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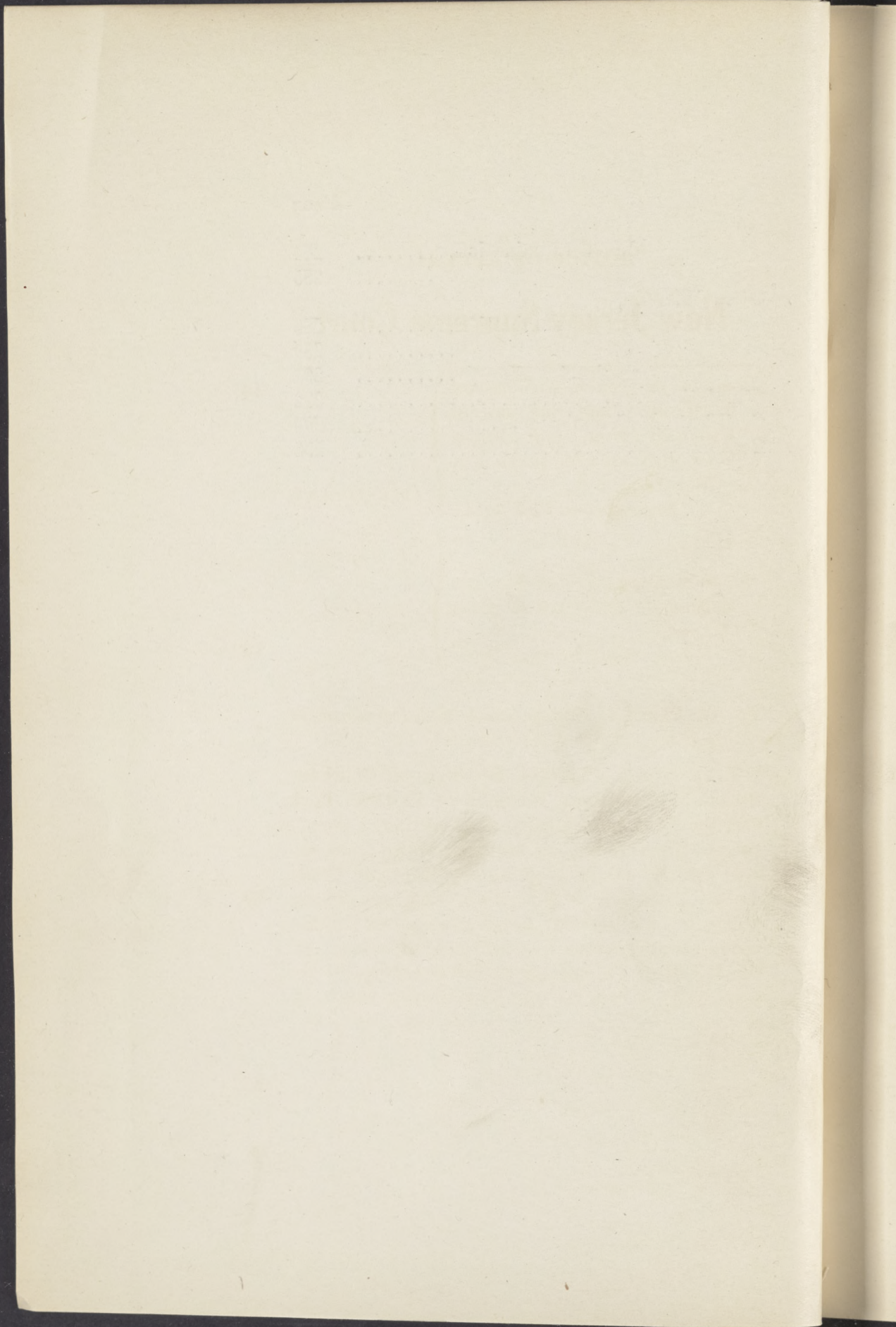
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NOTICE OF APPEAL.

New Jersey Supreme Court

BOROUGH OF CHATHAM, BOROUGH OF MADISON and BOROUGH OF FLORHAM PARK and BRAID- BURN REALTY CORPORATION, a corporation, <i>Prosecutors-Appellants,</i>	}	10
<i>vs.</i>		
BOARD OF CONSERVATION AND DE- VELOPMENT and CITY OF EAST ORANGE, <i>Defendants-Respondents.</i>	}	20

On Certiorari.
Notice
of Appeal.

*To the Board of Conservation and Development
and the City of East Orange:*

TAKE NOTICE that the Borough of Chatham, Borough of Madison, Borough of Florham Park and the Braidburn Realty Corporation, a corporation, prosecutors, do hereby appeal from the rule entered in the New Jersey Supreme Court on the 25th day of November, 1929, dismissing the writ of certiorari heretofore issued in the above-entitled cause and affirming the order of the Board of Conservation and Development referred to therein to the New Jersey Court of

Notice of Appeal.

Errors and Appeals as the last resort in all causes.

December 30, 1929.

10 RIKER & RIKER,
Attorneys of Borough of Chatham and
Braidburn Realty Corporation.

HENRY G. PILCH,
Attorney of Borough of Madison.

ROBERT E. BURKE,
Attorney of Borough of Florham Park.

THEODORE McC. MARSH,
Of Counsel.

20 (Note) Service acknowledged by Attorney-
General for the Board of Conservation and De-
velopment January 7, 1930.

WILLIAM A. STEVENS,
Attorney-General.

Service acknowledged by attorney for the City
of East Orange December 31, 1929.

WALTER C. ELLIS,
Attorney for City of East Orange.

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GROUNDS OF APPEAL.

New Jersey Court of Errors and Appeals

BOROUGH OF CHATHAM, BOROUGH OF MADISON and BOROUGH OF FLORHAM PARK and BRAID- BURN REALTY CORPORATION, a corporation, <i>Prosecutors-Appellants,</i>	}	<i>On Certiorari.</i> <i>Grounds of Appeal.</i>	10
<i>vs.</i> BOARD OF CONSERVATION AND DE- VELOPMENT and CITY OF EAST ORANGE, <i>Defendants-Respondents.</i>	}		20

The Borough of Chatham, Borough of Madison, Borough of Florham Park and the Braidburn Realty Corporation, a corporation, hereby specify as their grounds of appeal in the above-entitled cause as follows:

1. That the Supreme Court erred in giving judgment for the defendants instead of for the prosecutors.

30

2. That the Supreme Court of the State of New Jersey erred in giving judgment dismissing the writ of certiorari issued in the above-entitled cause and in affirming the order of the Board of Conservation and Development removed by the said writ of certiorari whereas said Supreme Court of the State of New Jersey should have set aside the resolutions, approvals, decisions and orders of the Board of Conservation and Development removed by said writ of certiorari.

40

Grounds of Appeal.

3. That the Supreme Court of the State of New Jersey erred in giving judgment dismissing the writ of certiorari issued in the above-entitled cause and in affirming the order of the Board of Conservation and Development removed by the said writ of certiorari whereas the Supreme
 10 Court of the State of New Jersey should have set aside the resolutions, approvals, decisions and orders of the Board of Conservation and Development removed by said writ of certiorari for the reasons set forth and filed in the Supreme Court of the State of New Jersey by said prosecutors.

December 31, 1929.

RIKER & RIKER,
 Attorneys for the Borough of Chatham
 and Braidburn Realty Corporation.
 20

FREDERICK G. PILCH,
 Attorney for the Borough of Madison.

ROBERT E. BURKE,
 Attorney for the Borough of Florham Park.

THEODORE McC. MARSH,
 Of Counsel.

Service acknowledged by attorney for the
 30 Board of Conservation and Development January 7, 1930.

WILLIAM A. STEVENS,
 Attorney-General.

Service acknowledged by attorney for the City
 of East Orange January , 1930.

WALTER C. ELLIS,
 Attorney for East Orange.

OPINION OF SUPREME COURT.

NEW JERSEY SUPREME COURT.

#207 May Term, 1929.

BOROUGH OF CHATHAM, BOROUGH OF MADISON and BOROUGH OF FLORHAM PARK and BRAID- BURN REALTY CORPORATION, a corporation, <p style="text-align: center;"><i>Prosecutors,</i></p>	10
<i>vs.</i>	
BOARD OF CONSERVATION AND DE- VELOPMENT and CITY OF EAST ORANGE, <p style="text-align: center;"><i>Respondents.</i></p>	20

Submitted May Term, 1929. Decided October ,
1929.

On Certiorari.

For prosecutors, Riker & Riker, Henry G.
Pilch, Robert E. Burke.

For respondents, William A. Stevens, Walter
C. Ellis.

30

Before Justices Trenchard, Lloyd and Case.

Per Curiam:

A writ of certiorari was allowed in this case to review the action of the Board of Conservation and Development in granting to the City of East Orange permission and authority to obtain an additional water supply for that city from land belonging to the Braidburn Realty Corporation, located in the Borough of Florham Park. Both

40

Opinion of Supreme Court.

the company and the borough are prosecutors of the writ.

It is claimed on behalf of the prosecutors that the application of the city was insufficient to confer jurisdiction on the Board. The application is made by virtue of authority conferred by Chapter 304, Laws 1910, section 2 of which forbids municipality appropriation by condemnation proceedings of lands or water without submission of the maps and plans to the commission and obtaining its approval. Section 3 provides that the application shall show the sources of the proposed supply, approximate location of the wells, their estimated capacity and an abstract of official reports relating to the same and the need for an added supply. It further provides that the commission shall by advertising in one or more newspapers published in the vicinity give notice of a public hearing at which all persons of the municipalities affected may be heard. It is contended that the application was faulty in that there was failure in all of these respects.

The sources of supply stated were the glacial deposits, the point of the proposed diversion being located 600 feet, plus or minus, from the Dickinson Well No. 1, belonging to the City of East Orange, located in Morris County, Florham Park Borough, and directly across the Passaic River from the above-mentioned well. The maps and plans accompanying the application corresponded therewith. In just what respect insufficiency here appears we are at a loss to determine.

So with respect to the quantity which is estimated at 2,000,000 to 4,000,000 gallons daily. It is obviously impossible to measure with entire accuracy the quantity of water that may be obtained from underground sources and the statute

Opinion of Supreme Court.

requires but an estimate. This is we think adequately given.

So again with respect to the advertising effected by the board. Advertisements were placed in the Newark Evening News, published at Newark; in the East Orange Record, published at East Orange; in the Daily Record of Morristown, published at Morristown. Morristown is the county seat of Morris County in which Florham Park is located and the Court will take judicial notice of the fact that it is within a distance of five miles from that borough. It is contended newspapers are published in Madison and Chatham, municipalities nearer in point of distance than Morristown. This contention seems to us unworthy of serious consideration. The statute must be given a reasonable interpretation, and as between local publications in minor towns a mile or two nearer the location of the wells and a publication in a newspaper at the county seat, it would be absurd to hold that for the purpose of the statute the selection of the latter was not in contemplation. The purpose of the statute is effective notice, and it is quite obvious that such notice would be more effectively given through the latter publication. It is sufficient for present purposes to say that we hold that the publication in the Morristown Record at least was in the vicinity of the proposed location of the well as required by the act.

It is next contended that the proceedings of the Board itself were faulty in failing to comply with the requirements of the act as to hearing and disposition. Evidence was taken as provided by the statute and a report prepared thereon and submitted to five of the eight members of the board. This report was signed by these five members and their action subsequently ratified

Opinion of Supreme Court.

and confirmed by the Board as an entirety. We think these proceedings were sufficient to meet the requirements of the statute and that the conclusion of the Board should not be disturbed for this reason.

- 10 Finally it is contended that the approval of the Board was not justified under the evidence in that it did not sufficiently appear that public necessity or reasonably anticipated use was established; that non-interference with other municipal supplies was not established; that non-injury to private interests was not established. The question for this Court on review is to determine in the language of the statute the "reasonableness, legality and form" of the proceedings. Voluminous testimony was taken on these various points and while it was not free from contro-
- 20 versial proof, we are satisfied that the conclusion of the Board thereon was justified.

The order of the Board of Conservation and Development is affirmed.

RULE FOR JUDGMENT.

NEW JERSEY SUPREME COURT.

#207 May Term, 1929.

BOROUGH OF CHATHAM, BOROUGH OF MADISON and BOROUGH OF FLORHAM PARK and BRAID- BURN REALTY CORPORATION, a corporation, <i>Prosecutors,</i> <i>vs.</i>	}	<i>On Certiorari.</i> <i>Rule for Judgment.</i>	10
BOARD OF CONSERVATION AND DE- VELOPMENT and CITY OF EAST ORANGE, <i>Respondents.</i>	}		20

The Court having inspected the transcript of proceedings on the application of the City of East Orange to the Board of Conservation and Development, together with the Resolution, Approval, Decision and Order of said Board of Conservation and Development removed by the writ of certiorari in this cause, and having considered the reasons filed for setting aside said Order, Approval and Decision and having heard the arguments of counsel therein, and duly considered the same:

30

IT IS ORDERED that the said writ of certiorari be, and the same hereby is dismissed with costs, and that the said Order of the Board of Conservation and Development removed by the writ of certiorari in the cause be, and the same is in all things affirmed.

Entered November 25, 1929, on motion of

WALTER C. ELLIS,

Attorney.

40

THE COURT OF COMMONS

... the ... of ...

... the ... of ...

... the ... of ...

... the ... of ...

PETITION FOR WRIT.

New Jersey Supreme Court

BOROUGH OF CHATHAM, BOROUGH
OF MADISON and BOROUGH OF
FLORHAM PARK and BRAIDBURN
REALTY CORPORATION, a cor-
poration,

Petitioners,

vs.

BOARD OF CONSERVATION AND DE-
VELOPMENT and CITY OF EAST
ORANGE,

Defendants.

10

*On Cer-
tiorari.*

*Petition for
Writ.*

20

*To His Honor, Charles W. Parker, Justice of the
Supreme Court.*

The petition of the Borough of Chatham, Borough of Madison and the Borough of Florham Park, all being municipal corporations of the State of New Jersey and the Braidburn Realty Corporation, a corporation of the State of New Jersey, respectfully shows:

1. That the Board of Conservation and De-
velopment is a Department of the State of New
Jersey consisting of eight members and has suc-
ceeded to all the powers and duties formerly ex-
ercised and performed by the State Water Supply
Commission including the power to determine
whether a municipal corporation shall be au-
thorized to condemn lands or water for any new
or additional water supply and to determine
whether a municipal corporation shall be au-

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Petition for Writ.

10 authorized to secure a new or additional water supply and whether the plans proposed by such municipality are justified by public necessity or reasonably anticipated public use and whether the same unduly interfere with the opportunity of other municipalities to obtain a water supply for their own use and whether same will unduly injure public or private interests.

20 2. That the City of East Orange, a municipal corporation of the State of New Jersey, on or about the 26th day of May, 1928, filed a petition and application with the said Board of Conservation and Development of the State of New Jersey, applying to the said Board for approval of its plans for diverting four million gallons of water from certain lands located in the Borough of Florham Park, County of Morris and State of New Jersey, for the purpose of supplying water to the said City of East Orange, and for authority to condemn forty acres of land owned by the Braidburn Realty Company and located in said Borough of Florham Park, a copy of which said petition and application are annexed hereto and made a part hereof and marked respectively, Exhibit A and Exhibit B.

30 3. The said City of East Orange also filed on said last mentioned date with the said Board of Conservation and Development a further instrument entitled "General Data Regarding Water Supply," a copy of which is annexed hereto and made a part hereof, and marked Exhibit C.

40 4. That upon the filing of the same, June 13, 1928 was fixed as the date for the hearing of the said application and notices thereof were published on June 1, 2 and 4, 1928, in each of the following newspapers: "Daily Record published

Petition for Writ.

in the Town of Morristown, County of Morris and State of New Jersey, in the Newark Evening News, a newspaper published in the City of Newark, County of Essex and State of New Jersey, and on June 1st and 8, 1928 in the East Orange Record, published in the City of East Orange, County of Essex and State of New Jersey, a copy of which said notice is annexed hereto and made a part hereof and marked Exhibit D.

10

5. That the said application came on for hearing at the time and place fixed in the notice aforesaid before A. W. Drake, one of the members of the said Board of Conservation and Development and was continued by him from time to time and further hearings held until the 2nd day of August, 1928, when the said hearings were closed, a copy of the testimony taken at the said hearings is submitted herewith as part of this application.

20

6. That at a meeting of the Board of Conservation and Development held August 8, 1928, at which said meeting four of the eight members of the said Board were present, Commissioner Drake recommended that the application of the City of East Orange for the taking of additional water be granted for two million gallons, and said municipality be authorized to condemn the said lands and water right in accordance with its petition, and that thereupon a resolution was adopted, a copy of which is set forth in the abstract of minutes of said meeting annexed hereto and made a part hereof and marked Exhibit E.

30

7. That subsequently an instrument entitled "Approval of Application of the City of East Orange" was prepared and submitted by mail by the Secretary of the Board to the several

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Petition for Writ.

10 members of the said Board of Conservation and Development and signed sometime during the month of August, 1928 by seven members of the said Board, acting separately, a copy of which said instrument is annexed hereto, made a part hereof and marked Exhibit F. That said instrument provided that the same was not to be operative unless the City of East Orange should file an acceptance thereof within ninety days, which said approval was accepted by the City of East Orange as required by the terms thereof, a copy of which said acceptance is annexed hereto and marked Exhibit G.

20 8. That subsequently and on the 19th day of September, 1928, a further meeting of the Board of Conservation and Development was held at which a resolution was adopted attempting to ratify the actions taken by the minority of the Board on August 8, 1928, an abstract of the minutes of the same is annexed hereto, made a part hereof and marked Exhibit H.

30 9. Your petitioners say that the application, petition and general data submitted by the City of East Orange to said Board did not comply with the requirements of the statute in such case made and provided in that the same did not show the sources of the proposed supply of water and the approximate location of the proposed wells with their estimated capacity and that, therefore, the Board of Conservation and Development was without jurisdiction to consider such application.

10. Your petitioners say that the lands and premises affected by the said application were located in the Borough of Florham Park and that the notices of the hearing were not printed

Petition for Writ.

in one or more newspapers published in the vicinity of the lands affected as required by the statute in such case made and provided and that, therefore, the said Board had no jurisdiction to consider said application.

11. Your petitioners further say that the hearing of the application was conducted by one member of the Board of Conservation and Development and that he had no authority or jurisdiction to conduct such hearing and that the same was, therefore, illegal and void. 10

12. Your petitioners further say that competent evidence offered by petitioners to sustain their contention was excluded by said Commissioner over objection by petitioners as will appear by reference to the testimony taken at the hearings submitted herewith, and that, therefore, the decision of the Board is illegal and void. 20

13. Your petitioners further say that incompetent testimony offered by the City of East Orange was admitted by the Commissioner over objection by petitioners as will appear by reference to the testimony taken at the hearings and submitted herewith and that, therefore, the decision of the Board is illegal and void.

14. Your petitioners further say that the resolution on August 8, 1928, approving the application of the City of East Orange was adopted by a minority of the said Board and is, therefore, illegal and void. 30

15. Your petitioners further say that the approval of the said Board which was signed by seven members of the said Board of Conservation, acting separately, and subsequent to the date of adoption of the said resolution and with-

Petition for Writ.

out consideration of testimony was not a decision of the Board as required by the statute in such case made and provided and is, therefore, illegal and void.

10 16. Your petitioners further say that the action of the said Board of Conservation and Development on September 19, 1928, in attempting to ratify the action of the minority members of the said Board, taken at a meeting on August 8, 1928, was ineffective and the Board could not ratify a void decision.

20 17. Your petitioners further say that the hearings in the said application were conducted by one of the Commission; that he prepared the report to the Commission and that the said Board as a body never read or considered the testimony, exhibits or heard the arguments of counsel in connection therewith; and that your petitioners are entitled to have the application heard and determined by the Board of Conservation and Development acting as a body after due consideration of the evidence and proper argument, and that the alleged decision of the Board is, therefore, illegal and void.

30 18. Your petitioners further say that the weight of the evidence submitted to the said Commissioner at the hearings aforesaid did not establish that the taking of the said additional water is justified by either public necessity or reasonably anticipated public use or that the taking of the said water will not interfere unduly with the opportunities of the municipalities of the Borough of Chatham, Borough of Madison and Borough of Florham Park to obtain a water supply for the water necessary for their and each of their respective uses, or that the same

Petition for Writ.

will not unduly interfere with the public interests of the said Boroughs and each of them, and that, therefore, the said decision is unreasonable and illegal.

19. The said Braidburn Realty Corporation further says that the weight of evidence did not establish that the taking of the said water will not unduly injure the private interests of said Braidburn Realty Corporation and that, therefore, the said decision is unreasonable and illegal. 10

20. Your petitioners further state that the City of East Orange failed to make application to the North Jersey District Water Supply Commission for its consent to the diversion of the water supply in question prior to applying to the Board of Conservation and Development, contrary to the provisions of the statute in such case made and provided. 20

21. Your petitioners, therefore, respectfully say that the resolution adopted August 8, 1928 and the approval, decision and order of the said Board of Conservation and Development were not reasonable and that all and each of said acts are illegal and, therefore, pray that a writ of certiorari may issue directed to the Board of Conservation and Development and the City of East Orange for the purpose of reviewing the resolution and decision and approval and order of the said Board as to its reasonableness, legality and form as provided in the statute in such case made and provided and that all proceedings pending thereunder be stayed and that your petitioners may have leave to take testimony to be used upon the argument. 30

Petition for Writ.

And your petitioners will ever pray, etc.

BOROUGH OF CHATHAM,
By Anthony Ruzicka, Mayor.

BOROUGH OF MADISON,
By Frank F. Tierney, Mayor.

10 BOROUGH OF FLORHAM PARK,
By W. S. Lanning, Mayor.

BRAIDBURN REALTY CORPORATION,
By F. B. Jewett, President.

RIKER & RIKER,
Attorneys of Borough of Chatham.

HENRY G. PILCH,
Attorney of Borough of Madison.

20 ROBERT E. BURKE,
Attorney of Borough of Florham Park.

RIKER & RIKER,
Attorneys of Braidburn Realty Corporation.

STATE OF NEW JERSEY, }
COUNTY OF MORRIS. } ss.

30 ANTHONY RUZICKA, being duly sworn on his
oath according to law, deposes and says that he
is the Mayor of the Borough of Chatham, and
that he has read the foregoing petition and the
matters therein set forth are true to the best of
his knowledge and belief.

ANTHONY RUZICKA.

Sworn and subscribed to before me
at Chamham, New Jersey, this first
day of November, 1928.

40 ERNEST L. QUACKENBUSH,
Master in Chancery of New Jersey.

Petition for Writ.

STATE OF NEW JERSEY, }
 COUNTY OF MORRIS. } ss.

FRANK F. TIERNEY, being duly sworn on his oath according to law, deposes and says that he is the Mayor of the Borough of Madison, and that he has read the foregoing petition and that the matters therein set forth are true to the best of his knowledge and belief. 10

FRANK F. TIERNEY.

Sworn and subscribed to before me
 at Madison, N. J., this 30th day
 of October, 1928.

ALEXANDER EAGLES,
 (SEAL) Notary Public N. J.

20

STATE OF NEW JERSEY, }
 COUNTY OF ESSEX. } ss.

W. S. LANNING, being duly sworn on his oath according to law, deposes and says that he is the Mayor of the Borough of Florham Park, and that he has read the foregoing petition and that the matters therein set forth are true to the best of his knowledge and belief.

W. S. LANNING. 30

Sworn and subscribed to before me
 at Newark, N. J., this 31st day
 of October, 1928.

GEORGE F. R. POLLARD,
 (SEAL) Notary Public of New Jersey.

40

Affidavit of Robert O. Bentley.

STATE OF NEW YORK, }
 COUNTY OF NEW YORK. } ss.

10 F. B. JEWETT, being duly sworn on his oath according to law, deposes and says that he is the President of the Braidburn Realty Corporation, and that he has read the foregoing petition and that the matters therein set forth are true to the best of his knowledge and belief.

F. B. JEWETT.

20 Sworn and subscribed to before me this 1st day of November, 1928, and I hereby certify that I am a Notary Public in and for the City, County and State of New York, duly authorized and commissioned to take oaths and affidavits in said County and State.

ALFRED KAUFMANN,
 (SEAL) Notary Public, Kings County.

Note—Exhibits A to H are omitted, as the same are printed as part of the return to the writ.

30 STATE OF NEW JERSEY, }
 COUNTY OF ESSEX. } ss.

ROBERT O. BENTLEY, of full age, being duly sworn according to law, on his oath deposes and says:

I am an attorney at law of the State of New Jersey and am employed by the firm of Riker & Riker, counsellors at law practicing in Newark, New Jersey.

40 I was requested by Robert S. Pollard, counsellor at law of the firm of Riker & Riker, and

Affidavit of Robert O. Bentley.

attorney of the Borough of Chatham, to examine the records of the Board of Conservation and Development at Trenton, New Jersey, with respect to said Board's action on the application of the City of East Orange for an additional water supply of four million gallons daily, from driven wells to be located in the Borough of Florham Park, Morris County, New Jersey. 10

Pursuant to the request of Mr. Pollard, I went to Trenton on the 28th day of August, 1928, and examined all of the records of the Board of Conservation and Development to which I could obtain access at the time, with respect to this application.

I found that the petition and application of the City of East Orange were filed with the Board on the 26th day of May, 1928, together with another instrument entitled "General Data Regarding Water Supply"; that the Board fixed June 13, 1928 as the date for the hearing of said application, and caused notices thereof to be published June 1st, 2nd and 4th, 1928, in each of the following newspapers: The Daily Record published in the Town of Morristown, Morris County, New Jersey and The Newark Evening News published in the City of Newark, Essex County, New Jersey, and on June 1st and 8th, in the East Orange Record published in the City of East Orange, Essex County, New Jersey; that the application came on for hearing at the time and place fixed in said notice, before A. W. Drake, Esquire, one of the members of the Board of Conservation and Development, and these hearings were continued by him from time to time, and other hearings were held by him until the 2nd day of August, 1928, when the said hearings were closed. The records of the said De- 20 30 40

Affidavit of Robert O. Bentley.

partment do not show that the hearings were held by any commissioner or group of commissioners other than the said A. W. Drake, nor do said records show that by any formal action, the authority to hold these hearings was delegated to the said A. W. Drake.

10 I had been advised that Commissioner Drake had made his report and recommendation to the Board of Conservation and Development at the regular meeting of the Board held on August 8th, 1928, but was not permitted to examine these minutes by reason of the fact that they had not been approved.

20 I went to Trenton again on the 27th day of September, and saw Mr. H. T. Critchlow, Chief of the Department of Division of Waters. Mr. Critchlow allowed me to examine the minutes of said meeting of August 8th, 1928, and also the minutes of the Secretary, made on September 19th, 1928. The minutes of the meeting of August 8th, 1928 disclosed the following facts: that the Water Committee by Commissioner Drake rendered its report and recommendation to the effect that the City of East Orange be granted permission to extract not exceeding two million gallons daily from the land set forth in the application, at which said meeting of August 30 8th, there were present but four members of said Board of Conservation and Development, namely: Messrs. Drake, Florance, Moeller and Winston.

That at said meeting, the said Board determined to grant the said application in accordance with the recommendation of Commissioner Drake.

I was further advised by Mr. Critchlow that the formal approval was thereupon prepared and sent by mail to the individual members of the Commission for their signature.

40

Affidavit of Clyde Potts.

At the subsequent meeting of September 19th, the minutes disclosed the passage of a motion ratifying and confirming all actions taken by the Minority Board at said meeting of August 8th.

I have also interviewed Mr. Fred Hoeren, Secretary to Mr. Edmond Tyler, who is Secretary of the New Jersey District Water Supply Commission, and was advised that no application had ever been presented to said Commission by the City of East Orange for permission to divert the water described in its application to the Board of Conservation and Development, a copy of which is attached hereto. 10

ROBERT O. BENTLEY.

Subscribed and sworn to before me
this 2nd day of November, 1928. 20

GEORGE F. R. POLLARD,
(SEAL) Notary Public of New Jersey.

STATE OF NEW JERSEY, }
COUNTY OF MORRIS. } ss.

CLYDE POTTS, of full age, being duly sworn according to law, on his oath deposes and says:

I am a Civil and Sanitary Engineer with offices at 30 Church street, New York City. I have been such Engineer for twenty-five years. 30

I was present at all the hearings held before Commissioner A. W. Drake in the application of the City of East Orange for additional water supply of four million gallons daily from driven wells to be located in the Borough of Florham Park, County of Morris and State of New Jersey. I testified as an expert witness in the case and heard the testimony of all the other witnesses. 40

Affidavit of Clyde Potts.

I had prepared at that time a great quantity of evidence which I considered pertinent to a proper consideration of the application, concerning facts which the Board in arriving at a decision, should have considered, and this evidence was excluded by the Commissioner.

10 At one stage of the proceedings, Mr. Walter C. Ellis, counsel for the City of East Orange, dictated a stipulation to the effect that all papers, documents and other public records of the City of East Orange and of the Board of Conservation and Development should be admitted as evidence in this case, and made a part of the record by reference thereto. I thereupon sent a clerk from my office to the office of the Water Department of the City of East Orange, to make
20 a summary or digest of the records available there. My clerk found in the file a letter from the Consulting Engineer of the City of East Orange, in regard to the adequacy of the city's supply for many years to come.

My clerk sought a copy of it, and permission to take a copy was refused.

Subsequently, at a hearing, the Commissioner refused to permit him to testify as to the contents of that letter.

30 I also found state records accurately describing the water supply in the present East Orange field, which I sought to read in the record, and which evidence was excluded by the Commissioner upon objection of counsel for the City of East Orange, in disregard of his former stipulation.

I am personally familiar with the location of the proposed new well supply for the City of East Orange, and have been over the ground in which said wells are proposed to be located. I

Affidavit of Clyde Potts.

am also familiar with the location of the Boroughs of Chatham, Madison, Florham Park, and I am Mayor of the Town of Morristown, and have lived there for many years.

The land upon which the new wells are proposed to be driven is located in the Borough of Florham Park adjacent to the Borough of Madison, and is separated from the Town of Morristown by the extensive Township of Morris and a large portion of the Township of Hanover. 10

To my knowledge, there are newspapers published in the Boroughs of Chatham and Madison, both of which are far nearer the vicinity of the proposed new wells than is the Town of Morristown.

CLYDE POTTS.

Subscribed and sworn to before me 20
this 1st day of November, 1928.

ELEANORE SCHENK,
(SEAL) Notary Public of New Jersey.

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40

WRIT OF CERTIORARI.

NEW JERSEY, ss.

10 The State of New Jersey to the
 Board of Conservation and Develop-
 (L. s.) ment of the State of New Jersey and
 the City of East Orange.

GREETING:

20 We being willing, for certain reasons, to be
 certified of a certain resolution and decision
 adopted by the Board of Conservation and De-
 velopment on August 8th, 1928 and a certain
 approval, decision and order of the Board of
 Conservation and Development bearing date
 August 8th, 1928, in relation to the application
 by the City of East Orange for approval of its
30 plans for diverting four million gallons of water
 from certain lands located in the Borough of
 Florham Park, County of Morris and State of
 New Jersey, for the purpose of supplying water
 to the said City of East Orange, and for au-
 thority to condemn forty acres of land owned
 by the Braidburn Realty Company and located
 in the said Borough of Florham Park, do com-
 mand you that you certify and send under your
 seal, to our Justice of our Supreme Court of
40 Judicature, at Trenton, on the 23rd day of Janu-
 ary, 1929, the said resolution, approval, decision
 and order of the said Board of Conservation and
 Development, together with all things touching
 and concerning the same.

Writ of Certiorari.

WITNESS, WILLIAM S. GUMMERE, Esquire, Chief Justice of our Supreme Court, at Trenton, this 3rd day of January, 1929.

FRED L. BLOODGOOD.

RIKER & RIKER,
Attorneys for Borough of Chatham
and Braidburn Realty Corporation. 10

HENRY G. PILCH,
Attorney for Borough of Madison.

ROBERT E. BURKE,
Attorney for Borough of Florham Park.

Service of the within Writ of Certiorari is hereby acknowledged this 8th day of January, 1929.

20

WALTER C. ELLIS,
Attorney of the City of East Orange.

Service of the within Writ of Certiorari is hereby acknowledged this 11th day of January, 1929.

EDWARD L. KATZENBACH,
Attorney General,
Attorney for Board of Conservation
and Development. 30

Allowed Dec. 28, 1928. Let it be sealed. The writ not to operate as a stay.

C. W. PARKER,
J. S. C.

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RULE.

NEW JERSEY SUPREME COURT.

10	BOROUGH OF CHATHAM, BOROUGH OF MADISON AND BOROUGH OF FLORHAM PARK AND BRAIDBURN REALTY CORPORATION, a cor- poration, <div style="text-align: right; padding-right: 20px;"><i>Petitioners,</i></div>	}	<i>On Certiorari.</i>
	<i>vs.</i>		<i>Rule.</i>
	BOARD OF CONSERVATION AND DE- VELOPMENT AND CITY OF EAST ORANGE, <div style="text-align: right; padding-right: 20px;"><i>Defendants.</i></div>		

20

The matter being opened to the Court on motion of Riker & Riker, attorneys for the Borough of Chatham and Braidburn Realty Corporation, a corporation, and Henry G. Pilch, attorney for the Borough of Madison, and Robert E. Burke, attorney for the Borough of Florham Park, petitioners, and in the presence of Walter C. Ellis, attorney for the City of East Orange defendants. And it appearing to the Court that due notice

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of this application has been served upon the Board of Conservation and Development, defendant, and upon reading and filing the petition and affidavits submitted by petitioners praying for the allowance of a Writ of Certiorari to review the resolution and decision adopted by the Board of Conservation and Development on August 8th, 1928, and the certain approval, decision and order of the Board of Conservation and Development bearing date August 8th, 1928, and the minutes of the regular meeting of said

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Rule.

Board held Sept. 19, 1928 with reference to the application of the City of East Orange for approval of its plans for diverting four million gallons of water from certain lands located in the Borough of Florham Park, County of Morris and State of New Jersey, and for authority to condemn forty acres of land owned by the Braidburn Realty Corporation and located in the said Borough of Florham Park, and for good cause shown:

10

It is on this 28th day of December, 1928 ORDERED that a Writ of Certiorari issue out of and under the seal of this Court, directed to the Board of Conservation and Development of the State of New Jersey and the City of East Orange to review the resolution and decision adopted by the Board of Conservation and Development on August 8th, 1928, and the certain approval, decision and order of the Board of Conservation and Development bearing date August 8th, 1928, and the minutes of the regular meeting of said Board held Sept. 19, 1928 with reference to the application of the City of East Orange for approval of its plans for diverting four million gallons of water from certain lands located in the Borough of Florham Park, County of Morris and State of New Jersey, and for authority to condemn forty acres of land owned by the Braidburn Realty Corporation and located in the said Borough of Florham Park.

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30

It is further ORDERED that the said Borough of Chatham, Borough of Madison, Borough of Florham Park and Braidburn Realty Corporation, or any of them, have leave to take testimony before a Supreme Court Commissioner, on four days' notice of the time and place of the taking of the same being served upon the Board

40

Rule.

of Conservation and Development of the State of New Jersey and the City of East Orange or their respective attorneys for use at the argument on the turn of the Writ of Certiorari in the above entitled cause.

10 It is further ORDERED that the issuance of the Writ of Certiorari in the above-entitled matter shall not operate as a stay of the proceedings authorized or approved by the said Board of Conservation and Development aforesaid, for the condemnation of lands of the Braidburn Realty Corporation.

Let this rule be entered.

C. W. PARKER,
J. S. C.

20 The form of the above rule is hereby approved.

RIKER & RIKER
Attorneys for Borough of Chatham and
Braidburn Realty Corporation.

HENRY G. PILCH
Attorney for Borough of Madison.

ROBERT E. BURKE
Attorney for Borough of Florham Park.

30 WALTER C. ELLIS
Attorney for City of East Orange.

RETURN TO WRIT.

*To the Honorable Justices of the Supreme Court
of Judicature of New Jersey.*

The Board of Conservation and Development,
by its Director, in obedience to the command of
the writ hereto annexed, director to said Board, 10
does hereby certify and send to you, the said
Justices, the award or approval of the applica-
tion of the City of East Orange, dated August 8,
1928, signed by seven (7) members of said Board,
together with a petition whereon the same was
based, and all things touching and appertaining
to the same, including the testimony taken by said
Board, as fully and as entirely as the same re-
mains in its hands and possession, as appears
by the schedule hereunder written.

The Board of Conservation and Development 20
in making return to the attached writ of cer-
tiorari does hereby set forth that in accordance
with Section 3, Chapter 309, P. L. 1910, the City
of East Orange on May 26, 1928, filed an applica-
tion in the office of the Board of Conservation
and Development, successor to the State Water
Supply Commission, for approval of its plan for
obtaining an additional source of water supply
from wells to be located in the Borough of
Florham Park, in the County of Morris (Ex- 30
hibit A attached hereto);

That in accordance with the rules and prac-
tices of the Board of Conservation and De-
velopment, due notice was thereafter given that
it would grant a public hearing on said applica-
tion on Wednesday, June 13, 1928, at 10:15
a. m., at its office in Trenton, N. J., at which time
and place all persons, corporations, or municipi-
palities affected by the proposed plan might be

Return to Writ.

heard, which notice bore date of May 26, 1928, was signed by Henry B. Kummel, Director (Exhibit B) and was published and otherwise made known, as more fully set forth in Exhibits C and D attached hereto;

10 That the Board of Conservation and Development held such public hearing on said day at the time and place according to said notice, and also on July 10, July 26 and August 2, days to which said hearing had been continued, and on said occasions said Board in pursuance with the authority granted by Chapter 194, P. L. 1924, by a minority of said Board did hear all persons and municipalities through their officers or counsel who presented themselves and desired to be heard;

20 That at a regular meeting of the Board on August 8, 1928, four (4) members of the Board being present, and a complete stenographic transcript of the testimony being before the Board (Exhibit DD), it did decide that the plans proposed by the petitioners, as set forth in their application and at the hearings, was justified by public necessity and reasonably anticipated public use, to the amount of two million gallons (2,000,000) daily; and that they would not interfere unduly with the opportunity of other municipalities to obtain a water supply by the taking of
30 waters necessary for their use; and that they would not unduly injure public or private interests, as in more fully set forth in a transcript from the minutes of said meeting (Exhibit E);

40 That the Board of Conservation and Development did thereupon approve the plan of the City of East Orange, subject to certain terms and conditions which are fully set forth in the signed decision of said Board (Exhibit F);

Return to Writ.

That the written decision of the Board prepared in accordance with this action and bearing the same date, was signed by five (5) members of the Board at a special meeting on September 5, and that it was later signed by two (2) additional members; a written summary of the facts and testimony having been prepared and sent to a majority of the Board on August 16 (Exhibit G);

That at a regular meeting of the Board held on September 19, six (6) members being present, the following resolution was adopted:

Resolved, That the Board does hereby ratify and confirm as its own each and every action taken by a minority of the Board at the meeting of August 8, as set forth in the minutes of said meeting, which minutes are hereby approved.

That the terms of the approval and conditions attached thereto and made a part thereof were accepted by the petitioner within ninety (90) days of the date of said approval as required therein (Exhibit H—copy of acceptance):

That the Board of Conservation and Development does attach to this return as a part thereof the following papers in substantiation of the statements as herein set forth:

Exhibit A—Application of the City of East Orange with maps and papers filed therewith.

Exhibit B—Copy of notice of the hearing.

Exhibits C and D—Proofs of publication and announcement of the hearing.

Exhibit DD—Testimony.

Exhibit E—Transcript from the minutes of August 8.

Return to Writ.

Exhibit F—Certified copy of the signed decision of the Board.

Exhibit G—Copy of summary of facts and testimony sent to a majority of the Board on August 16.

10 Exhibit H—Copy of the acceptance by the petitioner of the terms of the approval and conditions attached thereto.

IN WITNESS WHEREOF the said Board has hereunto set its hand on this 23rd day of January, one thousand nine hundred and twenty-nine (1929) by the Director.

HENRY B. KUMMEL,
Director.

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Return to Writ—Exhibit A.

EXHIBIT A.

APPLICATION NO. 303

State of New Jersey

DEPARTMENT OF CONSERVATION AND DEVELOPMENT

10

Division of Waters

State Office Building, Trenton

This space
not to be
filled in by
applicant.

Application of East Orange, City of Essex
(Name of applicant.)

County, N. J. for approval of its plans for an 20
(Address.)

additional sub-surface water supply
(new or additional.)

(surface, sub-surface or combination.)

Filed in the Department office May 26, 1928

Action of the Board of Conservation and De-
velopment 19..

COPY

30

East Orange, N. J.
May 24, 1928

To the Board of Conservation and Development:

In compliance with the provisions of Chapter
252, P. L. 1907, and Chapter 304, P. L. 1910
The Board of Water Commissioners of East
(Name of applicant.)

Orange, N. J. hereby makes application for the
approval of its plans for diverting a maximum

40

Return to Writ—Exhibit A.

of 4 million gallons daily for the purpose of obtaining additional source of water supply (new or additional.)

10 from the glacial deposits the point of the proposed diversion being located 600± feet north of Dickinson well #1 belonging to City of East (Give county, township, distance and direction from some prominent, nearby geographical feature.)

Orange, land located in Morris County, Florham Park Borough and directly across the Passaic River from the above mentioned well.

20 for the purpose of supplying water to City of East Orange, County of Essex and State of (State the municipalities to be supplied, giving brief description of the boundary of the territory when not restricted by established municipal limits. This information should supplement the map which is required under rule No. 2e. (P. 50 Booklet of Laws and Rules.)

New Jersey.
Description
of plans
proposed.

30 The boring of two (2) or more wells similar in general character to the existing Dickinson wells and connecting of the discharge of these wells to the present system of collectors in the Dickinson well field.

Return to Writ—Exhibit A.

Statement
regarding need
for the supply
desired, and
reason for
choice made.

Although we are supplying the City of East Orange on the basis of 58 gallons per capita per day, the population of the City of East Orange is increasing very rapidly and we are fast reaching the limit of our present supply. The reason for choosing the location mentioned in the application is its proximity to our Dickinson well field which we have thoroughly explored by boring and in which we have at present our collector and power lines. 10

List of additional maps, plans, reports, etc., which may be filed. 20

The following supplementary papers are filed with this application and made a part thereof:

1. General data regarding water-supply system form W 4. (required.) 30
2. Atlas sheet showing information required by rule No. 2 of the Board. (P. 50 Booklet of Laws and Rules.)

Return to Writ—Exhibit A.

COPY.

The City of East Orange,
By, Board of Water Commissioners
Address 436 Main Street,

(Signed) By Frank H. Taylor
President

10

Attest:

(Signed) R. M. Roper
Secretary

Note.—This application, together with all maps, plans, profiles and specifications, and all papers, information and data filed in connection therewith, will remain on file in the office of the Department of Conservation and Development.

20

Application No. 303

State of New Jersey

DEPARTMENT OF CONSERVATION AND
DEVELOPMENT

Division of Waters

State Office Building, Trenton

GENERAL DATA REGARDING WATER-
SUPPLY SYSTEM

30

This space
not to be
filled in by
applicant.

To accompany application of East Orange, City
of, Essex County, N. J.

(Name and address of applicant)
filed in the Department Office May 26, 1928

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*Return to Writ—Exhibit A.*Proposed Additional Water-Supply System
(New or additional.)

(Note.—The following data relate only to proposed works.)

1. Source of supply—(Fill in the following only as they apply directly to the proposed system.) 10
 - (a) Name of stream, lake or pond.....
 - (b) Drainage area above intake (square miles)
.....
 - (c) Springs (number and size).....
 - (d) Wells (number, size and depth) 2 or more—
24" x 130 feet—±
 - (e) Emergency supply, if any.....
 - (f) Dry season yield (gallons daily).....
2. Storage works (description and capacity).... 20
.....
3. Distribution (gravity or pumping) Pumping
4. Pumping units (description and capacity)
Deep well electrically driven turbine pumps—1
to 2 MGD capacity
5. Transmission mains (size and length) 600
to 1000 feet of 10"
6. Pressures in distribution mains, from 65 lbs.
to 105 lbs.
7. Purification 30
8. Communities to be supplied City of East
Orange, County of Essex, State of New Jersey.
9. Population to be supplied 70,000
10. Estimated consumption (gallons daily):
 - (a) Immediate 4,100,000
 - (b) Future (5 years) 6,000,000
11. Estimated capacity of proposed plant (gal-
lons daily) 2 to 4 million

Return to Writ—Exhibit A.

- 12. Probable date when capacity will be utilized 1930
- 13. Estimated cost of proposed plant \$60,000
- 14. Remarks

PRESENT WATER-SUPPLY SYSTEM

10 (Note:—The following data relate only to existing works)

Date of construction or important reconstruction 1905-1923

21. Source of supply—(Fill in the following only as they apply directly to the present system.)

- (a) Name of stream, lake or pond.....
- (b) Drainage area above intake (square miles)

- 20 (c) Springs (number and size).....
- (d) Wells (number, size and depth) Canoe Brook 16-8", Slough Brook 3-10" Dickinson 3-24"
- (e) Emergency supply, if any.....
- (f) Dry season yield (gallons daily) 4,500,000

22. Storage works (description and capacity) Concrete covered reservoir in South Orange, capacity 5 million gallons.

23. Distribution (gravity or pumping) Gravity

30 24. Pumping units (description and capacity) 2-4 million Snow, 1-2 million Centrifugal

25. Transmission mains (size and length) 24" —5 miles

26. Pressures in distribution mains, from 65 lbs. to 105 lbs.

27. Purification

28. Communities supplied City of East Orange, County of Essex, State of New Jersey.

29. Population supplied 68,000

Return to Writ—Exhibit A.

- 30. Consumption (gallons daily):
 - (a) Average 4 million Maximum 4.5 million
Minimum 3.9 mil.
 - (b) Average, per capita 58 gallons
 - (c) Industrial 400,000 gallons
 - (d) How determined Meters 10
- 31. Number of service taps, Domestic 10342 In-
Industrial 15 10
- 32. Number of meters, Domestic 10342 In-
Industrial 15
- 33. Fire hydrants (number and size) 944—5"
and 6"
- 34. Estimated capacity of plant (gallons daily)
4,500,000
- 35. Remarks

City of East Orange 20
 By Board of Water Commissioners
 (Signed) Roswell M. Roper,
 Engr. and Gen'l Mgr.
 (Signed) May 24, 1928
 East Orange, N. J.

COPY

May 22nd, 1928.

To the Board of Conservation and Development 30
 State House,
 Trenton, New Jersey.

Gentlemen:

The petition of the City of East Orange, County of Essex, State of New Jersey, respectfully shows:

(1) The City of East Orange is a city of the second class, incorporated under Chapter 250, P. L. 1908.

Return to Writ—Exhibit A.

(2) In accordance with the provisions of its Charter, your petitioner has established a Board of Water Commissioners, and is now supplying the City, consisting of approximately seventy thousand (70,000) population, from a sub-surface water system, located in Millburn and Livingston Townships, Essex County; the present supply averaging approximately four million gallons per day.

(3) Your petitioner now has need of an additional water supply on account of its rapidly increasing population, and has been negotiating for two years last past for the purchase of approximately forty acres of land lying immediately across the Passaic River from petitioner's wells. Said river abuts the present land of your petitioner. The said forty acres in question are in the Borough of Florham Park, County of Morris, State of New Jersey.

(4) The aforesaid forty acres are owned by the Braidburn Realty Corporation, and said owner refuses to sell to your petitioner the lands in question; said refusal having been recently made in writing.

The necessity for acquiring the land in question is urgent, and your petitioner therefore prays that your Honorable Board grants permission to the City of East Orange to exercise the right of eminent domain for the acquisition of said lands and water rights above described.

THE CITY OF EAST ORANGE

(Signed) By Frank H. Taylor
 President of the Board of
 Water Commissioners.

Attest: (Signed) R. M. Roper
 Secretary of the Board of
 Water Commissioners.

Return to Writ—Exhibit B.

This is to certify that the foregoing is a compared and true copy of the application of the City of East Orange for an additional water supply from wells in Florham Park, filed in the Department of Conservation and Development May 26, 1928.

Henry B. Kummel
Secretary. 10

Trenton, N. J. January 21/29.

EXHIBIT B.

NOTICE OF HEARING

DEPARTMENT OF CONSERVATION AND
DEVELOPMENT

20

Trenton, New Jersey, May 26, 1928.

The Board of Water Commissioners of the City of East Orange, Essex County, New Jersey, having made application to the Board of Conservation and Development for approval of its plans for diverting an additional water supply of four million (4,000,000) gallons daily from wells to be located on lands in the Borough of Florham Park, Morris County, said lands being about 40 acres in extent, owned by the Braidburn Realty Corporation and located about 600 feet north of the Dickinson Well No. 1 belonging to the City of East Orange, and directly across the Passaic River from the said well, as shown on map accompanying said application, for the purpose of supplying water to the City of East Orange; also a petition requesting permission for the City of East Orange to exercise the right of eminent domain for the acquisition of said lands and

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Return to Writ—Exhibit C.

10 water rights, said petition setting forth that the owner refuses to sell to the City of East Orange the lands in question; and having filed said application and petition in the office of this Board on the twenty-sixth day of May, 1928, notice is hereby given that a public hearing on said application and petition will be held in the office of the Board, State Office Building, Trenton, New Jersey, at 10:15 a. m. Daylight Time, on
 20 Wednesday, June, 13, 1928,
 at which all municipalities, corporations and persons may be heard for or against the granting of the application.

By order of the Board of Conservation and Development.

H. B. KUMMEL
 Director.

EXHIBIT C.**PROOFS OF PUBLICATION OF NOTICE OF HEARING**

State of New Jersey, }
 County of Morris, } ss

30 M. Margaret Shepps, of full age, being sworn according to law, does depose and say, that she is a representative of the "Daily Record," a newspaper printed and published at Morristown, Morris County, New Jersey, and circulating in the said County of Morris; and that the notice, of which the annexed is a true copy, has been regularly published in said newspaper at least three times; first publication being made on the first day of June, A. D. 1928 and the last pub-

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Return to Writ—Exhibit C.

lication being dated the fourth day of June, A. D.
1928

(Signed) M. Margaret Shepp

Sworn to and subscribed before me this
6th day of June, A. D. 1928

Loretta E. Tomlinson,
Notary Public of New Jersey

10

The notice referred to in the above affidavit is
a printed copy of the notice of hearing—Exhibit
B of this Return to Writ

Affidavits of similar form are in the files of
the department of Conservation and Development
and indicate publication as follows:

Newark Evening News, Newark, N. J.

June 1, June 2 and June 4, 1928

20

Affidavit by Harold F. Pierson, sworn to before
Harold W. Bailey, N. P. June 4, 1928

The East Orange Record, East Orange, N. J.
June 1 and June 8, 1928

Affidavit by Lester M. Lindsay sworn to before
Linwood C. Gillis, N. P. June 14, 1928

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Return to Writ—Exhibit D.

EXHIBIT D.

MAILING OF NOTICE OF HEARING

By direction of the Department of Conservation and Development, a copy of the notice of hearing was sent by registered mail to each of
10 the following.

Commonwealth Water Company, Summit, N. J.
Chatham Water Department, Borough of Chatham, N. J.

Madison Water Department, Borough of Madison, N. J.

The Mayor of the Borough of Florham Park, N. J.

The Braidburn Realty Corporation, Florham Park, N. J.

20 Proof of the mailing and receipt of said notices by the above addressees is shown by the return receipt postal cards, signed by said addressees, now in possession of the Department of Conservation and Development.

H. B. Kummel

Henry B. Kummel

Director of Conservation and Development

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40

Return to Writ—Exhibit E. Testimony.

EXHIBIT E.

STATE BOARD OF CONSERVATION AND
DEVELOPMENT

TESTIMONY

In re application of the City of
East Orange, New Jersey, to
the Board of Conservation
and Development for approval
of its plans to divert water
from artesian wells on lands
in the Borough of Florham
Park, Morris County, and a
petition requesting permission
to condemn said lands and
water rights.

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Transcript of shorthand notes taken in the
above entitled cause at a public hearing held in
the State House, Trenton, New Jersey, beginning
at 10:30 a. m., Tuesday, July 10, 1928.

PRESENT:

Mr. Drake, Chairman

Dr. Kummel, Director

Mr. Critchlow, Chief, Division of Waters

30

APPEARANCES:

Walter C. Ellis, Esq.

Roswell M. Roper, Esq.

Commissioner Frank H. Taylor
for the City of East Orange

Bernard F. Cruse, Esq.

L. F. Morehouse, Esq.
for the Braidburn Realty Corporation

40

Return to Writ—Exhibit E. Testimony.

Robert E. Burke, Esq.
for the Borough of Florham Park

Henry G. Pilch, Esq.
for the Borough of Madison

Robert S. Pollard, Esq.
for the Borough of Chatham

10 Mr. Clyde Potts, Engineer,
for the boroughs of Florham Park, Chat-
ham and Madison.

Mr. Walter C. Ellis, City Counsel: This is an application to obtain additional water supply of four million gallons from the same geological basin as we are now pumping from. The city of East Orange at the present time has a holding of about 2200 acres in Livingston and Millburn Township, County of Essex. We have at the
20 present time nineteen wells in operation and our daily average consumption of water is about four million gallons a day. Our maximum yield is about four million, five hundred thousand gallons. These wells that are now in operation are located in three different fields, sixteen of them are in what is known as Canoe Brook well field, three in the Dickinson well field and three in the Slough Brook field. The present application is for permission to condemn about 40 acres of
30 land lying adjacent to our present holdings across the Passaic River in the Borough of Florham Park in the County of Morris. The proposal is to construct additional well or wells at a point of about 600 feet north of the present Dickinson wells. I would like to state that the city of East Orange has not been hasty in its applications to the Board for the right to obtain an additional supply to condemn lands. The city has exhausted every resource and has tried every alternative
40 before it has asked the Commission to condemn

Return to Writ—Exhibit E. Testimony.

these additional lands. We have prepared a chart which I would like to offer in evidence, which shows the efforts of the city to meet its demands without condemning additional properties. This chart will show the operations of the city in 1905 up to date. It will show the metered service of the city from 1905 until it reached a 100% metered system and it will show the production of water from 1905 to date and also show the per capita consumption of water from 1905 to date. To amplify the statement, the city has exhausted every other resource before asking for this privilege. The city has achieved stoppage of leaks and the improvement of its service connections in reducing the daily per capita consumption of water from about ninety-five gallons per day in 1905 to fifty-seven gallons per capita per day in 1927. I think this will be shown to be one of the most efficiently regulated systems in the state. I don't think any municipality can show such a low per capita consumption of water. At the same time we think it is sanitary too. We will also show that during the last eight years that our additional water supply has only been increased to the extent of about four or five hundred thousand gallons per day. The population of the city, on the other hand, has increased perhaps more rapidly than any municipalities in New Jersey during the last ten years. By every known estimate the population of the city at the present time is estimated to be between sixty-eight to seventy thousand. We have the largest apartment houses in the state and we have scores of other large apartment houses now in the course of construction. The city has reached its limit with its present well fields in supplying water to its inhabitants. The population is increasing so rapidly that unless addi-

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Exhibit E. Testimony of Roswell M. Roper, direct.

tional sources are found or allowed, the city will be in an extreme state of necessity. That is the reason we are asking for this privilege to condemn 40 acres across the river and to sink about two or three wells which we expect to have in operation in about the year 1930.

10 ROSWELL M. ROPER, being duly sworn by the Chairman, testified as follows:

Direct examination by Mr. Ellis.

Q You are the Engineer of the East Orange Water Department? A Yes.

Q And you have been for how long? A About nine years.

20 Q Before that time were you connected with the Water Department? A Yes, as Assistant Engineer.

Q How long? A About nine years.

Q About eighteen years in the Water Department. A Yes.

Q I show you a chart marked East Orange, June 12, 1928, endorsed. Who prepared this chart?

30 (Chart offered in evidence and marked Exhibit A-1.)

A I did.

Q What does it represent? A It represents four things. First, the population of the city from 1905 up to the present time. This line is put in for convenience, this date, January 1, 1928.

Q And that line is in blue ink on the cross hatching? A Up to 1928 it is based on actual figures. Beyond that it is projected on the best basis of population and estimate we can get, such

Exhibit E. Testimony of Roswell M. Roper, direct.

as City Plan Commission and all the available sources we have. It is not overestimated and we tried not to underestimate. The second line shows the percentage of metered services.

Q And that is shown on the cross hatching in what color? A In black.

Q And this is the percentage of pumpage of metered water or metered services? A It is, strictly speaking, metered services. 10

Q What else is shown? A Third is the line showing the pumpage in million gallons per day.

Q From what dates? A 1905 through to the present time, and then projected to 1945 to 1950.

Q And that is shown on the cross hatching. Red is it in? A Right.

Q What is the next line? A Next is shown the gallons per day to each inhabitant ordinarily shown as gallons per capita per day. 20

Q And that is derived from curves which you just described? A It is due to that? That is the result of it.

Q And that line is shown in purple, is it? A I don't know, but it is marked. I would say this is orange and that is red. Every line is definitely marked.

Q Mr. Roper, this chart shows the records from 1905 to date? A Right.

Q And what was the population in 1905? A The population in 1905 was approximately twenty-five thousand. 30

Q And what is it today? A Today it is approximately sixty-eight thousand.

Q Now as to the metered service. When did that become effective to 100 per cent., if it is to 100%? A It is to 100%. That became effective during the year 1919. The real metering of the service of the city started in 1910 and took about nine and one-half years to complete. 40

Exhibit E. Testimony of Roswell M. Roper, direct.

Q Now as to the production of water. What was the production in 1905? Your total production per day? A The pumpage per day was two and one-half million.

Q And what is the average pumpage per day at the present time? A Four million.

10 Q How much increased pumpage has been made during the last ten years? A In ten years it has been just one million gallons.

Q During the last five years how much increased pumpage? A About 300,000 gallons.

Q Now as to the per capita consumption. What does that chart show? A It shows in 1905 the Department pumped more than ninety-five—ninety-seven gallons per day for each inhabitant, that as a result of the metered program which started in 1910 and extended to 1919
20 that per capita consumption was reduced from ninety-seven gallons per day to sixty gallons per day.

Q And that was in 1919? A 1919 to 1920. Just on the dividing line. Between 1920 and 1928 a systematic testing, repairing and keeping accurate of the meters started, show that in the last eight years this per capita consumption has been further reduced from sixty gallons per day to fifty-seven at the present time.

30 Q To what extent is the city at present exploiting its holdings for water supply? A The whole area of the water reserve has been tested by actual test wells. The record of those borings has been turned in to the Department of Geology in Trenton, showing we have covered the whole area and that we are taking water now from the only available sources that we have been able to find on water reserves.

40 Q Upon what findings or records is the scheme of the development? A The whole

Exhibit E. Testimony of Roswell M. Roper, direct.

scheme of developing was based on the estimates of the geological formations and the assistance rendered us by the State Geological Department, which has the records of all wells drilled either by private companies or individuals.

Q And upon what facts do you base the estimated increased population of East Orange? A 10
 On the reports of commissions such as the City Plan Commission, which was appointed to study that particular point, in addition to the gradual growth of the city—physical growths, etc. It is not an exact figure following their figures. It is a line between their estimate and that of our City Commission, who has followed them closely for the last 20 years or more.

Q This is your map prepared under your control? These forecasts are your forecasts made after investigating the matter? A They are 20
 much less than this Commission that I spoke of, the City Plan Commission. I believe the saturating point is going to start at that point.

Q Whether curve is admissible, it is his forecast? A I can go into more detail with the physical and actual development which is a common knowledge to everybody, which seems to be unnecessary.

Q To what extent has East Orange actually developed apartment houses and other buildings in the last five years, and to what extent is it developing at the present time? A I would say 30
 that East Orange has more apartment houses and larger apartment houses than have been built in the last five years than any city of its size in the state, in fact than any city in the state, running up to as much as ten stories and housing one hundred and thirty families.

Exhibit E. Testimony of Roswell M. Roper, direct.

Q And are you familiar with the general wave of construction at the present time? A I happen to be intimately in touch with it because we served every building that is put up.

10 Q And have you any idea how many apartment houses are in the course of construction at the present time? A Three weeks ago we had over twenty under construction, anywhere from twelve to eighty or one hundred families.

Q Does the city of East Orange sell water to any other municipality? A It does not.

Q Does it buy water? A It does not.

Q Have we any connections with any other municipalities? A Two other municipalities.

Q What are those connections for? A They are connections for emergency use.

20 Q In one case there is a mutual agreement and in the other by contract? A We are taking care of emergency.

Q With what municipality? A Newark.

Q Have you those agreements here? A Yes.

Q Those agreements provide what? Only use the waters of these municipalities in emergency? A Yes, and the emergency use is defined—such as the accident to pumping equipment, water shortage or large conflagration.

30 Q Will you tell us something about this basin in Millburn and Livingston Townships from which we are now extracting water? A There are three different ones.

Q What are they? A Canoe Brook which flows down the slope of the second mountain along the western slope.

Mr. Pilch: I am being interested in this particular area. I have made a study of the geological formation that is to determine the best water bearing formation in the water

Exhibit E. Testimony of Roswell M. Roper, direct.

reserves. What did you make that study from?

A From the very best records that we could find such as those of the State Geologists. I had direct charge of the borings of the wells under the water reserves and samples of them. I have some of the stratifications, have tabulated them and made glass tubes showing stratifications. 10

Q How many wells did you test? A In all I imagine I would estimate it at over thirty.

Q And were those wells over the entire area of your water shed? A Over the entire area—some in the extreme southwest corner and there were some there in the extreme northeast and northwest and those records have been turned in at Trenton.

Q They are all here? A They are all here. Dr. Kummel will verify that. 20

Mr. Ellis.

Q Mr. Roper, you said there were three basins. Will you tell us where they are and what they are? A Do you want me to show on the map?

Q If you have a map here it would help us all. What are the names of those places? A Canoe Brook, Slough Brook and what we call the Dickinson Well Field. 30

Q Now where is the Canoe Brook Well field? A Canoe Brook well field flows west of the edge of the trap formation of the second mountain and is a glacial deposit of sand and gravel on top of the old Newark sandstone formation at a point where the intrusive rock came through.

Q How far does that extend, that well field?

A The well field is approximately six or seven

Exhibit E. Testimony of Roswell M. Roper, direct.

hundred feet long, and about four hundred feet wide.

Q Can you mark it with a pencil on the map there? A It is already marked.

Q Marked by whom? A By me.

Q You marked it originally? A I did. I
10 just put it on when I came down.

Q Where is the Slough Brook Well? A
Slough Brook Well is over the next divide and follows the line which Slough Brook has shown here on the map.

Q By the way, how many wells have we in Canoe Brook field? A Sixteen wells there now.

Q And how many wells in the Slough Brook field? A Three.

Q Is that the area of Slough Brook field marked on the map? A The area is right in
20 here.

Q And where is the Dickinson field? A Down here in the bend of the river about a mile west of the lower Chatham Bridge, northwest, yes.

Q And what is the area of the Dickinson field? A You mean the field from which we actually take the water?

Q The field from which we are actually taking water now. A That consists of a rock valley, the sides of which are approximately eighty
30 feet below the surface and extending in the northerly and southerly direction across the property known as the Dickinson property. It is approximately three or four hundred feet wide.

Q And does the Dickinson Basin run approximately at right angles to the Passaic River? A At that particular point.

Q How many wells have we in the Dickinson well field? A We have three.

Q And how long have they been in operation? A Five years.
40

Exhibit E. Testimony of Roswell M. Roper, direct.

Q. Any complaints in Florham Park, Madison and Chatham with respect to operations there?

A. None whatever.

Q. And from your knowledge of the Dickinson Basin, has it any geological connections with the Chatham, Madison or Florham Park water supply? A. None whatever. Because I made a study of the records of the Geological Department here in Trenton and the findings that I made being based on that in connection with Mr. Nicholas Hill back in 1909 were borne out by the borings which we put in by putting in the wells extracting the water and no effect having been shown or any other wells put in around there. If it had we would have known it very soon. 10

Q. Now the lands we are concerned about, will you show on the map where they are located? Forty acres are involved in this application. A. Roughly, right in here. 20

Q. Before we go over that side, what is the depth of the three present wells in Dickinson field? A. One hundred and thirty feet. We do not go into the rock—we go into a gravel deposit which is thirty feet deep and the screens of our wells are one hundred and twenty-odd feet right along this gravel.

Q. Do the forty acres referred to join the lands of the Dickinson field? A. They do. 30

Q. Will you tell us something about the forty acres as to the character of the land? A. It is what we call low level, swampy land, and as we are right here together today, I doubt whether we could walk on it at all.

Q. Is any of it under cultivation? A. Not to my knowledge.

Q. Are you familiar with it? A. Yes. 40

Exhibit E. Testimony of Roswell M. Roper, direct.

Q How often is it submerged? A Whenever the Passaic River overflows its banks the land is submerged in proportion to the peak of the flood.

10 Q How often does that happen? A On an average of four, five, six times a year. Sometimes for short periods, other times for long periods. It has been flooded as long as three or four weeks at a time.

Q Any building of any kind located on the land? A No.

Q It is what you call swamp land? A Swamp and low level.

20 Q What is the average maximum yield of water from East Orange at the present time? A Do you mean safe yield? I need not define the term because Mr. Kummel and Mr. Critchlow, both being engineers, understand it. You can pump water from a well under normal conditions, what we call a safe yield is a yield which can be drawn from the well during a time of drought. In other words, if we have a protracted spell of warm weather of ten days' or two weeks' duration, then you can pump a certain quantity of water during that period.

30 Q And what is the daily average we have held? A A little over four and one-half million gallons.

Q Daily average consumption? A Four million gallons.

Q Then the city's consumption is approximately about 85% of this total yield? A It is over 80%.

Q What would you say is a safe margin of consumption? A We should have at least 50%.

Q Why do you say that? A Because of the fact that while we have a dry period, we may

Exhibit E. Testimony of Roswell M. Roper, cross.

have conditions come up such as a big fire or people watering their lawns and we have had experience during dry years when we have had to pump everything we could get out of the wells.

Q Has the city been required in recent years to curtail the use of water? A The last five years.

10

Q To what extent? A The Mayor of the city was requested to issue a proclamation requesting the people to conserve the water.

Q How many times in the last five years did that happen? A Only once. In 1923.

Q Was that before your Dickinson wells were in operation? A Yes, that was just the time they were being put in.

Q Has the city negotiated for the purchase of these forty acres at all? A For two years.

20

Q With what result? A I can report on that, but the President of the Board is the gentleman who actually carried on the negotiations. He can tell you better than I can.

Q I guess Mr. Roper is ready for cross examination.

Cross examination by Mr. Pilch.

Q Does this map show the entire area of the land in the East Orange reservation? A It does.

30

Q And how many acres are comprised in that reservation? A Between twenty-two and twenty-three hundred.

Q And that is roughly divided by South Orange avenue, is it? A I would say so, yes.

Q And where are your wells located in reference to South Orange avenue? A To the southwest.

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Exhibit E. Testimony of Roswell M. Roper, cross.

Q And have you developed the field north of South Orange avenue? A No. We have tested that, but we have not found sufficient water there to warrant development.

Q How many tests have you made? A I cannot just estimate it. I would say we have put in
10 at least fifteen or—

Q Well, if you don't know, I don't want the answer. If he has the estimates— A I would say there are at least fifteen wells put down all over that area, some of them as far north as up in that corner, here, here, over in that section, and in through here and in there.

Q All north of South Orange avenue? A All north of South Orange avenue, most of the wells are right there now.

Q Have no wells been put down north of
20 South Orange avenue? A Not in operation. We have test wells.

Q In your opinion, you could get no water north of South Orange avenue? A Yes, we could get water, but not in sufficient quantities to warrant development.

Q If you increased the number of wells, could you get sufficient water there? A No, I don't believe we could.

Q Would you say that you could, as an engineer?
30 A It depends on your term of what is sufficient water.

Q Sufficient for the needs of East Orange?
A No.

Q Quite sure about that? A Yes.

Q You say there are three, roughly speaking, three wells in Canoe Brook? A Three well fields.

Q Take Slough Brook, have you exhausted that field? A We have.

Exhibit E. Testimony of Roswell M. Roper, cross.

Q If you sank more wells in that field, would you get more water? A No, we had twenty wells in there and this last year we put in three new ones and we can get all the water out of those three wells.

Q What do the three new ones show—plenty of water? A No. We can only get out of all three about between six or seven hundred thousand gallons per day. 10

Q Take Canoe Brook field. Have you exhausted that field? A As far as we know we have gone as far north as we can go and to the south we can go no further because of an agreement with the Commonwealth Water Company.

Q Is that agreement with the Commonwealth Water Company a written agreement? A Yes. 20

Q Have you that agreement here? A I haven't it here, but it is a matter of record.

Q Is it a matter of record here with the Commission? A I think that has been filed here—an agreement with the Commonwealth Water Company.

Mr. Ellis: I don't know of a written agreement. We have maps showing the extent.

Mr. Pilch: Will you produce that? 30

Mr. Ellis: Mr. Pilch, we have had no requirement from the Commission to produce any records. You cannot take it from me now.

Mr. Pilch: I sent you a notice and wrote you a letter asking you, and while it is true that under the Act the Commission has power to issue a subpoena, I think that is a fair request and all those agreements should 40

Exhibit E. Testimony of Roswell M. Roper, cross.

be here. I don't mean at this time, but before the hearing is complete.

Mr. Drake: There has been a request for such.

10 Mr. Ellis: Your Honor please, I think the State Association will bear me out that this is an established policy of the state—there is a line between the Commonwealth well developments and East Orange developments, agreed to as a matter of convenience. I have never seen any written agreement. I don't know where I can get it from, but if Mr. Roper can tell me—

Mr. Roper: I haven't seen the agreement, but—

20 *Mr. Pilch.*

Q That distance which has been referred to as "No Man's Land" is about how wide in extent? A One thousand feet.

Q And then as I understand things, the Commonwealth Water Company will not drill within five hundred feet of that line and you will not drill within five hundred feet of their line? A Yes, it would be that way.

30 Q Would not the same result happen in reference to Florham Park, Madison and Chatham? A No, because the Canoe Brook—

Q I mean in reference to this new field? A No, the Canoe Brook goes down and becomes part of the Commonwealth holdings and the estimates made by the Geological Survey and those under Mr. Critchlow, have demonstrated that there is a very direct connection between our fields and the fields of the Commonwealth—in other words, they lie in the same valley.

Exhibit E. Testimony of Roswell M. Roper, cross.

Q Might not that same condition exist in Florham Park and Madison and Chatham? A They are a different geological formation.

Q Let us take up the Dickinson field—how many wells in that field? A Three.

Q And how much land is there in that field, approximately? A Maybe eighty acres. 10

Q And you think that the three wells you have there have exhausted that field? A Yes, because we have demonstrated that by putting in test wells on either side of that rock formation, put them here, here, here and here, we have found where that rock formation lies, demonstrated by putting wells there, we know the limits and confines.

Q Then in your opinion as an engineer, having twenty-three hundred acres of land in which you have nineteen wells in operation, you have exhausted that twenty-three hundred acres? A I have, from the standpoint of available water. 20

Q Your only salvation is to cross the river in Morris County and take this additional land? A Our only salvation is to get additional water supply.

Q Have you tried to get any more land in Essex County?

Mr. Ellis: That question is irrelevant. It is not relevant because this land is near our fields and I think if they want to use land in Essex County. 30

A There is—in studying these problems the surface conditions do not govern at all. Mr. Kummell will tell you that while the Passaic River will cross a certain field here, the geological formation under that may—the geological boundary is not a geographical boundary in any way. 40

Exhibit E. Testimony of Roswell M. Roper, cross.

The fact that the Passaic River is there has nothing to do with it. It is the geological formation which governs the flow or the accumulation of water.

Q Is it not true, Mr. Roper, that the underground waters flow toward the surface streams?
 10 In other words, doesn't the water flow underground towards the Passaic River? A Not at all. Your underground water may flow at any angle to the surface water. It may in fact flow in the opposite direction.

Q Have you tried to buy any land in Essex County, that is further away from our wells than this particular tract? A No.

Q You have 19 wells, and do you pump from all those at one time? A No, we have pumped
 20 from eighteen wells, that nineteen is incorrect. There are twenty-two wells. We are pumping from eighteen wells now.

Q Have the other four been abandoned or do you rotate? A We rotate. You could not pump all your wells at one time. It would be contrary to all principals.

Q What is your system of pumping? Do you pump directly into the mains? A We pump into a distributing reservoir on the east slope of the first mountain in the village of South Orange.
 30 From that point it flows by gravity to East Orange.

Q And does this reservoir—how much does this hold? A Five million gallons.

Q And what is your daily pumpage? A Four million gallons.

Q And what is the daily consumption? A Four million gallons.

Q Every day? Doesn't it vary from day to day? A In a very dry spell it will be a little

Exhibit E. Testimony of Roswell M. Roper, cross.

higher. In a wet spell it will run maybe a shade lower. Throughout the year it runs very uniformly because our system is 100% metered and where in the summer time you have constant hose use, in the winter time you have people who let it run to prevent freezing, so your system is pretty uniform throughout.

10

Q If you enlarge your reservoir, could you not pump in wet weather enough water to carry you over the dry periods, could you not get your supply through a larger reservoir? A You could build a reservoir of one billion gallons, but there is not any available place for that.

Q Could you not enlarge the reservoir on the mountain? A There is a road on one side and development on the other side, buildings all around it. We might make it a little larger, but not enough to help. We store five million gallons there and we are pumping four millions a day. That would not cover a wet period. A wet period may extend over a long period and even big cities like Newark and New York are good illustrations that no town can do that.

20

Q As far as site is concerned, you could get the land, could you not? That whole Orange Mountain—you don't mean to say you could not get the land? A There is only one valley I know available and that is used at the present time by the city of Orange.

30

Q Have you any agreement or have any overtures been made to buy or sell water from the city of Orange? A We have an agreement with them for emergency use only.

Q With them? Who is them? A The city of Orange.

Q Haven't any overtures or efforts been made by Orange to buy water from you? A No.

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Exhibit E. Testimony of Roswell M. Roper, cross.

Q Has any municipality requested you to sell them water? A Not to my knowledge. I will have to change that—some years ago the Township of Livingston asked us whether we would supply any water, but since that time they have taken their water from the Commonwealth Water Company. That was several years ago.

10 Q You stated the present population of East Orange? A Estimated at about sixty-eight to seventy thousand.

Q And they figure in five years that will be what? A About seventy-three, seventy-four thousand.

Q And if the Commission grants you permission to sink the new wells, how long do you think the supply will answer the needs of East Orange? A If we are able to get the amount of water from the land that we have applied for, it should last us about ten years.

20 Q Don't you think that with the increase in the apartment houses that your population will increase more rapidly than you have figured? A I have tried to be conservative in the figuring of the population.

Q Well, don't you think, Mr. Roper, that in a very few years the supply from these wells will be exhausted and you will have to join in some larger project like the Wanaque or Chimney Rock?

30

Mr. Ellis: Your Honor please, I don't think this is relevant—what is going to happen in twenty-five years.

Mr. Drake: I don't think Mr. Pilch is going twenty-five years off. I think his question is one of the most pertinent questions we have to ask ourselves. I think the

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Exhibit E. Testimony of Roswell M. Roper, cross.

question is one that we could very easily print and frame.

Mr. Ellis: Eventually, I quite agree.

Mr. Pilch.

Q What is your answer, Mr. Roper? A Why, I believe that any hydraulic engineer, and all of us who have studied the question, have agreed that within the next few years a major project must be started to take care of what is known as the southwest section of the metropolitan district. There is no question of that at all. 10

Q Have you any agreement with Newark now to enter such a project? A We have not.

Q And your agreement with Newark is simply for emergency purposes? A The stipulations in the agreement are specific as to what the emergencies are and it is stated that water is not to be used for increase in population. 20

Q I was looking at a map this morning and I noticed that there was quite a large tract marked "golf field." How many acres comprise your golf field? A I think one hundred and five acres.

Q And have you any wells in that golf field? A We have.

Q And how many? A Probably six or eight. 30

Q Could you not sink some more wells there? A No, because we sunk those wells and the water was not there. The formation is such—I will explain it so there will be no question in your mind. On the east of Canoe River is this trap rock formation. At the time this trap came through the broken sandstone it left a depression at this point, which is filled with geological debris such as sand, gravel and other substances. 40

Exhibit E. Testimony of Roswell M. Roper, cross.

We have shown by our borings and it is a matter of record here, that this formation probably is very narrow. At just the easterly edge of the golf club at some one hundred feet west of our pumping station we have put a well in there, but we can get very little water. One
10 hundred and fifty feet from that is a well in this broken section of gravel from which we can get plenty of water. That area has been tested out and is in a good water bearing area.

Q Then, in your opinion, with twenty-three hundred acres of land you have eighteen wells producing water, but you could sink no more wells in your twenty-three hundred area that would produce water? A That is not true. We certainly could. We could sink a well and
20 get some water, but not enough to meet the requirements of the growth of the population.

Q Could the growth of the population be taken care of by increasing the number of wells? A Not on that area we own now.

Q And you state, that as an engineer, that is your judgment? A Yes, I will state this, that aside from the well fields in which we are now operating, we have tested practically the whole area and have not found enough water to warrant development.

30 Q Well, then, take up the fields in which you are now operating. Could you not sink additional wells in those fields and get more water? A It is possible that you could get a little more water.

Q Is it not possible you could get a great deal of water? A I think that the records of the Geological Survey, the United States Geological Survey, have shown that in at least one of the groups there is an intercommunication.

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Exhibit E. Testimony of Roswell M. Roper, cross.

Q I don't mean to be—I want to get what you know from your own experience. He must state what he knows from what he has found out.

A On hydraulic engineering work along the right lines and guided by the experience and dealings of other units of organizations, the records such as the State Geologist has, records such as the United States Geological Survey are now making, they have shown that our fields are what they call in sympathy or in communication.

10

Q Take the fields in which you have successful wells. Have you yourself or has the city of East Orange some additional wells in those fields? A No, because in one field we had over twenty wells with a certain amount of water coming from those twenty wells. We experimented and found that by operating ten of the wells, we could get all of the water there was in the twenty in that whole area. In other words, some of the wells are not in sympathy. Take other wells. As an illustration, we put in ten wells. From Slough Brook we get as much water as all of the twenty—in other words, you can get a little more water by this type of wells, but we are getting as much now as we got out of the twenty original wells; adding more wells does not help.

20

Q If you adopted a different system of pumping, would that not insure more water? A It might make some effect. There are very many different types of pumps.

30

Q If you sunk your present wells to a greater depth or if you sunk new wells, would you not get more water? A I question that because unless you carry it to an extreme, I would not say you went down one thousand or two thousand feet, that is a gamble, but I do believe that

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Exhibit E. Testimony of Roswell M. Roper, cross.

we have as many wells on the property now as are needed to get out what we can safely get out of that territory.

Q Do you find that the water is reduced year by year? A No, we find—we have kept records over twenty years—quite a number of years, and
10 the ground water level varies with the precipitation and with the weather during the season. We have some summers when the ground water level is very high rather than from the drought upon them.

Q Do you think this reservoir that the Commonwealth Company is building—do you think that will help your wells any? A That is problematical. If it should, it would be contrary to the belief of best experts that they can get. They
20 are building the reservoir with the expectation of holding water and I would not venture to say, and controvert their engineers, that it would not hold the water.

Q Your point, Mr. Roper, is that if it holds water it would not be a benefit to anyone? A If the reservoir were to break down it would be of benefit not only to some of the wells, but if that happens they would abandon the whole property.

Q Are there any surface streams flowing near
30 to your reservation that could be utilized? A Not to give an available supply other than what has been signed already by the Department of Conservation and Development to the various units operating them that have made claims.

Q And that has exhausted the surface water? A The available surface water we are using reasonable means to get. I think I am correct in that Mr. Critchlow, that with the Commonwealth pumps they feel they are getting all they
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Exhibit E. Testimony of Roswell M. Roper, cross.

can catch, or they can reasonably get. I think they are figuring on pumping forty million gallons. Mr. Pilch is referring to surface water. Mr. Critchlow, I would have to look up those records.

Q There are a lot of technical questions that Mr. Potts would like to ask the witness. 10

Mr. Potts.

Q The idea is to cross examine for the Borough of Madison. I would like to ask Mr. Roper about these wells in the Dickinson field. He said he had three wells on the Dickinson field. They occupy a space three hundred to four hundred feet wide and those three wells yield three to six million gallons? A You have the wrong impression. We get two million gallons. We have taken practically two million gallons. 20

Q These three wells on the Dickinson field yield two million gallons in the aggregate a day. Have you the tests that were made on those three wells when they were put in use when they were tested after they were drilled? A We have them in the Department, yes.

Q You drilled those three wells on the Dickinson property? A You mean the contractor, engineer or whom? 30

Q The contractor. A The contractor was the Layne—New York Company.

Q Have you a copy of the contract for those three wells? A No, there was no guarantee, not in that particular case.

Q Did they drill these three wells at the same time? A Over a period of perhaps nineteen months. They were very much held up by the flooded conditions of the Passaic River. 40

Exhibit E. Testimony of Roswell M. Roper, cross.

Mr. Drake: All were drilled at one operation.

Mr. Potts.

Q Could we have the tests that were made when the wells were drilled? A If they are of
10 interest to you. The Laynes always make tests.

Q What size are those wells? A They are what is called twenty-four by fifteens.

Q And they are one hundred and thirty feet deep, is that it? A That is right—the approximate figures.

Q With thirty feet of screen on the end? A No, between twenty and thirty. I don't believe the screens are all the same.

Q Were they put down at so much a foot or
20 were they put down based on the yields? Contract based on yield? I am trying to find out what the contractor was going to get off the field.

Mr. Ellis: Is that of moment?

Mr. Potts: It would seem so, because they are going to extend this field just across the river into this other district and I gathered from what the witness said he is following up a rock valley in which the Dickinson field is located. Following that across the river
30 in Morris County. I am trying to find out what they expected to get off the Dickinson field.

Mr. Drake: I see no objection to that because we want to get any fact that is pertinent to it.

Mr. Pilch: There is nothing in this case from which expert can base an opinion. The question Mr. Potts is asking is for the purpose of—he is making statements of the con-
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Exhibit E. Testimony of Roswell M. Roper, cross.

struction of these wells, etc. In order to complete those we have to study them and we have got to get at the basis on which he is making a basis of opinion. We are not passing opinion on same. We would not know what facts were to be brought out. That this rock strata existed, we had nothing to put our geologists to work on. 10

Mr. Drake: I would be glad to have them answered if Mr. Roper can tell what they expected to get. It may help out in our ultimate solution.

Mr. Potts: We have eighty acres in the Dickinson field on the eastern side of the river. There are three wells from which they get two million gallons a day. Intend to pump four million from that vein from forty acres. If they were only able to get two million gallons from eighty acres, what the basis is for four million gallons from forty acres and whether this is a beginning or if it will be the ultimate. 20

Mr. Ellis: We are asking permission to get four million gallons if we can. I think that this testimony ought to be confined to this present application. It will be time enough to oppose it if we ask for any more. 30

Mr. Drake: I think the question is pertinent enough to go ahead.

A The anticipated yield from the Dickinson field was two million gallons. Does that answer your question?

Q Yes, sir. A We so stated in our description of the project in the contract.

Exhibit E. Testimony of Roswell M. Roper, cross.

Q That these three wells were to yield three million gallons a day? A That we anticipated getting two millions a day. That was after we had made tests and found out what the water supply was.

10 Q Would it be possible to get a copy of the tests made on those wells? A I think we still have them. The original tests I know were kept. We may have to go to Mr. Hill's office in New York to get them.

Q Mr. Hill recommended the Dickinson well field when he was connected with the Water Board in East Orange? A Yes.

Q Those wells were put in five years ago? A Yes, that is right.

20 Q So five years ago—you now have a yield of four and one-half million gallons at the present time? A Don't confuse me. We had two million gallons when we started with two wells in that field and we still have two million gallons.

Q Your total safe yield now, including Dickinson field, is four and one-half million gallons per day. So five years ago when Dickinson wells were put in use, did you say you had a yield of two and one-half million gallons a day? A About that.

30 Q That would be in 1923. You said the yield was two and one-half million gallons? A No, it was a little bit more than that. It was a little over three million in addition to those two millions in the Dickinson field, which brought us up to four and one-half million.

Mr. Drake: Where did we lose the five hundred thousand?

40 A Well, it probably comes in through the action which very gradually takes place in under-

Exhibit E. Testimony of Roswell M. Roper, cross.

ground fields from the accumulation of fine sediment coming in and stopping up the pores. You can clean them out in the immediate vicinity of the wells, but cannot go back, and well fields as a rule decrease in their output as the years go on.

Q Does that arise in the type of wells in the Dickinson field? A Not to such an extent in that particular field because that is very free water, very small draw down, etc. 10

Q Then when the Dickinson field went in use you had a safe yield of three million gallons? A Before that, yes.

Q Before that. And you added two million by the Dickinson field, but lost five hundred thousand from your other fields? A From that time on.

Q Which field was that, Canoe Brook or what? A Some in Dickinson, a little in Slough Brook and some in Canoe Brook. You know, as any geologist knows, your well systems will always gradually close up. 20

Q That Dickinson field you said is three hundred to four hundred feet wide. How long is it? I did not get that. A Oh, perhaps eighteen hundred to two thousand.

Q Does it reach across? A Somewhere around seventeen hundred or eighteen hundred. 30

Q Practically from one bend of the river across to the other? A Yes.

Q Now, in the Slough Brook field, what size are those wells? A Those are two-twelves and one-ten.

Q About the same depth—one hundred and thirty feet, roughly? A They run down as deep as three hundred feet.

Q What are they? A Those are rock wells. 40

Exhibit E. Testimony of Roswell M. Roper, cross.

Q And the sixteen wells on Canoe Brook, what size are they? A Most of them are eight inch wells.

Q Are they screen bottoms? A Yes.

10 Q How much screen? A They run from eighteen to twenty feet. I am only giving you figures based on old records. I did not see the wells put in, but they run about eighteen to twenty feet to here of screen. They cover the water bearing strata.

Q Mr. Vermeule put those wells down originally? A Yes.

Q Thirty-nine wells altogether? A Yes.

Q He put thirty-nine wells and hooked up twenty of them and four of them you have abandoned then? A Yes.

20 Q Was that due to faulty screen? A No, due to the wells lying on the eastern side of the brook and in that year abandoned, because of danger of breakage and washout of the pipe across the brook.

Q Did Mr. Hill recommend going to Slough Brook for water or was that before his time? A That was before his time.

30 Q Did Mr. Hill make a report covering his recommendation of going to Dickinson field for water before they went there? A I think he did. I am not sure about that. He made a verbal report on it.

Mr. Ellis: What difference does that make? How is it relevant to this application? We might have recommendations from a lot of engineers. I cannot see any relevancy.

40 Q Is Mr. Hill your consulting engineer? A No, he is not, Mr. Potts. Mr. Hill is the author

Exhibit E. Testimony of Roswell M. Roper, cross.

of the technical portions of the report of the Water Policy Commission made to the State Legislature and filed February 27th, 1926, and in this report to the State Legislature Mr. Hill gives the safe yield of the Orange Water System as seven million gallons per day.

Mr. Ellis: Your Honor, I object to this being on record. They could have Mr. Hill here today to give records. Mr. Hill could have been brought here as a witness if the opponent wanted him here.

10

Mr. Potts: I am only trying to bring out the point that Mr. Hill was Consulting Engineer for the East Orange Water Department and he recommended going to the Dickinson field for additional supply. They went there pursuant to his recommendation. After the supply was put down, five years since this Dickinson field was put down, their own engineer says the supply was seven million per day.

20

Mr. Drake: It seems to me Mr. Hill's report to the Water Policy Commission may be put in the testimony here, but if so it must be complete.

Mr. Ellis: I would not consent unless it has been read by me.

30

Mr. Potts: It is common knowledge.

Mr. Ellis: It is not common knowledge to me.

Mr. Drake: There is certainly much controversial material in it.

Mr. Potts: It is a well known report.

Mr. Ellis: The Commission seems to know about the report.

40

*Exhibit E. Testimony of Roswell M. Roper, cross.**Mr. Potts.*

Q Now, on these Slough Brook wells, what yield do you get? A I have already stated that. Six hundred thousand gallons.

Q That is the safe yield? A Well, that is rather high for that. We have not had time to check that up. They may not yield that. They are replacing wells.

Q What do they replace, local wells? A Yes.

Q We did not hear very well the yield of the Canoe Brook wells? A Well, that runs about two million gallons—in different seasons of the year we can get that.

Q Is that brought out by air, is air pump used on that? A No—Centrifugal pump.

Q Direct suction? A Yes.

Q Are they all connected direct on the same suction line? A Yes.

Q Can you cut any well off? A We can, yes.

Q What is the formation under those wells at Canoe Brook? A I would have to look at the straitigraphy to check it up. You know I have already told you the depth.

Q Did he tell the depth of those? A From one hundred to one hundred and twenty-five feet.

Q Have you the logs of those wells? A We have the logs. I cannot remember to the foot what the formation is. The general formation is loam on surface, hard pan strata, some clay, fine sand around forty feet, clay below that, sand below that.

Q Eighteen to twenty feet of sand on top of the rock? A About that.

Q Did you ever figure on putting deep well pumps in those wells? A That is a thing that can be tried, but we have—

Exhibit E. Testimony of Roswell M. Roper, cross.

Q How low do you figure the ground water is in those wells now? A Somewhere close to thirty feet.

Q Do you mean from the actual ground surface? A The pumps are set low enough so that it will run about thirty feet.

Q Now let us go back to the Dickinson well field for a few minutes. Across there on Braeburn Club, have you put any test wells there? A No.

Q The crevice in the rocks to the south suggests conditions on the north? A It is really a rock valley carved out in there and it runs across our property and further to the north.

Q There are no borings about there available to base that statement? A No.

Mr. Drake: Any further cross examination?

Cross examination by Dr. Kummel.

Q Mr. Roper, when the Canoe Brook field was first finished, did the wells overflow at the surface or not? A Yes, all the wells on that territory except the rock wells, Canoe Brook, Dickinson Field.

Q If you should shut off, stop pumping the Canoe Brook field at the present time, would they overflow? A They could not unless Commonwealth shut off at the same time.

Q Would they overflow? A I believe if both plants closed down, they would both overflow.

Q During periods of pumping you say the water is about thirty feet from the surface? A Yes. But upon cessation of pumping they come back again.

Exhibit E. Testimony of Roswell M. Roper, cross.

Q Did I understand you to say that you guaranteed that wells drilled on the other side of the river would not interfere with the Braidburn property? A No, I did not say that, but going by records of the Geological Survey and studies made in locating this new well field, and lines of former streams which they had worked out at other times. And our work has been based on conclusions of the State Geologist.

10

Q That conclusion has been made without any test borings? A You must understand the Passaic River has no effect upon the geological field from which we are drawing water. Our borings which we have made here all show that. Had they shown that that field instead of going in that direction had gone in this direction, we then would have put five wells in here and know we would be putting more wells here which we anticipated. We also estimated that we would get two million gallons more over here when we began. Now, then, whether that rock valley lies like that or whether it lies like that, does not affect the surface conditions—has nothing whatever to do with them. We have been drawing two million gallons daily for five years twenty-four hours a day without any effect upon the others.

20

Q You might have gotten water from across there? A Well, it comes from all around there.

30

Mr. Pollard.

Q Mr. Roper, I am not certain yet as to the number of wells here. I understand there were sixteen in Canoe Brook, three in Slough Brook, three in Dickinson field. In Mr. Potts' cross examination I understood you to say in answer to a question as to whether wells drilled on the

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Exhibit E. Testimony of Roswell M. Roper, cross.

north side would be sufficient to take care of East Orange needs. Did you mean by that they would not, in addition to the present supply? A That was the way I understood the question.

Q You testified the Dickinson well field covers approximately eighty acres. A That is it, roughly.

10

Q East Orange purchased more land than that from the Dickinson estate? A That was purchased from two different people. Part from one holding and part from the other.

Q Dickinson lot? A As I am familiar with it.

Q Wasn't there actually about one hundred and ten acres purchased for water purposes in the Dickinson estate? A Not from that field.

Q That well field comes in here. The city has bought—? A The well field runs across here. Part of the holdings were bought in a piece that came up like this. The other part was bought extending way around here. A part was bought to control this whole river front and the question of riparian rights. The actual amount applied to there in that bend of the river was roughly eighty acres, maybe a little less.

20

Q What was the purpose of the main purchase? Isn't that available for water land? A The people would not sell part to us unless we bought the whole thing.

30

Q But if you had purchased it, isn't it available for water land? A No, the water isn't there. We tested it out.

Q Do I understand from your testimony, that in your opinion the Passaic River would not act as a barrier to the water which might be drawn from wells on either side of it. In other words, the drawing of the water on one side of it from

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Exhibit E. Testimony of Roswell M. Roper, cross.

the well close to the river, would or would not draw water from the water land on the other side. Would that not be a barrier? A The river is a surface condition and in no way underneath is connected with the geological formation or water bearing strata. The water is flowing at that point northeast. The water in the artesian strata is flowing southwest.

10 Q It might be drawing water at the present time. A We have never made any records from the condition of underground water on their lands.

Q What I am trying to get at, you don't consider the river a barrier to the flow of underground water on either side of it? A No.

20 Q You testified that two million gallons was a safe yield from Canoe Brook, which I understand contains sixteen wells and quite a large area; that two million gallons was a safe yield from eighty acres and that six hundred and sixty-seven gallons was a safe yield from Slough Brook. Do you, as an expert, think that you will be able to get four million gallons from this additional land you are applying for? A What we are hoping for is another thing. You must realize that you can study a geological formation. You can make reasonable deductions but you can't know anything unless you put in test wells and test them out and find out what your yield is.

30 Q That is true, but when this tremendous growth in population is about to be enjoyed, do you think this little tract you are about to acquire—do you think it will take care of your needs for an appreciable period? A I don't know what you call an appreciable period.

Q About five years. A Yes, for five years.

40 Q Can you tell me what depletion there has been in the ground water level of your Dickin-

Exhibit E. Testimony of Roswell M. Roper, cross.

son wells since they were originally drilled? A It isn't a question of depletion. Some years the ground water level is lower than other years. It isn't that it is lower this year than it was last. Records may show that it is higher this year than it was last year, and personally I think it is. The whole thing depends upon the precipitation, the type of weather we have and how that precipitation comes, whether it comes slowly and can be absorbed or whether it comes in groups of rains, one following the other when the ground is already soaked and the run-off is great. Those are the questions you referred to. 10

Q I was trying to get some information myself on it. From what source, Mr. Roper, do you think the rainfall emanates that gets into these wells? 20

Mr. Pilch: He says it isn't going to affect Madison and Florham Park. We have small municipalities and cannot afford to put in other supplies.

A I could not tell you that.

Q I want to see where this water is coming from and what is going to happen when it gets there. A I don't know where the water comes from except it accumulates in broken stratifications from slopes of hills, etc., called Artesian well. When you go into rock formation you do not get artesian wells in this district. You get water that comes from the crevices. 30

Mr. Kummel.

Q Mr. Roper, can you point out on the map to us where the other well fields are located in reference to the Dickinson field and how far off 40

Exhibit E. Testimony of Roswell M. Roper, cross.

they are? A I could not very well, Mr. Kummel, on this map.

Q I think it would help us to understand this.

Mr. Drake: Any more questions?

10 *Cross examination by Mr. Critchlow.*

Q Mr. Roper, this exhibit that was marked 1-A shows by one of the lines the consumption of the city of East Orange, the total consumption as rate per day from 1905 to date. A Right.

Q You have also testified as to the date at which these different well fields were established. Canoe Brook in 1905, Slough Brook in 1910 or 1912. A Canoe Brook, 1905—Dickinson, 1923.

20 Q Slough Brook when? A 1912.

Q My question is this, would it be fair to take that consumption curve and take off from it the yield or rather the amount of water that is going into the city of East Orange just prior to the establishment of Slough Brook to determine a safe yield of the Slough Brook and Canoe Brook fields? A No, for this reason. Assuming that Canoe Brook wells started in 1905, if you were to get that point of 1912 when Slough Brook was added to Canoe Brook, then you have a period of sixteen years of deterioration in Canoe Brook well field. The actual conditions as we find them today are those on which we base the safe yield.

30 Q You started to say something about the possibility of changing the method of pumping the Canoe Brook wells from direct suction to something else. A I think perhaps it might, but it is problematical. I believe it would be worth while to try it, but I do not think it is a

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Exhibit E. Testimony of Roswell M. Roper, cross.

thing you can definitely say what you can get out of it. Of course, immediately the question would come up what the effect would be on the Commonwealth wells because the studies of the Geological Survey have shown that it would be a matter of adjustment between two companies or between this board.

10

Q No actual tests have been made on those wells other than by direct suction? A No.

12:30. Adjourned to 2 P. M.

Cross examination by Mr. Burke.

Q Referring to this chart you have, I understand that you have here projected curves—I understand your testimony this morning to be that the purpose of this application is to afford you a supply which will last you about five to ten years? A About that.

20

Q What is to be your estimate of your needs for the same period as covered by this chart? A For the next five or ten years?

Q Yes, as expressed in gallons, it is right somewhere here. A At the end of ten years we will need about seven million gallons.

Q Now over this same period of these curves, what would you estimate—what are your plans for this additional supply that you will need?

30

Mr. Ellis: Just a minute. I don't think this application ought to embrace applications we might make fifteen years from now.

Mr. Drake: Yes, it seems to me that we can cut out ten thousand words—irrespective of whether or not it is pertinent testimony.

40

Exhibit E. Testimony of Roswell M. Roper, cross.

A I have no doubt, in fact I know of a plan which will tie up East Orange in connection with the next big development, which will undoubtedly be to the southwest of our community.

10 Q Will this development which you have in mind comprise the intensive development of this area into which you wish to go? A No. It will be tied up to the surface development which undoubtedly will take place, taking in possibly Chimney Rock, Musconetcong, Paulinskill Creek—the foundation for this will probably start within the next year or year and a half. It is a thing that must come. Every engineer that has studied the proposition—Hazen, Hill, the Hydraulic Engineer of the State, Sherrred, Pratt, have agreed that there must be a development of the resources of the northern end of the state. To
20 some of the estimates of Mr. Hill—the total available supply of the west district enter through cross connected through the N. E. section will be used by 1937 will be distributed by connection direct through northeast sections. That will be used up by 1937. Our application is for the next ten years. All of our municipalities must look to some of the larger developments.

30 Q Then you do not hesitate to state that this development would not satisfy you for more than ten years? A For about ten years.

Q And at the end of that time you will have to go into some large development? A No, unless we found some other development which would tide us over until some development was ready. They all take from ten to fifteen years or more to get to the stage where they actually deliver.

40 Q Yes, but your application (this chart which you submitted in evidence) contemplates twenty

Exhibit E. Testimony of Roswell M. Roper, cross.

years' growth. Your application also states—as engineering fact that these present supplies will be exhausted before that period? A Before 1950, yes.

Q Not only for East Orange but for the territory in general unless East Orange sold to East Orange, Chatham and Madison as a group? 10

Mr. Drake: Of course we are getting into the field of speculation.

Q One other point was not made clear this morning. You were asked the question whether your municipality supplied any other municipality. Do you supply any other large communities, such as country clubs? A We have nothing to do with them at all. No, I do not know that they are private supplies, they may be connected with the Commonwealth. 20

Q On what study did you base your opinion this morning that the Dickinson Supply extended across the river? A On the borings and test wells that we put in in 1919.

Q But you did not bore on the other side of the river? A No.

Q How did you determine the extent of this basin unless you put down test holes? A I do not say that it does extend to the other side. 30

Q But you are willing to recommend to the City of East Orange that they will get the supply which they want? A I am not at all sure that you will get four million gallons a day.

Mr. Ellis: The point has been stressed that there are forty acres across the Passaic.

A We do not own the land and have no right to drill it. 40

Exhibit E. Testimony of Roswell M. Roper, cross.

Q Is it not true that available water is only found in certain portions of the twenty-two hundred acres that East Orange owns in Livingston Township? A Yes.

10 Q Is it true that in these three basins that we have been discussing that six or eight wells might pump as much water as sixteen or eighteen wells? A Yes, if the wells were of such a character in open stratification that the water could come into the wells. There is an illustration of that in Slough Brook. Out of twenty wells we were getting so much water. We got as much water out of nine. Now this year we are getting as much out of three as out of the twenty.

Cross examination by Mr. Moorhouse.

20 Q Doesn't East Orange have some signs out here somewhere? A No, you have the wrong road. As you go over First Mountain there is a sign here. See this sign about here. We do not own any property up there.

Q Just one other question. Did I understand you to say that you could get as much water out of nine wells as out of twenty? A Under some conditions you will.

30 Q Then it might be that you would not gain anything from this Braidburn property than what you get from out of your nine wells. A I qualified that by saying that it depends on the type of strata. If you get in a bed of coarse gravel or sand it will flow very much more freely than through rock formation and affect each other. On the other hand, in very close formation it will not affect wells two hundred feet away.

40 Q But it is possible that the sinking of additional wells on what is now the Braidburn

Exhibit E. Testimony of Roswell M. Roper, cross.

property would not increase your water supply?

A It is possible. If things broke right it would, but we have no proof.

Q It is speculation? A Speculation based on studies of the geological department and what we have got from our experience. It is engineering judgment, not speculation.

10

Mr. Drake: Before Mr. Roper leaves the stand, I would like to be cleared up on one question. Someone asked the question regarding the Dickinson tract. You were asked why you bought considerably more land than you required or than would use for water purposes, or something like that. Your answer had some tie in or some connection with riparian rights. Please clear that up.

20

A It does not enter into this case.

Q But because it is in the testimony, please explain. A It should not have been brought in at all. Some nine or ten years ago I recommended to the Board that we acquire lands along the river in the event that in the future if they were developed as a water supply, we should have riparian rights. At the same time—it never came to the Board—I recommended that we make application for the Diversion of water from the Passaic.

30

Mr. Drake: Any further questions?

Mr. Pilch: Did you ever ask to make borings in this new land you hope to get?

A No.

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Exhibit E. Testimony of Frank H. Taylor, direct.

FRANK H. TAYLOR, being duly sworn by the
Chairman, testified as follows:

Direct examination by Mr. Ellis.

10 Q Mr. Taylor, you are a member of the
East Orange Water Commission? A Yes, Presi-
dent of the Board.

20 Q Have you conducted any negotiations with
the Braidburn Realty Corporation for the pur-
chase of the forty acres mentioned in this appli-
cation? A I have. On approximately April 17,
1926, I received a letter dated April 16, 1926,
signed F. D. Jewett, President of the Braid-
burn Realty Corporation on a letter head of
the Braidburn Country Club, Madison, N. J., and
was addressed from 195 Broadway, New York
City, which read as follows:

“Mr. F. H. Taylor, Chairman,
Board of Water Commissioners,
520 Main St.,
East Orange, N. J.

Dear Mr. Taylor:

30 Mr. Heiss spoke to me yesterday with
regard to the possible interest of East
Orange in some of the low lying property
along the East Bank of the Passaic River
and belonging to the Braidburn Realty Cor-
poration. As a considerable portion of this
property is not immediately needed for use
by the Braidburn Country Club, I told
Mr. Heiss that I would be very glad to see
and talk with you on the matter. If it is
agreeable to you, I will endeavor some time
next week to get in touch with you by tele-
phone and if possible arrange to stop off at

Exhibit E. Testimony of Frank H. Taylor, direct.

East Orange on my way home some evening
and call at your office.

Very truly yours,

B. B. Jewett, President.

BBJ:AS''

Q Did you conduct negotiations for the purchase of the land and what was the result? A For two years, and they declined to sell. 10

Q What efforts did you make? A I got after them myself personally for about eighteen months without any result and then at the end of eighteen months I obtained from the East Orange Water Commission permission to employ Miss Edna Dickinson of Chatham, New Jersey, and living adjacent to the property, to negotiate with them and she had the same result. They refused to sell. 20

Mr. Pilch: What price did you offer for the land?

A Five thousand dollars.

Q Did that include everything? A Approximately forty-three acres with a right of way of twenty-five feet to the nearest road.

Q At the time you made that offer did you know that the Braidburn Realty Corporation had quite an extensive disposal plant on this tract? A I was told by some of the members that it was not used for any purpose. 30

Q Did you personally inspect the tract? A Yes.

Q Did you go over it? A No, sir.

Q Why not? A It was covered with water.

Q Covered with water all the time? A Not all the time, but at the time I was there. 40

Exhibit E. Testimony of Frank H. Taylor, direct.

Mr. Morehouse: I wonder if Mr. Taylor has a letter from Mr. Jewett, President of the Braidburn Realty Corporation, dated March 13, 1928? If he has, I would like him to read it.

10 A No, sir, the last one I have is dated February 21, 1928.

Q It was addressed to Miss Dickinson and I think it was sent to the Water Department Office. I would like to ask Mr. Taylor from whom he received information that there was no value to the Sewage Disposal plant.

20 Mr. Ellis: I wonder if for the purpose of the record we cannot stipulate the various distances from the lands involved in this application to the pumping stations of Madison and Chatham boroughs and Florham Park borough?

Mr. Pilch: Haven't you some wells there, Mr. Morehouse?

Mr. Morehouse: Yes, but not in this tract.

Mr. Drake: We can give you any distances you want in the stipulation.

30 Mr. Critchlow: The distances which have been made from the State Geological Survey map are to determine the distances of these various existing wells to the proposed source of supply under consideration in this application. The distances are as follows: From the center of this tract, as shown on the map filed with the application, to the Madison well field, nine thousand feet. To the Chatham well field, eight thousand feet; to the Florham Park well field twelve thousand feet, and to the artesian well of

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Exhibit E. Testimony of Frank H. Taylor, direct.

the Braidburn Country Club about one thousand feet.

Mr. Ellis: I wonder if for the sake of the record we cannot say "Stipulated by the different municipalities"? It is stipulated by and between Mr. Pilch, on behalf of the borough of Madison, Mr. Pollard, on behalf of the borough of Chatham, Mr. Burke, on behalf of the borough of Florham Park, Mr. Cruse, on behalf of the Braidburn Realty Corporation, and Mr. Ellis, on behalf of the city of East Orange, that the aforesaid distances given are correct. 10

Mr. Drake: Have you anything further?

Mr. Ellis: I think that is the case of the applicant.

Mr. Pilch: I wrote Mr. Ellis asking him to produce certain papers and documents, mailed notice and later supplemented it by a letter, and I think these records should have been before the Board to be studied by our geologists. I would ask the court to make an order asking them to produce the documents called for in my letter (filed a copy of their letter). 20

Mr. Ellis: It was served upon me, and I got it yesterday morning. It was impossible to get the data ready. It was mailed to me, but not served upon me. 30

Mr. Drake: Is it your intention to furnish this information?

Mr. Ellis: I do not think it is necessary or relevant for us to furnish that. To furnish all these reports, it is impossible.

Mr. Pilch: I do not want to be unreasonable. I will limit it then to my later letter which is before the Commission. 40

Exhibit E. Motion to Dismiss Application.

Mr. Drake: There is a good deal in this request. Some portions of it are obviously proper. Some portions should be taken into consideration. Will take it under consideration.

10 Mr. Pilch: In behalf of the borough of Madison, I ask at this time that the application of the city of East Orange be dismissed, first, because they have not obtained the consent of the Water Supply Commission of North Jersey and I do not think they have shown that the application is justified by public necessity or reasonably anticipated use, and they have not shown that this application will not interfere unduly with the opportunity of other municipalities to obtain
20 for themselves a water supply, and they have not shown that it will not unduly injure public or private interests.

Mr. Drake: Motion denied.

Mr. Pilch: I would like to supplement that Mr. Roper testified that they have not made any test borings on this land and I do not see how they can tell until they make these tests and I do not see that there is any proof before the Board that they need this
30 land. They already have twenty three hundred acres of land. Surely they can develop that and get more water and not come over and take these forty acres which we think will seriously interfere with us. We are a small municipality and it is a matter of very great importance to us that our water supply be conserved because we haven't any money. We cannot join any large development. We haven't the resources to do it

Exhibit E. Motion to Dismiss Application.

and if we have to go into any project like the Wanaque we could not raise the money.

Mr. Drake: Motion to dismiss is denied.

Mr. Cruse: It does not properly appear that East Orange has entirely developed all of its water resources and further on the ground that the evidence is unsupported evidence of the City Engineer, and as it does not appear that water will be developed as no tests were made. And some engineers were on these premises for the purpose of preparing a blue print. 10

Mr. Pollard: I want in behalf of the borough of Chatham to repeat Mr. Pilch's motion. I do not feel that all of the necessary elements have been proven—that of necessity or that it will not interfere with the interests of other municipalities. 20

Mr. Burke: I understand that the motion asked that the application be dismissed. There is not sufficient testimony before this Board that it will not seriously damage other supplies, and I think that the point that I brought out in cross examination of Mr. Roper—his own admission is that this application is only required for temporary relief and that after five years, after they have spoiled our supply, they will have to go somewhere else. 30

Mr. Pollard: We have said and several other witnesses who are here, it seems to me that there is very little time left anyway and the geologist whom we have engaged is not here today because we did not know what representations would be made, but we wanted to provide him with a stated case to base his investigation on, and I am 40

Exhibit E. Motion to Dismiss Application.

sure it is the desire of all of those in opposition that if it could be that this hearing be adjourned until some future date so that our geologist could put his facts into shape.

10 Mr. Drake: This case cannot be settled at a regular meeting of the Board of Conservation and Development before August eighth. There is a regular monthly meeting of the Board tomorrow and obviously nothing can be done before the Board then and the next meeting, I think, is August eighth. I want some time to prepare my recommendation. I should say that those of us here have between now and the end of July to get the facts before one another. To handle this case on the basis of facts we do not want to hoodwink each other.

20 No one wants to put something over on any one else. We wish to tell one another the story just as fairly as we know how to tell it.

Mr. Pilch: We want the facts, Mr. Drake.

Mr. Drake: When do we want to tackle the job again? I can take a reasonable time off and will come down here to help you if I can.

30 Mr. Pilch: As Mr. Potts says, that in order to get to the facts he and the geologist will have to see the records.

Mr. Drake: Mr. Ellis, when will you let us see these records?

Mr. Potts: We should like the logs of the test wells so that we will know what is underground and see what they have found, so that we can ask the geologist if it agrees with his conclusions. We do not want them

Exhibit E. Motion to Dismiss Application.

invading a territory that may put Chatham and Madison out of commission and if that geologist says that they are not going to injure their supply, they will perhaps be satisfied.

Mr. Ellis: Most of the things they ask for are matters of public record, filed with the Public Utilities Commission, the Geological Survey, etc. 10

Mr. Kummel: I do not want to say that we have a record of every well that East Orange has drilled, but we may have.

Mr. Potts: But, as I gathered this morning that this fissure was well established through the rocks. Are logs of those Dickinson wells filed with your office?

Mr. Kummel: We have logs of wells proving the existence of this fissure in the rocks. 20

Hearing adjourned at 3:30 to July 24, 1928.

30

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Exhibit E.

STATE OF NEW JERSEY
BOARD OF CONSERVATION
AND DEVELOPMENT

10 In the matter of the application
of the CITY OF EAST ORANGE to
the BOARD OF CONSERVATION
AND DEVELOPMENT, for ap-
proval of its plans to divert
water from artesian wells on
lands in the BOROUGH OF
FLORHAM PARK, Morris
County; and a petition re-
20 questing permission to con-
demn said lands and water
rights.

Transcript of Testimony, stenographically taken, at the hearing in the above matter, held in Room 208 of the State House, Trenton, New Jersey, on Thursday, the 26th day of July, A. D., 1928, at 10:30 o'clock A. M.

30 A. W. Denham
Stenographic Reporter,
Trenton, N. J.
July 28th, 1928.

Present: Mr. A. W. Drake, Commissioner,
Presiding.

Dr. Kummel, Director, Board of Conserva-
tion and Development of the State of New Jer-
sey.

40

Exhibit E. Testimony of Arthur Bell.

Mr. H. T. Critchlow, Chief, Division of Waters,
Board of Conservation and Development, State
of New Jersey.

Appearances:For the City of East Orange:

Walter C. Ellis, Esq. 10
Roswell M. Roper, Esq.
Commissioner Frank H. Taylor.

For the Braidburn Realty Corporation:

Bernard F. Cruse, Esq.
L. F. Moorhouse, Esq.

For the Borough of Florham Park:

Robert E. Burke, Esq.

For the Borough of Madison:

Henry G. Pilch, Esq. 20

For the Borough of Chatham:

Robert S. Pollard, Esq.

For the Boroughs of Florham Park, Chatham
and Madison:

Mr. Clyde Potts, Engineer.

ARTHUR BELL, sworn:

By Mr. Pilch:

Q What is your business? A Employee of Mr. Potts. 30

Q Mr. Potts. Where is his office? A New York City

Q Did you, at the request of Mr. Potts, obtain certain records and information from the City of East Orange? A Yes.

Q Have you got the information there? A Yes.

Exhibit E. Testimony of Arthur Bell.

Q Will you please tell what happened. You came to Trenton first? A Yes.

Q What did you get in Trenton? A I got a series of reports. I got the records and log of the three Slough Brook wells that were drilled in the Spring of 1928.

10 Q That is what you got in Trenton? A That is some of it.

Q Keep to what you got in Trenton first? A That is what I am doing. I got the logs of the wells driven in the Dickinson field, both test wells and wells that are being used.

Q Read the records you got in Trenton, so that they will get in the testimony? A Slough Brook well No. 1. East Orange Water Department, East Orange, New Jersey. Location 20 2515729. Surface elevation 190. Date completed, Spring 1928. Driller: Artesian Well and Equipment Company. Diameter: Top, ten inches; Bottom, ten inches. Total depth, 360 feet. Casing: Wrought iron pipe. Diameter, ten inches. Screen: Nine. Well flows naturally, none. No gallons per minute. Permanent pumping equipment, type Layne and Bowler, centrifugal, pumping 300 per minute. Depth of pump or foot piece in well, 80 feet. Driven by electric motor. I have a log of the Slough Brook well 30 No. 1.

0	—	2.5	Top soil
2.5	—	5	White clay
5	—	10	Clay and Sand
10	—	20	Sand, Gravel and Clay
20	—	40	Clay and Gravel
40	—	47	Fine gravel
47	—	60	Yellow clay
60	—	67	Clay and coarse gravel

Exhibit E. Testimony of Arthur Bell.

67 — 74	Hard pan
74 — 81	Bluish brown shale
81 — 315	Red sand stone
315 — 360	Dark red sand stone

Slough Brook Well No. 2. East Orange Water Department, East Orange, New Jersey. Location 2515726. Surface elevation, 260 feet. Completed, Spring 1928. Driller: Artesian Well and Equipment Company. Diameter: Top, ten inches; bottom, ten inches. Total depth, 170 feet. Casing: Pipe, wrought iron pipe. Diameter: Ten inches. Length: 90, plus minus, feet. Permanent pumping equipment: Type, Layne and Bowler centrifugal. Capacity: 300 gallons per minute. Depth of pump or foot piece in well, eighty feet. Driven by electric motor. Used for domestic water supply.

0— 3	Loam	
3— 6	Loam and Clay	
6— 13	Reddish soil, mixed with Clay, 18 water stands	
13— 39	Clay and gravel. At 30 there are boulders.	
39— 42	Clay and gravel. Very hard	
42— 50	Sand stone and coarse gravel	
50— 61	Sand and gravel, with little water	30
61— 66	Sand, clay and gravel. Very hard	
66— 70	Sand, gravel and yellow clay, loose.	
70— 86	Sand, gravel and clay, hard.	
86— 88	Black loam	
88— 90	Blue shale, very hard	
90— 96	Gray shale, changing to sand stone	

Exhibit E. Testimony of Arthur Bell.

- 96—102 Blue sand stone, changing to red
 102—114 Red sand stone, very hard
 114—120 Red sand stone, found water
 120—140 Red sand stone, very hard
 140—170 Red sand stone, very hard, with small open seams.

10

Slough Brook Well No. 3. East Orange Water Department, East Orange, New Jersey. Location: 2515727. Surface elevation 180 feet. Date completed, Spring, 1928. Driller: Artesian Well and Equipment Company. Diameter: top, twelve inches; bottom, twelve inches. Length: 80, plus or minus, feet. Permanent pumping equipment, type Layne and Bowler centrifugal, with a capacity of 300 gallons a minute. Depth of pump or foot piece in well, 80 feet. Driven by electric motor. I have the log of that well.

20

- 0— 2 Loam
 2— 8 Sand, clay and gravel
 8— 12 Sand, clay and gravel, with small boulders.
 12— 30 Sand
 30— 46 Sand, very fine
 46— 52 Yellow shale and blue shale
 52— 56 Yellow and red clay
 56-- 68 Blue clay mixed with blue shale
 68— 74 Clay and shale
 78— 98 Blue and brown sand stone
 98—106 Red sand stone, very hard
 106—124 Red sand stone, soft
 125—130 Red sand stone, very hard. Also open seams.
 136—138 Red sand stone, soft
 138—148 Red sand stone, hard
 148—156 Red sand stone, changing to soft.

30

40

That is all I have on Slough Brook.

Exhibit E. Testimony of Arthur Bell.

By the Commissioner: Let us stop there, Gentlemen and see where we are. Please tell me what you are reading. Are you reading from public records of the State of New Jersey?

Witness: Yes, sir, a copy of it.

The Commissioner: Isn't there some easier way of getting this testimony before the Commission? That is, providing we all agree that this is proper testimony to be before the Commission. There are a good many wells there, and if we go through all these your attention is taken from the real job. All this is a matter of public record. Can't there be some stipulation to put the matter before the Commission in the proper way?

Mr. Ellis: As far as the City is concerned, we are willing to have all the public records made a part of this case.

Mr. Pilch: As far as East Orange is concerned, it is extremely difficult to get it, and I don't know how we would do that.

The Commissioner: I am talking about the public records of the State of New Jersey. My understanding from the witness is that he is reading from a copy of the public record, which copy will speak for itself.

Mr. Pilch: Mr. Potts suggests that we prepare a record of this and submit it to the Commission.

The Commissioner: Just what would you want to incorporate in the record in this case? It has already been agreed that any

Exhibit E. Testimony of Arthur Bell.

of the records of the State of New Jersey may be introduced into the case by stipulation.

10 Mr. Ellis: Yes. I don't see the necessity. All this burdens somebody with the expense of having copies made of all these public records.

(After further discussion.)

The Commissioner: I see no demand for a copy at this time. My understanding of what you intend to do is to give us a list of the public records which you want the Commission to take into account in handling this case.

20 Mr. Pilch: We have engaged Mr. Horton, of Albany, a well known hydraulic engineer, to review this matter for the three boroughs, and the Doctor is to have all the available records in the possession of the the Board of Conservation and Development put in the form of an exhibit, which can be submitted as part of the record of the case.

(After further discussion.)

30 The Commissioner: We have agreed that further reading of the State records by the witness is unnecessary. What is the next thing?

Dr. Kummel: Before we go further, would it not be well to have the Attorney request that all the information which Mr. Bell obtained on well so and so, let him read the number of wells, be made a part of the record?

The Commissioner: It has already been settled that the State records are part of the testimony.

Exhibit E. Testimony of Arthur Bell.

By Mr. Pilch: After completing your investigation in Trenton, did you go to the office of the Water Department at East Orange?

A Yes, sir.

Q What did you do there? A I plotted a map I had, with the aid of Mr. Roper, with the position of the wells driven on the Dickinson field. 10

Q Have you the map? A I have the map, yes, sir.

Mr. Pilch: I think we ought to show on the map where these wells are, so the Commission will have that before them.

(Map received and marked.) 20

Q Did you examine the files of the Water Department with regard to these wells? A I don't understand the question.

Q You were sent to get certain information? A Yes.

Q What information did you get? Have you got it? A I got the information I have just given, plus the yield. What I requested was a test of the wells on the Dickinson field, plus—

Q Take them one at a time? A Mr. Roper gave me the yield of wells one and two on the Dickinson field, as follows— 30

Q Did he give you that verbally or show you the report? A He showed me a transcript of them.

Q Go ahead? A The yield was 1,892 gallons per minute from wells one and two. There was no record of a test on well number three. Mr. Roper told me that well three did not give as much as either well one or two. 40

Exhibit E. Testimony of Arthur Bell.

Q Was there any test there as to that well?

A No, sir.

Q Proceed? A That is the conclusion of all I got that day. That was July 17th, 1928.

10 Q Did you ask for a map showing the location of the wells? A I spoke to Mr. Roper about a map. He said there was no map showing the location of these wells driven over a period of time.

Q Did you see a report from Mr. Hill? A No, sir. I saw the transcript of the results of a series of tests from Mr. Hill.

Q Did you make a copy of it? A No, sir.

Q Why not? A I was advised by Mr. Roper that there was no object in making a copy of that.

20 Q Did you ask to make a copy, or—

Mr. Ellis: I don't see what that has to do with this case. Mr. Hill can be brought here as witness. Correspondence from time to time between Mr. Hill and the Department it seems to me is irrelevant and improper testimony. Mr. Hill can be brought here, and this is only hearsay testimony.

30 Mr. Pilch: This letter is a public document. I understand it is a report addressed to the Water Commission of the City of East Orange, and I submit that as Mr. Roper testified as a result of his investigations, the letter becomes a public record and I think that we have a right to have this record, or a copy of the record.

(After further discussion.)

The Commissioner: I doubt very much if we have any right to open the files of the City of East Orange for—

Exhibit E. Testimony of Arthur Bell.

Mr. Pilch: I think we have a perfect right.

Mr. Ellis: I have no objection to have as a matter of record what Mr. Hill thinks of the whole project, if you will allow me to put Mr. Roper on the stand and give you Mr. Hill's view of this situation. 10

The Commissioner: I am not willing to do that. It is a little different to have Mr. Hill's letter, which speaks for itself, read, and to have Mr. Roper interpret Mr. Hill's feelings in the matter. They are two different sorts of things. Are you willing to have the records of the City of East Orange read into the record in this case?

Mr. Ellis: As far as this particular thing is concerned, I have no objection. I don't think we ought to be required to have our adversaries bring out conversations with Mr. Hill, which might support them, unless we are given an opportunity to present fully this— 20

The Commissioner: I am going to ask Judge Ellis, and everyone else, are they here to expedite the handling of the whole thing? Are you willing to supply your records?

Mr. Ellis: I will be very glad to do that. Any records that we have we are willing to have a part of the record in this case. 30

The Commissioner: I have asked for all that I can think of.

Mr. Pilch: We are satisfied.

(After further discussion.)

The Commissioner: All the records of the State of New Jersey have been put in the testimony so far as anyone here can put 40

Exhibit E. Testimony of Arthur Bell.

them there. The records of the City of East Orange have been put in so far as anyone here can put them there. What more do you want?

(After further discussion.)

10 Mr. Ellis: We must know what you want. We can't bring down here the whole of the Water Department records for the past twenty-five years. I think you should tell us what you want, and we will give you everything that we have.

20 The Commissioner: That is just as true for the Department of Conservation and Development. Tell us what you want, and we will put every man, woman and child in the Department to work to get it out for you and to make it available. This is a case we are intensely interested in, and will go right along with you.

Mr. Pilch: That is perfectly acceptable, and—

Mr. Pollard: This is perfectly agreeable.

Mr. Pilch: Mr. Potts has suggested that we submit a list to Mr. Ellis and Dr. Kummel.

The Commissioner: Very good.

30 Mr. Pilch: I don't represent all those involved. The others may have some questions.

Mr. Ellis: Mr. Roper co-operated with you in getting all the information that you were after?

A Yes.

Q He showed you all the files that you were interested in? A All that he had, yes sir.

*Exhibit E. Testimony of Peter A. Draney.**By Mr. Pollard.*

Q Why did you go to the City of East Orange for the records? A I was sent there on several specific missions. I can read them all.

Q You came down to Trenton to get records from the public records, from the State records, didn't you? A Yes. 10

Q Were they sufficient for the purposes of yours? A No, sir.

The Commissioner: The witness has testified that he was sent there by his superior.

Mr. Pollard: I want to find out why he was sent there by his superior.

The Commissioner: I think that his superior must say that. 20

PETER A. DRANEY, sworn.

By Mr. Cruse.

Q What is your name? A Peter A. Draney.

Q What position do you hold in the Braidburn County Club? A General Manager.

Q How long have you been General Manager? 30

A About five years.

Q You are entirely familiar with the approximately 44 acres of property belonging to the Braidburn Realty Corporation of the City of East Orange?

Q Do you recall that Mr. Roper testified at the last hearing that this ground was under water at various times during the year. I think he said three or four times during the year. Is

Exhibit E. Testimony of Peter A. Draney.

that a permanent condition? A That is not a permanent condition. In substance, Mr. Roper's testimony was about right.

10 Q What is the cause of the water overflowing down there, the wet condition? A In the Spring of each year and intermittently through the year we drop our lake anywhere from six to seven feet, and as much as eight feet, for drainage purposes for the lower end of our golf course.

Q How long is that lake? A Approximately three-quarters of a mile long.

Q You have two steps? A We have three levels on the lake. The lake is emptied by means of a sluice gate, on which there are three levels.

20 Q The first drops it how far? A Approximately eighteen inches to two feet.

Q What is the second drop? A To about four feet, three and a half to four feet.

Q And the third drop empties it? A Empties it entirely.

30 Q Have you ever considered the possibility of developing these forty-four acres as part of the present nine hole course? A Yes, we have. We went into it some time ago about extending the course for the use of the ladies, which we found was congested frequently and week-ends. We have a potential lay-out, increasing the nine holes to eighteen.

Q Have you ever actually made any sketches as to that? A We have a rough sketch of eleven holes, the contour of the eleven holes.

Q Approximately what would be the cost of adding a full nine holes to the tower course, which this property adjoins? A The first problem would be an engineering one, one of dyking

Exhibit E. Testimony of Peter A. Drahey.

the river bank at about approximately four or five different points, to keep back the water from coming in, and then diverting the drainage from the lake, or drainage from the upper golf course down through the center of that line to a lower point in the Passaic. After that is accomplished, it would be a very simple matter to lay out these eleven holes, due to the fact that there is little, if any, rock or surface stone there, and it would be a very simple matter to get the golf course there within a short time at very little cost. We have approximately the same condition as we had on the thirteenth and fourteenth fair ways at our present lake course. It was entirely under water eight to ten months of the year, except during the very dry weather in July and August. We have now been playing this course for the past three and a half years, and except in exceptional storms, it is entirely dry.

Q You actually did supervise the construction yourself of the thirteenth and fourteenth holes on the eighteen hole course? A I did.

Q Did you ever discuss with anybody the matter of dyking up the Passaic to prevent overflow? A It was informally discussed some time ago, a year or so ago, with Mr. Harry L. H.—a director and member of the Board of Governors of the Braidburn Country Club, and it was his opinion that at these different points of the river this could be accomplished for practically two thousand dollars.

Q You concluded from that that the ground could be made available for golf club purposes?

A Our problem would be one of draining, when we drop the lake, to divert the water down through the center of this property, rather than have it flow to the river direct.

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Exhibit E. Testimony of Peter A. Draney.

Q About this sewage disposal plant. As I view the map, the City of East Orange are leaving us approximately 225 feet in the road and demanding a right of way from the road to the property which they are seeking to condemn. The value of that property left to us would, in your opinion, be what?

10

Mr. Ellis: I object to that. I don't think it has any relation to this application.

The Commissioner: On what ground?

Mr. Ellis: That it is irrelevant.

The Commissioner: The witness has not been qualified as an expert in valuation. The question of valuation is not before us at this time.

20

Q How far is the sewage disposal plant from the line of the property demanded by the City of East Orange? A Approximately seventy-five to eighty feet, I would say, roughly.

Q Seepage from that plant would go in what direction? A Towards the river.

Q Do you know what the original sewage disposal plant cost? A I haven't any idea. I have no figures available.

30

By Dr. Kummel: What sewage disposal plant do you have reference to?

Witness: The sewage disposal plant for the club. I will show you on the map.

(Witness points out location on map.)

Q Has this particular land any other value? The character of the soil, I have reference to. A Some two years—

40

Exhibit E. Testimony of Peter A. Draney.

Mr. Ellis: That is a matter for the condemnation Commission. I object to that.

The Commissioner: Has the witness testified to the effect that he is an expert, and if an expert, an expert in what?

Mr. Cruse: He knows the property. He knows the value of it. 10

The Commissioner: To know the property, that doesn't require an expert. There is nothing expert in knowing property, but when you talk about knowing the value you begin to get into the question of expertness, and before he testifies to values, I would like to know what he knows about values.

Mr. Cruse: Mr. Draney has been at this Club for approximately five years as Manager. He has actually constructed holes, supervised the construction of holes, and at present supervises and maintains the Club. What I want to say is that about thirty of these forty acres consist of humus, which the Club uses for maintaining its greens. 20

The Commissioner: The position he holds is one of active charge of the maintenance of the Club?

Witness: That is correct.

Mr. Cruse: He has also constructed several holes. 30

The Commissioner: Two.

Witness: Seven in all.

The Commissioner: There is no objection to Mr. Draney testifying to conditions as I believe he knows them and sees them and understands them. If he is going to testify as to values, then I must ask that he be qualified as an expert. 40

Exhibit E. Testimony of Peter A. Draney.

Mr. Cruse: What I want to say is that part of this acreage is used for the maintaining of the course.

The Commissioner: Ask the question. That is a direct question. There is no objection to that.

10

Q Approximately how many acres of the forty-two or forty-four involved consist of humus? A That is hard to tell you. We have taken three specimens of soil out at different points and sent them to Washington for analysis and report, and two are favorable and we are going right ahead and using it.

20

The Commissioner: It is a fact that part of the water used to maintain the upkeep of the course is derived from this particular tract, and is derived from that tract because that is the most available place to get it from at this time?

Witness: Not at this time. We have not seen fit to go through there, but when we go down through the center we will keep it high and dry at any season of the year.

30

The Commissioner: You are maintaining the course, and getting along all right at this time?

Witness: Except on one or two occasions we have taken as many as thirty or forty loads of this soil out of there and treated it with sand and used it on the course.

Q At the time that East Orange drilled this well in the Dickinson field, it was in what year? A As near as possible, I have heard it was in 1924.

40

Exhibit E. Testimony of Peter A. Draney.

The Commissioner: Are you testifying from what you heard, or do you know anything about it?

Witness: I don't know. I was not present.

Q What year did the artesian well on the Braidburn property go dry? A It was a flowing well. It was dry in the latter part of 1924. That is an eighty foot flowing well. How long it was dry, I am not in a position to say. 10

Q That was after the time that the Dickinson well was drilled? A About that time.

Q There have been no drilling operations on the Dickinson field since you have been there? A Not to my knowledge. To be frank with you, I have not been over the Dickinson field except to look at the ice in the Winter time. 20

The Commissioner: I don't believe that there is any desire on the part of East Orange to refuse to give you the dates on that.

Mr. Cruse: I just wanted to establish this.

The Commissioner: This witness is not the man to do it. He does not know, obviously.

Q How many gallons of water per day does the Club require? A Approximately about thirty thousand a day for shower bath purposes, bath rooms and watering the greens. 30

The Commissioner: That is the average over a week?

Witness: It varies. It will run to thirty thousand in the months the Club is used most, in June, July and August. 40

Exhibit E. Testimony of Peter A. Draney.

The Commissioner: You spoke of so many gallons per day. You mean the average daily consumption for a period of time, or is that the maximum day?

Witness: That is the maximum, over the week-ends.

10 Q You get all that water now from what source? A From the artesian well that was sunk last year.

Q Approximately, can you tell the Commission, about how many gallons goes through the sewage disposal plant? A That is hard to say. The shower baths run constantly on Saturdays and Sundays, and the water from the shower baths goes through the sewage disposal plant.

20 The Commissioner: The overflow from the showers goes through the filtering plant?

Witness: Yes.

Q That also takes care of all of the toilets emptied there and the kitchen? A It is all in one system.

The Commissioner: Practically all of your water goes through the disposal plant?

30 Witness: It all goes through the disposal plant, yes.

Q Are there as many as three hundred people there on Saturdays and Sundays? A We average about three hundred players, and it is safe to say that these three hundred at least take one shower, if not two, some of them.

The Commissioner: You mean three hundred players on any day?

40 Witness: On Sundays.

Exhibit E. Testimony of Peter A. Draney.

Q At the present time, is there any other means of sewage disposal available? A None that that I know of.

By Mr. Ellis.

Q You have one flowing well on the premises now? A Yes, one artesian well. 10

Q You get all the water you need without any difficulty, don't you? A We are now, at the present time, but last year we had to hook up a separate unit for the greens. We were short of water in our shower baths several times last year.

Q Your flowing well is right across the river from our wells? A Yes.

Q It is flowing all the time? A Yes, all the time. 20

Mr. Ellis: If your Honor please, we realize that the proposed well, the one we are seeking permission for, is in close proximity to them, and I am authorized to say that if by the operation of the new well, their yield is lessened, we will make good the difference without any charge whatever. That is all we can, of course, possibly do.

Dr. Kummel: Is any part of your golf course as at present laid out, East of the Brook Lake Road? 30

Witness: No.

Dr. Kummel: It lies entirely West of the Brook Lake Road?

Witness: Yes.

Exhibit E. Testimony of Peter A. Draney.

By Dr. Kummel.

Q This well that has been testified to, the new one, which was put down last year, is located East or West of the Brook Lake Road? A West.

10 Q What is the depth of that well? A Possibly a hundred and thirteen feet, I believe.

Q Is that well located North or South of the line of your ponds? A It is directly West of the lake. Right at the sluice gate of the lake.

Q I indicate a point on a map on which we have a cross and the figures 113 foot well. Is that the correct location? A Yes.

20 Q I call your attention to another well on a map taken from the files of the Department located some distance West of the 113 foot well and marked 85 foot well. What can you tell me about that well? A That was formerly a flowing well at the Junior Club House, which is now at the present time dry, with about a foot and a half of water in it.

Q That is not in use? A Not in use.

30 Q The elevation of the 113 foot well is indicated, if correctly located and indicated on the topographical map, as between the 180 and the 190 contour lines. Is that correct? A Approximately, yes. This 113 foot well is about 75 or 80 feet from the lower lake.

Q How deep have you ever observed the water over the area proposed to be taken by the City of East Orange; have you ever made any observations as to the depth of the water? A No. I have never made any observations, just a general view of it.

Q What is the general impression you have as to the greatest depth you have ever noticed over this area at times of extreme flooding of the

Exhibit E. Testimony of Peter A. Draney.

river? A About a foot and a half, except at the lower end of it, where there is a basin in it. It would be higher there than it would be over the general area.

Q In the years you have been connected with the Club, has the flood of the Passaic River ever come up to the sewage disposal plant? A With- 10
in seventy-five to a hundred feet of it it has.

Q How many times, in your recollection, have the floods come up to within seventy-five or a hundred feet of the sewage tank? A Usually in the Spring, and several different times when we have excessive rains it has, for a very short period.

Q Have you had any floods there this last month, July? A Yes, plenty.

20

The Commissioner: You spoke of eleven holes. How about the present nine?

Witness: We are going to lengthen two.

The Commissioner: You will put them on this forty acres?

Witness: Yes.

The Commissioner: Have there been plans drawn up?

Witness: Tentative plans have been 30
drawn up.

The Commissioner: How many acres does the present nine hole course cover?

Witness: I could not say offhand.

The Commissioner: Long or short?

Witness: Very short, seventeen hundred yards long.

The Commissioner: Isn't it a fact that you have in mind carrying out the same

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Exhibit E. Testimony of Peter A. Draney.

general kind of course, or are the holes going to be larger?

Witness: The same kind of course potentially, to be used by the ladies.

By Mr. Cruse.

10 Q I would like to ask what the depth of the new well is? A 113 feet.

Q Were there any logs made of that? A No, there has not been.

Q Did you testify that most of the water on the land during the flood time comes from the lake, due to the lowering of the lake it, which can be lowered how much? A To the depth of six feet, six to eight feet.

20 The Commissioner: By that you mean that the land is flooded more frequently because of the manipulation of the lake?

Witness: I mean that most of the water on the land comes from the lake.

The Commissioner: You are asking Mr. Draney where the water comes from. To my question he answers that the water is due to the lowering of the lake.

30 *By Mr. Cruse.*

Q Have you lowered the lake at any time during the last month? A At the present time we have got the lake about thirty inches lower than normal height due to excessive rains.

Q Was the flooding of this land which occurred during the month of July due to the lowering of the lake thirty inches? A We lower it at each storm. Yes, that had a great deal to do with it. Then again water comes from the

Exhibit E. Testimony of Peter A. Draney.

Passaic River. It is hard to tell how much does come in unless you stand out there and measure it.

Q You testified that this marsh was under water every Spring, nearly every Spring? A Yes.

Q Isn't that due to the Spring flooding in the Passaic River, not to the lowering of this little pond of yours? A We lower the lake as well in Spring and lower it at each storm. 10

Q How deep are these ponds? A About four feet at the upper end, and anywhere from six to ten feet at the lower end.

Q Can you give me any figure as to the area of this pond? A I cannot.

Q Have these ponds as large an area as the area which East Orange proposes to take? A No. 20

Q Could you make any intelligent estimate as to the size as compared with the pond area? A Approximately three quarters of a mile long, and at its widest point about fifty yards wide.

By Mr. Ellis.

Q You don't seriously mean that that lake is three quarters of a mile long, do you? A From the lower lake to the upper end of it.

Q How many acres would you say the entire water space there covers. Not more than five acres, does it? A About that. 30

Q You know the area adjacent to the Passaic is about twenty-five thousand acres, don't you? A That I don't know.

Q You mean this water from the lakes stays in this area we are talking about? A Yes, it runs down there from the lake and floods out through the meadows when the Passaic River is 40

Exhibit E. Testimony of Peter A. Draney.

overflowing. It finds its level out through the meadows.

Q Can you tell how much water you let out of the lake? A We have had it open as long as six or seven hours at one period.

10 Q Can you tell us how many gallons? A No, I cannot.

The Commissioner: I don't know whether this testimony is pertinent or not. I don't know that it is a matter of any great importance to know the area of the lake.

Q When were the tentative plans for this golf course made? A It was talked about by the Greens Committee at various different times last year, a year or so ago.

20 Q The City of East Orange has been negotiating for two years about it? A I don't know about that.

Q I thought you were the Manager of that? A Of the Braidburn Country Club, not the Realty Company.

Q Who owns the land itself, the Realty Company or the Country Club? A The Realty Company.

30 Q You have nothing to do with that? A I have nothing directly to do with it.

Mr. Moorhouse: I would like to put a letter in the record. At the last session Mr. Frank H. Taylor read a letter from Dr. Jewett relative to the sale of this property to East Orange. That letter was dated April 16th, 1926. Under date of October 18th, 1926, Mr. Jewett, President of the Braidburn Realty Corporation wrote Mr. Taylor as follows:—

Exhibit E. Discussion.

Mr. Frank H. Taylor, Commissioner, Water Department, City of East Orange. My dear Mr. Taylor: This is in further regard to the matter of the water bearing land along the Passaic referred to in your letter of September 24th and in our subsequent conversation. Immediately following our conversation, I submitted the whole matter by letter to the Directors of the Braidburn Realty Corporation, and called a meeting for October 13th for the specific purpose of reconsidering the Board's previous action in the light of the facts you submitted to me. As matters turned out, absence from the city prevented my being present at the meeting, and on my return to the office I found a copy of the minutes, from which I quote as follows:— At the July 6th meeting of the Board of Directors, the inquiry of Mr. Frank H. Taylor, Chairman of the Water Commission of East Orange, as to whether the Corporation would be willing to dispose of some of its property along the Passaic River to East Orange, in order that the City might in this way gain added protection for its future water supply, was discussed, and the President was directed to advise Mr. Taylor that the Board was of the opinion that it did not, at this time, wish to dispose of any of its property. Since that time Mr. Taylor has again raised the question with President Jewett, and the Secretary laid before the Board the correspondence President Jewett had had with Mr. Taylor, and the whole subject was given further consideration. After considerable discussion as to the future needs of the Club,

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Exhibit E. Discussion.

10 both with respect to water and additional golf facilities, it was unanimously agreed that it would be unwise for the Corporation either to dispose of its property or to lease any water rights thereon to others, and on motion of Mr. Kilpatrick, seconded by Mr. Richardson, and carried unanimously; and the President was directed to so advise Mr. Taylor. Regretting that the interests of the Club do not permit of our acceding to the desires of the Board of Water Commissioners as you expressed them to me, I am,
Yours very truly, F. B. Jewett, President,
Braidburn Realty Corporation.

20 Mr. Moorhouse: I have also one more letter. I think it was testified also that subsequently to Mr. Taylor's conversation with Dr. Jewett, the matter was turned over by Mr. Taylor to Miss Edna Dickinson, and under date of March 15th, 1928, President Jewett wrote Miss Dickinson as follows:—

Miss Edna Dickinson, Chatham, N. J.,

30 My dear Miss Dickinson: As planned, the Board of Directors of the Braidburn Realty Corporation had a meeting on March 9th, and among other things, discussed at length again the question of selling land to the City of East Orange. I advised the Directors of our previous conversation, and submitted to them the map of the land required which Mr. Taylor had had prepared. At the end of the Board's consideration, they were unanimously of the opinion that it was not in the interest of the Realty Corporation of the Country Club to alienate any of this land. This feeling was set forth in the following resolution: Whereas, the property of the
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Exhibit E. Discussion.

Braidburn Realty Corporation was purchased for Country Club purposes, and in the judgment of this Board is required for the growth and ultimate expansion of the golf and other facilities of the Corporation property, and whereas the sale of the property desired by the City of East Orange would detract from the value of the property of the Realty Corporation and from its value for Country Club purposes, and leave the Corporation without adequate land for expansion purposes; Therefore, be it resolved that the Directors of this Corporation deem it inadvisable to dispose of any of it; And be it further resolved that the President be directed to advise Miss Dickinson to that effect. In view of the action of the Board, I would be glad if you would advise Mr. Taylor. Yours very truly, F. B. Jewett, President, Braidburn Realty Corporation.

The Commissioner: Let me have the dates.

Mr. Moorhouse: The first letter is dated October 18th, 1926. The second letter, to Miss Dickinson, is dated March 15th, 1928.

Mr. Ellis: No objection to either letter.

Mr. Pilch: After the hearing last time, or the hearing before that, we retained Mr. Horton, of Albany, to represent us, to go over the field and the data and make his report. He promised to come down on Tuesday and Wednesday of this week, but Mr. Potts received word from him that something had happened at Albany with the Albany Water Commission and he could not come down, and so I telephoned to Mr. Ellis and told him the day before yesterday that I was going to make this application to have

Exhibit E. Discussion.

a short adjournment to submit this to Mr. Horton and have him go over this proposition. We thought that we ought to pick out a very capable man, a skillful man.

10 The Commissioner: Do I understand from your remarks that you are requesting a further adjournment?

Mr. Pilch: Yes.

The Commissioner: You have in mind, of course, the limitation of this Board as far as time is concerned?

Mr. Pilch: I understand that limitation can be waived.

(After further discussion.)

20 The Commissioner: This is a matter of law, and you, as a lawyer, must have a definite opinion as to what this Commission has to do to comply with the law. We are subject to the law, the same as everybody else. There is no question in my mind, and my mind is not a lawyer's mind, but that we are required to come to a decision on this application as soon as convenient, but ninety days is the limit. Ninety days will expire towards the end of August, and the difficulty in getting a meeting of our Board, even the regular meeting in August, which comes on the
30 8th August, is very great. This is a time of year when it is very hard to get eight men together, so that I am pretty well satisfied that in order to comply with the law I have got to be prepared to make a recommendation to the Board at its regular meeting on August 8th. Between now and August 8th I am perfectly willing to help all I can in this case, but I cannot go beyond that. I

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Exhibit E. Discussion.

must have a reasonable time before August 8th to review the testimony and consider various matters which you put before me and make up my mind what recommendation to make. I feel that a reasonable time to ask from you gentlemen is a week, August 1st. I will ask you to have all the testimony complete by August 1st. That seems reasonable to me. 10

(After further discussion.)

The Commissioner: Reading the law. Such Commission shall within ninety days after receiving an application, and with all convenient speed either approve the said application, reject it entirely, or approve the same subject to such reasonable terms and conditions as the Commission may prescribe. 20

I can't read very much latitude in that language.

(After considerable further discussion.)

The Commissioner: I am willing to make an adjournment to August 2nd, and on that day all the testimony must be in, except that Judge Ellis will have a reasonable time in his opinion to study the new testimony presented, and formulate a rebuttal. 30

Mr. Ellis: The opposition must complete their case August 2nd, so that I will have some time after that for my rebuttal. If they go beyond that, I don't see how it is possible for us to complete our testimony within three months.

The Commissioner: Let the case continue to be conducted as it has been up to now. There will be an adjournment until 10:30 a. m. August 2nd. 40

*Exhibit E. Testimony of Clyde Potts.*BOARD OF CONSERVATION AND
DEVELOPMENT

STATE OF NEW JERSEY

10 Transcript of testimony taken at the continued hearing in the matter of the application of the City of East Orange, held at the State House, Trenton, New Jersey, Thursday, August 2nd, 1928, at 10:30 A. M.

Commissioner A. W. Drake, Presiding; and all other appearances as at the preceding hearings.

CLYDE POTTS, sworn.

By Mr. Pilch.

20 Q You are an engineer? A I am, yes, sir.

Q How long have you practiced as an engineer? A 27 years.

Q Where is your office? A New York City.

Q Do you live at Morristown? A Yes, sir, I live in Morristown.

Q You are Mayor of Morristown? A I am, yes, sir.

30 Q Morristown is in close proximity to the water reservation of East Orange? A Morristown is in the bed of the old Passaic lake and is on the same terminal moraine as Chatham and Madison, and Morristown draws its water from the same gravel underlying the old Passaic lake as these other municipalities do, which includes East Orange.

Q Are you familiar with the present necessities of Madison, Chatham and Florham Park in the matter of water? A I know what they are

Exhibit E. Testimony of Clyde Potts.

taking now, and I know their probable needs in the future.

Q Will you tell * * * A Does that mean just Madison, or are you * * *

Q Madison, Chatham and Florham Park?

Mr. Ellis: If Mr. Potts is going to read, 10
I would like to know what he is reading from.

Witness: I am reading from memoranda I prepared myself after making inquiry, and ascertaining what the pumpage was at these different places, made up from data to which I have access.

A Madison is pumping about 800,000 gallons a day out of their wells, which are located in the Borough of Madison on the Northerly edge of the terminal moraine, that is, it passes through Madison. Chatham takes about 300,000 gallons per day from their wells, which are some distance East of the Madison wells. Florham Park, the plant is just being finished. This is being built under plans which I prepared for them, and I estimated that the consumption in five years there would be 100,000 gallons a day. Probably, at the present time, when we put the plant in operation, the use will be around 65,000, and I estimated that it would increase over a five year period to at least 100,000. 20 30

Q Are you familiar with the wells in Chatham and Madison? A Yes, sir.

Q From your investigation, what has been the effect over the last few years in the height of the water in these wells? Has that been lower?

A There has been a steady depletion of ground water there during the last 15 to 18 years. 40

Exhibit E. Testimony of Clyde Potts.

Mr. Ellis: I object to that testimony. I don't know that Mr. Potts is competent to give that information. It is hearsay, at the best.

10 The Commissioner: Tell us how you are competent. What do you know about the height of the water?

Witness: I have been engineer for Madison and Chatham for about 15 or 18 years. I have watched the elevation of the water in the wells over that period.

The Commissioner: You are now engineer for Madison and Chatham?

Witness: Yes, sir.

20 The Commissioner: The testimony will be admitted.

Q Have you made any examination of the water preserve of the City of East Orange? A I have, yes, sir.

30 Q In your opinion as an engineer, have they exhausted their present available means of supply? A I have examined the available records furnished by East Orange in this case. I have examined all the reports and publications that are available. This includes the records of the Department of Conservation and Development, and of the United States Geological Survey, and all data that I can find bearing on this; and my opinion is that East Orange is not getting all the water that is available for it on the 2,300 acres of land it now owns; nor is it getting the water out of the ground on this 2,300 acres by the most efficient methods. There is an opportunity for East Orange to develop a large amount of water on its own property without the necessity of

Exhibit E. Testimony of Clyde Potts.

purchasing any additional property, without the necessity of invading any other areas.

Q In your opinion, based on your experience as an engineer, how can that additional supply be obtained by East Orange? A I have prepared here a diagram, which I think, in my opinion, correctly represents the situation with regard to the East Orange Water Supply, its probable needs, and the possibilities of developing additional water on its own property. I have made this in the form of a diagram. I first prepared a chart showing the past population of East Orange, and I have that there on this blue print. This is made up from all of the available data in regard to past population, and I think in accordance with the best practice of predicting future populations; and this curve shows the probable population of East Orange up to 1985.

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The Commissioner: This is a forecast of the population?

Witness: This is a forecast of the population up to 1985, and the forecast is made up in accordance with what I think is the best practice or best rules for forecasting populations.

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Mr. Pilch: I offer it in evidence.

Mr. Ellis: I don't think Mr. Potts has qualified as an expert in predicting populations. I would want to know what he has predicted before I can allow it in evidence.

Witness: In preparing that I took into account all the factors entering into it, including Mr. Roper's curve which he submitted when he gave his testimony, and

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Exhibit E. Testimony of Clyde Potts.

10 predicted it in the usual way that sanitary engineers predict populations when dealing with the questions of water supply or sewage systems. That is one phase of engineering, preparing plans for future water supply or sewage, predicting populations they will probably have to serve. In preparing this curve, I followed the usual procedure which all consulting engineers follow in preparing prediction curves.

Mr. Pollard: I don't think that population curve varies very much from that curve which you have.

20 The Commissioner: The question is whether Mr. Potts can qualify as an expert in preparing forecasts of population. My own feeling is that no man can do engineering without doing that. It is a fundamental in any engineer's work which he may do. I take it that the other curves which are here of the forecasts of the population in various other * * *

Witness: The others are put in there merely to show * * *

The Commissioner: The others just happened to be there.

30 Witness: I put those on to show what the growth of other municipalities of similar size was, what their growths were.

The Commissioner: These other curves have not been introduced as evidence, merely East Orange.

Witness: The others are merely put on there to show the influence they had on my judgment in predicting East Orange.

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Exhibit E. Testimony of Clyde Potts.

The Commissioner: I will allow the evidence to go in.

Mr. Ellis: What is the purpose of showing the curve lines marked Jersey City, Newark and Paterson?

Witness: That shows actually how these places grew, the rate at which they grew. 10

Mr. Ellis: Is that any criterion in estimating the population of this town?

Witness: I think so. I think if you take the growth of other municipalities in the metropolitan district, you can use that to form your judgment of what one unit in the metropolitan district will do.

The Commissioner: I think we are going astray. There is no evidence at this time regarding any population in the City of Newark. It happened to be on this sheet. It is not a part of the evidence. East Orange is the only line we are interested in. 20

Mr. Ellis: If that is the understanding, I have no objection.

Q As an engineer, as a result of your investigation and your experience, how could the present supply of East Orange in its present field be increased? A Answering that question, I made, after making this prediction curve as to the probable population of East Orange, I then prepared another diagram, which shows what in my opinion supply can be developed for East Orange from the property which they now own, to meet this demand; and this curve, as I stated a moment ago, is based on a study of the records available in East Orange, which were made available to us, and all those on record here in the Department of Conservation and Develop- 30 40

Exhibit E. Testimony of Clyde Potts.

ment and in the United States Geological Survey, and all other data pertaining to this subject, including the reports made to East Orange by their past consulting engineers, which are available. It is my judgment that they can develop four million gallons of water in the Dickinson field now, and that can be increased to a minimum of at least nine to ten hundred thousand of gallons from Slough Brook field, and then as the needs of East Orange require the development of these two fields, Dickinson and Slough Brook field would carry East Orange to about 1936 or so. Then by a proper development, a modern development, of Canoe Brook field, in accordance with modern practice in taking water from the ground, an additional three million gallons can be taken from Canoe Brook field. I believe they could get about two million gallons a day from Canoe Brook, as near as one can tell from their records, but they have very inefficient machinery there for taking water out of the ground—

Mr. Ellis: I don't think that is competent.

—very antiquated methods of taking water from the ground, and by putting down a modern well and modern pumps at Canoe Brook field, I think without a question can be made to yield at least five million gallons in million gallon units as necessity arises. So that the first million gallon unit would probably carry East Orange to about 1943. At the end of that time, they could put another million gallon unit there, and that would carry them to 1948; and at the end of that time, another million gallon unit, which would carry them to 1953, or thereabouts; and I have prepared here a diagram which shows the development of their property in accordance with

Exhibit E. Testimony of Clyde Potts.

their demand curve, which is based on the prediction of the population.

Mr. Pilch: I offer it in evidence.

(Received and marked Exhibit B)

Q You said you had examined reports of the water engineer on file in their department? A What are available, yes, sir. 10

Q Who made those reports? A Nicholas Hill made one. Another was made by Cornelius C. Vermule.

Q As a result of your examination, what do those reports show?

Mr. Ellis: I object to that.

Mr. Pilch: I have already asked that these reports be brought before the Commission. I made such a demand last week and I think he is competent to testify. 20

The Commissioner: These reports you are speaking of are reports made by Mr. Hill and Mr. Vermule to East Orange?

Mr. Pilch: I understand so.

Mr. Ellis: They are highly incompetent as evidence. Mr. Vermule and Mr. Hill are, I believe, alive today. They can be brought here. I have the right to cross examine them. How can Mr. Potts come here and make his deductions from conversations with Mr. Hill, or anything along that line? 30

The Commissioner: If both these gentlemen are available, they can be brought here to testify.

Mr. Pilch: Mr. Hill is in a sanitarium.

Witness: Mr. Hill is in Battle Creek sanitarium. 40

Exhibit E. Testimony of Clyde Potts.

Mr. Pollard: May I add one point? My recollection of Mr. Roper's testimony is that some of his conclusions were based on data he had obtained from these reports.

Mr. Roper: I quoted excerpts from the report.

10 (After further discussion.)

The Commissioner: I think it is perfectly plain Mr. Potts cannot interpret Mr. Vermule's or Mr. Hill's reports.

Mr. Pilch: I think these reports should be made available to the Commissioner.

The Commissioner: The Commission has not the reports.

Mr. Pilch: The Commission can get them. It has the authority to get them.

20 The Commissioner: The facts in this matter can be obtained by you and your engineers by going out in the field and getting them.

(After further discussion.)

30 The Commissioner: I will admit they are admissible if they are offered, but they are not offered. If they are offered, and the engineers who made the reports are available for examination, so much the better, but for the Commission to say East Orange must produce the records for examination, I don't think I can do that.

Q In your opinion, based on your investigations and your experience, if East Orange is permitted to draw two million and more gallons from the proposed new field, would that have an effect on the wells at Madison, Chatham and Florham Park? A I don't think there is any

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Exhibit E. Testimony of Clyde Potts.

question about it. It certainly would, in my judgment.

Q I am asking for your judgment as an engineer? A Yes, sir.

By Mr. Pollard.

Q What effect do you—just to amplify this last question—what effect do you think it would have, what kind of effect? A My opinion is that if East Orange comes into that territory, which they propose, and takes the quantity of water they propose, that the abstraction of that amount of water from that underground reservoir will be sufficient to lower the ground water level that is now maintained by that reservoir to such an extent that it will require Madison and Chatham and the Braidburn Club to put down deeper wells, with larger pumps, possibly very soon and eventually if that draft continues, it would probably seriously interfere, and would require them to go elsewhere for additional water. 10 20

Q You testified that you had examined the wells of Chatham and Madison, and that you found that the ground water levels had been lower in recent years. Can you be more specific in that and tell us to what extent the ground water level was lower, and over what period? A One very notable thing came under my observation. One well there about thirty feet in diameter and about thirty-five feet deep. When that was completed, after they stopped pumping the water rose and flowed over that well every night. I haven't seen it for a long time come back to flow over the top as it used to. I think that is a pretty fair monometer of the ground water level there. The wells at Chatham have 30 40

Exhibit E. Testimony of Clyde Potts.

been lower. There has been a lowering of the ground water level there over the same period.

Q Have you made a personal examination of the East Orange water property and their wells?

A Yes, I have visited them and looked them over.

10 Q How recently? A I was there yesterday. I have been there before, and I was there again yesterday with Mr. Horton and Mr. Waterman.

Q Did you find the Slough Brook wells in use?

A No, sir, I didn't find them in use, and the appearances are that they haven't been in use for a number of years back.

Q Are there any records there of their recent use? A No. They were making a test of what they called well number three yesterday while we were there. We happened to be there
20 while the test was being made.

Q Is that a new well or an old well? A According to the testimony of Mr. Roper it is one of the new wells, one of three new wells which they put down last year, and it was one of the wells they furnished us the log on, when we sent down here to Trenton to get the logs, that was one that we got the log on.

Q Is there any record of that well ever having been in use? A No, sir. The evidence on
30 the ground was that it had only recently been connected up to the pipe lines so that it could be used. These pumps are brand new and the building brand new.

Q Were you able to examine the record of this test that you saw going on? A Yes, sir.

Q What did you find? A We found that they were pumping water out from this well over a V notch weir, and at the rate which they were pumping, this well was yielding 425,000 to
40 450,000 gallons a day.

Exhibit E. Testimony of Clyde Potts.

Q That was just one well? A Yes, sir.

Q Was the water all pumped in the supply or wasted? A It was pumped out on the ground.

Q If other wells similar to this were located in the same vicinity, do you think that they would yield anything like the yield that this one well that was being tested would indicate? A I could not say that, because these wells go down into sand stone, and I don't believe you can predict the yield of wells in rock to the same degree of certainty which you can predict gravel wells. I could not say whether they would yield as much or not. I think Mr. Roper's testimony was that they yielded, I think, 200,000 gallons a day. I think he was low, if anything, very low. 10

Q I recall Mr. Roper having testified that his estimate of the minimum safe yield of the Slough Brook wells was about 600,000 gallons a day? A 600,000 gallons a day from the three wells, as I remember the testimony. 20

Q From two wells? A I understood him to say from three wells.

Q Pumping two wells his minimum safe yield was 600,000 gallons. In your opinion as an engineer, would the use of this additional well increase that minimum safe yield from Slough Brook? A I don't get the question.

Q Assuming that these two wells which Mr. Roper was referring to had a minimum safe yield of about 600,000 gallons a day. Is it your opinion that that will increase the minimum safe yield from that field? A The test that was made yesterday? 30

Q Yes? A I think the test we saw yesterday would indicate there was more water in the Slough Brook wells than East Orange contemplates getting there.

Exhibit E. Testimony of Clyde Potts.

Q My understanding was that East Orange was counting on a minimum safe yield from the Slough Brook wells, and I further understand that these wells are not in use now. I have got the impression that they are not in use, and that a third well, a new well, is being put down, which shows a test of from 400,000 to 500,000 gallons a day alone. Would not the addition of this new well to what Mr. Roper was basing his calculations on when he testified, increased the minimum safe yield of that field by about 400,000 or 500,000 gallons? A It would, if your premise is correct, but my understanding of the situation is this: East Orange now gets its water from the Canoe Brook field and from the Dickinson field only. They have been getting no water from the Slough Brook field for some time past, possibly three or five years past, they have taken no water from Slough Brook. Mr. Roper's prediction was that these three new wells on Slough Brook, which were put down last year, would yield 600,000 per day, and this new well, which was tested yesterday, was one of the three new wells which were put down last year as replacement wells over the old air lift wells which they formerly had at Slough Brook. In other words, I understand they have discarded the antiquated system which they had at Slough Brook, and have put in a modern method of raising the water from the ground at Slough Brook, and this well is one of the three wells in that new system they put in there. And this one well gave a yield, according to the test made yesterday of, as I recall, around 450,000 gallons a day. With the other two wells, and this is a third, you would have an ultimate yield of around one and a quarter millions a day from these wells. The

Exhibit E. Testimony of Clyde Potts.

other two wells have not yet been tested, or so we were informed yesterday, and in view of the fact that they have not been tested, it would only be a prediction of what they would yield.

Q Are these other two wells similar in construction? Are they now modern? A One of them is very similar. It goes down to about the same vein. As I recall the log of the other, it goes down very much deeper. 10

Q In your opinion as an engineer, is it safe to assume it will produce as abundantly as the one which was tested? A I should think that one of them at least might produce the same quantity of water. The machinery is very similar, and I see no reason why they should not get about the same quantity of water. As to the deeper one, I don't know. I would not want to predict that, but I presume that from some preliminary test they must have made, they must be satisfied with it. 20

Q I understand Mr. Roper testified in the question of the minimum safe yield two million gallons from Canoe Brook, two million gallons from Dickinson, and 600,000 or 700,000 from Slough Brook. You say they are taking 300,000 from Canoe Brook? A No, I would judge they were taking about two million gallons from Canoe Brook daily, and about two millions a day from Dickinson field, and nothing from Slough Brook. I think probably they are taking a little more from Dickinson and not so much from Canoe Brook field. I should judge it was more or less evenly divided, half from Canoe Brook and half from Dickinson, and according to the information on file, and my prediction curve, and my demand curve, and my supply curve—which is not founded on the opinion of anybody else—that is 30 40

Exhibit E. Testimony of Clyde Potts.

my best judgment after studying all the available records in the office at East Orange, and all the records available at Trenton, and from Washington and so forth, and all the data. I found in the office of the Water Commissioners in East Orange a report from Nicholas Hill, which gave
 10 a record of this—

Mr. Ellis: I object to any quotation from Mr. Hill's report unless we have the whole thing here.

The Commissioner: That will be ruled out on exactly the same basis as before. What are we driving at just now? Are we questioning the records of the East Orange Water Commission regarding the draft of water? Is that what we are going after? How much
 20 water has the company drawn from that date to this date and the other date? The question is a perfectly proper question.

Mr. Pollard: I am not so much questioning their records as I am trying to show that they are over fearful about the water supply there, and I would like to show by our expert that there is a great deal more water there which can be obtained from their present 2,300 acres by more efficient methods.
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(After further discussion.)

The Commissioner: The actual draft of water is a matter of fact and not a matter of opinion. That is perfectly easy for every one of us to see. Why not take that as our foundation? Just save time, that is all.

Q In your opinion, it has been testified that the minimum safe yield of Canoe Brook well field is two million gallons daily. In your opinion, is
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Exhibit E. Testimony of Clyde Potts.

that a correct estimate? A No, sir. Canoe Brook field has a safe yield of three million daily, and the minimum is possibly more than that.

Q It has been testified that the Dickinson well field has a minimum safe yield of two million gallons a day. Do you think that is right? A No, sir. I think it has a safe yield of four million gallons at least. 10

Q And what is your opinion with regard to the minimum safe yield of the Slough Brook field? A I estimate that at 900,000 a day from three wells. That was before I saw the test yesterday, and if I had had that test I might have raised it slightly to a million gallons a day, but I think 900,000 is a conservative estimate.

Q When you were examining the well field yesterday, did you find any apparent evidence of depletion of their ground water supply in the Canoe Brook field? A No, sir. 20

Q Did you find from their records that the level had been reduced at all within recent years to any appreciable extent? A There were no records there, only hearsay evidence of the man in charge. That is not admissible. My judgment in looking over the field is that it shows no signs of depletion from the use they make of it now.

Q Did you examine the requirements of any other surrounding municipalities in this particular basin, which take water from this particular basin, other than the boroughs of Chat-ham, Madison and Florham Park? A Yes, I am familiar with others around there, too. 30

Q Does Morristown take its supply from the same— A We take water from that bed of gravel under the bed of old Lake Passaic, and we take out of the well field about a million gallons of water a day at Littleton. 40

Exhibit E. Testimony of Clyde Potts.

Q That is one million gallons for Morristown? A Yes, and the Normandy Water Company, which is a company supplying part of our district around Morristown takes about 200,000 a day, and the Convent of Saint Elizabeth, just along in the same terminal moraine, takes 60,000 a day, and Mrs. Twombly at her place—

10

Mr. Ellis: I would like to know where this information comes from, what Mr. Potts is reading from. Has someone told him this? Did he check it up?

The Commissioner: I think we are going too far.

20

Mr. Pollard: I am trying to lay the basis, the foundation, in effect to show the water, the quantity of water which is taken from this particular area, and these various sources to which Mr. Potts is now testifying will, I understand, come out of that. When we put our geologist on the stand we hope to show what our available supply is, and the idea is to show the requirements of these small municipalities and individual users which have to get their water from this particular source at the present time; and our theory is if those requirements are anywhere near the available supply, that a large place like East Orange will simply ruin all these small municipalities and small users. That is what I am now trying to do.

30

The Commissioner: We are concerned with the amount of water that can be developed in this territory. The requirements of various interests and municipalities and otherwise is a thing which can be testified to by the users. They have not taken any steps

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in regard to the application of the City of East Orange. Some have. Those who have not, it seems to me, are not before the Commission. The fact of their using water may be a pertinent fact to bring out. The fact that their water, plus somebody else's water, taken from the total draft, and so on, may be perfectly proper, but as to their requirements, I do not think that is proper. The City of Morristown has interposed no objection to the City of East Orange. They have known of it. Their draft can have no effect. The effect of that would have no place in this testimony. 10

Mr. Ellis: I think, too, that it should be kept in reasonable proximity to these proposed wells. 20

The Commissioner: You object to what the requirements of these various interests are?

Mr. Ellis: Yes, and furthermore, whether Mr. Potts is testifying from what someone told him, or what he knows himself.

The Commissioner: I am perfectly willing to hear as to how much is drawn in the immediate vicinity.

A (continued) Mrs. Twombly 170,000 a day. Chatham, Madison and Florham Park I gave you a while ago. 30

By Mr. Ellis.

Q You didn't give us in the figures that the Commonwealth took seven million gallons a day within very close proximity? A I didn't go into the matter of the Commonwealth. There is the barrier interposed between the Commonwealth wells and the Madison and Chatham wells. In 40

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this new application, do you propose to invade that barrier and go beyond it?

Q What is the barrier you are speaking of now? A Our geologist informs us that there is a rock ledge that protrudes itself upwards there and cuts off the flow of water from the upper part of the lake bed with the part in which the Commonwealth draws its water.

Q Are you a geologist, Mr. Potts? A No, sir, only to the extent that I am familiar with some of the underground conditions which I have learned in dealing with wells and water supplies.

Q How much activity have you had as a hydraulic engineer? A I make it my business.

Q You are a hydraulic engineer? A Yes, sir.

20 Q Don't you specialize in sanitary engineering? A I have built the Jersey City pipe lines from Boonton to Jersey City, built the Bayonne Pipe lines from Kearny into Bayonne, and I have—

Q Don't you specialize in sanitary engineering? A No, sir, I specialize in water works and sewage processes.

30 Q Is it your theory that the Slough Brook and Canoe Brook and Dickinson fields have any substantial relation with each other as far as underground supply is concerned? A Slough Brook and Dickinson field?

Q And Canoe Brook field? A They may have, but it is very remote, and it is very difficult—

Q Have you any opinion whether they have or not? A I don't think the Slough Brook field could be interfered with by the Dickinson field. It may be possible for Dickinson field to interfere

Exhibit E. Testimony of Clyde Potts.

somewhat with Slough Brook. That depends on what is underground.

Q Do you think that each of these basins has an unlimited water supply? A Each of which basins?

Q The Canoe Brook, Slough Brook and Dickinson fields. I think that they are all part of the same gravel bed which underlies old Lake Pas-
saic. They are more or less intimately con-
nected. In some cases, perhaps not so intimate.
There is probably a connection between that
gravel bed, with the exception of where this rock
barrier may interpose a divide. 10

Q Will you answer my question? Do you think that each of these basins has an unlimited supply of water? A No, I don't think anything of the kind. 20

Q Upon what are you basing your opinion you have given here today as to the maximum yield of these various basins? A I stated that my judgment was founded on a study of the available records and my own experience.

Q Eliminating any opinion or any records of Mr. Vermule or Mr. Hill, upon what do you predicate your opinion with respect to the maximum yield of these various basins? A On what my judgment is of what you could get out of the
ground. 30

Q What is your judgment based on? A Based on a multitude of small elements, various elements.

Q Tell us what they are? A Records on file here in the Department of Conservation and Development and—

Q Do those reports show a greater yield possible in Canoe Brook? A Yes, one of them says
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you can get five million gallons a day from Canoe Brook.

Q Whose report? A The report of the Geological Survey, 1904.

Q By whom? A It is the published record of the geological survey.

10

Mr. Ellis: I move the answer be stricken out. This is an opinion in 1903 by Mr. Vermule. I move that the answer be stricken out.

20

Mr. Pollard: I believe that by stipulation that every record of the geological survey, the records of this Department, and the City of East Orange, were admitted in evidence at the last hearing, this should be admitted. This is a record of the State Department, as I understand it. All their records were admitted by stipulation.

The Commissioner: This is an opinion of an engineer, and Mr. Potts has testified to his understanding of that engineer's opinion. I think merely stating it that way makes the testimony of little or no value.

(Exception noted for objectors.)

30

Q Are there any records of the City on file here which will substantiate your judgment there is a greater possible yield in Canoe Brook than that report by the City in its testimony? A It is made up of all the available data.

Q Tell us what they are? A The pump records contained in that 1904 report. Not the opinion of an engineer. The pump records contained in this report of 1904 gives the yield of these wells as they actually were at that time. That was of the available records, and it was

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one of the elements on which my judgment was founded.

Q You are now referring to a report made in 1904? A When the Canoe Brook wells were put in use.

Q In 1904? A 1904 or 5, whenever it was. 1905, I believe the records were made.

10

Q You know that the Commonwealth Water Company was only pumping about three million gallons a day from that field, whereas they are now pumping seven million a day? A The Commonwealth are not in the Canoe Brook field.

Q Do you want to be quoted as saying that the Commonwealth don't get their supply from the Canoe Brook field? A No, they probably do take from the Canoe Brook field to some extent. I think all these well supplies steal from each other. That is the basis of my objection to your going over to the Chatham field. If you got over there, you would interfere with this.

20

Q Don't you think there is a direct connection between the Commonwealth field and the Canoe Brook field? A The closer they are together, admitting the character of the gravel throughout is permeable material. The closer they are, the more they are interfered with.

Q Don't you think there is a direct connection between the Commonwealth field and Canoe Brook? A I would not say.

30

Q Have you any opinion? A There is a connection between all of them to the extent of the—

Q Have you an opinion as to whether there is any direct connection? A I think there is a probable connection between them, but how much I am not in a position to say.

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Q Do you know that although they were pumping three million gallons in 1904 they are now pumping seven million? A Maybe. I don't know. I didn't go into the Commonwealth yield.

10 Q Have you any other facts on which to base your opinion we can get two million gallons a day out of the Canoe Brook field? A Out of Canoe Brook?

Q Yes, three millions a day? A It is my opinion you could if you put in the proper machinery and proper devices to do it. You cannot with the antiquated equipment you have there now.

20 Q What makes you think there is a yield of three million gallons a day in that field, in that basin? A That is my judgment, studying the location of your wells and the cross section of the ground there.

Does the location of the wells indicate there are three million gallons per day available in the basin? A That is one of the elements you use in basing your judgment.

Q Does the location of the wells indicate it? A The location of the well never indicates it.

30 Q Is there anything else there about the wells to indicate there is a yield of three million gallons a day at the Canoe Brook field? A The location indicates the very best gravel sub-strata there, and when they were put in they indicated there was a flowing well there, and a great quantity of water flowing, and I cannot find anything in the records push published since that disproves that. There is nothing in your pump records since that time when disproves that.

Q You understood my question, did you? It is whether or not there is anything in the location of these wells, which indicates there is a

Exhibit E. Testimony of Clyde Potts.

yield of three million gallons a day in Canoe Brook field? A They indicate a very fine water bearing gravel under there; in my judgment, if they were properly handled you could get three million gallons a day from there.

Q There is nothing from the location which would substantiate that? A The location of a well doesn't tell you in figures what you can do. It is only one of the elements on which to base your judgment. 10

Q Are there any other things beside that on which you base your opinion? A That is my opinion.

Q Let us go to the Dickinson field. How long have you been familiar with that? A For quite a long while.

Q How long have you made a study of it? A I have not made an intensive study of it until recently, but I have been familiar with the situation there for many years. 20

Q These pumps in the Dickinson field are modern pumps, are they? A Yes, they are about the last word in water works construction.

Q What makes you think there is a supply of four million gallons a day in the Dickinson field? A From a study of all the elements entering into it, including Mr. Roper's testimony when he testified. 30

Q Did Mr. Roper's testimony substantiate your judgment that there was four million gallons a day in the Dickinson field? A It led me to form my judgment.

Q Tell us what there was in his testimony that led you to form that judgment? A The wells didn't interfere with each other, as I recall it.

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Q Is that the only base on which you based your judgment? A No, that was not all. There were other things.

Q Tell us what they were? A The yield which he got out of two wells was one of the elements that entered into it.

10 Q Can you tell us any more? A The location that he gave of the wells, the location of the test wells around there. That all entered into the forming of the judgment.

Q What was there about the location of these particular wells that led you to believe there was four million gallons a day available in the Dickinson field? A The character of the sub-soil encountered, the gravel bed that lies underneath there. All these entered into it.

20 Q Why did you fix it at four millions a day and not five? A Because you can't get much over four million with three pumps. If you put down more pumps and more wells, you might get more if you tried it. You may get more than four millions without interfering with each other, nobody knows; but your three pumps and three wells have a capacity of four million gallons a day. Mr. Roper's testimony, and the fact that they don't interfere with each other, would lead me to believe you possibly have a minimum
30 amount of four million gallons.

Q Are you sure Mr. Roper testified that one would not interfere with the other? A I gathered that.

Q Are you sure? A No, that was the impression I got from his testimony, that they didn't interfere with each other.

Q You think there is an unlimited supply in Dickinson field? A I would not say unlimited, because there is a limit to everything, but in

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these wells, obviously the way to find your limit is to try it and see.

Q Has it ever been tried? A I don't think it ever has.

Q No? On what do you base your opinion, then? A I have told you several times.

Q I haven't got the answer yet. 10

Mr. Pilch: The question has been answered a good many times.

Q Do you think the maximum yield is four millions? A I think the minimum is four million gallons.

Q What do you think the maximum is? A I don't know.

Q You can't tell us anything about the particular logs of these wells on which you base your opinion? A No. We didn't see the tests when the logs were made. We were handicapped very much in this because we could get practically no specific information from the East Orange records. There was very little to be had. 20

Q You got everything you asked for. Tell us what records you asked for that you didn't get? A I don't think you could say that we got everything we asked for.

Q Tell us what records you asked for that you didn't get? A We asked for some reports early in the proceeding; what they were I don't recall. 30

Q Mr. Hill's reports have been eliminated from this hearing. Tell us what you didn't get. A I asked Mr. Roper for the pump records, the performances of the different well fields, the amount of water that he took from each well field. He told me that they kept no separate record and that they didn't have it. 40

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Q He showed you everything he had? A And I asked him for the total pumping to East Orange. He said that they kept the records in the form of a Venturi meter. They were recorded but never plotted. They were filed away. He said that we could have them if we wanted
10 them, but we did not see the records.

Q You saw the meter yesterday? A I saw the one in operation yesterday. I saw that one.

Q Did Mr. Roper show you every record he had you asked him for, you or your representative? A He either showed them to us, or told us they were unavailable. Most of them he told us were not available. Some of them he told us were no good. Finally we got it in some cases.

Q Have you ever studied the records there to
20 find out whether there was any substantial connection between Canoe Brook field and Slough Brook field and Dickinson field? A I have a general idea of these things. I have studied all the records available in this old bed of Lake Passaic; and I think I answered that.

Q As a result of your studies, do you think there is a substantial connection between Canoe Brook field, Slough Brook field and Dickinson field? A As I said before, as I said a while ago, a heavy pump at Slough Brook may affect some
30 of your other wells.

Q To what extent? A I don't think you can form an opinion as to the exact amount.

Q You didn't hesitate to form an opinion on sinking those new wells? A No, because you are not taking a lot of water out of that basin.

Q Is there any record in the State Geological Survey, or elsewhere, that would lead you to believe that the Dickinson well field, as now located, is in the same field as Madison, Florham

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Park and Chatham wells are? A I think the bed of old Lake Passaic has an outlet there.

Q I am not talking about that. A I am talking about the connection of the gravel underneath there through which all these different municipalities get their water. I think in the gravel bed you have an outlet under your Dickinson field. 10

Q How about that gravel bed beneath Canoe Brook and Slough Brook field? A Canoe Brook is on a different water shed than this other one.

Q How about Slough Brook? A Your Slough Brook wells go down into sand stone. They don't draw from the gravel, except perhaps as any water in the gravel could leak down into the sand stone.

Q You think the present Dickinson wells are in the same geological basin as the Florham Park, Chatham and Madison and Morristown wells, do you? A What do you mean by geological basin? 20

Q That is a term you engineers use, geological basin, don't you? A I think in the gravel underneath there, there is a connection between all of it right down through, more or less remote in some places and wider in other places.

Q You say that in the last fifteen or eighteen years there has been somewhat of a failure in the yield of the Chatham, Madison and Florham Park wells? A No, sir, I didn't say that. I said there had been a depletion of ground water there. They are taking an increasing amount of water out of the ground for the last fifteen years. The yield has not been affected. 30

Q To what extent? A What do you mean?

Q To what extent has there been a depletion?

A About five feet, at least. 40

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Q You say about five feet? A About five feet below the over-flow, yes.

Q That was fifteen or eighteen years ago? A It over-flowed.

Q You say you are engineer for Chatham, Madison and Florham Park Water Supply Company? A I just put in and designed the water supply system for Florham Park. I have been engineer for Chatham for many years.

Q Has the operation of the Dickinson well during the last five years had any marked effect on the supply of these municipalities? A There has been a depletion of ground water there. How much is chargeable to Dickinson well field we are not in a position to say.

Q Only about five feet in eighteen years? A About that, I should judge.

Q What change has there been in the last five years, if you know? A I could not tell you by years what it has been going down.

Q So far as you know, the operation of the Dickinton field has not had any marked effect on the supply, has it? A I am not prepared to say one way or the other.

Q Aren't you familiar with the records to be able to say? A I haven't studied the records specifically to ascertain whether the Dickinson well field has depleted the ground water.

Q As engineer for these municipalities, if there had been a marked defect in the supply, you would have known of it? A If it had been enough to make them suffer.

Q If there had been any marked effect you would have known of it? A If it had been enough to have had my attention called to it.

Q You have never complained to East Orange about the operation of the Dickinson well field or any other well field? A I never have.

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Q So far as you know, the municipalities never have? A I don't know whether they have or not.

Q You say there has been a depletion in the yield of these various wells. You know also as an engineer that wells clog up after usage, don't you, to some extent? A I didn't say there had been a depletion in the yield. I have made it plain two or three times that I have not said any such thing. I have said that the ground water has been lowered; and it may be true that in wells with screens on the bottom that the screens clog up, but they would not affect the static head to any marked degree. That would only affect it during the time of pumping. 10

Q You think there is a four million gallons a day yield in the Dickinson field? A I said in my judgment it would yield four million gallons per day, if pumped, and the only real way to find out is to try it and see. 20

Q Do you think it would make any difference to your municipalities whether we took it from across the Passaic or if we took it from where the wells are located? A I could not say whether there is enough of a barrier there to affect it or not, but I should judge if you find a gap you would be putting your intake higher up in the stream than the underground reservoir. If you did that, the more you would deplete. 30

Q Where is the gap between the Dickinson wells and your wells? A I judge it comes through under the Dickinson field.

Q You don't think the Passaic River is any barrier, do you? A Whether the Passaic River is a barrier?

Q You don't think it is a barrier? A No, it is an underground supply. 40

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Q You don't think the Passaic River is any barrier to the underground supply of Dickinson field and the field of the municipalities you represent? A I don't think the river itself is a barrier.

10 Q You don't think it would make any difference if we took two million gallons from across the Passaic, immediately across the Passaic, or whether we took it where our wells are now located? A I do think it might make a difference, yes.

Q Tell us where that barrier is? A As I understand it when you located these three wells on the Dickinson field it disclosed a barrier passing through there.

Q Where? A Between your test wells.

Q In the Dickinson field? A Yes, sir.

20 Q Who testified to that? A As I recall the testimony, the three deep wells on Dickinson field from which you draw your water go down to a greater depth before they hit the rock than do the others.

Q Do you understand that these wells show a less yield as you approach the Passaic River? A I don't think you ever made any logs of these wells. You put nothing in the record about the yield of these wells.

30 Q Upon what do you base your opinion as to the barrier between Dickinson field and your field? You say there is a barrier. Where is the barrier? A I say there is a barrier comes up through the underground.

Q Where is it? A It separates the wells of the Commonwealth Water Company from the wells of Chatham and Madison. It is the other side of the old lake bed. There is a barrier exists somewhere in there. I am not in a position to

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tell you where the barrier is, but I believe if you pass that barrier and come up above for your water, that it has the same effect as extending your intake further up stream and interfering with upper riparian owners.

Q You knew one of the wells in the Dickinson field is located within a hundred feet of the Passaic River? A It is very close. 10

Q Do you think there is any barrier between the location of that well and the location of these proposed wells immediately across the Passaic? A No, no barrier, except that you go on up further into the underground waters from which these other municipalities draw their supply. You are just driving your intake further up stream.

Q You think there is a safe yield of four million gallons in the Dickinson field? A I think there is. 20

Q Do you think it will make any difference whether we sink these wells one hundred or two hundred feet from the present wells? Do you think that will make any difference? A That would be in the Passaic River.

Q What is that? A One hundred feet or two hundred feet would be in the same well field as you are now. I understand that you are asking for 43 acres right across the river. 30

Q Do you think there would be any specific difference between locating these wells on the south bank of the Passaic or the north bank of the Passaic? A I think there would.

Q Would that affect the supply? A I think you would get some water up there, or you would not go up there at all.

Q You say there are four million gallons in there? A I think you could get four million gallons there if you tried to. 40

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Q Do you think there would be any substantial difference between drawing that water from the south bank of the Passaic River or the north bank of the Passaic River? A There would be a difference if you should get four million gallons now, and you went across and took—

10 Q Suppose we took two millions from the north bank of the Passaic? A That would damage Madison and Chatham less than if you took four.

Q Do you think it would make any difference where we sunk these wells, on either bank of the Passaic? Do you think it would make any difference? A In a general way, the further you go up into the area which supplies Madison and Chatham with water the more you interfere with them. If you only take two millions you damage them less than if you took four millions. It is a matter of degree.

20

Q You are testifying as an expert. Do you think the location of the wells 200 feet further north would substantially affect the supply of Madison, Chatham and Florham Park? A And took four million gallons of water?

Q Took two million gallons? A Yes, it would probably affect them. On the other hand it might not.

30 Q As a matter of fact, you don't think it would affect them, do you? A It all depends—

Mr. Ellis: Oh, well, I should like Mr. Roper to be permitted to ask Mr. Potts a few questions.

By Mr. Roper.

Q Isn't it true in geological basins, such as Lake Passaic, that the formation of this basin

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during the geological period came about in such a way that the ice picking up rocks and other debris ground out channels in the underlying rock, as well as push ahead of it a lot of other things? A It may have done that in the ice fields.

Q Isn't that the result of the studies of all geologists? A They all speak of the ice field coming down carrying these big stones and boulders and they score underlying rocks to some extent. 10

Q Is it not also true that as the glacier started its—

Mr. Pollard: I object to this line of questioning. I don't think Mr. Potts has attempted to qualify as a geologist along the lines he is now being asked. We intend to put in testimony along this line. 20

The Commissioner: I think that Mr. Potts has qualified as an expert engineer, and that a certain amount of geological knowledge is necessary.

Q Isn't it true that the gravel deposits are found principally in—not necessarily principally—they are found in these grooves, as you may call them, or underground channels cut out in the rocks more or less in the line of the action of the glacier? A I don't know. I rather have the opinion that the old pre-glacial streams have been filled with debris, and it is my judgment that these channels were gouged out by the glacier in sliding down, and I think that is particularly true of the old bed of Lake Passaic. 30

Q Isn't it true that this gravel is deposited where these grooves were cut, where they were 40

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gouged out, where the glacier has cut them out, the gravel has been deposited in these particular runways of water?

10 The Commissioner: Isn't it true that there are some underground passages filled with water?

Mr. Roper: I want to show that the formation of the outlets from this old Lake Passaic were more or less of the nature of a series of streams coming into the channel, which our State Geologist will probably testify went out through a certain point. That it is perfectly possible to have wells in one ravine filled with debris and gravel, which does not affect the other.

20 Mr. Pollard: Mr. Potts is testifying, I think. Mr. Roper is not on the stand.

The Commissioner: To a certain extent you can bring out the geological facts. If we get into a discussion of geological theories we will be here over our ninety days.

30 Q Isn't it true that wells can be sunk in these various valleys, rock valleys, which go towards a common outlet, if these valleys are inclined, and at the same time wells in each do not affect the other valleys?

Mr. Pilch: I object to that, unless there is such a condition here.

The Commissioner: I am very much afraid that I don't get what the question means. I can't visualize what the question means.

40 Mr. Roper: Mr. Potts testified that these wells will affect those in other communities.

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I am asking him whether it is not perfectly possible that wells sunk in one of these ravines filled with gravel can draw water from those veins without affecting the water drawn from other veins in the same area.

Mr. Pilch: My objection is that it is not a proper question unless we have that condition here. 10

Mr. Pollard: We are going to put a geologist on later.

The Commissioner: I agree that a hypothetical question, based on a condition which does not exist here, must be ruled out.

Q Didn't I testify that these wells had been put down in the various parts of the Dickinson well field, and that they established the fact that there was a rock ravine fifty feet deep down? This rock was immediately below the surface? 20

The Commissioner: Or something to that effect.

Q Is it not perfectly possible to withdraw water from that rock ravine? Isn't it not a fact that water drawn from one well will not affect water drawn from another? 30

Mr. Burke: Mr. Roper apparently wants to testify. His geological data is unlimited. It is not proper cross examination of Mr. Potts. The cross examination should be confined to what he has testified.

Q Isn't it perfectly possible for wells to be driven in one ravine, as we call it, a glacial ravine, containing gravel, and water pumped 40

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from these wells without affecting the water in wells driven in another ravine adjacent to that, but separated by a rock formation? A Specifically, I suppose, relating to this rock ravine disclosed by your borings?

10 Q Yes? A It is problematical largely. But it depends on the amount you take. If you take a limited amount you will affect any other well field to a limited degree; but you might affect it very greatly if you undertake to take a greater amount of water than there was there, so that it would be flowing around from one ravine into another. Your borings through rock, which your testimony developed, was one of the things that led me to believe that if you passed that rock gorge and came up beyond it, you might do Madison and Chatham a great deal of injury because
20 you passed the barrier.

The Commissioner: You mean on the same side of the barrier as Madison and Chatham have their supply?

Witness: If he passes this barrier, which his test disclosed and goes in behind that barrier, then he directly taps our reservoir beyond the barrier.

30 Q Didn't your study of the testimony and the test of those wells and the Dickinson wells indicate that that barrier led northeast and southwest towards Parsipany and then over towards Chatham, Madison and Morristown? A You only had 2,000 feet covered in your distance between your wells. That is hardly distance enough to get a—

Q At the test on the Slough Brook well yesterday, what reading did you get to indicate to

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you there was a 450,000 gallon flow? A I don't think I have that reading now. As I recall you had—

Q How did you learn there was that flow? A You had a weir box there with a V notch, where as I remember, the flow over that weir at the close of the test was around six inches or a little better. 10

Q What does six inches represent in a V notch weir in a 24 hour day? A I think we figured it was around something like 420,000 gallons.

Q Is it not true it is about 350,000 gallons? A I don't recall. My recollection is there was about six and a quarter inches on the weir, which we figured would mean about 450,000 gallons. I haven't checked it since then. 20

Q If there is an error there I would like it to be in the record. Are you sure your figures are right? I have this record, and they indicate 350,000 rather than 450,000 gallons? A I don't think I made a note of it. Mr. Waterman, who was with me, made a note of the depth. 20

Q Six inches. If you recall that, and six inches in a V notch weir will give you 350,000 and not 450,000.

Mr. Pollard: I object to Mr. Roper testifying to what this is. He is not the witness. 30

The Commissioner: Any rebuttal can be put in regarding this test well.

By Mr. Ellis.

Q You say there has been a depletion in the ground water level in Madison and Chatham during the last fifteen to eighteen years. Is it not also true that you have been drawing an in- 40

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creasing amount of water from this source? A You mean Morristown?

Q You said there had been? A You said "you." Who do you mean by "you"?

10 Q You represent Madison and Chatham. You said there had been a depletion in the ground water level to the extent of about five feet during the last fifteen to eighteen years. Isn't it true you mean that Madison and Chatham have been drawing an increased amount during the last fifteen to eighteen years from this source? A There is no question about it, and their draft is largely responsible for the depletion.

20 Mr. Pollard: We have got the exact data on that test, and the gentleman who made it, if you would like to have that go in at this point?

The Commissioner: Which test, the test yesterday?

Mr. Pollard: The Slough Brook well.

The Commissioner: If you have any data relating to this we will be glad to hear it.

By Mr. Critchlow.

30 Q In testifying as to the lowering of the water in the Chatham area, you said the lowering was in a shallow well 35 feet deep? A Yes, sir.

Q What is the depth of the other wells at Chatham which they use? A This is Madison now, not Chatham.

Q I mean Madison. A Generally they run about a hundred feet deep, the wells in that section.

40 Q Is the shallow well connected directly with the deep well through the underground formation,

Exhibit E. Testimony of Clyde Potts.

or is there an impervious bed between them? A I could not say positively. There is a spring comes up in the big well. When they pump now, I judge there is a connection, because when they pump now on their small wells they draw the water down in that big well.

Q Where does the water level stand in the 100 foot well? A I could not tell you that. 10

Q Does it stand lower than it does in the shallow well? A When they are pumping there is no question about it.

Q I mean the static condition? A I imagine they stand the same.

Q You don't know? A I imagine they stand the same, because when they pump on their small well, they affect that big well during the pumping period six to eight inches. 20

Q You testified as to the yield of the Littleton wells that supply Morristown as being a million gallons a day. How many wells do you have up there? A We have two wells there.

Q Is that the yield of both of them? A No, we only pump on one, because our pipe line from Littleton now has got just about the capacity to carry a million gallons a day.

Q Are these wells in gravel or rock? A I think they are in the debris that fills the bed of the old pre-glacial stream. 30

Q Do they interfere with each other? A These two wells?

Q Yes. A I don't think to any marked extent.

Dr. Kummel: How far apart, do you remember?

Witness: I should say around 800 to 1,000 feet apart. 40

Exhibit E. Testimony of Clyde Potts.

Q You were talking about the yield of well No. 3 at the Slough Brook area being tested, there being some testimony as to the amount. Regardless of the correct amount from that well under test, and as an engineer, in designing pumps for permanent installation and continuous operation, do you cover a capacity which is equal to the yield of that well under test? A In my own business?

Q Yes. A In this specific case they made no test of this well before putting the pump in. They just put the pump in.

Q What is your practice for permanent installation and continuous operation? A You should not put in a pump greater than the yield of the well. You would suck it dry; you should put in one somewhat lower than the yield on the test. If you don't, you will have trouble with your machinery.

Q Was this test you witnessed sufficiently lengthy to test the safe yield of the well? A That is a matter of opinion. I think when you put a well down in rock, and are depending on water from fissures of the rock, probably you can say that the test gives you a little more reliable judgment than a gravel well, but it is a matter of judgment. I think that a 24 hour test of a well of that character is a pretty good indication of what you can get.

Q What are the conditions at the present time as regards the general ground water level? Is the condition normal, above normal, or below normal? A Generally speaking with the rainfall we have had these local rainfalls have replenished your water supply, your ground water is probably high, but it all depends on whether the rainfall got into your ground there. I think the

Exhibit E. Testimony of Robert E. Horton.

ground water in the old Lake Passaic bed is now probably above normal for this time of the year, although your rainfall in winter time helps your springs and wells. We didn't have many of these last winter. I know early this spring ours was way below normal, and we attributed that to lack of snow in the winter and lack of winter rains. 10

By Mr. Pollard.

Q You were asked with respect to this Madison well, where the depletion was to the extent of about five feet, you were asked whether in the ordinary course of events the well didn't clog up. Is there any screen on this well you are referring to? A No, an open bottom.

Q Would that be likely to clog up without a screen? A It would not be likely to. It would be very unlikely for it to do so. 20

By Mr. Ellis.

Q Doesn't every well, regardless of whether it has a screen or not, always to some extent clog up? A It all depends on the condition around it. If there is a formation around the opening into the well, it will clog up. 30

ROBERT E. HORTON, sworn.

By Mr. Pilch.

Q What is your profession, Mr. Horton? A Consulting hydraulic engineer.

Q How long have you been such an engineer? A I have been practicing engineering for some-

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Exhibit E. Testimony of Robert E. Horton.

thing over thirty years, and during the earlier years in Federal and State service largely. Since October 1, 1901, I have been practicing independently as a consulting hydraulic engineer.

Q Tell us some of the municipalities by whom you have been employed? A Metropolitan
10 water district, Boston, and a large number in New York State. Albany, I am consulting engineer of water supply for Albany at the present time, a new water supply at Herkimer. I am consulting engineer of Little Falls, N. Y., and I have been retained as consulting engineer on various problems having to do with water supply, Amsterdam, Watertown, Gouveneur, and many others in New York State. I am consulting
20 engineer for the City of Trenton, N. J., at the present time, on problems having to do with water supply; and I am also engaged on various matters in North New Jersey having to do with water supply problems.

Q Have you studied the situation in respect to the application of East Orange for additional supply? A I have.

Q Have you been over the ground of the water reserve? A Yes, I have been over both
30 the region, as I call it, East, and the region West of the Passaic River, the region to the East including the Canoe Brook, Slough Brook and Dickinson well fields, and the region to the west including the area covered by the terminal moraine of, or adjacent to which Chatham, Madison and Florham Park are located, and the region to the northeast from there extending to the Black Swamp and across to the Passaic River.

Q As a result of your investigations and your
40 experience, would the application of East Orange to take from two to four million gallons from

Exhibit E. Testimony of Robert E. Horton.

these fields, if granted, would that affect the supply of Madison, Chatham and Florham Park?

A As a result of my investigations I should say in my opinion it would seriously affect the available supply of Chatham, Madison and Florham Park. I would say that the available supply in that triangular region, the minimum dependable supply is probably from four to six millions a day. Of course, while I am giving these figures, that is an opinion based on the studies and the investigations I have made.

10

Q In your opinion, where does that water come from? A In giving that answer, I should have said that was the available supply, which would be available if it could all be obtained by pumping, but I would say that there is no certainty that it can be obtained, or even more than half of it could be obtained. It is not directly available by pumping. While that is the minimum available supply in one section, that does not mean that you get your most favorable condition every year, or over a long period of time. There are other things to take into consideration, leakage losses, and—

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Mr. Ellis: May I ask what Mr. Horton is speaking of?

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A This is what I call more or less the triangular area bounded south by the ridge of the terminal moraine and including Chatham and Madison and Florham Park. Not, however, going northwards to Morristown; that is excluded. And going across to the north to Florham Park and then east to the Passaic River, to keep west of the Passaic River. That is an area altogether comprising perhaps nine or ten square miles. Of that, the area which yields water is, in my

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Exhibit E. Testimony of Robert E. Horton.

opinion, about seven square miles from which the supply is really derived.

Dr. Kummel: Indicate on the map here what territory you investigated.

10 A I have marked on a copy of the map in pencil the approximate territory, or the approximate boundary of the triangular area which I have taken into consideration, west of the Passaic River and generally north of the moraine, and the reason for adopting the boundary to that area that I have adopted is that the wells which have been developed at Chatham, Madison and Florham Park and some others in the vicinity are, generally speaking, on ground that has an elevation of 180 feet above tide, which is about
20 the level of this same area. According to the geological reports, under original conditions most of these wells over-flowed, and in view of the fact that there is more or less loss of head by friction, it is my contention that the water which supplies these wells must have originated at an elevation somewhat greater than 180 feet, probably at an elevation of at least 200 feet. I therefore marked out the approximate boundary of the area which lies at an elevation of 200 feet or higher, with
30 the general geographic outline.

Q In your opinion, could the available supply for East Orange be increased in their present water shed? A Yes, in my opinion it can be substantially increased. The dependable supply obtained east of the Passaic River, and in the 2,300 acre water reserve, or that vicinity, which includes the Slough Brook and Canoe Brook and Dickinson fields. I believe the supply from that area could be materially increased above the

Exhibit E. Testimony of Robert E. Horton.

present pumping, which, I take it, is about four million gallons per day.

Q How, in your opinion, could it be increased?

A I have not gone into that question as thoroughly, perhaps, as Mr. Potts has done, but, for example, at the Canoe Brook field they now have driven small diameter wells over a very restricted area. I believe their yield could be increased by extending the area and putting down larger wells with centrifugal pumps. At the Slough Brook field they are replacing their old wells with new pumps which are of a modern type, and I saw one of these wells yesterday. They were making a test at that time, but, unfortunately, the operator did not have, apparently, any facilities by which we could get any indication as to the amount of water they were drawing out of the well. It simply indicated they were drawing from the well, and not the amount they were pumping.

Q Would it be possible for East Orange to get four million gallons from this new field they propose taking if restricted to that particular field? A Certainly not. The available water supply which could be derived from the area of forty acres, without encroaching on waters coming from the surrounding area would not be more than 500,000 or 600,000 gallons a day. If they got four millions, or two millions, or one million a day out of the forty acre tract.

Q Taking the 2,300 acres now owned by East Orange, in your opinion could not the supply be increased by sinking more additional wells? A Yes, I believe so. It is my opinion it could be increased by developing the area of 2,300 acres. I do not know the exact area, but the active wells positively do not cover an area of more than 100 to 150 acres. The undeveloped part is the more

Exhibit E. Testimony of Robert E. Horton.

desirable location, and as an underground water supply, scientifically developed, would yield a considerable amount of water. No such investigation has been made, and, therefore, I am unable to give any such opinion as to that.

10 Mr. Ellis: I move that be stricken from the record. He says he does not know.

Q Why do you say that? A Because I have
seen the well records and the information furnished by East Orange purporting to cover the test wells which they have put down, and I have examined the records of the wells in New Jersey generally, as published in the reports of the State Department, for forty years past, and unless there is somewhere some additional information as to test wells, which is not included either
20 in the information furnished by East Orange or published in the State geological reports, I think that any competent engineer would feel that further and additional ground water investigations were necessary before it was possible to determine the quantity of ground water supply that could be developed from the 2,300 acre tract.

The Commissioner: The original answer
30 will be stricken out.

Q Do you think that the depletion of the Madison and Chatham and Florham Park supply would be quite rapid, or would it be a slow process? A That would depend to a considerable extent upon the rainfall conditions. There is some evidence, which I have taken into consideration, that it is not possible to develop as a safe, dependable yield in this area west of the Passaic as much as four million gallons; but you could
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Exhibit E. Testimony of Robert E. Horton.

temporarily pull from that area at a much higher rate if you simply put the wells down; and that pumpage, plus the present pumpage of 1,500,000, over a period of a few years, in my opinion would seriously deplete and lower the available amount of underground water storage throughout this area generally. On the other hand, if that happened to be during a period of very wet years, then the rainfall and infiltration may be said to sustain the supply and there would be no material lowering for the first few years. Then when a period of dry years came along, there would be a rapid lowering or depletion of the ground water reservoir. 10

Q Would you consider that to be very serious? A I do. I consider that this is a restricted area, which has a ground water supply in fairly definite limits of boundary, and the rainfall condition alone determines the effect of that, with the known factor as to the loss by evaporation. There is a certain limit, beyond which you cannot go without permanently depleting the underground reservoir. If you do that, then it is a very slow process to recover that lost storage, and the time of recovery—the pumping would still have to go on, even though it may be somewhat restricted—the time of recovery would be so slow that, in my opinion, it would be a very serious handicap to the water supplies located in the region itself. 20 30

By Mr. Pollard.

Q Can you tell us where, in your opinion, this water supply originates? What is the source of this water supply? Where does that water bearing land have an outlet? A West of the Passaic, I take it, you mean? 40

Exhibit E. Testimony of Robert E. Horton.

10 Q Yes. A In my opinion, it is mainly rain which falls on the terminal moraine and the jutting glacial deposits north of it, and above the level of the Swamp and the Passaic River. Rain which falls on an area above an elevation of 200 feet. Underlying the glacial deposits, which are variable in character, of course, in gravel, more or less permeable. From well records, underlying this are, of course, the shale and sand stone, and it is, of course, natural to inquire whether some of this water may not come a considerable distance through the shale and sand stone. In my opinion, it does not come into this area from any remote region through the shale and sand stone. It is probable that there is leakage out of the sand and gravel into the sand stone, and that water or rainfall on the higher areas is the source of supply of much of the water.

20 Q In your opinion, would a well sunk down deep enough to be bringing a supply from sand stone, would that deplete or lessen the supply from a well only sunk in the gravel? A It very probably would.

Q In this locality? A I think, in general, it would. There may be exceptions.

30 Q Would you differentiate between the available supply and the dependable supply in a district of this sort? A Yes. I view the term available supply as the quantity which goes into the ground and is not brought back to the surface by evaporative processes. Therefore, it must pass out, ultimately reaching the sea, or else be pumped out. That is the available supply. How much is the dependable supply for water works purposes depends on what proportion of it is lost through underground channels and

Exhibit E. Testimony of Robert E. Horton.

other outlets, and consequently cannot be recovered by pumping.

Q On what do you base your conclusion of the available supply in this locality? A I base my conclusion that the available supply in this locality, exclusive of leakage losses, would be somewhere from four to six million gallons total, partly on the rainfall records published by the United States Weather Bureau, New Jersey section, for the surrounding territory, including, for example, Chatham, and part on my own knowledge of the losses which take place there from rainfall through evaporative processes, which must be deducted from rain which falls, in order to obtain the amount which could be recovered by pumping. And I also base that conclusion in part upon actual experience as to the amount of available supply, as determined by stream flow records, which include both surface run off and ground water flow. And in part on my knowledge and experience as to the amount of supply which can be recovered from underground water sources in glacial deposits and in sand stone of a character similar to the deposits existing in this particular locality.

Q In your opinion, would the draft of four millions a day from the location which the City of Orange wishes to acquire, would a draft of that amount deplete the dependable supply, which I understand is the supply below which it is not safe to go, because of the time that it will take to put it back, would that deplete the dependable supply in that locality? A In my opinion it would reduce it.

Exhibit E. Testimony of Robert E. Horton.

By Dr. Kummel.

Q Does the witness put the dependable supply at four to six million gallons, or the available supply? A I put the available supply at four to six million gallons, when I have no proof that the dependable supply is any more than 1,500,000
10 gallons. 1,500,000 gallons have been pumped, and this area is depleted, the ground water level, to some extent at the present time, and even in spite of the fact that the rainfall has been unusually heavy during the past few years.

Q The witness testified something as to his opinion as to the amount of additional water which might be drawn from the 2,300 acres? A I didn't give the amount, because I haven't given it sufficient study to feel that my opinion would be
20 of value as to the specific amount.

Q Your testimony was that in your judgment it could be very largely increased? A Yes, substantially increased.

Q A substantially increased yield from the 2,300 acres they have now? A Yes.

By Mr. Pollard.

Q You examined the records of all the test wells available sunk by the City of East Orange
30 in this 2,300 acres? A Yes.

Q In your opinion, considering the character of the underground condition, were these sufficient to thoroughly ascertain the available water supply on that 2,300 acre tract? A They were not, in my opinion.

By Mr. Burke.

Q You mentioned the test which you witnessed yesterday. Was this test which you at-

Exhibit E. Testimony of Robert E. Horton.

tended yesterday properly done, or could they have done something in addition to that to determine what the character of the supply was underground to that well? A The test was properly done for certain purposes. It was the manufacturers' test, as I understand it. It could have been carried out in such a way as to furnish more information of value to a study of this kind. It was practically a mechanical test, not a hydrological test. 10

The Commissioner: What was the purpose of the test?

A It was a mechanical test for equipment. No quantity of water shows, or how much the well was running. 20

Mr. Pilch: You say no quantity of water was shown?

A Yes, but approximate.

Mr. Pollard: I am in doubt whether the Commissioner would care to have Mr. Horton outline his views on the geological formation, whether you would care to take up the time for this purpose. He went into considerable detail with us on the question of the character of the soils, and the underground formation, which would take considerable time. I don't know whether the Commissioner would care to have this go in at this time. 30

The Commissioner: We are now at the point for adjournment for lunch, and I would be glad to have anything you can tell us 40

Exhibit E. Testimony of Robert E. Horton.

about this situation which has a bearing on it, and which is pertinent.

(At this point the hearing was adjourned until 2:15 P. M.)

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RESUMPTION :

By Mr. Pollard.

Q From your experience, would you say that these glacial gorges, scarred out by the glacier, are the only source of sand and gravel deposits, of water bearing land? A I would say they are not. No pre-glacial gorges nor fields scarred by a glacier, not one of them is necessarily a water bearing deposit. There is one condition where a valley may become filled with water bearing deposit in a way that is called the valley train deposit, which develops material washed from the glacier, the coarser material deposit first, and the waters following down the valley that is pre-glacial. The material becomes finally a deposit. With the advancing and retreating of the glacier, there may be water bearing deposit in one of such valleys and deposits that carry very little water in another part, but equally well there may be, in my experience commonly are, water deposits of sand and gravel, varying greatly in texture or fineness wherever the ground moraine, as it is called, left by the glacier is of considerable thickness. I can explain very briefly how such water bearing deposits may develop. The glacier melts, not melting at one point but over the entire surface, and the water which melts from the surface of the glacier must, of course, run off somewhere. The surface of the glacier

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Exhibit E. Testimony of Robert E. Horton.

is fissured, and a large part of the water, therefore, sinks into the body of the glacier and follows natural lines of exit, along fissures in the ice caused by the melting of the ice. The material borne on the surface of the glacier is carried down into these sub-glacial channels and to a certain extent carried along with the water. 10
The water may be under pressure, so that commonly the track of a glacial channel outlet is a line of sand and gravel. You will find that a filled stream generally very well marked on a formation, that is commonly described as an eskers, are rather rare, but there are some right here in this Lake Passaic region as I recall. But there is another phenomenon in connection with the melting of water on the surface of a glacier, and that is where this sub-glacial stream discharged all around a glacier, usually course material of the same character as that which forms valley train deposits or eskers is deposited in rows irregularly followed with eskers. Eskers are in general and the subsequent condition, wherever they exist, positively proves that a sub-glacial stream existed. This sub-glacial stream, naturally, carried material of the same character. Most of the eskers are destroyed by the advance and retreat of the ice, or by subsequent action of the water in the lake, so that 20
finally you have layer after layer in glacial beds of regularly deposited material, such as sand and gravel, or silt, and more or less permeable matter; so that you can get wells of large yield in one locality, and wells giving only a small yield at nearby points. The water bearing gravels are by no means confined to rock channels. 30

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Exhibit E. Testimony of Robert E. Horton.

By Mr. Ellis.

10 Q On what information are you basing the opinion you are giving here today? A Upon my own knowledge and experience of glacial phenomena, and possibly I should have given my answers a little more fully than I did. I was connected with the United States Geological Survey for a period of six years. In matters of geology, I am not a technical geologist, and—

Q I am asking a question. I didn't ask you—
A You have already asked a question. I am about to answer it very carefully, and I desire to be allowed to make that answer before you object to the answer.

20 Q I just wanted to know on what information you are basing the opinion you are giving here today, without your telling us your life history. A If you will desist from interrupting me, I will return to your original question. As I said when I was interrupted, I gained fully six years' experience in the United States Geological Survey and a knowledge of glacial phenomena and ground water conditions. On my knowledge also, gained in the matter of my education. Also the knowledge which I have gained in my professional practice and in connection with a large amount of studies, involving the underground water conditions in glacier and in rock formation. Also by knowledge gained from the published records of the New Jersey State Bureau of Conservation. Also information as to the rainfall from the published reports of the United States Weather Bureau. And as to the infiltration and percolation of ground water from my own experience covering a number of years. As to underground conditions from hundreds, or perhaps thousands of wells which have been put

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Exhibit E. Testimony of Robert E. Horton.

down, many of them under my direction, in various localities, and which form the basis of the interpretation of well data. As to the amount of rainfall which may be rendered available through infiltration in part from my knowledge in general, which is, in part, the common knowledge of hydraulic engineers, and in part from my own experience, numbering several hundred, from the amount of infiltration through soils of various localities in the United States, including studies which I have made regarding the rainfall and run-off conditions in Northern New Jersey over a long period. I was engaged in water supply investigation here in New Jersey among other places during a portion of the time, 1900 to 1906. This is simply some of the general items.

Q All these geological conditions vary from one district to another? A That is a pretty broad statement. You will find a certain condition which is fairly continuous over a certain region. Then somewhere else that same condition, for example, the amount of rainfall, would be doubled. Of course, over a certain part it may not vary to an appreciable extent.

Q Do I understand that the geological conditions are the same in all of these various areas you are talking about, where you have worked so many years? A No. Geological conditions in these various areas I have been familiar with cover a wide range; but more largely they were in glacial areas. I have done much more work in glacial areas, in glacial formations, than I have done in natural rocks.

Q How long have you been familiar with the geological conditions of the area from which East Orange gets its water and from where Chatham

Exhibit E. Testimony of Robert E. Horton.

and Madison get their water? A In general, for 25 or 30 years. The matter came to my attention a great many years ago.

10 Q To what extent have you studied it? A I know this, that when the volume on glacial geology of New Jersey appeared along about 1907, 1907-8, I read the whole thing through very carefully and abstracted it. That is simply one example, and I had read earlier reports and studied them. I was on the ground here, examining conditions. I spent some time here in 1903, in North New Jersey investigating water supply problems.

Q Were you ever at the East Orange water reserve before yesterday? A Yes.

20 Q When? A At the East Orange water reserve?

Q Yes. A I am not sure that I was on that specific tract, but I explored and examined the region around there way back in 1903.

Q The surface conditions? A That was not the East Orange water reserve at that time.

Q You examined the surface conditions? A Yes, and studied the geological conditions.

30 Q For what purpose were you doing that? A I was here in 1903 as District Engineer of the United States Geological Survey, charged with the duty of making a preliminary investigation, with a view to establishing, and we did establish, further studies on the water resources in New Jersey.

Q Did you get your information from what you did yourself, or from the records of the State of New Jersey? A I got them from the records of the State. I never made any borings myself, for instance.

Exhibit E. Testimony of Robert E. Horton.

Q Your only investigation of the geological conditions of this area are from the records of the State Geologist of the State of New Jersey, is it? A Those are the records I relied on at the time I was here, yes. Of course there are certain well records in this case, as offered by you, which I have also examined.

10

Q You have marked on the map there a certain geological basin from which you say that Morristown, Florham Park, Chatham and Madison get their water. Has that any boundary, any geological boundary? A I didn't describe it as a geological basin. That is a hydraulic basin, and bounded, as I marked it out, by the contour elevation about 200.

Q Would you call that a water basin, or a water shed? A Yes, that is a water shed in one sense of the word. It is not a topographical shed. It is a ground water shed.

20

Q Do you know anything about the geological boundary of that area? A What do you mean by geological boundary?

Q You have defined an area from which you said that there was a water supply of about six million gallons per day. Has that area any geological boundary? A It has a topographic boundary.

30

Q Has it any geological boundary? A It has, but its boundary as fixed by me is topographical. Within that area the formation, the surface formations are all glacial, whereas outside of that they largely are not. To that extent it has a definite geological boundary.

Q Are you familiar with that area to say what the geological boundaries are? A I am, and I have already done so.

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Exhibit E. Testimony of Robert E. Horton.

Q Where are they? A As located on the map.

Q What are they? A Approximately, if you take a contour of 200 feet. That is what I took, not merely because of the geological condition, but also because of the topographical condition, and the area which I took is the underground water shed supplying this area.

The surface conditions as a rule don't generally affect the geological condition, do they? A That depends in what respect you mean. The surface conditions have a very profound effect on underground water supply. If the surface is wholly impervious, then no water could get into the underlying water basin. If it is permeable, water can percolate into the soil. So in that respect the surface condition plays a very important part in determining the ground water.

Q Upon what do you base your opinion that there is an available yield of six million gallons in that area? A In the first place, that area as marked on the map within the 200 feet contour has an expanse of about seven square miles. The minimum rainfall in this locality is around 36 inches. Of that rainfall, something like 18 inches would be lost by evaporative processes, or it may percolate into the soil to be brought up again, and will not be available to supply ground water. And about nine inches, or approximately one half, under extremely dry conditions, would be lost as surface run-off, leaving say nine inches, or three-quarters second foot, per square mile, as available supply, 450,000 gallons, provided there was no leakage losses. If, under conditions where the evaporative losses were a little less than 18 inches, the net available supply was 12 inches instead of 9 inches, then you would have a second

Exhibit E. Testimony of Robert E. Horton.

foot per square mile, or 650,000 gallons per square mile per day. If these figures are complete, take your seven square miles, 650 times 7, the square miles, it gives you 4,500,000 gallons as the available supply from the seven square miles.

Q You are basing it on the rainfall? A On the rainfall, on the water losses, the net available supply. 10

Q You don't figure on water coming in there in other ways, from other sources? A No, not in this computation. For the first two years of ground water supply you can derive a certain amount of water in deposits at the time laid down, and it may be of large volume. And such water undoubtedly exists in these deposits when they were laid down thousands of years ago. That water can be pumped out, and additional water comes in for a period of a few years, but in doing so you are lowering your water level. Water that was originally in storage can only be replaced by reducing the amount of the pumpage. 20

Q You say that of this available deposit you could only pump about one million gallons per day? A At the present time the quantity of water which is being taken from this local area is something over 1,500,000 gallons a day, as testified to by Mr. Potts this morning. 30

Q Are you familiar with the Canoe Brook basin? A Only to a slight extent.

Q Tell us the area of it. What are its width and dimensions? A The underlying conditions I can give you, but these figures, they are shown on the map. I cannot give you them.

Q Can you tell us anything about the Slough Brook field or basin? A I would say that all I know as to those is hearsay information. 40

Exhibit E. Testimony of Robert E. Horton.

Q This is all based on hearsay information?

10 A No, it is not, I beg pardon, but as far as the dimensions of these fields, or details of the wells of East Orange in these fields is concerned, I have read Mr. Roper's testimony, and I have visited the wells, and while there I asked some questions as to the extent of the area and character of the soils but I haven't used that information here.

Q Can you define the Dickinson field or basin, the dimensions? A The topographical basis tributary to that I cannot. I would say that there is a very marked difference between that and the topographical basin which supplies the water, and I have not attempted to define either one of these areas.

20 Q How can you describe the other basin, the Madison and Chatham basin you have been talking about? A Because I have given that careful and detailed study. I could have done the same for the others, but I have not undertaken to do so.

30 Q How long would it take for a careful consideration and study? A A matter of intense study for a period of about a week at this particular time, but I was already very familiar with this region. I have been out there a great many times in regard to the question of water supply and yield, so that it was simply to put together information which I already possessed.

40 Q You don't possess the information so far as East Orange is concerned? A Yes, I possess the same data, and I could have gone ahead if I had about two weeks more time. I could have made the same kind of study for this East Orange basin. This basin is west of the Passaic River, but I didn't have the time, and have not done it.

Exhibit E. Testimony of Robert E. Horton.

Q How much can you tell us about the East Orange basin? A Not very much. I have not attempted to go into the question of the contributing area that supplies the East Orange basin.

Q You haven't any opinion to compare with Mr. Potts' estimate of four millions in the Dickinson field area, have you? A I have a general opinion as to that, but I would like it to be based on a detailed study before presenting it as a final opinion. It is only what you would call tentative. 10

Q Assuming there is an available supply of four million gallons in the Dickinson field, you don't think that it would seriously affect the water supply of these other communities if that water was taken 200 feet north of the present well, or whether it was taken opposite the present well? A Provided no additional water was taken over and above what is being taken now from where the four millions was taken out. 20

Q Assuming that there is an additional two million gallons of water in that area, you don't think it would have any material effect on the water supply of Chatham and Madison whether that two million gallons is taken 200 feet north of the present well, or whether it is taken 200 feet west of the present well, do you? A I don't think that taking two million gallons would have any effect, but I don't think there would be much difference in effect as between the two places you describe. On the other hand, there might be a marked difference, depending on the underground condition. 30

Q As far as you know, there is no unusual underground condition which would make any difference? A There is, apparently, an unusual 40

Exhibit E. Testimony of Robert E. Horton.

underground condition in there somewhere. Whether within this limit of 200 feet stated in your question, I do not know, and could not say.

Q You have testified that, in your judgment, the city has not made the necessary effort to locate water elsewhere on this preserve, before making this application? A That is my opinion.

Q How many test wells have East Orange made in that area? A I could not give you the number off hand. In that entire area, perhaps 40 or 50.

Q Don't you think that is a pretty good examination? A For some conditions it would be, but for the condition here, apparently it is not sufficient, because apparently there are areas outside of the three developed areas. There is something like probably 3,000 acres in which there is not a test well to the hundred acres.

Q Do you know where that additional water is on that reserve? A No, I don't think anybody knows, or how much it is, with any great degree of certainty, because of the lack of adequate tests.

Q You saw all these test wells? A No, I saw the location. I saw where they were located from the information furnished by Mr. Roper, but we did not look them over thoroughly.

Q Did you see them? A I have not seen all of them. There was nobody there from East Orange to point out the location of these wells, but I was over the ground and on the location of the wells marked on the State map.

Q How many of them have you seen? A I could not say how many I have seen. I didn't attempt to see these wells. They would show me nothing at the present time, the location of the wells and the frequency of distribution. The map

Exhibit E. Testimony of Robert E. Horton.

shows the frequency and distribution better than I could have observed it on the ground.

Q If 30 or 40 wells driven on the Eastern boundary of the water acreage indicated little or no water there, you would assume from that the City did not get its water supply from that area, would you? A I am not assuming that is true, but taking it as a hypothetical question, I don't think the conclusion necessarily follows that it could not be developed from that area. 10

Q A knowledge of the geological conditions in that area in itself almost, without any test wells, ought to indicate whether or not there is any water there? A It indicates to my mind whether there is water there or not. It indicates there is.

Q If the geological and topographical data didn't indicate there was water there, and thirty or forty test wells corroborated the fact that there was no water there, would you reasonably suppose there was water there? A Not if both your premises were true, but I am not assuming they are. 20

Q That is in the testimony? A It doesn't conform to my opinion, but assuming for the purpose of answering your question both your premises were true, then I think that that would be a reasonable conclusion, but I don't, in my opinion, know that these premises are true. 30

Q Why? A In the first place, the topographical conditions indicate very strongly that water falls on that basin, in which there is some condition which has not been revealed by the test wells put down, and supplies quite an abundance of ground water. Secondly, I find these wells were so distributed as to be mainly concentrated close to the well field already developed; and that in my opinion the underground condition 40

Exhibit E. Testimony of Robert E. Horton.

10 tests, as available, are not of the character to give sufficient information to determine the amount of water that can be developed. Furthermore, the putting down of these test wells give sufficient information, which shows whether there are, or are not, strata of sufficient pocity to be capable of yielding water. But to make a complete exploration of the region would require some kind of pumping tests to be made to develop the amount of water which can be yielded, and also the ground water level record should be kept. Without this information, it is impossible to determine with certainty what the available or total yield of this 2,300 acre tract is at the present time. It simply has not been explored in a sufficiently complete manner.

20 Q You know that a great many of these test wells were built three miles from any of our well fields? A I know that some of them were a very considerable distance.

Q On the northerly side of South Orange avenue? A Some of them were outside the 2,300 acres.

30 Q The topography would indicate that there is water bearing strata there? A Yes, to an extent, but I do not think that the surface deposits are as permeable as the region of the moraine. I would say that I base this mainly on the report of the New Jersey State Geologist, who reports that the most permeable deposits in the moraine region are those in the vicinity of Chatham and Madison through to the vicinity of Morristown.

Q You are sufficiently familiar with the conditions in these three bases we are talking about, Dickinson, Slough Brook and Canoe Brook, to pass an opinion upon the available yield of

Exhibit E. Testimony of Robert E. Horton.

water? A I prefer not to give a definite opinion until I have one. It would be a tentative opinion.

Q What makes you think that these wells in the Dickinson field would affect the supply of Chatham, Madison and Florham Park? A My testimony is that wells in the 40 acre tract would affect the supply of Chatham, Madison and Florham Park. 10

Q If they were located 300 to 400 feet north of the present well, do you think that? A I don't think it makes very much difference where they are located if additional water is drawn from that locality. Sooner or later, in my opinion, there will be a marked effect on the water supply of Chatham, Madison and Florham Park. In fact, it is not at all certain that the lowering of the ground water in this locality west of the Passaic is not in part at least due to the existing pumpage from the Dickinson field. There are some lines of evidence which indicates to me that may not be the case. 20

Q There is nothing in the records of the pumping for the last five years of the two million gallons from the Dickinson field which would lead you to believe that they affect Chatham, Madison and Florham Park? A There is nothing to indicate they are not affecting it. I would put it that way. As to the Madison well I could not say, because there is a well at present, which, to my mind, is an excellent indicator of the ground water conditions; but there is the situation there, and it is this, that there have been no continuous daily records of ground water levels in these territories available to me; so that it is impossible for me to tell the precise manner in which these changes have taken place. 30

Q It has been testified to by Mr. Potts during the last 15 or 18 years the ground water level 40

Exhibit E. Testimony of Robert E. Horton.

has depleted to the extent of about five feet in this area? A Yes.

10 Q And that has been accounted for also by Mr. Potts by the statement that these municipalities themselves are drawing a greatly increased supply from this area. Taking all these facts, do you think there is anything in that to warrant the belief that the abstraction of two million gallons in the Dickinson field by East Orange is seriously affecting their water supply? A Yes, it seems to me that almost positive proof of that would be expected if a draft of 1,500,000 gallons a day has lowered the ground water level. That draft exceeds the net dependable supply there in that area and it will certain to have an increased effect.

20 Q Have you in mind that we have only been pumping there for five years, and this depletion took place eighteen years ago? A I was not speaking about the effect of your pumping when answering the question. With regard to your pumping, that is a different question. I based my answer solely on the assumption that your pumping had no effect. I don't think there is any certainty that the assumption is correct. I think it is equally probable that your pumping may have been a contributing factor. I was not assuming it. I simply assumed that the wells
30 had gone down five feet as a result of the pumping of 1,500,000, not by East Orange, but by these other communities, and that if East Orange begins to pump out of the same area a greatly increased lowering of the ground water must be expected.

40 Q The testimony given by Mr. Potts was that this depletion has been gradual over eighteen years, and now only reaches to the extent of five feet. Do you think that bearing in mind that the

Exhibit E. Testimony of Robert E. Horton.

Dickinson wells have only been in operation five years indicates that the operation of those wells is seriously affecting their water?

Mr. Pollard: I object to that. Mr. Potts testified, as I recall it, that the depletion of the ground water level five feet had taken place within the last eighteen years. He didn't know whether it took place five years ago, ten years ago or eighteen years ago. 10

Mr. Ellis: I am willing to test my memory against the record of the stenographer.

The Commissioner: Is it not a question as to whether the lowering of this ground level five feet has been gradual or not.

Mr. Pollard: Mr. Potts said that it had been depleted during the last fifteen to eighteen years. 20

The Commissioner: Is that the whole question?

Mr. Pollard: Mr. Potts' testimony was that there was no accurate record kept of the well. He doesn't know when the depletion started. I am willing to accept the question if it states that there has been a gradual depletion of the ground level.

(Question repeated.) 30

A Not seriously. Neither does it indicate to the contrary. The rainfall of the last five years having been very heavy, and there being no proof that the depletion, while gradual, has been uniform. It may have been gradual but have not been uniform. I don't know whether it was uniform or not.

Q Do I understand it to be your opinion that we would find additional supplies by prospecting 40

Exhibit E. Testimony of Robert E. Horton.

10 further, or we might find additional supplies by prospecting further? A I think in many instances if you put down an additional test well you would find there are water bearing strata; and if you make a pumpage test on this well, and it has already been done, you would get some information as to how much water you could get out; and if a thorough hydrologic test of that basin was made you would arrive at a reasonable conclusion as between the available supply and the dependable supply, which has never been done.

20 Q Is that opinion based on facts that you have, or on conditions you think we may find? A It is based on information I have. It is work that should have been carried out, and has not been done.

Q Will you tell us what that information is? A The records of your wells, and the distribution, and the effect and the amount of the rainfall, the glacial character of this basin. All these facts lead me to believe that if such a study as I have indicated was carried out, it would afford much more definite information than is now at our disposal, as to both the quantity of the available supply and the dependable supply.

30 Q You have stated that your opinion with respect to this basin is tentative. You have no specific information with regard to it? A I have stated that I have not carried out this type of investigation which should have been carried out by East Orange years ago. I have not carried that out.

Q Perhaps we were in error? A I think so.

40 Q You haven't made any specific study of that area on which to base this opinion, and your

Exhibit E. Testimony of Peter A. Draney.

judgment is simply based on the general conditions which you think we might find there? A No, I made study enough of it to be confirmed in the opinion that a further study is needed before a final determination can be made as to the amount of water than can be developed out of that 2,300 acre tract, and there is every indication in my mind that you will find that more water can be developed than is now being developed. How much I cannot say. 10

Q Or where it is to be found? A No, it is there, but—

Q You don't know where? A No, neither do you.

Mr. Ellis: No, we would not be here today if we did. 20

PETER A. DRANEY, sworn.

By Mr. Pilch.

Q You had an estimate, did you, of the cost of replacing that plant?

Mr. Ellis: I object to that. The sewage disposal plant is not located in the 40 acres we are asking the right to have, and have nothing to do with this question. If it costs \$100.00, if we took it we would have to pay for it. It has nothing to do with this situation. Furthermore, it is not on the 40 acre tract we are after. Further, Mr. Draney is not an expert and cannot give any opinion of value on that. 30

The Commissioner: The whole question of value does not appear to me to be what 40

Exhibit E. Testimony of Peter A. Draney.

we want to get here. I am willing to have the question put so that it will indicate that some rearrangement is necessary.

Q You are manager of the club, are you?

A I am.

10 Q You have been there some little time? A
Going on five years.

Q Do you think if East Orange acquires this land the sewage plant will have to be changed?

A Unquestionably, yes.

Q Have you any estimate as to the cost?

Mr. Ellis: I object to that.

20 The Commissioner: I have no objection to his answering the question, whether he had an estimate, how much it is, and so forth.

A Yes.

Q You have had an estimate? A Yes.

Mr. Pilch: As to the amount, the ruling is that it is not pertinent?

30 The Commissioner: - It is not pertinent. We haven't brought out the fact that not only the present sewage disposal plant must be rearranged if this land is alienated from the club, but this sewage disposal plant will need enlargement from time to time.

Mr. Pilch: That is the fact, is it?

A Yes, it will have to be enlarged. As a matter of fact it is over-flowing profusely now.

*Exhibit E. Testimony of Henry B. Kummel.**By Mr. Ellis.*

Q You realize that we are not going to attempt any wells within 225 feet of the Brook Lake Road? A I am.

Q That 225 feet would still leave a distance of 50 to 75 feet from the rear end of the sewage tank to the line of the road in question, wouldn't it? A Approximately. 10

Q You have an area of a great many hundred feet on both sides of the sewage tank to enlarge it if you wish to? A Yes.

Mr. Pilch: That is our case, I believe.

HENRY B. KUMMEL, sworn. 20

The Commissioner: Will you tell us in your own way the facts which you as State Geologist have learned regarding the situation pertaining to the water supply of the City of East Orange?

A The map on the left is part of the topographic map of that district, scale 2,000 feet to the inch, from Springfield northward to beyond Hanover, and on the west to Madison, and on the South-west to a point some distance southwest of Summit. The area northwest of the second of the large trap ridges lies in what is commonly spoken of as the Lake Passaic basin, Lake Passaic being a lake which existed in that region during and for a period after the close of the glacial period. At Milburn, there is a very deep gap in First mountain, the elevation of the present surface in the vicinity 30

Exhibit E. Testimony of Henry B. Kummel.

of Milburn being 100 feet, and at the top of the trap ridge immediately to the northeast being 545 feet, indicating a cut in the rock ridge of over 450 feet, making no allowance for however deep the rock might lie in the gap, the earth only being exposed in the gap. Immediately in line with that to the northwest there is a similar gap, but not nearly so apparent on the surface in the crest of Second mountain. The second mountain; in this gap is a great mass of glacial material, a part of the terminal moraine. This is located at the town of Short Hills. A well drilled many years ago shows that right in the center of that gap, and not far from Milburn, the rock lies very close to sea level. The third trap ridge, which is known commonly as Long Hill, has an even course northeast towards Chatham, where it drops off abruptly at a point beginning just south of the Lackawanna Railroad, and it does not appear again at the surface until in between Livingston and Northfield, where it rises again in a very conspicuous ridge to the same height that it is southwest of Chatham. There is evidence, therefore, that between Chatham and West Livingston the thinner trap ridge known as Long Hill has been opened up in a much wider gap than the gaps through the two thicker trap ridges. These facts led us many years ago, on the geological survey, to believe that in preglacial times a large stream flowed in a general southeast direction, across the trap ridges, approximately at right angles, and during the thousands of years that it occupied that course it had cut these deep gaps in each of the ridges, the gap in the first mountain being practically unfilled, except for a slight relatively

Exhibit E. Testimony of Henry B. Kummel.

shallow deposit, and the bottom of the gap in the rock ridge of the second mountain being almost completely filled by the terminal moraine, and the gap in this ridge (pointing to Long Hill) being almost completely filled, but not completely so, because of the bluff here and the rise in the ground here, and in the report which was made many years ago on the history of Lake Passaic, there were published maps showing a pre-glacial drainage, a pre-glacial stream flowing in approximately that direction (southwest), receiving tributaries from the north and from the south and southwest. The exact location, of course, of this stream, as shown at that time, was largely tentative. We knew the stream flowed through these gaps. Whether it was located a half mile one way or the other at that time was not known. Since that time we have been able to get a great deal of information. Referring to the blue print, which is on a somewhat different scale, 1,000 feet to the inch instead of 2,000 feet to the inch, we have the gap in the First Mountain southwest of Millburn; we have the partially drift filled gap in the second mountain near Short Hills. We have the end of Long Hill south of Chatham, and it rises beyond the limits of the map to the northeast. The wells which I referred to as having been located thirty or more years ago at Short Hills are located at that point (pointing), where the record as given to me by Mr. Hartshorn shows that they went down to the sea level without striking bed rock. I should have said that the old well at the Short Hills water works reached sea level, and did strike rock at that depth. Borings made by the Commonwealth Water Company and by East Orange at the Canoe Brook field, the Commonwealth

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Exhibit E. Testimony of Henry B. Kummel.

Canoe Brook field, the Slough Brook field, and the Dickinson field, have brought to light some very important facts in regard to its exact location. The wells have been plotted on this map with the depths at which rock was struck being indicated at each well. Where rock was not
10 reached, the bottom of the well has been given, and the figure is followed by a minus sign indicating that the rock is below that depth. These lines, marked 40 and 80 on the map, indicate the rock topography as we have been able to make it out. At points along this line, for example, rock occurs at a depth of 40 feet above sea level, or approximately 120 or 130 feet below the present level of the ground. This line is also a 40-foot line, and following it around we
20 have evidence of a tributary following approximately the present course of Canoe Brook, extending up to several hundred feet northeast of South Orange avenue. At the extreme northeast is shown on the map a well showing that the rock was found at a depth of 35 feet above sea level. Southeast of that valley the slope of Second Mountain rises rapidly, and rock very shortly comes to the surface, so that it is our warrant for recording these contour lines in this direction. At points within that curved line rock
30 is found at less than forty feet above sea level, and at points to the southeast and the northwest rock rises to a higher elevation. The next line as drawn here is the 80-foot contour line. In all the present surface, the rock surface is established by contour. In other words, in the area between the two lines, rock is found at depths ranging from 40 feet to 80 feet above sea level. We have, therefore, a somewhat marked swelling in the rock surface extending to the southeast

Exhibit E. Testimony of Henry B. Kummel.

and immediately lying to the southwest of the center of this valley. On the northeast side of this rock valley we have a ridge, at which the rock rises to heights exceeding eighty feet above the sea level. In the Slough Brook wells rock was found at depths of a little below 80 feet, and a little above 80 feet. In the Dickinson field, some of the wells drilled showed the existence of a valley in which rock was found below 40 feet, with a somewhat abrupt rise to the northeast and to the southwest, at heights somewhat over 80 feet. Another line of wells drilled approximately in line with Long Hill on and close to Passaic avenue, showed trap rock, proving the northeast continuation of the Long Hill ridge at depths of 105 feet above sea level, and 77 feet above sea level, and then on the northeast side of the axis of the straight line connecting the Dickinson field with the Commonwealth field at 127 feet, 141 feet, 125 feet, 141 feet, 131 feet above sea level. These facts, I believe, are sufficient to establish within a reasonable degree of certainty that this trap ridge, which falls off so abruptly at Chatham is cut by a narrow, somewhat steep rock gorge about at the present line of the Passaic River at approximately that point (pointing), and then rises again to heights of 120 to 140 feet above sea level, gradually coming to the surface at that point (near West Livingston). It has not yet been established by a boring that right at that point the rock lies as deep as it does here and as deep as it does there. There is a possibility that this contour line should curve around in that direction, and this contour line should close here, showing an elevation of more than 60 feet. There is some evidence, however, from the behaviour of the Com-

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Exhibit E. Testimony of Henry B. Kummel.

monwealth wells and the Dickinson wells—although it does not prove the point—that there is a direct connection at as low a level across this hypothetical saddle as there is in the Commonwealth field or in the Dickinson field. The Madison well field is located at that point, and rock has been struck at a level of 135 feet, which compares very closely with the depth of rock at that point. The deepest well in the Chatham field goes down to only 98 feet above sea level and does not reach rock. It would help us very much in solving the questions which are now before us if we knew how deep the rock lay at Chatham, because if the rock here lies at a depth a little less than it does at Madison, we have some reason for believing that there is another valley, a rock valley similar to that (pointing to rock valley through Dickinson field), southeast from Madison, past Chatham, and just a little bit south of Chatham, or a little bit north of the Chatham Railroad station. To prove, apparently, the existence of this second valley, we would have to prove that a well drilled at that point, which is right in line with this trap gorge, was cut by a gap as deep or deeper than this Madison well, but we have not got the evidence, and we can only conjecture as to whether it is there or is not there. Assuming for the moment that it is not there, this low point in the rock (the Madison well) would presumably be part of a valley with a southwest and northeast direction, which joins this second valley somewhere in that neighborhood, north of the Dickinson well field. There is no other way in which in pre-glacial times the drainage from that point (Madison well) could have escaped to the sea, except across this

Exhibit E. Testimony of Henry B. Kummel.

way. That is, southeast, directly past the Chatham depot, or northeast past the Golf Club grounds, and then into the Channel underlying the Dickinson field, because, as we trace these trap ridges to the southwest down towards Bernardsville, there is no point low enough for the drainage to escape to the sea in that direction. The northwest extension of this rock valley from the Dickinson field, is to a certain extent hypothetical. The Rockaway River comes out of the high lands, and in pre-glacial times I believe that the Rockaway River came through this gap (the gaps in First and Second Mountains) rather than going to the northeast. The Whippany River comes out of the high lands in the vicinity of Morristown, and that stream probably joined the Rockaway in coming across here. Assume, for the moment, that trap borings in the Chatham well field and north of the Chatham Depot would prove the existence of a southeast valley from the Madison well field past the Chatham Depot. If that valley exists, that may be the main line of the pre-glacial Rockaway and Whippany, and this other rock valley may be merely a tributary, or this may have been the main stream and this may be the tributary. The important thing to notice, however, in connection with this application, is that the rock valley, the underlying rock surface immediately southwest of the Dickinson field rises abruptly for over 40 feet towards the Madison field. The same thing is true down here to the southwest of the Commonwealth field, rising from a point of 31 feet above sea level to 81 feet at that point and 105 feet at that point, a high ridge interposing between the valley from which the Commonwealth gets their supply from the sands and gravels

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Exhibit E. Testimony of Henry B. Kummel.

drawn upon by the wells in Madison and Chatham. There is the possibility, as I pointed out, that there may be a round about connection in a pre-glacial valley northeast from the Madison fields, which joins this valley somewhere to the northwest of the Dickinson field, or there may be
10 a rock ridge which cut off entirely this deep bend in the rock from this deep bed in the rock. These are the facts and the various inferences that may be drawn from these facts. I might make one further point in regard to the general geology of the region. The basin of Lake Passaic, from the various borings which are filed in our office, does not appear anywhere to have a bed of gravel immediately next to the rock. Many of the records show beds of hard pan, beds of
20 stony clay, and beds of clay without stones, practically all the way down from the surface. Other wells show beds of gravel close to the rock, overlaid by beds of clay 15, 20 or 30 feet in thickness, with beds of sand and gravel above. The detailed map of the glacial formation made years ago by myself and my associates on the survey show that a considerable portion of this area in part included in the East Orange property, and existing also beyond their property, is on the surface at least a stony, bouldery clay,
30 somewhat impervious. There are, however, other surface areas in which it is evident that the stone and gravel beds have a thickness of 10, 15 or probably even more feet. The well records and the general experience of glacial geologists, as testified to by Mr. Horton, show that a glacial deposit may vary very greatly, in that we may have stony clay either above, or underneath, or between beds of sand and gravel. We may also have layers of sand and gravel underneath or

Exhibit E. Testimony of Henry B. Kummel.

over or between beds of stony clay. So that where there is a surface area covered by stony clay, as is true of a considerable part of this region, drilling holes may reveal the existence of beds of sand and gravel which are not apparent at all on the surface. On the other hand, in such a region as this there is no assurance that such sand and gravel beds occur. Their presence or absence can only be determined by actual drilling.

By Mr. Ellis.

Q Do I understand from your testimony, between the Dickinson field and the Slough Brook field there is some kind of rock barrier directly between them? A Between the Slough Brook field and the Madison and Chatham wells, and between Slough Brook field and the Dickinson field, there is a rock ridge, in which the rock rises to heights of 125 feet to 141 feet above sea level, as compared with 31 feet or 33 feet in the Dickinson field and 80 feet and 72 feet in the Slough Brook field. In other words, the ridge separating the Dickinson field and the Slough Brook field on a direct line between them rises 70 feet higher than the rock in the Slough Brook field and 110 feet higher, roughly, than it does in the Dickinson field.

Q Between the Commonwealth field and the East Orange field, and the Madison and Chatham pumping station there is from your findings a rock barrier down through here? A We have that direct line between the East Orange Canoe Brook and the Commonwealth Canoe Brook. There is a rock ridge running between those two fields and the Madison field. Whether that rock ridge extends continuously to the North-

Exhibit E. Testimony of Henry B. Kummel.

east and forms a continuous barrier between the Madison field and the Dickinson field is yet unproven.

Q If the water from Canoe Brook field and Madison field reaches the Dickinson field, it must come around this? A It must go in a more or
10 less circuitous route, in a very circuitous route so far as our present information goes in getting to the north end of the Dickinson field. A direct line between Dickinson field, the center of the Dickinson field and the Madison field is indicated by the lower edge of the white paper (holding paper along map). Within 200 feet southwest of the center of the Dickinson field the rock has risen from a depth of 33 feet to over 80 feet.

Q It is natural or reasonable to suppose that
20 that gorge moved towards sea level, isn't it? It is not generally found that way? A I believe that that rock valley is the result primarily of stream erosion, cut by a stream flowing from the northwest to the southeast, and that would, of course, give an initial tilt of slope to that valley from the northwest to the southeast. This region, of course, was crossed by the ice, which in this region at least moved from North-
30 west to Southwest in a direction approximately at right angles to the line of the moraine from Chatham over to Morristown. The ice was moving at right angles across this valley, and under those conditions I should not expect that the ice had any material share in gouging out that valley. Therefore, I ascribe that primarily to pre-glacial stream erosion.

Q Have you had any reports or any complaints of any kind of the operation of the Dickinson field affecting the Chatham or Madison

Exhibit E. Testimony of Henry B. Kummel.

pumping? A No reports have been filed in our office.

Q Have you discovered any evidence of water bearing strata in the vicinity of South Orange avenue, at points north of that? A I have no evidence as to the occurrence of strata except what I have got from the logs of the East Orange wells that have been filed. I do not recall what the details of these logs show at the present time. I do know that the surface indications of this region are that for some distance below the surface the glacial material is of a tough, relatively impervious stone clay, technically called till, which, while it absorbs some water, does not yield water into wells as readily as does coarse sand and gravel. 10

Q You have the general information as to the location of the test wells put in by the City of East Orange in that area, haven't you? A They have been filed in our office. Some of them are located on this map, and I believe that some of the wells are located on another map that I have. 20

Q Do you think that the City has made a reasonable examination for water in that area? A I would rather not express an opinion in that matter. It is a matter of inference, which I am not called upon to testify to. 30

By Mr. Horton.

Q There are some localities in that general region including both the area east and the area west of the Passaic River where borings reveal porous sand and gravel immediately overlying the sand stone. The wells in sand stone yield more water, generally speaking? A Yes. 40

Exhibit E. Testimony of Roswell M. Roper.

Q Some of these wells give large yields up further north in the vicinity of Paterson, I believe, for instance? A They do.

Q The general direction of the sand stone is what? A Towards the north west, at an angle of 9 to 10 degrees.

10 Q Where that sand stone is more or less fissured and permeable, it is entirely possible for pressure transmission to take place from one area to another to another layer of sand and gravel, both being in direct contact with the sand stone? A As a general proposition I would assent to that, yes.

ROSWELL ROPER, recalled.

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By Mr. Ellis.

Q This morning there was some question about the yield of the test well, the well now being tested at Slough Brook? A Yes.

Q Can you tell us what the first 24 hours revealed in connection with that?

Mr. Pollard: I object to that unless Mr. Roper either personally examined it, or was present at the test.

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Mr. Ellis: Mr. Roper is entirely in charge of the Water Department, and naturally would know.

The Commissioner: His testimony is perfectly pertinent. It will be admitted. It is alright for a superior to tell what a man may have found and reported to him.

A Yes, the figures are substantially what Mr. Potts gave this morning. In other words six

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Exhibit E. Testimony of Roswell M. Roper.

inches, between six and six and a quarter inches of water over a standard V notch weir. The quantity represented by that elevation passing over the weir, however, if you will figure it out by standard formula, you will find six inches over a standard V notch weir will give you about 297,000 or 298,000 gallons a day. Six and a quarter inches will give you around 327,000 gallons a day, and not 450,000 to which he referred. 10

Q There was also a question this morning as to the effect of the pumps 1, 2 and 3 in the Dickinson field. Does the operation of pumps 1 and 2 affect the supply or yield of pump No. 3? A Very materially.

Q And vice versa? A Very materially.

Q Are all of the wells affected by the operation of each other? A They are. 20

Q In the Dickinson field there, assuming one pump is in operation, what is the average daily yield? A One and 2 pumps, pumps No. 1 and 2 will either one give from 1,300,000 to 1,400,000 alone.

Q What will the operation of the two pumps yield? A About 1,900,000.

Q Will the operation of the three pumps yield more than that? A It will add about 300,000 to 400,000 more. 30

By Mr. Pollard.

Q What do you base your estimates on, your memory? A What estimates?

Q The estimates in the first place of the amount of water over that weir? A No, actual readings, and Mr. Potts also testified to that.

Q You haven't got with you the reports? A No, because I took the man off the job 40

Exhibit E. Testimony of Roswell M. Roper.

yesterday afternoon. Mr. Potts testified he was there the same time substantially, and I am simply correcting the figure which Mr. Potts gave. He said that six inches coming over the weir was equivalent to 450,000 when it should be about 300,000.

10 Q You are simply testifying what this man told you. He has not made his report yet? A He reports to me every day, and I am there on an average of three or four times a week. I was out there last night and Mr. Potts was there in the afternoon.

Q Was this the verbal report last night? A A verbal report, but there is no misunderstanding about it, though.

Q And your estimate of the yields of these wells, that is based on your recollection also? A That is based on the actual figures in the test. I have been there and seen them myself, but I have not the figures here put down.

By Mr. Ellis.

Q You saw the water running over the weir yourself when you were there? A Yes.

Q How much was running over? A Between six and six and a quarter inches.

30 *By Mr. Pollard.*

Q When were you there? A I was there about seven o'clock. I think Mr. Potts was there in the afternoon around four or five o'clock.

Q When was this test discontinued, do you know? A About nine o'clock. No, it was earlier than that. About eight o'clock, I think it was.

Q Didn't you know that the test was discontinued while Mr. Potts was there? They

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Exhibit E. Testimony of Roswell M. Roper.

pulled the machinery away. What did they do, start it up again afterwards? A No.

Q Was the weir box still there when you were there? A At the well?

Q Yes. A No.

Q How did you observe this test if it was gone? A I didn't say I went to the well and saw the test. 10

Q You didn't? A No, I told you that at the end I had gotten a verbal report from the man.

Q You have just testified that this test was not completed when you got there at nine o'clock, or whenever it was. A Pardon me, I said I went up there around seven o'clock.

Q And the test was completed at nine o'clock? A As I said, I thought somewhere between 7 and 8 o'clock. I was not sure. I did not see the test. I received a verbal report from the man on the test and that checked up with what Mr. Potts testified to. 20

Mr. Pollard: Mr. Potts testified as to the amount of water over the weir, and Mr. Roper testifies to the same amount. Mr. Potts applies a hydraulic formula to that and give us an amount around 450,000, and Mr. Roper now says that it should not be more than 325,000 gallons. 30

The Commissioner: There was about six and a quarter inches going over the weir. It was between six and six and a quarter inches?

Witness: Yes.

The Commissioner: You know that because of your man's report to you?

Witness: Absolutely. 40

Exhibit E. Testimony of Roswell M. Roper.

Mr. Ellis: There is no dispute about the amount going over.

The Commissioner: I thought I understood you to say that you read the weir?

Witness: No.

10 Mr. Pollard: Did Mr. Roper actually say he was or was not there?

Witness: No, I did not say it. I told you distinctly a verbal report was made to me by the man.

20 The Commissioner: What you told him, I would rather not have in there. There is no dispute about how much water was going over the weir. The only point is was it six inches or six and a quarter inches, and whether that means 300,000 or 450,000 gallons. Mr. Potts says 450,000 and Mr. Roper says 300,000. We can settle it here if you want to. If we don't we will settle it in our own way, because we have hydraulic engineers who know what it means.

Mr. Potts: I could perhaps clear this up a little bit by stating what happened there. I don't think that on cross examination I was given the opportunity to state exactly what occurred.

30 Mr. Horton: Did the hook gauge used in the weir at well No. 3 yesterday read in feet and decimals or inches and decimals?

Witness: Feet and decimals.

Exhibit E. Testimony of Paul C. Carey.

PAUL C. CAREY, sworn.

By Mr. Ellis.

Q What is your business? A Consulting engineer.

Q With whom are you associated? A Runyon and Carey, Newark. 10

Q What is your connection at the present time with the Water Department? A I have been employed by the Water Department in connection with the development of their reserve up there.

Q Prior to that time what was your connection with the Department? A I was one of the Commissioners for five years. I held the position of President during that time.

Q During that time did you make a study of the records of the Water Department and the geological condition of the water reserve? A I did. 20

Q From your information and knowledge of the Dickinson with Chatham and Madison and Florham Park pumping station to any substantial degree? A I think it lies much in that same rock valley.

Q As what? A That both fields, Dickinson field and the Chatham and Madison field draw their water from substantially the same ground supply. 30

Q Is there a barrier between the Dickinson field and the Chatham and Madison field?

Mr. Pollard: I don't want to object, but Mr. Carey said that he was a consulting engineer. I always understood that Runyon and Carey were electrical engineers.

Exhibit E. Testimony of Paul C. Carey.

Q How much experience have you had with the development of water supplies or water departments? A I don't know that I can qualify as being a water engineering expert. We have been consulting engineers for a number of municipalities including Pompton Lakes, Wana-

10 que, the Essex County Water Supply at Overbrook, and the water supply for Manasquan. There have also been several other small supplies that I can't recollect offhand.

By the Commissioner.

Q In that work you have done for these various municipalities, have you handled the geological portion of the job? A Yes.

Q Has the geological portion of the job been

20 prominent in any particular case? A Over for the Essex County Hospital.

Q That is an underground source of supply? A Yes.

Q The geological considerations were important? A Quite so. However, I don't consider myself a geological expert. I am perfectly frank to admit it.

By Mr. Ellis.

30 Q From your knowledge of the records of the well fields on the East Orange preserve, does the operation of the Canoe Brook field affect the operation of the Slough Brook field? A Not in any way.

Q Does the operation of the Slough Brook field in any way affect the supply in Dickinson field or the Canoe Brook field? A Not at all.

Q Can you tell us anything with respect to the operation of the wells in Dickinson field? In

Exhibit E. Testimony of Paul C. Carey.

other words, does the operation of well No. 1 affect the supply at well No. 2 and No. 3 if working at the same time? A Yes, very materially. Mr. Roper testified to the amount of water which could be drawn from this well pump No. 1, 2 or 3, which indicates that if one well is pumping alone, it has a much greater capacity than if two wells are pumping, when the capacity of both wells falls off; and when three are pumping, the capacity of all three falls off. 10

Q Is that also true of the Canoe Brook and Slough Brook field? In other words, does the operation of some pumps affect the supply in others? A You mean does the operation of Canoe Brook affect Dickinson?

Q No, I mean this: Suppose five pumps were in operation in the Canoe Brook field, and five other pumps were started up, would the operation of the five last pumps affect the supply of the first five pumps? A We haven't got pumping equipment at the Canoe Brook field. We have wells that are drawn on by a single pump. We can draw on one or more wells with that pump. We haven't got a comparable condition at Canoe Brook that we have at Dickinson. 20

Mr. Pollard: That figure should be 300,000. Exclusive of leakage apparently it accurately comes out at 300,000 gallons. 30

Exhibit E. Testimony of C. E. Potts (recalled).

CLYDE E. POTTS, recalled.

By Mr. Pollard.

10 Q Can you tell me whether there was any considerable leakage from that weir box when you were observing the test, which was not used in your measurements? A At the Slough Brook wells?

20 Q Yes, the test you witnessed yesterday? A They had a weir box there made out of boards and caulked with oakum. It was about four feet high and about six feet long, and the water entered one end of the box from the pumps and went through a series of baffles, flowing past a hook gauge about midway, and then over a V notch at the other end of the weir. We were there at the finishing up of the test. We were there when the man, the attendant in charge made the last reading about a quarter of four. They came with an automobile to take this weir box away. He had made a reading at 3:30 and just before they took the box away, which was about ten minutes of four, he made another reading, and we got the reading that he made. I didn't set that down, but I called them off to Mr. Waterman, and he set them down, and after we got in the car and went away he obtained the flow.

30 It was, as I said, approximately six to six and a quarter inches. I did not figure it. I gave him the reading. There were some leaks through the weir, and I didn't make any calculation of the amount that was escaping. There were considerable leaks in the weir box, and was not an accurate measurement of the amount of water which the well was pumping.

Q As a matter of State record, are there any records of actual tests on the East Orange wells

Exhibit E. Testimony of C. E. Potts (recalled).

which may have assessed you in forming your opinion of their present capacity?

Mr. Ellis: If this is rebuttal, I—

The Commissioner: This was put in because of the misunderstanding this morning.

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A On page 55 of the Report, the annual report of the State Geologist for the year 1904, there is a pretty thorough report of the construction and the nature of the Canoe Brook well field, the East Orange Water Works, and this report also contains the logs of the various wells on that field, and in my work and in reaching my conclusions, I used the logs as indicated in this report; and also in reaching my judgment in the matter of this yield I used the cross section shown on page 257, which gives the nature of the soil as disclosed by these wells when they were put down, and on page 256 there is a map of the Canoe Brook field, which shows the location of these wells, and also on page 259 the last paragraph of that page tells what the natural flow of these wells were when they were drilled and put in operation, and these are facts which would influence the mind of an engineer in reaching his conclusions as to the various conditions in the field.

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The Commissioner: All these are admissible.

Mr. Ellis: If the purpose is to show the available supply there today, I must object to that report going into evidence, on the ground of its remoteness, because conditions have changed very much since that time. There is the difference in the amount taken

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Exhibit E. Testimony of C. E. Potts (recalled).

by the Commonwealth company, which Dr. Kummel referred to, and I think that a report made 24 years ago deals with conditions which are entirely different from those before us now.

10 The Commissioner: I think it is proper testimony if it is used right. I think it is admissible as to the borings. It may be left to the Commission to bear the date of the report in mind.

By Mr. Pollard.

Q You said that you had some additional statement you wanted to make or correct when the Commissioner suggested that you take the stand? A No, it was only that I wanted to
20 make plain to the Commission that I did not make the deduction. I gave the elevation of the bottom of the weir and reading of the top of the weir to Mr. Waterman, and he figured the exact elevation. He has just come in and if you want I can tell you what I said when the attendant made the readings and I can—

Mr. Pollard: No. We agree, and I don't think it is necessary.

30 Mr. Burke: I would like the record to show that the three boroughs in the opposition take exception to all the rulings on the testimony by the Commissioner, on rulings rather extended to where testimony is excluded.

(Exceptions noted for the opposition.)

NOTE: At the conclusion of this hearing certain errors in the record of the hearing held July 10, 1928, were corrected by agreement between Counsel.
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Exhibit E. Abstract of Minutes of Board, August 8, 1928.

EXHIBIT E.

Abstract of Minutes of the

REGULAR MEETING

BOARD OF CONSERVATION AND
DEVELOPMENT

August 8, 1928.

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The regular monthly meeting of the Board was held in its office at 11:45 a. m. Present: Messrs. Drake, Florance, Moeller and Winston, the Director, the Forester, and the Engineer. In the absence of the President, Col. Moeller was elected chairman.

* * * * *

Mr. Drake, for the Water Committee, outlined at some length the character of the testimony taken at the hearings on the applications of the City of East Orange and A. W. Preen, and recommended that the application of East Orange be granted for 2,000,000 gallons, and that of A. W. Preen for 300,000 gallons. After a somewhat lengthy discussion of the facts in each case, the Board, on recommendation of the Water Committee and on motion by Mr. Winston, adopted the following resolutions.

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Application of East Orange.

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Whereas, The Board of Water Commissioners of the City of East Orange, Essex County, New Jersey, filed an application on May 26, 1928, for approval of its plans for diverting a maximum of four million (4,000,000) gallons of water daily from wells to be located on lands in the Borough of Florham Park, Morris County, said lands being about 40 acres in extent, owned by the

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Braidburn Realty Corporation, and located directly across the Passaic River from the Dickinson well field of said City, for the purpose of supplying water to the City of East Orange and its inhabitants; also a petition requesting permission for the City of East Orange to exercise the right of eminent domain for the acquisition of said lands and water rights; and

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Whereas, After due notice and hearing, the Water Committee has recommended that the application be approved, limiting the amount of diversion to an average of two million (2,000,000) gallons daily during any month, and granting the City of East Orange permission to exercise the right of eminent domain for the acquisition of said lands and water rights; therefore be it

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Resolved, That the Board finds that the plans proposed by the City of East Orange for the diversion of water from wells to be located on said lands in Florham Park, Morris County, are justified by public necessity and reasonably anticipated public use to the amount of two million (2,000,000) gallons daily, that they will not unduly interfere with the opportunity of other municipalities to obtain for themselves a water supply, and that they will not unduly injure public or private interests; and the Board does therefore approve said plans to the amount of

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two million (2,000,000) gallons daily, subject to the conditions as set forth in the written and signed decision of the Board; and be it further
Resolved, That the Board approve the application of the City of East Orange for permission to exercise the right of eminent domain for the acquisition of said lands and water rights.

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Exhibit E. 1. Abstract of Minutes of Board, Sept. 19, 1928.

EXHIBIT E. 1.

Abstract of Minutes of the

REGULAR MEETING

BOARD OF CONSERVATION AND
DEVELOPMENT

September 19, 1928.

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The regular monthly meeting of the Board of Conservation and Development was held in its office at 11:00 a. m. Present: Messrs, Drake, Florance, Kuser, Moeller, Robb and Winston, the Director, the Forester, and the Engineers. In the absence of the President, Mr. Florance was elected Chairman.

* * * * *

On motion by Mr. Robb, the following resolutions were adopted.

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Resolved, That the Board does hereby ratify and confirm as its own each and every action taken by a minority of the Board at the meeting of August 8 as set forth in the minutes of said meeting, which minutes are hereby approved.

* * * * *

This is to certify that the foregoing is a compared and true copy of the minutes of the regular meeting of the Board of Conservation and Development of September 19, 1928, relating to the Board's action on the application of the City of East Orange for an additional water supply, etc.

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HENRY B. KUMMEL,
Secretary.

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*Exhibit F. Approval of the Board.***EXHIBIT F.**

STATE OF NEW JERSEY
 DEPARTMENT OF CONSERVATION AND
 DEVELOPMENT

10 APPROVAL OF APPLICATION OF
 CITY OF EAST ORANGE

for an additional water supply from wells in
 Florham Park Borough, Morris County,
 New Jersey.

Approved August 8, 1928.

20 In compliance with the provisions of Chapter
 252, P. L. 1907 and Chapter 304, P. L. 1910, the
 Board of Water Commissioners of the City of
 East Orange, Essex County, filed with the Board
 of Conservation and Development on May 26,
 1928, an application for approval of plans for
 diverting a maximum of four million (4,000,000)
 gallons daily for the purpose of obtaining an
 additional source of water supply from wells in
 glacial deposits, the point of the proposed diver-
 sion being located on lands in the Borough of
 Florham Park, Morris County, said lands being
 30 about 40 acres in extent, owned by the Braidburn
 Realty Corporation and located about 600 feet
 north of the Dickinson Well No. 1 belonging to
 the City of East Orange, and directly across the
 Passaic River from the said well, as shown on
 map accompanying said application, for the pur-
 pose of supplying water to the City of East
 Orange; also a petition requesting permission for
 the City of East Orange to exercise the right
 of eminent domain for the acquisition of said
 lands and water rights.

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Exhibit F. Approval of the Board.

The following supplementary papers were filed with the application and made a part thereof:

1. General data regarding water supply system.

2. Map showing the information required by the Board of Conservation and Development.

3. Map showing lands in Florham Park, Morris County (area 42.977 acres), owned by the Braidburn Realty Corporation, which it is proposed to condemn. 10

The Board of Conservation and Development directed that a public hearing on said application be held at its office in the City of Trenton on June 13, 1928. Notice of this hearing was advertised in accordance with the orders of the Board, and proofs of this advertising were filed with the Board of Conservation and Development. 20

In accordance with the notice as above set forth, the Board of Conservation and Development held a public hearing on said application in Trenton on June 13, 1928, and also on July 10, 26, and August 2, 1928, at which all municipalities, corporations and persons affected by the proposed plans who desired to be heard were heard.

The Board of Conservation and Development having heard the testimony and argument presented at the hearings does hereby decide that the plans proposed by the City of East Orange, through its Board of Water Commissioners, for the diversion of an additional water supply from wells in glacial drift, as set forth in the application and the testimony presented at said hearing, are justified by public necessity or reasonably anticipated public use to the amount of two 30

Exhibit F. Approval of the Board.

million (2,000,000) gallons daily, and that they will not interfere unduly with the opportunity of other municipalities to obtain a water supply by the taking of water necessary for their use and that they will not unduly injure public or private interests.

10 The Board of Conservation and Development does, therefore, approve the application of the Board of Water Commissioners of the City of East Orange and hereby consents to the diversion of water from wells in glacial drift as proposed therein, and does, also, approve the application of the City of East Orange for permission to exercise the right of eminent domain for the acquisition of said lands and water rights, subject, however, to the following limitations, terms
20 and conditions:

1. The applicant shall pay to the State such annual charge for the diversion of water as is now made or may hereafter be authorized by law. Said applicant shall keep accurate records by meter or other approved method of the amount of water diverted and shall report the same quarter-yearly to this Board, as required by law.

2. The amount of water which shall be di-
30 verted under this approval shall not exceed an average of two million (2,000,000) gallons per diem during any month.

3. The territory to be supplied under this approval shall be the City of East Orange, Essex County.

4. The applicant shall in good faith begin the construction of the works necessary to utilize the proposed source of supply within one year from date of this approval and shall complete

Exhibit F. Approval of the Board.

the construction of said works within three years from said date.

5. If the applicant shall at any time abandon this source of supply, all rights and privileges conveyed by this approval shall revert to the State, it being distinctly understood and agreed that the permission herein contained to divert water is given to the applicant alone and shall not be assigned or set over to any corporation or person without the consent of this Board. 10

6. The approval of the application herein and all rights covered thereby or arising by reason thereof are granted and accepted upon the express condition that the applicant herein, its successors or assigns, shall surrender or sell any or all of its rights under this permit and any or all lands, rights of way, reservoirs, pipe lines and other property, real or personal, corporeal or incorporeal, acquired in good faith, for or in connection with the exercise of the rights or any of them herein granted, to the State of New Jersey or to any board, body or commission thereof having authority to acquire or consolidate existing public water supplies, or to exercise any like power, whenever said board, body or commission may so elect, at the fair cost of such property less a fair allowance for depreciation. In determining such cost interest on the investment shall be included for the period of construction, but not after the date when said applicant, its successors or assigns, shall begin the sale of water or the distribution thereof. 20 30

7. This approval shall not be construed to empower or permit the applicant to use any of the waters mentioned in the application for which it shall not have first obtained the permission of the State Board of Health. 40

Exhibit F. Approval of the Board.

8. This approval shall not become operative unless and until the applicant shall file with the Board within ninety days from date hereof its written acceptance of the terms and conditions hereby imposed.

10 9. In the event that any of the conditions hereby imposed are violated and such violation shall be established to the satisfaction of this Board, this approval may thereby be abrogated upon the passage by this Board of a resolution to that effect.

20 IN TESTIMONY WHEREOF, we, a majority of the members of the Board of Conservation and Development, do hereunto set our hands and cause the official seal of the Board to be affixed hereto and attested by its Secretary this eighth day of August, one thousand, nine hundred twenty-eight.

Dated, Trenton, New Jersey.

H. F. McCONNELL,
President.

H. L. MOELLER,
A. W. DRAKE,
W. E. FLORANCE,
JOHN L. KUSER,
OWEN WINSTON,
WALTER E. ROBB.

30 (L. S.)

Members of the Board of Conservation and Development.

ATTEST:

H. B. KUMMEL,
Secretary.

Exhibit G. Summary of Facts and Testimony.

(SEAL) This is to certify that the foregoing is a compared and true copy of the approval of the Board of Conservation and Development of the plans of the City of East Orange for obtaining an additional water supply.

HENRY B. KUMMEL, 10
Secretary.

September 12, 1928.

EXHIBIT G.

Report on the Application of the City of East Orange for an additional water supply from artesian wells to be located in Florham Park Borough. 20

By H. T. Critchlow
Chief, Division of Waters.

GENERAL

On May 26, 1928, an application was received from the Board of Water Commissioners of the City of East Orange, Essex County, for approval of its plans for diverting an additional water supply of four million (4,000,000) gallons of water daily from wells to be located on lands in the Borough of Florham Park, Morris County, said lands being about 40 acres in extent, owned by the Braidburn Realty Corporation and located about 600 feet north of the Dickinson well No. 1, belonging to the City of East Orange, and directly across the Passaic River from said well, as shown on map accompanying said application, for the purpose of supplying water to the City 30
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Exhibit G. Summary of Facts and Testimony.

of East Orange; also a petition requesting permission for the City of East Orange to exercise the right of eminent domain for the acquisition of said lands and water rights, said petition setting forth that the owner refuses to sell to the City the lands in question. A public hearing, 10
duly advertised, was held on June 13 and adjourned hearings on July 10, 26 and August 2. The application was opposed by the Boroughs of Florham Park, Chatham and Madison and also by the Braidburn Realty Corporation. A stenographic record of the proceedings was taken and the testimony has been transcribed.

EAST ORANGE CASE

The principal witness for the applicant was 20
Mr. Roswell M. Roper, Engineer and Secretary for the Water Commission, who has been with the Water Department 18 years, 9 years as Assistant Engineer and 9 years as Engineer. The essential points of his testimony were to the effect that the consumption in East Orange has increased from 2.5 m. g. d. in 1905 to 4.0 m. g. d. in 1928, and that the population has increased from about 22,000 in 1905 to 68,000 in 1927; that the present per capita consumption 30
of water is moderate due to the fact that all of the services are metered and that rigid inspection for leaking and waste has reduced the loss to a minimum, the per capita consumption being 57 gallons daily.

Present Sources. The present sources of water supply for the City consist of three well fields located in the Townships of Millburn and Livingston about three miles north of Summit. The following tabulation gives more detailed information regarding the three groups of wells:

Exhibit G. Summary of Facts and Testimony.

Station	Date of Construction	No. of Wells	Diameter	Depth	Safe Yield Gals. Daily
Canoe Brook	1905	16	6" and 8"	75' to 110'	2,225,000
Slough Brook	1912*	3	12" " 10"	156' to 360'	600,000
Dickinson	1923	3	16"	130'	2,000,000
Total		21			

*Reconstructed 1928.

The wells at Canoe Brook Station are pumped by direct suction into a receiving basin. The Slough Brook well field is now being reconstructed, the three new wells replacing 20 6- to 8-inch wells 115 to 260 feet deep, pumped by air lift. The three new wells will be pumped by deep well centrifugals into a pipe line flowing into the receiving basin at Canoe Brook Station. The Dickinson wells are pumped by deep well centrifugals into a pipe line flowing into the receiving basin at Canoe Brook Station. All the wells take their water from the glacial deposits except the Slough Brook wells, which are into the underlying shale and sandstone formations. The water is pumped from the receiving basin by two 4 m. g. d. Snow crank and fly wheel pumps and one 2 m. g. d. steam turbine driven centrifugal pump through a 24-inch transmission main about 5 miles long into the City of East Orange, with a concrete reservoir—capacity 5,000,000 gallons—on the line in the village of South Orange. The water preserve has an area of 2300 acres and according to Mr. Roper has been very thoroughly prospected for additional water supplies with the result that no appreciable additional amounts of water can be obtained from their present holdings. Therefore it is desired to go into a new territory for additional supply.

Consumption. Mr. Roper submitted a diagram showing the population, total consumption and

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Exhibit G. Summary of Facts and Testimony.

per capita consumption and the percentage of services metered from 1905 to date. The following tabulation is a summary of this diagram for certain years:

	Year	Total Consumption M. G. D.	Population	Per Capita Consumption Gallons Daily	Percentage of Services Metered
10	1905	2.45	25,300	97	4.5
	1910	3.17	34,500	91	11.0
	1915	2.76	40,800	67	48.5
	1920	3.26	55,300	60	100.0
	1925	3.70	64,000	58.5	100.0
	1927	4.00	67,500	58	100.0

Mr. Roper estimates that the consumption in 1935 will be 6.15 m. g. d. with a population of 79,500. This makes a per capita consumption of 77 gallons daily, which is not in keeping with his assumption used in the diagram that the per capita consumption will remain about where it is at the present time, that is, 58 gallons daily. In studying the future consumption for East Orange, it would seem from a study of the evidence presented on this question and the records in their quarterly reports furnished to this Department, that the average consumption in 1935 would be about 5.6 m. g. d. and the maximum monthly consumption about 5.85 m. g. d. In 1940 the average consumption would be 6.6 m. g. d. and the maximum monthly consumption 7.0 m. g. d.

30 Mr. Roper, under cross examination, admitted that the time would probably come when the City of East Orange would have to join in with a water district of the metropolitan area rather than continue to depend for its water supply on its own system. He pointed out further that such a project would take from 10 to 15 years to complete and in the meantime the City of East Orange must take care of its own water needs. This would be around 1940 at the earliest, when

Exhibit G. Summary of Facts and Testimony.

the estimated future maximum monthly consumption would probably be about 7,000,000 gallons daily. Therefore, in a dry period their present sources of supply, which are capable of yielding around 5,000,000 gallons daily, would be about 2,000,000 short of meeting the 1940 requirements.

Interference. Mr. Roper testified that the interference between the three well fields now used was very slight, if at all noticeable, because of the nature of the geologic formation, the Canoe Brook well field being in a pre-glacial valley just east of Second Mountain, the Slough Brook well field being in sandstone, and the Dickinson well field in another pre-glacial valley west of the trap rock ridge known as Third Mountain. The Chatham and Madison wells are west of Third Mountain and lie $1\frac{1}{2}$ and $1\frac{3}{4}$ miles southwesterly respectively from the proposed well field in Florham Park. It is Mr. Roper's opinion that the taking of water from the proposed wells would not interfere with the water supply of the Boroughs of Chatham and Madison. There might be some interference with the existing artesian well belonging to the Braidburn Realty Corporation, but in case of such interference, the City of East Orange is willing to furnish them with a water supply to compensate them for any damage which may be caused to their water supply.

OPPOSITION

Braidburn Realty Corporation. The opposition of the Braidburn Realty Corporation was based upon the objection which they had to losing ownership of the land which it is contemplated to condemn for the new source of supply. The 40-acre tract is all swamp land adjacent to the west bank of the Passaic River and directly

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Exhibit G. Summary of Facts and Testimony.

10 across the river from the existing Dickinson well fields, which is also in swamp land, all of which is subject to inundation to a depth of several feet in flood periods. They also contended that the taking of large quantities of water in this area would ruin their existing source of water supply which is obtained from an artesian well 113 feet deep and located near the club house on the knoll up from the swamp land. Their opposition was purely from the standpoint of protecting a private development, which would have to give way in case public necessity for water so demanded.

20 *Chatham and Madison.* The objection of these municipalities is worthy of careful consideration. They had two expert witnesses, Clyde Potts, Consulting Engineer, New York City, and Robert S. Horton, Consulting Engineer, Albany, N. Y. Both of these gentlemen had studied the local situation and testified that in their judgment the taking of 4,000,000 gallons of water a day would interfere unduly with the Chatham and Madison water supplies. Both experts were also of the opinion that the City of East Orange could obtain considerably more water from its present water preserve than it is now taking. Mr. Horton particularly stressed the point that the water

30 preserve had not been prospected thoroughly enough in spite of the fact that 40 or more test wells had been driven in many parts of the area and the location selected only after careful consideration of the geologic and topographic conditions. The only testimony bearing on the question of interference with the Chatham and Madison wells under present operation was that the ground water level in the Madison wells had receded 5 feet in the past 18 years, but it was

Exhibit G. Summary of Facts and Testimony.

admitted that this recession was due more likely to the pumping of water in their own fields than from the operation of any distant well field. Mr. Horton's testimony dealt largely with generalities and theorized as to what would happen in case large quantities of water were taken out of the ground at the proposed site. He was able to contribute no new information which had not already been presented previously either through testimony or through the records available in the Department's office. No testimony was given directed specifically at the future needs of Chatham and Madison. As a matter of fact, however, the total consumption in these towns at the present time is about 1.2 million gallons a day and increasing at a very moderate rate. The safe yield of both well fields as measured in 1925 by the Department was 2.7 m. g. d.

DEPARTMENTAL INVESTIGATION

In 1925, in considering the application of the Commonwealth Water Company for an additional water supply from wells to be located in the Canoe Brook area, a special investigation was made of the entire region. At that time all the available well records in the East Orange well fields, Commonwealth Water Company, Chatham, Madison and private wells were assembled and a map prepared showing the underground conditions as affecting the flow of ground water. Tests were made at that time to determine what interference, if any, occurred between the East Orange and the Commonwealth well fields, both of which are located in the Canoe Brook basin. However, the principal value of that investigation on the present problem was in the application of the map of the underground conditions to the present problem.

Exhibit G. Summary of Facts and Testimony.

10 *Geologic Conditions.* Dr. Kummel, as State Geologist, testified as to his opinions on the underground conditions in the area. He stated that according to the conditions disclosed by well borings there is evidently an underground rock ridge separating the Dickinson well field from the Chatham and Madison well fields. He also stated that while there was no positive proof that they are directly connected underground through sand and gravel beds, he admitted that there might be such an underground connection by some indirect route. In other words, to use a surface water illustration, the two well fields might be on different branches of the same drainage system, in which case the interference between the wells proposed and the Chatham and Madison wells would be remote.

20

SUMMARY AND CONCLUSIONS

East Orange showed a need for an additional water supply to meet its needs for the future. An additional 2 m. g. d. and the safe yield of the present sources, conservatively estimated at 5 m. g. d. making a total of 7 m. g. d. will probably carry them until about 1940, when a district water supply project may be the solution of their future needs.

30 The question of interference with the water supply of Chatham and Madison is not easily answered. Certainly the taking of 2 m. g. d. will interfere much less than the taking 4 m. g. d. During our investigation in the Canoe Brook field in September, 1925, when Commonwealth Water Company was pumping at a maximum of 6 m. g. d. and Dickinson wells of East Orange at a maximum of 2.5 m. g. d., no appreciable effect was observed on the wells at Chatham and Mad-

40

Exhibit G. Summary of Facts and Testimony.

ison. Chatham and Madison have a reserve supply according to our investigation of about 100 per cent over their present maximum monthly demands. According to my judgment the taking of 2 m. g. d. in the proposed area will not unduly affect Chatham and Madison nor the municipal supply of Florham Park now under construction. The interference with the water supply of the Braidburn Realty Corporation is possible and if it occurs, East Orange has agreed to pay them in kind. The damage or loss of land can be compensated by money. 10

Therefore, the case seems to reduce to this:—

1. East Orange has proved a public necessity for 2 m. g. d.

2. The weight of evidence is that the diversion of 2 m. g. d. from the proposed source will not unduly interfere with the opportunity of any municipality to obtain a water supply necessary for its use. 20

3. That there will be caused by such taking no undue injury to private interests that cannot be compensated for in money or in kind.

4. East Orange by the testimony of its own experts and by the application itself shows that its present sources are capable of yielding safely only about 5 m. g. d. while 2.5 m. g. d. were pumped from the Dickinson field under test in September, 1925, the safe yield of this field during a month of drought would not be over 2 m. g. d. In order to limit the total draft in the Dickinson and Florham Park areas, which are geologically one area, the draft from the area should be limited to 4 m. g. d.—2 m. g. d. from each. This can probably best be done for the Dickinson area by agreement with the Water 30 40

Exhibit H. Resolution of Acceptance by City.

Department and not as a condition in any grant for the Florham Park development.

H. T. CRITCHLOW,
Chief, Division of Waters.

Trenton, N. J.
August 16, 1928.

10

EXHIBIT H.

THE CITY OF EAST ORANGE,
BOARD OF WATER COMMISSIONERS.

20

In the Matter of the application of The City of East Orange to the Board of Conservation and Development, for permission to exercise the right of Eminent Domain for the acquisition of certain lands in the Borough of Florham Park, Morris County, New Jersey, and to obtain therefrom an additional water supply for said City.

30

*Acceptance
of the terms
and condi-
tions imposed
in the ap-
proval of the
Board.*

WHEREAS, The City of East Orange, by its Board of Water Commissioners, did on May 26, 1928, file with the Board of Conservation and Development an application reciting its need of an additional water supply and requested permission to exercise the right of Eminent Domain for the acquisition of certain lands owned by the Braidburn Realty Corporation in the

40

Exhibit H. Resolution of Acceptance by City.

Borough of Florham Park, County of Morris and State of New Jersey, for the purpose of obtaining for said City an additional source of water supply for its inhabitants, and

WHEREAS, certain maps showing the lands described in said application, together with general data regarding the water supply system were filed with said application and made a part thereof, and thereafter the Board of Conservation and Development fixed a date for a public hearing on said application and notice of said hearing was advertised in the manner provided by law, and 10

WHEREAS, public hearings were held, and the Board of Conservation and Development, having heard the testimony and arguments presented by all parties in interest, did on August 8, 1928, approve of the application of said City for permission to exercise the right of Eminent Domain for the acquisition of the lands described in said application and maps accompanying same and did consent to the diversion of water from said lands to the amount of two million gallons daily, provided The City of East Orange files with said Board its written acceptance of the terms and conditions set forth in the approval of said Board, which terms and conditions have been read and considered by the Board of Water Commissioners, and 20 30

WHEREAS, the Board of Water Commissioners is the Board in The City of East Orange designated by statute as the Board having control over the subject matter herein,

BE IT RESOLVED by the Board of Water Commissioners of The City of East Orange that the terms and conditions set forth in the approval of the Board of Conservation and Development

Exhibit H. Resolution of Acceptance by City.

dated August 8, 1928 of its application filed May 26, 1928, be and the same hereby is accepted with all its terms and conditions, and

BE IT FURTHER RESOLVED that The City of East Orange by said Board of Water Commissioners hereby agrees to comply with all the said terms and conditions.

10 BOARD OF WATER COMMISSIONERS OF
THE CITY OF EAST ORANGE

(Signed) By Frank H. Taylor
President

(Signed) W. Hillyer Ragsdale

(Signed) J. Edward Ashmead

Attest: (Signed) Roswell M. Roper

Secretary, Board of Water Commissioners.

20 Approved: October 26th, 1928 (Signed) Charles
H. Martens Mayor, The City of East Orange

I, ROSWELL M. ROPER, Secretary of the East Orange Board of Water Commissioners, hereby certify that the above resolution was regularly adopted by the East Orange Board of Water Commissioners on October 25th, 1928.

(Signed) ROSWELL M. ROPER
Secretary

30

This is to certify that the foregoing is a compared and true copy of the acceptance of the Board of Water Commissioners of the City of East Orange of the terms and conditions attached to the approval of the Board of Conservation and Development for an additional water supply approved August 8, 1928.

HENRY B. KUMMEL,
Secretary.

40 Trenton, N. J., January 21, 1929.

TESTIMONY BEFORE COMMISSIONER.

NEW JERSEY SUPREME COURT.

THE BOROUGH OF CHATHAM, THE
BOROUGH OF MADISON, THE
BOROUGH OF FLORHAM PARK
and BRAIDBURN REALTY COR-
PORATION, a corporation,
Petitioners,

10

vs.

THE BOARD OF CONSERVATION
AND DEVELOPMENT and THE
CITY OF EAST ORANGE,
Defendants.

20

Transcript of stengrapher's notes of proceed-
ings in the above-entitled cause before Nicholas
W. Bindseil, Esq., Supreme Court Commissioner,
at the office of the Board of Conservation and
Development at Trenton, New Jersey, on Friday,
January 25, 1929, at 10:30 A. M.

Appearances:

Messrs. Riker & Riker, Theodore McC. Marsh,
Esq., of counsel, representing the Borough of
Chatham, and Braidburn Realty Corporation.

30

Henry G. Pilch, Esq., representing the
Borough of Madison.

Robert E. Burke, Esq., representing the
Borough of Florham Park.

Walter C. Ellis, Esq., representing the City
of East Orange.

Hon. Edward L. Katzenbach, Attorney Gen-
eral, by S. M. Dickinson, Esq., representing the
Board of Conservation and Development.

40

Dr. Henry B. Kummel, direct.

It is stipulated that the testimony may be taken stenographically and afterwards reproduced in typewriting, and that the signatures of the witnesses thereto may be waived.

10 DR. HENRY B. KUMMEL, a witness called on behalf of the petitioners, being first duly sworn according to law, on his oath testified as follows:

Direct examination by Mr. Marsh.

Q What position do you hold in connection with the Board of Conservation and Development? A Director.

20 Q And as director, are you clerk of the Board and custodian of their records? A I am, the secretary of the Board ex-officio, and have charge of all the records of the department.

Q Who constitute the Board of Conservation and Development? A Howard M. McConnell, president; Owen Winston, John L. Kuser, William E. Florence, Bloomfield H. Minch, Henry L. Moeller, Walter E. Robb and A. W. Drake.

30 Q Did the Board of Conservation and Development consist of the same persons which you have referred to in May, 1928, and during the time when the application of the City of East Orange was being considered? A It did.

Q When did this application of the City of East Orange first come to the attention of the Board of Conservation and Development? A That appears in the return. I do not recall the date.

Q Have you got the applications, the filing dates of them? A May 26, 1928.

Dr. Henry B. Kummel, direct.

Q What papers were filed? A The application, general data sheet, petition of the City of East Orange and atlas sheet showing the information required by Rule 2 of the Board.

Q Are copies of each of these papers attached to the return made by the Board in answer to this writ of certiorari in this case? 10

A They are.

Q What did you do with the application after you received it? A Notice of a hearing was prepared and sent to the newspapers for publication.

Q When those applications were received, who received them? A What individual?

Q Yes, what individual? A I don't know.

Q Was it received by you as director of the Board? A Not by me personally.

Q When did it first come to the attention of the Board as a body? A I cannot tell you. 20

Q Who arranged for the hearing? A The clerk who has charge of that matter.

Q Who is that? A I think it was—the notice of the hearing was probably typewritten by Miss Hunt, who is one of the clerks acting under the instructions of Mr. Critchlow, the head of the division of waters. The notice of the hearing came to me for signature and I signed it.

Q And in what papers was it published? A 30
That is set forth in the return.

Q Can you just tell us of them, you probably have your records there? A It was advertised in the Daily Record, Morristown, on June 1st, 1928, the first publication, and the last time June 4th, 1928, and once between those dates; it was advertised in the Newark Evening News June 1st, June 2nd and June 4th, 1928; it was advertised in the East Orange Record on June 1st and June 8th, 1928.

Dr. Henry B. Kummel, direct.

Q And a copy of the publication in each of said papers is attached to the return, is that correct? A That I don't know.

10 Q What is the difference? A The record shows that a copy of the affidavit relating to the publication in the Daily Record of Morristown was filed in the return, and it stated Exhibit C, the notice referred to in the above affidavit, is a printed copy of the notice of hearing which appears as Exhibit B in this return to the writ. The Exhibit C further sets forth that affidavits of similar form are in the files of the Department of Conservation and Development and indicate publication as follows: Newark Evening News, on the dates already specified; East Orange Record, on the dates already specified.

20 Q In the return to the writ it appears that due notice was given in accordance with the rules and practice of the Board of Conservation and Development. What rule are you referring to? A The rule that the application shall be published in one or more papers circulating in the vicinity and that notices of the hearing shall be sent by registered mail to such water companies and municipalities in the vicinity as might appear to have an interest in the matter.

30 Q In what form does that rule appear? A That rule does not appear in the laws and rules regarding public water supplies issued by the department, dated 1928.

Q Where does it appear? A If it has ever been adopted as a formal written rule it would appear in our minutes.

Q Does it appear in the minutes? A I don't know.

Mr. Dickinson: Isn't it a statute?

Dr. Henry B. Kummel, direct.

The Witness: The statute provides that due notice of the hearing shall be given by advertisement, but the statute is general in its statement, and by long established practice, at least, if not by formal rule of the Board, the policy is to advertise in one or more papers several times circulating in the vicinity. 10

Q What I want to get from you, if I can, doctor, is whether you are referring to an established rule or to a practice that has been followed by the Board in this matter? A I am certainly referring to an established practice. I believe the practice is based upon formal action by the Board at some time in the past.

Q Are you able to find such a rule or action by the Board, establishing this practice? A I might if I went back over the minutes of the Board for the last thirteen years. 20

Q Is there any printed rule covering this matter? A Not that I recall.

Q Who conducted the hearings referred to in the return? A The first hearing was conducted by Mr. Florence. The subsequent hearings were conducted by Mr. A. W. Drake.

Q How was the matter referred to Commissioner Florence? A Mr. Florence and one or more other members of the Board were present on the date at which the hearing was advertised. 30

Q How, or by what action of the Board of Conservation and Development did the matter become referred to Commissioner Florence or Commissioner Drake?

Mr. Ellis: I object.

Q How did the matter come before Commissioner Florence or Commissioner Drake? A The 40

Dr. Henry B. Kummel, direct.

law specifies that a minority of the Board shall have authority to take testimony at any hearing duly advertised on the dates on which the hearing was appointed to be held. Mr. Drake was the only member present on two occasions. On the first occasion, Mr. Florence, I believe, and one or two other members of the Board were present.

10

Q Was any action taken by the Board of Conservation and Development at any meeting designating Commissioner Florence or Commissioner Drake as the person to take the testimony?

A For these specific hearings or applications?

Q For this specific application? A No.

Q When was the taking of the testimony completed? A That is set forth in the return. August 2nd.

20

Q Was a copy of the testimony taken at the hearing filed with the Board of Conservation and Development? A It was.

Q And have you a record of the filing date, when that was received? A No, I have not. It may appear on the testimony itself.

Q Can you tell us whether or not that was received prior or subsequent to August 8, 1928?

A A copy of the testimony of the last date was delivered to this department before the meeting of August 8th, and it was before the Board, the complete testimony in typewritten form, was before the Board on August 8th.

30

Q How many copies were received by the department? A One.

Q Has it remained in the office of the Board from the day of its receipt until it was attached to the return? A I cannot say.

Q Do you know whether or not it ever left the office? A I do not.

40

Dr. Henry B. Kummel, direct.

Q How many copies were there of the testimony, more than one received? A One.

Q When are the regular meetings of the Board? A The second Wednesday of each month.

Q At the meeting of the Board of August 8, 1928, who was present? A Messrs. Drake, Florence, Moeller and Winston. 10

Q Were any representatives of the Borough of Chatham, the Borough of Madison, the Borough of Florham Park or the Braidburn Realty Corporation present at that meeting? A Not to my recollection.

Q Any representative of the City of East Orange? A No.

Q Was any notice sent out by the department that at the meeting of August 8th, the matter of the application of the City of East Orange would come before the Board? 20

Mr. Ellis: I object to that testimony as not being a statutory requirement, and because counsel at the last hearing were told when the next meeting of the Board would be.

Mr. Marsh: That would appear in the record. 30

The Witness: A notice of the meeting is always sent to members of the Board a week before.

Q The question was whether or not the Board through you, or to your knowledge, sent any notice, not to the members of the Board, but to the representatives of the municipalities involved in the application. 40

Dr. Henry B. Kummel, direct.

Mr. Ellis: I want to note my objection on the record as not being a statutory requirement and for the reason that representatives of the parties mentioned were notified the day the last testimony was taken when the Board would make its determination.

10 A It sent no notice regarding the meeting of August 8th. There is no reason why it should.

Mr. Marsh: I ask that that be stricken out, "There is no reason why it should."

Q Was any argument presented to the Board on August 8th in behalf of any of the municipalities with reference to the application of the City of East Orange as— A Argument by whom?

20 Q By any person representing any of the parties in interest on the application? A No, the hearings had been closed on August 2nd.

Mr. Marsh: I ask that that be stricken out as not responsive to the question, that last phrasing.

Q Following August 8th, a decision or order was prepared covering the application of the City of East Orange, which I think bears date August 8th, is that correct? A Yes.

30 Q Who prepared it? A It was prepared in this office, I presume in its first form it was dictated by Mr. Critchlow.

Q Who is Mr. Critchlow? A He is chief of the Division of Waters.

Q And a copy of that document is attached to the return? A It is.

Q What was done with the document after it was prepared by Mr. Critchlow? A It was

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Dr. Henry B. Kummel, direct.

held here in the office until September 5th or after.

Q Were copies of that sent to any members of the Board of Conservation and Development?

A Not until after September 5th.

Q Who signed the copies? A The original was sent to two members of the Board sometime after September 5th, after the original had been signed by five members of the Board at a special meeting on September 5th in this office—not in this room but in the room in the State House.

10

Q Between August 8th and September 5th was anything done with reference to the application or this opinion or decision of the Board referred to as Exhibit F in the return? A Nothing was done with the application nor with the decision. Between those dates a summary of the testimony and a report of the whole matter was prepared by Mr. Critchlow and sent to the members of the Board. That was done on or about August 16th.

20

Q And that is the document which is referred to as Exhibit G of the return filed? A It is.

Q And that was prepared by Mr. Critchlow? A It was.

Q And a copy of it mailed to the members of the Board? A It was.

Q Who are the members of the Board? A It was not mailed to Mr. Kuser and Mr. Robb, who were at that time away on their vacations. I believe it was not mailed to Mr. Minch, who for nearly a year has been ill and unable to give any attention to the work of the Board. It was mailed to the other five.

30

Q Have you the letter of transmittal that went with it? A It may be in our files.

Q Can you get it? A I believe so.

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Dr. Henry B. Kummel, direct.

Q Will you do so? A (Producing letter.)

(Letter produced offered in evidence and marked Exhibit P. 1.)

Q Will you read the letter?

10

Mr. Ellis: I wish to note my objection to the admission of this letter in evidence on the ground that it is not binding on any member of the Commission and is irrelevant.

A (Reading.) "August 28, 1928, Mr. Owen Winston, 346 Madison avenue, New York City. Dear Mr. Winston: I am enclosing herewith a copy of the report on the application of the City of East Orange for additional water supply. This is being sent to you in advance of the approval which you will be asked to sign in accordance with the resolution passed at the Board meeting on August 8th. The formal approval will reach you in due course with the request that your signature be attached. Yours very truly, H. T. Critchlow, Chief of the Division of Waters.

Copy sent to Mr. McConnell.

Copy sent to Mr. Florence, Mr. Drake and Mr. Moeller on August 17."

30 Q Now, with reference to the meeting of September 5th, have you the minutes of the meeting here? A I have a copy of the minutes of the meeting of September 5, 1928.

Q Who was present? A President McConnell in the chair, Messrs. Drake, Florence, Kuser and Moeller.

Q The meeting that you referred to, September 5th, was that a regular meeting of the Board?

A No, it was a special meeting of the Board.

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Dr. Henry B. Kummel, direct.

Q Was any notice of the special meeting of the Board on September 5th sent to any of the representatives of the municipalities involved in the application of the City of East Orange? A No.

Q Have you the minutes of the meeting of September 5th? A I have. 10

Q Is there any reference in the minutes to the application of the City of East Orange for a diversion of water? A No.

Q Between August 8th and September 5th was there any meeting of the Board of Conservation and Development? A No.

Q Did the matter of the application of the City of East Orange come before the Board at any other meeting than the meeting of August 8th? A Not as a separate and distinct matter. 20

Q Was any action taken by the Board with reference thereto at any Board meeting except the meeting of August 8th?

Q Yes, on the regular meeting of—the regular September meeting of the Board, which was held on September 19th, at which time the Board passed the resolution.

Q Have you the minutes of that meeting? A I have the minutes of September 19, 1928.

Q Who was present? A Messrs. Drake, Florence, Kuser, Moeller, Robb and Winston. 30

Q Was any notice of the meeting of September 19th sent to the municipalities involved in the application of the City of East Orange? A No.

Q What do the minutes show with reference to the application of the City of East Orange?

A The only thing would be this resolution: "Resolved, that the Board does hereby ratify and confirm as its own, each and every action 40

Dr. Henry B. Kummel, direct.

taken by a minority of the Board at the meeting of August 8th, as set forth in the minutes of said meeting, which minutes are hereby approved."

Q At the meeting of September 19th were any representatives of any of the municipalities involved in the application present? A No.

10 Q Were representatives of any of the municipalities involved in this application present at any meeting of the Board at which the matter of the application of the City of East Orange for the right to take water was before the Board? A Not after the hearing of August 2nd.

Q I am referring now to the meetings of August 8th, September 5th and September 19th, or any other regular or special meeting of the Board? A No representatives of the municipalities were present at any of the meetings
20 which you specify.

Q Or at any other meeting of the Board at which the matter of the application of the City of East Orange was in any way considered? A They were all present at the hearings, and the hearings are meetings of the Board.

Q Let us get the exact occasions they were there and when they were not there? A They were there at the four meetings of the Board at which the application of East Orange was heard
30 in public on the dates specified in the return.

Q When the testimony was taken before Commissioner Drake? A Exactly.

Q And those are the only occasions at which they were present? A That is true.

Q Have you given us from the minutes all the action which was taken by the Board of Conservation and Development at any regular meeting which had any bearing or relation to the application of the City of East Orange for the right to take water? A I have.
40

Dr. Henry B. Kummel, direct.

Direct examination by Mr. Pilch.

Q Did you, doctor, assist in preparing the copy of summary and the facts of the testimony?

A I went over it in its first form before it was sent out in final form.

Mr. Dickinson: Is that testimony the summary that was sent out to all the members of the Board?

Mr. Pilch: Yes, on August 16th.

The Witness: I don't recall now whether I made any changes or corrections previous to its being put in that form. Mr. Critchlow and I discussed the matter to some extent.

Q Did you go into it fully, you and Mr. Critchlow, in your discussion? A I would not say definitely. I had read the testimony after it came into this office, I participated in the discussions when the matter was before the Board.

Q Then this copy of the summary and the facts and the testimony was an abbreviated report? A Well, it is abbreviated as compared with the testimony itself, six or seven typewritten pages in length. It is made a part of the return.

Q The advertising of the hearing, was that done by the Board or was that done by the attorney for East Orange? A As shown by letters signed by me under date of May 28, 1928, the Board of Water Commissioners of the City of East Orange were directed to publish a notice in the Newark Evening News, Daily Record, three insertions each—two insertions each in the East Orange Record, and send notice by registered mail to the Commonwealth Water Company,

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Dr. Henry B. Kummel, direct.

Chatham Water Department, Madison Water Department, the Mayor of Florham Park and Braid-turn Realty Corporation, and to furnish the customary legal proof of the publication and mailing of the notice to the Board on or before the date of the hearing. That was done.

- 10 Q Then after that letter left the Board, the remainder of the advertising was done by the City of East Orange? A Yes.

Further direct examination by Mr. Marsh.

Q With reference to Exhibit F attached to the return, indicated as the signed decision of the Board, when was that signed by the various members of the Board? A It was signed by five members of the Board on September 5th.

- 20 Q Which five? A The five members who were present at the special meeting of September 5th, Messrs. McConnell, Drake, Florence, Kuser and Moeller.

Q When and under what circumstances, was it signed by the other two members of the Board that signed the same? A At some date after September 5th it was sent to the other two members who attached their signatures.

Q Sent in what manner? A By mail.

- 30 Q Have you the letter of transmittal of that? A It was signed by Mr. Winston and Mr. Robb subsequent to September 5th. It was sent on September 6th to Mr. Winston.

Q Have you the letter of transmittal? A I have.

Q Will you read that for the record? A (Reading.)

Dr. Henry B. Kummel, cross.

“September 6, 1928,

Mr. Owen Winston,
346 Madison Avenue,
New York City,
Mr. Walter E. Robb,
Burlington Trust Company,
Burlington, N. J.

10

Dear Sirs:

The approval of the application of the City of East Orange is enclosed herewith and has already been signed by a majority of the members of the Board, the signatures being attached at a special meeting held yesterday. The President directed that the approval be sent to you with the request that you sign it if you wish to do so. Will Mr. Robb please return the approval to this office.

20

Yours very truly,

DEPARTMENT OF CONSERVATION
AND DEVELOPMENT

By H. T. Critchlow,
Chief, Division of Waters.”

Q That is addressed to both men? A Yes.

Q Were any briefs or written arguments ever submitted to the Board by any of the municipalities involved? A Not to my recollection.

30

Q Was any notice or request for the same ever sent out by the Board to your knowledge to the municipalities for such a written argument or brief? A Not to my recollection.

Cross examination by Mr. Ellis.

Q Dr. Kummel, did you attend all of the meetings of the Board at which testimony was

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Dr. Henry B. Kummel, cross.

taken on this application? A I attended all the meetings at which testimony was taken. I was not present at the first hearing at which the case was called and then was dismissed or postponed because of the absence of some of the parties.

10 Q At all of the hearings at which testimony was taken was Mr. Critchlow present so far as you recall? A Yes, so far as I recall. I can verify that if you wish.

Q Doctor, in this application for this writ to condemn and to abstract waters did the City of East Orange file a formal petition with maps, plans and other data required by the statute and the rules of the Board?

20 Mr. Marsh: I object to that as a conclusion of the witness.

A It did.

Q And at all of the hearings at which testimony was taken, so far as you can recall, was the City of East Orange, the Braidburn Realty Corporation, the Borough of Florham Park, the Borough of Madison and the Borough of Chatham represented by counsel?

30 Mr. Marsh: I object to that as the record speaks for itself.

A They were.

Q Did you hear at any time any objection offered by anyone representing the parties as to the jurisdiction of the Board in any respect whatsoever? A No.

40 Mr. Marsh: Perhaps I covered any objections which I have to offer on my general objection to questions which are covered by

Dr. Henry B. Kummel, cross.

the typewritten record of the testimony. In other words, I object to any questions which relate to what is covered by the typewritten copy of the testimony.

Q And doctor, the notice of this hearing was published in the Daily Record, a newspaper published in Morristown, Morris County, was it not? 10
A It was.

Q You also have proof of the publication in the Newark Evening News? A I have.

Q And the East Orange Record, on two or more days in each newspaper? A I have.

Q And have you also received by registered mail the notice of the hearing signed by representatives of the Braidburn Realty Corporation, Borough of Chatham, Chatham Water Department, Borough of Florham Park, Madison Water Department and Commonwealth Water Company? A Yes. 20

Q Doctor, as you recall the testimony taken at these hearings and adjourned from time to time, did the representatives of these parties participate in the examination and cross examination of witnesses from time to time? A They did.

Q Now, to give the chronological order of what transpired after the completion of the testimony, as I recall your testimony, the testimony was written up and before the Board at its meeting of August 8, 1928? A It was. 30

Q Was it discussed then among the members present, the testimony in general? A It was.

Q To some considerable extent? A It was.

Q And then on September 5, 1928, at which time there was five of the eight members of the Board present, they in joint session signed this 40

Dr. Henry B. Kummel, cross.

approval, or five of them signed this approval of the application of East Orange? A They did.

Q And prior to that time they had had a summation prepared in this office of the testimony taken at the various hearings, isn't that so? A It is.

10 Q And then on September 19, 1928, there were six members of the Board present, isn't that so? A Yes.

Q And on that date, September 19, 1928, at a regular meeting of the Board, the Board adopted the resolution which you have referred to ratifying each and every action taken by the minority at the meeting of August 8, 1928? A It did.

20 Q Doctor, after the completion of the testimony on August 2, 1928, do you recall a discussion before the Board between counsel of the parties as to whether or not they would make any oral arguments or file any briefs? A I do.

Q And what is your recollection of that conversation?

Mr. Marsh: My objection covers this, as before. The fact that witness cannot testify except as it appears in the record of the hearings.

30 A It was to the effect that no oral arguments would be made and that if they wished to submit briefs the Board would receive them, but that the Board would act on August 8th, hence the briefs would have to be submitted before that date.

40 Q And if the request had been made by any parties to this proceeding, was it the custom of the Board that they should be given an opportunity to argue orally the contention of the parties?

Dr. Henry B. Kummel, further direct.

Mr. Marsh: I object to the question as to the custom. It is a matter of what happened in this case.

A If a request were made before the adjournment of the Board at the last hearing and before the Board made a statement that the case was closed, opportunity would be given. 10

Q And as you recall it, at the meetings of August 8th, September 5th and September 19th, was the testimony taken in this proceeding before the Board for any member to read if he desired to? A At the meeting of August 8th the testimony was on the table before the Board. At the meeting of September 5th the testimony was not actually in the physical presence of the Board, but it was accessible in the files of the Department. At the meeting of September 19th my recollection is that the testimony was not actually on the table before the Board. 20

Q But at the meeting of August 8, 1928, there was no one present representing any of the parties to this proceeding to request any adjournment of the matter, was there? A No.

Q Have you ever at any time had any requests since August 2, 1928, from any of the parties for the right to argue the matter orally? A No request had been received by me none had been received by the Department here in Trenton, that I know of. 30

Further direct examination by Mr. Marsh.

Q As I understand it, the rules of the Board call for regular meetings on the second Wednesday of each month, is that correct? A Yes.

Dr. Henry B. Kummel, further direct.

Q September 19th was not the second Wednesday of September, was it, Dr. Kummel? A No, it was not. It was the third Wednesday.

10 Q What notice or action was taken with reference to that date? A At the special meeting of September 5th the Board passed a motion to the effect that the regular meeting would be postponed from September 12th to September 19th for that month.

Q Notices subsequently were sent out to those members not present? A Notices were subsequently sent out to all members of the Board of this change of date.

Further direct examination by Mr. Pilch.

20 Q You remember, doctor, at the close of the testimony on August 2nd, Mr. Drake saying there would be no time for briefs or arguments because he needed at least a week before the Board met to prepare his recommendations. Do you remember that? A I don't recall his saying those exact words. I remember that Mr. Drake felt the time was pretty short and that it would be pretty difficult to arrange for another meeting.

Q But the exact words you don't remember? A I don't recall his exact words.

30 Q But you do remember that the substance of his remarks were that there would be no time for any further hearing? A I could hardly say that I remember that. I won't dispute that such a remark may have been made, but I cannot say that I recollect that such a remark was made.

Q But you do remember that there was something said about that by Mr. Drake, about the time being short? A My recollection is that Mr. Drake said something about the time being

Dr. Henry B. Kummel, further direct.

pretty short between August 2nd and the date of the meeting, August 8th.

Q And do you remember him saying he needed at least a week to prepare his recommendations? A I don't recall that at all.

Further cross examination by Mr. Ellis. 10

Q Whatever was said during that conversation, your recollection is that it was finally agreed between counsel for the parties to this proceeding that there would be no oral argument, isn't that so?

Mr. Marsh: I object to that as a conclusion. He can testify to what was said, not the result of it.

Mr. Ellis: I will reframe that question. 20

Q Dr. Kummel, whatever was discussed among the representatives of the parties to this proceeding, your recollection is that it was finally stated by the parties that there would be no oral argument? A It was, yes.

Further direct examination by Mr. Marsh.

Q Who said that? A I don't recall that it was said specifically by any person. My recollection is that when we broke up— 30

Mr. Marsh: You have answered the question.

Mr. Ellis: Finish your answer.

The Witness: It was my understanding—

Mr. Marsh: That is what I object to, his understanding.

40

Dr. Henry B. Kummel, further direct.

10 The Witness: It is my recollection that when we broke up it was with the understanding that there would be no oral argument and that briefs could be submitted and would be considered by the Board if they were submitted before the meeting of August 8th, at which it was announced the Board would take action on the application.

 Mr. Marsh: I object to the answer as containing a conclusion on the part of the witness, and ask that it be stricken out.

 Adjourned to February 13, 1929.

20 Continuation of proceedings in the above-entitled cause before Nicholas W. Bindseil, Esq., a Supreme Court Commissioner of New Jersey, at the Board of Conservation and Development office, in Trenton, New Jersey, on Wednesday, February 13, 1929, at 2 P. M.

Appearances:

30 Messrs. Riker & Riker, by Robert S. Pollard, Esq., representing the Borough of Chatham and Braidburn Realty Corporation.

 Henry G. Pilch, Esq., representing the Borough of Madison.

 Robert E. Burke, Esq., representing the Borough of Florham Park.

 Walter C. Ellis, Esq., representing the City of East Orange.

 Hon. Edward L. Katzenbach, attorney-general, by S. M. Dickinson, Esq., repre-

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Howard F. McConnell, direct.

sending the Board of Conservation and Development.

HOWARD F. McCONNELL, a witness called on behalf of prosecutors, being first duly sworn according to law, on his oath testified as follows:

10

Direct examination by Mr. Pollard.

Q What is your official position with the Board of Conservation and Development? A I am a member of it, and president this year.

Q When did this application of the City of East Orange first come to your attention? A I cannot tell you the date; it came in due course and was presented. I didn't prepare any dates in my mind; I cannot tell you.

20

Q Was the matter brought to your attention before the first hearing, held on July 10th, of last year?

Mr. Dickinson: On behalf of the attorney-general, I would like to confine this testimony to the terms embodied in the order allowing the writ, which was allowing him to take depositions for the purpose of the argument on the writ. I therefore object to any testimony whatsoever as to any motive in anything outside of the record. I think under your order you have no power whatsoever to examine this gentleman as to anything that is not on the record, as far as your order permits you to go.

30

Mr. Pollard: The purpose wasn't to go into—if I understand you clearly—to go into the motives which impelled these gentlemen to make their decision.

40

Howard F. McConnell, direct.

Mr. Dickinson: We do object to anything except as to the record.

Mr. Pollard: You are willing to make that an objection, and if anything I ask is improper under the objection, to allow it to be answered and passed on later?

10 Mr. Dickinson: We will probably not answer.

Mr. Ellis: Mr. Pollard, is it the purpose of the objectors to inquire into the mental processes by which the commissioners arrived at their decision in this matter?

Mr. Pollard: No, sir.

A I don't recollect; I haven't these dates in my mind. These applications come in to our board
20 and they are referred to the Water Committee and acted on. Our records will show when they were received and when they were acted on. I don't carry these details in my mind. I don't propose to.

Q Do you recall in what manner this application of the City of East Orange was brought to your personal attention? A The director would announce the application, which was referred to the committee on water for the usual course.

30 Q Was any of the data filed by the City of East Orange in connection with this application ever examined by you personally? A I went over the—what is that question?

Q Was any of the data filed by the City of East Orange in connection with this application ever examined by you personally? A I cannot say; I discussed the matter informally, but I don't know—I didn't read the application word for word, no.

40

Howard F. McConnell, direct.

Q Are you personally familiar with the facts sought to be established by the City of East Orange in support of this application? A In a general way.

Q How were those facts brought to your attention, Mr. McConnell? A I told you the application was made to the Board; we discussed it informally, and referred it to the Water Committee. 10

Q I understand that as a preliminary procedure, but the facts which the city sought to establish at these hearings, how were those facts brought to your attention? A They were brought before the Water Committee; I didn't attend any of those hearings.

Q You signed the consent or approval of the application, didn't you? A Naturally. 20

Q What I am trying to get at is this: in order to obtain this approval, there were these various hearings, in which the city sought to establish certain facts; were any of those facts which they sought to establish in order to obtain the approval, ever brought to your attention? A Our committee always makes a report, and I read that report.

Q You say your committee made a report; who are the members of that committee? A That is on our records—Mr. Drake, Mr.—Colonel Moeller and Senator Florance. 30

Q Was this report which they made and which you went over, signed by all of them? A I cannot say now; I assume so; I don't know.

Q It was a written report, however, not an oral report? A It was a written report.

Q Do you recall when that report first came to your attention? A No, sir; I do not.

Howard F. McConnell, direct.

Q Do you recall whether it was before or after the meeting of August 8th? A No, sir; I cannot tell you.

Q Did this report contain a summary of the testimony? A As I recall it, yes.

10 Q What else did it contain? A It contained their recommendation.

Q The Water Committee's recommendation? A Yes.

Q Do you recall who prepared the report, Mr. McConnell? A I presume the director did, he generally does.

Q That is Dr. Kummel? A Yes.

20 Q Did you ever read the report and recommendation prepared by Mr. Critchlow? A I believe it was available around August 16th, according to the testimony.

Q At the last hearing? A I think I did.

Q Was that the report that you referred to? A No. I cannot say on that; no, I don't think so. We don't keep date books on these things. You are asking me a lot of things that I cannot answer and cannot be expected to answer.

30 Q You were present at the meeting of September 5th, were you not, Mr. McConnell? A I would have to look that up; I cannot tell you. The directors says I was there. Yes, I was present.

Q Was the transcript of the testimony taken at the various hearings in this matter available at that meeting, do you recall? A As I recall, it was.

Q Did you ever examine it? A No; I told you what I examined.

Q Did you ever see the exhibits in this case, Mr. McConnell? I mean those which were put

Howard F. McConnell, direct.

in the record at the hearings. A I don't think so. If I did see them, I didn't examine them.

Q At this meeting of September 5th, at which it was testified you signed the consent or approval, was there any discussion of this matter?

A In a formal way, I think there was; I don't recall now.

10

Q You don't recollect; is that your answer?

A Yes; I would rather say that I don't recollect just what was said.

Q Was that the first time that you had ever seen this consent? A What do you mean?

Q This formal approval which consented to East Orange taking two million gallons additional. A Yes, the first time.

Q That was at the meeting? A Yes, but I had seen some of the testimony prior to that.

20

Q You say you had seen some of the testimony prior to that; do you mean a summary of the testimony? A I think that is what it was; I cannot recollect all these things.

Mr. Pollard: If you don't recollect it, just say so.

The Witness: I had business beside this, and I cannot tell you the date I got a letter from Dr. Kummel.

Mr. Pollard: I just wanted to know. If you don't remember, say so.

30

The Witness: I don't remember.

Q You don't remember whether you actually saw a summary or not before that meeting of September 5th? A No, I said I read the summary, but I don't know the date or the hour.

Q But you did read a summary of the testimony or a report prepared by Dr. Kummel? A

40

Howard F. McConnell, direct.

I think it was a report of the hearing; whether Dr. Kummel prepared it, or a stenographer or who, I cannot tell you.

Q Did you read the formal consent before you signed it? A Yes; that is a regular form.

10 Q Were you present at any meeting in which this application was discussed by the Board as a whole? A Yes, it was discussed once, to my recollection, and maybe more.

Q At what meeting was that? A I cannot tell you.

Q Do you recall at this meeting at which it was discussed, whether this particular application was discussed apart from other applications? A I cannot recall; I don't know.

20 Q Mr. McConnell, did you receive a letter from me after the hearing of August 8th, requesting that a special meeting of the Board of Conservation and Development be called, at which these objecting municipalities would be given an opportunity to appear and state their case to the Board?

30 Mr. Ellis: I object to that question for the reason that at the last hearing of the Board at which testimony was taken, it was agreed between counsel representing the petitioner and the objectors, that there would be no arguments on the testimony, and no briefs filed.

Mr. Pollard: You say such an agreement at the last hearing here?

Mr. Ellis: At the last hearing of the Board.

Mr. Pollard: That does not appear on the record.

Howard F. McConnell, direct.

A Who signed the letter, may I ask?

Q It was from Riker & Riker, signed by Robert S. Pollard; it enclosed a copy of a letter mailed to Dr. Kummel. A I have some recollection of it. Was it sent to me in New York, do you recall?

Q Sent to you at 150 Broadway. A Yes, I did get a letter; I don't recall the contents. 10

Q Did you ever write a letter shortly thereafter to Dr. Kummel with respect to any such special meeting? A The records would show whether I did or not. I wrote so many letters to Dr. Kummel, that I don't recollect the particular one.

Further direct examination by Mr. Burke.

Q You referred to a report prepared by either Dr. Kummel or someone in the office; was that in the nature of a digest of the testimony, or was there some other report that you were referring to? A No, it was the matter in question; it might have been a digest. We generally have that at every hearing. 20

Q But this so-called report was in the nature of a summary of the testimony? A Yes.

Q And which contained recommendations of your engineer or your director? A I cannot tell you. 30

Q There was only one document filed with you? A Yes.

Q And that is what you call a report? A Yes.

Q And some of the other witnesses have referred to it as a summary of the testimony? A Possibly.

Q Is it supposedly the same document? A Yes.

Howard F. McConnell, cross.

Cross examination by Mr. Ellis.

Q How many years have you been a member of the Board of Conservation and Development?

A I think I came on the first time in 1922—1922 or 1923.

10 Q And during the six or seven years that you have been on this Board, you have sat in on many applications of the City of East Orange, the Commonwealth Water Company and other parties interested in lands affecting this area, haven't you? A Yes.

Q And your department gets monthly reports from all municipalities and corporations diverting water from the area affected by this application?

20 Mr. Pollard: I don't think that is proper cross examination; I object to it.

A Yes, we get regular reports from municipalities and water companies.

Q And from the information and testimony given at these hearings, you as a member of the Board have acquired considerable information about the area affected by this application, have you not? A I should have.

30 Q And you have reports from the experts of your department from time to time with respect to the water conditions in various areas of the State, have you not? A Yes, we have.

Q And prior to deciding this application you had been advised by experts of your department that the Boroughs of Chatham and Madison have a reserve supply of water about one hundred per cent. above their present maximum monthly demand?

40

Howard F. McConnell, cross.

Mr. Pollard: I object to that on the grounds that it is not proper cross examination; that it is bringing in matter that was not testified on the direct examination, and I also object to counsel in the forming of his questions, indicating to the witness what he desires in reply.

10

Mr. Ellis: You inquired from the witness what information he had in order to reach a decision in this matter.

Mr. Pollard: I inquired of the witness what information produced at this application was in his hands. I don't think there is any other inquiry made of him.

A I cannot say.

Q You had been advised by experts of your department that the diverting of two million additional gallons of water in this area would not unduly affect the Boroughs of Chatham and Madison nor the municipal supply of Florham Park, were you not? A As I recall, it is all in the grant there.

20

Q In deciding applications of this nature, I presume you are governed by the personal knowledge you have of the area affected as well as by the information given at the hearing, are you not? A I always try to use a reasonable amount of judgment, yes.

30

Q And I presume that all of the records of your department here are available to you and the other commissioners at all times? A Yes, sir; absolutely.

Q And you can recall that at this hearing, or at some of them, the merits of the application of the petitioner were discussed in some consider-

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Howard F. McConnell, re-direct.

able detail by the members of the Board? A In some form or other; yes, sir.

Q And from these discussions and from what you personally know, from your experience in the department, you were able to make up your mind as to what disposition should be made of the application, is that not so? A I have never
10 evaded a responsibility yet.

Q Is that so? (Last question repeated.) A Yes.

Re-direct examination by Mr. Pollard.

Q Can you recall at which of these meetings this matter was discussed at which you were present? A No, sir; I cannot.

Q I would like to clarify the record, if it is possible, on this summary of facts and testimony which you say that you read. A It is all in our
20 records.

Q In the return to the writ, there is a copy of the summary of facts, the testimony sent to a majority of the Board on August 16th; was that the summer to which you referred? A I cannot say.

Q Could you say whether it was in your hands before or after the meeting of August 8th?
30 A I could not.

Henry L. Moeller, direct.

HENRY L. MOELLER, called on behalf of the prosecutors, being duly sworn according to law, on his oath testified as follows:

Direct examination by Mr. Pollard.

Q Mr. Moeller, you are a member of the Board of Conservation and Development? A I am. 10

Q When did this application of the City of East Orange first come to your attention? A In a summary of the work done during a certain month by the department, and I think this summary bears the date either May or June; it was then mentioned that East Orange had made application for four million gallons of water.

Q And when did the further proceedings under this application next come to your attention? A I heard that special hearings were being conducted during June and July, and then in August, at the August meeting. 20

Q What proceedings on this application were brought to your notice after the conclusion of these hearings in August? A A digest submitted by Mr. Critchlow, and then an explanation verbally at the monthly meeting of August 8th—I believe that is the date. 30

Q Who made that verbal explanation at the August 8th meeting? A Mr. Drake. Mr. Critchlow was present; Dr. Kummel was present, and Mr. Drake was present. 30

Q Did Mr. Critchlow give you any summary or recommendation at the meeting of August 8th? A No recommendation that I recall.

Q Did he offer any explanation or summary of the testimony at that time? A Your question is did he offer any testimony in writing? 40

Henry L. Moeller, direct.

Q No, I meant did he orally offer any summary of the testimony or explanation of the proceedings, at the August 8th meeting? A Different questions were exchanged among the members by Mr. Critchlow to clarify certain points on which the decision might be rendered.

10 Q Did you receive a copy of Mr. Critchlow's summary and report which was prepared after that August 8th meeting? A I believe that I have received everything that Mr. Critchlow prepared; I don't recall whether it is after August 8th or prior to August 8th.

Q Did you ever read the transcript of the testimony? A Not word for word; I looked over it on August 8th.

20 Q Do you recall any discussion after the meeting of August 8th, of this application, during any meeting of the Board? A Yes, there were subsequent discussions about a meeting in September.

Q Was that a regular or special meeting? A That I do not recall. I believe there was a special meeting held prior to our regular meeting. I am not sure whether it was discussed at the special meeting or at the monthly meeting, but I know it was discussed quite thoroughly.

30 Q Did you examine any of the exhibits offered in evidence in this case? A I did, yes, on August 8th.

Q Do you recall which one? A The application which was contained in that folder kept by Mr. Critchlow and the maps which showed the relative locations of the different lines.

Examination by Mr. Pilch.

40 Q You say that special meetings were being held. Do you remember who held those meet-

Henry L. Moeller, cross.

ings? A I don't recall that I made that statement.

Mr. Pilch: I may be in error.

The Witness: I stated that a special meeting was held in September prior to our regular monthly meeting, and the question asked me, whether the East Orange application was discussed at the special meeting or at the monthly meeting, and I stated I did not recall at which meeting. 10

Q Did you ever go over the ground yourself physically? A I have been through that section.

Q Since the application of East Orange? A Not since the application; no, sir.

Q You never examined the wells? A No, I never have examined the wells. 20

Cross examination by Mr. Ellis.

Q How many years have you been a member of this Board? A Since 1925; that is four years now.

Q In addition to the monthly reports which your Board receives from the municipal corporations and other corporations diverting water from the area affected by this application, don't you get a working sheet or some report from the department from time to time advising you as to the conditions of various areas? A So-called work summary for each month. 30

Q The answer is "yes"? A Yes.

Q At the meeting on August 8th, do you recall that the typewritten testimony and the maps and other exhibits were before the Board? A They were. 40

Henry L. Moeller, cross.

Q And the application was discussed by those present on August 8th, was it not? A They were.

Q And at a special meeting on September 5th was there a quorum of the Board present? A I do not recall; the records would show that.

10 Q And at that time the East Orange application was again brought up before the Board and a written report submitted, was there not? A I do not recall at which meeting.

Q Do you recall signing the written report granting this application? A Yes, at one of these meetings.

Q Can you say whether that was the meeting of September 5th or later? A Not definitely.

20 Q But you had discussed it with other members of the Board before you signed the grant, had you not? A Yes.

Q And during your service on the Board, have you sat in on applications of the City of East Orange and the Commonwealth Water Company and Florham Park affecting water in this area? A Yes, several hearings

30 Q And before disposing of this application, do you recall that your Board was advised by the experts of your department that the Boroughs of Chatham and Madison had a reserve supply of one hundred per cent. over and above their monthly needs?

Mr. Pilch: I object to that.

Mr. Pollard: I object on the same ground as before.

A I recall very definitely that that was brought to the attention of the members.

Q Do you also recall that the experts of your department advised the Board that the abstrac-

Henry L. Moeller, re-direct.

tion of two million gallons additional daily by the City of East Orange would not unduly affect the supply to Chatham, Madison and Florham Park?

Mr. Pollard: Objected to on the ground that those experts were not on the stand, and the objectors given a chance to cross examine them. 10

A I do recall it.

Q And before voting on this matter you satisfied yourself from the records of the department and from the testimony, and from the advice of the experts of the department, and the discussion with other members of the Board, that the application should be granted? A I did, absolutely. 20

Re-direct examination by Mr. Pilch.

Q Who were these experts that advised that the application should be granted? A Mr. Critchlow is our water engineer. Furthermore, I recall and know that Chatham and Madison are separated from the proposed well field a distance of a mile and a half or mile and three-quarters, and it was stated by our experts that those wells would not be affected. 30

Q Who were these experts that advised that? A In this particular case, Mr. Critchlow and Dr. Kummel; that is all in this particular case.

Mr. Pollard: Do you recall any summary of facts or report on this, other than the one sent out by Mr. Critchlow?

The Witness: No written report. 40

John L. Kuser, direct.

JOHN L. KUSER, a witness called on behalf of the prosecutors, being duly sworn according to law, on his oath testified as follows:

Direct examination by Mr. Pollard.

10 Q Mr. Kuser, you are a member of the Board of Conservation and Development, are you not?
A Yes.

Q Can you tell us when this application of the City of East Orange for additional water supply first came to your attention? A The first attention I had—I think you were there representing the opposition; you remember you came up and told me that you were a son of Mr. Pollard? That is the only way I can recollect. What meeting that was, I cannot tell.

20 Q I think you have confused the meetings, Mr. Kuser; that was at an application of the Commonwealth Water Company, if I remember right. A Well, it may be. The only thing I remember about it was a report we received from our water board—the commission.

Q Were you aware that the hearings on this application were in progress during the months of July and August? A Yes.

30 Q When after the conclusion of those hearings on August 2nd, was the matter first again brought to your attention? A You would have to refer to the minutes; I cannot remember what meetings. There were several meetings I was not present, when I was away, but there are two meetings at which I was present, you will see by the records there, when the Water Commission made a report on this.

Q You were present at the special meeting of September 5th? A I think so.

40

John L. Kuser, direct.

Q Do you recall any discussion at that meeting with respect to this matter? A You can refer to the minutes and see. I remember the matter came up. At what meeting, I cannot remember. I don't remember the dates.

Q Do you recall whether any discussion was had by the Board at more than one meeting at which you were present, Mr. Kuser? A I am not sure of that, but I know one thing, we went fully into that thing. Mr. Winston was the one that made the report, and we went into that thing thoroughly. 10

Q Did you say Mr. Winston was the one? A Isn't he chairman of the Water Board, or member of the Water Board? No, not Winston; Moeller. Winston is of the Forestry. I got the two commissions mixed. 20

Q Are you personally familiar, Mr. Kuser, with the facts which East Orange sought to establish in support of this application?

Mr. Ellis: I object to that.

A I am familiar.

Q In what manner were these facts brought to your attention, Mr. Kuser? A Through the Water Commission, that has charge; that takes the testimony, you know. They are referred to the Forestry and the Water Commission, and they bring it to the attention of the meeting. Then we ask for the opinion from the expert, who is Mr. Critchlow, and he gives us the full data on that; and whether I am familiar with the location, you mean, of East Orange? 30

Mr. Pollard: No, I meant just what you answered.

John L. Kuser, direct.

Q Then you base your determination chiefly on Mr. Critchlow's statement of the facts; is that right?

10 Mr. Ellis: I object; I don't think you should put words in his mouth. I object to the question as being leading.

A On those facts. I base my opinion on the facts. Of course, I use my judgment.

Q Did you ever read the testimony yourself, the reported testimony in this case? Did you ever read the stenographic testimony as taken at these hearings? A I think I did. All these reports are sent to us off and on during the month; I think I did.

20 Q Was the testimony itself sent to you? A Mr. Kummel sends us the reports of these things. If we are not here, he sends them every week. If I am here, I read them.

Q You don't mean to say that any of the reports Dr. Kummel sent included the typewritten testimony? A I wouldn't say that. I could say there are so many of them that it is impossible to remember one.

30 Q Did you ever examine any of the exhibits which the City of East Orange introduced in evidence in this case? A What I went by was what the committee reported.

Q Did you ever examine any of the exhibits East Orange introduced? A All the exhibits were here; they were all sent to me.

Mr. Pollard: Perhaps you don't understand.

Mr. Ellis: I object; the witness has answered the question.

John L. Kuser, cross.

Q The question, Mr. Kuser, was whether you examined personally any of the exhibits which the City of East Orange put in evidence in connection with this application. A I did.

Q And what ones of these exhibits did you examine? A Those that were sent to me by Dr. Kummel.

10

Q Can you recall what they were? A Oh, I cannot recall; I have too many other things to remember, to recall any one thing that happened a month ago. We get them on all these questions; we have hundreds of them.

Q Did you examine anything other than that which was sent to you by Dr. Kummel? A No, sir.

Examination by Mr. Pilch.

20

Q Was Mr. Critchlow's report in writing? A Yes, they are all in writing; when they make the reports, they are always in writing.

Q Did you read Mr. Critchlow's report? A Everything that was sent to me I read, and also his oral report that he made at the meeting.

Q In arriving at a decision, were you influenced by Mr. Critchlow's report? A I was influenced by the facts of the case, if you want to place it that way.

30

Q No, I want to know if you were influenced by it? A Not at all. If I hear his report, if I think it is right, I vote for it; if I don't, I don't. I use my own judgment.

Cross examination by Mr. Ellis.

Q How many years have you been a member of the Board? A About eight years or more.

40

John L. Kuser, re-direct.

Q And during that time you have become familiar with the area affected by this application by reason of the hearings on the applications of the Commonwealth Water Company and the City of East Orange? A I ought to learn something in eight years. I have had considerable
10 experience with my own wells and water works.

Q And before voting on the disposition of this application, you satisfied yourself by the discussion with the other members of the Board and the records of the department and the advice of your experts, that the application should be granted; is that not so? A I certainly do.

Re-direct examination by Mr. Pollard.

Q In answer to a question by Mr. Pilch, as
20 to whether you relied on this report of Mr. Critchlow's, you said, as I recall, you did if you thought it was proper, and you didn't, if you didn't think it was proper. Can you tell us what information you had other than this report of Mr. Critchlow's? A From the Water Committee what they reported; we are guided a great deal by their report, because we cannot go all over every case, we have got to divide it all up, or we would be here all week.

30 Mr. Ellis: You are also governed by the information you have obtained from your experience with this Board?

The Witness: Certainly.

Walter E. Robb, direct.

WALTER E. ROBB, being duly sworn according to law, on his oath testified as follows:

Direct examination by Mr. Pollard.

Q Are you a member of the Board of Conservation and Development? A I am.

10

Q And when did this application of the City of East Orange first come to your attention? A It came to my attention in September; I was away on my vacation during August; it came before I went away on my vacation. I remember there was an application. I imagine it must have been in July; I cannot say exactly; so far as I can remember, it was in July. I was away on my vacation from the first part of August until some time in September.

20

Q What was the first knowledge of this matter which came to you after the conclusion of the hearings in August? A When did I first hear about it? I didn't get that.

Q When did it first come to your attention again after the conclusion of the hearing on August 8th? A At the regular meeting in September.

Q That was September 19th? A I think so.

Q Do you recall any discussion of this particular matter by the Board as a whole at that meeting? A There was some discussion, but I don't remember the particulars. I might say also, if it be proper to say it, in explanation, that I had read the minutes of the meetings of the Board, and that familiarized me with the fact that this application was going through.

30

Q At this meeting of September 19th, was there any report made to the Board with respect to this matter? A Not that I remember.

40

Walter E. Robb, cross.

Q Did you yourself read the testimony, or transcript of testimony taken at the hearing? A I did not.

Q Did you receive this summary of facts and testimony prepared by Mr. Critchlow? A I did not.

10 *Cross examination by Mr. Ellis.*

Q When these applications come before the Board, I presume they are handed over to the secretary as a departmental matter when they come in? A I don't think they are handed to the secretary; they are handed to the chief of the Water Department.

Q How many years have you been on the Board? A This is my fifth year.

20 Q I presume you read the monthly reports of the municipal corporations and other corporations diverting water from the area affected by this application, do you not? A What is that question?

Q Are the monthly reports available to you as commissioner as they come in from the various municipal corporations affected by this area? A Yes.

30 Q Do you receive what has been referred to as a work sheet from time to time, advising you as to the areas affected by your department? A Every month.

Q You have sat in on hearings of the Commonwealth Water Company and the City of East Orange and the Borough of Florham Park for the diversion of water in this area, have you not? A I am not sure about that. We used to have water hearings by the whole Board; now, it is divided. I cannot remember what hearings I

William E. Florance, direct.

sat in on. I remember having sat in on some hearings in connection with East Orange previous to this application.

Q You have a general information with respect to that area from the records of the department? A Yes, I have.

Q And do you recall receiving a report from Mr. Critchlow dated August 16, 1928, in which he gave a summation of the situation? A No, I do not. 10

WILLIAM E. FLORANCE, being duly sworn according to law, on his oath says:

Direct examination by Mr. Pollard.

Q Mr. Florance, you are a member of the Board of Conservation and Development? A I am. 20

Q Were you present at any of the hearings on this application at which testimony was taken? A No, I was present at the first meeting that was held in the State House, when we had several cases down; I think that was the meeting of the Board in June, and I think we called the case, and the counsel for East Orange wasn't present. I think there were several other lawyers representing the defendants, or opponents, and we continued the matter until July. 30

Q But you were not present at any one at which testimony was taken? A I was on vacation during July.

Q In what manner did the facts presented by the City of East Orange come to your attention as a member of the Board? A As a member of the Water Committee, we met before the 40

William E. Florance, direct.

Board meeting, at the meeting in August with Mr. Drake, Colonel Moeller, Dr. Kummel, Mr. Critchlow and myself present, and took up the whole question of the East Orange application with the testimony before us—with the application before us, in our usual form of consideration of the East Orange application, and after a thorough examination according to our opinion at that time, and free discussion of the facts as shown by the record and testimony, reached the conclusion to limit the application of four million gallons per day to a two million gallon per day grant to the City of East Orange. I remember quite distinctly this case and this discussion, because Critchlow suggested that a definition of the rights of various interested municipalities in the Canoe Brook grant—he recommended that we define these limitations in that grant, and after a discussion of that very question, that impressed it on my mind, that that wasn't the question that was before us for decision at that time, and it was improper to include in the grant that definition of rights, but it had to do with our consideration of the application of East Orange, and in its reduction from four millions, as requested, to two millions, as granted.

30 *Examination by Mr. Pilch.*

Q Do you remember, Senator, what Mr. Critchlow's recommendation was at that time?
 A My recollection is it was two million gallon grant, rather than a four million, which we thought wasn't necessary. We had before us the curves showing the increase of population, and the curves showing the consumption, as we have in these cases, and that application did not

William E. Florance, cross.

warrant, we thought, a grant of four million gallons per day, with their present supply—East Orange's present supply—of about five million, as I remember it, roughly, plus this two million, that it would carry them through for a term of years.

Q Do you remember whether Mr. Critchlow recommended four millions or two millions? A I think two millions, sir. 10

Further direct examination by Mr. Pollard.

Q Do you recall that this matter was discussed by the Board as a whole at any meeting other than the meeting of August 8th? A I don't think so. I think it was signed—I think the grant was made at the August meeting, and was signed at the following meeting. 20

Cross examination by Mr. Ellis.

Q You were present at the special meeting on September 5, 1928, were you not? A I think so. That is when the grant was actually signed.

Q And there was a quorum of the Board present at that time? A The record would show; I don't remember.

Q The minutes show that yourself, Commissioners McConnell, Drake, Kuser and Moeller were present. A If there were five present, there was a quorum present. 30

Q At that time the question of this written grant was taken up by the Board and signed by the five men present? A It was signed that day.

Q How many years have you been a member of this Board? A I think about ten. 40

William E. Florance, cross.

Q And during that time you have become generally familiar with the situation in the area affected by this application by reason of hearing testimony in other applications of the Commonwealth and the City of East Orange and Florham Park?

10

Mr. Pilch: I object to that.

A My recollection is that Madison and Chatham and Commonwealth Water Company have been frequently before the Board, so that we are very familiar with the water rights, especially as relating to the Canoe Brook section.

20

Q Did you receive a copy of the summary of the records by Mr Critchlow? A I presume if it was sent, I received it, but I don't remember that that summary was at the August meeting. When we determined the question as a committee we had the original records before us at that time.

30

Q I presume you made your determination in this matter by reason of your experience in the Board, your knowledge of the records of the office, plus the advice of the experts of the department, and the testimony? Is that right? A Complete record before us at that time, together with any knowledge that we may have had from experience.

Q Can you recall at the discussion of the Water Committee, that the various charts showing, as you say, the line of consumption and population for a period of various years was one of the exhibits? A Yes.

40

It is stipulated and agreed by and between the attorneys for all the parties herein that

Dr. Henry B. Kummel, recalled, further direct.

Commissioner Drake, one of the members of the Board of Conservation and Development, not called to testify herein, was present at the hearings on June 13, July 10, July 26 and August 2, and heard the testimony given at hearings on July 10, 1928 and August 2, 1928.

10

DR. HENRY B. KUMMEL, recalled for

Further direct examination by Mr. Pollard.

Q Dr. Kummel, were any of the exhibits offered in evidence in this matter ever sent, to your knowledge, to any of the members of the Board of Conservation and Development? A 20
No, they were not sent to the members.

Q Were any copies of the testimony taken in this matter ever sent, to your knowledge, to any of the members of the Board? A No.

Q Was any report or summary of the testimony made up by you and sent to any of the members of the Board before the meeting of August 8th? A No, not by me.

Q Was there any report made by any other person, to your knowledge, sent to any of the members of the Board before the meeting of August 8th? A Not before the meeting of August 8th. 30

Q Do you know of any report or summary of the testimony and of the facts other than the one— A Let me clarify. The work summary for the month of July, which was sent to the members, four or five days before the meeting of August 8th, contained a paragraph, as I now

40

Dr. Henry B. Kummel, recalled, further direct.

recall, without having refreshed my memory by referring to that summary, summarizing very briefly the facts in the case. The paragraph, probably, did not exceed possibly one-third or half of a typewritten page.

10 Q Who made up this report that you refer to? A That item was prepared by Mr. Critchlow. I am making that statement, not because I remember distinctly that paragraph, but because that is the invariable practice followed. I can verify that by referring to our records.

20 Q Do you know of any other summary of the facts and testimony or recommendation in this particular application, other than the one set out as Exhibit G in the return to the writ, which was stated to be "a copy of the summary of facts and testimony," sent to a majority of the Board on August 16th? A That is the only summary that was sent, except the brief paragraph in the work summary to which I just alluded.

Q Have you in the files of your department any record of the Dickinson wells? Any records of the Dickinson wells, as may be shown by the Venturi meters in these wells?

30 Mr. Ellis: I object to that question as being no part of the proceedings previously had in this matter, and relates to no part of the return to this writ.

A I don't know; I cannot answer that without going over the records in detail.

Q I would like to have an answer to that question. Would it take long to ascertain from your records whether you have any such records or not? A I really don't know; you understand that I do not have personal charge of these

40

Dr. Henry B. Kummel, recalled, further direct.

records, that is, in the Water Supply Division; Mr. Critchlow has a more intimate knowledge of what is on file in the way of water supply records than I have.

Q The answer is, you cannot answer that without looking over your records? A That is right.

10

Q And these records are not available so you can examine them in the course of a few minutes, and answer that question? A I don't think I could.

Q Dr. Kummel, have you here a letter which I sent you under date of August 14, 1928, requesting a special meeting of the Board to give the objecting municipalities a full hearing on this application?

20

Mr. Ellis: I object to that question on the ground that at the last hearing of the Board at which testimony was taken on this application, it was agreed between counsel for all of the parties interested that no oral argument would be made on the testimony nor any briefs filed.

A A similar question was asked me at the last hearing, and I then testified that to my knowledge no such letter had been received. Since then my attention has been directed to the fact that there was a letter addressed to me, received in the office about August 14 or 15, while I was away on my vacation, and my recollection is that letter never came to my attention after I got back, and I believe it was answered in my absence by Mr. Critchlow.

30

Q Have you that letter here; and if so, read it into the record, doctor.

40

Dr. Henry B. Kummel, recalled, further direct.

10 Mr. Ellis: I wish to object to the introduction of this letter in evidence, on the theory that it is not binding on the City of East Orange, and for the further reason that at the last hearing of the Board at which testimony was taken, the case was by agreement of counsel for all parties concerned closed, and it was definitely agreed that no oral argument be made and no briefs be filed.

A (Reading.) Letter from Riker & Riker, Newark, August 14, 1928:

“Mr. Henry B. Kummel, Director,
Department of Conservation and Development,
State Office Building,
Trenton, N. J.

20 Dear Sir:

In regard to the application of East Orange for the right to take four million gallons of water per day from land to be condemned from the Braidburn Country Club in Florham Park, would say that we would like to have a conference with the board to discuss this matter before the permit is signed up. We understand the permit was authorized for two million gallons per day instead of four, as requested.

30 I am advised that it is not unusual for the board to give a full hearing on such matters before they are finally closed up, and if you could arrange a special meeting of the board so that we might discuss this matter, it would be appreciated.

Yours very truly,

Robert S. Pollard,
Attorney for the Borough of Chatham.”

Dr. Henry B. Kummel, recalled, cross.

Mr. Pollard: I would like to put in Mr. Critchlow's answer to that letter, and also a letter of mine to Mr. Critchlow.

Mr. Ellis: I object to that.

Cross examination by Mr. Ellis.

Q When you answered that none of the exhibits referred to in the return were sent to the members of the Board, did you overlook the fact that Exhibit G, being the summary of facts and testimony prepared by Mr. Critchlow, was mailed to the members of the Board? A I understood that I was asked whether any of the exhibits introduced at the hearings had been sent to the members of the Board, and I said no.

10

Q Dr. Kummel, you have read into the record over my objection, a letter received from Mr. Pollard, requesting a hearing on the petitioner's application. As I recall your previous testimony, you said that you recalled that the attorneys for all parties taking part in these proceedings agreed that there would be no oral argument nor any briefs filed on this petition; is that so?

20

Mr. Pollard: I object to that because it is not a statement according to the record of Dr. Kummel's answer at the last taking of testimony.

30

A My answer is that that is my recollection.

Q Your recollection also is that it was agreed by and between the attorneys for the parties, that there would be no briefs on the testimony?

Mr. Pilch: I object to that, because he said in his previous testimony that briefs could be filed.

40

Howard T. Critchlow, direct.

A My recollection is now as it was when I testified, two or three weeks ago, that briefs could be filed, provided they were in the hands of the Board at the meeting of August 8th, but that there would be no oral argument.

10 Q As director of the Board have you received or seen or heard of any briefs either on or before August 8, 1928? A No.

HOWARD T. CRITCHLOW, being duly sworn according to law, on his oath testified as follows:

Direct examination by Mr. Pollard.

20 Q Mr. Critchlow, I show you a letter signed by H. T. Critchlow, directed to me, under date of August 15, 1928; did you write that letter? A That is my signature. I am reading the letter to refresh my memory. (After reading letter.) I wrote that letter and signed it.

Mr. Pollard: I would like to have that letter read into the record.

30 Mr. Ellis: I wish to make an objection to the reading of the letter into the testimony, on the ground that it is irrelevant, and for the reason previously stated, that it was agreed between counsel for the parties that there would be no oral arguments made on the testimony.

The Witness: (Reading.) "August 15, 1928.

Howard T. Critchlow, cross.

Mr. Robert S. Pollard,
Attorney for Borough of Chatham,
24 Commerce St.,
Newark, N. J.

Dear Mr. Pollard:

I acknowledge your letter of August 14 enclosing copy of letter mailed to Dr. Kummel, Director of the Department, regarding the East Orange water matter. 10

Dr. Kummel is away on vacation and will not return until about September 5. I have no authority to call a special meeting of the Board for the discussion of the matter mentioned in your letter to Dr. Kummel. I would suggest, however, that you get in touch with Mr. Howard F. McConnell, President of the Board, 150 Broadway, New York City. 20

I am sending you herewith an exact copy of the application of the City of East Orange for additional water supply, as you have requested.

Yours very truly,

H. T. Critchlow
Chief, Division of Waters."

Cross examination by Mr. Ellis.

Q Mr. Critchlow, you have read into the record, over my objection, a letter dated August 15, 1928, addressed to Mr. Pollard, that was in reply to a letter mailed to Dr. Kummel, was it not? A Yes, sir. 30

Q Dr. Kummel was away on his vacation at that time? A I believe he was.

Owen Winston, direct.

Q Did Dr. Kummel ever see that letter, to your knowledge? A Not to my knowledge.

Adjourned to Thursday, February 21, 1929.

10 Continuation of proceedings in the above-entitled matter before Nicholas W. Bindseil, Esq., a Supreme Court Commissioner of New Jersey, at his office, Federal Trust Building, Newark, New Jersey, on Tuesday, February 26, 1929, at 3:30 P. M.

Appearances:

20 Messrs. Riker & Riker, by Theodore McC. Marsh, Esq., and Robert S. Pollard, representing the Borough of Chatham and Braidburn Realty Corporation.

Henry G. Pilch, Esq., representing the Borough of Madison.

Robert E. Burke, Esq., representing the Borough of Florham Park.

Walter C. Ellis, Esq., representing the City of East Orange.

30 Hon. Edward L. Katzenbach, attorney-general, by S. M. Dickinson, Esq., representing the Board of Conservation and Development.

OWEN WINSTON, a witness called on behalf of the prosecutors, being duly sworn according to law, on his oath testified as follows:

Direct examination by Mr. Marsh.

40 Q You are a member of the State Board of Conservation and Development? A I am.

Owen Winston, direct.

Q And were you a member during the entire year 1928, when the application of the City of East Orange was under consideration? A I was.

Q Were you present at any of the occasions at which the testimony was taken? A No, not when it was taken, not at the hearings.

Q You were not present, I understand, at the meeting of August 8, 1928? A Yes, I was present then. 10

Q You were present at that meeting? A Yes; there were four of us present.

Q Prior to that meeting had this matter of the application of the City of East Orange been brought to your attention? A Yes, sir.

Q In what way? A We have a thing called the "work summary," which summarizes the work of the past month, and these water cases are all summarized, so that we have them before us at the next meeting. At the June meeting I had the May summary before me, which gave an outline of the application of East Orange for this well. 20

Q Who prepares these summaries? A It is done in the office; I cannot tell you who does it, probably Miss Cooley; I wouldn't be sure of that; I really don't know who does it.

Q It is done by the staff of the Board of Conservation and Development, by some member of the staff? A Yes. 30

Q And subsequent to that meeting, did you have this matter again before you? A Not until—not finally, until August 8th.

Q Following the meeting of August 8th, and on or about August 28th, did you receive a report or summary of the work, signed by Mr. Critchlow, Chief of the Division of Water? A I did. 40

Owen Winston, direct.

Q And the document which you received is the same as that marked Exhibit G on the return; that is a copy of it? A That looks like it.

Q You read it, I assume? A Oh, yes. This was received after the meeting at which we discussed it.

10 Q Prior to the meeting of August 8th was the matter presented to your attention in any way except through the work sheets? A No.

Q And subsequent to the meeting of August 8th did anything come to your attention between that time and the time you received this report? A Not that I remember.

Q Were you present at the meeting of September 5th? A No, sir; that was my birthday; I took a day off.

20 Q And following the meeting of September 5th, was the document known as the approval of the application, which is marked "F" on the return, sent to you? A That I don't remember. I saw it at the meeting of September 19th, at which I was present.

Q I call your attention to a letter which was presented by Dr. Kummel, which bears date September 6, 1928, addressed to Mr. Owen Winston, in which it states:

30 "The approval of the application of the City of East Orange is enclosed herewith and has already been signed by a majority of the members of the Board, the signatures being attached at a special meeting held yesterday. The President directed that the approval be sent to you with the request that you sign it if you wish to do so."

A Yes, I must have received it. I don't know whether I signed it then or at the meeting of September 19th; that I cannot remember.

40

Owen Winston, cross.

Q When you received it, on or about September 6th, by mail, you then signed it? A Yes.

Q And forwarded it to Mr. Robb? A Yes, I must have.

Q You can look at the letter; that will refresh your recollection. A You have just read it to me, and I do remember now getting a letter. I was in some doubt whether I signed it in my office or at the meeting on the nineteenth. 10

Q But having seen the letter, you now recollect having signed it at your office? A Yes.

Q And was that the first time that that document, Exhibit F. attached to the return, was presented to you? A Yes.

Q And between the time of August 28th, or thereabouts, when you received the Critchlow report, and this date, had the matter been presented to you in any form? A No. 20

Q You were present at the meeting of September 19th—I think you said? A Yes, and August 8th.

Cross examination by Mr. Ellis.

Q Mr. Winston, at the meeting of August 8th, at which there were four members of the Board present, the merits of this application were discussed rather freely among those present? A Very fully. 30

Q And then you recall that again on September 19th, the prior proceedings of the Board were ratified again, by the Board, at which time there was a quorum present? A Yes.

Q How many years have you been a member of the Board, Mr. Winston? A Seven or eight.

Q Do you recall also at the meeting of August 8th that the testimony was there and the exhibits in the case? A I do. 40

Owen Winston, cross.

Q During your service on the Board, you have sat in on many applications of East Orange and the Commonwealth Water Company and other municipalities abstracting water from the area concerned in these proceedings? A Yes, I have.

10 Q So that, I presume, you had considerable general information about that area before any testimony was taken? A Yes, I had.

Q The work sheet which you received from the director or secretary of the Board each month keeps the members of the Board advised as to the matters pending before the Board and the disposition of different things? A The work sheet keeps track of the matters that are coming up before the Board, and the minutes, and keeps track of what has been done.

20 Q Does the Board get reports from time to time from its director and engineers with respect to water matters? A Only at the meetings, unless there is some case coming up and we ask for information; yes, we do.

Q Mr. Winston, do you recall that before the meeting of September 19th, you were advised by Mr. Critchlow—I believe he is the hydraulic engineer, is he not? A He is.

30 Q —that the Boroughs of Chatham, Madison and Florham Park had a supply of water at least one hundred per cent. in excess of what their daily needs showed? A Yes.

Q You were also advised by Mr. Critchlow that in his judgment the taking of two million gallons per day from the area described in the proceedings, would not unduly affect the supply of Chatham, Florham Park and Madison? A I was; that was discussed at the meeting, in August.

Owen Winston, re-direct.

Q And I presume before you voted on this application, you satisfied your own mind from the information you had previously had, and your knowledge of the conditions generally, and the advices from the experts of your department, and from the testimony, that this application should be granted for two million gallons per day? A I certainly did. 10

Q And did you exercise your own judgment in the matter, Mr. Winston? A Absolutely.

Q As I understand it, this matter was discussed by you, or conferred on by you with other members of the Board on August 8th and again on September 19th? A Yes, sir, it was.

Re-direct examination by Mr. Marsh.

Q Mr. Winston, I understand from what you have just testified, that Mr. Critchlow advised you that Chatham and Madison had a water supply one hundred per cent. in excess of their needs? A Yes. 20

Q Did that report of Mr. Chitchlow affect your decision in any way, or enter into a consideration of the question? A Yes, it did; it affected us. Dr. Kummel also gave us a great deal of information. The thing that bothered me most was the geological formation there. 30

Q You had that report and used that in making up your mind? A Yes.

Q At the meeting of August 8th, as I understand it, Mr. Critchlow also made a report, in which he advised that the taking of two million gallons would be reasonable; is that right? A Yes.

Q And Mr. Critchlow's report was considered by you and the other members of the Board at that meeting of August 8th? A Yes. 40

Stipulation.

Q You didn't read through the testimony, did you, yourself? A No, it was very voluminous.

Q You didn't attempt to read it? A No; we asked certain questions, and certain questions were looked up.

Q To whom did you address those questions?
10 A Dr. Kummel and Mr. Critchlow.

Q You were guided by their reply? A And what was read out of the testimony.

Q That was implied from their report and their recommendations? A Yes, we had a very full discussion; everybody asked questions.

Mr. Ellis: Was Mr. Critchlow's report the sole reason for your deciding as you did, or did you take that into consideration, along with other information?
20

The Witness: Among other things.

It is hereby stipulated and agreed by and between Walter C. Ellis, attorney for the City of East Orange, defendant, and Riker & Riker, attorneys for the Borough of Chatham and Braidburn Realty Corporation; Henry G. Pilch, attorney for the Borough of Madison, and Robert E. Burke, attorney for the Borough of Florham Park, prosecutors,
30 that the following stipulation may be offered in evidence in the above-entitled cause as proof of the facts therein stated:

1. The City of East Orange did not, either prior or subsequent to filing its application with the Board of Conservation and Development of the State of New Jersey, secure the consent of the North Jersey District Water Supply Commission to the diversion of the waters covered in its application

Certificate of Commissioner.

to the said Board of Conservation and Development.

2. That there was published, during the year 1928, in the Borough of Chatham, County of Morris and State of New Jersey, a weekly newspaper which was known as the Chatham Press which circulated in the Borough of Chatham and vicinity. 10

3. That there was published, during the year 1928, in the Borough of Madison, County of Morris and State of New Jersey, a weekly newspaper which was known as the Madison Eagle which circulated in the Borough of Madison and vicinity.

CERTIFICATE.

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I HEREBY CERTIFY, that the foregoing testimony was taken before me as Supreme Court Commissioner, at the office of the Board of Conservation and Development, at Trenton, New Jersey, on January 25 and February 13, 1929, and at my office, Federal Building, Newark, New Jersey, on February 26, 1929, in the presence of Theodore McC. Marsh, Esq., and Robert S. Pollard, Esq., of Riker & Riker, representing the Borough of Chatham and Braidburn Realty Corporation; 30
Henry G. Pilch, Esq., representing the Borough of Madison; Robert E. Burke, Esq., representing the Borough of Florham Park; Walter C. Ellis, Esq., representing the City of East Orange, and Hon. Edward L. Katzenbach, Attorney-General, by S. M. Dickinson, Esq., representing the Board of Conservation and Development; that it was stipulated by and agreed between the attorneys for the respective parties that the testimony 40

Certificate of Commissioner.

should be taken stenographically by me and afterwards reduced to typewriting, the signing of the same being waived; and I further certify that the foregoing is a true and correct transcript of my shorthand notes of the testimony given by the respective witnesses.

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NICHOLAS W. BINDSEIL,
Supreme Court Commissioner.

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REASONS.

NEW JERSEY SUPREME COURT.

BOROUGH OF CHATHAM, BOROUGH
OF MADISON and BOROUGH OF
FLORHAM PARK and BRAIDBURN
REALTY CORPORATION, a corpo-
ration,

Prosecutors,

vs.

BOARD OF CONSERVATION AND DE-
VELOPMENT and CITY OF EAST
ORANGE,

Defendants.

10

On Certiorari.

Reasons.

20

The Boroughs of Chatham, Madison and Florham Park all being municipal corporations of the State of New Jersey, and the Braidburn Realty Corporation, a corporation of the State of New Jersey, prosecutors, hereby pray that the resolution and decision adopted by the Board of Conservation and Development of the State of New Jersey on August 8, 1928, and the approval, decision and order of the said Board of Conservation and Development bearing date August 8, 1928, and the resolution ratifying same adopted September 19, 1928, in relation to the application of the City of East Orange for approval of its plans for diverting four million gallons of water from certain lands located in the Borough of Florham Park, County of Morris and State of New Jersey, for the purpose of supplying water to the said City of East Orange and for authority to condemn forty acres of land owned by the Braidburn Realty Corporation and

30

40

Reasons.

located in the said Borough of Florham Park be set aside, reversed and for nothing holden for the following reasons:

10 1. The application, petition and general data submitted by the City of East Orange to the said Board of Conservation and Development in connection with the above matter did not comply with the statute in such case made and provided in that the same did not show the source of the proposed supply of water, and, therefore, the Board of Conservation and Development was without jurisdiction.

20 2. The application, petition and general data submitted to the said Board of Conservation and Development by the said City of East Orange in connection with the above matter did not comply with the requirements of the statute in such case made and provided in that it did not show the approximate location of the proposed wells and, therefore, the said Board of Conservation and Development was without jurisdiction.

30 3. The application, petition and general data submitted by the City of East Orange to the said Board of Conservation and Development in connection with the above matter did not comply with the requirements of the statute in such case made and provided in that the same did not show the estimated capacity of the proposed wells and, therefore, the Board of Conservation and Development was without jurisdiction.

40 4. Notices of the hearing by the Board of Conservation and Development were not printed in one or more newspapers published in the vicinity of the lands affected as required by the statute in such case made and provided and, there-

Reasons.

fore, the said Board of Conservation and Development had no jurisdiction.

5. The hearing of the application of the said City of East Orange was conducted by only one member of the Board of Conservation and Development and he had no legal authority or jurisdiction to conduct hearings for and in behalf of the said Board of Conservation and Development and the said hearing was, therefore, illegal, void and of no effect. 10

6. The resolution purporting to be adopted by the Board of Conservation and Development at an alleged meeting on August 8, 1928, approving the said application of the City of East Orange, was adopted by a minority of the said Board of Conservation and Development and was, therefore, illegal, void and of no effect. 20

7. The approval, order and decision of the said Board of Conservation and Development dated August 8, 1928, purporting to approve the said application of the City of East Orange, was signed by seven members of said Board acting separately and the same was, therefore, not a decision of said Board as required by the statute in such case made and provided and is illegal, void and of no effect. 30

8. The said Board of Conservation and Development, as a body, never heard, read or considered the testimony and evidence presented in said cause or heard or offered an opportunity for counsel for the prosecutors to present argument to said Board why the application should not be granted, and that no proper hearing was ever conducted by the said Board of Conservation and Development and that the approval, de- 40

Reasons.

cision and order of said Board was, therefore, illegal, void and of no effect.

10 9. The resolution adopted by the Board of Conservation and Development on September 19, 1928, attempting to ratify the actions of the minority members of the said Board as taken at a meeting of the minority members on August 8, 1928, was general and not specific and, therefore, ineffective to ratify the resolution of August 8, 1928, aforesaid.

20 10 The resolution adopted by the Board of Conservation and Development on September 19, 1928, attempting to ratify the action of the minority members of said Board of Conservation and Development on August 8, 1928, was adopted without any hearing having been held by said Board and without any consideration of the testimony, evidence or argument of counsel and, therefore, was ineffective and void.

30 11. The weight of the evidence submitted to the Commissioner at the hearings conducted by him did not establish that the taking of the additional water as applied for by the City of East Orange was justified by either public necessity or reasonably anticipated public use or that the taking of said water did not interfere unduly with the operation of the municipalities of the Borough of Chatham, Borough of Madison and Borough of Florham Park to obtain a water supply for their and each of their respective uses or that the same will not unduly interfere with the public interests of the said boroughs, and each of them, and that, therefore, the actions of the Board are illegal, void and of no effect.

40 12. The weight of evidence submitted to the said Commissioner did not establish that the

Reasons.

taking of the additional water would not unduly injure the private interests of the Braidburn Realty Corporation and that, therefore, the said actions of the Board are illegal, void and of no effect.

13. Evidence offered by the prosecutors relative to the yield in the Canoe Brook Field, as shown by the report of Geological Survey of 1904, was excluded by the Commissioners upon objection by counsel for the defendant, City of East Orange. Such evidence was material to cause of prosecutors and was offered after it had been agreed and stipulated that all such records and reports should be admitted in evidence.

10

14. The said Board of Conservation and Development used a summary of the evidence and a report and recommendation prepared by a person not a member of the said Board or representing any of the parties to said cause in reaching its decision, and that the use of the same renders said approval, decision and order void, illegal and of no effect.

20

15. No consent or approval was ever granted by the North Jersey District Water Supply Commission to the diversion of the water supply in question and the said Board of Conservation and Development had no power to act in the premises unless and until the North Jersey District Water Supply Commission had first approved the same and that, therefore, the actions of said Board of Conservation and Development are illegal, void and of no effect.

30

16. That the petition and application of the City of East Orange did not indicate with certainty the lands of the Braidburn Realty Corpo-

40

Reasons.

ration it desired to condemn and, therefore, the action of the Board of Conservation and Development was illegal, void and of no effect.

17. That the said several actions of the Board of Conservation and Development are in divers others illegal, unjust and void and should be set
10 aside and for nothing holden.

RIKER & RIKER,
Attorneys for Borough of Chatham and
Braidburn Realty Corporation.

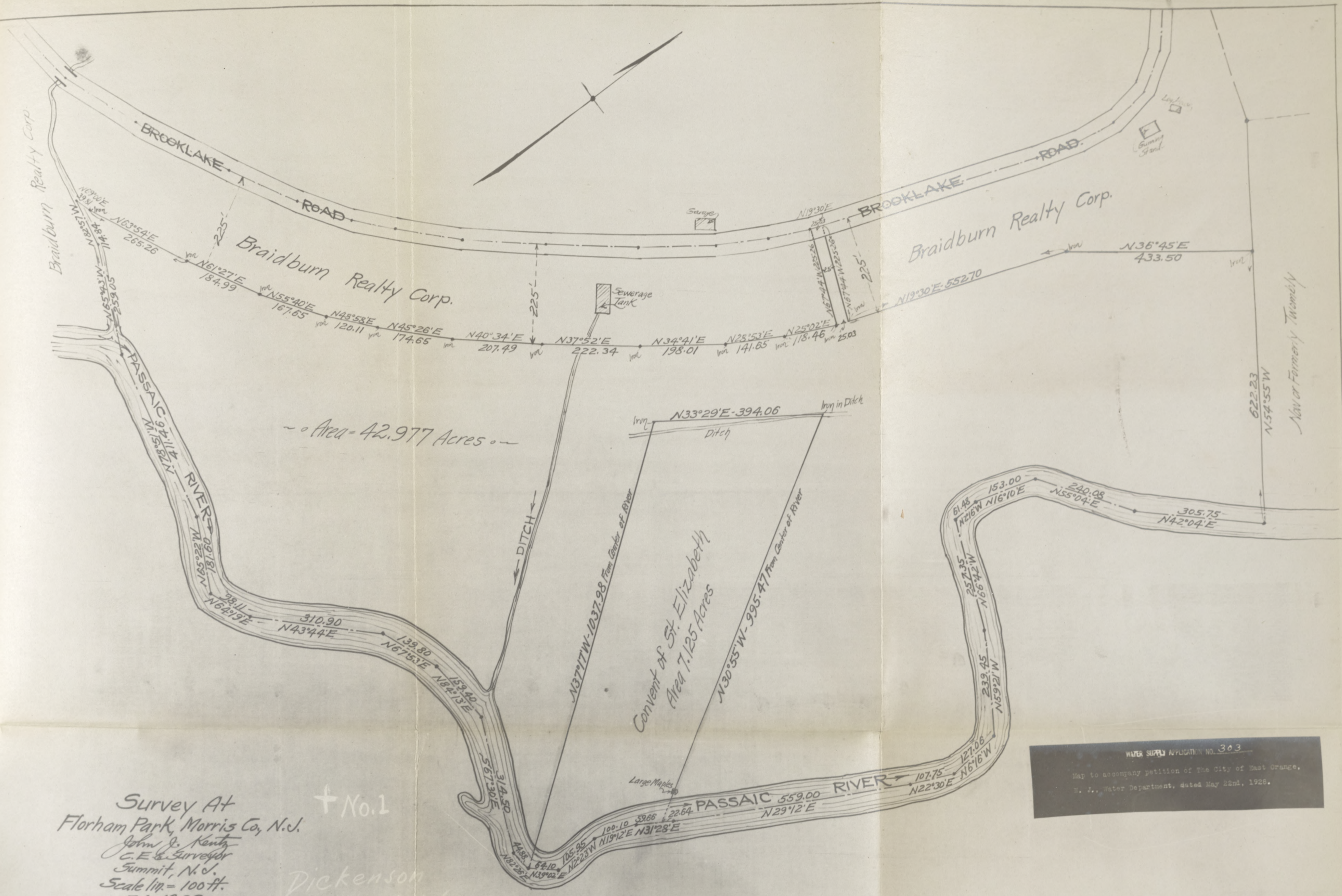
HENRY G. PILCH,
Attorney for Borough of Madison.

ROBERT E. BURKE,
Attorney for Borough of Florham Park.

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30

40



Survey At
 Florham Park, Morris Co., N.J.
 John J. Kenty
 C.E. & Surveyor
 Summit, N.J.
 Scale 1 in. = 100 ft.
 Feb. 1928-

+ No. 1
 Dickenson
 Well Field

WATER SUPPLY APPLICATION NO. 303
 Map to accompany petition of The City of East Orange,
 N. J., Water Department, dated May 22nd, 1926.

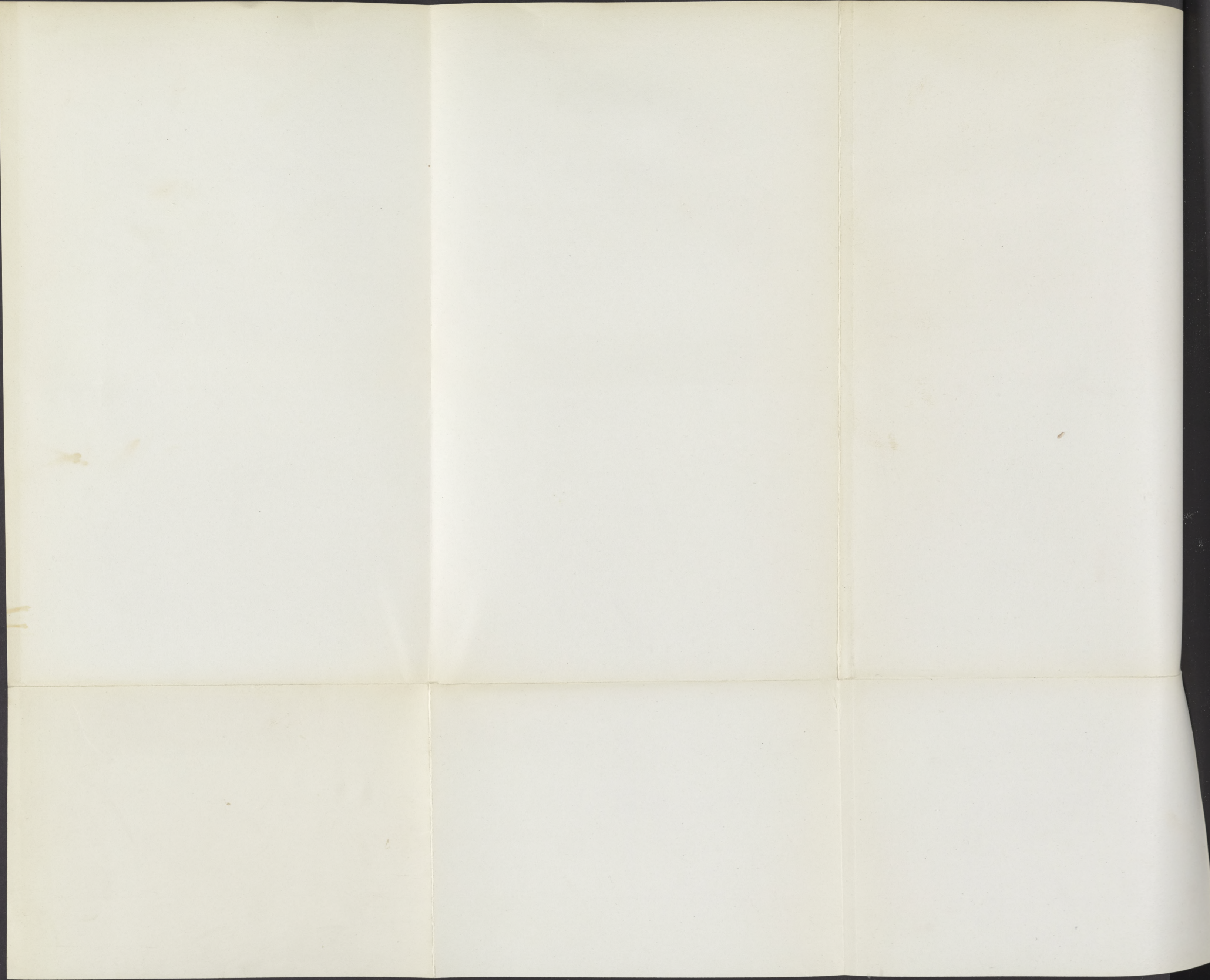


Exhibit 12

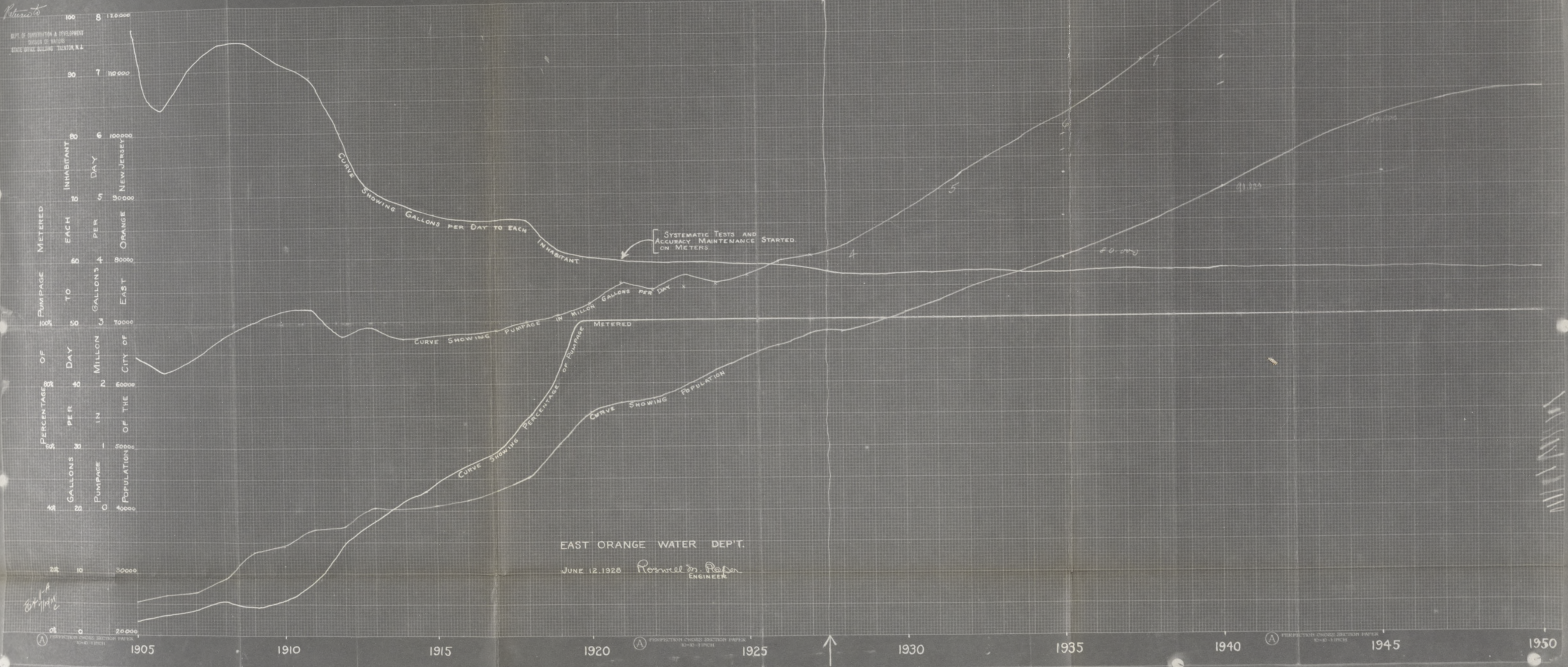






Exhibit A(1)

APPLICANT - CITY OF EAST ORANGE,
Water Department,
436 Main Street.

Engineer - Roswell M. Roper

Scale - 1 inch = 2000 ft.
Date - May 15, 1928.

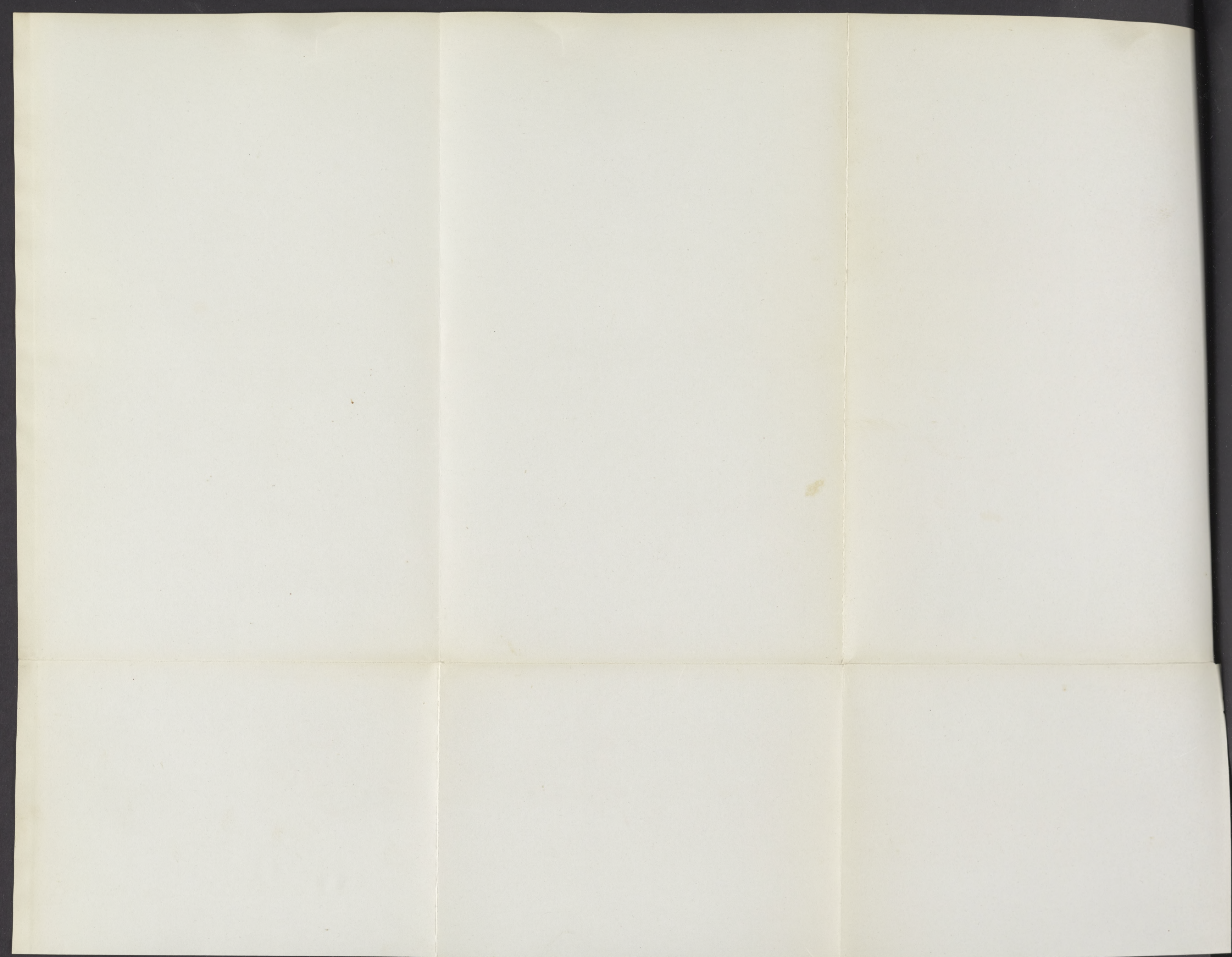
To be returned to
DEPT. OF CONSERVATION & DEVELOPMENT
DIVISION OF WATERS
STATE OFFICE BUILDING TRENTON, N. J.

Surveyed in 1887.

Resurveyed in 1900.

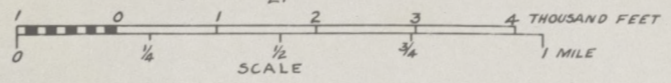
Edition of 1902.

Contour lines and figures show elevation
in feet above mean sea level.
Contour Interval in level country 10 feet;
in hilly country 20 feet.

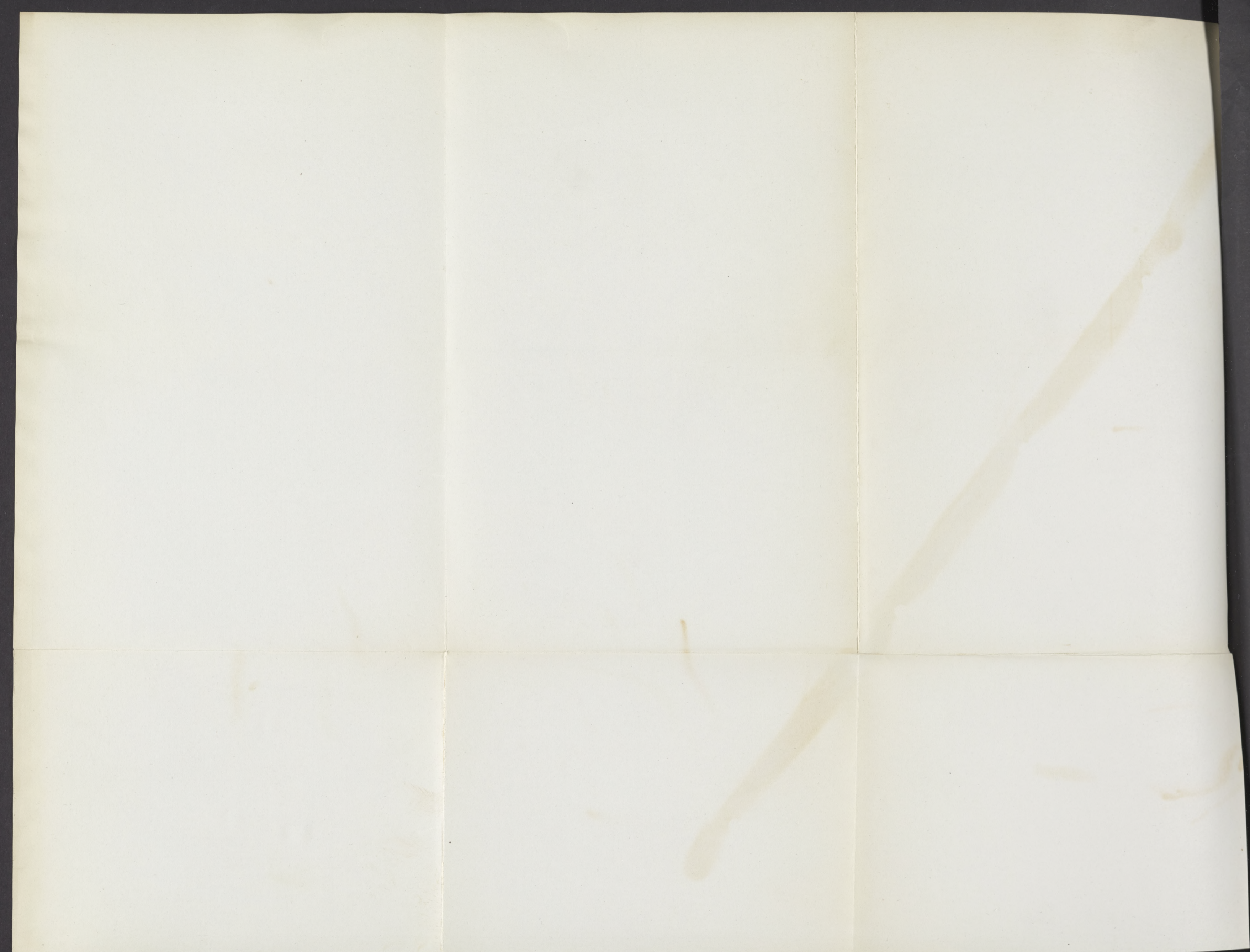




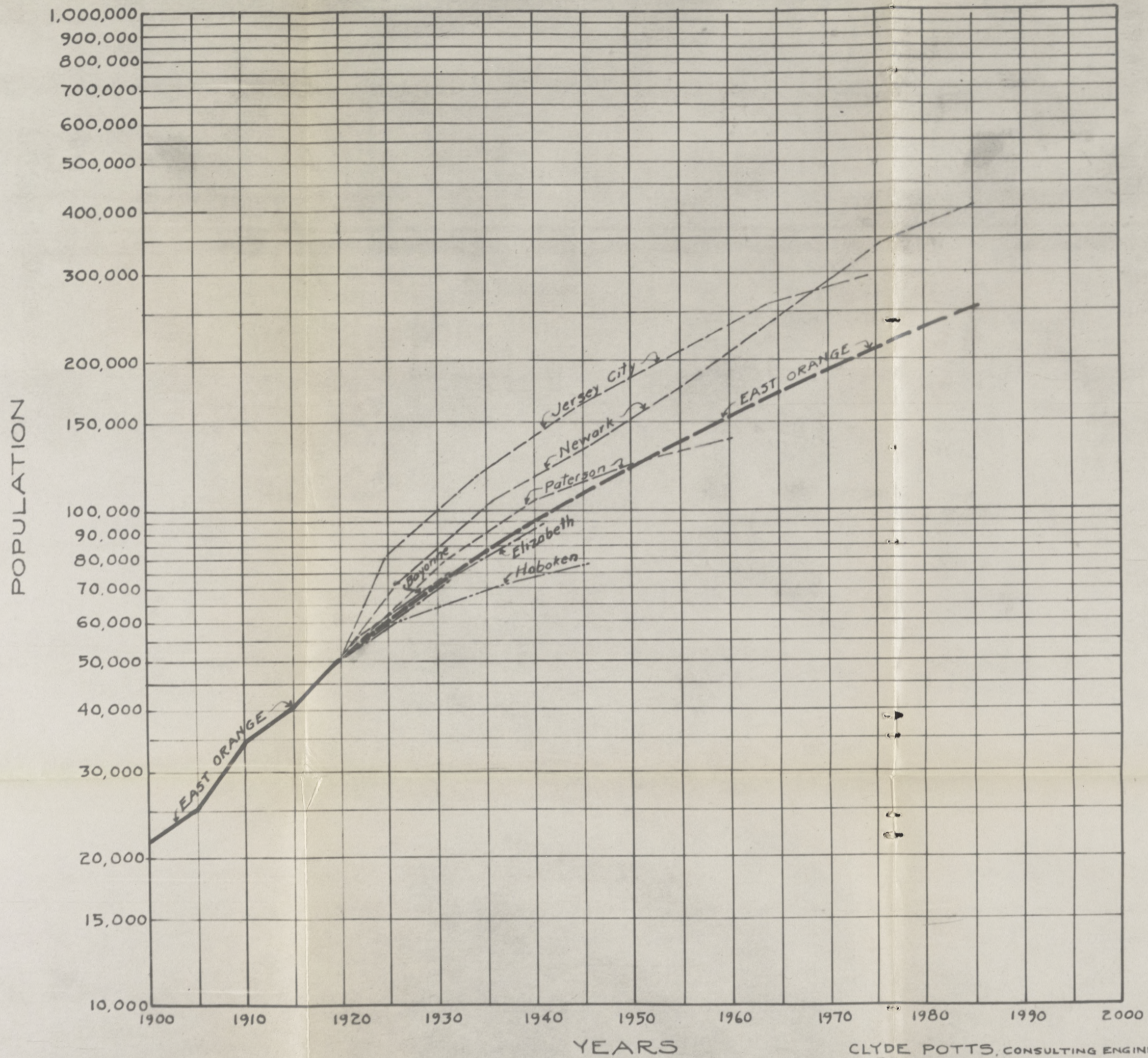
LEGEND
 Surface contours — 300
 Probable contours of rock floor, red sandstone or shale — 40
 Active wells — 15
 Test wells — 8
 Elevation of rock, Feet A.M.T. 46.3



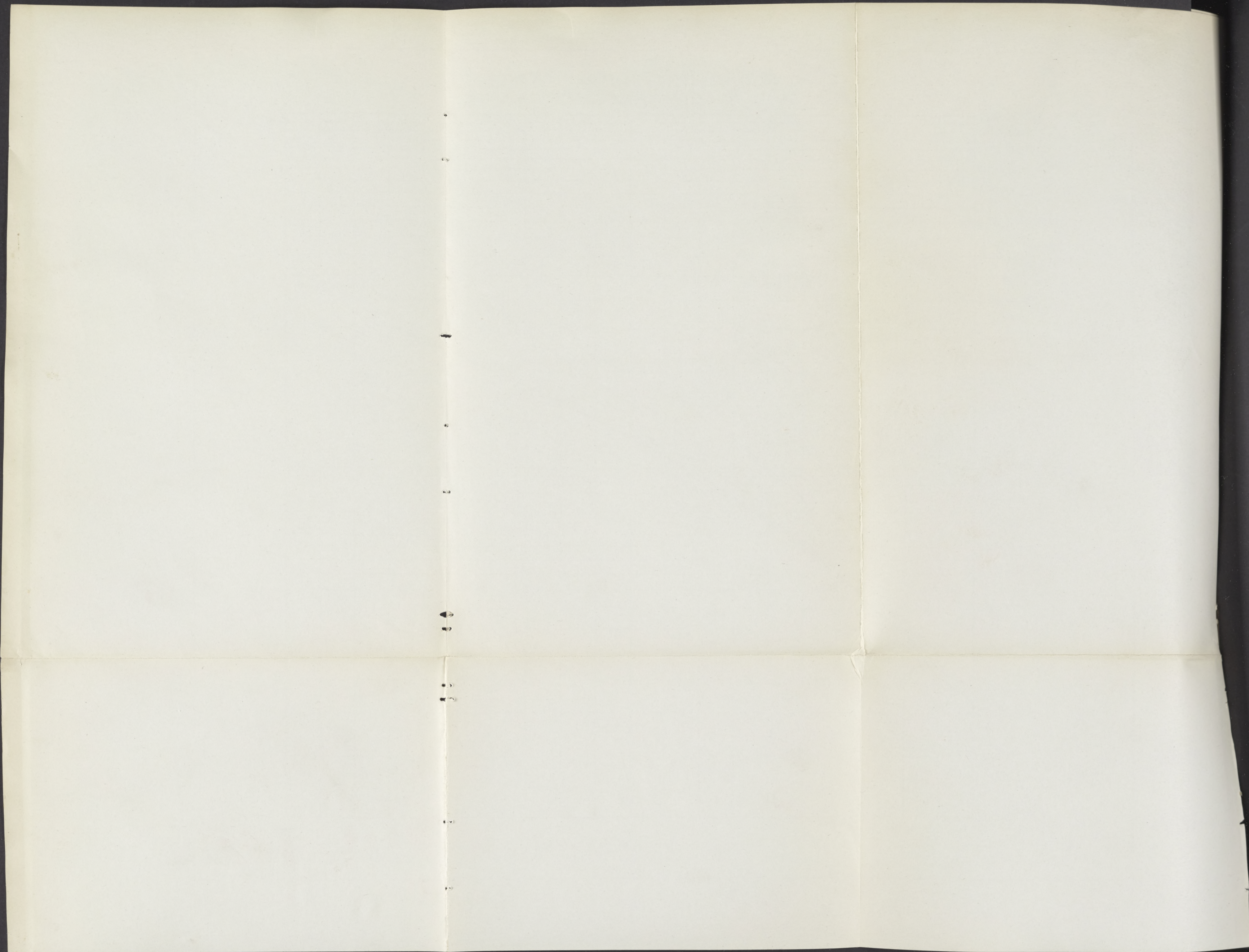
STATE OF NEW JERSEY
 DEPARTMENT OF CONSERVATION & DEVELOPMENT
 INVESTIGATION OF
 COMMONWEALTH WATER CO.'S WATER SUPPLY APPLICATION
 OCTOBER 1925
 Joseph Brook Wells revised June 1928 149
 John H. Brown
 Hydraulic Engineer

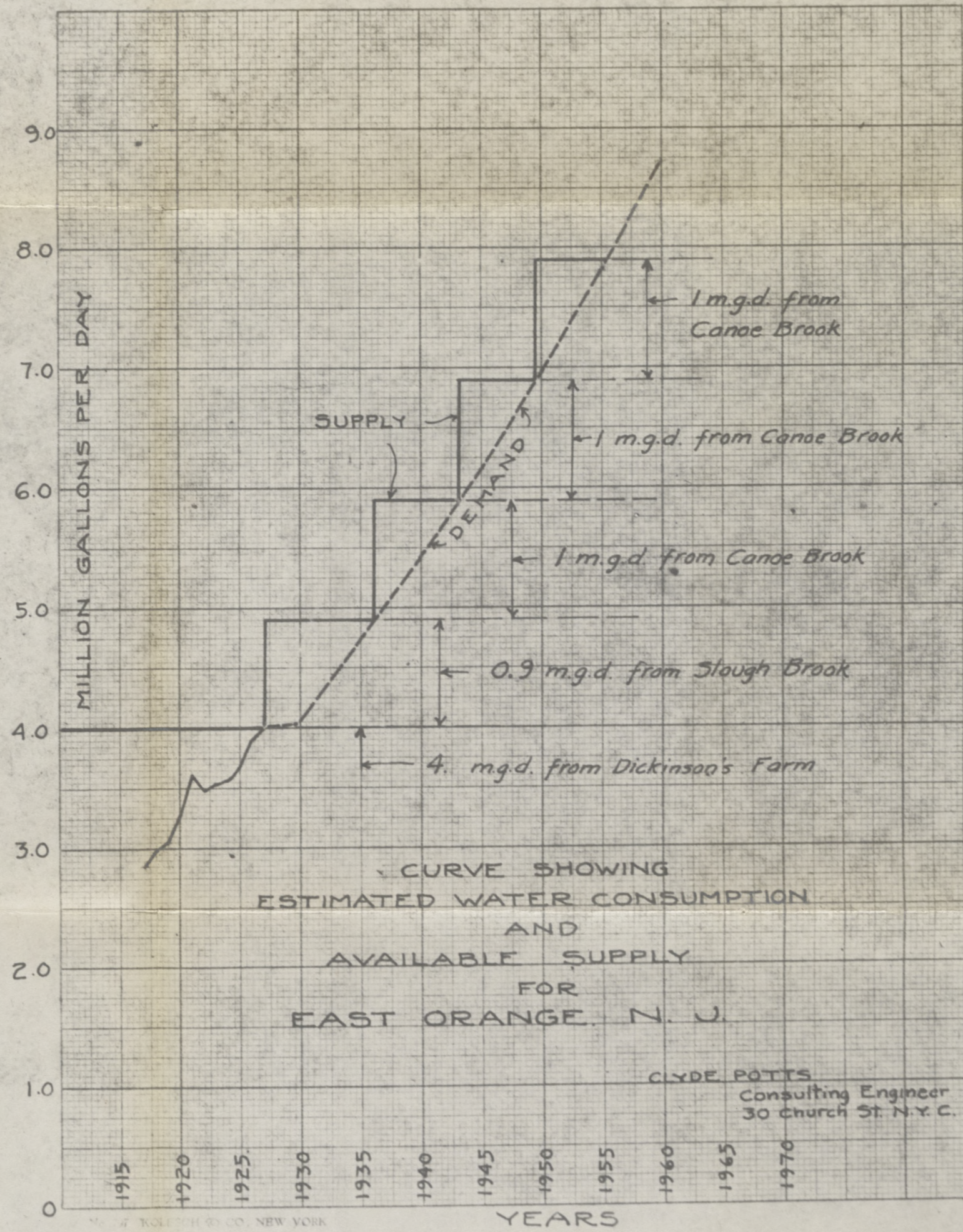


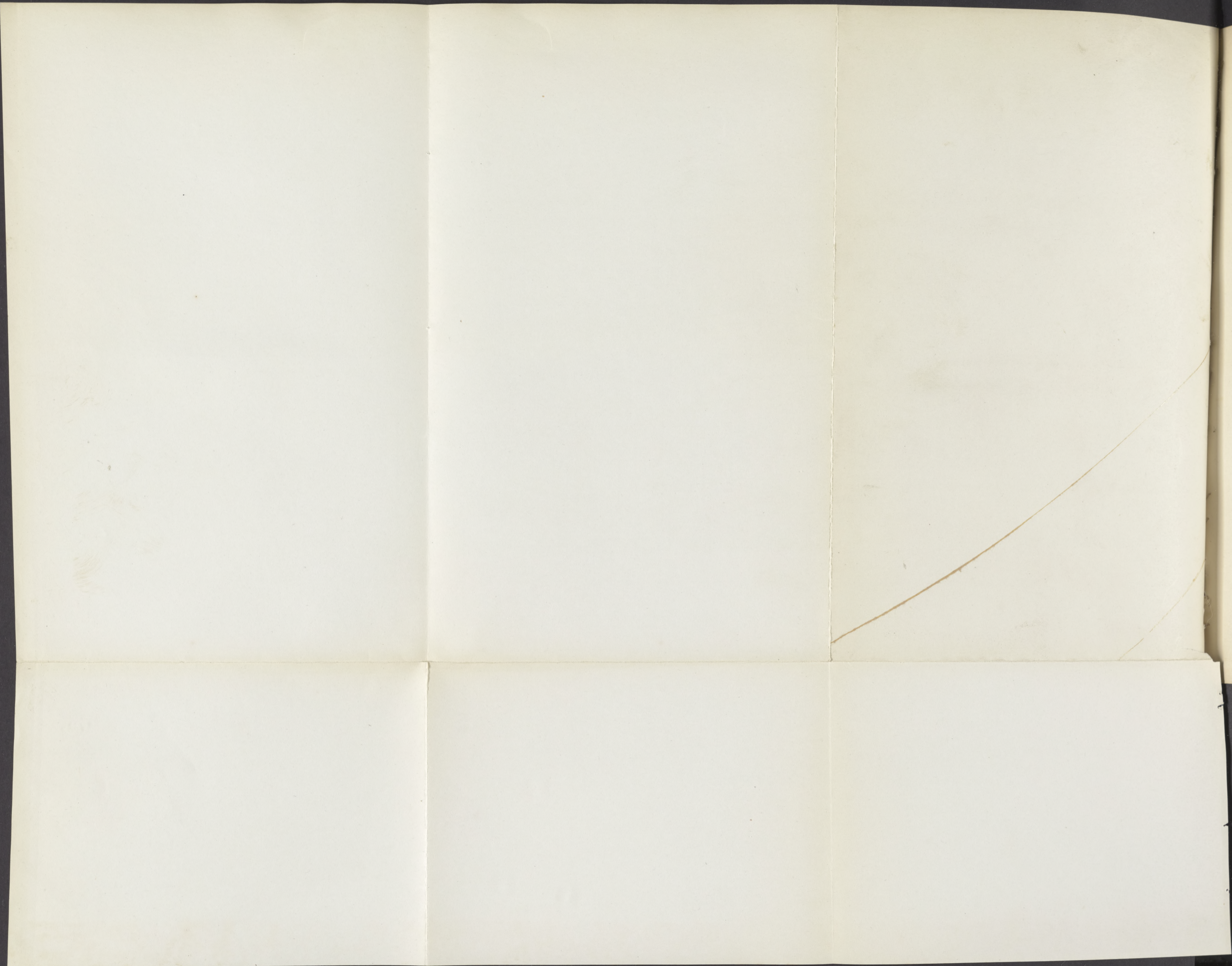
CURVE SHOWING POPULATION
 - PAST AND FORECAST - OF EAST ORANGE, N. J.



CLYDE POTTS, CONSULTING ENGINEER
 30 CHURCH ST. N. Y. C.







New Jersey Court of Errors and Appeals

BOROUGH OF CHATHAM, BOROUGH
OF MADISON and BOROUGH OF
FLORHAM PARK and BRAID-
BURN REALTY CORPORATION, a
corporation,

Prosecutors-Appellants,

vs.

BOARD OF CONSERVATION AND DE-
VELOPMENT and CITY OF EAST
ORANGE,

Defendants-Appellees.

On Appeal.

On Certiorari.

BRIEF FOR PROSECUTORS-APPELLANTS.

Statement of the Case.

The Boroughs of Chatham, Madison and Florham Park and the Braidburn Realty Corporation secured the writ of certiorari in the above-entitled cause to review the action of the Board of Conservation and Development of the State of New Jersey in granting to the City of East Orange permission and authority to secure an additional supply of water from lands belonging to the Braidburn Realty Corporation located in the Borough of Florham Park and adjacent to the properties used by the three Boroughs of Chatham, Madison and Florham Park for their local water supplies.

The application of the prosecutors was to set aside the resolutions and orders of the said Board of Conservation and Development which granted authority to the City of East Orange to divert two million gallons of water daily and to condemn the lands of the Braidburn Realty Cor-

poration affected thereby. The Supreme Court sustained the action of the Board and this appeal is brought in order to reverse that determination.

Summary of Proceedings.

The following is a brief history of the proceedings. On or about the 24th day of May, 1928, the City of East Orange filed its application with the Board of Conservation and Development of New Jersey for leave to divert four million gallons of sub-surface water from the glacial deposits located at Florham Park in Morris County, for the purpose of supplying water to the City of East Orange. Upon the filing of the application, the Board caused a notice of a hearing on the application to be prepared and notified the three prosecuting municipalities thereof. The matter was then referred to Commissioner Drake, one of the members of the said Board, to take the testimony on the application. This was completed on August 2, 1928. During none of the taking of the testimony was any other member of the Board present.

On August 8, 1928, the day fixed for the regular meeting of the Board, four members (less than a quorum) attended. Commissioner Drake, Dr. Kummel, secretary of the Board, and Mr. Critchlow, one of the Board's engineers and head of the division of waters, reported to the other members present their conclusions on the case. A resolution was then presented to the minority in attendance approving the application of the City of East Orange and the same was then passed. (Note: For form of Resolution see State of the Case, p. 211.)

Following the meeting, Mr. Critchlow prepared his written analysis of the testimony, together with his report and recommendations thereon and mailed the same to five members of the Board (four present on August 8th and Commissioner McConnell, the president). (Note: This report will be found on p. 219, State of the Case.)

Mr. Critchlow also prepared, with the assistance of Dr. Kummel, a document designated as formal approval and order of the Board. This paper, although dated August 8, 1928, was not submitted to the Board until the time of a special meeting held on September 5, 1928, and called for a purpose other than the consideration of the application of East Orange. At that time this order and approval was signed by the five commissioners then present. Subsequently it was sent by mail to two other members and signed by them at their respective offices. The eighth member was ill at the time and did not participate in any way in the matter. (Note: Order and Approval see p. 214, State of the Case.)

On September 19, 1928, the regular September meeting of the Board was held and a resolution then adopted purporting to ratify each and every action taken by the minority members at the meeting of August 8, 1928, above referred to. (Note: Form of Resolution see p. 213, State of the Case.)

The prosecutors in the Supreme Court sought to set aside, by certiorari, the resolution of the minority members of the Board adopted August 8, 1928; the order and approval of the Board bearing date August 8, 1928, but actually signed as aforementioned, and the resolution of the Board adopted September 19, 1928.

The Supreme Court affirmed all of the actions of the Board and this appeal is to reverse that action of the Supreme Court.

Grounds of Appeal.

The appellants allege that the Supreme Court erred in affirming the action of the Board of Conservation and Development for the several reasons filed by them in the Supreme Court and set forth in detail at page 295 in the State of the Case.

Seventeen reasons were filed, but for simplicity in argument they will be grouped as follows:

1. That the Board of Conservation and Development was without jurisdiction to consider the matter because of defects existing in the application, petition and general data filed and for failure to properly notice the hearing (Reasons 1-4, inclusive).

2. The actions of the Board in conducting the hearings, passing the resolutions and signing the order and approval were illegal (Reasons 5, 6, 7, 8, 9, 10 and 14).

3. The actions of the Board were unreasonable and not sustained by the facts (Reasons 11-12).

4. Legal evidence offered by prosecutors to sustain their contention was excluded (Reason 13).

5. Failure of East Orange to secure the approval of the North Jersey District Water Supply Commission rendered the whole action of the Board illegal (Reason 15).

6. The application of the City of East Orange to condemn lands of the Braidburn Realty Corporation and the action of the Board in authorizing same was illegal and void (Reason 16).

Statutes Governing Action of the Board.

The statutes establishing the Board of Conservation and Development and defining its powers and duties and in accordance with which the City of East Orange made its application are Chapters 252 P. L. 1907, 304 P. L. 1910, 241 P. L. 1915 and 194 P. L. 1924.

The initial act, Chapter 252 P. L. 1907, provides for the establishment of a Water Supply Commission to have control of surface waters and therein defines the duties of said Commission. As the waters in question were sub-surface waters, we shall not refer in detail to this act.

Chapter 304 P. L. 1910 enlarged the powers of the Water Supply Commission to cover applications relating to sub-surface or percolating water supplies. The important sections of that act are sections two and three.

Section 2: "No municipal corporation, corporation or person now engaged in supplying or hereafter proposing to supply the inhabitants of any municipal corporation with water, either from surface, sub-surface wells or percolating sources, shall have power to condemn lands or water for or divert from any new or additional source of water supply, until it shall have first submitted to the Commission descriptions thereof, which may be accompanied by maps, and plans and the Commission shall have approved the same."

* * *

Section 3: "Any municipal corporation, corporation or person may make application in writing to the Commission for approval of its plans for obtaining a new or additional source of supply from surface or sub-surface wells or percolating sources. The application shall show the course of the proposed supply, the approximate location of the proposed wells, reservoirs or other works, with their

estimated capacities, an abstract of any official reports relating to the same, the need for an added supply and the reasons for the choice made. The Commission shall give notice, by advertising in one or more newspapers published in the vicinity, of a public hearing, at which all persons or municipalities affected by the proposed plans, may be heard for or against the granting of the application. After such hearing, the commission shall decide whether the plans proposed are justified by public necessity or reasonably anticipated use, and whether by taking waters necessary for this use they interfere unduly with the opportunity of other municipalities to obtain for themselves a water supply, or whether the taking of sub-surface waters will unduly injure public or private interests. Within ninety days after receiving the application the commission shall, with all convenient speed, either approve or reject the same or approve it subject to such reasonable terms and conditions as it may prescribe. The decision upon any application shall be in writing, signed by at least a majority of the members of the commission, and shall be filed, together with the application and all plans, maps, surveys and other papers or records relating thereto, in its office. A copy of the decision, certified under the seal of the commission, shall be forthwith delivered to the applicant or his attorney or agent named in the application and shall be evidence in all courts and places. The approval of the commission shall constitute the State's assent to the diversion of water either surface, sub-surface, well or percolating for use within the State, and the right to construct and operate the waterworks in accordance with the terms of the decision and the plans filed therewith. The decision of the commission shall at all times be subject to review by the courts for reasonableness, legality and form."

Chapter 241 P. L. 1915 provided for the organization of the Board of Conservation and Development as a successor to the State Water Supply Commission and provides as follows:

Section 2: "The Board of Conservation and Development shall consist of eight members." * * *

Section 5: "The Board of Conservation and Development shall succeed to and exercise all the powers and perform all the duties now exercised, performed by, or conferred and charged upon the State Water Supply Commission." * * *

Section 9: "The Board of Conservation and Development, by its presiding officer, each of its committees, by its Chairman, and the Director of the Board of Conservation and Development shall have authority to administer oaths, to examine, under oath in any part of the State, witnesses in any matter relating to the powers and duties of the department and to conservation and development of the State's resources. * * * Less than a majority of the Board may sit for the taking of testimony at any hearing which the Board is required to hold, but a majority vote of the Board shall be necessary for the transaction of business."

Chapter 214 P. L. 1915 as amended by Chapter 194 P. L. 1924.

To summarize the provisions of the above statutes, we find that a board of eight members has been established and charged with the responsibility of considering applications of municipalities for diverting to their own use sub-surface waters of the State. The responsibility of hearing and deciding on the application rests with the Board as a body. The amendment of 1924 to Section 9 above quoted gives power to a single member to take testimony on any application, but in no provision of the statute is authority given

to any one or more of the commission less than a majority to transact business or to decide on the merits of any proceedings.

This board is a quasi judicial body and the Court of Errors has discussed its status quite fully in its opinion in the case of *Oakland v. Bayonne*, 98 N. J. L., 814, to which opinion we will refer more at length later in the argument. This quasi judicial body is charged by the statute with the important duty of passing upon the right to divert surface and sub-surface water. Each member is obviously required to give his own personal consideration to the matter coming before the board. Before deciding a question presented to the board he must consider the evidence, both oral and documentary, offered and hear the argument of counsel of the respective condemning parties. No member of the board can act as a judge or participate in a decision unless he knows what the case is about from his own first hand knowledge.

“Thus it is to be observed that the Board was required as a quasi judicial tribunal to decide many important factual questions which require the swearing in and hearing of witnesses and a consideration of their testimony.”

Oakland v. Bayonne, 98 N. J. L. at 816.

“The first is that the hearing began in the presence of three of the board, and after two witnesses had testified a fourth member of the board came in and was allowed to sit as one of the judges and participate in the making of the order of dismissal without having heard the evidence of the first two witnesses. This was not, according to prosecutor, that fair and impartial trial the law declares that he shall have. * * * (Citing cases.)

The participation of one of the commissioners in adjudicating the guilt of prosecutor on testimony he had never heard is

fatal to the conviction, and without it the resolution of dismissal must fall.”

Kelly v. Bishop, 119 Atl., page 6 (N. J.).

In the case of *Eisberg v. Cliffside Park*, 92 N. J. L. at 321, a member of the police force of the Borough of Cliffside Park was discharged after an alleged *fair trial*. We quote from that opinion as follows:

“One of the councilmen who, under the theory of a fair trial required by the mandate of the statute was supposed at least to have heard the testimony upon which he was called upon to base his judgment, was not present at the first hearing, and, consequently, heard none of the testimony presented at that session * * * A fair trial, in the generic language of Mr. Webster in the Dartmouth College Case, 4 Wheat, 518, 581, is a proceeding ‘which hears before it condemns; which proceeds upon inquiry, and renders judgment only after trial.’ * * * The rule is fundamental that a person who has not heard the testimony in a given case occupies no legal status as arbiter or judge to adjudicate upon the cause.”

Bearing this rule in mind, let us now pass to a consideration of the question whether or not the Board of Conservation and Development did fairly act as an arbiter or judge on the case in question with knowledge of the evidence secured by having either heard or read the testimony.

POINT A.

The Board, as such, never heard or considered the testimony or arguments of counsel.

It is undisputed that the testimony in the matter was taken before Commissioner Drake sitting alone. While Commissioner Florance was present on June 13, 1928, upon the date set for the hearing, no evidence was taken at that time

and the matter was continued until July 10th. The actual taking of testimony took place on July 10th, July 28th and August 2nd. On August 8th, a meeting was held at which the first resolution referred to was adopted by the minority members. At that time there were present four members of the commission, to wit: Messrs. Drake, Florance, Moeller and Winston. Each of these commissioners was examined in order to ascertain whether or not they did, in fact, at any time read or consider the testimony and evidence submitted in arriving at any determination of the matter.

At the meeting in question, besides the minority members referred to, there were also present Dr. Kummel, the secretary of the board, and Mr. Critchlow, the head of the division of waters. Dr. Kummel had been a witness in the case with reference to the geology of the district affected. Mr. Critchlow did not appear as a witness. So far as the Board was concerned, they were present to advise how to decide the application.

Commissioner Moeller's statements of the basis for his action is as follows:

“Q What proceedings in this application were brought to your notice after the conclusion of those hearings in August? A A digest submitted by Mr. Critchlow, and then an explanation verbally at the monthly meeting of August 8th—I believe that is the date.

Q Who made that verbal explanation at the August 8th meeting? A Mr. Drake. Mr. Critchlow was present; Dr. Kummel was present, and Mr. Drake was present.”

State of the Case, page 263, lines 24-32.

“Q Did you ever read the transcript of the testimony? A Not word for word; I looked over it on August 8th.”

State of the Case, page 264, lines 16-18.

Commissioner John L. Kuser testified:

“Q Did you ever examine any of the exhibits which the City of East Orange introduced in evidence in this case? A What I went by was what the committee reported.”

State of the Case, page 270, lines 28-31.

Commissioner Walter E. Robb testified:

“Q Did you yourself read the testimony or transcript of testimony taken at the hearing? A I did not.”

State of the Case, page 274, lines 1-3.

Commissioner Winston testified:

“Q You didn't read through the testimony, did you, yourself? A No, it was very voluminous.

Q You didn't attempt to read it? A No; we asked certain questions, and certain questions were looked up.

Q To whom did you address those questions? A Dr. Kummel and Mr. Critchlow.”

State of the Case, page 292, lines 1-10.

Commissioner McConnell, the President of the Board, states as follows:

“Q Was any of the data filed by the City of East Orange in connection with this application ever examined by you personally? A I cannot say; I discussed the matter informally, but I don't know—I didn't read the application word for word, no.

Q Are you personally familiar with the facts sought to be established by the City of East Orange in support of this application?

A In a general way.”

State of the Case, page 254, line 34 to page 255, line 4.

“Q Was the transcript of the testimony taken at the various hearings available at that meeting, do you recall? A As I recall, it was.

Q Did you ever examine it? A No, I told you what I examined.

Q Did you ever see the exhibits in this case, Mr. McConnell? I mean those that were put in the record at the hearings. A I don't think so. If I did see them, I didn't examine them."

State of the Case, page 256, line 32 to page 257, line 2.

From the testimony of these commissioners, it is very apparent that the members of the commission, with the exception of Commissioner Drake who heard the testimony, never themselves read the testimony which was taken at the hearing or examined the exhibits.

Commissioner Kuser very frankly says that what he went by was what the committee, *i. e.*, Commissioner Drake, reported. No committee or individual member of the board was empowered to decide the question for the board. The board could not delegate its duty of determination.

"The action of the council in delegating its authority to a committee cannot be supported. By the express language of the charter, the power and responsibility are theirs and theirs alone. * * * It was the duty of the council, therefore, upon a challenge of its jurisdiction of the application, itself to afford a hearing and itself to hear and decide the matter, and not to attempt to delegate to a subordinate body the duty of making an investigation essentially judicial in its character."

Miner v. Larney, 87 N. J. L. at page 42.

The Board failed to hear the application within the meaning of the statute. It could not act as a judge or judicial body without first hand knowledge of the facts submitted by the contending parties.

POINT B.

The Board in making its decision used the report of its experts which was not in evidence.

It appears very clearly from an examination of the testimony of the members of the Board of Conservation and Development in arriving at their determination they relied upon the recommendations of Mr. Critchlow. Mr. Critchlow is the head of the Division of Waters and an expert employee of the board. He was not sworn as a witness in the case. His report was not submitted at any time to the prosecutors for examination. They had no knowledge of its existence until it was filed with the return and the writ. The use of such expert assistance and of testimony or information outside of the record is condemned by all courts as illegal. The principle was discussed by Chief Justice Gummere in a case where an Assessment Commission called in the help of its expert to assist it in making up its opinion. We quote from his opinion as follows:

“One other matter has been discussed, and that is the right of the assessment commission to base their award to any extent upon what has been called here the report of Mr. Kilgus, and a report of some other distinguished gentleman, known as a building expert. I have always supposed that where the sovereign power of eminent domain was to be exercised, and my property was going to be taken for the public good, I was entitled to be heard * * * The condemning party may produce witnesses who are supposed to have expert knowledge; but these witnesses are subject to cross examination on the part of the property owners; the property owners also may produce expert witnesses, and those witnesses are also subject to cross examination by the condemning parties. But I never yet have heard that after all the testimony had been taken and

all the facts had been produced and all of the views of experts expressed under oath, the soundness of which had been tested by cross examination, that the commissioners could go around the corner and talk to two gentlemen in whose ability and judgment they had confidence and say, 'What do you think, Mr. Expert? What do you think ought to be done by us?'

Mr. Wolber—It was while the hearing was being heard.

The Court—That I think would be quite objectionable. I am the property owner and I think I am entitled to be afforded a hearing; and that hearing includes not only the presentation of my case, but what the other side contends. I have a right to hear the testimony, under oath, of experts (whether called by my adversary or the condemnation commissioner) as to what their view is and why they have it; and I am entitled to demonstrate, if I can, by cross examination, the fact that their views and their conclusions of the experts rest on an unsound foundation."

Schickhaus v. Newark, 1 N. J. M. R. at 488.

A similar rule is recognized in trials before a jury.

"A later writer on instructions to Jury says: 'Although the rule was otherwise at early common law, it is now well settled that a jury must base their verdict upon the evidence delivered to them in open court, and they may not take into consideration facts known to them personally, but outside of the evidence produced before them in court. If a party would avail himself of facts known to a juror, he must have been sworn and examined as other witnesses, so that his evidence, like that of other witnesses, may be first scrutinized as to its competency and bearing upon the issue, and for the further reason that the court and parties may know upon what evidence the verdict is rendered. Accordingly, it is error to give instructions

directing or permitting jurors to apply their own personal knowledge of the facts, or the character of the witness, in determining their verdict.' ”

Gray v. New York & New Jersey Telephone Company, 68 N. J. L., pages 457 and 458.

“Instances may be multiplied in which the jury might properly use its view to check up the testimony adduced by the parties without any infringement by the jury of the rule that prohibits the importation into the case of outside, or even of inside, information through some other channel than that recognized by the law.

Hinners v. Edgewater & Fort Lee R. R. Co., 75 N. J. L., page 519.

We also quote from a well-considered opinion found in the case of *Hoskovec v. Omaha Street Railway Company*, 115 Northwestern 312 (Nebraska):

“One of the jurors, anxious, no doubt, to ascertain the truth and probably unconscious of the impropriety of his undertaking an ex parte investigation upon his own initiative, interrogated one of the defendant’s conductors as to how a person leaving a car in the manner described by defendant’s witnesses before the same had been brought to a stop would probably fall; and, having received the answer that such person would sit down or fall backward, he communicated the result of his inquiry to his fellow jurors.

* * * The fact that the juror in this case desired and sought for the opinion of a person having special opportunities for observation of such instances tends to show that he felt unable to satisfactorily determine the question out of his own experience and that he therefore might, and probably did to some extent, depend upon the information which he acquired in this irregular way. We are therefore of the opinion that the court did not err in granting a new trial upon this ground.”

The legal principle, as these cases emphasize, is that all matters going into the making up of a determination by a court or jury must be presented to the contending parties for their examination. The use of expert opinion not so presented will invalidate any finding based thereon.

At the meeting of the minority members held on August 8th, Mr. Critchlow was present and submitted his recommendations as is evident from the following quotations from the testimony. Mr. Winston:

“Cross examination.

“Q Mr. Winston, do you recall that before the meeting of September 19th, you were advised by Mr. Critchlow—I believe he is the hydraulic engineer, is he not? A He is.

Q —that the Boroughs of Chatham, Madison and Florham Park had a supply of water at least one hundred per cent. in excess of what their daily needs showed? A Yes.

Q You were also advised by Mr. Critchlow that in his judgment the taking of two million gallons per day from the area described in the proceedings, would not unduly affect the supply of Chatham, Florham Park and Madison? A I was; that was discussed at the meeting, in August.

Q And I presume before you voted on this application, you satisfied your own mind from the information you had previously had, and your knowledge of the conditions generally, and the advices from the experts of your department, and from the testimony, that this application should be granted for two million gallons per day? A I certainly did.” * * *

“Re-direct examination.

Q Mr. Winston, I understand from what you have just testified that Mr. Critchlow

advised you that Chatham and Madison had a water supply one hundred per cent. in excess of their needs? A Yes.

Q Did that report of Mr. Critchlow affect your decision in any way, or enter into a consideration of the question? A Yes, it did; it affected us. Dr. Kummel also gave us a great deal of information. The thing that bothered me most was the geological formation there.

Q You had that report and used that in making up your mind? A Yes.

Q At that meeting of August 8th, as I understand it, Mr. Critchlow also made a report in which he advised that the taking of two million gallons would be reasonable; is that right? A Yes.

Q And Mr. Critchlow's report was considered by you and the other members of the Board at that meeting of August 8th? A Yes."

State of the Case, pages 290-291, lines 1-10, 20-40, 25-40.

Commissioner Howard F. McConnel testified:

"Q You had been advised by experts of your department that the diverting of two million additional gallons of water in this area would not unduly affect the Boroughs of Chatham and Madison nor the municipal supply of Florham Park, were you not? A As I recall, it is all in the grant there."

State of the Case, page 261, lines 19-26.

Commissioner Henry L. Moeller testified to the same effect:

"Q And before voting on this matter you satisfied yourself from the records of the department and from the testimony, and from the advice of the experts of the department and the discussion with other members of the Board, that the application should be granted? A I did, absolutely.

Re-direct examination.

“Q Who were these experts that advised that the application should be granted? A Mr. Critchlow is our water engineer. Furthermore, I recall and know that Chatham and Madison are separated from the proposed well field a distance of a mile and a half or mile and three-quarters, and it was stated by our experts that those wells would not be affected.

Q Who were these experts that advised that? A In this particular case, Mr. Critchlow and Dr. Kummel; that is all in this particular case.”

State of the Case, page 267, lines 14-34:

“Q What proceedings on this application were brought to your notice after the conclusion of these hearings in August? A A digest submitted by Mr. Critchlow and then an explanation verbally at the monthly meeting of August 8th—I believe that is the date.”

State of the Case, page 263, lines 24-29:

“Q No, I meant did he orally offer any summary of the testimony or explanation of the proceedings, at the August 8th meeting? A Different questions were exchanged among the members by Mr. Critchlow to clarify certain points on which the decision might be rendered.

Q Did you receive a copy of Mr. Critchlow's summary and report which was prepared after that August 8th meeting? A I believe that I have received everything that Mr. Critchlow prepared; I don't recall whether it is after August 8th or prior to August 8th.”

State of the Case, page 264, lines 1-15:

“Q And before disposing of this application, do you recall that your Board was advised by the experts of your department that the Boroughs of Chatham and Madison had a reserve supply of one hundred per cent.

over and above their monthly needs? A I recall very definitely that that was brought to the attention of the members.

Q Do you also recall that the experts of your department advised the Board that the abstraction of two million gallons additional daily by the City of East Orange would not unduly affect the supply to Chatham, Madison and Florham Park? A I do recall it."

State of the Case, page 266, line 26, to page 267, line 13.

Mr. Florance testified as follows:

"* * * I remember quite distinctly this case and this discussion, because Critchlow suggested that a definition of the rights of various interested municipalities in the Canoe Brook grant—he recommended that we define these limitations in that grant, and after a discussion of that very question that impressed it on my mind, that that wasn't the question that was before us for decision at that time, and it was improper to include in the grant that definition of rights, but it had to do with our consideration of the application of East Orange, and in its reduction from four millions, as requested, to two millions, as granted.

State of the Case, page 276, lines 16-29.

Following the meeting of August 8th, these recommendations were embodied in a formal report which was sent to the five members of the Board who signed the approval on September 5th. An examination of that report will clearly indicate that in making up this report Mr. Critchlow used information not presented before the Board at any hearing and also himself characterized the effect of the testimony presented. We quote from that report as follows:

"No testimony was given directed specifically at the future needs of Chatham and Madison. *As a matter of fact*, however, the total consumption in these towns at the present time is about 1.2 million gallons a day

and increasing at a very moderate rate. The safe yield of both well fields as measured in 1925 by the Department was 2.8 m. g. d."

Exhibit G, State of the Case, page 225, lines 14-20.

Following an analysis of the testimony, Mr. Critchlow submits what he entitled "Summary and Conclusions."

"During *our investigation* in the Canoe Brook field in September, 1925, when Commonwealth Water Company was pumping at a maximum of 6 m. g. d. and Dickinson wells of East Orange at a maximum of 2.5 m. g. d., no appreciable effect was observed on the wells at Chatham and Madison. Chatham and Madison have a reserve supply according to our investigation of about 100 per cent. over their present maximum monthly demands. *According to my judgment* the taking of 2 m. g. d. in the proposed area will not unduly affect Chatham and Madison nor the municipal supply of Florham Park now under construction. The interference with the water supply of the Braidburn Realty Corporation is possible and if it occurs, East Orange has agreed to pay them in kind. The damage or loss of land can be compensated by money.

Therefore, the case seems to reduce to this:

1. East Orange has proved a public necessity for 2 m. g. d.
2. The weight of evidence is that the diversion of 2 m. g. d. from the proposed source will not unduly interfere with the opportunity of any municipality to obtain a water supply necessary for its use.
3. That there will be caused by such taking no undue injury to private interests that cannot be compensated for in money or in kind.

State of the Case, page 226, line 35, to page 227, line 26.

The Commission has admitted that it used the oral and written report of Mr. Critchlow in making up its decision. This is illegal as it is required to limit itself to the evidence in the case and not to receive and use outside facts and opinions even though submitted by an expert.

The opinion of the Supreme Court does not discuss this phase of the case at all, although the matter was argued before it. In spite of this we feel that this is a vital defect.

POINT C.

The resolution of August 8, 1928 was void, having been illegally adopted.

On August 8, 1928, an alleged meeting of the Board of Conservation and Development was held. The Board consisted of eight members, but only four were present. (See Minutes of Meeting, Exhibit A, State of the Case, p. 211.)

At that meeting a resolution was introduced and adopted granting to East Orange the right to divert two million gallons of water daily. This resolution was passed by the votes of the four members or less than a majority of the Board. The statute requires action by the Board and this requires a majority and no action taken by less than a majority has any validity.

“There is another fatal objection to the procedure adopted by the Board in the hearing of the application of the municipality in that at none of the hearings, except on July 7th, was there a quorum of the Board present.”

“Where the legislature confers powers upon a Board to be exercised by it, without expressly authorizing that the power or powers conferred may be exercised by a less number than a quorum, and there is no pro-

vision made as to the number of members necessary to act in concert to exercise the power or powers conferred on the Board by the statute, then the common law rule prevails that a majority of the Board, constituting a quorum, may lawfully act." (Citing cases.) "As the express language of the statute is that 'after due hearing the Commission shall decide,' there can be no question but that it was intended that the matter could be heard by all the members of the Commission or at least by a quorum."

Oakland v. Bayonne, 98 N. J. L. 814.

POINT D.

The order and approval of the Board dated August 8th was illegal.

"At the time of the hearing and determination of the question in issue, there were eleven qualified members of the board.

There is no provision in the statute with respect to the number of the board that constitute a quorum for the transaction of its business although the board is empowered to make rules. It has by rule provided that five members shall constitute a quorum.

This it cannot do. * * * 'If the charter is silent and there is no general law fixing a statutory quorum, then the common law rule of majority will govern.' * * *

The State board being composed of eleven members, no less than a majority can constitute a quorum. * * * Since the action of the board was not properly taken it is unnecessary to consider the other points raised."

Borough of Florham Park v. Department of Health, 146 Atl. Rep. 354.

The Board of Conservation and Development in an attempt to conform to the statute directing them to prepare a written decision signed the document known as Exhibit F appearing on

page 214 of the State of the Case. This document was prepared by Mr. Critchlow during the month of August, 1928, and while bearing date August 8, 1928, was not actually signed by any member of the Board until September 5, 1928. With reference to its preparation, we quote from the testimony of Dr. Kummel as follows:

“Following August 8th, a decision or order was prepared covering the application of the City of East Orange, which I think bears date August 8th, is that correct? A Yes.

Q Who prepared it? A It was prepared in this office, I presume in its first form it was dictated by Mr. Critchlow.

* * * * *

Q What was done with the document after it was prepared by Mr. Critchlow? A It was held here in the office until September 5th or after.

Q Were copies of that sent to any members of the Board of Conservation and Development? A Not until after September 5th.

Q Who signed the copies? A The original was sent to two members of the Board sometime after September 5th, after the original had been signed by five members of the Board at a special meeting on September 5th in this office—not in this room but in the room in the State House.”

State of the Case, page 238, line 27 to page 239, line 15.

On September 6th, this document was forwarded to Mr. Owen Winston at his office, 346 Madison avenue, New York City, signed by him and then forwarded to Mr. Robb, who evidently signed it and returned it to the department at Trenton. See letter to Mr. Owen Winston, page 245 and testimony of Mr. Winston, page 289, lines 1-12, which reads as follows:

“Q When you received it (Exhibit F) on or about September 6th, by mail, you then signed it? A Yes.

Q And forwarded it to Mr. Robb? A Yes, I must have.

Q You can look at the letter; that will refresh your recollection? A You have just read it to me, and I do remember now getting a letter. I was in some doubt whether I signed it in my office or at the meeting of the nineteenth.

Q But having seen the letter, you now recollect having signed it at your office? A Yes."

It thus appears from the record that at a special meeting of the Board on September 5, 1928, called for a purpose other than the consideration of the application of East Orange, and at which the East Orange matter was not considered at all so far as the minutes and testimony show, five members of the Board signed the document prepared by Mr. Critchlow and the other two signed it at their respective offices subsequently. In a matter of this kind in which the Board is required to act as a body, an approval prepared for it by its employee, receiving no consideration by the five members who signed on September 5th and signed by the other two in the absence of the rest is illegal.

"The validity of the return depends upon the joint act of the surveyors, upon one and the same occasion, is in accord inferentially at least with the decision. * * * One object of the law manifestly was to obtain the benefit of the combined judgment of these public officers while assembled together as a body having opportunity of interchanging opinions with each other in their final action. Signing upon separate occasions by individual officers, in the absence of their associates, and upon the pressure, perhaps of private individuals, might be fraught with great danger to both public and private interest."

Whittingham v. Hopkins, 70 N. J. L. at 325.

This same doctrine is stated also in the case of *Moffatt v. Niemats*, 139 Atlantic 798 and *Schumm v. Seymour*, 24 N. J. E. 143.

The prosecutors were entitled to have this approval executed by the Board in concert and the signing and execution of the same by the Commissioners at different times and places makes the whole act void.

POINT E.

The Resolution of Ratification is Ineffective.

On September 19, 1928, the Board of Conservation and Development at its regular meeting, at which a quorum was present, passed a resolution which it now claims ratifies the action taken by the minority of the board at the meeting of August 8th. (See Exhibit E. 1, State of the Case, p. 213.) This resolution does not refer specifically to East Orange's application, but purports to ratify all acts taken by the minority on August 8th. While it is possible that wholesale ratification of this kind might be valid and effectual to confirm a ministerial act that is not the situation here. The act of the board was judicial and you cannot dispense with the necessity of judicial procedure by ratification.

This will be apparent if we assume a case of a policeman brought for trial before a board or a commission. One member hears the case, adjudges the man guilty and the rest ratify the decision. If such procedure is justified the accused would lose entirely the protection afforded him of having an entire body sit to consider his case.

Similarly here, prosecutors contend that they are entitled to a decision and determination of a

board of eight members and to have each of them consider the case and that the Board is not justified in accepting the opinion of experts, the opinion of its committee or of a minority of the members and merely ratifying it. Ratification, therefore, cannot be used to dispense with the requirements that the board give judicial consideration to the matters pending before it.

It is, therefore, respectfully insisted that this resolution of September 19th has added no validity whatever to the proceedings; that they were void and that this ratification could not and did not correct the preceding defects.

POINT F.

The Board of Conservation and Development had no jurisdiction as the application was radically defective.

Section 3 of Chapter 304, P. L. 1910, heretofore quoted, makes it necessary for the applicant, in this case the City of East Orange, to show to the Board in its application for a permit to abstract water, the following fundamental information:

- A. Source of proposed supply.
- B. The approximate location of the proposed wells, etc.
- C. Their estimated capacity.
- D. The need for an added supply and the reasons.

These matters are jurisdictional requirements and not mere matters of form. In the absence of them, or if they be defectively stated, the proceedings fail.

“The Board of Conservation and Development is not a purely administrative body, but is also invested with limited quasi judicial functions. Its jurisdiction to entertain

an application is derived from statute and in order to properly invoke the jurisdiction of this statutory tribunal all of the conditions prescribed by the statute must appear to have been complied with. The statutory facts conferring jurisdiction must be alleged and not left to be inferred. These legal principles are elementary and need no citation of cases to support them."

Oakland v. Bayonne, 98 N. J. L. at 812.

In its attempt to comply with these requirements, East Orange filed the application and general data marked Exhibit A. (See p. 25, etc.) and certain maps all attached to the back of the Record.

(A) *Source of Supply.*

Concerning source of supply, the application states as follows:

"The Board of Water Commissioners of East Orange, N. J., hereby make application for the approval of its plans for diverting a maximum of four million gallons daily for the purpose of obtaining additional sources of water supply from the glacial deposits, the point of the proposed diversion being located six hundred feet, plus or minus, from Dickinson Well, No. 1, belonging to the City of East Orange, land located in Morris County, Florham Park Borough, and directly across the Passaic River from the above mentioned well."

State of the Case, page 25, line 37 to page 26, line 16.

Under the heading of general data, the source of supply is left blank (p. 29, l. 9). The maps give only a general picture of the entire territory involved. The question, therefore, as to whether East Orange has complied with the jurisdictional requirement in this particular must be determined from a consideration of the wording of the ap-

plication quoted. It will be noted that the source of supply is simply given as "glacial deposits." This indicates, in no manner, the location of the deposit, its extent, the character of the sub-surface water, the basin within which it lies or from what underground stream or water basin the water is to be taken. Glacial deposits might cover any amount of territory. In fact, large areas of New Jersey are glacial deposits. The only place defined at all is the point of diversion. A location of the point from which water is to be extracted is a description of the place where wells are to be driven, but contains no information whatever, as to the source of the water which supplies those wells.

In connection with this requirement, we quote from the opinion of the Court of Errors in the case of *Oakland v. Bayonne*, 98 N. J. L. at 812.

"Turning to the application in question we find it to be most vague and uncertain in those material respects which the provision of the statute require to be precise and definite. Thus as instances of the utter disregard of the statutory requirements in the respect mentioned, the application states the point of the proposed diversion for the purpose of supplying water to the City of Bayonne, &c., as being located in the valley below Suffern, New York; but in the State of New Jersey; that the general plan is to construct a storage reservoir within the State of New Jersey and in the valley below Suffern, New York, and to convey the water through pipes by gravity to Bayonne. No attempt is made to show the approximate location of the proposed reservoir or other works, nor their estimated capacities as required by the statute." (The opinion then points out that the applicants failed in these particulars to meet the jurisdictional requirements.)

Following the reasoning of the Court it is insisted that in order to comply with the requirements of the statute, the City of East Orange must define not only the point where it proposes to place its wells, but the source of the water supplying the same, that by identifying the source as "glacial deposits" no more accurately locates it than the description given in the Oakland case where the water was to be taken out of the valley.

(B) *Location and Capacity of Wells.*

"The next requirement of the statute is that 'the approximate location of the proposed wells' and 'their estimated capacity' should be stated. Turning to the application and general data, referred to we find the following:

"Description of Plans proposed."

"The boring of two or more wells similar in general character to the existing Dickinson Wells and connecting the discharge of these wells to the present system of collectors in the Dickinson Well Field."

State of the Case, page 26, lines 29-33.

The general data reads as follows:

"D. Wells (number, size and depth) two or more, 24" x 130' 1".

11. Estimated capacity of proposed plans (gallons daily) two to four million."

State of the Case, page 29, lines 37-38.

It is noted that the number of wells is not given except that the minimum is fixed at two. The location is not stated except the reference above quoted as to the point of diversion. The estimated capacity is two to four million gallons. This information is most vague and uncertain in

points which the statute requires to be definite and precise. It means nothing more than if the City of East Orange had said we will drive as many wells as we need and take as much water as we can get from certain glacial deposits. The situation in this particular also is similar to that in the Oakland cause and the same rule applies.

“* * * The application was radically defective as filed in that there was an absence of jurisdictional facts.”

Oakland v. Bayonne, 98 N. J. L. at 813.

POINT G.

Decision of Board Not Justified By Facts..

The statute governing the application of the City of East Orange provides that the Commission shall decide “whether the plans proposed are justified by public necessity or reasonably anticipated use, and whether by taking water necessary for this use they interfere unduly with the opportunity of other municipalities to obtain for themselves a water supply, or whether the taking of sub-surface water will unduly injure public or private interests.”

Chapter 304 P. L. 1910, Section 3.

This decision of the Commission is by the said statute expressly made subject to review by the Court for “reasonableness.” Reasonableness implies that the decision must be supported by the evidence presented.

The burden of establishing the statutory requirements by satisfactory proof rested upon the applicant, City of East Orange. The four elements set forth in the statute:

- A. Public necessity,
- B. Non-interference with other municipal supplies,

- C. Non-injury to public interests,
- D. Non-injury to private interests.

must be established by the preponderance of the evidence to justify the decision of the Commission. Prosecutors insist that the proof offered in no manner sustains the decision. Let us review the evidence on each of these points.

A. Public Necessity or Reasonably Anticipated Use.

The only proof to establish necessity offered by East Orange was that of their City Engineer, Mr. Roper. In qualifying Mr. Roper, it appeared that his experience as an hydraulic engineer, or as an expert on water supply matters, was obtained solely by virtue of his employment for the past eighteen years in the Water Department of the City of East Orange. His field of experience was, therefore, necessarily limited and his testimony tinged with enthusiasm for his own project and loyalty to his employer.

Mr. Roper first submitted in evidence, in his endeavor to establish public necessity, a chart (see same attached to cover of State of the Case) which he had prepared to show: (A) his estimate of the probable increase of population of East Orange projected to the year 1950; (B) the percentage of pumpage metered; (C) past and future estimated consumption in gallons per day to each inhabitant.

The object of the chart was to show present and future (assumed) distribution efficiency, and probable consumption requirements up to the year 1950. As Mr. Roper testified very definitely that the present application would not satisfy the needs of East Orange for more than from five to ten years and that thereafter East Orange

would have to join in some major water development, the imposing demonstration of requirements in 1950 are hardly in point.

“*Cross examination* by Mr. Burke.

Q Referring to this chart you have, I understand that you have here projected curves—I understand your testimony this morning to be that the purpose of this application is to afford you a supply which will last you about five to ten years? A About that.”

State of the Case, page 75, lines 18-22.

* * * * *

“Q Then you do not hesitate to state that this development would not satisfy you for more than ten years? A For about ten years.”

State of the Case, page 76, line 28-30. (See also State of the Case, p. 56, ll. 16-22.)

As we then examine Mr. Roper's chart as of the maximum period of time for which the present application relates, we find the following condition to exist in 1940. The curve showing estimated per capita consumption indicates a use of 57½ gallons per day per inhabitant. The curve showing estimated increase in population indicates a population of 90,000 inhabitants in 1940. Using these two estimates, a daily consumption in 1940 is indicated amounting to 5,175,000 gallons. The present minimum supply available for East Orange as testified by Mr. Roper is from 4 to 4½ million gallons per day and, therefore, on this basis in 1940 East Orange will require an increase of less than 1,000,000 gallons per day. The contention of the City of East Orange is that they have no further available area or supply of water from which this additional supply can be drawn, while the

other municipalities insist that upon a proper use of the available water area East Orange can get from the property which it now owns not only this supply, but a much greater one.

The present supply of East Orange consists of three wells in the "Slough Brook" field, 3 wells in the "Dickinson property" penetrating a basin three or four hundred feet wide and 16 wells in the "Canoe Brook" field. All of these wells are not in use at the same time, but are operated in rotation, eighteen being pumped at one time. They are all located in an area consisting of approximately 150 acres.

Capacity of the existing fields now in use is as follows:

A. Slough Brook Field—six or seven hundred thousand gallons per day;

State of the Case, page 51, line 10.

B. Dickinson—two million gallons per day;
State of the Case, page 64, lines 20-23.

C. Canoe Brook Field—two million gallons per day;

State of the Case, page 68, line 16.

These yields as given by Mr. Roper are designated as "safe yields" by which he means the minimum amount which the wells may be counted upon to give under the most adverse conditions. During normal conditions, the average yield would be much greater and water could very readily be stored against periods of drought with the proper facilities made available.

Referring to Mr. Roper's testimony as supporting the contention of East Orange that they have no available additional water supply, we find a general statement by him to the fact that the whole area of East Orange's water re-

serve has been tested and this is followed with his conclusion that the water which is now being drawn is taken from the only available sources. No record of the number of test wells put down by East Orange, of the dates or location of these test wells, no record of the borings or locations or charts thereof, and in fact no specific data of any sort was offered by him to substantiate his general statement. On cross examination as to the number of test wells actually sunk, the answer was about 30. These thirty tests, whereof we have no specific data whatever, are supposed to substantiate the conclusion by him that the entire water reserve of East Orange covering approximately 2,300 acres, has been thoroughly explored and found wanting in water-bearing lands, with the exception of the small area now in use.

On further cross examination (see p. 49) it appears that the 2,300-acre reserve of East Orange is roughly divided by South Orange avenue and that all existing wells are located to the southwest of this line and that no development exists at all north of South Orange avenue (see p. 50).

Mr. Roper admits that there has been a loss in yield of about five hundred thousand gallons per day since the Dickinson well went into use about five years ago (see pp. 64 and 65). This, he explains, by an accumulation of fine sediment coming in and stopping up the pores and not by any failure in the amount of water. This would seem to establish rather a need of better engineering methods and proper use of available water than expansion of territory. Mr. Roper even admits that the method in use might be improved upon so that additional water could be secured.

“Q Could you not sink additional wells in those fields and get more water? A It is possible that you could get a little more water.”

State of the Case, page 58, lines 31-33.

“Q * * * You started to say something about the possibility of changing the method of pumping the Canoe Brook wells from direct suction to something else? A I think perhaps it might, but it is problematical. I believe it would be worth while to try it, but I do not think it is a thing you can definitely say what you can get out of it.”

State of the Case, page 74, line 35, to page 75, line 2.

To summarize the testimony, therefore, offered by the City of East Orange to show the necessity of additional land we find an alleged need of less than a million gallons per day and that East Orange owns large tracts of lands which have never been adequately explored and an admission on the part of their own engineer that by a different type of pumping or use of the other lands now owned an improvement might be made over their present supply. This is all the evidence they have offered to substantiate their claim as to necessity.

To counteract this testimony, the municipalities affected have presented the testimony of two experts, Mr. Clyde Potts and Mr. Robert E. Horton. Mr. Potts is a sanitary and hydraulic engineer with offices in New York City, specializing in water works and sewerage processes. His wide experience has extended over numerous major projects in a practice of twenty-seven years. In addition to his general practice, he was at that time President of the State Board of Health and consulting engineer for the opposing municipali-

ties and intimately familiar with the locations involved. He had also just completed the construction of the water works for the Borough of Florham Park, one of the contesting municipalities. His testimony is as follows:

“Q In your opinion as an engineer, have they (East Orange) exhausted their present available means of supply? A I have examined the available records furnished by East Orange in this case. I have examined all the reports and publications that are available. This includes the records of the Department of Conservation and Development, and of the United States Geological Survey, and all data that I can find bearing on this; and my opinion is that East Orange is not getting all the water that is available for it on the 2,300 acres of land that it now owns; nor is it getting the water out of the ground on this 2,300 acres by the most efficient methods. There is an opportunity for East Orange to develop a large amount of water on its own property without the necessity of purchasing any additional property, without the necessity of invading any other areas.”

State of the Case, page 120, line 23, to page 121, line 2.

“A * * * It is my judgment that they (East Orange) can develop four million gallons of water in the Dickinson Field now, and that can be increased to a minimum of at least nine to ten hundred thousand gallons from Slough Brook Field, and then as the needs of East Orange require the development of these two fields, Dickinson and Slough Brook Field, would carry East Orange to about 1936 or so. Then by a proper development, a modern development, of Canoe Brook Field, in accordance with modern practice in taking water from the ground, an additional three million gallons can be taken from the Canoe Brook Field. I believe they could get about two million gal-

lons a day from Canoe Brook, as near as one can tell from their records, but they have very inefficient machinery there for taking water out of the ground."

Mr. Ellis: I don't think that is competent. "Very antiquated method of taking water from the ground, and by putting down a modern well and modern pumps at Canoe Brook Field, I think without question can be made to yield at least five million gallons in million gallon units as necessity arises. So that the first million gallon unit would probably carry East Orange to about 1943. At the end of that time, they could put another million gallon unit there, and that would carry them to 1948; and at the end of that time another million gallon unit, which would carry them to 1953 or thereabouts; and I have prepared here a diagram which shows the development of their property in accordance with their demand curve, which is based on the prediction of the population."

State of the Case, page 124, line 8, to page 125, line 2.

Mr. Robert E. Horton, the other expert called on behalf of the prosecutors, is an engineer of something over thirty years' experience and during the earlier years in the State and Federal Service largely. Since 1901, he has been a consulting hydraulic engineer for the metropolitan water district, Boston, and for a large number of municipalities in New York State. He is consulting engineer of the water supply for Albany at the present time, and for a new water supply at Herkimer. He is also consulting engineer for the City of Trenton in connection with its water supply problems. For six years he has been connected with the United States Geological Survey and has spent considerable time in investigating water supply problems in Northern New Jersey.

With respect to the possibility of further exploitation of the existing well field, his testimony is very valuable. After stating that in his opinion the dependable supply of the 2,300 acre water reserve could be materially increased, Mr. Horton was asked at page 163:

“Q How, in your opinion, could it be increased? A I have not gone into that question as thoroughly perhaps, as Mr. Potts has done, but, for example, at the Canoe Brook Field they have now driven small diameter wells over a very restricted area. I believe their yield could be increased by extending the area and putting down larger wells with centrifugal pumps. At the Slough Brook Field, they are replacing their old wells with new pumps which are of modern type and I saw one of these wells yesterday. * * *”

State of the Case, page 163, lines 3-16.

In answer to a question as to whether or not the East Orange supply could be increased by sinking additional wells on the 2,300 acre tract, Mr. Horton says:

“A Yes, I believe so. It is my opinion that it could be increased by developing the area of 2,300 acres. I do not know the exact area, but the active wells positively do not cover an area of more than 100 to 150 acres. The undeveloped part is the more desirable location, and as an underground water supply, scientifically developed, would yield a considerable amount of water. No such investigation has been made and therefore I am unable to give any such opinion as to that.

Mr. Ellis: I move that be stricken from the record. He says he does not know.

Q Why do you say that? A Because I have seen the well records and the information furnished by East Orange purporting to cover the test wells which they have put down, and I have examined the records of

the wells in New Jersey generally, as published in the reports of the State Department for forty years past, and unless there is somewhere some additional information as to test wells which is not included either in the information furnished by East Orange or published in the State Geological Reports, I think that any competent engineer would feel that further and additional ground water investigations were necessary before it was possible to determine the quantity of ground water supply that could be developed from the 2,300 acre tract.

The Commissioner: The original answer will be stricken out."

State of the Case, page 163, line 35, to page 164, line 30.

On cross examination, referring to the present East Orange water reserve, Mr. Horton says:

"A In the first place, the topographical conditions indicate very strongly that water falls on that basin, in which there is some condition which has not been revealed by the test wells put down and supplies quite an abundance of ground water. Secondly, I find these wells were so distributed as to be mainly concentrated close to the well field already developed; and that, in my opinion, the underground condition tests, as available, are not of the character to give sufficient information to determine the amount of water that could be developed * * *. To make a complete exploration of the region would require some kind of pumping tests to be made to develop the amount of water which can be yielded and also the ground water level record should be kept. Without this information, it would be impossible to determine, with certainty, what the available or total yield of this 2,300 acre tract is at the present time. It has simply not been explored in a sufficiently complete manner."

State of the Case, page 181, line 31 to page 182, line 19.

The evidence of these two experts is very strong that East Orange has a present available supply of water sufficient for their needs for many years to come.

The prosecutors also desire to call attention to the strenuous efforts of counsel to exclude from the record any of the reports of Mr. Nicholas Hill and Mr. Cornelius C. Vermeule to the City of East Orange relative to the situation of East Orange's water supply. Both of these gentlemen are water engineers of highest standing and both have been employed by East Orange at one time or other in an advisory capacity with respect to its water supply. From the brief extracts of their opinions which appear in the record and from the effort made to prevent any further reference to it, it is obvious that their opinions support the contention of the witnesses produced by the prosecutors. Mr. Roper refers to Mr. Hill in his testimony as follows:

"Mr. Hill is the author of the technical portions of the report of the Water Policy Commission made to the State Legislature and filed February 27, 1926, and in this report to the State Legislature Mr. Hill gives the safe yield of the (East) Orange Water System as seven million gallons per day.

Mr. Ellis: Your Honor, I object to this being on record. They could have Mr. Hill here today to give records. Mr. Hill could have been brought here as a witness if the opponent wanted him here.

Mr. Potts: I am only trying to bring out the point that Mr. Hill was Consulting Engineer for the East Orange Water Department and he recommended going to the Dickinson field for additional supply. They went there pursuant to his recommendation. After the supply was put down, five years since this Dickinson field was put down, their own

engineer says the supply was seven million gallons per day."

State of the Case, page 66, line 40 to page 67, line 24.

It is, therefore, respectfully insisted that the City of East Orange has failed to show that there is any necessity at the present time for obtaining new water bearing lands and that on the contrary the prosecutors have shown that by the use of modern machinery and by a more thorough use of its present water reserve East Orange has ample opportunity to secure such additional water as may reasonably be required for many years to come.

B. Undue interference with other municipal supplies.

The Second element which it is necessary for the Court to determine, and consequently the City of East Orange to establish by evidence, is that the granting of the application would not unduly interfere with the opportunity of other municipalities, including the prosecutors, to obtain an adequate water supply for themselves.

It will appear by an examination of the maps attached to the state of the case that the property which East Orange proposes to acquire is located in the vicinity of the wells which are now supplying Chatham, Madison and Florham Park with water. The distance has been stated in the evidence as follows:

A. Chatham wells are 8,000 feet from the location.

B. Madison wells are 9,000 feet from the location.

C. Florham Park wells are 12,000 feet from the location.

State of the Case, page 82, line 35.

There is no dispute over the fact that the water supplies of the opposing municipalities and of the Braidburn Realty Corporation are located in the same basin as any supply which might be taken from the land sought to be condemned. The contention of Mr. Roper is that between the wells of the prosecutors and the property which East Orange proposes to acquire is an impervious rock ridge and that, therefore, the abstraction of the water by East Orange will not affect the wells or water supply of the prosecutors. He is the only witness in the case to testify to that effect and consequently the only person to support the conclusion which he draws therefrom that the granting of the application will not interfere with the water supply of the adjacent municipalities.

Dr. Kummel, the director of the Department of Conservation and Development, took the stand at the hearing and testified that there was no definite evidence available which would absolutely determine the underground formation in the area involved. There is plenty of evidence of a rock ridge obtained from various borings, but the extent of this ridge, its exact direction and location through the locality involved and whether or not and to what extent it is penetrated by fissures or openings or tributaries is still a matter of conjecture. From his testimony we quote:

“Q Between the Commonwealth Field and the East Orange field and the Madison and Chatham pumping stations there is from your findings a rock barrier through here?
A We have that direct line between the East Orange Canoe Brook and the Commonwealth Canoe Brook. There is a rock

ridge running between those two fields and the Madison field. Whether that rock ridge extends continuously to the northeast and forms a continuous barrier between the Madison field and the Dickinson field is yet unproven."

State of the Case, page 197, line 31 to page 198, line 3.

Mr. Paul C. Carey was called as witness for the City of East Orange in this connection as an engineer and former member of the East Orange Water Commission and on direct examination stated as follows:

"Q From your information and knowledge of the Dickinson with Chatham and Madison and Florham Park pumping station to any substantial degree? A I think it lies much in that same rock valley.

Q As what? A That both fields, Dickinson field and the Chatham and Madison field draw their water from substantially the same ground supply."

State of the Case, page 205, lines 25-34.

This testimony and that of Dr. Kummel seem effectually to dispose of Mr. Roper's argument that the water basins are disconnected. We are, therefore, left with the problem of whether there is sufficient water in the water basin to permit East Orange to withdraw the additional two million gallons, which the decision of the Commission has awarded, without unduly interfering with the legitimate requirements of the prosecuting municipalities.

East Orange has offered no evidence whatsoever as to the available supply of water in the water basin effected. The prosecutors have submitted the testimony of their expert, Mr. Horton, who gives it as his expert opinion that the withdrawal of such an amount of water would seri-

ously interfere with the interests of Chatham, Madison and Florham Park. He bases that opinion by determining the available water supply from the rainfall in the area affected. Taking an area of approximately seven square miles, he estimates the minimum rainfall as about thirty-six inches, of which something like eighteen inches would be lost by evaporation. After considering further factors which would have to be taken into account, Mr. Horton arrived at the deduction that the total available supply would be either 650,000 gallons per square mile per day or a total of 4,500,000 gallons from the seven square miles (see Testimony, pp. 176-177).

When asked for his opinion as to the proposed withdrawal of East Orange, he testified as follows:

“Q Would it be possible for East Orange to get four million gallons from the new field they propose taking if restricted to that particular field? A Certainly not. The available water supply which could be derived from the area of forty acres, without encroaching on waters coming from the surrounding area would not be more than 500,000 or 600,000 gallons a day.”

State of the Case, page 163, lines 22-28.

* * * * *

“Q Do you think that the depletion of the Madison and Chatham and Florham Park Supply would be quite rapid, or would it be a slow process? A That would depend to a considerable extent upon the rainfall conditions. There is some evidence, which I have taken into consideration, that it is not possible to develop as a safe, dependable yield in this area west of the Passaic as much as four million gallons, but you could temporarily pull from that area at a much higher rate if you simply put the wells down; and

that pumpage, plus the present pumpage of 1,500,000, over a period of a few years, in my opinion would seriously deplete and lower the available amount of underground water storage through this area generally. * * *

Q Would you consider that to be serious?

A I do. I consider that this is a restricted area which has a ground water supply in fairly definite limits of boundary, and the rainfall condition alone determines the effect of that, with the known factor as to the loss by evaporation. There is a certain limit, beyond which you cannot go without permanently depleting the underground reservoir. If you do that, then it is a very slow process to recover that lost storage, and the time of recovery—the pumping would still have to go on, even though it may be somewhat restricted—the time of recovery would be so slow, that, in my opinion, it would be a very serious handicap to the water supplies located in the region itself.”

State of the Case, page 164, line 30, to page 165, line 31.

Mr. Potts, the other expert called in behalf of the opposing municipalities, testified to the same effect:

“Q In your opinion, based on your investigation and your experience, if East Orange is permitted to draw two million and more gallons from the proposed new field, would that have an effect on the wells at Madison, Chatham and Florham Park? A I don't think there is any question about it. It certainly would, in my judgment.

* * * * *

Q What effect do you—just to amplify this last question—what effect do you think it would have, what kind of effect? A My opinion is that if East Orange comes into that territory, which they propose, and takes the quantity of water they propose, that the abstraction of that amount of water from

that underground reservoir will be sufficient to lower the ground water level that is now maintained by that reservoir to such an extent that it will require Madison and Chatham and the Braidburn Club to put down deeper wells, with larger pumps, possibly very soon and eventually if that draft continues, it would probably seriously interfere, and would require them to go elsewhere for additional water."

State of the Case, page 126, line 33, to page 127, line 25.

The needs of Chatham, Madison and Florham Park now amount to about 1,500,000 gallons per day. All of these communities are growing rapidly and their needs bid fair to increase in large measure in the immediate future. The testimony of the experts establish that the present water supply available for these municipalities will be seriously depleted by the demands of a city the size of East Orange. Should their available supply be depleted, the result would be disastrous to them as they could not afford in view of their size, to enter one of the larger projects, and there is no reason why they should be compelled to do so. They have a present sufficient available supply in their local territory for their necessary water and it would be fatal for them were East Orange to dissipate this supply.

The prosecutors, therefore, maintain that the evidence submitted to the Commission established that the granting of the application to East Orange would affect the water supply of the prosecutors and that such interference would be of a serious nature.

C. Undue injury to public interests.

The testimony of the two main expert witnesses for the opposing municipalities, Mr. Horton and Mr. Potts, would seem sufficient to demonstrate that the intrusion of the City of East Orange into the water supplies west of the Passaic River and the draft of the volume of the underground water which they propose to take from the restricted area embraced in this application, would in all probability so deplete the available supply for the opposing municipalities that they would be unable to supply their needs from their present lands. The evidence also strongly indicates that the available supply would be so depleted that in time the municipalities now drawing from this locality would have to greatly curtail their pumping in order to replace the depletion. This would, of course, result in the practical ruination for them of the large investments which they now have and which they are steadily increasing, in their present water systems, and would be a decided interference with public interests.

D. Undue injury to private interests.

Not a scintilla of evidence was introduced by the City of East Orange to prove that their application would not cause an undue injury to private interests, in spite of the fact that the land which they are seeking to condemn and from which they propose to abstract this large supply is owned by the Braidburn Realty Corporation and under lease to the Braidburn Country Club. The Braidburn Realty Corporation was represented at the hearings by counsel and by Mr. L. F. Morehouse, one of its officers. They placed on the stand Mr. Peter A. Draney, manager of the golf and country club located on this prop-

erty. Mr. Draney testified that the golf club had prepared plans for the enlargement of its second course, which is now nine holes in length, by the extension of two holes and the addition of eleven new holes over the premises sought to be condemned (p. 101). He also testified that the sewage disposal plant of the golf club was now located approximately 75 to 80 feet from the line of the property sought to be condemned by East Orange and that the seepage from that plant was towards the river. He further testified that the soil on the property sought to be condemned has been tested and found excellent for the maintenance of the entire group of golf courses and was in general use at the present time for that purpose (see pp. 103 and 104). On page 199 he testified that if East Orange acquires the lands in question for their water supply that the sewage disposal plant would unquestionably have to be changed. He was not permitted to testify as to the value of the plant or the cost of replacing in view of the fact that he could not qualify as an expert on these points. This seems immaterial, however, in view of the utter failure of the City of East Orange, upon whom the burden rested, to introduce any testimony whatsoever, tending to show that the private interests of this country club would not be unduly injured.

Conclusion on Facts.

In conclusion, prosecutors desire to emphasize the salient features of the testimony. One of these is the fact that East Orange failed utterly to offer any proof on the question of undue injury to public or private interests; both public and private interests were involved and endangered, as demonstrated by the testimony introduced by the prosecutors. The most outstanding features,

however, are: first, the testimony of prosecutors' two experts, whose experience and ability as engineers is beyond question, to the effect that East Orange could undoubtedly increase its present supply to an extent sufficient for its needs, but the use of more modern machinery, and by a more complete exploitation of its present 2,300-acre reserve; and second, the pitiful failure of East Orange to support its general statements, by any specific evidence of borings and testings on its reserve, and the positive statements of prosecutors' experts that the only records of exploration and test wells by East Orange which they were able to locate, were wholly inadequate to enable any competent engineer to definitely determine the available supply under the present 2,300-acre reserve.

The adequacy of the present water lands is a matter capable of proof. These small municipalities should not be subjected to even the possibility of the danger to their supply as testified to by their experts, before East Orange has positively demonstrated by an exhaustive and expert investigation of its reserves that it must go elsewhere for its water, and must make further invasion into the only available source of supply for these three boroughs.

POINT H.

No approval of the North Jersey District Water Supply Commission.

The City of East Orange concedes the fact that it never secured the approval of the North Jersey District Water Supply Commission to its application for the diversion of water (see Stipulation, p. 292, l. 31, to p. 293, l. 2).

The statute under which the North Jersey District Water Supply Commission was organized provides as follows:

Section 18: "Wherever any district commission has been brought into being by virtue of this act it shall be unlawful for any municipality within the water supply district represented by said commission to obtain any new or additional water supply from any water shed other than the water shed or water sheds from which said municipality obtained its existing supply without the consent of said District Water Supply Commission."

Volume 2—Cumulative Supplements, page 3813.

This section of the Act has been very carefully considered in the case of *Oakland v. Bayonne*, 98 N. J. L. 806.

"This legislation forces prominently to the foreground the inquiry whether or not the application of the municipality in the present case is for a new and additional water supply from any water shed other than from which it is obtaining its present supply. If it is, then consent of the district commission was a necessary and essential step to be taken by the applicant before it could lawfully make its application to the board. The lack of such consent would leave the municipality without any legal status to make the application and the board without any jurisdiction over the subject matter."

East Orange is now deriving water from the Canoe Brook, Slough Brook and Dickinson Fields and now proposes to invade a new water bearing area in Florham Park. Water shed applies to both surface and sub-surface waters. It means "The whole region or area contributing to the supply of a river or lake; drainage area; catchment basin." (Opinion of Justice Parker in *Oakland v. Bayonne*, *supra*, at page 817.) A

drainage area or catchment basin includes all water falling on the territory involved and flowing either on the surface or under the surface.

East Orange seeks a new water supply in a new water shed and as the consent provided in this section has not been secured, proceedings are consequently defective.

POINT I.

Grant of right to exercise eminent domain was illegal.

Braidburn Realty Corporation, one of the prosecutors, have alleged that the application of the City of East Orange to condemn its lands was illegal. The property of this corporation is proposed to be taken by eminent domain and in order to exercise this right, it is necessary that every requirement of the statute relating thereto be met.

The reasons which we have heretofore urged in this brief as applicable to the municipalities involved are equally applicable to the Braidburn Realty Corporation and without re-stating them here it is insisted in behalf of that corporation that the entire proceedings to condemn their lands are illegal and void.

SUMMARY.

The three municipalities and the Braidburn Realty Corporation, prosecutors and appellants before this Court, insist that the proceedings and order of the Board of Conservation and Development under consideration were entirely illegal and should be set aside. The Supreme Court has affirmed these proceedings and the appellants respectfully urge that the rule affirming the

action of the Board should be reversed for the reasons filed in the Supreme Court.

These reasons are briefly summarized as follows:

Reason 1. The application, petition and general data submitted by the City of East Orange did not show the source of the proposed supply. It is essential that the source should be shown definitely in the application to confer jurisdiction on the Board to hear the application. "Glacial deposits" indentifies nothing and we respectfully insist that the Supreme Court erred in finding this allegation sufficient.

Reason 2. The application, petition and general data did not show the approximate location of the proposed wells. This is also jurisdictional. The Supreme Court made no comment on this reason in its opinion. It is respectfully insisted that an allegation of two or more wells similar to the Dickinson well did not meet the requirements of the statute.

Reason 3. The application, petition and general data did not set forth the capacity of the wells. This is also a jurisdictional requirement. The Supreme Court says that capacity cannot be definitely computed and the allegation is sufficient. We respectfully urge that is error as an allegation of 2,000,000—4,000,000 gallons is not an estimate based upon any intelligent computation but merely speculation with a sufficiently wide spread to cover any situation that may develop.

Reason 4. Abandoned.

Reasons 5 and 8. These reasons allege that the Board never conducted a hearing within the

meaning of the statute. The members did not hear, read or consider the actual testimony taken and, therefore, could not sit in judgment. No comment on this point is made by the Supreme Court. It is respectfully urged that there having been no judicial hearing or consideration the proceedings are invalid.

Reason 6. Resolution of August 8th approving application of East Orange was adopted by a minority vote and is, therefore, illegal. No comment by the Supreme Court and the reason is obviously good unless the action be validated by some other proceeding by the Board.

Reason 7. Approval and order of the Board dated August 8th, but signed September 5th, was invalid being signed at different times and places by the several members and was not the result of their due consideration and action by the Board acting in concert. It was the product of Critchlow both in substance and form and not of the Board. The Supreme Court says that the action is valid but gives no reasons. We respectfully urge that they have erred in so deciding.

Reasons 9 and 10. The Resolution of ratification adopted September 19, 1928, did not validate the prior illegal proceedings. You cannot ratify the failure to conduct a judicial hearing and give judicial consideration to a cause. No comment by the Supreme Court on this point.

Reasons 11 and 12. The facts submitted at the hearings did not establish that the taking of additional water by the City of East Orange was justified by public necessity or that the same did not unduly interfere with the rights of prosecutors. The Supreme Court says that the evidence was controversial and that, therefore, it would not disturb the finding of the Board.

It is respectfully urged that while much testimony was taken there was no evidence justifying the action of the Board or the Supreme Court in affirming it.

Reason 14. The Board of Conservation privately consulted with, and used facts and opinions submitted by, its own expert in arriving at its decision. This violates every fundamental rule of fair trial. No comment on this by Supreme Court. It is respectfully urged that to permit commission, boards or judicial tribunals to consult experts not known to the parties or subject to examination by them is subversive of the basic principles of our legal system and that for this reason alone the judgment of the Board should be set aside and the affirmative judgment of the Supreme Court reversed.

Reason 15. No consent was ever granted to the diversion of water by North Jersey District Water Supply Commission. Supreme Court did not refer to this point at all in its opinion. The consent was necessary before application could be made to the State Board and its absence invalidates the proceedings.

It is, therefore, respectfully submitted that the judgment of the Supreme Court affirming the orders of the Board of Conservation should be reversed.

Respectfully submitted,

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New Jersey Court of Errors and Appeals

BOROUGH OF CHATHAM, BOROUGH
OF MADISON and BOROUGH OF
FLORHAM PARK and BRAID-
BURN REALTY CORPORATION,
a corporation,

Prosecutors-Appellants,

vs.

BOARD OF CONSERVATION AND DE-
VELOPMENT and CITY OF EAST
ORANGE,

Defendants-Appellees.

*On Appeal on
Certiorari.*

BRIEF FOR DEFENDANTS-APPELLEES.

Statement of Facts.

By authority of Chapter 241 P. L. 1915, the Board of Conservation and Development succeeded to and now exercises the rights and powers of the State Water Supply Commission, except insofar as they were restricted by Section 22, Chapter 71 P. L. 1916, and the jurisdiction of the Board, with relation to the subject matter herein, is not disputed by the prosecutors.

The City of East Orange was incorporated under Chapter 250 P. L. 1908, and possesses all the rights, powers and privileges conferred upon municipalities by the act entitled "An act concerning municipalities," Chapter 152 P. L. 1917, and the supplements thereof and amendments thereto; and by other acts to take lands and water for public use.

In May, 1928, the authorities of The City of East Orange determined it necessary to acquire an additional underground water supply from

the same source as its present supply, in order to meet the needs of its extremely rapid growth of population.

On May 26, 1928, said City filed with the Board of Conservation and Development (hereinafter called the Board) an application for permission to exercise the right of eminent domain for the acquisition of about 40 acres of land in the Borough of Florham Park, in the County of Morris, and contiguous to Essex County. The petition described the said lands as abutting other lands owned by The City of East Orange, and used for the purpose of abstracting its present subterranean water supply. Said application and petition were accompanied by general data and information required by the rules of the Board (pp. 25 to 33, State of Case), and by maps showing the location of the lands and the proposed wells. (See Exhibit A 1, survey and other maps, p. 300, State of Case.)

The said application requested permission to take from the lands to be condemned, underground water not in excess of four million gallons per day, and the general data and maps set forth that the proposed new source of supply was to be taken from two or more 24" x 130' wells to be constructed about 600 feet north of Dickinson Well #1 of The City of East Orange, lying across the Passaic River on the Essex County side, and shown on the maps. The application gave other detailed description of the location and pumping units. (Described on p. 29, State of Case.)

On May 26, 1928, the Board fixed Wednesday, June 13, 1928, at 10:15 A. M., at the office of the Board, State Office Building, Trenton, N. J., as the time and place for hearing on said application, and gave due notice thereof by publications in the Daily Record, a daily newspaper

published in Morristown, Morris County, and circulating in Morris County. Three insertions of said publication were made, on June 1, 2 and 4, 1928, and in addition thereto said notice was published in the Newark Evening News on June 1, 2 and 4, 1928, and in the East Orange Record, East Orange, on June 1 and June 8, 1928. The Borough of Florham Park, where said lands are located, is territorially separated from the Town of Morristown, where the Daily Record is published, by less than one and one-eighth miles (actual measurement), the Township of Morris intervening.

In addition to the above, notice of said hearing was sent by registered mail to each of the following:

- Commonwealth Water Company,
Summit, N. J.
- Chatham Water Department,
Borough of Chatham, N. J.
- Madison Water Department,
Borough of Madison, N. J.
- The Mayor of the Borough of Florham
Park, N. J.
- The Braidburn Realty Corporation,
Florham Park, N. J.

The hearing of June 13, 1928, was attended by counsel for all of the parties to this case, and the hearing was thereupon adjourned until July 10, 1928, when testimony was taken in the application (p. 37, State of Case). Further testimony was taken on July 26 and August 2, 1928.

At the conclusion of the hearing on July 26, 1928, it was announced by Commissioner Drake, who was presiding, that the Board would dispose of the application at its regular meeting of August 8, 1928, as that was the last day the Board would be together within the ninety-day

period within which the Board was required to make its decision (see pp. 116-117, State of Case). After some discussion the hearing was continued to August 2nd, when the testimony was completed and both sides rested.

On that day Commissioner Drake inquired whether the parties wished to file briefs or to make any oral arguments on the application. A prolonged conversation between the Commissioner and counsel for the parties then took place, which unfortunately was not taken down by the stenographer, but which conversation was testified to by Mr. H. B. Kummell, Secretary of the Board. The conversation resulted in counsel for all parties at the hearing stating to the Board that no briefs would be filed and no oral arguments made on the application.

At all of the aforesaid hearings the Braidburn Realty Corporation, Borough of Florham Park, Borough of Madison and the Borough of Chatham were represented by attorneys and engineers (p. 37, State of Case), and no objection was made by any party at the hearings to the jurisdiction of the Board of Conservation and Development, because less than a majority was present. The authority for less than a majority of the Board to sit for the taking of testimony at any hearing which the Board is required to hold, is contained in Chapter 194 P. L. 1924 (hereinafter referred to). Neither this act or any other statute relating to said Board requires that the testimony given shall be reduced to writing.

At the various hearings testimony was adduced by the petitioner and the objectors, and it is here respectfully submitted that the report to the Board by H. T. Critchlow, Chief, Division Waters (see Exhibit G, p. 219, State of Case), who attended all the hearings to make a summa-

tion of the testimony for the Board is an excellent and accurate summation of the testimony and proceedings.

The following facts presented by the petitioner were uncontroverted by the objectors.

The City of East Orange at the present time has a holding of about 2,200 acres in Livingston and Millburn Townships, Essex County, a considerable portion of which abuts Morris County, and from which area the City obtains its entire underground water supply. The lands sought to be condemned are contiguous to the present holdings, although in Morris County, and the additional supply will be taken from the same source as the City's present supply. The City now operates 22 wells, located in three well fields; 16 of said wells being in what is known as Canoe Brook field, 3 in the Dickinson field and 3 in the Slough Brook field. (The Dickinson field abuts the lands involved in the application.) The population of the City is increasing at a very unusually rapid rate, and now contains at least 68,000 people. The water supply is at the present time inadequate, and the consumption, as compared to the possible supply, has reached a dangerous margin. The City has exhausted every effort to prevent waste by achieving stoppage of leaks, the improvement of service connections and by effecting a 100% metered system. These efforts have effected such a remarkable saving of water that the per capita consumption has been reduced from 95 gallons per day in 1905 to 57 gallons per capita per day in 1927. It was not disputed that East Orange has one of the most efficiently regulated systems in the State.

Notwithstanding the population of the City has increased from 25,000 in 1905 to 68,000 in

1928, and is even more rapidly increasing at the present time, the production of water for the City has been increased only from an average of two and one-half million gallons per day in 1905 to an average pumpage of four million gallons in 1928. During the last five years the increase contained in the aforesaid four million gallons per day was increased only to the extent of three hundred thousand gallons. (See chart, p. 300, State of Case.)

It is estimated that by 1935 the population will reach 90,000 people, as the largest apartment houses in the State are now being built within the City. The City's consumption today is over 80% of its possible yield, whereas engineers consider the margin of possible yield over consumption should be 50%.

In a dry season it was uncontroverted that the Mayor was obliged to issue a proclamation requesting the inhabitants to conserve the use of water.

The objectors sought to establish that the City had not sufficiently exploited its present holdings, and that additional water might be found in the City's present acreage. The engineers for the objectors, however, could not suggest where such water could be found (see p. 187, State of Case), and the City's Water Engineer testified that the City has 30 test wells distributed over its entire acreage, but that water could be found only in the three well fields above referred to, and which fields are now exploited to their capacity.

Engineers for the objectors further sought to establish that the abstraction of water from the area involved in the application might affect the water supply of Florham Park, Madison and

Chatham, but the City met this testimony by uncontroverted proof that The City of East Orange, for the last five years, has been abstracting two million gallons per day from the Dickinson well field, within a few hundred feet from the place where new wells are contemplated. Such operations have not in any manner affected the wells of the above-named municipalities, nor have they affected the artesian well of the Braidburn Realty Corporation, which is located on lands adjacent to those described in the application.

It is suggested that a review of the testimony of petitioner's witnesses, will convince there is no danger of the grant affecting other water supplies and that the objectors' witnesses reveal no scientific facts, or other evidence, to justify any apprehension that the abstraction of two million gallons per day, allowed by the Board, would in any way disturb the supply of the other municipalities or private interests referred to.

It was not denied by the objectors that the lands sought by the City to be condemned are low, marsh and swamp lands, and are under water for a considerable portion of the year, and after every heavy rain remain under water sometimes for weeks at a time. The lands are unadapted for farming or any other use.

It was not denied by the objectors that unless the City is able to acquire the lands in question and construct its plant so that wells will be in operation by the year 1930, the City will be in an extreme state of necessity. Such a situation was recognized by the Justice of this Court allowing the writ herein, for said writ was allowed with the express provision that the condemnation of the lands should not be stayed. Since

the allowance of the writ without the stay, the City has condemned the lands in question and is now proceeding to develop them.

LAW.

I.

Where the Supreme Court has determined as a question of fact that the determination of the Board of Conservation and Development was reasonable, the conclusion of the Supreme Court will not be reviewed on appeal if there was any evidence justifying such finding.

A large portion of the brief of prosecutors-appellants herein is taken up with argument that the decision of the State Board was not justified by the facts, and that the evidence did not establish a public necessity for the grant applied for.

Counsel for the City has refrained herein from arguing this matter further since the Supreme Court has determined as a question of fact that the evidence sustained the application.

The principle cited in the above caption is well established.

In the case of *Sisters of Charity v. Cory, Collector, et als.*, 73 N. J. L. p. 704, Mr. Chief Justice Gummere in stating this principle said for the Court of Errors and Appeals:

“This Court is exclusively a court of review. Its sole function is to pass upon the legality of the decisions of inferior tribunals. The question which it undertook to determine was one of fact which it was the exclusive province of the Supreme Court to settle.”

And in the case of *Borough of Collingswood v. State Water Supply Commission*, 85 N. J. L. p. 678, the Court of Errors stated as follows:

“We are of the opinion that the commission is given by the statute the power to refuse a municipality the right to divert water from a new source of supply, if there exists no public necessity of reasonably anticipated public use therefor, and where as in this case the Supreme Court has determined as a question of fact that such determination was reasonable, the conclusion of the Supreme Court will not be reviewed, if there was any evidence justifying the finding by the Supreme Court.”

II.

The Application, Petition and General Data submitted by the City of East Orange contained all the information required by the Statute.

Answering Appellants' Point F. defendants refer to Section 3, Chapter 304 P. L. 1910, which provides in part as follows:

“Any municipal corporation, corporation or person may make application in writing to the commission for approval of its plans for obtaining a new or additional source of water-supply from surface or sub-surface, well or percolating source. The application shall show the sources of proposed supply, the approximate location of the proposed wells, reservoirs or other works, with their estimated capacities, an abstract of any official reports relating to the same, the need for an added supply, and the reasons for the choice made. The commission shall give notice by advertisement in one or more newspapers published in the vicinity, of a public hearing, at which all persons or municipalities affected by the proposed plans may be heard for or against the granting of the application. After such hearing, the commis-

sion shall decide whether the plans proposed are justified by public necessity or reasonably anticipated use, and whether by taking waters necessary for this use they interfere unduly with the opportunity of other municipalities to obtain for themselves a water-supply, or whether the taking of sub-surface waters will unduly injure public or private interests. Within ninety days after receiving the application the commission shall, with all convenient speed, either approve or reject the same, or approve it subject to such reasonable terms and conditions as it may prescribe. The decision upon any application shall be in writing, signed by at least a majority of the members of the commission, and shall be filed, together with the application and all plans, maps, surveys and other papers or records relating thereto, in its office."

The three maps filed with the application (p. 300, State of Case) by The City of East Orange to the Board, not only described the area in question by survey (in metes and bounds), and by solid shading on the map, showing location with respect to other geographical markings (see Exhibit A 1), but definitely locate the proposed wells at a point about 600 feet north of Dickinson Well No. 1 of The City of East Orange, shown on said maps. Said map (see Exhibit A 1), shows the exact location of the three Dickinson field wells immediately across the Passaic River from the acreage sought to be condemned in Florham Park. The petition (see p. 31, State of Case) shows the need for an added supply and the reasons for the choice made.

The application was for the right to obtain four million gallons daily from two or more wells, to be located in the said area, and the general data (please see Exhibit A, p. 25, State of Case), described the proposed wells, pumping

units, transmission lines, pressure and gave much additional information. Since the application was for the right to obtain a limited amount of water from the section, it was immaterial to the Board, or anyone else, just how many wells were necessary to collect such amount, and it was an engineering impossibility to ascertain the number of wells necessary in advance of the exploration by operations in the area.

Counsel for appellants complained because the petition states that the source of the proposed supply is from "glacial deposits," and because the application does not explain the origin of the waters found in such glacial deposits.

It does not seem necessary to answer such an unreasonable objection further than to remark that it does not lie within the knowledge of any man to trace the fountain heads of subterranean waters. That question remains one of the mysteries of the underground. Surely the statute does not contemplate anything further than to state the geographical area where the glacial deposits are to be tapped and the diversion made.

It is respectfully submitted that the application, petition and general data contained all the information necessary to permit the Board to act intelligently in the matter.

III.

The notice of the hearing by advertisement and otherwise met all requirements of the statutes.

Answering appellants' Grounds of Appeal (Reason 4), defendants again refer to Section 3, Chapter 304 P. L. 1910, which provides as follows:

"The Commission shall give notice by advertisement in *one* or more newspapers published in the *vicinity* of a public hearing, at which all persons or municipalities effected by the proposed plans may be heard, for or against the granting of the application."

As heretofore stated, notice on this application was not only given in the Daily Record of Morristown by three insertions, but was published three times in the Newark Evening News and twice in the East Orange Record, and in addition thereto, notice by registered mail was given the Commonwealth Water Company, the Boroughs of Chatham, Madison and Florham Park, and the Braidburn Realty Corporation, as owner of the land in question.

There is no newspaper published in the Borough of Florham Park, where the lands in question are situated, but the appellants complain because notice of the hearing was not published in the Chatham Press, a weekly newspaper published in Chatham, Morris County; or in the Madison Eagle, a weekly newspaper published in Madison, Morris County.

Attention is at this time called to the fact that the language of the statute is not that notice of the hearing be printed in a paper published *nearest* the lands effected, but simply requires that the newspaper be published in the vicinity. There can be no dispute that the Daily Record

is the leading daily newspaper of Morris County and circulates throughout the county.

In the case of *Oakland v. Bayonne*, 98 Law 815, the Court of Errors in commenting on the manner of publication, did not hold that the notice must be published in a newspaper nearest to the lands involved, but had this to say:

“It seems to us there can be no legal excuse why the statutory notice was not inserted at least in a newspaper published in Bergen County.”

The criticism of the Court in the above case was because the notice was published in Newark, Passaic and Hoboken, but nowhere in Bergen County, where the lands were situated.

As heretofore stated, the Town of Morristown is located less than one and one-eighth miles from the Borough of Florham Park. There can therefore be no doubt that Morristown is in the vicinity of Florham Park, and that the defendants complied with the statutory requirements in regard to the publishing of the notice.

IV.

The hearings on the application were conducted according to law.

Answering appellants' Point A, defendants refer to Chapter 194 P. L. 1924, which is an amendment to the act establishing the Board of Conservation and Development.

It will be noted that this statute was enacted subsequent to the case of *Oakland v. Bayonne*, 98 Law 806, and was undoubtedly adopted to meet the suggestion in the last mentioned case for statutory authority with respect to less than a majority of the Board sitting at a hearing on

any application. It is presumed that this act was also intended to expedite the business of the Board (in view of the increasing number of petitions for the diversion of water), by thus enabling the Board to divide its work insofar as hearings are concerned. The act provides as follows:

“Less than a majority of the Board may sit for the taking of testimony at any hearing which the Board is required to hold, but a majority vote of the Board shall be necessary for the transaction of business. Any person who, having been sworn by the presiding officer of the Board, or the chairman of any of its committees, or by the Director of Conservation and Development, wilfully gives false testimony, shall be guilty of perjury.”

These various statutes do not require stenographic reports of the hearings held.

On the day set for the first hearing of June 13, 1928, the hearing was continued for the purpose of taking testimony, and at all subsequent hearings for the taking of testimony, less than a majority of the Board attended.

As heretofore stated, at these hearings all of the parties interested were represented by various counsel, and no objection at any time was made to the character of the hearings or the minority sitting.

Attention is at this time directed to the fact that the petition by The City of East Orange to the Board was filed on May 26, 1928, and under the statute (see Section 3 Chapter 304 P. L. 1910), the Board is required to make its disposition of the application within ninety days from the filing of the same.

The August monthly meeting (the second Wednesday of each month) of the Board of Conservation and Development was scheduled for August 8, 1928. At the meeting of August 2, 1928, the petitioner and all the objectors concluded their testimony, and were at that time advised by Commissioner Drake, who presided at the hearing, that the application would be disposed of on August 8, 1928, just six days later. Commissioner Drake thereupon ascertained from all of the parties interested whether they preferred to rest their case at that hearing or whether they desired to file briefs, or to file briefs and orally argue the matter at the meeting of August 8th. After much discussion among the attorneys for all of the parties interested, it was unanimously decided that all parties would consider the case closed, and owing to the brief period before the meeting of August 8th, no briefs would be filed and no oral arguments made. (Please see testimony of Dr. H. B. Kummell, Secretary of the Board, pp. 237, 248 to 250, 283 and 284.)

It is unfortunate that the stenographer (who, by the way, was substituting and stated she was inexperienced in taking testimony at hearings), did not make notes of the discussion among counsel and their agreement not to file briefs or oral arguments.

The testimony of Dr. Henry B. Kummell, however, a witness called by the appellants, and who attended all hearings as Secretary of the Board, is not controverted by any other testimony.

When counsel for the appellants argue they were given no opportunity to present a summation to the Board why the application of The City of East Orange should not be granted, they

are confronted by these facts which they well understand. As heretofore stated, they were all present at the hearing of August 2, 1928, and were parties to the agreement among counsel that no oral arguments would be made and no briefs filed. Attention is called to the fact that the letter shown on page 282, State of Case, dated August 14, 1928, addressed to Mr. Henry B. Kummell, Director, and signed by Robert S. Pollard, attorney for the Borough of Chatham, was mailed many days after attorneys for the appellants had knowledge of the fact, from newspapers and otherwise, that the Board had decided the application in favor of The City of East Orange, and was therefore a mere gesture for the purpose of arguing that the appellants were not given an opportunity to sum up their arguments. Under these circumstances, and in view of the agreement entered into on August 2, 1928, and testified to by the Secretary of the Board, it was a late day for the appellants to complain.

In proof that the attorneys for the appellants considered their protests concluded at the meeting of August 2nd, the Court is here respectfully reminded that although they had been informed by Commissioner Drake of the continuation of the matter to August 8th, none of them appeared to argue the case at that regular meeting, nor were any briefs filed with the Board by any of the attorneys interested, nor was any request of any kind made for the privilege of orally arguing their protest or of filing briefs until they learned the application had been decided in favor of The City of East Orange. The above facts have been somewhat stressed in order that this Court should have all the circumstances and to challenge the appellants' claim that they were not given a chance to be heard.

V.

The Approval, Order and Decision of the Board on the application was sufficient in law.

Answering appellants' Points C, D and E.

It is admitted that the resolution approving the application of The City of East Orange was adopted by a minority of the Board on August 8, 1928. However, this action of the minority was confirmed first by a formal signing of the approval, order and decision of the Board at a special meeting of the Board on September 5, 1928, at which five members of the Board (a majority) were present; and second, by the adoption of a resolution at the regular meeting of the Board on September 19, 1928, at which six members of the Board were present, and at which time the action of the Board, taken on August 8th, was ratified and confirmed in the following language:

“Resolved, that the Board does hereby ratify and confirm as its own, each and every action taken by a minority of the Board at the meeting of August 8th, as set forth in the minutes of said meeting, which minutes are hereby approved.” (See p. 23, State of Case.)

The language of the statute with respect to a decision of the Board is as follows:

“The decision upon any application shall be in writing, signed by at least a majority of the members of the commission” (Section 3, Chapter 304 P. L. 1910).

The decision of the Board was actually signed by seven of the eight members of the Board, five of whom were present at one time at a special meeting on September 5, 1928.

It is argued for the appellees that this last mentioned action in itself sufficiently complied

with the provisions of the statute requiring only that the decision shall be signed by a majority of the members of the Board. But, as heretofore stated, at the regular meeting of September 19, 1928, a further ratification of the action of a minority taken on August 8, 1928, was made.

The appellants insist that the action of August 8, 1928, was "illegal and void." The defendants suggest, however, that the action of a minority on August 8, 1928, was not at all an *illegal act*, but was rather an *insufficient act*, which was properly cured by *ratification* both on September 5th and September 19th.

It is admitted of course, that an illegal act of any body cannot be ratified. However, any act of a Board within its province, which is insufficiently done, may be cured by ratification by proper action of the Board, as was here done. If it were not so, the doctrine of ratification would have no meaning. The law relating to the right of a body to ratify its former action is well settled. The prevailing rule is briefly stated in *McQuillan Municipal Corporations*, Section 641, as follows:

"Irregular and void acts may be ratified or confirmed at a subsequent meeting. Thus, where the action in allowing a claim is invalid because of a lack of a majority vote as required by law, it may be ratified at a subsequent meeting by resolution confirming such previous action."

The fact such ratification was not made within the ninety day period fixed in the statute, does not vitiate the effect. The following appears in an opinion by Chief Justice Gummere in *Botti v. McGovern*, 97 N. J. 353:

"The rule was applied by this court in the case of *Hugg v. Camden*, 39 N. J. L. 620, 623, in determining the intention of the legisla-

ture in declaring the time within which a duty created by it should be performed, Scudder *J.*, who delivered the opinion, stating that while the command of the statute should be obeyed within the time specified by the legislature, the naming of the time of performance is not a limitation of authority, unless the statute itself contains words restraining the person upon whom the duty is imposed from performing that duty at any time subsequent to the period fixed for such performance; and that, in the absence of such limitation, the duty enjoined may be performed at a time subsequent to that named in the statute, and the action is valid."

VI.

The Board of Conservation and Development provided for an ample hearing on the application in question and had sufficient knowledge of the facts to intelligently dispose of the application.

Answering appellants' Points A, B and C.

Appellants attempt to establish that the Board did not have sufficient information to enable them to intelligently dispose of the application in question. They also complain because all the members of the Board did not read the entire transcript of testimony taken, and because the members read the summation of the testimony and report prepared by Mr. H. T. Critchlow, Chief, Division of Waters in the Department of Conservation and Development. Mr. Critchlow had attended all the hearings to make a report to the Board of all material facts brought out by both sides. No inaccuracies in the summation of the testimony prepared by Mr. Critchlow are pointed out by the appellants, however, and a remarkably fair and complete marshalling of facts by Mr. Critchlow will be indicated by comparison

of the testimony with Exhibit G (see p. 19, State of Case).

Counsel for the defendants know of no case where the courts of this state, or any other state, have held a decision of any judicial body to be illegal because all the members of such body had not read every word of the testimony submitted by the parties, and especially if it appears that the testimony, in fact, substantiated the prevailing side.

Counsel for the appellants sought to inquire into the mental process by which members of the Board arrived at their decision, but the testimony of the members, as appears in the State of Case, is the best answer to such inquiry.

Counsel for appellants also cite several cases in which this Court has held that jurors in a trial of an issue by them, may consider only such evidence as is presented at the trial. It is argued for the defendants herein, that these cases have no application to the present case. The members of the Board of Conservation and Development were not *trying a case*, but were *exercising a discretion conferred upon them by statute*. The said Board was constituted for the very purpose of conserving the waters of the state and controlling the uses thereof, so that a proper distribution may be made among the various municipalities. In order to effectuate its purpose, it must establish a fixed policy and such Board must not be bound, in the exercise of its discretion, entirely by the appeals or objections which may be submitted at any hearing held by the Board. If it were, its very purpose would be frustrated.

In exercising its functions, the Board has from its beginning required the filing, by municipal-

ities and private water companies, monthly reports of water production and consumption, together with all other general data relating to the water supplies of the state. It has accumulated volumes of records and constantly employed technical advisers to advise and report the general conditions from time to time. The statutes under which the Board operates, has made it the agent of the state for the purpose aforesaid.

Mr. Justice Parker very clearly, stated the powers of the Board in *Collingswood v. Water Supply Commission*, 84 N. J. L. 104, in the following language:

“It is quite evident, therefore, that the policy of the state is one of determination to conserve, and as we view the matter, to economize to the fullest extent that is reasonable, the water resources of the state for the benefit of all its inhabitants. The growing scarcity of water-supply is a matter of common knowledge, and a great deal of the fiercest litigation in the courts at the present time arises out of disputes over the ownership of water rights. Consequently, in looking at the acts of 1907 and 1910, this policy should be kept in mind; though indeed this is hardly necessary in view of the language of those very acts, for the act of 1907 in its very first section says that the State Water-Supply Commission ‘shall be charged with a general supervision over all the sources of potable and public water-supply, to the end that the same may be economically and prudently developed for the use of the people of this state.’

By section 1 of the act of 1910 the commission is invested with the same jurisdiction over well, subsurface or percolating water supplies now or hereafter furnished to the inhabitants of any municipal corporation as it now has over surface water sup-

plies so furnished except as such jurisdiction and supervision may be modified by the act; and in section 3 of both acts the approval by the commission of an application coming from a municipality 'shall constitute the state's assent to the diversion of water, &c.'

The general effect of this legislation is to invest the commission as a state agency with the fullest control over prospective drafts by municipalities, corporations, or private persons upon either surface or subsurface supplies of water within the jurisdiction and boundaries of the state; to charge it as such agency with the duty of prudently and economically dealing with the supply so as best to subserve the interests of the people of the state at large and not the interests of any particular locality; and to vest in the commission a judicial discretion with regard to permitting municipalities to draw upon that water-supply, such discretion to be exercised within the limits laid down by the statute and subject to review by the courts 'for reasonableness, legality and form.' "

The last-mentioned case was affirmed by the Court of Errors and Appeals, 85 N. J. L. 673, which court had the following to say:

"The power of the legislature to conserve the public waters of the state for the benefit of all the people of the state is not questioned, and if the legislature has committed to its agent, what, in the estimation of some of its citizens, appears to be an undue power, it can only be corrected by the legislature and not by the courts of the state, and finding as we do that the power to sanction and approve, or to withhold it, is committed to this commission, we cannot say that its action was illegal, if reasonable. Is it reasonable, is the remaining question."

It is therefore apparent that the Board must be conceded a wide latitude and discretion.

The Board must necessarily make use of the knowledge and experience of its members, the records and statistics of its office, and the recommendations of its scientific and technical staff in collecting, summarizing and establishing the facts developed at the hearings, and, particularly, when such testimony is technical in character. Each member of the Board should give such weight to the assistance and recommendations of its technical advisers as in his judgment he thinks it is worth.

As was said by this Court in the case of *Collingswood v. Water-Supply Commission*, 84 N. J. L. 112,

“When a state tribunal, presumably public spirited and impartial, has after due hearing passed on a question within its jurisdiction, and with whose determination it is charged by statute, its finding should not be reversed unless unwarranted in law, or unfounded in fact, or unless a discretionary power has been plainly abused.”

In the present case, it is submitted that the testimony of the members of the State Board shows that each of them, before voting to approve the grant, satisfied himself from the testimony and maps, from the data and general information previously acquired, from the record and statistics of the department, and from the recommendations of the Board's technical advisers, that the application, as modified, should be allowed.

VII.

The weight of evidence submitted preponderantly supported the petition.

Answering appellants' Point G generally.

Defendants refer to the testimony of Roswell M. Roper, Chief Engineer of The City of East Orange, which undoubtedly establishes that additional water supply for The City of East Orange is urgently needed to take care of its rapidly increasing population. The evidence further warranted the conclusion by the Board that the abstraction of two million gallons from the area in question would not unduly interfere with the supply of other municipalities, or other private interests. The basis of the testimony of petitioner's witnesses is completely supported by the records in the Department of Conservation and Development, where monthly reports of water conditions have been filed for years, and the apprehension of the objectors' witnesses that such operations might affect the supply of other municipalities is fanciful rather than supported by scientific data or by records or other facts.

The fact that The City of East Orange has for the last five years been pumping two million gallons per day from adjacent areas but a few hundred feet away without affecting the water supply of the Braidburn Country Club or the Boroughs of Florham Park, Chatham and Madison, strongly supports the contention of the Water Engineer of The City of East Orange that the supply taken by The City of East Orange at the present time (as well as the additional amount applied for), is drawn from a geographical water basin entirely different from that of the objecting municipalities.

The appellants' brief stresses the prominence as experts of two of their witnesses, namely, Mr. Clyde Potts and Mr. Robert E. Horton. It is admitted Mr. Potts is a sanitary and hydraulic engineer, and that he was president of the State Board of Health—at one time. It is also conceded that his name has been prominently associated with several major projects recently. It is suggested, however, that these activities have not brought him such renown as to overshadow other experts in the present case. His experiences were not based on any explorations or other tests of water conditions in the area involved herein, and were of a most general character. As for Mr. Horton, he seems to have had considerable experience in New York State, but an examination of his testimony will indicate that he had no opportunity of making a thorough study of the Livingston Township area. He testified (p. 174, State of Case) that he was not sure he had ever been on the tract in question, and that he had not been near that vicinity, prior to the day before he testified, since 1903. An examination of Mr. Horton's testimony also indicates that he had no specific knowledge of water conditions thereabouts. All that can be said about him is that he qualified as a consulting hydraulic engineer.

In contrast to the generalities of the aforesaid witnesses, it is argued that the clear and concise information gathered by Mr. Roswell M. Roper as a water engineer for The City of East Orange for a period of eighteen years, is most convincing.

VIII.

It was not necessary for the petitioner to obtain consent of the North Jersey District Water Supply Commission for the supply in question.

Answering appellants' Point H.

Chapter 71 P. L. 1916, Section 18, reads as follows:

"Wherever any district commission has been brought into being by virtue of this act, it shall be unlawful for any municipality within the water-supply district represented by said commission to obtain any new or additional water supply from any watershed other than the watershed or watersheds from which said municipality obtains its existing supply without the consent of said district water-supply commission."

From the use of the word "watershed" and other language in the above act, it is apparent the jurisdiction of the District Water Supply Commission relates solely to surface supplies. Hydraulic engineers and geologists do not regard subterranean waters as any part of a "watershed," since, frequently such waters move in an opposite direction from the surface streams.

However, if such statute should be held to apply to underground water, it would not concern the present proceedings, because the new supply sought is to be taken from the same geological basin as that from which the City is now getting its water. This fact was not disputed at the hearings by the objectors' engineers. They differed with the City's engineers in that they contended the basin included not only the area in question, but also the wells of Chatham, Madison and Florham Park.

And so, The City of East Orange is not seeking "any new or additional water supply from any

watershed other than the watershed or watersheds from which it obtained its existing supply.”

IX.

The right to exercise eminent domain was properly granted.

In answer to appellants' Point I the foregoing reasons why the proceedings should be sustained in their entirety is referred to, without re-stating them here.

In conclusion, the defendants respectfully submit that The City of East Orange has amply established its need for an additional water supply, and has complied with all the requirements of law, and that the Board of Conservation and Development in granting one-half of the quantity applied for upon conditions and terms, has also complied with all statutes relating to its jurisdiction.

Defendants therefore urge that the judgment of the Board of Condemnation and Development as approved by the Supreme Court be further sustained.

Respectfully submitted,

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Defendants-Appellees.

