1 UNITED STATES DISTRICT COURT

2 DISTRICT OF MINNESOTA

3 FOURTH DIVISION

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United States of America,
5 Plaintiff,
and
6 State of Minnesota, by its
Attorney General Warren Spannaus,
7 its Department of Health, and
its Pollution Control Agency,
8 Plaintiff-Intervenor,
vs.
9 Reilly Tar & Chemical Corporation;
Housing and Redevelopment authority Civil No.
10 of Saint Louis Park; Oak Park 4-80-469
Village Associates; Rustic Oaks
11 Condominium Incorporated; and
Philip's Investment Company,
12 Defendants.
and
13 City of Saint Louis Park,
Plaintiff-Intervenor,
14 vs.
Reilly Tar and Chemical Corporation,
15 Defendant.
and
16 City of Hopkins,
Plaintiff-Intervenor,
17 vs.
Reilly Tar & Chemical Corporation,
18 Defendant.

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The Deposition of HAROLD R. HORNER, taken
21 pursuant to Notice of Taking Deposition, taken before
Kirby A. Kennedy, a Notary Public in and for the County
22 of Washington, State of Minnesota, taken on the 8th,
9th, 10th, 11th and 12th days of March, 1983, at Room
23 287, Federal Courthouse, Indianapolis, Indiana,
commencing at approximately 9:00 o'clock a.m.

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1 APPEARANCES

2 DAVID HIRD, ESQUIRE, United States Attorney, Department of Justice, 10th Street and Penn Avenue,
3 Washington, D.C. 20530.

4 ROBERT E. LEININGER, ESQUIRE, Enforcement Attorney, 230 South Dearborn Steet, Chicago, Illinois
5 60604, appeared for and on behalf of the United States Environmental Protection Agency, Region V, Plaintiff,
6 United States of America.

7 DENNIS M. COYNE, ESQUIRE, and STEPHEN SHAKMAN, ESQUIRE, Special Assistant Attorneys General
8 1935 West County Road B2, Roseville, Minnesota 55113, appeared for and on behalf of Plaintiff-Intervenor,
9 State of Minnesota.

10 ALLEN HINDERAKER, ESQUIRE, KATHLEEN MARTIN, ESQUIRE of the law firm of POPHAM, HAIK, SCHNOBRICH,
11 KAUFMAN and DOTY, LIMITED, 4344 IDS Center, Minneapolis, Minnesota 55402, appeared for and on
12 behalf of Plaintiff-Intervenor, City of Saint Louis Park.
13

EDWARD J. SCHWARTZBAUER, ESQUIRE, and BECKY
14 COMSTOCK, ESQUIRE, of the law firm of DORSEY and WHITNEY, 2200 First Bank Place, Minneapolis, Minnesota
15 55402, appeared for and on behalf of Defendant Reilly Tar and Chemical Corporation.
16

ROBERT POLACK, ESQUIRE, Vice President and
17 General Counsel, Reilly Tar and Chemical Corporation, 1510 Market Square Center, 151 North Delaware Street,
18 Indianapolis, Indiana 46204, apeared for and on behalf of Defendant Reilly Tar and Chemical Corporation.
19

20 ALSO PRESENT:

WARREN S. THOMPSON, Director, Mississippi
21 State University, Forest Products Utilization Laboratory, Box 552, Mississippi State, Mississippi
22 39762.

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1 HAROLD R. HORNER
2 the Witness in the above-entitled
3 matter after having been first duly
4 sworn deposes and says as follows:
5
6 CROSS-EXAMINATION
7 BY MR. HINDERAKER:
8 Q. Mr. Horner, I will be asking the questions of
9 you for this morning if not for the day. As I
10 mentioned earlier, I represent the City of Saint Louis
11 Park. I am going to try to ask questions in a clear
12 way but if for any reason you have any doubt about the
13 meaning of my question, I would ask that you tell me so,
14 and I will be quite happy to rephrase it. Have you
15 been through such a proceeding before?
16 A. Not a deposition. I have been in court quite
17 frequently but not in this form of court. This is my
18 first experience where you take depositions. Usually
19 we went right straight to court.
20 Q. Okay. Well, this is like the Court setting
21 in that we have a Court Reporter, and it will be
22 necessary that you answer or respond to any question in
23 an audible fashion rather than a nod of the head or
24 such, and both of us should try to not speak on top of
25 each other since the Court Reporter can only take down

one thing at a time. Do I correctly assume that you have had some chance before today to review various documents relative to the Reilly Tar plant at Saint Louis Park?

A. That's correct.

Q. And do I also correctly assume that you have had some opportunity to discuss this case and this deposition today with Mr. Schwartzbauer or Mr. Polack or others?

A. That is correct.

Q. So you have had some chance to sort of refresh your recollection about the events of past days?

A. That's correct.

Q. Also, if at any time you desire to take a break or whatever, just let me know and we will do that as well. Although you are under oath, it is an informal proceeding and we can break whenever we wish.

A. Thank you.

Q. Could you state your full name, Mr. Horner?

A. Harold Richard Horner.

Q. And what is your current age?

A. Pardon me? I didn't get that question.

Q. What is your current age?

A. Age?

Q. Yes.

A. This October I will be 88, almost 90, not quite.

Q. Sneaking up on it?

A. I am slipping awful fast up on it.

Q. On that last question I didn't speak loudly enough and please don't hesitate to ask me to do that as well.

A. When you see me trying to push that up a little bit, you know my problem.

Q. For what period of years were you employed by Reilly Tar & Chemical Company?

A. Do you want the exact number of years or do you want the approximate number of years?

Q. The approximate. When you began and when you retired would be sufficient.

A. I think it was in '24, 1924 and 1972, I believe. I did not check those figures.

Q. I understand that the facility at Saint Louis Park, Minnesota was constructed in approximately 1917. As you recall, was the facility at Saint Louis Park in operation before you joined the company?

A. Very much so.

Q. Prior to joining Reilly Tar in 1924, did you have previous employment?

A. I would answer that yes.

1 Q. And by whom were you employed?
2 A. It was the Deeds Commercial Laboratories
3 which my father had an interest in.
4 Q. What were your job tasks then?
5 A. Supervising the operation, running the plant
6 in its operation.
7 Q. Was your job a managerial one as opposed to
8 an engineering one?
9 A. Both.
10 Q. What was the business of that company?
11 A. Manufacturing carburizing compound.
12 Q. What period of years were you employed with
13 your father's company?
14 A. It was not my father's company. He was
15 interested in that.
16 Q. I am sorry.
17 A. The company had gone through reorganization,
18 patent problems, and we were trying to salvage what we
19 could out of it.
20 Q. Do you recall the years when you were
21 employed there?
22 A. I don't think it was more than one or two
23 years. After that date that we -- because we used so
24 much of Reilly Tar's coke that Mr. Reilly purchased it.
25 It may have been three years. I would have to look

1 back to get those figures correct. This is from memory.
2 Q. And, Mr. Horner, one of the things that we do
3 appreciate is that you, as any witness, can do no more
4 than give us your present recollection of matters, and
5 that's all that we can ask. Could you give me a
6 description of your formal education after high school?
7 A. Purdue, from there directly into the Army as
8 a pilot. Sent to Minneloa to go overseas but General
9 Fushe came along and grabbed us up and took us down in
10 Florida, and we taught flying from then on until the
11 end of the war. I was teaching acrobatics.
12 Q. Flying acrobatics?
13 A. Flying acrobatics. It was fortunate for
14 myself and a good many people after that that I knew
15 how to get out of an upside down spin, and they came
16 from all over the country to learn that upside down
17 spin.
18 Q. Was this with -- the biplanes?
19 A. You are you flying upside down and twisting
20 around and around and you don't know where you are
21 going, how to get out of it, how to bring the plane out
22 of it. We were the first ones to teach upside down
23 spins.
24 Q. And after the Army?
25 A. Well, I had my education, they gave us --

1 Purdue gave us our diplomas, and one of the reasons
2 that we didn't go overseas, our papers were all lost
3 from Purdue to Minneola. Somebody lost all our papers.
4 That's why we had a rather unfortunate -- well, I think
5 it was actually fortunate for us and fortunate for a
6 good many people that we did do that teaching rather
7 than going to war.
8 Q. Did you have any education after the Army?
9 A. I didn't need it.
10 Q. You had your degree from Purdue?
11 A. Yes, they were supposed to have given our
12 degree but there is no record of it at Purdue. We had
13 all the papers. There is no record from the Army of
14 that.
15 Q. When did you graduate from Purdue?
16 A. We went right from Purdue to directly to
17 Minneola. We were able to fly so there was no teaching
18 involved.
19 Q. This was World War I?
20 A. World War I.
21 Q. So I suppose you left Purdue and went into
22 the Army in 1914 to '17?
23 A. 1914 to '17.
24 Q. What was your degree in or what was your
25 course of study at Purdue?

A. Chemical engineering.

Q. Did you become, subsequent to that, a registered engineer in any state?

A. When registration was required in Indiana to practice, I took out my registration. I am a registered engineer in the state of Indiana.

Q. And your degree from Purdue would be a Bachlors of Science?

A. That's what it would have been if it were completed. You know that that complete course was about two months before the completion of the course.

Q. Have you had any formal training in hydrology?

A. No, I haven't.

Q. In your employment or during your carrier, was hydrology any part of what you did for a living?

A. Every one of our plants had that problem, and it was my job to correct it.

Q. And when you reference "that problem", what is it that you are referring to?

A. Contamination you might call it.

Q. Contamination of what?

A. Effluents from the plant.

Q. Speaking of the waters discharged in the process of the plant operation?

A. Right.

1 Q. And contaminated with what?

2 A. Well, it is called phenol but that -- in that

3 contamination, it is a pretty complicated material. I

4 should have brought that list like I showed you

5 yesterday. It's a list about that thick (indicating)

6 of materials that are in that, close to 1,000 different

7 materials in that one material that was called phenol.

8 Q. Is phenol a chemical compound or a mixture of

9 chemical compounds?

10 A. Phenol as shown in the books is a compound by

11 itself.

12 Q. And that compound is made up of this list of

13 thousands of --

14 A. No, that is a compound by itself; but the

15 material that it comes from in distillation is very

16 complicated and contains many, many compounds, probably

17 1,000 compounds, five or six hundred without any

18 question.

19 Q. And is one of those compounds phenol?

20 A. Right. The majority of it is phenol. The

21 other, you have to spend hours to get it separated,

22 enough material to even find out what it is.

23 Q. What is the --

24 A. If you want to see that, I could bring that,

25 and it's only -- I don't know as there is any other in

1 this country. This was taken from Germany directly
2 after World War I by our -- and I have a copy of those
3 figures that the Germans collected together as to what
4 we call phenol as it comes off. I can show it to you
5 if you want to see it.
6 Q. I would appreciate that.
7 MR. HINDERAKER: Is that all right?
8 MR. SCHWARTZBAUER: Certainly.
9 BY MR. HINDERAKER:
10 Q. Is there a name for the product or the end
11 result of the process that contains all of these
12 compounds including the phenol?
13 A. I wish you would repeat that. I don't quite
14 understand it.
15 Q. I think you were referencing the fact that in
16 the refining process, as a result of the refining
17 process, you get a discharge which contains 600 to
18 1,000 compounds?
19 A. Right.
20 Q. Is there a name for that final discharge or
21 end result?
22 A. It's called phenol.
23 Q. Called phenol?
24 A. Yes.
25 Q. In the operation of the refining plant at

Saint Louis Park, was there a name given to that part of the refining process that results in this material with all of these compounds?

A. The compounds would take hours and months to separate. The Germans are the only ones that ever attempted that.

Q. And what is the material that all of these compounds are a part of?

A. Phenol. It comes over with the phenol, and it would be very difficult to separate it from the phenol.

Q. Is this in the waste water discharge of the refining operation?

MR. SCHWARTZBAUER: Well, I object to that. No foundation.

A. Repeat that. I think you are wrong but repeat it, please.

Q. Let me try to rephrase the question. If I was to go to the Reilly Tar operations in Saint Louis Park during the period of time that the company was in operation there and I wanted to take a sample for the purpose of duplicating this German study, where would I take that sample?

MR. SCHWARTZBAUER: Objection. No foundation. When I object it means that I think that

1 there is something wrong with the question but you
2 should answer in any event if you can, if you know.
3 A. Please repeat it.
4 BY MR. HINDERAKER:
5 Q. Okay. We will do it again, and I will
6 recognize the objection. If I wanted to duplicate this
7 German study that you have mentioned and I wanted to
8 take a sample of material and see if I could identify
9 in that sample all of these compounds on this list from
10 the German study, could I take that sample from the
11 facilities at Saint Louis Park while that plant was in
12 operation?
13 MR. SCHWARTZBAUER: Same objection.
14 A. You would have to control the operation other
15 than how it is normally operated. Does that answer
16 your question or does it not?
17 Q. It helps. Are you saying that in the normal
18 operations of the facilities at Saint Louis Park, you
19 do not produce materials that duplicate the German
20 study?
21 A. No, I didn't say that.
22 Q. What did you mean to say?
23 A. Do you understand the operation of a still?
24 Q. In a very summary way.
25 A. Well, you start by you boil over the water,

1 you boil over the low boiling points, and your still
2 gets to a certain temperature, and you continue to
3 raise that temperature to a point where the material is
4 coming over is the material you want. You are not
5 worried about the material you don't want. So
6 depending on the greater grade of the tar that's being
7 used and the amount of contamination that you don't
8 want why that is the point where you cut that water.
9 That's what we call water cut. It goes down the drain
10 treated to try to get as much of that contamination out
11 as possible. That's the part that is treated, to
12 separate the water from those materials that you do not
13 want. Does that answer your question?
14 Q. Yes, that helps.
15 THE WITNESS: Was that legal?
16 MR. SCHWARTZBAUER: As far as I am
17 concerned it was.
18 THE WITNESS: I hope I didn't overstep
19 my bounds when I answered it that way.
20 BY MR. HINDERAKER:
21 Q. Could we refer to that part of the refining
22 process as the water cut?
23 A. That's correct, correct termonology.
24 Q. And this water cut are you saying contains at
25 least hundreds of different chemical compounds?

1 A. Right.
2 Q. The majority of it you say is the phenol?
3 A. That's right.
4 Q. And this German study which you referenced,
5 does that identify the other chemical compounds that
6 are in the water cut?
7 A. I have forgotten where they cut it but it's
8 where they cut it and they could have gone beyond where
9 we would normally cut it and probably they did pick up
10 something beyond the phenols so that they could isolate
11 the figures better. Normally I probably wouldn't go
12 that far.
13 Q. So in the normal operation of the Reilly Tar
14 plant, the water cut would contain some of those
15 additional compounds but not all of them?
16 A. I may take -- that's a question mark in my
17 mind. I would say it may contain all of them. I don't
18 know.
19 Q. I see.
20 A. We have never studied that to know just
21 exactly where to cut to get all those materials that
22 are listed in that list. That would take a lot of time
23 and a lot of good engineering chemical work to do.
24 Q. The water cut in the normal operations at
25 Saint Louis Park would, however, contain more chemical

1 compounds that phenol?
2 A. Right.
3 Q. And this German study was done around World
4 War I?
5 A. I think that's correct, but put a question
6 mark on it, I don't know when it was done.
7 Q. Was this German study something that was in
8 the library at Reilly Tar & Chemical in the 20's and
9 '30's?
10 A. I don't know how many copies of that we had.
11 I had one and I don't know whether anyone else had one
12 or not.
13 Q. As far as the copy that you had, did you have
14 that from as early as the 20's or '30's?
15 A. Long before the '30's but I don't know just
16 exactly when it was handed to me by Mr. Reilly, Senior.
17 He said, "Here, you might be interested in this."
18 Q. You mentioned that the water cut was treated.
19 Was that treated in what is called a settling basin?
20 A. The little -- you can't settle it out. You
21 have to steam it out. So that it was the little
22 steamer that we put in to take that out.
23 Q. Okay.
24 A. You will find it in the records someplace.
25 THE WITNESS: Do you remember where it

1 showed in the records?

2 MR. SCHWARTZBAUER: I am not sure what

3 you are referring to. Are you talking about a steamer?

4 Well, let Mr. Hinderaker continue his examination.

5 THE WITNESS: Okay.

6 BY MR. HINDERAKER:

7 Q. I will get to that steamer in a moment but to

8 clarify in my mind, a settling basin does not remove

9 phenols, is that correct?

10 A. It doesn't take the phenol out of the water

11 or these other compounds out of the water.

12 Q. Or the other compounds?

13 A. That's right.

14 Q. When you mention the other compounds, you are

15 saying those other chemical compounds in addition to

16 phenol?

17 A. That's right.

18 Q. Simply put, a settling basin is not designed

19 to do that, is that right?

20 A. Yes.

21 Q. Let me put a footnote on the steamer, and we

22 will get back to that shortly. I want to go back for a

23 little while longer and just get kind of an overview of

24 your background and employment history with Reilly Tar.

25 We have gone through the educational background and a

1 summary of your tenure with Reilly Tar. Perhaps if you
2 could give me a summary of your various positions with
3 Reilly Tar over the years.
4 A. Well, I told you Reilly Tar purchased Deeds
5 Commercial Laboratory. They had a plant in
6 Indianapolis, Deeds Commercial Laboratories did, and a
7 plant in Illinois, a little town just west of Rockville.
8 I should know it because that's where I got my wife and
9 which we have had 58 years of a very happy marriage.
10 That plant was turning corn cobs into carbon,
11 and the carbon was one of the most effective carbons
12 for carburizing, and it was mixed in the Indianapolis
13 plant with Reilly carbon which is the end point of the
14 distillation of coal tar with this carbon to make
15 carburizing compound for treating steel. We used so
16 much of the Reilly -- Reilly's coke that Mr. Reilly
17 became very much interested in what we were doing.
18 Carlton Edwards came out, and we showed him
19 the plant, and we were having troubles, financial
20 troubles, so he made an offer of purchasing that plant
21 in Illinois and a plant in Indianapolis. During that
22 time the plant in Indianapolis was moved to just the
23 one plant over in Illinois where we were doing the
24 whole operation.
25 Q. Okay.

1 A. So he purchased that in 1910.
2 Q. Carlton Edwards, he is himself known as C. B.
3 Edwards?
4 A. C. B. Edwards.
5 Q. Same man?
6 A. Yes.
7 Q. And when you came with the company, what was
8 your job title first with Reilly Tar?
9 A. The first one was running this carburizing
10 plant.
11 Q. And then what was next after that?
12 A. We just gradually took over more and more and
13 more until I was doing all the work for Reilly Tar.
14 Q. In the engineering?
15 A. In the engineering and established their
16 engineering department.
17 Q. When did the engineering department become
18 formally established?
19 A. It was formally established about two years
20 before it was moved into the new laboratories in 1930.
21 So it must have been about 1928 that it was formally
22 established as an engineering department.
23 Q. Were you the first official engineer of
24 Reilly Tar?
25 A. I was the first engineer -- well, no, there

1 was one other man that we had that had a degree. Yes,
2 we established that phase of the Republic Creosoting
3 Company.
4 Q. Are you saying that there were two of you
5 when the engineering department of Reilly Tar was
6 formally established?
7 A. Well, there isn't very much formality in it.
8 Q. I understand. In 1928, there was you and
9 another gentleman who were the engineers for Reilly Tar?
10 A. No, we had a crew of about four men plus a
11 lot of labor did a lot of work, development work. I
12 don't know how much time we ought to spend on this.
13 Q. We will go fairly quickly through this. Did
14 you have a title at that time?
15 A. No, I have never had a title.
16 Q. By the way, you may be aware we have had
17 other depositions in this case, and we have spoken with
18 other people from the company, and we have spoken with
19 people from places other than the company as well. But
20 I came here today with an understanding that at some
21 point you were the director of the engineering
22 department for Reilly Tar, is that correct?
23 A. Officially, no. I never was officially
24 appointed that job but I did that work. Mr. Reilly
25 didn't have anybody with an official appointment. He

1 was the boss, and we all reported to him, and that was
2 it. If he said for me to go out and sell this
3 creosoting, I would go. So it was never an official
4 appointment. We did the work, and we accomplished what
5 we wanted without such a setup.
6 Q. Well, I do think other witnesses have
7 commented on the absence of formal titles at the
8 company.
9 A. Right.
10 Q. Let me turn our attention now to your
11 involvement with engineering matters relative only to
12 the facilities at Saint Louis Park, Minnesota. Can you
13 give me a summary of the major projects that you were
14 involved with for the Saint Louis Park facility?
15 A. I don't believe I can.
16 Q. Okay.
17 A. The only problem that you come up with that I
18 can tell you what I did with it, what my duties were
19 with that particular problem. I can't say what my
20 general overall responsibility for Saint Louis Park was.
21 Q. So you can talk today about the management of
22 the plant effluent at Saint Louis Park, is that what
23 you are saying?
24 A. I would have to say that that's a cooperative
25 job between all the men that you have on your list too,

1 see, and I cooperated with that group. No one person
2 had the whole responsibility for that.
3 Q. I appreciate that and today we will talk
4 about your involvement and what you know about the
5 involvement of others, recognizing that it was a
6 cooperative effort, and as you know or may know we have
7 had a chance to speak with some of the other gentlemen
8 who also had some of that role.
9 A. That's right.
10 Q. In a summary fashion, what was your role with
11 regard to the management of the plant effluent at Saint
12 Louis Park?
13 A. Would you repeat that? I didn't get it all.
14 Q. Sure. With regard to the waters or the
15 waters that were discharged from the operation of the
16 Saint Louis Park facility, could you tell me what tasks
17 you were involved in relative to the management of
18 those matters?
19 A. I doubt whether I could differentiate between
20 the responsibility of each and every one of us. We
21 worked together and -- this is a letter from Wheeler,
22 part of it is mine. On the back side is mine, and I
23 don't think we could isolate that this is my job and
24 this is Wheeler's job. This is a particular job, and
25 it's always been that way. We went together up there.

1 We each saw different things about the problem, and we
2 discussed it together, and the plant manager took over
3 our recommendations. That's the way it operated.
4 Q. What --
5 A. Does that answer your question?
6 Q. Yes, it helps. What period of time do you
7 have in mind?
8 A. From the time I was first at the so-called
9 Reilly Tar job clear through to when I retired it
10 operated that way, very successfully I think.
11 Q. Do you know anything about the history of the
12 Saint Louis Park facility and what I really am asking
13 is the original construction of the plant?
14 A. The original construction of the plant, its
15 design and its installation was long before my
16 association with the company.
17 Q. Do you know if in constructing the plant any
18 wetlands were reclaimed or there was filling in of low
19 lands to originally construct the site?
20 A. Only from what I have had experience on.
21 Q. And from that prospective?
22 A. I would assume what was done.
23 Q. And what do you assume?
24 A. That it was all covered, practically the
25 whole plant needed a cover to keep it up in the air.

1 Q. Was the plant in low lands?
2 A. Now, that I don't know.
3 Q. Why was it necessary to cover the plant to
4 keep it up in the air?
5 A. All I could tell you is from -- not the
6 beginning but during the operation that I was familiar
7 with, that anything that you put in that would not
8 float had to be piled. Railroad tracks would float, I
9 mean, there was enough support there to carry the
10 railroad without much servicing. The tank --
11 Q. You would have to pile?
12 A. Should have been piled. Some of them were
13 not piled but it all should have been piled without any
14 question. I couldn't say that all of them were.
15 Q. From time to time over the years, were you
16 physically at the Saint Louis Park site?
17 A. Not very often.
18 Q. Can you give me a sense of how many times you
19 may have been there over the course of your employment
20 with Reilly Tar?
21 A. Maybe three or four, maybe five times.
22 Q. Your offices were in Indiana, were they not?
23 A. In Indiana.
24 Q. Mr. Horner, pretty soon we are going to get
25 back to where we started here but I want to ask you

1 some more questions just to get a sense of your general
2 involvement relative to some of the issues that are
3 part of this lawsuit, and I am going to ask these
4 questions even though I have a sense that maybe you
5 were not part of all of these things but I do want to
6 understand what your involvement may have been. In
7 October or so of 1970, there was a lawsuit initiated by
8 the State of Minnesota and the City of Saint Louis Park
9 against the company. With regard to that lawsuit in
10 1970, did you have any responsibility for the handling
11 of that matter?
12 A. I can't answer that from memory. I would
13 imagine that at that time I would have some duty; but
14 to answer it yes or no I would have to look it up.
15 Q. As you sit here right now, is it fair to say
16 that you can't say?
17 A. Say that again, please.
18 Q. As we sit here today right now, and we may
19 not have all the records to look through, from your
20 recollection is it your testimony that you can't say
21 whether you had any management responsibilities for
22 that litigation?
23 A. Not without looking at my own file. My
24 memory doesn't tie what's happened to the dates.
25 Q. Do you have any documents -- I see you have

1 some papers with you today. Is there anything in those
2 papers that would refresh your recollection?
3 A. This is '69. This is not for that purpose.
4 These are papers for a different purpose. This is '68.
5 Q. Are both of those documents for a different
6 purpose?
7 A. Both for the same purpose.
8 Q. Do they bare on the lawsuit of 1970?
9 A. I imagine the lawsuit of 1970 would refer to
10 this.
11 Q. And in what way?
12 A. The information supplied here.
13 Q. Could I look at those? I think I have seen
14 them.
15 THE WITNESS: Would that be all right?
16 MR. SCHWARTZBAUER: Surely.
17 BY MR. HINDERAKER:
18 Q. Mr. Horner, you were looking at one document
19 of November 19, 1969 by Mr. Wheeler and then a
20 supplemental letter authored by yourself?
21 A. Right.
22 Q. And then the attachment is in part --
23 A. Information on what you are interested in.
24 Q. Part is a photocopy of a 1938 Department of
25 Health report and then an analytical examination of

1 water.

2 A. That's done by Saint Louis Park.

3 Q. I see. I was trying to see if it bore a date.

4 A. The dates I believe are there.

5 Q. Again in 1938?

6 A. Uh-huh.

7 MR. HINDERAKER: It's Saint Louis Park

8 43.

9 MR. HIRD: With all the attachments. I

10 think there was a separate number for the attachments.

11 BY MR. HINDERAKER:

12 Q. On the final page is a summary or analytical

13 examination of Saint Louis Park waste water with dates

14 of between 1938 and 1969. And the second document is

15 Soil Engineering Services, Incorporated letter to

16 Republic Creosoting Company of October 8, 1968 with

17 attachments of laboratory test results?

18 A. That is why I brought it along. That's the

19 only dope that we have, vertical dope.

20 Q. Referencing the soil borings, correct. What

21 you are referring to are soil borings?

22 A. I don't know the word. What do you mean by

23 that.

24 Q. Borings as down into the ground?

25 A. No, these are pilings. They are not borings.

1 This is piling.

2 Q. And they identify the type of soils at

3 different levels?

4 A. Yes.

5 Q. Going down into the ground?

6 A. Down into the ground, very important.

7 Q. And why is that important?

8 A. To show how bad it is.

9 Q. In what sense do you use the word "bad"?

10 A. Well, you can see how close the underground

11 water is to the surface.

12 Q. I see.

13 A. And this underground water, without very much

14 water on the surface, would be -- part of that water on

15 the surface would be the same as this, and we would get

16 interchanging reactions.

17 Q. Interchanging reactions?

18 A. Between the water on the surface. Many times

19 that plant has been flooded.

20 Q. Okay.

21 A. Then when it's flooded, this is essentially

22 one flood clear up to here. It will go through that

23 mud very quickly. Anything that's down here will be up

24 here. That is capable of getting up there.

25 Q. You're of the understanding that in flood

1 conditions --

2 A. We have one, water, this water right here.

3 Q. The ground water and the surface water merge?

4 A. Yes.

5 Q. From how early a date do you recall flooding

6 of the plant property at Saint Louis Park?

7 A. Well, if goes back way before the -- it goes

8 back years before 1928. And I have forgotten how many

9 years.

10 Q. But certainly the plant would suffer from

11 floods before 1928?

12 A. Right.

13 Q. The plant was at a low spot in the drainage

14 pattern of that area, correct?

15 A. I think it actually -- as far as I can get my

16 own information on it, it was not the low spot because

17 I was looking at that picture, the picture over there,

18 and our own picture. I don't know whether I put one in

19 here or not. No, I didn't. But the low spot was on

20 the south side of -- it was Highway 7, and from there

21 on it goes lower down towards the river. So we had

22 that much flow, not much, but actually there is a flow

23 from that -- from this level right here down to the

24 river, if it was opened up. Does that answer your

25 question?

1 Q. I think so. I will ask a couple more
2 questions to clarify it for myself. The property of
3 the plant was higher in elevation than the lands south
4 of the plant?
5 A. Right.
6 Q. The lands north of the plant were higher in
7 elevation than the plant site?
8 A. Very much so, 20 feet at least.
9 Q. So that heavy rainfall waters would flow
10 toward and then across the plant?
11 A. Right.
12 Q. And I assume in spring when you had
13 sufficient snow, the plant would also experience that
14 type of flood condition,, correct?
15 A. Correct, particularly when the operation
16 above us had to get rid of their water early or fast.
17 Then they would open their gates, and we would get
18 water down there.
19 MR. HINDERAKER: Off the record a second.
20 (At this time Saint Louis Park Deposition
21 Exhibits 51 and 52 marked for identification
22 by the Court Reporter.)
23 MR. HINDERAKER: Ed, can we just agree
24 on the record that Saint Louis Park Exhibits 51 and 52
25 are the documents which Mr. Horner brought with him

1 today?

2 MR. SCHWARTZBAUER: That's right.

3 MR. SHAKMAN: Which has been marked.

4 MR. HINDERAKER: 51 is the November 19,

5 1969 letter or memo with the attachments, and 52 is the

6 Soil Engineering Services report of October 8, 1968.

7 MR. SCHWARTZBAUER: It appears he also

8 brought with him a map of Minneapolis-Saint Paul and a

9 map of Minnesota and Wisconsin.

10 MR. HINDERAKER: I guess we won't make

11 those exhibits.

12 A. You know, that was one place I could never

13 get oriented.

14 Q. Minneapolis?

15 A. Saint Louis Park. I was ashamed to say it;

16 but, you know, my wife had to go to Mayo, and we drove

17 up there because we didn't know how long she was going

18 to have to stay and got out just a little earlier than

19 we thought so we decided that we would run over to

20 Saint Louis Park. Well, we went into our hotel, called

21 up the plant the next morning that I was on my way out

22 and I -- the first thing I saw was Minneapolis or --

23 not -- what's the one across the river?

24 MR. SCHWARTZBAUER: Saint Paul.

25 A. Saint Paul. I went absolutely the wrong

1 direction.

2 Q. Well, if it makes you feel any better, I get

3 lost in Saint Paul too.

4 A. You got lost in Saint Paul before you got to

5 where you wanted to go?

6 Q. Mr. Horner, back in the '30's and '40's, do

7 you recall there being statements made that wells in

8 the area of the Saint Louis Park facility were

9 contaminated?

10 A. Yes, I recall that.

11 (At this time Saint Louis Park Deposition

12 Exhibit 53 was marked for identification by

13 the Court Reporter.)

14 BY MR. HINDERAKER:

15 Q. I think as an example of that we have had

16 marked as Saint Louis Park Exhibit 53, a memorandum

17 regarding the E. D. Jones well of November 4, 1940, and

18 the document shows yourself as being carbon copied.

19 Why don't you take as much time as you want just to

20 review --

21 A. Read this particular one?

22 Q. Yes.

23 A. All right.

24 Q. Have you had a chance to look at that

25 document, Mr. Horner?

1 A. I have that in my file.
2 Q. So you reviewed that prior to today for the
3 purposes of this deposition?
4 A. I don't understand that question.
5 Q. This document, Exhibit 53, is one that you
6 reviewed in the last few months?
7 A. One of the very, very many.
8 Q. I understand. And that document has
9 reference to a complaint made by a Mr. Jones that his
10 well was contaminated around 1940, does it not?
11 A. That's right.
12 Q. And was it the case that there were
13 allegations at that time that the contamination of Mr.
14 Jones's well was because of the operation of the Reilly
15 Tar facilities at Saint Louis Park?
16 A. Well, I don't quite know how to answer that.
17 Q. Maybe I could rephrase the question. Did you
18 understand that Mr. Jones's well was contaminated from
19 the Reilly Tar operations?
20 A. No, I don't agree with that.
21 Q. You would agree with the opposite, that it
22 was not contaminated from the Reilly operations?
23 A. I would agree with the opposite. If it was
24 contaminated, I don't know if it was contaminated or
25 not.

Q. Assuming it was, it was certainly not from from the Reilly operations?

A. It was not from the Reilly operations.

Q. On this Exhibit 53, do you recognize the signature of Mr. C. B. Edwards?

A. Right.

Q. And he was the president of the company at that time?

A. No, he was not the president of the company.

Q. What was his title at that time if you know?

A. Well, he was like I was. He had no particular title. I don't think anybody had a title. He was in the laboratory at that time, heading up the laboratory operations, I think. Now that's just off the record. I guess he was in the downtown office then -- no, he wasn't. I don't know where he was.

Q. Mr. Horner, from time to time over the course of these depositions, we have introduced or had identified a number of documents and with any luck I am going to to show you one I want to show you, and I am going to show you what we have previously identified as State Exhibit 97. You can sit down. I will just give you the book.

MR. SCHWARTZBAUER: Would it help to move your chair up closer to the table, Mr. Horner?

1 THE WITNESS: Yes, I will.
2 A. I don't have a copy of this in my file.
3 Q. All right.
4 THE WITNESS: Can we just have a talk
5 here just a few minutes? Can we have a discussion for
6 a few minutes?
7 MR. HINDERAKER: Certainly.
8 (At this time a discussion was held off the
9 record.)
10 A. I haven't read it. I knew about it but I
11 didn't get a copy of it.
12 BY MR. HINDERAKER:
13 Q. Mr. Horner, my purpose in bringing out State
14 Exhibit 97 is only with regard to the second to the
15 last paragraph where it says, "Jones's well is 85 feet
16 deep." I don't mean to foreclose you from reviewing
17 the entire document, but my question to you will be
18 whether you would conclude from this document that the
19 Jones's well was 85 feet deep?
20 A. Well, I don't know as I could come out with
21 any conclusions such as that.
22 Q. You notice on Saint Louis Park Exhibit 53, it
23 encloses to Mr. Horner Mr. McClullen's letter of
24 October 14 and October 31?
25 A. I have a copy of this.

1 Q. You notice that State Exhibit 97, the subject
2 is the E. D. Jones well. It's from Mr. McClullen, and
3 it's dated October 14, 1940. Okay?
4 A. That's right.
5 Q. As you understand, would it be correct to
6 assume that this document, 97, was one of the
7 enclosures to this other document, Saint Louis Park
8 Exhibit 53?
9 A. I have no way of saying yes or no to that.
10 Q. Do you have any basis to believe that the
11 Jones well was other than 85 feet deep?
12 A. I have no records of that. I could not
13 answer that.
14 Q. A little bit earlier, when we were looking at
15 this document which we have marked as Saint Louis Park
16 52, one of those that you brought with you, you
17 commented on the location of the water table relative
18 to the ground level, correct?
19 MR. SCHWARTZBAUER: You should answer
20 out loud yes or no rather than just nodding your head
21 like that.
22 A. Please say it again.
23 Q. Looking at that document, 52, you commented
24 on the location of the water table relative to the
25 surface of the ground?

1 A. Right.
2 Q. And made some comment that in periods of
3 flood conditions there was an intermingling of the
4 surface waters and the ground waters?
5 A. Right.
6 Q. From your understanding, did that intermingling
7 result in any contamination of the ground waters at
8 Saint Louis Park with any of the materials from the
9 Reilly operation?
10 MR. SCHWARTZBAUER: Objection, no
11 foundation.
12 BY MR. HINDERAKER:
13 Q. You can answer the question.
14 MR. SCHWARTZBAUER: If you know you may
15 answer in spite of my objection.
16 A. I would have to ask you to repeat that
17 question because I couldn't follow you to give you the
18 correct answer.
19 Q. Surely. From your understanding, was there
20 any contamination of the ground waters with any of the
21 products or materials of the Reilly Tar operation at
22 Saint Louis Park during periods of flood condition?
23 A. I just think I have to ask him what it is.
24 What do you think?
25 MR. SCHWARTZBAUER: Well, would you read

1 it back? Would one of you either restate the question
2 or read it back?
3 (Whereupon the requested portion of the
4 record was read by the Court Reporter.)
5 MR. SCHWARTZBAUER: Go ahead and answer
6 that.
7 THE WITNESS: That would be --
8 MR. SCHWARTZBAUER: I have an objection.
9 Lack of foundation but you can tell him.
10 THE WITNESS: I would have to tell him
11 where the contamination came from.
12 MR. SCHWARTZBAUER: You answer it the
13 best way you can. Go ahead.
14 A. One of these flood conditions, Saint Louis
15 Park opened up all their dikes up above us, and we had
16 a flood, and it was over a weekend where there was no
17 one in the plant to take control of things quickly.
18 That flood came down on our plant and washed one of our
19 tanks right off its foundation, lifted that tank -- it
20 was enough of a flood coming down from above us to lift
21 that tank off of its foundation, and it dumped in we
22 figure from 300 to 1,000 gallons of creosote oil on the
23 ground.
24 Q. Onto the ground?
25 A. It went into the ground as creosote would

surely do. Now, that's the answer to your question.

Q. Did that creosote then get into the ground waters?

A. It's down there, still down there.

Q. Did --

A. I am going to tell him what I had at Miley Avenue.

Q. Go ahead.

A. Now, this is off the record. I don't think it ought to go on there because it has nothing to do with this problem at all but it does have as to where we got our information from.

Q. Go ahead.

A. From Mr. Reilly, I forgot when he bought that plant out at Miley Avenue, but it was way in the early part of the century, the first of the last part of the century, and his brother lived out there while I was operating the plant out of that area, and he used to come out and talk quite frequently. We were building a structure out there that required going down into the ground a good distance, and all at once found a little trickle of oil coming out of the side where we were cutting down, and it gradually got bigger and bigger and bigger. Mr. Reilly came out the following day, and I told him we were collecting some of his oil, and he

1 was very excited about it because he said one of the
2 early things that happen, they had a wreck that knocked
3 a tank off its foundation and dumped it into the ground,
4 and it all disappeared and they thought it went down
5 the river. Well, it all came out of this layer. The
6 creosote oil was light, as you might say, and ran into
7 our ditch and we recovered, I have forgotten how much,
8 well over 1,000 gallons of oil, and Mr. Reilly said
9 that was about the figure of oil that they lost. It
10 was down in the ground that length of time. When we
11 tapped it, it all ran out. And I expect if you do that
12 thing with this oil that is in Saint Louis Park, if you
13 tapped it in the right spot, you would be able to
14 recover it.
15 Q. This instance that you just referred to, at
16 what plant was that?
17 A. This instance?
18 Q. Yes.
19 A. Was Miley Avenue plant here in town?
20 Q. Here in Indianapolis?
21 A. Here in Indianapolis, Miley Avenue plant.
22 Q. How deep down was that that you were digging
23 in the Miley Avenue plant?
24 A. About ten feet.
25 Q. So was that as far down --

A. We hit a layer of gravel, which creosote oil could flow into, exactly the same type of bottom as this would be here. Here, course sand or gravel, it would go down that far, that's where the oil would be, someplace down in there.

Q. About 17 feet?

A. 17 feet, yes.

Q. Your understanding is that it would not go beyond 17 feet?

A. Well, I wouldn't say that. I don't know how far some of them go but that would be where you would naturally expect to find it.

Q. So you would naturally expect --

A. If we get a heavy rain storm, this whole area is mixed up, and you get some of the oil up here onto the surface.

Q. And you naturally expect to find that any creosote dumped on the ground would go as deep as 17 feet into the soils?

A. That's where I would expect to find it.

Q. The instance at Saint Louis Park when the tank fell over?

A. This wall of water coming from this upper area right around -- a wall of water coming right around here, it comes down this way.

1 Q. From north to south?

2 A. North to south. And it was coming down fast

3 enough and with building up enough water level here to

4 pick up one of those tanks, break it off its foundation

5 and dump all that oil into this area, which I am sure

6 is down in there still.

7 Q. Mr. Horner, we are looking at Minnesota

8 Exhibit Number 9, and I am pointing to an area where

9 circles are numbered, tanker unloading area?

10 A. Here is the treating cylinder up in here.

11 Q. These are the retorts?

12 A. And I think there is some tankage -- there

13 should have been some tankage right in there.

14 Q. Looking at this, could you point to where you

15 think this tank was on the property?

16 A. Well, I wish we brought our own map along

17 that would show exactly where it would be. This ought

18 to show it. What does that say?

19 MR. SCHWARTZBAUER: Treating room.

20 BY MR. HINDERAKER:

21 Q. Treating room?

22 A. Treating room, boiler room, settling tank,

23 treating room. It's missing some tanks.

24 MR. SCHWARTZBAUER: Let the record

25 reflect that the witness has his finger on the area

1 marked "retorts", and he is looking for a tank.
2 BY MR. HINDERAKER:
3 Q. Would it have been in the retort area?
4 A. It would be in the area of the -- in the
5 general area here because this is where it's being
6 pumped into the retort for treatment and being run back
7 out into the tank.
8 Q. So this tank would have been in the general
9 area of the retorts?
10 A. General area of the retorts because that's
11 where the creosote oil was being used in the plant
12 right here. It would be transferred back and forth as
13 the treating progressed.
14 Q. Can you give me an idea of the area that the
15 creosote oil would have covered after the spill?
16 A. From the records, it disappeared very rapidly
17 because it wasn't seen the next day. It wasn't
18 reported excepting just a very thin film out there
19 where that tank was. It had disappeared over night.
20 Q. And it had disappeared by permeating into the
21 soils?
22 A. By going down.
23 Q. Was anything done to try to reclaim that?
24 A. No. It would be an impossible job. I mean,
25 it's a never-ending job to find out where it decided to

take a rest.

Q. Do you recall when this happened, approximately?

A. To the best of my records, I tried to find a date on that but I haven't been able to find it. It should have been -- we should have reported it -- those are some of the things that we should have done but we don't have the records.

Q. I take it that that was not reported?

A. I will tell you where it went to, it went -- Mr. Reilly saw the letter on my desk out in -- he said, "I want that and I want to put it in my lock box. I want to keep this for a record. This was not our fault. This was the fault of somebody else not advising us that they were going to dump water onto us like that, and I want to copy it so if we ever get into trouble here is what happened." He took it down and put it in his lock box, and we haven't been able to find it since. What happened to it, I don't know.

Q. Can you give me a sense of the approximate period of time?

A. Well, I would guess at '28, but it might have been '26, somewhere between -- somewheres in that area because I think Mr. Reilly died -- well, I don't know. I could probably dig it out, if it's of importance, out

of my records and give you a more exact guess on it.

Q. But sometime in the late 1920's?

A. Yes, because I was at Miley Avenue there, and in 1930 we moved our offices and all our stuff over to the Reilly Laboratories at Maywood, and it was before 1930 by a couple or three years.

Q. In the late 1920's, were there any businesses north of the Saint Louis Park plant?

A. There is only houses there that I can ever remember seeing. They had the one park up on the left side. That was a park, and it was always a park as far as I know, and I will show you that. You are talking about north now.

Q. I am talking about the late 1920's.

A. I can't see anything out of that one.

A. I know that all this area up in here was a park, and it is still a park I believe.

MR. HINDERAKER: The witness is referring to the northwest.

A. And then there is houses across this area here. I don't know what -- I have never -- I don't know how far the houses were down over here; but this was always a park and this is where the flood comes, down like that.

Q. Across the park and then into the property at

1 the northwest corner?

2 A. It comes right -- the flow, as I figured it

3 out when we were trying to find out how and where this

4 came from, it came over this ridge or it came over this

5 ridge down that way and the railroad -- this is the

6 highway here at this end and 7 is about down in here.

7 Q. Okay.

8 A. And at that time 7 was not there. It was

9 just a little -- the water, flood, would just flow

10 right on down.

11 MR. HINDERAKER: The witness was

12 indicating from the northwest corner of the plant and

13 then down through the plant moving southerly.

14 A. That's one thing that you will not find in

15 the records. I don't know why and I can't understand

16 why you did that because that's how it happened. I

17 know that comes as a shock to you because you didn't

18 know it, and it should have been public knowledge long

19 before this, I think.

20 Q. Okay. We have that. Now, as a result of

21 that -- well, let me put the question this way. In the

22 1940's, did you believe that any wells of residents in

23 the area were contaminated with that spilled material?

24 A. I can't say and no one else can say what that

25 oil decided to do. I do know that it was part of the

1 contamination on the surface soil because there is
2 circulation of those waters at the plant right now.
3 How far it goes, I don't know.
4 Q. Going back to this Jones well in 1940, did
5 you believe that well if it was contaminated could have
6 been contaminated because of decayed vegetable matters?
7 A. I am sure it could be contaminated -- well, I
8 won't say. I am not sure but there is a constant
9 change on that vegetable matter. If we left it there
10 long enough, it would turn into coal.
11 Q. And I take it that contamination of a well
12 with decayed vegetable matter will result in a bad
13 taste and odor to that well water?
14 A. I wouldn't want to say yes or no to those
15 kind of questions.
16 Q. Do you know if any of the wells on the site
17 at Saint Louis Park were used by employees for drinking?
18 A. I would -- from personal knowledge, no,
19 because, as I say, I was only there for probably a day,
20 sometimes a day and a half, never over two days and
21 only four or five times for the length of time that the
22 Saint Louis Park plant was in operation. So I couldn't
23 say that. I couldn't comment on that, what they had.
24 They had available City water. If they wanted to drink
25 the other, I couldn't say yes or no whether they were

1 drinking it or not.

2 Q. Do you have a recollection of when City water

3 began to be used?

4 A. It would be a guess because I think if I --

5 if you wanted that date, I could find it in my records

6 but I wouldn't want to say yes or no to it.

7 Q. Well, I think we can find it. In 1972, Mr.

8 Horner, the property of Reilly Tar was sold to the City

9 of Saint Louis Park. Did you have any involvement in

10 the negotiations for that purchase and sale?

11 A. No, I didn't.

12 Q. The sale of that property was closed in the

13 summer of 1973. Did you have any involvement in any of

14 the negotiations surrounding that?

15 A. I didn't.

16 Q. For the purposes of negotiating the sale of

17 the property, valuations were made to determine its

18 price. Did you have any involvement in valuing the

19 property at Saint Louis Park?

20 A. I did not.

21 Q. The plant was closed around 1972. Were you

22 part of the decision-making group that decided to close

23 the Saint Louis Park plant?

24 A. Well, I don't know how much of a decision was

25 made. I had nothing to do with the final decisions or

1 the accepting it right in here, this letter that we
2 brought down. I went down with Bill Wheeler when I was
3 just about to retire.
4 Q. Are you looking at one of the documents you
5 brought with you which we have marked as 51?
6 A. Yes, right in there. I was about ready to
7 retire then. And it may have been '70 or '71. I have
8 forgotten when I did retire.
9 Q. Other than that visit to Saint Louis Park,
10 which is memorialized in that document, did you have
11 any other involvement in the decision to close the
12 Saint Louis Park plant?
13 A. I had nothing to do with it.
14 Q. After the property was sold, the buildings
15 and tankage et cetera on the plant were removed. Did
16 you have any involvement in that?
17 A. No, I had no involvement in that. That's the
18 reason I went with Bill Wheeler here, I was passing on
19 to him all the knowledge of that plant that I could
20 because he would be really taking over.
21 Q. He and who, Mr. Wheeler?
22 A. Dick Hennessy. Wheeler and Dick Hennessy
23 would be taking over.
24 Q. Do you know if sludge materials in the tanks
25 at Saint Louis Park were ever disposed of? This is

1 during the time that the plant was being operated by
2 Reilly Tar.
3 A. I don't quite understand that question
4 because there are so many tanks and different services
5 and which ones you are referring to I would have to
6 know.
7 Q. In the normal operation of the plant at Saint
8 Louis Park, would there be occasions to clean tanks?
9 A. Not unless they are going to be for a
10 different service from what they were performing.
11 Q. On those occasions, what was done with the
12 material taken from the tank, if you know?
13 A. I wouldn't know. I know what our standard
14 practice would be.
15 Q. And what was that?
16 A. Put them in the boiler.
17 Q. And refine it again?
18 A. No, burn it.
19 Q. How is that done?
20 A. Well, it depends on what kind of boiler plant
21 you had.
22 Q. At Saint Louis Park?
23 A. At Saint Louis Park they had oil fired --
24 that would be to just mix it with the coal that was
25 going through and let it burn up. It was a good fire.

1 If I were running the Saint Louis Park plant, that's
2 where it would go. Now, the ashes from that operation
3 would go in the normal way too; but I don't think any
4 of the contaminant would reach the ash stage.
5 Q. In approximately 1940 a settling basin was
6 designed and then constructed at the Saint Louis Park
7 facility. Do you have some recollection of those
8 events?
9 A. Yes, I do.
10 Q. Is it consistent with your recollection that
11 the settling basin was installed at Saint Louis Park in
12 approximately 1940?
13 A. I do.
14 Q. Do you recall the reason why a settling basin
15 was put in at Saint Louis Park?
16 A. For the same reason that it was put in all
17 our plants.
18 Q. And that reason was?
19 A. Separating the good from the bad.
20 Q. And what constituted the bad?
21 A. The light oils.
22 Q. And the good was what?
23 A. Pure water and then the oils would separate
24 out into the settling basin, would settle into the
25 settling basin. Did you ever see a setup like we

1 installed in all our plants?
2 Q. No, sir.
3 THE WITNESS: Would it be all right to
4 tell him how we handled that?
5 MR. SCHWARTZBAUER: Certainly, if that's
6 the best way you can answer the question.
7 THE WITNESS: Yes.
8 MR. SCHWARTZBAUER: Sure.
9 A. Well, it's a rather complicated but accepted
10 practice throughout the industry. I have a son that is
11 one of Texaco's vice-presidents out there, and the last
12 time I was talking to them was a few weeks ago, and I
13 told him what we are going to bump into here, and he
14 was quite involved because he is one of the top men at
15 Texaco. But it's a difficult -- very difficult problem
16 to separate those materials, and it takes a certain
17 length of time for the materials to go either to the
18 bottom, if they are heavier, or the top. So these
19 tanks are built so that when you take the material that
20 goes into them off in that tank you either decide to go
21 up to the top or go to the bottom. Now, that's gotten
22 done very, very carefully. We have done it at all our
23 plants. We had Dick Hennessy doing that most of the
24 time. But you have got to design those tanks to
25 separate those materials which are almost the same

1 density as water, and it takes a period of time. Then
2 you have to build in facilities for taking off that top
3 material and taking off that bottom material, and it
4 takes a good deal of time to work that out. That's
5 what Saint Louis Park had done, we designed it from the
6 testing of the material that they had to dispose of.
7 Now, whether they were made a little bit smaller or a
8 little bit larger. I know that they had some trouble
9 with it. The Maywood plant we had to in practically
10 every one of our plants, Cleveland, Indianapolis, put
11 in that system for cleaning up our water, which was a
12 rather expensive proposition.
13 Q. What was the quality of the water then that
14 was discharged after going through the settling basin?
15 A. Well, personally I would have to look up that
16 figure. I don't think that any of it would ever be
17 zero, but it was way down, within the requirements of
18 the State that we were working with. Indianapolis, for
19 instance, or Indiana has a little different requirement
20 for that water that can be discharged into the stream,
21 or wherever it's going, from Minneapolis. Now, I know
22 that the Minneapolis plant would be working with you or
23 with anyone in the control department as to what they
24 would accept. And a tank big enough, it would be down
25 in the decimal points two or three zeros before the

1 point. You get it down that far.

2 Q. And we are talking about quantity of oil in

3 the water?

4 A. Contamination, I don't care whether it's oil

5 or something else, but the amount of contamination in

6 that water would have to be worked out with the

7 officials of the State and determine that we could

8 accomplish that. We have enough of them set around

9 over the country to know how big we would have to be.

10 The one in Indianapolis isn't very large. The one at

11 Cleveland is a very large one because we process a lot

12 of stuff there.

13 The one at Saint Louis Park or in Illinois is

14 quite small. I imagine the one at Minneapolis was

15 fairly small too because the amount of water there was

16 insignificant to the other plants. Does that answer

17 your question?

18 Q. Yes. Did you believe that the water

19 discharge from the settling basin then was such that it

20 would not do any environmental damage?

21 A. Well, I have a great deal of confidence in

22 the man that was doing that, and I am sure if it were

23 brought to Bill Wheeler's attention it would have been

24 changed and that would be accomplished, and also the

25 men that were actually working on it, I have every

1 confidence that they might make a mistake but the
2 mistake would be corrected if it were brought to their
3 attention.
4 Q. With regard to the settling basin at Saint
5 Louis Park, did you have that same confidence?
6 A. Absolutely, they not only put in that but
7 they put in a tank to get rid of the light oils by heat.
8 They were not going to be able to get rid of some of
9 those light oils during that separation without making
10 the normal tank so they put in one that would distill
11 it out or actually kind of a still.
12 Q. You mentioned that there were some problems
13 with the settling basin at Saint Louis Park. What did
14 you have in mind?
15 A. Well, it took a little time to get it in
16 proper operation.
17 Q. And after a shakedown period, if you will,
18 did it get into proper operation?
19 A. It definitely got into proper operation.
20 Q. Do you recall what measurements were taken to
21 determine the size of the settling basin?
22 A. Well, I have enough confidence in Bill
23 Wheeler and in the boys that were handling that that
24 they would bring down samples to Indianapolis and know
25 exactly what they were trying to do and that they would

1 design it to the best of their ability.
2 Q. And in addition to studying the
3 characteristics of the material that was going into the
4 settling basin, that was one of the things they did?
5 A. Yes, that's right.
6 Q. Was another thing that they did attempt to
7 measure the quantity of flow into the basin?
8 A. So that they would know.
9 Q. And with regard to that, you would have
10 confidence that they did that appropriately as well?
11 A. I am sure that they would be designed or they
12 would have authority to make the changes necessary to
13 do it.
14 Q. Were those calculations or measurements
15 things that were done by Messrs. Hennessy and others?
16 A. Yes.
17 Q. And they were not done directly by yourself?
18 A. That's right, I did not have anything to do
19 with that installation because I was doing other things
20 for the company.
21 Q. So the person to talk to about that is Mr.
22 Hennessy rather than yourself, is that right?
23 A. R Excepting that Dick was still working for
24 me and I got all the information for him that he needed
25 to do the job.

1 Q. But as far as the details of what was
2 measured to determine the quantities, that was
3 something that Mr. Hennessy would know?
4 A. Well, I shouldn't say that.
5 Q. Well, is it something that --
6 A. He could say that for himself.
7 Q. Right. And as far as you are concerned,
8 that's not something that you know yourself?
9 A. That is right.
10 Q. In addition to Mr. Hennessy, do you recall
11 what other gentlemen were part of the effort to design
12 and then install the settling basin at Saint Louis Park?
13 A. He is a very good friend of mine, for years
14 and years, but to name his name right now, I can't
15 think of it. Who is the one that's in the hospital
16 over here?
17 MR. SCHWARTZBAUER: Mitchell?
18 A. Mitchell. Thanks very much. Malcolm
19 Mitchell.
20 Q. Did Mr. Wheeler play any role in that?
21 A. I am sure he did.
22 Q. Can you think of any others that may have had
23 some involvement?
24 A. Dick Hennessy.
25 Q. Dick Hennessy?

A. I am sure they would take over with 100 percent capacity to do a better job than I ever did.

Q. So the people with front-line involvement were Mr. Hennessy, Mr. Mitchell and Mr. Wheeler?

A. That's correct. I was gradually getting out from under.

Q. Do you know what was done with the heavy oils that settled to the bottom of the settling basin?

A. Well, I answered that. I don't know whether it was done, but I answered it that it would be burned or not put in the steam and run down the river. I am sure the men up there have enough sense to not do that.

Q. So that would have been handled the same way as any material taken from a tank?

A. That's right.

Q. With regard to the light oils, what would be the company's standard practice for the disposition of those?

A. They would put -- the light oils would come off one of these separating tanks.

Q. Yes.

A. Would be done exactly the same way, destroyed by burning.

Q. Now, we mentioned right at the beginning of today that the settling basin does not separate out any

1 phenols, correct?

2 A. Well, no, I hope I didn't give that

3 information.

4 Q. I thought that phenols were treated with

5 steam rather than the settling basin.

6 A. They would have to go through both cycles.

7 Q. Would you tell me about the steam treatment

8 of the water for the purpose of addressing phenols?

9 MR. SCHWARTZBAUER: I am not quite sure

10 he said it was steam. Did you?

11 THE WITNESS: I didn't say it was steam.

12 MR. HINDERAKER: I am sorry.

13 BY MR. HINDERAKER:

14 Q. As I remember you said we would get back to

15 this business of the steamer.

16 A. You had better cross that out, and when you

17 talk with Malcolm Mitchell he can explain it because it

18 was his design but it would be boiling them off. If

19 you want to call that a steamer, I don't know if you

20 want to call that a steamer, but separating the

21 materials.

22 MR. SHAKMAN: May I interject one

23 question?

24 MR. HINDERAKER: Sure.

25 MR. SHAKMAN: Mr. Horner, we have heard

mention earlier of a phenol extraction tank and a digestion tank.

THE WITNESS: That's what we are talking about now.

MR. SHAKMAN: That's the same as the steamer?

THE WITNESS: Same thing. But it isn't just phenol. It is a mixture. It isn't just phenol.

MR. SHAKMAN: It removes other than phenols?

THE WITNESS: Other things.

MR. HIRD: If I may interject. Mr. Horner, are the phenol extraction tank and the digester tank the same thing?

THE WITNESS: That's just a name. That phenol tank that's material that are light enough so that they can't separate them other than by steam.

MR. HIRD: So the two names, digester tank and phenol extraction tank, would refer to the same tank?

THE WITNESS: Yes.

MR. HIRD: Thank you.

THE WITNESS: Where it would separate in the water. If you got a material that has the same gravity as water, it isn't going to separate in water.

1 Now, you have got to take care of that, and that's what
2 the other tank --
3 MR. HIRD: That's what the settling
4 basin was used for?
5 THE WITNESS: The settling basin is
6 where it actually settles. It either goes to the top
7 or goes to the bottom. If you have a difference in
8 gravity less than water, it would go to the top, and
9 you can take those out or if it goes to the bottom, you
10 can take those out. But when you have somebody right
11 in the middle, you have got to do something else, and
12 that's what the other system was for.
13 MR. HIRD: The "other system" which
14 would go either by the name of digester tank or phenol
15 extraction tank?
16 THE WITNESS: That's right. You have
17 got the picture of it. Phenol would cover the whole
18 works, you know.
19 MR. HIRD: Thank you for clarifying that
20 for me.
21 THE WITNESS: Sure.
22 BY MR. HINDERAKER:
23 Q. Mr. Horner, do you recall why the settling
24 basin was installed in Saint Louis Park?
25 A. It was our policy to get those -- when we

1 began to get into trouble with -- and I won't say
2 trouble, we wanted to be trouble-free from all possible
3 contaminations. We started at the Maywood plant. It
4 was that method of cleaning up our effluent that was
5 going down the river at that time, and then everybody
6 was getting conscious of these problems, and after we
7 were successful in doing it at Indianapolis we started
8 expanding and going to practically all our plants. All
9 over the country they have them now. You can't burn
10 water, you have to clean it.
11 Q. I am going to see if I can find a particular
12 document here.
13 (At this time Saint Louis Park Deposition
14 Exhibit 54 was marked for identification by
15 the Court Reporter.)
16 BY MR. HINDERAKER:
17 Q. I will show you, Mr. Horner, what we have
18 marked as Saint Louis Park Exhibit 54. It bears the
19 date of May 15, 1944 on the letterhead of Republic
20 Creosoting Company, signed by A. E. Larkin and a carbon
21 copy to yourself, and if you would take the time to
22 read that, please.
23 A. This is the first time I have seen this
24 letter, and I can't quite read my copy of it.
25 Q. Is that copy any better?

A. I can't -- I would have to have another copy to know what you are really talking about there.

Q. Now I am speaking about the Saint Louis Park facility. Do you have any recollection of water from the tar system getting into the pond at the plant?

A. Now, which pond are you talking about, the pond outside of the plant or the pond inside the plant, the cooling pond inside the plant?

MR. SCHWARTZBAUER: That's not clear to me. When you say inside the plant, cooling pond inside the property?

BY MR. HINDERAKER:

Q. Cooling pond on the property?

A. That isn't a pond, that's a tank, isn't it?

MR. SCHWARTZBAUER: Maybe he doesn't know what are you are talking about. Maybe you could explain it by reference to the aerial photo.

MR. HINDERAKER: That's what I am asking for.

MR. SCHWARTZBAUER: Thank you.

BY MR. HINDERAKER:

Q. Mr. Horner, if you notice on Minnesota 9, right here, south and east of the refinery is what I believe others have identified as a cooling pond. Do you have any recollection of that pond at the plant?

A. There was a much smaller pond -- much smaller pond than that.

Q. Do you recall where that was located, the smaller pond?

A. If they are subject to cooling operations I can't quite figure it out because I don't think we would tolerate it if we knew about it.

Q. What do you mean?

A. There isn't any place to cool it. But, anyway, they may have been doing it for a while.

Q. What would --

A. If they had to cool it they had to cool it in a tank.

Q. You would have cooled the water in a tank?

A. In a tank so you would have some control over it if you were going to use it again. Why they are saying that we are using that I don't know.

Q. Why would you use a tank?

A. To have control of the whole thing. This way you only have control of the stuff that doesn't go down on the ground.

Q. What advantages do you receive from having control of the cooled waters when they are in a tank?

A. Just what I said, you know what you have got and you know how to treat it and you know you are not

1 going to lose some of it otherwise, unless they have
2 that pond it's something that I don't know and I really
3 can't comment on it.
4 Q. I assume, Mr. Horner, that you knew Mr.
5 Holstrom while he was plant manager at Saint Louis Park?
6 A. Very well.
7 Q. Do you have a recollection of the number of
8 years that he was plant manager? I know he retired
9 around 1960 but I don't know when he began
10 approximately.
11 A. I don't. There is someone -- in between
12 Rademacher, there is someone operating the plant in
13 between those two men, but not operating the plant, but
14 Larkin's right-hand man and I would have to look those
15 figures up. I think from our records we could probably
16 answer that question but not from memory. He is a very
17 competent man, I will tell you that.
18 Q. Mr. Holstrom?
19 A. Yes, Mr. Holstrom, a very competent man. I
20 have a lot of respect for him.
21 Q. Do you have any recollection of discussions
22 of trenching the property at Saint Louis Park to divert
23 any flood waters away from the plant?
24 A. You have added a reason for it that I
25 wouldn't quite follow, but the flood waters that would

1 come down from that hill a way from the plant, is that
2 what you are talking about?
3 Q. Did you ever have any discussions about doing
4 something to prevent those waters from --
5 A. Getting on to the plant property?
6 Q. Yes.
7 A. Yes, I can remember some idea and I think we
8 have something in the correspondence of how much
9 excavation we would have to do. I don't know. I can't
10 remember what was actually done on it without
11 refreshing my mind.
12 Q. Could you tell me what you recall as far as
13 you recall?
14 A. My recollection is the cost of doing it would
15 be quite large. We would have to have a very good
16 survey of the property to know that we were
17 accomplishing -- what we wanted to accomplish. And we
18 might have some problems that would be shown on that
19 picture I showed that we might be getting down into the
20 ground where the water would all go down into the
21 ground anyway and not stay on top. I know, I can
22 remember many problems of doing it but I can't remember
23 what we finally decided on until I would refresh my
24 memory further on it.
25 Q. And I don't think I have any documents that

1 go beyond the recollection that you have. Do you have
2 any recollection of what the price was or would have
3 been?
4 A. That would be just a guess, it would just be
5 a guess. I think from the records that I would look at
6 I could give you some idea what it would be -- what the
7 cost would run but from memory, no, I can't give you
8 the right answer.
9 Q. Do you know if these records which might
10 refresh your recollection were in the documents that
11 you reviewed in the last few months?
12 A. No, they were not.
13 (At this time Saint Louis Park Deposition
14 Exhibit 55 was marked for identification by
15 the Court Reporter.)
16 BY MR. HINDERAKER:
17 Q. Mr. Horner, you have been reviewing what we
18 have marked as Saint Louis Park Exhibit 55?
19 A. Yes.
20 Q. And just for the purposes of some clarity,
21 the document is dated June 1, 1939 from Mr. McLellan to
22 the home office and Mr. Horner you are carbon copied.
23 I take it this document is interoffice correspondence
24 within the Reilly Tar Company?
25 A. Yes.

1 Q. Something that you would have received in the
2 normal course of your duties in the engineering
3 department at the company?
4 A. That's right.
5 Q. You notice in the document the observation
6 that the State Board of Health is objecting to phenols
7 and similar soluable acids in the waste water as well
8 as light oils and then the statement is made that, "This
9 material could not be kept from flowing into the swamp
10 area by the use of settling basins alone as far as this
11 author could see." Do you agree with those comments?
12 A. We agreed to the extent that we had that
13 steamer put in to the system, so-called steamer.
14 Q. The so-called steamer addressed the removal
15 of phenols and other soluable acids?
16 A. That's right.
17 Q. And the removal of those materials was not
18 done by the settling basin?
19 A. Well, the settling basin helped in getting
20 rid of it but to get rid of it so that it would not go
21 down the sewer. The water would not go down, it would
22 be further treated.
23 Q. Is it your recollection that the so-called
24 steamer was installed at Saint Louis Park after the
25 date of this document?

A. I can't say after the date of this without looking up the dates, but it was installed.

Q. And I guess we have said before that the steamer is sometimes called the extraction tank?

A. That's right.

Q. Do you recall if the extraction tank was installed in response to comments from some government agency in Minnesota?

A. I don't think anyone told us how to do it. That's the way we decided it would have to be done. I don't think anybody in Minnesota said that you had to install that. How it was accomplished was our own job.

Q. And whether to do it, was that your decision or was that prompted by someone else?

A. I can't say yes or no to that because I don't know of anyone that prompted us to do it, but I do know that we did it, if that answers your question.

Q. That's fine.

MR. HINDERAKER: I need to get a clean copy of United States 4.

BY MR. HINDERAKER:

Q. Mr. Horner, there is a single page document that we have previously marked as United States Exhibit 4 and here is a copy of it and if you could take the time necessary to read that, please.

1 MR. SCHWARTZBAUER: I think he has read
2 it. Have you read it?
3 THE WITNESS: I have read it. I was
4 trying to remember something about receiving it or
5 discussing it. It was in different words. I think I
6 got the information but in considerably different words.
7 BY MR. HINDERAKER:
8 Q. Well, I will ask some questions and we will
9 see what part of it you have a recollection on. The
10 document reflects a visit at Saint Louis Park by
11 yourself and Mr. Edwards and you had apparently
12 occasion to discuss the operation of the plant with Mr.
13 Larkin. Do you have a recollection of such a visit?
14 A. I have a recollection of such a visit, yes.
15 Q. And do you have a recollection of discussing
16 with Mr. Larkin ways in which the plant could be
17 expanded and changed to give pure water?
18 A. Well, I wouldn't use those terms but I can
19 remember the discussion to make an improvement in it.
20 Q. And could you relay the substance of those
21 discussions as you remember them?
22 A. I would like to suggest that that is a little
23 more than I could say yes or no to. I mean, I couldn't
24 be that definite in my answer to it. It's an almost
25 impossible problem to make it pure, water pure.

1 Q. I understand.
2 A. And that's what the end was supposed to be,
3 absolutely drinking water, but that I don't quite
4 understand why Larkin got that in there. This is the
5 first time I have read this letter. Maybe it's just
6 his terminology, I don't know.
7 Q. Sure. Leaving aside for the moment the
8 terminology of Mr. Larkin, I take it there were
9 discussions with him about improving the quality of the
10 water?
11 A. That's correct. That's correct terminology,
12 improving it not making it pure water.
13 Q. Because when you say pure water you mean
14 drinkable water?
15 A. Drinkable water without any taste.
16 Q. Right. Now, leaving that terminology aside,
17 can you tell me in substance what was discussed
18 regarding methods to improve the water?
19 A. I can't tell you whether it was before or
20 after this letter. I would have to get the dates.
21 That was quite a long time ago and many things have
22 gone passed. But we needed samples to determine
23 exactly what this water was that was being condemned
24 and those samples were eventually sent through our
25 laboratory to determine exactly what was in that water.

1 We knew what we were getting from the ground water but
2 I don't that's what I mentioned before, that that was
3 the overflow from Saint Louis Park, dumped on to our
4 ground, which I think we should have complained about
5 deliberately and even taken it to court.
6 Q. Are you talking about that instance in '26?
7 A. Yes, that stirred up a different water down
8 there, different problem. But staying right with this
9 problem, we had to have samples of it and determine
10 just exactly the size of the equipment that was going
11 in it and that was a long procedure and I think you
12 have probably got copies of those results in the form
13 of Courtney's analysis of what we actually had to
14 accomplish.
15 Q. Okay.
16 A. That was the first step and then Malcolm
17 spent a good deal of time in determining size and
18 Malcolm and Dick Hennessy both determined the size of
19 the equipment. Here is one of the letters that should
20 have been destroyed because it doesn't give what they
21 was talking about really. Do you have that file
22 showing all the data of --
23 Q. That's what I was looking for.
24 A. There is a summary sheet too. There is all
25 the details that are supposed to be there and a summary

1 sheet also.

2 (At this time Saint Louis Park Deposition

3 Exhibit 56 was marked for identification by

4 the Court Reporter.)

5 BY MR. HINDERAKER:

6 Q. I am going to show you what we have marked as

7 Saint Louis Park Exhibit 56, it's a memo from Mr.

8 Courtney. Are those the testing samples that you just

9 referred to, Mr. Horner?

10 A. Well, let me read this first to make sure

11 that -- I thought we had subsequent data on -- for this

12 burner just before this problem right here. I think

13 the original facilities were put in by this one.

14 I think you will find similar data referring

15 to this problem and this was the original installation,

16 but I don't think the two are together.

17 Q. You think there is data similar to that

18 document you are looking at dated around the 1950s?

19 A. Yes, that's right. That was given much more

20 careful consideration.

21 Q. Just for purposes of the record it's Saint

22 Louis Park Exhibit 56 that's being looked at. Okay.

23 Let's leave that aside, Mr. Horner, and not get

24 concerned about the particular quantities of solids,

25 oils or phenols that might be the subject of discussion

1 in the '50's. Instead I just want to ask you what
2 processes or what pieces of equipment, if any, were
3 being discussed with Mr. Larkin in the '50's to improve
4 the quality of the water?
5 A. I would like to look up my files to answer
6 that question. I couldn't give you the dates. I don't
7 have the dates of these discussions clear enough in my
8 mind to say yes and no on some of these things that we
9 have done and that we expect to do.
10 Q. So you don't feel comfortable answering that
11 question from your recollection?
12 A. I would like to have that and go through my
13 files and see what the situation was other than what is
14 shown right -- well, that letter you gave me. This
15 letter right here I guess.
16 Q. All right. That's fair enough. It's a '50
17 letter. That's okay, Mr. Horner.
18 MS. MARTIN: I think it's this one.
19 BY MR. HINDERAKER:
20 Q. If you are not comfortable --
21 A. I do not have a copy of this letter, but I
22 understand what the letter would be. Mr. Larkin wrote
23 it, we referred to it. I will see what the -- how
24 these two correlate.
25 Q. How would you characterize the quality of the

1 water discharged from the plant property at Saint Louis
2 Park?
3 MR. SCHWARTZBAUER: Objection, too vague
4 and general.
5 A. I would have to ask you to repeat that
6 because I didn't get the -- what you had in mind from
7 the way you said it. Would you repeat that?
8 Q. Certainly. Speaking of the Saint Louis Park
9 facilities, of course, and speaking of the waters after
10 they flow from the settling basin, I would like you to
11 tell me how you would characterize the quality of that
12 water.
13 MR. SCHWARTZBAUER: Same objection.
14 A. When we were looking at it we had to look at
15 it a little differently than from what someone else
16 would look at the problem. We knew that a great deal
17 of our contamination was coming from that oil down in
18 the ground. I don't think we would be able to answer
19 any question on how much that was causing it, which we
20 would have absolutely no control over, we couldn't do
21 anything about that. The ground -- the water that was
22 coming from what you are talking about could be handled
23 but the other, when it would all end up, if we were
24 losing any in the same spot and we don't know what it
25 would -- how it actually would come out to satisfy

1 ourselves until it was actually installed and checked
2 on, if that will answer your question.
3 Q. Let's limit our discussion for a moment to
4 the water that was coming out of the basin that you
5 could handle. Okay?
6 A. That should be as we would expect, pretty
7 darn good. It has to be both designed right and
8 handled right.
9 Q. And with regard to that, I take it that it
10 was, as you understand it?
11 A. As I understand it it was. Eventually it was.
12 We had some problems with it but eventually it was.
13 There was no reason not to make it do it because we had
14 done it all over the country, I mean, every place else;
15 Indianapolis, Chicago, Saint Louis Park. We put it in
16 in Saint Louis Park. Every place we had problems we
17 put in the same equipment and the same equipment is
18 used for all the refineries, other refineries, it's a
19 standard procedure.
20 Q. Okay.
21 A. Standard procedure in design. There is no
22 excuse for not being able to tell just exactly what you
23 can do when you have got the information available.
24 Q. Did you happen to be at Saint Louis Park on
25 the occasion of that flood in '26 or '28?

1 A. I was not there, it was all -- well, the
2 first of it was a telephone conversation and the next
3 was at a later conversation and the letters I said were
4 in Mr. Reilly's hand and he told me he was going to put
5 it in his lock box.
6 Q. So you learned about that from the report of
7 other people?
8 A. Other people.
9 Q. Do you have a recollection or a recall of who
10 reported that to you?
11 A. I tried to determine that. I think it was
12 Rademacher. I think it was Mr. Rademacher. That could
13 be -- it was his predecessor if it was not Mr.
14 Rademacher?
15 A. Does Rademacher come up in your file at all.
16 Q. I imagine it does and I just can't click on
17 the dates so I will have to look that up.
18 Q. That's fine.
19 A. All right.
20 Q. Mr. Horner, I am going to show you what was
21 previously marked as State of Minnesota Exhibit 51 and
22 give you a copy of that. It's a document of July 25,
23 1951, authored by yourself apparently.
24 MR. SHAKMAN: Off the record.
25 (At this time a discussion was held off the

1 record.)

2 A. This is a longer letter than I usually write.

3 A. Well, I told him now. Did you want to read

4 it?

5 MR. SCHWARTZBAUER: No, I just did.

6 THE WITNESS: Oh, you already have.

7 BY MR. HINDERAKER:

8 Q. You have just had a chance to reread

9 something you wrote back in '51?

10 A. That's right.

11 Q. Is this your handwriting here at the top with

12 these initials?

13 A. I don't know why I would initial up there.

14 Didn't I sign it down here?

15 Q. That too.

16 A. This is my signature down here. I think

17 that's Harold Holstrom's or somebody else's but how it

18 got on here -- did you pick this up at Minneapolis?

19 Q. This document was received by the Saint Louis

20 Park facility, yes.

21 A. So it's probably Holstrom's.

22 Q. Okay.

23 A. I would do it with my signature down here.

24 Q. Okay. And apparently you were discussing

25 with him the installation of straw filters?

A. Operation of his settling tank and his straw filters in combination.

Q. And the straw filters would be downstream from the settling basin?

A. Down stream from the settling basin.

Q. And what purpose were the straw filters intended to serve?

A. It would pick up from the water that is discharged from the settling basin either the material that wasn't settled properly to the bottom level or separated properly at the top level. It would take everything out of that flow. If you are taking too much out, if you are getting too much in your straw filters, then you had better regulate the time that you are allowing for the separation through top and bottom in your tank operation.

Q. And was it your judgement that the straw filters in combination with the settling basin would provide an acceptable effluent?

A. We have all over the country that same installation and it's done a bang up job. For ourselves, we are not responsible for it. The big refineries are responsible largely for that design and they collected most of it which we just applied to our own -- on our own problems which are slightly different

1 from theirs.

2 Q. And would you say that was true for as long

3 as the Saint Louis Park plant was in operation?

4 A. If it were operated properly. If it were

5 maintained properly it would take care of that problem

6 100 percent.

7 Q. You will notice this sentence in the 4th

8 paragraph, I guess it's the last sentence of that

9 paragraph, it says, "To eliminate this from the final

10 effluent of the plant we have installed a straw filter

11 which does an excellent job even when the detention

12 pond is bypassed."

13 A. For cleaning or anything else.

14 Q. And the detention pond is the same thing as

15 what we have been calling the settling basin?

16 A. That's right.

17 Q. And the straw filters will do an excellent

18 job even if the waters don't go through that settling

19 basin?

20 A. That's a good job. It does a heck of a lot

21 better job than let it run down raw.

22 Q. Okay.

23 A. I would say it would take 95 or 96 percent of

24 the material out. It's been very remarkable how that

25 straw does the job.

1 Q. All right.
2 A. As to me anyway.
3 Q. And I take it that that would be true for as
4 long as the Saint Louis Park plant was operating?
5 A. If they used it, yes, they would have to keep
6 the straw in it and not saturated with the material
7 that's taken out. It's got to be done on time and care
8 taken.
9 Q. And this effluent that results, this
10 acceptable effluent, is it such it's not eventually
11 damaging?
12 A. To all the installations we have made, when
13 it's properly operated, it has met the Ohio, which I
14 think is the toughest one, our own, Saint Louis Park,
15 which is Minnesota. We put them all in practically
16 every plant in the country even down in Texas and they
17 have done a job. They did it for the petroleum
18 industry and they have done it for our -- the petroleum
19 industry has the same problem, they have a water
20 disposal problem. This is their answer and this is our
21 answer, that if it's done properly it will be down
22 within acceptable area.
23 Q. And do you mean by "acceptable" that it is --
24 A. I don't believe you could find a phenol in it.
25 You are testing for phenol. I don't think you could

1 get enough to check it. This is phenol and might get
2 something that is -- I have forgotten the figures, I
3 have them at home and I think I could find them in my
4 notebooks. Unfortunately my notebook contains --
5 everything I left on my desk for Dick and Dick says he
6 never saw that thing. Somebody picked it up when I
7 left. I told him I was leaving it on my desk and he
8 was coming back in the morning and somebody picked it
9 up.
10 Q. Dick being?
11 A. I wish I had that notebook of mine,
12 everything was put down every day.
13 Q. Dick being Dick Hennessy?
14 A. Dick Hennessy, he took my place.
15 Q. So this effluent, you know, assuming that
16 it's operated correctly, this effluent that results,
17 this acceptable effluent, I take it is safe to health?
18 A. It would -- you would accept it, I am sure of
19 that, you would accept the effluent. But now what we
20 are talking about here, it is not effecting that spill
21 that we had that's down in the ground.
22 Q. That I understand. That I understand. Other
23 than that spill in '26 or '28, do you have any
24 information of any other such spills?
25 A. I have no information excepting that one.

1 That was a humdinger, and it was something that we
2 don't want to lose a tank every day in the week. That
3 was an oversight on the part of the men up there that
4 were opening those gates. It was such a bad storm that
5 it was going to do some damage downstream.
6 Q. What gates are you referring to?
7 A. Up in that upper level. They had -- they
8 were installing a system for taking care of their rain
9 water but at that time it was only partially installed
10 so there was a tremendous backlog of water up on that
11 upper level that was barricaded off by their streets,
12 et cetera. They opened all those which had direct flow
13 right down into the plant and it came down in one big
14 rush.
15 Q. Did you see this?
16 A. I didn't see it but that was reported to me
17 by either Rademacher or one of the men.
18 Q. So, as I understand it, it was during a time
19 of some storm sewer construction?
20 A. Storm sewer construction, construction of
21 various water disposal area operations on that upper
22 floor -- upper level.
23 Q. And what other operations other than --
24 A. I don't know, but it came down enough -- if
25 there was 300 gallons of oil in that tank it wouldn't

1 have lifted off the foundation, but actually it had
2 some abnormal flow because we know that there was 300
3 gallons in it. There may have been as much as 1,000
4 gallons in that tank. It's an operating tank for the
5 treating operation and it varies in level quite
6 frequently and it would be someplace in that area but
7 there was enough water flowing -- they reported it at
8 four or five or six feet -- six feet it would have
9 taken the 3,000 gallons -- the tank would have been
10 lifted off and broken lose at that point but there was
11 someplace in there that they must have dumped a
12 tremendous amount of water on that plant to do damage.
13 Q. Was the tank on a tower?
14 A. The tank was on the ground.
15 Q. Was it in ground or on ground?
16 A. On ground.
17 Q. So all of the tank was above ground?
18 A. All of the tank was above ground and it was
19 on wood padding. We usually use creosoted wood padding
20 under those tanks so they wouldn't be right on the
21 ground so they wouldn't rust.
22 Q. And what type of material was the tank made
23 out of, steel?
24 A. Steel.
25 Q. Open top or what?

1 A. Closed top. Everything was closed top. I
2 asked Carlton Edwards about it yesterday. I didn't
3 know it was so secretive. He said he didn't remember
4 anything about it. I think the whole deal was between
5 myself and Mr. Reilly and Mr. Rademacher out at the
6 plant, I don't think anybody else knows a darn thing
7 about it, unfortunately, very unfortunately.
8 Q. I am going to look at my notes a minute.
9 (At this time a discussion was held off the
10 record.)
11 BY MR. HINDERAKER:
12 Q. Let's get a couple more things done. It's
13 close to 1:00. Mr. Horner, during the time that you
14 were employed by the company, by Reilly Tar, did you
15 know whether any of the chemical compounds in coal tar
16 or creosote were carcinogenic?
17 A. I had no knowledge of that, no, I didn't.
18 You know, Minnesota up until just a few years ago --
19 well, I say a few years ago, 20 years ago maybe, all
20 the roads up there was made of road tar, no concrete
21 would take the winters, so there was a tremendous
22 amount of street road tar being made. I think our
23 plant made quite a bit of it too. There was a lot of
24 it up there even a little of it down here on streets.
25 Q. While you were employed with the company did

1 you have any knowledge of the drinking water supply of
2 Saint Louis Park being contaminated from the operation
3 of the Reilly facilities?
4 A. We understood that there was contamination up
5 there. Where it was coming from -- we couldn't decide
6 in our own minds where it was coming from. We felt we
7 were doing everything possible to keep it from
8 originating on our plant excepting for something that
9 we couldn't do about it and that was the stuff in the
10 ground.
11 Q. Was the concern regarding this contamination,
12 people talked about it in terms of phenolic
13 contamination or contamination with phenol?
14 A. I think they used that term phenol for
15 anything that was below the boiling point of treating
16 oil because phenol would be the one thing that you
17 could check very easily, the other compounds that were
18 involved in it were hard to issolate and hard to check.
19 Q. Do you recall any efforts being made by
20 Reilly Tar to check for any compounds other than phenol
21 in its testing?
22 A. Quantity-wise there would be no reason for us
23 to get into that sort of a problem. You can check for
24 phenol and you know how much contamination you are
25 getting. Now, whether it's three or four radical

1 compounds, I don't think would make any difference to
2 our problems.
3 Q. Let's look for a moment at one of these
4 documents you brought with you we have marked it as
5 Saint Louis Park Exhibit 51. If you want to refresh
6 yourself again go ahead.
7 A. I brought that down primarily not for this
8 because this is just simply a review of a discussion
9 with him but it did give some data in here.
10 Q. Sure. In "Report on Investigation of Wastes
11 at the Rupublic Creosoting Company, St. Louis Park,
12 Minnesota," and it gives other data in here, the areas
13 that you actually checked in different spots. You are
14 referring to --
15 A. That's the only reason I brought it down
16 otherwise it wouldn't be any information other than
17 this.
18 Q. So you are referring to the data that's
19 attached to the report of the Minnesota Department of
20 Health of May 1938?
21 A. Yes, that's right. It gives me a picture of
22 what the situation is up there, where it is and where
23 the samples were taken, what effect it would have on
24 the flow here. You can see that these samples would be
25 taken right in line of flow. That's the reason I

1 brought it down.

2 Q. Okay.

3 A. And here is a Graph 6 of what our water flow

4 was, which is of interest I think to you and to

5 everyone else.

6 Q. What do you glean of importance from that?

7 A. The variation.

8 Q. What do you mean by "variation"?

9 A. Well, why this sudden raise of flow and then

10 a fairly constant flow of 40 gallons.

11 Q. And why the raise in flow in the drainage

12 ditch?

13 A. Somebody dumped a lot of water down there all

14 at once.

15 Q. I see.

16 A. Jumped up from a normal flow of 40 gallons

17 and up to 80 gallons.

18 Q. And the 80 gallon flow was recorded about an

19 hour after a 40 gallon flow?

20 A. Yes, that's right.

21 Q. And then an hour after that it went down to

22 50?

23 A. Yes.

24 Q. And two hours after that back up to 80, do I

25 interpret the graph correctly?

A. Yes. That was my interest in it.

MR. SHAKMAN: Can I ask you a question? Is that gallons per minute?

THE WITNESS: I think it's gallons per minute. Have you got it?

MR. SHAKMAN: I have it but I can't read anything on the left side. Perhaps yours shows that.

MR. HIRD: There seems to be a small initials p.m. on the bottom left-hand corner, I don't know if that's a correct reading.

MR. SCHWARTZBAUER: Mr. Hird was asking you about the chart.

THE WITNESS: Yes, I know. It corresponds to these figures here. He is asking the amount, whether it was gallons per minute or something else per minute.

MR. HIRD: I think Mr. Shakman was asking whether it was gallons per minute.

MR. SHAKMAN: That's correct.

MR. HIRD: And I was alluding to a notation "PM" which I thought meant per minute, which means p.m. by the day, on closer examination. Do you if the gallonage which is along the left-hand line is in a per minute calculation?

THE WITNESS: I would have to check that.

1 It is there but right now I wouldn't be able to say
2 positively if it was. It was a variation -- radical
3 variation.
4 BY MR. HINDERAKER:
5 Q. Looking at this exhibit, I will turn you to
6 the third page, and that was authored by yourself, Mr.
7 Horner?
8 A. Yes.
9 Q. Correct?
10 A. I don't know how far up in here. I think we
11 decided on this together. Health report.
12 Q. And the sellecting mentioned is dry weather
13 effluent flow data?
14 A. Yes.
15 Q. Is that what we were just looking at with the
16 graph?
17 A. Yes.
18 Q. That was dry weather data?
19 A. On the area map showing the outside area, yes.
20 Q. Mr. Horner, do you have a recollection of
21 this meeting with you and Mr. Wheeler at Saint Louis
22 Park that's recorded in part in this exhibit?
23 A. Quite vivid.
24 Q. Mr. Wheeler makes the comment on the second
25 page of the document that, "The Reilly Republic group

1 left with the impression that while the City had a
2 legitimate concern for the quality of their draining
3 water the meeting had been handled in rather a curious
4 fashion." Do you see that comment?
5 A. I remember the comment. I am not looking at
6 it yet.
7 Q. I will point it out for you. It's right
8 there.
9 A. That's right. Well, that was our impression
10 that we wanted to get down to brass tacks and we never
11 got down there.
12 Q. And what do you mean by getting down to brass
13 tacks?
14 A. What they actually wanted us to do. What
15 they actually knew and knew positively was wrong.
16 Q. As you left the meeting, what was the nature
17 of the concern of Saint Louis Park as you understood it
18 regarding their drinking water?
19 A. Their concern was that our effluent was
20 causing problems in their well system, same as you have
21 been talking about..
22 Q. Did you agree?
23 A. I can't agree that if you got water on the
24 surface that is within the range of the water that we
25 were trying to put out and could put out if it was

1 properly operated, could damage any valve. Now, for
2 subsurface flows then I would say that that could
3 happen, that's why I brought both of these down. This
4 is subsurface deal over here on this second page -- on
5 this other page.
6 Q. With subsurface flow?
7 A. There is a flow down there at the bottom of
8 that thing too. At the bottom of that trench there is
9 a flow because creosote oil is a fluid that is heavier
10 than water and there is a flow down there.
11 Q. What trench?
12 A. Where is the other one that I put down?
13 Where is the other one that I --
14 Q. Here you are.
15 A. Well, I hope I put the whole thing together
16 here. Oh, here we are. At that level here is your
17 water level down three feet. Here is your movement,
18 even way down here, medium course sand. You are going
19 to get a flow of water down here.
20 Q. Around the 18 foot level you are talking?
21 A. 18 foot level.
22 Q. All right.
23 A. You are going to get a flow of water down
24 stream from this level right here.
25 Q. Get a flow of water below 18 feet?

A. Well, as long as -- you are going to have water here. As it gets more and more compact the less water you are going to get down there. But there will be no problem in getting water from the surface down through this area here, this peat area down to this clay area down to the course sand and gravel and it shows definitely water levels down three feet right here, you see. So you are getting an up and down flow of water down this way and you are going to get a flow this way down there. So anything we have dumped down in here like that darn creosote oil that was dumped down here, it's going to be right down here where you get a flow.

Q. Did you have a view in, you know, the late '60's-'70's, whether that oil could get into City wells 800 feet or 1,000 feet deep?

A. I would have to have a picture going down that far, which I don't have.

Q. Did you have one then?

A. I have seen them and I have looked them over carefully, but the ones that I have seen that would be rather impossible, I would say, rather unlikely that the flow that you get right here would seep down into that other. If there was a little flow down to your river from here, if there was say probably only two or

1 three feet difference, you might expect some of that to
2 go down further. But if there is a reasonable
3 difference between here and the river you would expect
4 that to flow -- all of that to flow clear to the river.
5 I am trying to answer your question to the best of my
6 ability but sometimes I may lead you astray.
7 Q. I appreciate that and I just have a couple
8 more questions and then we will be at 1:00 and we will
9 conclude for the day. So let me get back to this
10 meeting with the City officials that's the subject
11 matter of this document of November 1969 for a moment.
12 We have talked about, I think you said, that in your
13 view there would be no harm to any City water supply
14 from the plant effluent because of the way you managed
15 that, correct?
16 A. If it were managed properly, and I believe
17 Saint Louis Park was a well operated plant. They had
18 their own area living there, they didn't want to make
19 any more problems there that they could avoid and they
20 would do the best they had with the facilities they had.
21 So if they did that I can't see it getting into the
22 well.
23 Q. I am clear about that so let's set that aside
24 for a moment.
25 A. Yes.

1 Q. And now with regard to the creosote oils that
2 were spilled on to and into the ground, when you were
3 at Saint Louis Park was it your view that you did not
4 see how those would get into the City wells either?
5 A. I don't see how they would. I can't see how
6 they would but they are more likely to get into that
7 than this surface water is to get into that.
8 Q. Did --
9 A. You wouldn't get phenol in that if that was
10 the case.
11 Q. You would not get phenol?
12 A. Oh, you might get a trace but you won't get
13 the phenol that you would with the stuff that's coming
14 over the top.
15 Q. Why not?
16 A. Because it's gone through distillation.
17 Q. Okay.
18 A. It's all distilled out. It had better be
19 otherwise we would be in trouble.
20 Q. Did anyone at the meeting tell any of the
21 Saint Louis Park people of that spill back in '26 or '28?
22 A. I think that was entirely confidential
23 between myself -- Carlton Edwards didn't know about it,
24 I don't think Harry Holstrom knew about it, and I know
25 that.

1 Q. Mr. Horner?
2 A. Wheeler didn't know about it.
3 Q. I am sorry?
4 A. I don't know why it was supposed to be kept a
5 secret. Mr. Reilly, as I say, I gave him this report.
6 I don't know why he kept it a secret. I would have
7 thought he would have made that very public to the
8 Saint Louis Park people and I think he fully intended
9 to but he didn't do it.
10 Q. Now, if any of that creosote oil that was
11 spilled was in the City water supply in your view what
12 would be the nature of the harm, if any?
13 A. I don't think there would be any problems
14 there because that's just the heavy oil that's in there
15 and I don't think there would be any problems excepting
16 that somebody would say, "I can't use this water, it
17 doesn't taste good."
18 Q. So the only problem that would result even if
19 that should happen would be a taste problem?
20 A. A taste problem.
21 Q. There wouldn't be any health problems as you
22 understood it?
23 A. I would say that to my knowledge that there
24 would be no health problem.
25 MR. HINDERAKER: It's five minutes to

1:00. Rather than me going on into something else why don't we stop in deference to your request.

THE WITNESS: I would be glad to do that.

MR. SHAKMAN: Mr. Schwartzbauer, may I ask one thing? Do you have a file at home of your own documents?

THE WITNESS: Not along these lines. I have some of my files but not along these lines. I thought this was entirely up to the plant and no interest to me after I retired and so I turned everything that I had along these lines over to Dick or left them at the plant.

MR. SHAKMAN: By "along these lines" you mean relating to Saint Louis Park?

THE WITNESS: All these were just given to me recently. I had none of this until we were given it.

MR. HIRD: Could I just ask one question to clarify Mr. Shakman's question? Do the records that you have at home, Mr. Horner, your own records have any documents that pertain to Saint Louis Park?

THE WITNESS: I have so few that -- just general information. Everything that pertained to any of our plants, particularly to any of our plants, like these letters, were all left with the company.

1 MR. HIRD: So the ones you have at home
2 do not pertain to Saint Louis Park at all?
3 THE WITNESS: They are not Reilly Tar
4 problems, they are just general problems that you would
5 discuss with a creosoting man and a refinery man but
6 not --
7 MR. HIRD: But nothing that's specific
8 about any of the specific plants?
9 THE WITNESS: That was Dick's and Bill
10 Wheeler's problem and I thought they should have
11 everything that I had.
12 MR. HIRD: So this is more sort of a
13 personal reading file?
14 THE WITNESS: Yes, that's right.
15 MR. HIRD: Thank you very much.
16 THE WITNESS: I had to buy these maps.
17 MR. SHAKMAN: Will you bring us that
18 German listing of the compounds that you have?
19 THE WITNESS: Yes. Do you want to see
20 it? What was your question about it?
21 MR. SHAKMAN: Would you bring it with
22 you tomorrow?
23 THE WITNESS: I will try to remember it.
24 I can't leave it because that was given to me very very
25 confidentially.

1 MR. SHAKMAN: Fine

2 THE WITNESS: I think there is only two

3 or three in the country.

4 (At this time the deposition recessed and

5 reconvened March 9, 1983 commencing at 9:00

6 a.m.)

7

8 CONTINUED CROSS-EXAMINATION

9 BY MR. HINDERAKER:

10 Q. Mr. Horner, can you hear me all right if I

11 talk at this level?

12 A. I can here better from this side than I can

13 from this side. This is no good at all, this ear. I

14 didn't even stick it in.

15 MR. SCHWARTZBAUER: I think you are much

16 too loud.

17 BY MR. HINDERAKER:

18 Q. That is one reason I am sitting at this angle

19 to you.

20 A. That's all right.

21 Q. Over the evening did you by chance have

22 occasion to review your file or other documents that

23 have been supplied to you about this matter?

24 A. I just looked at them, I didn't read those

25 documents. I spent so much time reading them I felt I

1 couldn't do very much more. The documents, are they
2 extensive? They are right here. The top of my desk
3 looks like that.
4 Q. I take it that there is nothing that you
5 would change or modify from your testimony yesterday as
6 a result of that?
7 A. I wouldn't modify it.
8 Q. Did you by chance bring that German list that
9 we were discussing yesterday?
10 A. I gave it last night to -- I think it's been
11 copied for him.
12 THE WITNESS: Were the copies any good?
13 MR. SCHWARTZBAUER: No. We made one
14 copy and didn't go any farther with the copies.
15 THE WITNESS: I didn't think it would
16 copy but you can look it over.
17 MR. SCHWARTZBAUER: But I do have yours
18 and one Xerox and maybe we can do better, I'm not sure.
19 BY MR. HINDERAKER:
20 Q. We will take a moment to look at it.
21 A. Look it over. It's a very interesting one.
22 It's one that was made in Germany and one that was
23 picked up after the Second World War. Where this
24 friend of mine, we went through World War I together,
25 had his hands on it and knew I would be interested in

1 it: If you can read German you can read it.
2 Q. Oh, it is in German.
3 MR. SCHWARTZBAUER: Mr. Horner, I think
4 we found a date of 1955 on it
5 THE WITNESS: That's right, its after.
6 MR. SCHWARTZBAUER: Well, in any event,
7 this brown colored document is the one that the witness
8 found. This is a Xerox that we made. It's not very
9 legible.
10 MR. HIRD: This is the copy?
11 MR. SCHWARTZBAUER: That's the only copy
12 we have.
13 MR. HINDERAKER: Why don't we go off the
14 record a moment and we will just talk about what to do
15 with this document.
16 (At this time a discussion was held off the
17 record.)
18 MR. HINDERAKER: For the record, Mr.
19 Schwartzbauer brought the original of the list of the
20 compounds compiled by some German author as well as a
21 photocopy. The photocopy does not copy well -- or the
22 original does not copy well and we have marked as Saint
23 Louis Park Deposition Exhibit 57 the photocopy for
24 whatever value that gives us and I understand that
25 counsel for Reilly Tar will retain the original and we

1 will make efforts to either acquire readable
2 photocopies or find the publication in its original
3 source.
4 MR. SCHWARTZBAUER: Correct. For the
5 record, the original document is brown colored and
6 rather fragile, but it's printed in German. It's a
7 seven page document and it bears the date September
8 1955. The pages are numbered 637 through 643 in
9 sequence.
10 (At this time Saint Louis Park Deposition
11 Exhibit 57 was marked for identification by
12 the Court Reporter.)
13 THE WITNESS: We have never taken the
14 time to justify this document by running tests in our
15 own laboratories. Why I brought it down, it was just
16 as a curiosity and how complete and how complicated the
17 material that we are talking about is, I don't know.
18 BY MR. HINDERAKER:
19 Q. Let's leave that be behind us and go on.
20 A. That's all I had in mind.
21 Q. All right. Very good. Go on to something
22 else right now. I am going to show you what has
23 previously been marked for identification as State of
24 Minnesota Exhibit 33, it happens to be a memorandum of
25 September 7, 1962 and let me first refer you to the

1 second page, the signature being yours, correct?
2 A. Correct.
3 Q. I have such a limited number of questions
4 about it. Why don't you take a moment to look at it.
5 My questions, sir, are going to be limited to the last
6 paragraph on the first page carrying over to the top of
7 the second page. Take whatever time you wish with it.
8 A. When you are reading this, I deliberately put
9 that date in.
10 Q. Of 1933?
11 A. 1933. But from my own knowledge it goes back
12 further than that. As I told you the other day, where
13 we lost a tank, it goes back further than that. I
14 didn't want to get that in this group. This is an
15 entirely different problem.
16 Q. I understand.
17 A. Do you want me to really check carefully this
18 last paragraph or is it this one right here?
19 Q. This one right here.
20 A. This one right here.
21 Q. One of my questions is you see the document
22 speaks of a water separating device?
23 A. That's right.
24 Q. My question is whether that is making mention
25 to what we were referring to yesterday as the settling

basin?

A. Well, it isn't necessarily the basin, it's the whole set-up with the tank for separating the very light oils plus the detention pond, but it's not a pond, it's a tank, detention tank for separating by gravity, two separate ways of trying to get rid of the contaminant.

Q. And you will see at the top of the second page you make mention of a water separating device and anextractor for removing the phenol. When you mention --

A. Water distillation, that's right.

Q. When you mention the extractor did you have in mind what we were calling yesterday the steamer?

A. Steamer. That was done by temperature difference.

Q. And the steamer --

A. One is done by gravity difference and the other is done by temperature difference.

Q. What we were calling yesterday the steamer is the same thing as the extractor in this letter?

A. That's right. Different terminology, confusing.

Q. That's fine. And what we were calling the settling by gravity is the water separating device that's in this letter?

A. That's right.

Q. Mr. Horner, do you know whether any of the creosote or coal tar or other products that might be in the soils would improve naturally by biodegradation?

A. Eventually I think it will but I don't think it's a very rapid condition.

Q. When you --

A. I told you yesterday I think that about the oil that we discovered at our Miley Avenue plant. Now that had been in the soil some 20 years, close to that and we couldn't find -- well, there was no degradation some of it had generated itself out of existance as such but the oil that was left was in the same condition that it was originally put in the ground.

Q. Do you know whether there was any purification of creosote oil or coal tar if it percolated through soils?

A. I know we never attempted it and I don't know of anybody that ever attempted to clean up the coal tar by percolation. It might help your thinking to refer again the only time we discovered oil in the ground was at Miley Avenue and when Mr. Reilly was running the plant, Senior, Mr. Reilly, Senior was running the plant the accident occurred. Where we found this oil was at least a quarter of a block from where it went into the

ground and yet we recovered all of it. How it got there, it has its own way of reaching a point where it can travel, so it does travel underground if it can.

Q. I want to get this out of the way. We might use it again but I will try to do one thing at a time. I am going to show you again, Mr. Horner, one of the documents you brought with you yesterday and we happened to have marked it as Saint Louis Park Exhibit 51 and I am going to refer to the second page of that Department of Health study of 1938. I have a fairly specific question. The document at the top of that second page mentions a tarry taste being removed by passing the water through a small filter. My question is whether you have any understanding of how any tarry taste in water is removed by filtration?

A. You are questioning this paragraph, the top of this paragraph?

Q. No. Let me be more clear. Let me just ask of your own knowledge, and perhaps it's something you weren't involved in, perhaps it was, so I will just ask whether you have any knowledge of how any tarry taste in water is removed by filtration?

A. I have never experienced anything by filtration, no.

Q. Okay. Fine.

A. Never attempted it. To my knowledge it's never attempted just by filtration.

Q. Well, that's enough of that one I think. Mr. Horner, after the visit with the City officials of Saint Louis Park in November of 1969, and I am referring to that particular visit that's reported in this Exhibit 51 that you brought with you, after that time did you have any further meetings with any officials of the City of Saint Louis Park, if you can recall?

A. I can't answer that question positively. It would be a guess on my part, it wouldn't be a positive statement so you don't want that.

Q. I agree. Do you recall whether you ever had any meetings with any officials of the State of Minnesota around 1969 or thereabouts?

A. Where is that Bill Wheeler's letter.

Q. That's this one here?

A. I was with him on this trip.

Q. Okay.

A. We went together on this trip and that was the last, because I was partially retired at that time.

Q. Mr. Horner, there was a deep well on the plant property and throughout these depositions we have been referring to it as the Republic deep well and I am

1 going to go over to this Minnesota Exhibit 9 and show
2 you where that is designated on the exhibit. You will
3 see it as right here at the south end or southeast end
4 of the refining building?
5 A. Right.
6 Q. Do you have any present memory of the
7 appearance of that well?
8 A. I couldn't help you any on that.
9 Q. Mr. Horner, did you ever hear of coal tar or
10 creosote oil spilling into that well?
11 A. It would after that flood and dumping of that
12 tank, that oil could go any place. If somebody said it
13 did go down the well, I would agree it went down.
14 Q. Did anybody tell you it went down the well?
15 A. Nobody told me it went down the well. I
16 couldn't say for sure. I don't know where it went to.
17 To my knowledge we have no positive record of where
18 that oil is right now.
19 Q. And other than that instance, that instance
20 that you just referred to, is the only one that you
21 heard of of any spill of materials at the site?
22 A. The one where we lost a tank?
23 Q. Yes.
24 A. That's the only place where we -- that I have
25 any knowledge of a spill from the plant operation, that

one time.

Q. Now, that spill was creosote oil or what?

A. It was reported to me -- my recollection, just a little note and a telephone call back at that time, that it was straight creosote oil, that's why I assumed that it was in one of the tanks used at the treating facility because that's straight creosote oil.

MR. HINDERAKER: If we could take a 10 minute or five minute break I may shorten up my examination quite a bit. I just want to confer with counsel a second.

(At this time a brief recess was taken.)

MR. HINDERAKER: Let's start.

BY MR. HINDERAKER:

Q. Mr. Horner, do you have any recollection of the time of the year that you heard about this spill in the 20's?

A. I can't take the time of the year but I can take the days of the week because it was on Sunday. The plant was shut down and it was only the -- well, it wasn't an operator, it was kind of a man staying on the job to see that no one was bothering the thing.

Q. So the tank spilled on a Sunday?

A. I didn't hear about it until Monday but it was reported that it happened on a Sunday. Now, that's

1 just a report as I remember it. I couldn't say that
2 that's actually what happened but that's quite a long
3 time ago.
4 Q. Absolutely, and I understand that you are
5 just telling us what was told to you.
6 A. Well, as I remember what was told to me, as I
7 remember it that would be the best of my memory, that's
8 how it occurred.
9 Q. Were you told whether the material spilled --
10 let me put it this way. At the time of the spill there
11 were flood waters going across the plant site?
12 A. I was told that it occurred because the flood
13 waters going across the plant site was high enough off
14 the ground level to lift this tank off the foundation
15 and that's why we came up with the amount of oil that
16 was in there and all the oil in the tank was discharged.
17 Q. Was it discharged immediately following the
18 movement off of its foundations as you understood the
19 record?
20 A. Well, it had to. At least the piping going
21 to that tank was shared off so there is nothing holding
22 the oil in.
23 Q. As you understood what was reported to you
24 would the materials in that tank then intermingle with
25 the flood waters?

A. Went right into the flood waters. They would be at the bottom because they are heavier. So it could have gone down right there or it could have gone down right down the line. But the density of the oil, and it was reported and I, just in my own mind, picked the tank down near the treating cylinder because it was creosote oil.

Q. Now, I understand that with static water or standing water, creosote being heavier, will settle to the bottom, right?

A. Even if it's going full speed it will settle to the bottom.

Q. Eventually?

A. Pretty darn fast.

Q. Will it?

A. Pretty darn fast because there is quite a bit of difference in gravity there.

Q. Let me go back to Exhibit 9. Here at the location of the retort, Mr. Horner, do you have any recollection as to the direction of flow of surface waters from that point?

A. This is high. This area right here is 20 -- 25 feet higher and it is a very steep incline.

Q. Let me interrupt you for a moment.

A. And this is all highway back and it goes back

about like that and this is high over here. My understanding, when opening these valves or whatever, I had better get a better name, but opening all this water over here plus the water that we were getting from the same rain would come down like that. That's the reason I picked that tank.

Q. There at that location, at the retorts?

A. It's going down that way.

Q. Kind of south through the center of the property?

A. Yes, but this is a much slower flow than down here because this is 20 feet and probably 30 feet this way but it's 20 feet high, just a very steep bank and it's coming down with a great rush here and, as I would visualize now, I didn't see it go.

Q. I understand.

A. I didn't see it go.

Q. I understand.

A. But there would be quite a velocity here and then slowing down so that it built up high enough, water from ground line, to lift one of these tanks so that it would have to be at least this high, knee high or probably a little higher, that rush of water down there to lift that tank off the foundation. If it had, as we suggested that it might be as low as 300 gallons,

1 then the water would be much lower. But we felt it was
2 closer to 1,000 gallons so the water must be about
3 waist high. Now that's just our own thoughts on what
4 happened.
5 Q. I think for the purposes of the record we
6 have it starting off the plant site at the north and
7 the west corner, the flow goes southerly and then
8 through the retort area and then at a reduced
9 difference of elevation it continues flowing southerly
10 off the plant property?
11 A. Right.
12 Q. Okay.
13 A. You have got the picture.
14 Q. I am now, Mr. Horner, going to show you a
15 document that has previously been marked as State of
16 Minnesota Exhibit 39, it bears a date of March 5, 1958,
17 from Mr. Holstrom to yourself. Why don't you take
18 whatever time you wish to review that.
19 (At this time a discussion was held off the
20 record.)
21 BY MR. HINDERAKER:
22 Q. Have you finished reading it?
23 A. Yes.
24 Q. Is this one of the documents that you
25 reviewed in the last weeks or months?

A. I may have that. If I do have it I missed it. But I can recall reading it over again, the problems that we were having.

Q. Was the well contaminated with tar?

A. I am not -- I couldn't say yes or no to that. I could get my own file out and review and pick out this particular time and be able to answer it by carefully checking.

Q. But at least as we sit here right now today your feeling is that you can't comment one way or the other on that?

A. I can't comment one way or the other excepting that I can give you my opinions on this, that I was strong in converting to City water because of the knowledge that we did have a great deal of oil from this dump down in the ground someplace and I didn't know where it was. I was very anxious to get all our wells City water.

Q. Do you have an understanding -- you notice that the document refers to the bearings on the pump seizing up?

A. Right.

Q. Do you have an understanding of how those bearings seized up?

A. This is off the cuff now, don't put it down

1 because I hadn't read or studied just exactly what that
2 was. But I can't imagine anything going through that
3 pump that would cause those bearings to seize excepting
4 they were improperly installed.
5 Q. Did you ever give consideration to cleaning
6 out that well?
7 A. Not for me, no. If it came to my attention I
8 would recommend going to City water.
9 Q. While your recommendation was to go to City
10 water did others have a different view of that?
11 A. To my knowledge there was no general
12 discussion on it and I wouldn't want to say the opinion
13 of any of the other people.
14 Q. Let me show you the fifth paragraph of the
15 first page of this Exhibit 39 right there. You notice
16 it says, "It must be assumed that the contamination
17 enters the well within the first 225 feet which is
18 cased." What is your understanding of what that means?
19 A. Well, my understanding of what it means may
20 not be true because, as I say, I want to read it over
21 carefully to refer to our -- I don't think I have all
22 our records down here so that I can get an exact
23 picture of this, what that refers to. It is my
24 understanding that that could be correct providing the
25 casing was -- had failed or was about to fail in any of

1 that area because water would go up or down either way.
2 Did that answer your question?
3 Q. Yes, sir. Are you familiar with any
4 emulsions from the operation of the facilities at Saint
5 Louis Park being wasted on the ground?
6 A. It has never been brought to my attention.
7 Q. If it were brought to your attention would
8 you agree with --
9 A. I would stop it.
10 Q. Why?
11 A. Well, those emulsions should be broken down
12 and you shouldn't throw oil all over your plant and the
13 emulsion would breakdown when it hit the ground. It
14 should be done first and the oil properly handled.
15 Q. If emulsions are wasted on the ground does
16 that contribute to the contamination of the soils?
17 A. Not necessarily.
18 Q. Why not?
19 A. Because they would -- you can find a point
20 where I had to show that to one of your men.
21 Q. That being that they --
22 A. They went out into the plant to see where we
23 had had drippage all over where we were bringing out
24 the trams and they said, "Now, here is where your
25 contamination occurs." I said, "Well, you just take

1 this, here is a little hand shovel, and see what's
2 underneath this black stuff." They dug down three
3 inches and came into the cleanest gravel that there is
4 in the place. So that would be on the surface of the
5 ground, you don't worry about that, oil won't go that
6 way; that is in small quantities. Let's change that
7 oil, but that messy stuff won't go that way, that
8 drippage and stuff is just entirely on the surface.
9 Q. I am going to show you a document we looked
10 at just a little bit ago and see if it refers to the
11 occasion you just mentioned. What I have in mind is
12 this State Exhibit 33. On the second page and on the
13 bottom paragraph it says, "The state took samples of
14 this gravel and could not find even traces of phenol so
15 they gave up the idea that the underground
16 contamination originated by water seeping from our
17 plant." Is that the occasion that you mentioned?
18 A. Yes, that's the occasion I mentioned.
19 Q. Thank you.
20 A. We went out and dug through that surface
21 drippage that you get from the trams or disposals.
22 Like your roads that you have all over the state.
23 Q. Let me show you another document, State
24 Exhibit 16 bears a date of January 27, 1961 from Mr.
25 Finch to yourself. Take a moment to look at that,

1 please.

2 A. Read the whole thing?

3 Q. Well, my question will be with regard to the

4 fifth paragraph which mentions leaking valves and I

5 will ask you what you know about that.

6 A. I don't know the tendency to take care of

7 that. They should take care of that right quick.

8 That's probably what I told them but I think that went

9 up right away for other reasons.

10 Q. Did you have any understanding where the

11 materials which were leaking went?

12 A. I would say that that type of leaking would

13 stay right on the surface, it wouldn't go down.

14 Q. Stay on the surface of the soils?

15 A. Stay on the surface. They don't say -- let

16 me read the whole darn thing.

17 Q. Certainly. Have you had a chance to look at

18 the document again?

19 A. That was in the treating plant itself. Any

20 drippage in there would be on the floor of the treating

21 plant and it would be mopped up and taken care of

22 without any problem. That would never reach the ground.

23 Q. Okay.

24 A. He should never have written this letter, he

25 should have just exchanged those valves and kept in

business and I think that's probably what I told him. That wasn't critically said, they had their problems.

Q. I understand. Mr. Horner, right about here on the plant site with reference to Exhibit 9 of the State of Minnesota is what has been referred to as a tar cistern?

A. That's right.

Q. You recall that there was a --

A. I recall it, yes.

Q. And that's where tar went into storage prior to being refined?

A. That's where they dumped their cars, I believe. Is this a railroad track? This is the railroad track.

Q. I think so.

A. And they had a switch for putting the cars in -- rather than tracks, first to the tanks -- to a pump. They pumped them there and put them in a tank. Rather an antiquated operation but it seemed to work all right.

Q. Do you have a recollection of the floor of that settling basin being ruptured?

MR. SCHWARTZBAUER: You said "settling basin."

BY MR. HINDERAKER:

Q. I am sorry. Do you have a recollection of

1 the floor of that tar cistern being ruptured?
2 A. I have no recollection of that.
3 Q. Do you have any recollection of any
4 maintenance problems relative to that tar cistern?
5 A. I can remember -- let's put it this way,
6 that's the only plant that I know of that I ever saw
7 that used that method of unloading their tank cars. If
8 I could possibly have gotten rid of that method I would
9 have done it. Now, how much I could have done and when
10 it could have been accomplished, I have just forgotten.
11 But I would try to get rid of that method of -- I would
12 have installed pumping systems if I possibly could into
13 tankage and direct rather than through that pond.
14 Q. Why?
15 A. Well, you could handle it then. You are in
16 operation when it's in the tank. Here you have to
17 transfer it -- double transfer from the car to the sump
18 and then from the sump to a tank and then from the tank
19 to wherever you want it to go, double handling of the
20 darn thing.
21 Q. Did you lose any tar because the tar cistern
22 was used?
23 A. To my knowledge it was always kept in fairly
24 good shape. If it did leak it could be repaired very
25 easily.

1 Q. If it had a leak on the bottom would you have
2 to empty the cistern before repair?
3 A. If they had skillful enough repairman, and I
4 think they did, they could stop the leakage, but they
5 would eventually have to permanently correct it. They
6 would have to empty the tank entirely or the pond
7 entirely and get down there and really make a repair.
8 But they could stop any leakage.
9 Q. How?
10 A. A sheet of asbestos paper dropped down over
11 it and load it down with a few rocks would stop the
12 leakage. It doesn't run out that easy into the ground.
13 It would be so simple that it would be ridiculous to
14 have a leakage in that thing without correcting it.
15 Q. I am going to go to a different topic now.
16 In about 1975 or thereabouts a storm sewer was put in
17 at the location of the old Reilly site. Do you have
18 any knowledge about that?
19 A. I lost the -- the old Reilly site?
20 Q. Okay. In about 1975, and we are speaking of
21 a time after the plant was closed and the property sold,
22 all right?
23 A. I have nothing to do with the sale of the
24 plant or nothing to do with the operation as after
25 about 1972 or even before that because I was just

1 acting as a consultant in those days.
2 Q. And I take it you have no information about
3 any storm sewers that were built after you retired?
4 A. That's right.
5 Q. And I take it you have no information about
6 any roads that were constructed after you retired?
7 A. That's correct. I had no connection because
8 there were very competent men that were taking my place
9 and two different people don't do it in the same way.
10 MR. HINDERAKER: Off the record a second.
11 (At this time a discussion was held off the
12 record.)
13 MR. HINDERAKER: Back on the record.
14 BY MR. HINDERAKER:
15 Q. Mr. Horner, yesterday and a few times today
16 you mentioned your files and the stack of material that
17 you have. Are those at home or did you bring them with
18 you today?
19 A. I brought nothing with me today.
20 MR. HINDERAKER: That's all the
21 questions I have.
22 THE WITNESS: Good. Thank you very much.
23 You have been very generous with your time and the way
24 you have asked the questions and I appreciate it very
25 very much.

1 MR. HINDERAKER: Thank you.
2 THE WITNESS: You can get a lot tougher
3 than that. You can put me over the barrel, I am sure
4 of that.
5 MR. HIRD: I think Mr. Shakman will be
6 going next.
7 MR. SCHWARTZBAUER: He is in charge of
8 the barrel.
9 (At this time a brief recess was taken.)
10 MR. HINDERAKER: Mr. Schwartzbauer has
11 advised that Mr. Horner will not be an expert witness
12 at trial relative to the issues of what effect, if any
13 the storm sewer and road construction in the vicinity
14 of the Reilly plant had on the issues of this case.
15 MR. SCHWARTZBAUER: That's correct.
16
17 CROSS-EXAMINATION
18 BY MR. SHAKMAN:
19 Q. Mr. Horner, I will be asking you questions
20 behalf of the State of Minnesota. All those pieces of
21 advice that Mr. Hinderaker gave I will follow too,
22 particularly if you want to take a break or recess just
23 let us know. I will be covering some of the same areas.
24 I will try not to go over those areas where we have
25 explanations already on the record. It may be that I

1 will ask you again to explain something that you
2 explained earlier and I would appreciate you bearing
3 with that. Sometimes that is necessary for
4 clarification.
5 I understand you did attend Purdue University
6 in chemical engineering but left just before you would
7 have received the degree, is that correct?
8 A. That's correct. We were all interested in
9 flying, although we were taking chemical engineering.
10 We had a little Thomas Moore Scout Plane out at Purdue
11 so we were a group that were just definitely interested
12 more in flying than we were in chemical engineering.
13 Q. You had completed most of the course work
14 then for the degree?
15 A. Right. I had a son that also followed me
16 through the same -- he now heads up a big part of
17 Texaco on their attempt to make them independent of
18 Saudi Arabia oil.
19 Q. A big job.
20 A. That's a real big job.
21 Q. What was your place of birth?
22 A. Grand Rapids, Michigan.
23 Q. Is that where you grew up?
24 A. Until nine years old and then my father was
25 moved down to Indianapolis and the family.

1 Q. In some of the interrogatory answers that Mr.
2 Schwartzbauer has provided us with there is a mention
3 of a W. C. Horner, this is a reference in the 1920's.
4 Who was W. C. Horner?
5 A. W. C. Horner was my father.
6 Q. And there is a reference to company, Char, C
7 H A R, Products, what was that company?
8 A. The Deeds Commercial Laboratory, that was the
9 original name of this company that my father got
10 involved in and after the war his health had gone.
11 They went through two or three lawsuits and a terrible
12 mess and there was Mr. Lesh and several very prominent
13 men in Indianapolis that were all involved in this
14 Deeds Commercial Laboratories and -- it was so involved.
15 One of the men committed suicide. It was one of those
16 things that was just not right. But before we tried to
17 get anything out of it we changed the name to Char
18 Products Company and I was just out of the Army. I had
19 intended to fly for the rest of my life but with my
20 father being so involved in it financially I couldn't
21 see any way out but help do what I could for that
22 company.
23 Q. Then when Mr. Reilly purchased these
24 companies that was the termination of Char Products and
25 Deeds Commercial?

A. No, he continued Char Products as a name.

Q. Mr. Reilly did?

A. Mr. Reilly continued that and to keep himself out of the operation he continued it in a very peculiar way. He paid me a salary plus paying all our expenses, but we operated it as an entirely different plant from his operation for many years. Not many years, but several years until the requirement for the products that we were making went beyond our ability to do it in Illinois. We transferred Char Products to Metcalf, Illinois that's where it would be operating then.

Q. That's what you described for Mr. Hinderaker?

A. Yes.

Q. Where you took the corn cobs and made carbonizing product?

A. Yes.

Q. Did your father receive a financial interest such as being a stockholder or bondholder in Reilly Tar as a result of that transaction?

A. All of the investors in the parent company or the original company that could stayed in and those that didn't want to continue their investment why they dropped out, but they were all involved in Char Products Company the same as they were in the original company as stockholders.

1 Q. If I understood correctly then they were then
2 part owners of Reilly Tar Company?
3 A. No, they were part owners of Char Products
4 Company.
5 Q. And was Reilly --
6 A. Mr. Reilly purchased the Char Products
7 Company and paid these men off what they had involved
8 in the company. So he took it over entirely when he
9 took it over.
10 Q. He was the sole owner after that?
11 A. He was the sole owner after that. T. C.
12 required that I stay with the company and run it for --
13 until they got everything under control. That's how I
14 came with Char Products or Mr. Reilly, through the back
15 door.
16 Q. Did Char Products continue for some years
17 under that name?
18 A. That continued for some little time under
19 that same name. It was over in Metcalf, Illinois up
20 until the time of the depression, I believe.
21 Q. Did you at any time have any financial
22 interest in the Reilly Tar Company or Republic
23 Creosoting Company?
24 A. Never. It was always -- I never -- all I did
25 was to work for them.

1 Q. That's true today as well?
2 A. True today as well.
3 Q. Do you receive a pension?
4 A. I receive a pension from Reilly Tar.
5 Q. The time after you left the military and
6 through your work with Reilly Tar did you ever attend
7 professional seminars such as those given by the
8 American Association of Wood Preservers?
9 A. No, I didn't. I didn't have the time or the
10 inclination.
11 Q. Were there others in the company who did
12 attend those seminars?
13 A. I didn't get that.
14 Q. Were there others in the company attending
15 those seminars?
16 A. Not that particular type. I know there was
17 people attending the seminars for the normal operation
18 of Republic Creosoting Company, the creosoting end of
19 the company. They had similar seminars.
20 Q. Were those just for the company?
21 A. For those companies doing the same thing, yes.
22 Q. So other companies in the industry?
23 A. They had no connection with the type of
24 operation to grind corn cobs and make them into
25 creosoting materials.

1 Q. These were wood treaters?
2 A. These were wood treaters and creosote oil
3 producers similar to the major operation that Republic
4 Creosoting Company is doing today.
5 Q. Did you sometimes get copies of the minutes
6 or reports of those seminars?
7 A. No, I had no interest in those.
8 Q. Were there other seminars of interest to
9 engineers that you attended over the years?
10 A. The only one that I can recall attending,
11 there was a number of us from Purdue that got into the
12 Army in the same way, had the same problems. They lost
13 our papers, I think, between our trip from Purdue over
14 to Minneola and we -- they were involved in similar
15 operations and we had a reunion together at the start
16 of World War II. Several of them had already joined
17 the services. One of the things they wanted me to do,
18 the same thing, but I wouldn't do it. I had three sons
19 that were going to go into it anyway so I felt that we
20 were doing our share.
21 Q. That was a get together of your engineering
22 students?
23 A. That was the only get together that we ever
24 had and that was a difficult get together because some
25 of them came from South America, some of them came from

1 Canada, from almost all over the world. General Fushe
2 was retired and came back into service again at the
3 first part of the war and we did it for him.
4 Q. Other than that get together that you had you
5 didn't have any other ones?
6 A. That was the only get together that I ever
7 remember in my association with Republic Creosoting
8 Company and that was far from Republic operations.
9 Q. Did you tell us yesterday that 1930 was the
10 year that Republic laboratory opened?
11 A. That's right. As near as I can remember that
12 was the time it opened because that's the time I moved
13 my offices from Miley Avenue, which was the original
14 plant, to the laboratory.
15 Q. I think when we have been over to the Reilly
16 Tar offices at the Market Square Center there is a
17 photograph as you come in of a dinner in 1930?
18 A. That's right.
19 Q. That commemorated that occasion?
20 A. That's right. They had a dinner
21 commemorating the opening of that operation.
22 Q. Before that time, before 1930, had you ever
23 gone to the Saint Louis Park facility?
24 A. I had correspondence with them but I don't
25 remember -- in fact I can say no, positively no.

1 Q. Did you review drawings and plans from that
2 facility before 1930?
3 A. The only -- I associated with Mr. Larkin and
4 I don't know whether before 1930 I was up there
5 visiting with Mr. Larkin and helping him; but I can't
6 be positive of those dates.
7 Q. Mr. Larkin was the manager there?
8 A. Mr. Larkin was the manager of the plant. He
9 came to Indianapolis frequently and wanted me to come
10 back with him several times. One time I recall
11 definitely mentioning it. I recall because he took us
12 on -- he took his wife, himself and me, out for a
13 picnic and, I will be darned, he was fixing his steaks
14 beautiful steak like that, (indicating) and he dropped
15 one in the sand, so I will never forget that one. His
16 wife didn't see it. I said, "Well, there is nice clean
17 water down here and we can take and wash it off and
18 never mention it," and that's what he did.
19 Q. That was up in Minnesota?
20 A. That was Minnesota. That's my experience
21 with Minnesota. Put a little joy in the discussion.
22 MR. SCHWARTZBAUER: We can use it
23 sometimes.
24 THE WITNESS: Yes, we can use it
25 sometimes. I will never forget that, how embarrassed

1 he was.
2 BY MR. SHAKMAN:
3 Q. What were the areas that he needed your help
4 with, he being Mr. Larkin, can you recall?
5 A. He needed any help that he could get. Why I
6 don't know, whether it was a disposition clash or
7 something that Arthur Larkin had done that Mr. Reilly
8 didn't like, but he needed help and he needed it from
9 any place he could get it. I guess both Carlton
10 Edwards and myself, both of them were very sorry for
11 him we would help him in any way we could.
12 Q. Had Mr. Larkin been with the company before
13 the Saint Louis Park facility started?
14 A. Well, he was Mr. Reilly's right-hand man. He
15 supervised the building of the Saint Louis Park plant,
16 moving the Saint Louis Park plant, all the far eastern
17 plants, the one at Provo and the one at Seattle. One
18 other. He supervised the design, did all the work for
19 it, even the Indianapolis plant, he was responsible to
20 some extent for the design of that. Something happened
21 between Mr. Reilly and Mr. Larkin that I don't know and
22 I don't want to know. I don't want to mention it.
23 Q. His job at Saint Louis Park or Provo or
24 Seattle was to get the initial plant construction and
25 running?

A. And supervise its running too. It came under his supervision.

Q. Was he ever manager at Seattle or Provo?

A. No, they had separate managers at all these plants.

Q. But he was the manager for many years at Saint Louis Park afterwards?

A. All his lifetime he was.

Q. Prior to being in Saint Louis Park it's our understanding Reilly had a facility in Minneapolis proper near the University of Minnesota. Do you know if Mr. Larkin was involved with that facility?

A. I am sure he would be. Mr. Larkin and Doctor Derby -- Doctor Derby's name has not been mentioned but he was on the teaching staff of the college up there or the University up there.

Q. At Minnesota?

A. At Minnesota. And Mr. Reilly persuaded him to take over our research laboratory. He and Larkin were very close I know that.

Q. Doctor Derby came down here then?

A. He came down to Indianapolis.

Q. Did you know a Charlie Batson

A. Very well, yes, I knew him.

Q. What was his role with the company?

A. His role was similar to Mr. Larkin's, only that was the south development down in --

Q. Mobile.

A. You said it for me. He did develop that and he did quite a bit of work -- it's the one on the east coast. It doesn't make any difference.

Q. Was Charlie Batson involved with the plant, the old one in Minneapolis or the move to Saint Louis Park?

A. That is only a guess on my part. That preceded anything that I came in contact with when I was with the company.

Q. Did you ever have discussions or read correspondence about why Mr. Reilly moved that Minneapolis plant to Saint Louis Park?

A. Just rumors. It was all done before my time and it was just rumors of why it was done and I wouldn't want to say what those rumors were. Some of them were real and some of them were unreal, I know that, so I wouldn't want to comment on that at all.

Q. Did Mr. Reilly ever talk to you about it himself?

A. No, he didn't talk to me about it excepting that he objected to everything that there was there. He didn't want this new plant anything like the one --

1 Q. He wanted one a lot better than the one at
2 Minneapolis?
3 A. He wanted it a lot better than the one at
4 Indianapolis.
5 Q. Did you learn what businesses or industry had
6 been on that Saint Louis Park site prior to the time
7 Mr. Reilly purchased it?
8 A. I have no knowledge of it.
9 Q. Did you know if there were buildings or
10 structures there when it was purchased?
11 A. No, I have no knowledge of that.
12 Q. Did you know if there were wells on the
13 property when it was purchased?
14 A. I have no knowledge of the purchase of that
15 plant. I came into it after it had been in operation
16 for some little time.
17 (At this time a discussion was held off the
18 record.)
19 BY MR. SHAKMAN:
20 Q. Mr. Horner, I am showing you a photograph of
21 the Saint Louis Park facility that has been used in the
22 interrogatories of the State of Minnesota and
23 identified in there by Mr. Hennessy as the plant in the
24 late 1930's. Would you take a minute to look that over?
25 I would note for the record that that photograph is

1 identified by the Number 305243. I do want to ask you
2 some questions on this but first let me establish when
3 you may have been there. Mr. Hinderaker had an exhibit
4 this morning, I believe it was numbered Minnesota 33,
5 which had an anecdote you recall about scraping the
6 gravel beneath the retorts to show that the gravel was
7 clean a few inches down, do you recall that exhibit?
8 A. Yes.
9 Q. That was dated 1940 indicating you were at
10 the plant at that time?
11 A. (Indicated in the affirmative.) That's about
12 right.
13 Q. Do you recall being at the plant previous to
14 that visit?
15 A. I wouldn't want to say. I think -- I am sure
16 at the time that I was with Mr. Larkin and he got into
17 his trouble with his steak was before that. About how
18 much before it I can't tell you without getting into my
19 records, what few I have saved.
20 Q. But in the '30's you were working with that
21 plant a good deal, weren't you?
22 A. That's one of the -- unfortunately that's one
23 of the fosterchilds of our operation that got very
24 little attention and not the attention it should have
25 had. We were building plants in other places and it

1 didn't have the attention that it should have from the
2 engineering department or any other part of the
3 operation.
4 Q. It was a fosterchild who cried every now and
5 then and asked for help, wasn't it?
6 A. That's right. And they didn't get the help
7 that they really should have gotten and part of it was
8 Mr. Reilly wouldn't let us give the time to it because
9 I think in his mind he had it coming to a close --
10 treating operations coming to a close.
11 Q. At that plant?
12 A. Even at that time. He was much more
13 interested in the chemical operations that were being
14 developed very rapidly.
15 Q. That's the synthetic chemicals?
16 A. Synthetic chemicals.
17 Q. And the plant manager would tend to request
18 to you and to Carl Edwards, is that the people they
19 would contact?
20 A. They contacted anyone that would listen to
21 them, anyone that would listen to them. I know
22 Rademacher seemed to feel that he could get more from
23 me than he could from anyone else and he preceded, he
24 went back into the early -- the late 20's.
25 Q. He was the engineer out there?

A. He was an engineer and practically running the plant directly under Larkin.

Q. What was Larkin's training?

A. What was Larkin's training? He was a graduate of engineering someplace, now I don't know where that is.

Q. So from these communications --

A. That's a guess on my part. I didn't go into those details. It would be embarrassing, it may not, I don't know.

Q. I understand.

A. Had no reason to.

Q. You would have an idea then from the late 1930's from corresponding and perhaps from visiting about the layout at the plant and whether this picture appears accurate for that time period, late 1930's up to 1940, would you agree with Mr. Hennessy's interpretation that that's when this photo was likely from?

A. Dick spent much more time at Minneapolis than I did. I was in and out as fast as I could get in and out and, as I say, that's the only plant -- the only area that I ever got lost in.

Q. From your knowledge of the plant would you recognize this body of water that's located sort of in

1 the right center part of the photograph?
2 A. That's right. I would recognize that.
3 Q. And how was that water used at the plant?
4 How was that pond used?
5 A. My answer to that would be a guess on my part.
6 I would think that I would have to pass that up. If
7 you will accept it as a guess why it would be all right,
8 but we tried to get them modern operations as rapidly
9 as we could and that pond would disappear over night if
10 we had our chance to bring the plant up to really
11 modern operations.
12 Q. By that you mean going to City water that you
13 earlier talked about?
14 A. Well, the City water would supply it just as
15 well as anybody else but it certainly wouldn't be left
16 in a pond like that. We had had too many troubles with
17 ponds. Everybody else had.
18 Q. What were the kinds of troubles with ponds?
19 A. I told you one trouble that Uncle Sam had
20 with the pond very very close to us, they dug it down a
21 little deep to give them more space for dumping it into
22 a pond and overnight it disappeared and it came up in
23 our plant and destroyed a 500 horsepower motor and a
24 500 horsepower pump.
25 Q. The water just rushed out?

A. The water came right up there. We had the same experience, ponds are just awfully dangerous. We had a pond that they -- in doing some construction work for they accidentally ran their digger into it and that disappeared over night. We had to install water works for all the people that lived around there because their water was bad. We knew where it was coming from.

Q. Because of the pond?

A. We spent several thousand dollars. I think it ran to four, five or $6,000 loss that we tried to pass on to the contractor who did that accidentally I think. But we couldn't. Anybody that has ponds should watch it like a hawk.

Q. Where did that take place?

A. Indianapolis, both of them.

Q. Is that the Miley Street you mentioned yesterday?

A. No, this is out at the Maywood plant. No wonder I hate ponds, huh?

Q. If you look on that map and see the pond is marked by number 16?

A. Right.

Q. Then there is something that looks like railroad track that cuts it in two, can you see that?

A. I can see it and it probably is true, that if

1 you took the picture at some other time that that would
2 be along the edge of the pond that ordinarily was shown
3 in our drawings
4 Q. So depending on the water conditions the
5 ponds expanse could change quite a bit?
6 A. Yes.
7 Q. You had mentioned earlier that they had to
8 add some cover out at that site, some fill, early on.
9 From this photograph can you designate some of those
10 areas where they may have put fill in at that site?
11 MR. SCHWARTZBAUER: Well, if you know.
12 A. Well, the only positive locations that I have
13 are from the drawings that I show here or gave to you,
14 that those were the positive locations that I know of.
15 The rest of them we would assume because I think there
16 was an awful lot of fill put in this plant from just
17 the looks of it, but positive information on it I do
18 not have. I had nothing to do with the construction of
19 this plant or the design of it.
20 Q. Did that filling continue on in later years
21 after the original construction during say the time of
22 Mr. Larkin's tenure as manager? Were they still doing
23 fill?
24 A. I am sure they would also have to do fill as
25 they could and had the available fill material.

1 Q. What kind of materials --
2 A. Did you look at these that I had where it
3 showed what we had there?
4 Q. Is that Exhibit 52, the borings of the soil?
5 A. It was the -- we had one vertical section of
6 that area and it showed pretty conclusively what it is
7 all about.
8 Q. Showing you the seventh page of the Saint
9 Louis Park Exhibit 52, is that what you had in mind?
10 A. That's what I had in mind. That's the only
11 real picture of what the whole plant is like. This
12 undoubtedly is fill up in through here right below,
13 water level is here and that fibrus material and these
14 occur 12 feet down before you get to anything, but this
15 whole plant is put on something horrible.
16 Q. What kind of materials would be used as fill?
17 A. Whatever they could get. I should say again
18 here that I had nothing to do with the design or the
19 development of this plant.
20 Q. The design back before your time?
21 A. Except later when we sent Dick up from our
22 own staff who can give you much better pictures of
23 Saint Louis Park because he spent more time up there
24 than I did.
25 Q. I have here Minnesota Exhibit 12. This is a

letter written in 1962 from Mr. Finch to Mr. Edwards and there is just a paragraph in there that describes something before Mr. Finch's time that I wanted to ask you about, it's on the second page where it begins, "General plant," and if you go down about six or seven lines it says, "Prior to 1941." I wonder if you would read those next few sentences that give Mr. Finch's account of what it was like prior to 1941.

A. I ought to say that they occasionally opened up the dams up there and we were really flooded.

Q. He says, "There was an open ditch about six feet wide and five feet deep that ran through our south yard and water was handled quite readily." Would you know with the help of that photograph where that ditch ran?

A. I wish we would see our plant map.

THE WITNESS: Where did that go, that plant map?

MR. SCHWARTZBAUER: The one that you and I were looking at the other day?

THE WITNESS: Yes.

MR. SCHWARTZBAUER: I think that is still back at the office. I have a smaller version of that if that would help you.

THE WITNESS: I could get it on a plant

1 map a heck of a lot easier.

2 MR. SCHWARTZBAUER: It's the same one

3 that's on the board here. This one is not clear enough

4 to isolate certain things.

5 THE WITNESS: That's a copy of it and I

6 can hardly make out the details of that darn thing.

7 MR. SHAKMAN: Could we mark that one as

8 an exhibit and make a copy of it if it may be necessary.

9 A. This is a copy of it, all right. This is a

10 copy of the plant.

11 Q. Mr. Horner, would you like to use that one or

12 would you like to wait until tomorrow morning, would

13 that be easier for you?

14 A. The big one. I think I could give you a

15 better answer on that big one that we have.

16 MR. SHAKMAN: Can you wait until

17 tomorrow and can we get that big one?

18 MR. SCHWARTZBAUER: Sure.

19 MR. LEININGER: Excuse me. Steve, did

20 you mark that as an exhibit?

21 MR. SHAKMAN: No, it's identified in

22 there as 305243, which is a Reilly Tar identification

23 number.

24 MR. LEININGER: Okay.

25 BY MR. SHAKMAN:

1 Q. I think I will confine my questions for today
2 to the area off the site that the plant map won't help
3 us with. I wondered about your recollection of the
4 railroads that may have existed to the south of the
5 plant on that date. Behind Mr. Kennedy is R.T.C. Exhibit
6 3 which is an aerial photo from 1963. You will see on
7 it State Highway 7 or towards the south, Lake Street
8 and to the south of that again is an elevated railroad
9 track. Can you see those on that map?
10 A. Well, I can see the one without any question.
11 Q. I will point out the railroad here for you
12 coming here to the right moving diagonally?
13 A. This is State Highway 7 now, isn't it? Yes,
14 State Highway 7. That was being installed or they were
15 working that the last time I was up there, it wasn't
16 completed.
17 Q. Could you recall as best you can before that
18 highway went in how that appeared, the road and the
19 railroad in that area?
20 A. It doesn't show that -- Walker Street. I
21 would rather have that map of ours. This is quite
22 confusing seeing to me.
23 (At this time a discussion was held off the
24 record.)
25 BY MR. SHAKMAN:

Q. Mr. Horner, we have been looking off the record at a photograph designated R.T.C. Exhibit 3 from the 1950s. I would like to ask you going back to the time before State Highway 7, if you recall the flow of water in that direction where State Highway 7 now exists. Was there a drainage flow in that direction to the south?

A. Definitely that's where all the flow was, runoff water from -- that's what has always upset us, wherever they got into trouble up on this upper elevation. I guess this is our property, this here.

Q. That's Pennsylvania Avenue, that's a higher elevation you are pointing out?

A. Yes.

Q. Do you recall if the flow went right down in a straight ditch?

A. It came down this way until it got down in here and then came through like that.

Q. Going through the property?

A. Going through the property.

Q. Was there a ditch you recall as Mr. Finch described it?

A. Yes, there was a ditch. I think eventually it was covered and put into a tile but originally there was a ditch there that came down.

Q. This Exhibit 19 shows a tile line in the lower left corner, a dotted line, Minnesota Exhibit 9. Do you see that dotted line?

A. I thought it was down here further but this maybe right.

Q. It is a dotted line beginning here at the settling basin and going south and west towards the property line?

A. Well, from my recollection it was -- the surface flow, now that may have been put in.

Q. I am interested in the earlier surface flow before there was a tile line.

A. I think it was down here like this.

Q. Like this would be from where it says garage down towards the words "tar cistern"?

A. Yes.

Q. That's actually Walker Street where the words "tar cistern" are written?

A. That point to way up here though so it was down in that direction. Now, I could be wrong in that I would have to study our map of ours a little bit further to refresh my mind.

Q. Do you recall a culvert going under Walker Street, is that how it moved the water?

A. I remember a culvert coming down. Let me

1 check when we get this map that I am more familiar with
2 than this deal and I will be able to answer that
3 without any question in my mind when I look at that map.
4 Q. Okay. Thank you. Let's do that tomorrow.
5 A. Can you put that off until I get a chance to
6 refresh my mind on that? You are asking me for details
7 that are hard to remember exactly where they go. We
8 had a good many places we are having trouble.
9 Q. Mr. Finch had written back in that Exhibit 12
10 Page 2 and I quote, "The ditch was hazardous in our
11 operation and a continuous worry and source of
12 complaint." "The ditch was hazardous in our operation
13 and was a continuous worry and source of complaint."
14 Had you heard about that problem in that time before
15 1941?
16 A. I expect I had heard about that because it
17 was constantly -- they had constant problems up there,
18 just constant problems; but the ditch was never
19 isolated as one of their major problems.
20 Q. Do you recall your making any recommendations
21 about that ditch?
22 A. I couldn't answer yes or no to that. I know
23 if I had made any comments I would have the same
24 feeling then as I have now, that it ought to be tiled,
25 got to get it out of the way.

1 Q. Get it under the ground then?
2 A. Get it under the ground. An open ditch is
3 hazardous in any plant and I would have recommended
4 that if that ditch was necessary to tile it, get it out
5 of the way.
6 Q. What were the other major problems at Saint
7 Louis Park?
8 A. There were millions of them, problems. The
9 plant never had any support from Indianapolis. I think
10 Dick Hennessy was the only one that was really giving
11 them some help.
12 Q. What were the problems that they reported to
13 you?
14 A. The main problem was the foul water that was
15 actually dumped on the plant from up above. They were
16 having trouble with their expansion of property there,
17 new sewers for handling the runoff water and the
18 blockage in those -- where they were trying to expand
19 and any time they got into a really heavy storm they
20 had to open up what they call their dikes and we would
21 get a flood of water down over the plant.
22 Q. Was the system of trenches there a problem
23 for them?
24 A. In the plant?
25 Q. Yes.

1 A. They were objectionable but we had nothing to
2 do about those trenches that they were forced to use to
3 get rid of the water that was dumped on them.
4 Q. I have read in the Reilly documents that
5 those trenches were put in at the beginning of the
6 plant?
7 A. I think they were.
8 Q. Was that a usual practice to put your pipes
9 down in trenches in this type of operation?
10 A. Well, from what we did with the engineering
11 in the plants that we put in there was no trenches,
12 period.
13 Q. When you were in engineering?
14 A. When the engineering was turned over to us to
15 handle there were no trenches in any plant that we
16 built. We built -- put tile in or there was nothing at
17 all. We tiled everything.
18 Q. At Saint Louis Park which pipes did they run
19 through the trenches?
20 MR. SCHWARTZBAUER: Excuse me. I think
21 there is some confusion here. When you talk about
22 trenches are you talking about the trench that Mr.
23 Finch is referring to carrying the water?
24 THE WITNESS: No. We had nothing to do
25 with the engineering at Saint Louis Park excepting what

1 Dick could do on the side. That was done long before
2 we had anything to do with any of the plants --
3 BY MR. SHAKMAN:
4 Q. I meant the trenches that carried the the oil
5 out to the treating plant, the trenches that carried
6 the steam pipes. That's what I meant by trenches. Did
7 you understand me differently?
8 A. I misunderstood you then. You are referring
9 to this Minneapolis plant?
10 Q. Yes.
11 A. We had nothing to do with that. I would
12 never approve that way of handling the job.
13 MR. SCHWARTZBAUER: You said a minute
14 ago when you were in engineering there were no trenches,
15 they were tiled.
16 THE WITNESS: That's right.
17 MR. SCHWARTZBAUER: Are you talking
18 about pipe trenches or trenches to carry waste?
19 THE WITNESS: We would get the pipe out
20 of the ground, if possible. If we couldn't get it out
21 of the ground we would not put it in a trench.
22 BY MR. SHAKMAN:
23 Q. Maybe it would be easier if I asked a
24 particular item. Say steam, would you tell me how the
25 engineering that you worked with would prefer to handle

1 a series of steam lines in the plant?

2 A. Well, for instance, the Cleveland plant. We

3 bought our steam from the Cleveland -- what is the big

4 company there? Anyway, it came almost a mile, all the

5 overhead. We hung it on telephone poles overhead, and

6 the water lines on the ground, why it would be

7 impossible to carry it open and to submerge it in the

8 ground would be very expensive so that we just hung it

9 on a pole, water on one side and steam on the other and

10 that's the way we would do it at any of our plants.

11 Q. Did you insulate those lines?

12 A. Oh, absolutely. You can't get steam at the

13 other end if you don't insulate it.

14 Q. But the steam line at Saint Louis Park wasn't

15 insulated, was it?

16 A. You can tell that -- I wouldn't want to say

17 there was no insulation on steam lines at Saint Louis

18 Park but it would be so easy to put it on, even if it

19 was just sawdust on there, something to keep from

20 losing the steam. Anyone that would have an open steam

21 line ought to have there head examined, an exposed

22 steam line.

23 Q. At Saint Louis Park they had lines in

24 trenches carrying the refined oil?

25 A. Absolutely. No cover for them. They would

1 be open lines.

2 Q. Was that a practice that you recommended at

3 the other plants when you were engineering them?

4 A. Well, we would never -- we wouldn't be at all --

5 we would have no objections to running oil lines, even

6 though it was hot oil, in uninsulated lines.

7 Q. Would you put those above ground or below

8 ground?

9 A. I would -- if it would be possible to get a

10 routing above ground they would be above ground.

11 Q. Why is that better?

12 A. Why is it better?

13 Q. Why is it better, yes.

14 A. You can't put those lines in without getting

15 a movement because they are hot one time, you are

16 running hot oil -- hot something next time and it's not

17 hot. Those lines are going this way all that time.

18 You have them in the ground, you are having trouble.

19 Q. The Reporter couldn't see that. When you say

20 they are going this way you mean they are expanding and

21 contracting?

22 A. They are expanding sometimes as much as

23 several inches in length and if you get them up in the

24 air get them up off the ground they take care of that

25 expansion probably satisfactorily.

1 Q. Do they need to be visible so you can inspect
2 for leaks or corrosion?
3 A. That is advisable for that purpose but not
4 necessary. But it is the expansion for handling that
5 hot material that is the important thing to do. Let it
6 expand and then it doesn't hurt the pipe. If you
7 retain that expansion you are going to get twisted and
8 turned pipe.
9 Q. I want to change from pipes to ask you about
10 tanks, the tanks for oil storage in the plants where
11 you did engineering and made recommendations. Did you
12 recommend the refined products go in above-ground tanks
13 or underground tanks?
14 A. Well, there is an exception to every rule.
15 If we could we would keep everything above ground.
16 When you put it in the ground why problems just are
17 covered up. When you can see them why they are taken
18 care of. I don't -- any of our new plants I don't know
19 anything -- well, someplaces where you go on the
20 roadway we would go underneath rather than overhead, we
21 would have to probably, but keep it out of the ground
22 if you can.
23 Q. Is the presence of high ground water a
24 consideration when you are deciding whether to put the
25 tanks in the ground or above ground?

A. It would have -- like this -- like we had at Saint Louis Park with just two feet before you run into water, that would be a very important decision where it's 20 feet under water, you don't expect that problem. Does that answer your question?

Q. Let me ask one more on that. Where you do have the high groundwater say within a couple feet of ground?

A. You stay out of the ground.

Q. What happens to the tank that's in there?

A. You stay out of the ground then.

Q. Say you put them in there, what are some of the things that the water is going to do to that tank?

MR. SCHWARTZBAUER: I object as speculative and no foundation. You can do the best you can in answering that. In other words, merely because I object, we don't have a judge here and therefore nobody to rule.

BY MR. SHAKMAN:

Q. Would you like me to repeat it?

A. Yes, if you will and I will answer it for you.

Q. Where you have a product tank which is an underground tank and the ground it is in has a high ground water level so the water rises up along side the tank, what might that water do to the tank?

A. Now, are you wanting to know what we would do if we ran into that in a plant or do you want to know whether we ran into a design for a plant --

Q. Say it was already there, what would be the problems that you would anticipate coming up with that because of the water?

A. Well, there is the acceptance of a very poor design or excavating and exposing those tanks or uncovering them so that you could see what was going on. Those old plants, I know down at Mobile we had to do a lot of that, exposing, because we had oil leaks down there. You never know them until it's just a nuisance.

Q. You wouldn't know about the leak until later?

A. When they have been stuck in the ground by poor engineering why we tried to correct for it.

Q. When your tank was in the ground and was empty what could the water do to it?

A. Completely empty and if it got full of water you would lose the tank or lose all the connections to the tank and it would float.

Q. It would float up and the tank would break the connections?

A. That's what happened when we had the flood, as I explained the other day.

Q. Was that at Saint Louis Park?

1 A. It's in the records.
2 MR. SCHWARTZBAUER: You mean the
3 incident you told us about that occurred in the 20's?
4 THE WITNESS: Yes, in the 20's.
5 BY MR. SHAKMAN:
6 Q. That was not an underground tank, was it?
7 A. No, that was a tank above ground.
8 MR. SHAKMAN: Would you like to take a
9 few minutes break at this time?
10 THE WITNESS: I am awfully glad to take
11 a break any time.
12 (At this time a brief recess was taken.)
13 BY MR. SHAKMAN:
14 Q. Mr. Horner, were you involved with the design
15 for retorts that were put in at Saint Louis Park about
16 1929?
17 A. By the term "retorts", what you do you mean?
18 Q. I mean the pressure treating chambers as part
19 of the wood preserving operation.
20 MR. SCHWARTZBAUER: They use the term
21 retort, which is not a term which Reilly people
22 customarily use, but I think they are talking about the
23 cylinders into which the trams are placed, is that
24 correct, Steve?
25 THE WITNESS: Treating cylinders.

1 MR. SHAKMAN: Treating cylinders.
2 MR. SCHWARTZBAUER: Treating cylinders
3 (At this time State of Minnesota Deposition
4 Exhibit 121A and 121B were marked for
5 identification by the Court Reporter.)
6 BY MR. SHAKMAN:
7 Q. Mr. Horner, I am showing you a page with two
8 photographs, the top one is marked 121A and the bottom
9 121B. 121A has identifying number 219924 and the
10 bottom one, 121B, has identifying number 291191 and
11 there is a back date on the back of each of them. By
12 reference to the treating filter I had reference to to
13 the large cylinders shown in 121A and 121B.
14 A. I think that's Bros that did the design work
15 on those. We had a very experienced company up there.
16 Are you familiar with that company?
17 Q. Is that B-r-o-s?
18 A. I think that's the way it's spelled. I am
19 not too sure. I don't know. I shouldn't answer that
20 question because I just do not know. You said whether
21 we did, per se, no.
22 Q. Would you know if 1929 was the first time
23 creosoting operations were conducted at Saint Louis
24 Park?
25 A. I can't tell you exactly. I can't answer

1 that with a positive statement because I would question
2 myself even whether that was or was not right.
3 Q. Would you know if they were doing refining
4 there before they were doing wood treating?
5 A. I wouldn't be able to say that positively.
6 (At this time State of Minnesota Deposition
7 Exhibit 122 and 123 were marked for
8 identification by the Court Reporter.)
9 BY MR. SHAKMAN:
10 Q. I am going to be handing out two documents,
11 122 and 123, have you read that, Mr. Horner?
12 A. I have read it.
13 Q. By that one I mean the letter dated July 24,
14 1939 from Mr. A. E. Larkin to home office to your
15 attention which has been marked Minnesota Exhibit 122.
16 I would like you to look down one, two, three, four
17 paragraphs. It says, "We are planning to revamp the
18 piping system at the refinery in order to save the
19 tremendous ways we now experience as outlined in a
20 recent letter from Mr. Holstrom." It continues in the
21 next paragraph, "We shall plan to make these changes as
22 it is possible and convenient to do so with our own
23 people but it does seem as though it is a great waste
24 of money to allow this to continue; namely, the use of
25 obsolete lines that are subject to vary great losses on

account of condensation when they come in contact with water from the outside." Could you explain in terms that someone not familiar with this facility would understand what this problem was that Mr. Larkin was describing?

MR. SCHWARTZBAUER: If you know. I object to form.

A. Well, I think it's obvious that he is trying to bring his plant up to standards, I guess. That would be what I would judge it to be about. It's just a -- it doesn't ring any particular bell.

Q. What do you understand was the waste that could have been prevented which he was describing?

A. Well, do you want a judgement or a positive answer to that?

Q. What your understanding would be.

A. He was trying to improve his plant. We were buying some boilers for him, new boilers. He was trying to improve his plant to be comparable with his new boilers and that is something that he would like to do. I am sure it was something that we would encourage him to do to cut down all the steam losses he possibly could. When those new boilers were installed -- he was getting new boilers at that time.

Q. What does he want to do in regard to steam

1 lines?

2 A. That's what I say, that we would advocate he

3 protect the loss of steam from uninsulated lines

4 without any question. New boilers were being installed

5 and everything made modern. We would advocate it 100

6 percent.

7 Q. In the last line of the fifth paragraph he

8 says, "Great losses on account of condensation when

9 they come in contact with the water from the outside."

10 Where would steam lines come in contact with water from

11 the outside?

12 A. I am sure he had steam lines going to his

13 tanks for heating his tanks and sometimes those got --

14 the insulation got worn off those and he wanted to

15 correct that, I am sure that's the case.

16 Q. Would they be in trenches, steam lines?

17 A. They would. If they were in trenches they

18 should be in open trenches but they still could be

19 insulated. I think he is just discussing -- he is

20 getting new boilers. He says down here, doesn't he,

21 where he is getting his new boilers, talking about his

22 new boilers?

23 Q. Third paragraph here.

24 A. I think this is -- as I read it, it's just an

25 installation of two new boilers that he is trying to

1 get the most out of it and I think he is in a spot to
2 get most anything he could get to bring it --
3 Q. And you understood they did put in new
4 boilers that time?
5 A. Oh, yes, two new Riley boilers, not Reilly
6 Tar, but the Riley Boiler Organization.
7 Q. That's R-i-l-e-y?
8 A. I think that's the way it's spelled.
9 Q. Where were the boilers at that time? I refer
10 you to Minnesota Exhibit 9. Mr. Horner, Minnesota
11 Exhibit 9 on the wall shows boiler room?
12 A. I will have to get that other map. I can't
13 make this thing out. It's carved up too much with
14 these lines.
15 Q. This line showing boiler room shows a smaller
16 rectangle.
17 A. And there is another boiler room down in here
18 someplace, isn't there?
19 Q. The one I was pointing to was in the area of
20 the retort. My question was, was there another boiler
21 down towards the refinery at some time?
22 A. I would have to get our own maps out. I
23 don't make it out from this map.
24 Q. Would that one that Mr. Schwartzbauer is
25 going to bring over be of help?

A. That would be much more clearer to me to answer those questions.

Q. Mr. Horner, I want to ask you about another document dated August 8, 1939.

Q. Have you had a chance to read Minnesota 123?

A. I have read it.

Q. That's a letter May 13, 1979 on which I am directing your attention to the second page, I am sorry, it's this one here. The second paragraph begins, "As we understand Mr. Edwards is on his vacation or about to go. We are depending upon Mr. Horner to give this matter his serious consideration and, if possible, get an authorization to us so that this work and the boiler work can go along simultaneously during the low spot in our creosoting plant operation." When Mr. Larkin is talking about getting an authorization how did the home office operate at that time in terms of authorization for this work? From whom would you go to get an authorization?

A. At this time there is only one person that could give you the authorization to spend money and that was Mr. P. C. Reilly.

Q. Your recollection is he did approve the boilers?

A. I am sure. Now, I would have to review some

1 of my files that I might be able to find and might not
2 be able to find; but we would be just a little bit off
3 our bonet if we would be willing to put in two brand
4 new boilers and have them just pumping steam into the
5 ground. I am sure that I would tell Mr. Reilly that he
6 would have to do that. I don't remember it but I know
7 Mr. Reilly well enough that if he saw that, if I
8 mentioned it that you are just buying two new boilers
9 to heat the atmosphere he would raise the very devil.
10 Q. Are you a person that in this situation he
11 would rely on for advice as to whether to get those
12 boilers?
13 A. Whether I --
14 Q. Would Mr. Reilly rely on you for advice on
15 that?
16 A. To buy those boilers?
17 Q. Yes.
18 A. There was quite a bit of trouble about those
19 boilers as I recall, because we were buying boilers
20 from the Riley Company for other places in the plant
21 and they proved very very satisfactory. Arthur Larkin
22 was dealing with the boiler works up there.
23 Q. What is the name of that company, Bros
24 Boilers?
25 A. Bros Boilers and he was rather in favor of

1 the buying the Brose Boiler. I am sure that Arthur
2 Larkin was a little bit disturbed when it was decided
3 to continue buying the boiler that we found so
4 satisfactory.
5 Q. He is also asking in this letter and the
6 previous letter we looked at about the steam lines on
7 the previous page of Exhibit 123, the fifth paragraph
8 here that I am pointing to you reads, "During periods
9 of heavy rainfall and snowfall the losses are much
10 greater so the 50 horsepower savings is actually
11 conservative because so many of our lines are in old
12 conduit that are subject to flood conditions when these
13 lines become nothing more or less than steam
14 condensers." Do you recall the discussion or advice
15 you may have given on that aspect of the inefficiency?
16 A. All I can remember about that is I think Mr.
17 Reilly got his hands on this letter and he hit the
18 ceiling. He didn't need authorization for doing things
19 like that, "Get it done and get it done right." So I
20 imagine that that was the situation. He wouldn't
21 tolerate spending money on one spot and letting it all --
22 all the advantages of new boilers going to the
23 atmosphere. I know him to well for that, although I
24 don't recall this particular instance. I do know there
25 was a lot of discussion and probably a little hard

1 feeling about the boiler purchase. I recall that quite
2 distinctly.
3 Q. Hard feelings between Mr. P. C. Reilly and
4 Mr. Larkin?
5 A. The three of us. I favored the boilers that
6 we purchased and Larkin favored his friendship with
7 somebody that he had done business with for years and
8 there was a little hard feeling circulating around at
9 that time and I can see why he wrote this letter. I
10 can see why P. C. hit the ceiling when he read that
11 letter.
12 Q. I have another letter that I want you to take
13 a look at now and could we have this marked as Minnesota
14 124?
15 (At this time State of Minnesota Deposition
16 Exhibit 124 was marked for identification by
17 the Court Reporter.)
18 THE WITNESS: This is from Mr. Reilly.
19 BY MR. SHAKMAN:
20 Q. Have you read Minnesota 124?
21 A. That's what I would expect.
22 Q. You have a very good memory about Mr.
23 Reilly's response?
24 A. That's what I expect. He saw it just the
25 same as I saw it right now.

1 Q. In the second paragraph of Minnesota 124, and
2 I should say Minnesota 124 is a letter from P. C.
3 Reilly to you dated August 16, 1939, the second
4 paragraph reads, "I asked Stanley yesterday to call you
5 and Mr. Mitchell and to say Mr. Holstrom nor Mr. Larkin
6 must have anything to do except under direction in the
7 installation of the new boiler and equipment at
8 Minneapolis." Who would Stanley be?
9 A. Stanley was the purchasing agent at the
10 downtown office.
11 Q. Is that Stanley Boyle?
12 A. Stanley Boyle. All the purchases went
13 through his office and actually sent out from the
14 downtown office. Mr. Reilly then could get immediate
15 knowledge of what we are spending.
16 Q. Mr. Reilly writes, "Installation of the new
17 boiler and equipment." Do you know what would be
18 covered by equipment?
19 A. Proper lines, proper treating equipment. I
20 certainly don't want to put a new boiler in without
21 adequate water treating."
22 Q. Mr. Reilly goes on to say, "Neither Mr.
23 Larkin nor Mr. Holstrom is a good enough engineer to
24 direct the installation or construction of the new
25 equipment but both believe they are?"

1 A. He would say that and not mean it. He was
2 mad at this letter right here. He was terribly upset
3 with that letter, and I don't blame him. I don't blame
4 him being upset because I get upset today to read that
5 letter.
6 Q. Was he one who was very demanding of people
7 working for him?
8 A. He was demanding regardless of what they did.
9 He was demanding that they do it right. And Larkin is
10 saying how wrong everything is. Well, he was running
11 that plant, why this long having something that was
12 wrong. I am repeating how he would take it.
13 Q. Was this view that Mr. Larkin was not a good
14 engineer something you heard on many occasions from Mr.
15 Reilly?
16 A. I think that's entirely personal. I think he
17 was domineered by Mr. Reilly and wouldn't do what he
18 thought he should do. I don't blame him. He was a
19 very fine engineer and a very good man but he was
20 dealing with a very very dominating man.
21 Q. Was it Mr. Larkin whom Mr. Reilly held
22 response for the problems with the steam lines and the
23 boilers?
24 A. That's right. If I had my entire file -- I
25 didn't bring my entire file home with me, but if I

1 could have my entire file I could see -- I could find
2 you letters from Mr. Reilly to me that would be -- make
3 these letters that you are reading now about Mr. Reilly
4 seem like pleasant conversation.
5 Q. This is mild?
6 A. When he got mad he got mad. The next day he
7 would come down and he would talk and be very very much
8 different. "Oh, we have to do this and we have to do
9 that." But he just had that temper that rose up and he
10 would get it off in the letter right off the bat and
11 then the next day --
12 Q. He was running the company back in 1917 too,
13 wasn't he?
14 A. He wanted to have the -- well, anyway, that
15 was the way it was.
16 Q. But back when the boilers and the trenches
17 and the steam lines were put in at Saint Louis Park Mr.
18 Reilly was president of the company, wasn't he?
19 A. He was president of the company since it's
20 conception back in 1917 or '16 when he bought the
21 Barrett Company out. He was the boss and he was the
22 boss until he died.
23 Q. From reading the letter he doesn't blame
24 himself, he blames someone else for the problem?
25 A. Someone else.

1 Q. Is that usually how it was with Mr. Reilly?
2 A. I don't think he ever apologized for what he
3 did. I know he realized he made his share of mistakes
4 but no one would ever be told that.
5 Q. He didn't admit those?
6 A. No. He was a very wonderful man. I thought
7 an awful lot of him. I would never have stayed on my
8 job if I didn't think Mr. Reilly was tops -- tops for
9 me even though he did give me the devil.
10 Q. Did he continue as president right up until
11 the time he passed away?
12 A. I don't think anyone took that title as long
13 as he was alive. Carlton Edwards took it after Mr.
14 Reilly's -- after he passed away.
15 Q. He ran the company as long as he was alive
16 then?
17 A. He did, with a vengence.
18 Q. I want to turn to a different topic that's
19 again in the 1930's. In 1932 the Village of Saint
20 Louis Park drilled a well for municipal water supply
21 and this was about three quarters of a mile away from
22 the Reilly Tar facility and there were reports of bad
23 tastes and odors described as phenol tastes. Were you
24 aware of that problem back in the early '30's?
25 A. I was aware of the dumping of that tank with

1 the creosote oil the day after it was dumped and I was
2 aware that that creosote oil could go any place
3 underground and so I was not surprised at having any
4 problems that originated -- I think they originated
5 from that very unfortunate accident having Saint Louis
6 Park dump all that water on us without any
7 consideration.
8 Q. You have said that occurred in '26 or '28?
9 A. The file that I had was in Mr. Reilly's lock
10 box. They haven't been able to find that file on that
11 particular occasion. It is all from my memmory which
12 is not too good on the day that that happened or the
13 date that that happened. I would judge that this is
14 about when it might --
15 Q. I wanted to get on to something else beyond
16 those memos and talk about 1932, that's when Saint
17 Louis Park had their problem with the taste and odor in
18 the well. So 1932 though would be after the spill that
19 you have told us about in this testimony yesterday and
20 today, is that correct?
21 A. '29 I think. I think that's what I said it
22 was.
23 Q. And we have some Reilly correspondence around
24 that time and Mr. Rademacher is mentioned in it.
25 A. That's right. That's the man I think that

1 would advise me, as I recall, that the accident
2 occurred.
3 Q. Do you recall anything from Rademacher or
4 anybody else at Saint Louis Park about the Village's
5 complaint in 1932?
6 A. I think it was -- I think -- I can't say that
7 this -- I know that we had comments or problems with
8 the Village frequently and it could have been at that
9 particular time it was called to our attention, but I
10 wouldn't want to say yes or no to that. I would like
11 to look in my own files and have it in some files where
12 I could review exactly the dates or very nearly exactly
13 the dates that we had those correspondence or calls. I
14 can't remember exactly the date.
15 Q. When these problems with the Village came up,
16 did anyone mention to the Village or the well drillers
17 the spill that had taken place a few years earlier?
18 A. The spill that I am talking about?
19 Q. Yes.
20 A. I am sure that -- and I think it was
21 Rademacher. I am sure that Rademacher knew it and I am
22 sure that many men up there knew it but I don't recall
23 any particular discussions on it because, as I say, my
24 file, Mr. Reilly wanted it right away and he didn't it
25 want it mentioned under any condition and this meeting

1 is the first time I have mentioned it since he told me
2 to forget about it. Carlton Edwards can't remember it.
3 I don't think he came into that discussion at all, I
4 think it was -- I got it and I turned it over to Mr.
5 Reilly and he wanted to keep it under his hat. Why I
6 don't know and I think it probably was because if it
7 ever came up why here is something that actually took
8 place that was not our fault but it was really a damage
9 to the under water contamination.
10 Q. I understand then that P. C. Reilly had you
11 keep this confidential?
12 A. Absolutely confidential. As I say, this is
13 the first time I have ever mentioned it since that time.
14 Q. Did he have you call Rademacher and have him
15 keep it confidential?
16 A. I didn't talk to Rademacher and I can't be
17 sure that Rademacher was the man that I talked to or
18 his predecessor and I have even forgotten his name.
19 Q. Did Mr. Reilly on other occasions put
20 something away in that lock box?
21 A. I don't know of anything that was ever put in
22 there besides that letter.
23 Q. Did you know if it was a personal box of his?
24 A. All I know is he took it up --
25 Q. Do you know the story on that?

1 A. Yes. I will repeat it once more.
2 Q. No, I heard it yesterday.
3 A. He came out to see his brother, before 1930,
4 that was the Miley Avenue plant and his brother had his
5 home there and he would came out to see him at his home
6 and he -- I showed him what I got and what happened and
7 he said -- intimated that he already knew about it and
8 he took those papers, "I am going to put those in my
9 lock box and I don't want you to mention it to anybody,"
10 so I haven't.
11 Q. Let me ask you one more question on Mr.
12 Reilly on that incident and then we will move off it.
13 What was the value of the oil you lost there?
14 MR. SCHWARTZBAUER: You mean dollars?
15 MR. SHAKMAN: Dollars.
16 A. Well, the oil loss was rather insignificant
17 because 300 gallons of oil is worth some money, there
18 is no question about that, even 1,000 gallons, it was
19 somewheres between that. I have forgotten what oil was
20 selling for at that time.
21 Q. Was the tank loss the bigger monetary loss?
22 A. No, the tank was replaced and put on its
23 foundation. From the time the plant operated it was
24 still operating, no damage to the tank.
25 Q. You would have to spend some money on your

1 labor at least to put it back up?
2 A. They had to reposition it on its foundation
3 and connect it up with its piping. It would not have
4 been too much of an expense.
5 Q. Did Mr. Reilly make an insurance claim, to
6 your knowledge, for that?
7 A. I don't know. All I know is the letter that
8 I had or the little notebook, the handwritten note that
9 I had about it and the call that we had is the only
10 information that we had on that. I hope they find it
11 sometime because it put me on the spot, very decidedly
12 on the spot.
13 Q. And until your preparation for this
14 deposition you haven't discussed that since 1926, '27
15 or '28, whenever it was?
16 A. The only discussion I had with Carlton
17 Edwards, I was really in hopes that he also was
18 involved in that deal but he can't remember having
19 anything to do with it. I think I am the only one because
20 he picked the information up from me and I know that he
21 took it and put it in his box or at least that's what
22 he said he was going to do.
23 Q. That was that discussion you had just the
24 other day with Mr. Edwards?
25 A. Yes, I discussed it with Mr. Edwards just the

1 other day.

2 Q. And apart from your lawyers you haven't

3 discussed that with anyone until you came here?

4 A. Until I came here.

5 (At this time State of Minnesota Deposition

6 Exhibit 125 was marked for identification by

7 the Court Reporter.)

8 BY MR. SHAKMAN:

9 Q. Mr. Horner, you have read Minnesota 125?

10 A. I have.

11 Q. This is a memo from H. L. Danz to you dated

12 June 30, 1938 entitled, "Stills-number one Battery-fire

13 and Explosion" and it begins, "Complying with your

14 letter of June 21st." We unfortunately don't have that

15 letter. Do you recall if you were at Saint Louis Park

16 when the fire and explosion took place?

17 A. Oh, no, no. I wasn't there.

18 Q. As I read the letter you asked for reports on

19 the condition of the stills, of the batteries, numbers

20 one to four?

21 A. I think that's the extent that I was involved

22 in. Very obviously the office made up their mind they

23 wanted that battery of stills to run or to be destroyed

24 or knock down, there is no question about it. Those

25 runs were all too long for the still -- that type of

still.

Q. These were in the refinery building?

A. Yes, they were in the refinery building.

Q. Do you know which end of the building they would be in?

A. I would have to get a picture of the refinery building and see how they were operated -- see how they were numbered.

Q. Maybe that map from tomorrow will help us.

A. I am afraid they won't. I will look in my records to see if I have any yet but I wouldn't -- Dick Hennessy was there and we had been going there more frequently and I wouldn't -- I don't know whether -- do you have any of Lauck's reports?

MR. SCHWARTZBAUER: We have seen reports from Mr. Lauck in the files and the State has been -- all of those have been produced to the State.

BY MR. SHAKMAN:

Q. I think the ones we have seen were from the '50' and I think this was from 1938. Would Mr. Lauck have been with you in 1938?

A. I think that's a little early for Lauck. I will check but that was the reason that we had the men circulate so that they could possibly get into this kind of condition and he reported -- you saw his

1 reports. You looked at his reports.

2 MR. SCHWARTZBAUER: There are reports

3 from him from time to time.

4 THE WITNESS: He made a round of all our

5 plants every so often.

6 BY MR. SHAKMAN:

7 Q. We have Mr. McLellan in here?

8 A. He was at the Saint Louise plant.

9 Q. What was his job at that plant? He is only

10 mentioned in the last sentence. It says, "Mr. McLellan

11 will write the home office in a few days."

12 A. I think Danz was under McLellan, as I recall.

13 I am a little confused about those two men.

14 Q. They are with the refining side of it?

15 A. I think McLellan was over the whole thing but

16 Danz was in the refinery. Now, that's just a guess,

17 don't put it down.

18 Q. Do you know if that explosion caused damage

19 beyond the battery involved?

20 A. I am just -- I remember vaguely the explosion

21 and wondering if we had better not send somebody up and

22 really make a thorough examination of it. But to

23 answer your question I would like to say I just don't

24 know. I wouldn't want to answer it.

25 Q. This report doesn't say what happened to the

1 material that was in the still at the time of the
2 explosion, if there were material. Did you get any
3 further report on that?
4 A. I am sure we would have had a report but
5 because the still explosion is so unusual and could be
6 so disasterous that we would follow it through until we
7 knew exactly what was -- what happened to it. If we
8 couldn't get it from them we would send somebody up.
9 That's really talking about the safety of our men.
10 Q. It's a serious matter then?
11 A. Very serious matter and something that we
12 couldn't tolerate then and we couldn't tolerate today,
13 that we would make a final decision on that particular
14 explosion, that's dangerous.
15 Q. From your knowledge and experience with the
16 company do you know how explosions in stills do occur?
17 A. These is only one way that I would ever
18 consider that they would occur would be a possibility
19 that they had a crack in that still above the water
20 line and they got circulation, and got some air in
21 there and she went off, just like that, because they
22 are at the temperature that it would do it.
23 Q. The air would be super hot and expand?
24 A. Actual explosion if they got circulation of
25 air in there because there is vapor in there. I

1 shouldn't tell you this because I would like -- I would
2 want to look at my notes if I could find them to
3 determine what that explosion consisted of and why it
4 exploded.
5 Q. I would be satisfied just to have a simple
6 explanation of the physical event. Is it vapors that
7 are there without air and when the air comes in they
8 ignite?
9 A. That is the only way that you would get an
10 explosion. You could get a bursting of the tank which
11 might be called an explosion because the material that
12 rushes out of that tank explodes on the outside, but
13 where I read it it sounds as though they thought it was
14 on the inside. I think probably we would find that it
15 was all outside explosion -- explosion on the outside
16 of the still because if that crack opened up the gas
17 and the liquid would explode outside as soon as it got
18 outside and it would tear off the brick work around the
19 still.
20 Q. Down three paragraphs Mr. Danz says, "The
21 report covering Still Number 2 reveals six rewelded
22 places in the joint and two cracks which opened up
23 during the fire." Now, that mention of cracks, would
24 that be consistent with either of those possible
25 explanations that you gave?

1 A. That's right. If you have got a crack in
2 there and you have your vapors out in the outside
3 section of the battery surrounding those stills and you
4 could get a combination of air and vapors to cause an
5 explosion outside the stills and my guess would be
6 that's where it occurred because it would be difficult
7 to get it inside the still.
8 Q. When you had a crack what measures did you
9 have to take then to repair the still and get it back
10 in operation?
11 A. I think towards the -- I don't know whether
12 we had hard and fast rules at this time or not but it
13 looks, from reading this letter, that it was before we
14 had gotten tough with our still installations and care.
15 It looks like -- boy, I get upset when I read this
16 letter.
17 Q. Why is that?
18 A. Shouldn't tolerate anything like that. It's
19 expensive because it's -- the still could have blown up
20 and killed somebody or the outside section of the still
21 wouldn't tolerate that for a continuing operation. If
22 your still gets so it will crack it has lossed its
23 ability to expand and contract and it should be
24 destroyed long before it gets into this situation or it
25 shouldn't be monkeyed with. I am sure that I would

1 convince Mr. Reilly that that was true and we had men
2 then visiting the plants, that would be the Number 1
3 object of their plants, are their stills being kept in
4 safe operating condition.
5 Q. This memo talks about stills with seven to
6 800 coking runs. From your experience was there a
7 certain number of coking runs that marked the useful
8 life of a still?
9 A. That all depended on the still operator. If
10 he fired it clear up to the end with vigor why one run
11 would be enough because it would be all warped out of
12 shape.
13 Q. Was this more of a problem at Saint Louis
14 Park in the 1930's than elsewhere?
15 A. I would say they are over-running. I would
16 say if they were getting that without any real
17 difficulty they were over-running the average, as I
18 recall it. They were doing -- they were running it too
19 long.
20 (At this time State of Minnesota Deposition
21 Exhibits 126 and 127 were marked for
22 identification by the Court Reporter.)
23 MR. SHAKMAN: Can we start up?
24 A. I wonder if somebody agreed with me and I
25 read Mr. Reilly's letter and he agrees with me 100

1 percent.

2 Q. You must really know his mind.

3 A. He was a well informed man.

4 Q. Let me ask you about the first memorandum,

5 which has been marked Minnesota 126, that's this one

6 April 4th, from Mr. Larkin to Mr. P. C. Reilly entitled,

7 "Village of Saint Louis Park Water Supply." As I had

8 raised with you earlier, there was a complaint from the

9 Village of Saint Louis Park in April of '32 about one

10 of their wells. This memorandum appears to me to be a

11 continuance of those discussions. In it there is

12 mention of a Mr. McCarthy of McCarthy Well and Mr.

13 Bradley a Village Engineer coming to meet Mr. Larkin to

14 have his -- he says, "Confidential explanation of the

15 situation." Was that a meeting that you learned about?

16 A. Only indirectly.

17 Q. Had you discussions with Mr. Larkin about it?

18 A. No, I don't think this letter -- I am almost

19 certain that I had only discussed it with Mr. Reilly.

20 Q. Do you recall Mr. Reilly's response to the

21 problem?

22 A. The same as my conclusion, I think we talked

23 about it together and his conclusion is the same as

24 mine.

25 Q. Which was?

A. Which is essentially the phenol that they are talking about is almost nonexistent in the creosote oil. Now, when we are stilling coal tar we do have phenol in one of the cuts in the light oil but when we get down to creosote oil the temperatures are such that there is no phenol in the operation, it's all been distilled out. So the phenol -- so that -- I am sure that -- I think the State chemist will admit phenol can be generated from other things than creosote oil. That I have no --

Q. That's from Mr. r Reilly's letter?

A. There is no phenol in the creosote oil used, that's true, it's all been distilled out. From these records you get the boiling point and I am sure the creosote oil is produced way past that boiling point where it is always -- where it is distilled out of the system.

Q. It's recounted that Mr. McCarthy was of the opinion that the contamination came from one of the Reilly wells that was not cased. Was that part of the discussions you had about that well as a possible --

MR. SCHWARTZBAUER: Excuse me. You should let him finish his question. He wasn't done yet. You can't know what his question is until he asks it.

A. Ask it again.

Q. Mr. McCarthy states that it was his opinion

1 that the phenol contamination may have come down a well
2 on the Reilly site, I think that's the same as the one
3 Mr. Hinderaker showed as the Republic deep well. Did
4 you and Mr. Reilly discuss that possible pathway?
5 A. I think we probably did. We would come up
6 with the same conclusion that we came up with here that
7 that would be very unusual. I don't see how it could
8 happen.
9 Q. Were there phenols in some of the wet cut or
10 the other waste waters from the plant?
11 A. I think that was discussed yesterday in
12 putting in -- if you refer to what was discussed
13 yesterday, I think you will find what it amounts to.
14 Q. Could I ask you just briefly to restate what
15 you concluded as to that yesterday?
16 THE WITNESS: Did you make notes on that?
17 MR. SCHWARTZBAUER: Well, yes, I did.
18 Maybe you could be a little more specific.
19 BY MR. SHAKMAN:
20 Q. Was there phenols in the wet cut?
21 A. In the wet cut? Yes, there is phenol. When
22 you take it as it comes from the supplier, and it all
23 depends on the process at which it was produced, how
24 much phenol there is in that. So I wouldn't want to
25 say that this had a lot of phenol or a small amount.

It would all depend on where they bought the raw material.

Q. The raw tar?

A. The raw tar material. If it was U. S. Steel we wouldn't get a drop of it because they wanted all they could get and they distilled it in such a way that they would recover it themselves.

Q. Other tars would have more phenol?

A. Some of the others were not equipped to that extent and you would get as much as the tar contained.

Q. And 1933 was before the Saint Louis Park facility was taking any measures to remove phenols from the wet cut or waste water, was it not?

A. Date wise I get confused. I think our records show it. If that's important we could find it in our records.

Q. You don't have a recollection now though one way or the other?

A. No, I don't have a recollection exactly when that was done.

Q. In the last paragraph on this page, first page of Minnesota 126, Mr. Larkin describes the underlying rock formations and mentions in the fourth line, "It's possible for contamination from our operation to reach this lime rock strata and being

1 carried in the horizontal cracks and crevasses to the
2 two holes in our property." He continues, "In this way
3 to get down to the lower strata." My question would be
4 do you know if the company consulted with any
5 geologists about the rock formations and their impact
6 on this problem?
7 A. This one I wouldn't want to say. I would
8 want to make sure that I could find out whether at that
9 time we were able to make that statement by referring
10 to the proper geologist that was doing the work, but I
11 can't for memory. I think, as Mr. Larkin said, he
12 would undoubtedly have discussed it with one of the
13 well makers or somebody that really knew.
14 Q. Did you have knowledge or training in geology
15 or hydrology?
16 A. No, we relied entirely on outside
17 capabilities.
18 Q. At the top of the second page on this Exhibit
19 125 there is a paragraph that begins, "We are -- " do
20 you see that, "We are on sand and gravel?"
21 A. Yes.
22 Q. Can you take a second to read that short
23 paragraph? Would Mr. Larkin's conclusion that this
24 soluable portion could be easily washed into the ground,
25 is that a conclusion that you would agree with?

A. I wouldn't agree with the first statement on that. That I assume is that after the ties had been treated they were stacked on the ground and we have never come up with any information that there is enough drippage from those ties to cause anybody any trouble. There is not nearly the amount of drippage from those ties in that position as there is there, the ties immediately coming out of the treating cylinder and that's what one of your men -- one of the men said here is where your trouble is on that drippage and we went out with him and we dug down and about that much from the surface it was perfectly clear and clean.

Q. That's a couple inches you are showing me?

A. It was absolutely clean and we picked it up and smelled it and we couldn't smell anything, there was nothing further than that. That's where they are getting constant drippage. Out here they might drip a little drop more than they dripped when they were on the trams, but here is where it got the concentration of drippage from those ties coming out. Out on the yard there was no concentration so I can't agree with that paragraph under any condition that that's part of our problem.

Q. In the next paragraph he makes a proposal to put some additional casing in their main well and to

plug the old well. That old well and some other testimony in this matter has been referred to as the well from the sugar beet factory or the sugar beet well?

A. Yes.

Q. Did you have discussions with Mr. Reilly on extending the casing?

A. Well, my discussion, if I had any recollections, it would be the same discussion that I had at other plants, that if we could get into City water let's get into City water, that these wells are a nuisance and we are not in a position to maintain them properly and let's get City water, it would be cheaper. And I think all our plants eventually were -- we relied on the City water. Anything I could get on to somebody else's well water would be my recommendation.

Q. Did you know what the casings were in those wells?

A. The only knowledge that I have is when I got down into that letter that we had the other day. We ought to get that letter back out to answer your question.

Q. Do you mean during your deposition yesterday?

A. Yesterday.

Q. That would be on the record then?

A. It would be on the record. These wells were

installed when City water was not available you know.

Q. The old well mentioned here, which I have also referred to as the sugar beet well is recommended to be plugged full length. Are you aware that that was actually carried out?

A. Not without looking up -- not from memory, that's a long time ago and I know we had some knock down battles as to what to do, but I think that they were all plugged. I hope they were all plugged.

Q. Looking at Exhibit 127, which is dated April 7, 1933, from Mr. Reilly to Mr. Larkin, down five lines it begins the sentence, "But you do not say how deep the lime rock is and perhaps the wells you speak of not cased may have conveyed some oil from our property to the water, although I think it is highly improbable that that is the case but, at any rate, close up the wells and do anything necessary to prevent any chance that the swampy taste of the water comes from our property." As far as you know that was Mr. Reillly's conclusion and direction was to close it up?

A. That's right.

Q. And you don't know anything to the contrary?

A. I don't know anything to the contrary and I underlined what he stated and he has used the exact words that I use when I was discussing with him that

1 phenol on our own treatment oil is minute.

2 Q. He has a footnote down at the bottom which

3 reads, "Before closing the wells dropped some (a

4 quantity) lime in them and then washed it down with

5 water. Consult Rademacher how to do this to remove all

6 traces of phenol." Do you understand what the purpose

7 of the lime would have been?

8 A. Well, to neutralize the acids in it and

9 phenol is a form of acid.

10 Q. So the lime would neutralize it?

11 A. Sure. He got that from Rademacher not from

12 me.

13 Q. It was Rademacher's suggestion?

14 A. Rademacher's suggestion.

15 Q. Was he a chemist, Rademacher?

16 A. I think he was chemical engineer. He came

17 down to Indianapolis and worked for us down in

18 Indianapolis for quite a while, very competent man.

19 Q. Do you recall if he was your age?

20 A. He must have been. I have forgotten now

21 whether he was my age or my son's age because he got

22 talking about his Army experience and I have forgotten

23 now whether it was World War I or World War II.

24 Q. Do you know where he is today?

25 A. Yes, he is on the West Coast some place.

Q. Have you --

A. I understand that.

Q. Have you heard from him in recent years?

A. I hadn't heard from him since he objected to our visit to the place where he was working on the west side of Indiana. He went over there and had a discussion with the treating plant that he was working with. He didn't like it one little bit.

Q. This was after he left Reilly Tar?

A. After he left Reilly Tar.

Q. What was the name of that company?

A. I can't remember the name. It was a small -- rather small treating plant.

Q. Do you know what town it was in?

A. Terre Haute. Just outside of Terre Haute.

Q. Do you recall Rademacher's first name?

A. No, I don't recall it.

Q. Do you have it?

A. What we know about him is on this page. He was a very capable and very fine man. I have a lot of respect for him although he did kind of rub us down, a different problem entirely from treating.

Q. Apart from this question of the wells, what were the other responsibilities Rademacher had at Saint Louis Park, if you know?

1 A. When he -- he was the one that let -- now,
2 this is going way back and it's only from memory since
3 I am giving you this information for what it is worth,
4 don't take it that that is gospel truth. My
5 recollection, as I said the other day, that it was
6 Rademacher that called me and told me about this wreck
7 and you have got that in the record, don't you, that it
8 was Rademacher that called me.
9 MR. SCHWARTZBAUER: I think you
10 testified to that
11 THE WITNESS: I testified to that and I
12 also testified that it is from memory and not from the
13 actual facts -- it was factual that I could say it was
14 absolutely true. It may have been this other man that
15 wrote this letter right here.
16 A. But he is a very competent man.
17 Q. What was he doing at Saint Louis Park, could
18 you describe his job?
19 A. I think that he was running the plant, my
20 recollection is, because --
21 Q. I had understood Larkin was called plant
22 manager?
23 A. He was plant manager but he didn't do much
24 about running the plant. He was more interested in
25 sales and spent most of his time in sales.

1 Q. So when you say "running the plant" he may
2 not have had the title but for practical purposes he
3 was the man getting the work done?
4 A. He was the man getting the business for the
5 company.
6 Q. I meant Mr. Rademacher, he was the one
7 running the operation?
8 A. He was the one doing the running of it as I
9 recall.
10 MR. SHAKMAN: I have used my 20 minutes
11 and three or four extra ones besides. So I would like
12 to adjourn this to 9:00 tomorrow.
13 A. I underlined that. That's a very
14 insignificant amount of phenol there.
15 Q. You are mentioning the phenol. It's just
16 inconceivable that any phenol had gotten into the water?
17 A. Yes, that's right. It's inconceivable to me
18 that any phenol has gotten into the water.
19 Q. That's the opinion you shared with Mr. Reilly?
20 A. I shared it.
21 MR. SHAKMAN: Thank you very much.
22
23
24
25

UNITED STATES DISTRICT COURT

DISTRICT OF MINNESOTA

FOURTH DIVISION

United States of America,
Plaintiff,
and
State of Minnesota, by its
Attorney General Warren Spannaus,
its Department of Health, and
its Pollution Control Agency,
Plaintiff-Intervenor,
vs.
Reilly Tar & Chemical Corporation;
Housing and Redevelopment authority
of Saint Louis Park; Oak Park
Village Associates; Rustic Oaks
Condominium Incorporated; and
Philip's Investment Company,
Defendants.
and
City of Saint Louis Park,
Plaintiff-Intervenor,
vs.
Reilly Tar and Chemical Corporation,
Defendant.
and
City of Hopkins,
Plaintiff-Intervenor,
vs.
Reilly Tar & Chemical Corporation,
Defendant.

Civil No.
4-80-469

VOLUME II

The Deposition of HAROLD R. HORNER, taken pursuant to Notice of Taking Deposition, taken before Kirby A. Kennedy, a Notary Public in and for the County of Washington, State of Minnesota, taken on the 10th 11th and 12th days of March, 1983, at Room 207, Federal Courthouse, Indianapolis, Indiana, commencing at approximately 1:30 o'clock p.m.

APPEARANCES

DAVID LIRD, ESQUIRE, United States Attorney, Department of Justice, 10th Street and Penn Avenue, Washington, D.C. 20530.

ROBERT E. LEININGER, ESQUIRE, Enforcement Attorney, 230 South Dearborn Steet, Chicago, Illinois 60604, appeared for and on behalf of the United States Environmental Protection Agency, Region V, Plaintiff United States of America.

DENNIS M. COYNE, ESQUIRE, and STEPHEN SHARMAN, ESQUIRE, Special Assistant Attorneys General 1935 West County Road B2, Roseville, Minnesota 55113 appeared for and on behalf of Plaintiff-Intervenor, State of Minnesota.

KATHLEEN MARTIN, ESQUIRE, of the law firm of DORSEY, MARX, SCHNOBRICH, KAUFMAN and DOTY, LIMITED, 4342 IDS Center, Minneapolis, Minnesota 55402, appeared for and on behalf of Plaintiff-Intervenor, City of Saint Louis Park.

EDWARD J. SCHWARTZBAUER, ESQUIRE, and DOUGLAS COMSTOCK, ESQUIRE, of the law firm of DORSEY and WHITNEY, 2200 First Bank Place, Minneapolis, Minnesota 55402, appeared for and on behalf of Defendant Reilly Tar and Chemical Corporation.

(At this time Minnesota Deposition Exhibit 123 was marked for identification by the Court Reporter.)

CONTINUED CROSS-EXAMINATION

BY MR. SHARMAN:

Q. Are you ready, Mr. Horner?

A. Any time.

Q. Good morning. This is the continuation of your deposition and the oath we earlier gave continues to be in effect. I want to give you the opportunity to add in any way to any of the testimony you gave yesterday. Is there anything that has occurred to you since yesterday you would like to add to what you said then?

A. I would have to review it and look at it and I didn't have an opportunity to do that.

Q. Fine.

A. You have it in writing and if you have that I might have some questions but as it is I have none.

Q. Since we left yesterday are there any additional materials you have reviewed or any further preparations you have made for today's deposition?

A. I looked over some of my own personal records that I have brought with me and I wouldn't make any

1 change in any of my statements.

2 Q. Are those records you brought with you here

3 today?

4 A. No. I haven't brought anything like that with

5 me.

6 Q. Those are the ones you kept at home?

7 A. Those are the ones that I have kept, not

8 necessarily for any particular reason, but just hadn't

9 destroyed and there is some information on that that

10 might or might not be applicable to this problem. It's

11 more other problems that were interesting to me.

12 Q. Let me direct your attention to the exhibit I

13 have handed out, which has been marked as Minnesota

14 Exhibit 123, a memo from P. C. Reilly to Doctor I. F.

15 Derby dated May 12, 1933. Have you had a chance to

16 read through that?

17 A. I read through it, yes, sir.

18 Q. Is that Doctor Derby the gentleman you told

19 us about yesterday who was at the University of

20 Minnesota?

21 A. That's right.

22 Q. And when he came with Reilly what was his

23 responsibility with the company?

24 A. His responsibility was heading up the

25 research department or organization with the research

1 included technical information for plant managers as
2 well. If they had some problems he would, through his
3 organization, which consisted of several people, work
4 on problems that the company had.
5 Q. Do you know how long he was with the company?
6 A. I don't know how long he was after this 23rd
7 date because I can't remember the years but it was a
8 large -- it was in the -- probably in the '50's that he --
9 as much as that, probably.
10 Q. Some years. 20 years?
11 A. A number of years after.
12 Q. Do you know his present whereabouts?
13 A. Well, he died soon after he left the company.
14 Q. Let me direct your attention to the second
15 paragraph, it begins, "Mr. Larkin." I will just read a
16 couple sentences I was going to ask about. Mr. Larkin
17 reported it was alleged that the ground at our plant
18 was saturated with phenol and that it had reached the
19 water supply of Saint Louis Park and that it had
20 contaminated it. As a result of two contractors
21 telling him this we had, before we had a chance to
22 question the complaint, made a contract with these
23 contractors for $500 to dig the well deeper or do
24 something or other, just what I do not know, but we do
25 know it cost $500 on some old complaint. I appreciat

1 the $500 in 1933 was different than it was in 19[illegible]3.
2 Looking back to that time from your activity with the
3 company, do you know what dollar limits the plant
4 managers had within their discretion to spend?
5 A. I don't think the dollar limits were as
6 important as what they were going to do with them.
7 They were supposed to report what they were going to do
8 with them and an outline of what that consisted of as
9 well as dollars. I think that was the limitation, the
10 way it was handled.
11 Q. Would you know in this instance if they could
12 spend $500 on a well repair because of a complaint
13 without Mr. Reilly approving first?
14 A. I think what concerned Mr. Reilly more than
15 the $500 was somebody starting a job without consulting --
16 with the research organization, that's what upset him.
17 Q. The last exhibit we looked at yesterday was
18 Minnesota 127, which you will note is dated April 7,
19 '33 from Mr. Reilly to Mr. Larkin. As I would read that
20 document it would look like Mr. Reilly had approved
21 this work. He says about in the middle of that
22 paragraph, but at any rate, close up the wells and do
23 anything that is necessary to prevent any chance for
24 the allegation being made that the swampy taste of the
25 water comes from our property."

1 A. Well, that is not this same problem here.

2 Q. Could you enlighten us on that as best you

3 can?

4 A. Here they dug down through and here they

5 wanted to be sure that they were --know what was

6 causing the problem.

7 Q. So the letter of May 12, that Exhibit 12?, is

8 a different piece of work then?

9 A. Yes, that's right.

10 Q. Do you know anything more about that digging

11 work than what this letter tells us?

12 A. No more than what we read here.

13 Q. Excuse me. Go ahead.

14 A. It never reached the engineering department.

15 This never reached the engineering department.

16 Q. Would it have been something Mr. Reilly

17 discussed with you just in conversation?

18 A. I don't think you can take the time to

19 discuss this problem because we never -- at least from

20 my memory we were never approached on this problem --

21 this particular problem.

22 Q. He mentions two contractors telling Larkin

23 this work should be done. Would you know who those two

24 contractors would be?

25 A. It would just be a guess. In fact, I would

1 have no knowledge -- no personal knowledge of this
2 particular affair so it's just a guess on my part.
3 Q. I see. Thank you. Let's go on to another
4 document from this time period.
5 (At this time State of Minnesota Deposition
6 Exhibit 129 was marked for identification by
7 the Court Reporter.)
8 A. I have read it.
9 Q. Thank you. Minnesota Exhibit 129 is a memo
10 from -- it looks like T. E. Courtney, if the middle
11 initial is correct, to Doctor I. L. Derby dated May 23
12 1933 concerning analysis for phenol from the Saint
13 Louis Park plant and the Maywood plant. Do you know
14 Mr. Courtney?
15 A. Very well.
16 Q. And would you know in 1933 where he was
17 assigned in the company?
18 A. He worked -- he was our chief chemist.
19 Q. And --
20 A. At the laboratory and was extremely competent
21 in running these very difficult analysis. I would
22 trust his results with my life.
23 Q. He was trained as an analytical chemist?
24 A. Well, I don't know his training but he was
25 probably the best chemist in this whole area of Indiana.

1 He was tops in his ability to give this kind of a
2 report. I would just trust that report without any
3 question. That was the report -- that was what he
4 found.
5 Q. He would run the analysis himself? He was
6 the man with the hands on --
7 A. He had help in his laboratory but he would
8 not let anything out unless he knew it was right. So I
9 would say that you can trust -- what he was sampling --
10 I don't know what he was sampling. I don't have any
11 knowledge of how these samples that were coming from
12 the plant were handled but from his samples you can
13 rest assured that that was correct.
14 Q. Do you have knowledge of the methods used for
15 analyzing for phenol?
16 A. I would never attempt it. I would never
17 attempt it. He had such an expert on that that as far
18 as I was concerned I let the expert give the data, not
19 to some amateur, as I would not touch a chemical
20 operation like that since before World War I.
21 Q. So you had some experience back in school
22 with --
23 A. Everybody at school had some experience like
24 that.
25 Q. You took chemistry courses then at Purdue?

A. But they vanished with the war.

Q. Do you have enough acquaintance with the topic to tell us what the Gibb's method is that's referenced in here?

A. I wouldn't even attempt it. If I brought down my books I could look it up that I still have at home, but I wouldn't attempt it.

Q. We would be better asking Mr. Courtney?

A. You can rest assured that that's the best way of accomplishing this job when Courtney signs it. He would not put something in there that would be for Reilly's benefit at all, it would be the truth.

Q. In the middle of the page he lists four samples and three of those come from Saint Louis Park and the last one the sample number is blurred but it then reads "Water from Haywood plant"?

A. That's right.

Q. Where was the Haywood plant? I should get that clear.

A. Have you ever been out in that area.

Q. In Indianapolis?

A. Indianapolis.

Q. No. If you would give me a direction in town, northwest, southwest, that would help us?

A. It's southwest. The Haywood plant covers

about -- well, I know it was a very large plant much larger than the Saint Louis Park, plant and they were south of the dividing road and the laboratories north of that, which is -- they have just been built, just occupied in 1930, covered an area that's probably a quarter of an acre or something like that. It would be a very large area of land, If that answers your question.

Q. I think so. Were you well acquainted with the Maywood operation back at this time?

A. I hope so. I hope so. I hope so.

Q. Did they have a situation where complaints were made about phenols coming from their plant causing water problems of any kind?

A. I never heard it. I never heard the complaint and I would have if there had been any complaints.

Q. Were there complaints about phenol problems from any of the other Reilly Tar facilities besides Saint Louis Park?

A. I can't remember of any. I can't place -- I can't remember of any of them. I am sure that I would have known of it if there was serious complaint. Now, there has been odors and everything else from these plants but I have never -- I can't remember a single

complaint, water complaint, excepting the one that I mentioned yesterday or the day before.

Q. Is that the one with the United States?

A. That was the one where United States contaminated our plant, accidentally I am sure, and we contaminated the ground around us accidentally with our contractor that came through and dug through our pit. We supplied all those people that were -- had some contamination with City water at a very large expense and Uncle Sam let us us tie into their service.

Q. Which facility was that at?

A. That was their ammunition plant just across the road from the -- it was a very large plant.

Q. In what town?

A. Just across from our Maywood plant.

Q. Maywood?

A. Adjoining with the railroad track in between the two plants.

Q. Was that after 1933?

A. Well, that was way back in World War II days

Q. Before that had Maywood used well water?

A. They had two wells, one for the ordinary use and a very large one, 500 horse power dry motor and a motor that would put out a fire steam with a circulating system around the entire plant in case of

1 fire and that's the one that was contaminated by Uncle
2 Sam. Our own well which was up near the office, was
3 usable water, still is as far as I know. Neither of
4 those had anything to do with phenol.
5 Q. They were used for process water too did I
6 understand you? The well water, that was used in other
7 than the fire protection?
8 A. Well, I tried to isolate that. The fire
9 protection was entirely independent of any operations
10 on the plant. We only wanted that in case of a fire.
11 We had other wells that were uncontaminated that are
12 still uncontaminated as far as I know, supplying the
13 drinking water and the water for the boilers. We
14 continued to use that until after the war and we were
15 having this water supply and rather than monkey with
16 putting it up in the tower why I think they switched to
17 using City water all through the plant.
18 Q. Was it considerably more expensive to use
19 City water?
20 A. I don't think it cost us as much money. That
21 was my conclusion. And I think that was the reason
22 that they switched to City water. It's a really major
23 problem to keep your wells in good condition, keep your
24 towers in good condition, keep everything -- there is a
25 very large expense. Anybody that goes to ground water

1 services when they have City water services is going to
2 a higher cost.
3 Q. The groundwater is more costly?
4 A. The groundwater is more costly, that's my
5 opinion, and it was proved at Maywood.
6 Q. You are saying that's true even if you
7 already have the cost of the wells put in?
8 A. Even though you have your wells put in.
9 Q. Why would that be? What are the expenses in
10 running a well that --
11 A. You are talking about some of them right here.
12 Q. Those problems that are accounted for in the
13 exhibits, 128 and 129?
14 A. Where you need some repair of -- major
15 repairs.
16 Q. Were there ever major repairs on the Maywood
17 wells that you know of?
18 A. There was never repairs made because of
19 contaminated water. We had no contamination at Maywood
20 in our Maywood operations as far as we were concerned
21 excepting when they dug through and had all that sludge
22 come from the other plants down on to ours and when we
23 dug through the pond accidentally, that whole area was
24 pretty much -- not phenol but other chemicals, other
25 chemicals from the government plant and other chemicals

from our own plant when we had that plant.

Q. With the Haywood wells did they change the pumps over the years? I was interested in different kinds of pumps they might have used.

A. I have forgotten the actual time of installation but it was the same when it was destroyed. I would say when that water came up around both units it must have been 15 years, something like that.

Q. They had to change the pumps?

A. No, they hadn't changed anything. I was only tested about once a year and that was all that it was used.

Q. Would they have used an air lift pump there?

A. They didn't have to because they -- we excavated down to almost water level so the pump itself would prime from the tank and pick up its pumping capacity almost instantly.

Q. Do you know the kind of pump, how would you describe that, suction?

A. Centrifugal -- a big -- well, 500 horsepower to drive that pump you could see what size pump it was. It would put out three or four or five streams any place in the plant, a tremendous amount of water.

Q. Is that the same pump that brought the water up from the well?

A. It didn't have to. The water was within about that far of the section.

Q. Just a foot or two?

A. When we got heavy rains it was above that pump because the pump was down in the ground by 12 or 14 or 15 feet, something like that, underground.

Q. When you said a tank, did you store some of the water in a tank then for a reservoir?

A. No. I may not be giving this a very good description. There was two systems in the plant, both before any of this happened, before -- when the plant was originally installed. There was this fire protection, which was a 12 inch pipe circulating and the fire pump was these big 500 horse power motors and a big pump that would put out -- I have forgotten the exact amount, but at least three fire streams which would be a lot of water.

Q. All right.

A. That was one system. No tower in it or anything. The other system was the original water supply before this other one was installed, which was a well up near the office that -- with a pump that put it into an overhead tank and that supplied the water for the -- well, for this -- for any of the requirements of water at the refinery or drinking water or water at the

boiler and that continued. I think we didn't tie into the City water until after the war because they were -- that whole system was rather short on water and we could get it from our ground and supply it.

Q. How big an overhead tank did you have there?

A. Well, you see them all over the country. You couldn't reach -- it must have been -- you are asking questions that I could answer right off the bat 20 years ago when I was very closely associated with it. But I would say it would be at least 1,000 gallons, 2,000 gallons, 3,000 gallons.

Q. A substantial thing?

A. Substantial. You used to see them all over the country. Every town would have one. Big towns would have big ones. We have one out here that would have a couple thousand -- a couple, I guess a million gallons of water out there. But this was large and it would be for individual plants.

Q. That was satisfactory for Maywood until you went to the City water?

A. That's right.

Q. Let me get back to Saint Louis Park and show you another document from there.

MR. SCHWARTZBAUER: Incidentally, the map is here now.

1 MR. SHERMAN: Thank you.

2 (At this time a discussion was held off the

3 record.)

4 BY MR. SHERMAN:

5 Q. Have you read the Exhibit I have just given

6 you? Minnesota 130 is a memo from P. C. Reilly to R.L.

7 Radenacher dated October 24, 1933 entitled, "Village of

8 Saint Louis Park Water Supply." As I read that first

9 paragraph I understood Mr. Reilly to be making

10 reference to those results that Mr. Courtney reported

11 in the last exhibit. He says, The swamp water

12 contains phenol, 10 parts per billion, whereas, the

13 phenol from our property is 20 parts per billion.

14 Then he continues in that last sentence of the first

15 paragraph, "I think the greater percentage in our

16 property is due to its saturated condition from the

17 sugar refinery which was established there at one

18 time," end of quotation. Did Mr. Reilly ever discuss

19 the sugar refinery as a source of phenol contamination

20 with you?

21 A. No more than just a casual comment like this

22 right here. That was purchased even before my time.

23 That whole operation was set up long before I came with

24 the company.

25 Q. He would have known about it from his own

1 experience though as best you know?

2 A. He was very active until he built up a -- he

3 was very active all his life as far as I was concerne

4 and would take on this and then pass it on to us just

5 over night, switching back and forth just as he felt

6 that he would like to handle this himself and he

7 handled this one -- he wanted to write this letter

8 himself and he did.

9 Q. So you worked very closely with him then?

10 A. When I was at Riley Avenue very close because

11 he was there almost once a week out there because his

12 brother was living on the area that we were operating

13 our engineering department on; but when we moved to

14 this Reilly Laboratories new building and he felt that

15 he should operate through the head of that department,

16 Doctor Derby.

17 Q. Did Doctor Derby or Mr. Courtney talk to you

18 about the sugar refinery matter at all?

19 A. Neither of them ever discussed it. Doctor

20 Derby came from that area, you know.

21 Q. I recall.

22 A. And he was familiar with what it was all

23 about. I had no knowledge of it.

24 Q. Did the Saint Louis Park people ask Mr.

25 Radenacher to talk to you about it?

1 A. No.

2 Q. So you don't know more than what we read in

3 this memorandum?

4 A. I don't know more than you do.

5 Q. In the next paragraph Mr. Reilly talks about

6 pumping their wells in order to minimize any possible

7 impact upon the wells of the Village of Saint Louis

8 Park. Was that proposal something that you discussed

9 also?

10 A. That -- those were his own ideas, not ours,

11 or we had no knowledge of this letter going out in that

12 form.

13 Q. He also mentions that when the water is

14 pumped up, and I quote, "We do not want it sprayed on

15 that part of the ground on which the ties are stored

16 because the ties have a phenolic content," end of quote.

17 Is the statement that "the treated tiles have a

18 phenolic content," is that a correct statement on Mr.

19 Reilly's part?

20 A. He was my boss and I wouldn't want to

21 discredit his opinions.

22 Q. Yesterday you mentioned the creosote oil

23 didn't have much phenol, if I understood?

24 A. Well, we produced our own oil, you know, by

25 stilling through tar and we produced coke and then this

oil and he might be thinking of some of the oils that we got elsewhere. When we were producing it ourselves all that phenol came off at the front end of that distillation. So I would question whether you could even detect in our oils any phenol.

Q. But some of the oils you bought from outside might have more phenol?

A. Some of the oils that we bought from the outside could and probably did contain quantities of phenol. If he had that in mind I am sure that they had not been properly separated in the distillation.

Q. From the oil that you made were there different blends of creosote oil that might have been used at that time; that is, would one customer want a certain specification?

A. Not to my knowledge. The specification was so broad that anybody producing it could meet the requirements.

Q. Do you know if there was much outside oil bought for Saint Louis Park in the 20's or '30's?

A. I have no knowledge of that.

Q. Do you know when they bring that in where they would store it?

A. It was brought -- they brought in creosote oil, it would go right in with our own production. I a

sure of that.

Q. We will look at that map later. It would go in the storage tanks just like what was produced there then, would that be correct?

A. Uh-huh.

Q. That was yes? I think you nodded your head. I don't know if Mr. Kennedy caught the yes.

A. Yes.

Q. Mr. Reilly talks about pumping, a quote, 'our wells,' plural. Would you know when he speaks of wells whether he includes the old well that had been there from the sugar beet company?

A. Your guess and my guess would be just a guess.

Q. Morningside is a community located two 2-1/2 miles south of the former facility in Saint Louis Park and in 1934 there were complaints about bad taste in the water from Morningside that were conveyed to Mr. Larkin and Mr. McLellan. Did you ever hear of those complaints?

A. From my memory, which could be faulty, it was not even recognized where Morningside was. For my interest in this problem, where is it?

Q. It's what's now Edina where Mr. Schwartzbauer lives to the south of Saint Louis Park.

MR. SCHWARTZBAUER: Does that help you

lot?

THE WITNESS: It helps me an awful lot right now.

BY MR. SHAKMAN:

Q. I will ask you about another question from this time period. Mr. McCarthy, who was mentioned in an earlier exhibit, was a well driller and drilled wells for the Village of Saint Louis Park and one of his letters he made an allegation that at the Republic Creosoting facility he had seen creosote running down the wells. Did you ever hear of his allegation at that time?

MR. SCHWARTZBAUER: Excuse me, Mr. Horner. When and where did Mr. McCarthy make such an allegation?

MR. SHAKMAN: He made it in correspondence of 1933 or 1934.

MR. SCHWARTZBAUER: Has that ever been marked?

MR. SHAKMAN: Mr. Schwartzbauer, I think I can find that for you at the break and I am sure we have seen a reference in one of the exhibits to charges or complaints from Mr. McCarthy.

MR. SCHWARTZBAUER: I don't remember it quite the way you said it. Maybe Kirby could read back

to me what you said.

MR. SHAKMAN: Fine.

MR. SCHWARTZBAUER: Or if you want to just restate it, I don't care which.

(Whereupon the requested portion of the record was read by the Court Reporter.)

MR. SCHWARTZBAUER: I object to the question because I don't believe Mr. McCarthy ever stated he had seen creosote running down the wells.

BY MR. SHAKMAN:

Q. You can still answer it, Mr. Horner. Did you ever hear of such an allegation?

A. I never remember anything as foolish as that being discussed. I think that's just a misprint or something. I can't think of anybody knowing anything about wells that would make a statement like that.

Q. I did find the exhibit I had in mind and I will have it marked as an exhibit so the record is clear on that.

(At this time State of Minnesota Deposition Exhibit 131 was marked for identification by the Court Reporter.)

BY MR. SHAKMAN:

Q. The document I had in mind has now been marked as Minnesota Deposition Exhibit 131 and is

1 marked by an identifying stamp 110001 and would have
2 been produced in the course of our document production
3 to you, Mr. Schwartzbauer, in the upper right retyped
4 June 1978 Ground Water Control Unit, Minnesota
5 Department of Health, from copy of original. In what
6 purports to be the original says, 'McCarthy Oil
7 Company, heading, Minneapolis and Saint Paul, Saint
8 Louis Park, Minnesota repair, Job 1333,' and it has a
9 date December 13, 1934. I will read that first
10 sentence. It says, 'This well always had a creosote
11 taste to the water and we found two old abandoned wells
12 at the Republic Creosoting Company plant about one-half
13 mile away which were being used to drain creosote down
14 to the ground and it was thought that this creosote was
15 going down in these old wells and passing over through
16 the crevasses in the Shakopee Dolomite and being pumped
17 up into this well.' I am ending quotation there. It
18 continues on for a page and a half. So that was the
19 allegation I had in mind, Mr. Horner, and you don't
20 recall that one from 1933 or '34?
21 A. Somebody, Dick, I don't know how in the devil
22 they got that.
23 Q. Mr. Horner, would you know if draining
24 creosote into wells occurred at any of the Reilly
25 facilities?

A. I don't see how they could do it. I don't see how they could do it.

Q. Could you know of draining of any kind of coal tar product would have occurred into wells?

A. Oh, that's the most -- that would be such a difficult thing to do I don't see how they could do it and if they -- I can't understand that one at all. I think there is a misunderstanding in terminology here.

Q. Did you ever hear of it from any plant?

A. I never heard of it otherwise I would certainly get that out of anybody's head without any question.

Q. When you say a misunderstanding of terminology, what did you mean by that?

A. Why, it's so ridiculous to try to get creosote oil down a well that I am sure they are talking about something else. I couldn't -- I can't believe anybody would try to do that. It's an impossible job that somebody is trying to do.

Q. Are you saying it couldn't be done even if you wanted to do it?

A. I don't think it could be done even if you wanted to do it.

Q. Why not?

A. Well, the only part -- they might -- have you

ever tried to get something down a well?

Q. Go ahead and explain what it might be like to get something down a well.

A. Something down a well. In the first place, you would have to cut the darn thing down to ground level and do an awful lot of changing around of the facilities from a well to get an opening there that you could get the darn stuff down. But with the normal connections coming from a well with a pumping system attached to it, which they all had, it would be impossible to get anything down past that pump into that well. But supposing they had taken everything off and you had an open hole to put -- and you wanted to put it down there, I can't think of anybody that would be so -- I can't think of the word. I can't think of anybody who would do a dirty trick for everybody involved to put that stuff down that well. I can't imagine anybody doing it.

Q. If you had a well with a pipe going in -- let me finish the question.

A. If you --

Q. -- and another pipe coming out with water and that was closed, could you still have space around that outside pipe that would be open so that with an operating well it would be possible for someone with

these had intentions to pour something down the outside part of the well?

A. Well, that's just a casing and it probably would not go down to the same depth that your well -- usually it doesn't go down as far as your well goes down. It just cases the surface water into the rock and keeps that surface water from getting into the well. Now, if you poured it down there it wouldn't get down to the bottom of the well which would be very much lower into that rock, probably below that into the subsoil, if you were getting good water out of that well. I don't see how they could get it, if the casing was properly installed and used as it should be used.

Q. Did you -- excuse me finish what you wanted to say.

A. It's used to keep that stuff out of the area that's true, the stuff that's beyond that casing. But it should be so tight in that ground that it would not run into the well, itself. If I understand what your question was, whether you had a well down with a casing properly installed could you get it in. I don't think you could.

Q. Let me ask you, did you see or otherwise learn about air lift wells in the 20's and '30's and '40's such as were used at Saint Louis Park, would you know

how they appeared at the surface of the ground when you looked at such a well?

A. They usually bring that casing up to wherever you have the pumping system and it's well above ground level and it's usually sealed off.

Q. Could you give us a rough drawing looking from above at a well that's being run by an air lift as how that might appear?

MR. SCHWARTZBAUER: You want it from above?

THE WITNESS: An air lift?

MR. SHAMMAN: Yes.

MR. SCHWARTZBAUER: Why from above?

A. Do you know whether it was an inside air lift or an outside air lift? If you had well say this size and a casing this size --

Q. Like a four inch pipe and a twelve inch casing you are talking about for the Court Reporter?

A. Something like that, and you are using an air lift, if this casing was tight, as it should be tight you could just seal it off the top and put it on the outside casing because the outside casing in that case is supposed to go to the water line and you are putting pressure on your water there. But mostly this outside casing is just to act as a casing and and your air lift

goes down on the inside with a pipe on the inside going down into the water.

Q. I think I followed you, but could I ask you to have a drawing? I asked you to make it overhead but if you prefer to draw it another way so we could understand where the air went in and how the water got out.

A. Let's put our well down first. Now, here is your ground line. Here is your -- in your plant now, in your plant that you are talking about, have we got our cross-section picture?

MR. SCHWARTZBAUER: It's around here someplace.

BY MR. [illegible]:

Q. Is the top line here, is this the ground?

A. This is the ground.

Q. Would you put a G there so we know that's the ground?

A. Ground, and this is fairly solid right here. Here from here is gunkey soil, this is where your half water and half soil is.

Q. That's the area you have made some dots on then?

A. Yes, that's water and gunk and natural subbase for the open ponds that we have. That whole

1 area was an open pond at one time.

2 Q. That would be your subsoil then?

3 A. Then down here you are beginning to get a

4 more solid area. There is probably some rock in here

5 and down in here.

6 Q. Could I ask you to put an R there for rock so

7 we know that's the area?

8 A. Gravel.

9 Q. G for gravel?

10 A. I will put a GR here.

11 Q. GR?

12 A. For gravel area. Then this may be a more

13 substantial area and down here you are actually into

14 hard rock and you are breaking that hard rock and

15 digging down then -- driving down through this rock and

16 way down here at the bottom you are getting a strata of

17 water.

18 Q. I will give you another sheet of paper to

19 continue down.

20 A. That's all right. You are right down at the

21 bottom over there, you are getting a strata of water

22 that is not water per se but water that is running

23 through broken spots in the rock into this well, which

24 is down into -- well, we gone down into this area down

25 here.

Q. Is that still a metal casing you are drawing?

A. This is the casing, down in here. This is the flow of water and here -- I won't attempt to put it down in there. Now, this is going down in the inside of that casing.

Q. Is that thinner line you are drawing, is that a pipe?

A. This is a pipe where you are pumping the water out. Getting down into this area where water -- we will just call this water, flows down underneath all these areas into this spot. The water level is probably way up here, and it's flowing down through this system and we will take it -- here is the water level, but this is contaminated water, it's coming from down in here someplace.

Q. Just to help the Court Reporter, when you say "the water level is here," that's up to where you marked the gravel?

A. This is gunkey, this is swamp water, and this area down here, this rock formation, we call it rock instead of gravel. This is a rock formation and you have to drill.

Q. That's an R for rock?

A. You have to drill through that R formation -- rock formation and seal it with a casing.

Q. What letter R means rock?

A. This is rock, hard rock. Down here you have strata in that rock that's producing water from long distances and it's being pumped by this inside pump by putting another line which is your air or a pump on the inside. You can do it either way, you can do it with air, seal this off here and then put air in here, air in here.

Q. You have drawn an A at the top to show the air line coming in?

A. This is the air line coming in.

Q. Does that go to the pipe that you made in the center?

A. No this is a separate pipe going down there. It has to be a separate pipe going in there. And you seal this outside casing off and you put the air down through here.

Q. Is it in a pipe there coming down?

A. This is a big pipe right here. This is a big pipe.

Q. I understand one pipe but I didn't understand what happened to the air once it's inside the casing.

A. The casing has to be sealed here. Are you using your casing now as -- you have to have a good casing. If that casing is broken there anywhere you

would have to have another pipe in this here. You have to have two pipes down to your water to use air.

Q. Is that two pipes and a casing when you say --

A. It could be either one. I don't know the condition of that casing. That casing may be kind of rotten, then you would have to put two pipes down here.

Q. So it might be just one pipe and a casing or two pipes and a casing?

A. Two pipes and a casing. Well, you have got so the air goes down the sealed off casing like that clear down to here and it takes your water out of here.

Q. You have drawn that arrow then as the water that's coming out?

A. Coming out.

Q. That's being pushed up by the air?

A. Pushed up by the air. Some of the wells that were good enough with a good enough casing would operate that way. If it wasn't and you were still going to use air to lift it you would have to put down another pipe inside that casing down to this same level. Have I answered your question?

Q. I think you have. I have one exhibit that I want to show you but why don't we take a break here and I will leave the exhibit with you during the break?

A. That's a poor drawing. I think we could get

many drawings from piping.

Q. I think that will be helpful from the explanation you gave. I am going to ask the Court Reporter to mark that and we will tape it so the two sheets you are drawing on stay together.

A. This may be 200 or 300 or 400 feet down or 500 feet down. You have to get down into something solid like that.

Q. That drawing that you made we will mark as Exhibit 132. Let's take 10 minutes then.

(At this time State of Minnesota Deposition Exhibit 132 was marked for identification by the Court Reporter.)

THE WITNESS: I can translate these to this picture right here very easily because this is what they put in over here.

BY MR. SHAKMAN:

Q. Why don't I ask you a question and I will get to that. During the intermission I handed you a document and I guess we need copies for the Court Reporter.

MR. COYNE: Off the record.

(At this time a discussion was held off the record.)

BY MR. SHAKMAN:

Q. Mr. Horner, I am showing you Minnesota Exhibit 120 and Exhibit 120, these two documents came to us stapled together. Exhibit 120 is a memo from Mr. Holstrom to you dated April 20, 1955 and bearing an identifying stamp at the bottom Number 102250. Exhibit 120 A is a handwritten page bearing the stamp 102251 and only is identified with the name "Dick" written in the upper left corner. I would like you to take a moment to look at those two pages.

Mr. Horner, have you had the chance to read those two pages marked as Minnesota 120 and 120 A?

A. Yes, sir.

Q. In Minnesota 120, Mr. Holstrom's memo to you of April 20, 1955, this one here, what is Mr. Holstrom proposing in regard to the deep well water supply?

A. I think it's very clear in his picture that he needs the supply to relieve the use of City water that was given to us.

Q. When you say "to relieve the use of City water," do you mean to replace the City water with another supply?

A. Another supply.

Q. And from this memo or from other knowledge you have why would he want to replace the City water with another supply?

1 A. That would be a question that I would ask him
2 right off the bat. His estimate -- now, let me put
3 this down. I can't remember this situation. I can't
4 place it exactly in my mind but we have had similar
5 ones come up all over the country and I would want to
6 know, either by a telephone call or a contact with one
7 of my men, with Rademacher, why he has added such a
8 very high price to the use of City water.
9 Q. That seems high to you?
10 A. Oh, yes, very high. From the amount of water
11 we use his estimate is about two or three times as much
12 as we actually should be using and the first thing
13 would be careful of the amount of water we use. Now,
14 that's without knowing the situation in detail. I
15 probably shouldn't have said that but I am sure when
16 this letter reached me it would come up and I would
17 want to know. I don't know what the answers were that
18 we got. My impression was that we didn't put in the
19 well. Now, I don't know whether we did or not.
20 Q. Here he talks about a hydropneumatic system.
21 Is that basically a pressure tank?
22 A. That's exactly the system I put right here.
23 Q. The one you drew in Exhibit 122?
24 A. Yes, on that, that's exactly that system
25 with the casing. This one was not -- I did not show

the casing on this one but I did on this one. This is the installation that he was considering.

Q. Let me get to that in just a minute.

A. It has another pipe down there.

Q. Let me let you draw that in just a second. But before I get to the drawing I wanted to be clear on what Mr. Holstrom had in mind when he said a hydropneumatic system with a deep well pump. How, is a deep well pump different than the air driven system you showed?

A. That's a deep well pump.

Q. That's a pump down in the well?

A. No, it isn't a pump down in the well. It's called a pump but you are putting air pressure down there to get the water up. That's pumping in general terms.

Q. So deep well pump to you would mean a system pushing air down to bring the water up?

A. Well, it could mean either one but in this one it is air.

Q. This one, you are looking at that second page, 120 A. Before we get to that let me ask you to look at this and see you list various prices including a pump installed, $1,720. The deep well pump Mr. Holstrom had you don't recall specifically what he had in mind?

A. Here he shows what he wants.

Q. The next page?

A. This page right here.

Q. Let's turn to that next page. Do you recognize the handwriting on that, that's Minnesota 12[illegible]

A. Would that be your handwriting?

A. Not my handwriting, no. I am not that good a writer.

Q. Would it be Holstrom's?

A. It would be Holstrom's. What he is giving me is what his pump -- the whole thing. He is giving me the information on the whole installation right here.

Q. Who is "Dick" written at the top?

A. This is a twelve inch casing here.

Q. Let me ask you to draw that. This is a drawing that was done in the intermission.

A. Substituting for that. Here you accomplish the same thing by just putting another pipe outside of this.

Q. You are showing your drawing Exhibit 132 and your explanation is that another pipe placed outside of what you have shown as the well casing would describe--

A. Outside right here (indicating).

Q. -- what's in this proposal?

A. Let me put down right here so you are

1 understanding it thoroughly?

2 A. No, I will add it right to this.

3 Q. Let me give you a different color to add it

4 so we can see the difference.

5 A. This is his static level.

6 MR. SCHARTZBAUER: We won't see that on

7 Herokes.

8 Q. So you need the static level -- the depth of

9 the well and the static level described to you?

10 A. Maybe it would be easier for you, Mr. Lorner

11 to do it on a different sheet if you could. It might

12 take another moment to draw it?

13 A. Well--

14 Q. And you are going to draw from what you

15 understand from that Exhibit 120 A?

16 A. We will put a ground line out here. I know

17 this takes down here. And we have got depth of well is

18 down here. Now, this is 90 feet. Now, the --

19 Q. Could you mark the ground again as you did

20 with the other one as a G so we know that's where the

21 ground is?

22 A. This is solid ground. The whole thing is

23 ground and this down here is the same thing down here

24 a duck. What did we call that.

25 Q. I think I called it a subbase.

MR. SCHWARTZBAUER: Call it muck on for muck.

MS. MARTIN: 'Gunk' is what he said.

MR. SCHWARTZBAUER: I will take Kathy's.

BY MR. SHAKMAN:

Q. Put in 'mucky area'.

A. The static level in here is 90. We have a water line down here clear across. The static level is 48 feet down to the same point, 48 feet. This is your static level. You are not doing anything with it it just stays right there. The water line is right there.

Q. Could I ask you one thing? It says, 'Depth of well 90 feet.'

A. I haven't got the well in yet. I use this figure, that's the static level. We have to get a pump in there to get that down. We are going backwards.

MR. SCHWARTZBAUER: Why don't you let him draw the picture?

MR. SHAKMAN: Go ahead.

A. Here we are putting -- we had best put the casing down where it should go right here because it's cased. And that's an open casing. In here he has -- and this is 12 inches across there. But in here he has an air lift one-half inch pipe inside a four inch pipe

1 He has a four inch pipe coming down in here with an
2 inch and a half pipe, we will put it on the side like
3 we did over here. This is an inch and a half pipe
4 coming into that. And this is sealed with our water
5 going any place you want it to go. It may be the full
6 size or it may be a smaller connection. This goes
7 wherever water is going. He says this inside pipe is
8 an inch and a quarter or inch and a half. It goes all
9 the way down. This one is four inches. This goes down
10 air lift pipe, 120 feet long, it goes way down beyond
11 this point right here, way beyond where he is
12 correcting for it, it goes clear down to this inch and
13 a half pipe. Put the pipe in first. 120 is another 40
14 feet down here. This casing may stop at that spot but
15 this one goes clear on down. This one goes all the way
16 down. This is another 90 plus 30. Wouldn't that be
17 another 30 feet?
18 MR. SCHWARTZBAUER: Yes.
19 A. Now, that's open to the water. I closed it
20 off. Why I did that I don't know.
21 Q. Is that the four inch pipe you have drawn way
22 down to the bottom of the page? That's this pipe right
23 here that he says he has got a four inch pipe. Where
24 is that now? This pipe right here. This inch and a
25 half pipe is inside the four inch pipe.

Q. You haven't shown the inch and a half goin down?

A. This inch and a half pipe goes down probably all the way probably not. It doesn't say how long the inch and a half -- oh, here it is. The inch and a half pipe goes down 120 feet too. It goes clear down to there. So I have to connect them or can you see that connection?

MR. SCHWARTZBAUER: Well, I think now that you have stated they are connected it's fine.

MR. SHAKMAN: We can follow it.

BY MR. SHAKMAN:

Q. Is the air coming on the inside of the four inch pipe, is that where it's coming?

A. The air is coming in here.

Q. That's the inlet at the top?

A. This is your air line.

Q. Could you make an A where the air comes in so we will know what that signifies?

A. Well, I want to show it as he shows it. Air lift, 1-1/2 inch pipe 120 feet long. They are both the same length so that's all right. Inch and a half.

MR. SCHWARTZBAUER: I think Mr. Shakman wants you to make an A for air or why don't you write the word "air" so we can see where the air comes in

next to the one and a half inch pipe?

A. And these two go down. This has to be sealed so this puts the whole thing under pressure.

Q. The top of the four inch pipe is under seal, is that correct?

A. That's right. This has to be sealed. This can be open. It should be sealed. You could use any kind of a seal there to keep dirt from getting down into a pipe.

Q. You have covered in at the ground level between the four inch pipe and the casing?

A. Yes, but that should be sealed and I am sure he is engineer enough to know that it had to be sealed. Whether it was actually sealed by a permanent connection there isn't important.

Q. You are saying sometimes they were and sometimes they are not?

A. They always are. You have to seal that otherwise you can get dirt or anything else down into the bottom of your line and you are in trouble. We usually recommend that that be at least partially covered with a plate there so.

Q. That's to keep things from getting down the well?

A. Right.

Q. But you don't need a pressure system?

A. Oh, no, this pressure system is all within this four inch pipe. Let's draw it down there so we will see it better. I didn't make it that long. I did put that down there. Now, this I will just take a single line that goes down there and double it down when I go down there.

Q. That single line in the center represents the 1-1/2 inch?

A. That represents this 1-1/2 inch pipe that's down here. That represents this 1-1/2 inch pipe there. It says -- this is the inch and a half inside the four inch pipe. This is a four inch pipe. This goes clear to the bottom and your water line goes up in here someplace.

Q. Would water line be what's referred to as static level in Mr. Holstrom's note?

A. That would be the static level with the five inch. When you pump them that drops down here, according to him, five feet. How should I label that?

MR. SCHWARTZBAUER: Why don't you label this static level line, perhaps just make an SL.

THE WITNESS: Static level.

BY M. STARMAN:

Q. And then "DD" for draw down. And draw down

1 indicates where the water level proceeds to when it is
2 pumped?
3 A. Draw down of water.
4 Q. Would you explain draw down?
5 A. When you start to pump, you start to pump, it
6 pulls this surface -- this level of the water down to
7 this level.
8 Q. And that's the level outside the pipe but in
9 the casing, is that correct?
10 A. Inside the casing but inside this outside
11 casing, 12 inch casing. I don't how far that casing --
12 he doesn't say how far that casing goes down.
13 Q. I just wanted to be clear. That's not the
14 level inside the four inch pipe. The four inch pipe is
15 under pressure so this is outside that pipe, is it not?
16 A. That's not what he is saying here.
17 Q. Clarify it for me.
18 A. When you have stopped -- it's sealed up here
19 but it's open down here. So this water level is
20 figured from here to here. But when you start pumping
21 this is blowing air down here and it's lifting water up
22 this way.
23 Q. That's up inside the four inch pipe?
24 A. Up inside the four inch to wherever you want
25 to go.

MR. SCHWARTZBAUER: Inside the four inch pipe or 1-1/2 inch pipe?

THE WITNESS: This is -- the four inch pipe is on the outside and the inch and a half pipe is where you get your air down to here.

MR. SCHWARTZBAUER: I thought you told us that the air went into the four inch pipe and went down the outside.

THE WITNESS: I am sorry, you are right.

BY MR. SHAKMAN:

Q. Could it be done either way, Mr. Horner?

A. It could be done either way. That's the way he has it here but sometimes you reverse it.

Q. Which way does he have it here?

A. He has it the same coming in here. I put it down -- I have got it down right, but I mentioned it the wrong way around.

Q. I am confused. Is the air in the 1-1/2 inch pipe?

A. The water is the in the 1-1/2 inch pipe and the air is in the four inch pipe.

Q. Thank you.

A. I marked it 'air' here but when I mentioned it to you it got reversed. We saw them both ways.

Q. On this Exhibit 120, I just wanted to review

the different figures given here. Let me start at the top and it says Dick. Who would Dick be?

A. Depth of well?

Q. The upper left it looks like it's D-i-c-k, the name Dick.

A. I don't recognize that at all. I think there was something marked over the K, isn't it? I don't know. Your guess on what that means, I don't know. I have no knowledge of that.

Q. You didn't have a Dick working with you at the time, Dick Hennessy or anyone?

A. Well, Dick Hennessy was there but I don't recall having him on this job at all.

Q. Then let me go to the first line, depth of well. That reads 90 feet. It occurred to me that might have been an error in writing since the memo talks about a deep well and it occurred to me that you might have meant 990 feet. Would you have an opinion as to whether that might have been in error from the well he is talking about?

A. You are getting into a lot of money when you go down that far. I would think for boiler water this would be right, just what he said here, going down 90 feet.

Q. I also noticed his air lift pipe was 120 feet

1 and that would not make sense, would it, with a well
2 that's only 90 feet?
3 A. This is the outside casing. The depth of the
4 well with the outside casing. The static level is 40
5 feet, the draw down is five. The pumping 150 gallons
6 per minute. Size of well is 12 feet. Now, I don't
7 think he -- that these probably go together. Casing is
8 90 feet down and the air lift is 120 feet down, which
9 would be all right with the four inch casing going down
10 the same length. This is just a protection, this
11 outside casing.
12 Q. So when it says, "depth of well 90 feet," do
13 you that means the casing goes 90 feet, is that correct?
14 A. Well, it does in this case, if these figures
15 are all correct.
16 Q. But the whole could continue much further
17 than 90 feet?
18 A. Say that again, please.
19 Q. The whole that is made for this well could be
20 deeper than 90 feet?
21 A. Could be 900 feet, as far as -- I don't know.
22 It doesn't give a --
23 Q. Then you have explained the static level and
24 the draw down and it says "pumping approximately 150
25 galperm." Would that mean 150 gallons per minute?

A. Where does it say that?

MR. SCHWARTZBAUER: Right here.

A. That's correct. The pump is capable of 150 gallons per minute.

Q. 'Size of well 12 inch.' That's the diameter of the outside casing?

A. Outside casing.

Q. 'Air lift 1-1/2 inch pipe.' You have explained that to us. If you had a 1-1/2 inch pipe would that usually have a sand screen in it?

A. A sand screen in that 1-1/2 inch pipe?

Q. Yes, that's what I was asking.

A. Well, I don't know what he had. He doesn't say. I wouldn't think he would need anything if he was this sealed off. But I am sure he would have that sealed off. That would only be to keep the dirt from getting in through it.

Q. When you are saying that is sealed off you are referring to the outside four inch pipe, is that right?

A. That's right.

MR. SCHWARTZBAUER: Excuse me. Aren't you pointing to the 12 inch casing.

BY MR. [illegible]:

Q. You said when he had that sealed off and the

1 Court Reporter couldn't tell where you were pointing to
2 and I don't think Mr. Schwartzbauer was clear either.
3 Q. This is the 12 inch that was at least sealed
4 with something not left open to the atmosphere or left
5 open so that somebody could kick some dirt down into
6 the well, packing.
7 Q. So if you had that packed off you didn't have
8 to worry about screening out dirt and grit?
9 A. Falling down into the well. Some protection
10 there should be made. If it were something permanent
11 and something that was critical I would have
12 recommended that they have a plate there that could be
13 tack welded to both units so no one could open it up
14 and get something down there out of mischief.
15 Q. I see. On the next line it says, "Pumping at
16 45 pounds pressure." Where would you measure the 45
17 pounds pressure?
18 A. This is the inch and a half -- this is where
19 you would have a little pressure gauge attached to this
20 line right here.
21 Q. That's the 1-1/2 inch line carrying the water
22 out?
23 A. Carrying the water out.
24 Q. 45 pounds is the pressure the water is under
25 then?

A. Pressure the water is under.

Q. Then the next line says the 1-1/2 is inside the four inch and the following line says it looks like perhaps 02, operating pressure 50 pounds?

A. Yes.

Q. What does that designate "operating pressure 60 pounds"?

A. That's what they are keeping their system at. It drops below 50 pounds, the pump comes on automatically and puts more water in the system.

Q. To build the pressure up to 50?

A. Build the pressure up.

Q. Will it then turn off when it reaches 50?

A. If you notice that that is -- could be a -- an ultimate pressure because he is pumping at 45 pounds. He is not up to his maximum pressure.

Q. I see. 45 is the operating and 50 would be a limit?

A. Probably the limit of the pump.

Q. As you understand a hydropneumatic system, would this water line lead into a tank necessarily?

A. As he says here, this is what he would have to have pump installed, that's what we show, one 72 inche by 16 inche tank to hold a supply of water so that the pump would have an on and off connector when

the water dropped so low automatically the pump should come on and keep it up to that and run until it got back to the water that he wants to hold in this holding tank.

Q. You would measurer the pressure in the tank then?

A. No, the pressure in the tank would be his operating pressure. I think he says down here he is going to -- his operating pressure might be 45 pounds and it's good for 60. I wouldn't want to say which is which. Here is is pumping at 45 pounds. So that would be the operating pressure in that tank.

Q. I am going to ask Mr. Kennedy to mark the drawing you have just made on the basis of Exhibit 132 A, the Holstrom memo as Minnesota Exhibit 132 A so we will have the two drawings together, your initial drawing was 132 and this drawing is 132 A?

A. Add that I do not remember.

Q. Please go ahead now.

A. I do not remember that it was installed.

Q. All right.

A. It would have been installed with a great big question mark in my mind.

(At this time, State of Minnesota Deposition Exhibit 132 A was marked for identification

1 by the Court reporter.)

2 BY [illegible]:

3 Q. Mr. Horner, I wanted to ask you a couple

4 things to followup on matters we were talking about

5 yesterday. Yesterday you brought in an item for Mr.

6 Winderaker which was written in German language and it

7 was a scientific journal article on chemical

8 constituents. I just wanted to inquire, do you read

9 German?

10 A. Did I?

11 Q. Do you read German?

12 A. I do not read German. I can work it out

13 sometimes and I tried to get that but it's been so long

14 in my care that it was just a curiosity, that was all

15 as far as I was concerned.

16 Q. It wasn't something that you were using?

17 A. Oh, no, all those products would be in the

18 last minute supply. Some of them would be -- you would

19 have to take 100 gallons to get one little tiny drop of

20 the darn stuff. Just a curiosity, that's all it is.

21 But it does show how complicated the material that we

22 are handling is, that's all it shows.

23 Q. Let's go over and look at this plant drawing

24 that you had referenced yesterday that Mr.

25 Schwartzbauer brought in today.

1 A. You haven't got an interpreter either with
2 you.
3 Q. Mr. Horner, what you are looking at is a
4 plant drawing. In the lower right it says, Reilly Tar
5 & Chemical Corporation, Minneapolis Plant, Log File
6 Number 211-10, and it has an identifying stamp number
7 at 300,000 and I have asked the Court Reporter to mark
8 this as Minnesota Exhibit 133. Can you tell us where
9 this came from?
10 A. Well, it originated from -- let's see, Mr. --
11 R. Maurice Rogers, one of the best draftsmen that we
12 ever had.
13 Q. He was with the company here in Indianapolis?
14 A. Yes, he was with the company when I was out
15 on Riley Avenue.
16 Q. And would this date 7-20-44, would that
17 indicate that he drew that in 1944?
18 A. That's the date he put his name on it. There
19 has been changes since then that he was not responsible
20 for. That would be all these red linings, they would
21 have nothing to do with that, I don't believe.
22 Q. Would you know the origin of those red lines?
23 A. I do not. I would like to know what they
24 mean -- what they mean because I can't figure it out
25 myself.

MR. SHAKMAN: Mr. Schwartzbauer, can you enlighten us on the red lines?

MR. SCHWARTZBAUER: No, I really can't. Those were on there the first time I saw the document.

BY MR. SHAKMAN:

Q. Do you recognize this, Mr. Horner, as the layout of the Saint Louis Park plant?

A. Without the red lines I recognize it 100 percent, excepting I can't, without looking at it very carefully, locate what's what on there. But without this supplementary, and it was so extensive that it was another attachment to this, it should say what this is and what that is with all these numbers and I can't -- I can remember some of them but I can't remember all of them. I would have to scratch my head what that is.

MR. SHAKMAN: Mr. Schwartzbauer, is that something that's been looked for, the attachment?

MR. SCHWARTZBAUER: Well, I can't say that it's been exhaustively looked for, it's been briefly looked for and I don't know whether we have it or not.

MR. SHAKMAN: Could I ask although I am going to continue with Mr. Horner, that you take a look to see if that is available?

MR. SCHWARTZBAUER: Sure. I had better

make a note of that.

BY MR. SHAKMAN:

Q. Yesterday I was --

MR. SCHWARTZBAUER: Excuse me, Steve. I just found out that we have looked, that Reilly Tar has looked, and it's just not in its file of blueprints.

MR. SHAKMAN: Thank you.

MR. SCHWARTZBAUER: Go ahead.

BY MR. SHAKMAN:

Q. Mr. Horner, in those documents that you mentioned that you still have, do you think the explanation for this drawing might be found?

A. I would have to search awful hard to even answer that question. Mine was just off of my desk and I asked Dick whether he wanted any of it and he said no and I don't -- I could look and see if we had anything that would say what all these were.

Q. Is that something you could bring in tomorrow morning and allow us to take a look at?

A. I am sure that Carl would be able to and Dick would be able to do a better job on isolating all this than I can. Of course this is the boring mill in the refinery and this is -- I could get the pumping system. I think this is the -- where is our office?

Q. Let me stop you for a minute because I think

1 the Court Reporter is going to have difficulty. Could
2 you bring your file with you tomorrow and allow us to
3 take a look through it and see if there is anything
4 useful for us?
5 A. I could look through in a few minutes tonight
6 and if there is anything on this map that would help us
7 I could bring it along but there is no use bringing it
8 generally.
9 Q. Do you have an objection to our looking
10 through the file that you have mentioned?
11 A. I would hate -- well, I could bring down some
12 of the file. Very little of it has anything to do with
13 Minneapolis. We didn't build Minneapolis, you know.
14 Q. It would be helpful if you could bring it
15 down and we will return it to you tomorrow and see if
16 there is anything that we wanted to inquire about.
17 Would that be okay?
18 A. Well, you wouldn't be interested in the
19 Cleveland plant, would you?
20 Q. I would doubt it but I would hate to say
21 absolutely no.
22 MR. SCHWARTZENDER: What are we talking
23 about now, are we talking about a supplemental legend
24 that would identify those numbers.
25 MR. STATHAS: I was talking about the

1 file Mr. Horner referred to as the one that he kept at
2 home and requesting that he bring it with him so allow
3 us to take it with him tomorrow. As he describes it I
4 doubt that we will have much to ask about it, but since
5 there is no other place to look for the code to this I
6 thought we could help him out and serve our purposes by
7 asking him to bring the file with him in the morning.
8 MR. SCHWARTZBAUER: You are free to ask
9 him to bring anything he wants. We are all going to be
10 here for a long time if you at this late date ask him
11 to bring down whatever he has at home. I have no
12 concept of what that is and I really don't know what
13 his file is. Go ahead.
14 MR. SHAKMAN: Let me propose an
15 alternative. I understand that we were going to drop
16 Mr. Horner off on the way out to visit the other
17 gentlemen this afternoon. Perhaps one of us could stop
18 and take a look at that time.
19 MR. SHAKMAN: Off the record. We don't
20 need to get this on the record.
21 MR. SCHWARTZBAUER: I don't know what
22 Mr. Horner is talking about. I suspect, frequently he
23 talks about 'our file,' and what he really means is
24 Neilly Tar's files and you know you have already had
25 access to Neilly Tar's files and I am not going to --

in so far as he is referring to Reilly Tar's files I am not going to bring Reilly Tar's files over here. I want him to distinguish in his own mind the things he may have home, if they are his personal papers. I don't think --

THE WITNESS: I have no personal papers, it's all Reilly Tar, because this was my Reilly Tar desk that these papers were on and it was not my desk. I have said to Dick most of the things that he wants and I am just going over the last little bit. There was a big pile of stuff that I don't want to throw away and I wouldn't want to bring any of it out as personal. It would be Reilly Tar.

MR. SHANMAN: Then it seems we ought to take a look at it and resolve it.

MR. SCHWARTZBAUER: Mr. Horner, I think that that's an imposition.

THE WITNESS: I do too.

MR. HIRD: Mr. Schwartzbauer, I think, if I understand Mr. Horner's description directly these were Reilly Tar documents which he took home with him at or about the time you retired.

THE WITNESS: Just to clean out my desk thoroughly and the ones that are of any interest to Dick or subsequent -- everything I have there would be

duplicated in the files that you already have gone through.

MR. [illegible]: Who has made --

MR. HIRD: Which seems to indicate to me that these were not documents that may have been gone through at the time you responded to the document request.

MR. SCHWARTZBAUER: I haven't the foggiest idea whether they are or not.

MR. HIRD: In the course of his deposition Mr. Horner has referred to these several times and having looked at his file the night before, if I recall. It seems to me that falls within the rules as documents that he looked at in order to refresh his recollection in order to testify. You have looked at these documents in between days of testimony.

THE WITNESS: I looked at all of them to refresh my mind as much as I could on some of the problems that we have had.

MR. HIRD: During the course of this week you have been looking at them?

THE WITNESS: I did to find some information on the amount of water that our still produced and I didn't find anything out of Minneapolis on that and we are talking about another plant, which I

1 don't think should come into it. It's another plant
2 with water that was coming in.
3 MR. SCHARTSBAUER: Well, I don't either
4 Mr. Horner. I am not your lawyer, but it strikes me as
5 being rather unfair that we are now here on Thursday
6 when this deposition started on Monday and people are
7 asking you to drag from your home or else allow them to
8 come up into your apartment and start searching through
9 your personal records. I don't think that's very fair.
10 You can bring down whatever they ask you to bring down,
11 that's for you to decide.
12 MR. SIRO: Well, I do think it's
13 provided for within the Federal Rules of Evidence. I
14 don't think that what we are talking about is personal
15 records. I think we are talking about a specific group
16 of documents which he took home with him at the time he
17 retired from Neilly Tar.
18 MR. SPARKMAN: How big is this collection
19 of documents? Would it fit in my notebook here?
20 THE WITNESS: From your plant that you
21 are representing, I don't know as I can find one
22 document on it.
23 BY MR. SPARKMAN:
24 Q. How about the whole collection that you
25 brought home from Neilly Tar?

1 A. Well, those plants that we built and some of
2 the modern things that we added to it I had to have in
3 my file and I have scripped it down to almost nothing
4 of any particular value to you or anybody else passing
5 it on to Dick. I don't think I could find anything
6 excepting what I showed this morning that is not -- has
7 anything to do with our operations here, still
8 operating data, things like that, I don't think you
9 would be interested in at all.
10 Q. Do you have a problem with our looking at it.
11 A. Do I have a problem in looking at it.
12 Q. With our looking at it.
13 MR. SCHWARTZBAUER: Under what
14 circumstances?
15 THE WITNESS: I think my own attorney
16 should say whether I take those out and that has
17 nothing to do with Minneapolis.
18 MR. SHAMAN: Who is your attorney?
19 THE WITNESS: Right here.
20 MR. SHAMAN: You are designating Mr.
21 Polack?
22 THE WITNESS: If he says I should bring
23 it down I will bring it down.
24 MR. SCHWARTZBAUER: We have arrangements
25 this afternoon to talk to people that you said you

1 wanted to talk to Mr. Courtney and Mr. Carlton Edwards
2 and Mr. Mitchell and the latter two are at their
3 nursing homes and going to be waiting for us. If you
4 think you are going up into Mr. Horner's apartment and
5 start prowling through his apartment, while you are
6 doing it I can't be in two places at once.
7 MR. SHAPMAN: Let's determine how many
8 papers we are talking about. I think this whole
9 discussion springs from the fact you asked him whether
10 he has a legend on the map.
11 MR. SCHWARTZBAUER: That have been
12 identified by a number of witnesses and now you want to
13 start prowling around this man's apartment. We can't
14 talk over one another.
15 MR. SHAPMAN: Please finish.
16 MR. SCHWARTZBAUER: I am finished with
17 that statement.
18 MR. SHAPMAN: I would like to make a
19 statement. I think your characterization of prowling
20 about Mr. Horner's apartment was unjustified and
21 undignified and never suggested. What we did suggest,
22 as Mr. Bird explained, was that document that Mr.
23 Horner looked at for purposes of refreshing his
24 recollection and which apparently came from Reilly Far
25 Company when he left, are documents which we are

1 entitled to examine under the rules.

2 There appears to be some confusion, Mr.

3 Schwartzbauer, as to whether you represent Mr. Horner.

4 I understand you do not. He indicated that Mr. Polack

5 does.

6 I was trying to determine from Mr. Horner how

7 large a set of documents. If they are not large I was

8 going to suggest to him that he bring them down here

9 tomorrow morning and during some of the free time we

10 have tomorrow we can look through them. You are

11 certainly welcome to look through them. I don't

12 believe that would be an imposition as he describes a

13 small set of documents. I suppose if necessary we

14 could obtain a subpoena on Mr. Horner, you have been

15 very cooperative in bringing him without subpoena and

16 we could subpoena documents pertaining to his working

17 files at the Neilly Tar & Chemical Company. I would

18 hope that we can, by discussion, resolve that. I think

19 we can do it without, as you are alleging, prowling

20 about Mr. Horner's apartment. I would just like to ask

21 him. Mr. Horner, if we had a box like this box here

22 could you put those papers in that box and would that

23 be satisfactory to hold them or would there be more

24 papers than would go in that box?

25 THE WITNESS: I could carry it and I

Don't think I could pick out one paper relating directly to Minneapolis in my files.

MR. SHAKMAN: I just want to know how big they are. Would they fit in that cardboard box?

THE WITNESS: They would -- that would be much too large a box for what I have got at home.

MR. SHAKMAN: They are less than that?

THE WITNESS: Most of that stuff is from companies that supplied us with information like to make our work for Reilly Tar a lot easier than when we went to a bunch of pamphlets from manufacturing concerns.

BY MR. SHAKMAN:

Q. I see. To keep this from getting too long I would like to request that you bring them with you tomorrow morning. Why don't you decide between now and tomorrow morning whether you want to bring them with you and then we can determine what course of action we wish to take but that's our request to you.

THE WITNESS: Okay.

MR. SCHWARTZBAUER: I don't know what you have at home, Mr. Horner.

THE WITNESS: It's a bunch of junk.

MR. SCHWARTZBAUER: I don't know what you have looked at. But I think I heard you say that

you don't have one document that relates to Saint Louis Park. I don't think you have to bring your junk down here.

THE WITNESS: Well, we will.

MR. LEININGER: I would like to make a comment for the record that at least three or four times Mr. Horner, in answering questions that have been posed to him, has said, If I can look back in my files and refer back in my files I would probably be able to answer your question but since I don't have these files in front of me I can't answer that question.. Consequently, that's one of the main reasons we would like to see these documents.

MR. SCHWARTZBAUER: I am tired of making shows for the record. This has gotten far too long and it's much a do about nothing. Why don't you get along with the examination.

THE WITNESS: I will let them subpoena me to bring them down because you know what I have got it's nothing to do with this lawsuit and I don't think I could bring a --

MR. SCHWARTZBAUER: Mr. Horner, nobody asked us or asked you before we started this deposition on Monday to bring anything along.

MR. SAAKMAN: Why don't we take a

1 minutes break and then come back and resume our
2 questions about this plan?
3 THE WITNESS: I will do my best to
4 satisfy everybody.
5 BY MR. BRADOW:
6 (At this time a brief recess was held.)
7 Q. Mr. Porner, looking at what's been marked as
8 Minnesota Exhibit 133, can you identify where the
9 boilers were located?
10 A. I wouldn't be to darn sure without a
11 reference for the numbers. I wouldn't be to darn sure.
12 Q. Do you have any other recollection apart from
13 this diagram as to where they may have been at that
14 plant?
15 A. I have nothing excepting the reference to
16 this where all these numbers are recorded. It would be
17 on a separate sheet of paper, where all these are
18 recorded.
19 Q. You would really need that to interpret this
20 map?
21 A. You would need that to interpret this map. I
22 think it's right here.
23 Q. Right here is the Number 1?
24 A. I think it is but that would be the boiler.
25 Q. Let me ask you where the refinery would be?

1 A. Well, the refinery is very obvious, this one
2 right here.
3 Q. That has the red letter R written in it?
4 A. That's the way I would interpret it.
5 Q. It's the long rectangle that extends as far
6 as the blue number 4?
7 A. That's the whole thing. I think it's true.
8 Q. And at the right end of the refinery there is
9 written "eight inch well, 909 feet," is that correct?
10 A. I would have no knowledge of that.
11 Q. I am just saying is that what is written
12 there, "eight inch well, 909 feet"?
13 A. This is building.
14 Q. That's showing a well just outside the
15 building as you read the --
16 A. The one that they are talking about in that
17 letter, yes, I would imagine that would be it.
18 Q. Are you acquainted with that well and how it
19 looked?
20 A. I have never been at this plant long enough
21 at any one time to be thoroughly acquainted with all
22 the previous installations from the time we actually
23 started to do their engineering work.
24 Q. I understand. Moving down and to the left as
25 we look at this map from the refinery are a number of

circles, with numbers 2, 3, 5, 4 and so forth. Do you see those circles?

A. Those are all tanks.

Q. Those would be tanks?

A. Yes.

Q. And from your knowledge of the operation of the plant what would they keep in those tanks?

MR. SCHWARTZBAUER: If you know.

A. Here is their dumping, their oil is all coming in from this direction.

Q. It goes from the railroad track that goes by the cooling pond, goes on the map below cooling pond?

A. I think eventually we equipped them so they didn't have to do this. But they dumped their creosote -- I don't think it's creosote -- coal tar into that well and then --

Q. Is that marked tar well, that rectangle?

A. Tar well, that's tar, and then transferred it over to the treating plant as required.

Q. Would you be aware if the railroad track leading into the rectangle marked 15, what would come into structure 15?

A. I think that was -- they tore it out. I am not too sure about any of that stuff.

Q. Would you know if they stored creosote in any

of those tanks that are between the tar well and the refinery?

A. I am sure they would have to store them in there because there is no tankage over here large enough to take that. That would be tar tanks for the use in the refinery. I think the use in the treating plant we have tar tanks down there that would be --

Q. Are you pointing to the ones with the numbers 1, 5 and 4 that are located towards the left side of the drawing?

A. I think that's one of those is the one that got pulled off its foundation and dumped.

Q. Back in the 1920's?

A. Sometime. I gave that information out before.

Q. That's what you said Mr. Rademacher had told you about?

A. I think it -- I had a big question mark whether it was Rademacher or his predecessors told me about it. That's a long time ago and I am not too sure. I have nothing in writing on it.

Q. I know it was a long time ago. Do you think they told you where the tank was located?

A. They told me where it was located and how far it was dragged from its foundation and dumped, but all things being down here this would be the first tanks

1 that got hit.

2 Q. Could it have been one of these tanks located

3 between tar well and refinery?

4 A. It could be but it wouldn't be logical

5 because that force of flow would be gradually used up

6 in coming down in further and --

7 Q. That would slow the flow down, coming down?

8 A. Spreading out a little.

9 Q. So is that your reason for thinking it was a

10 tank near the retort rather than a tank near the --

11 A. That's where the highest velocity would be.

12 It would be slowing down as it travels down and that

13 would be the deepest water at that point.

14 Q. So that would be your reason for thinking

15 where the tank was?

16 A. That would be the only reason that I would

17 have that that would be the tank.

18 Q. But you can't be sure that it wasn't a tank

19 by the refinery?

20 A. I am almost certain from memory. We are

21 going back a long time and I have never been at this

22 plant nearly as much as I was at the plants that we

23 were building under my supervision like Cleveland and

24 all over the country. This was very well operated I

25 thought and didn't need very much engineering.

1 Q. So you didn't help as much as you did with
2 the other plants then?
3 A. Oh, no. Arthur Larkin and Rademacher, the
4 persons he had were engineers that I would like to have
5 myself.
6 Q. Can you tell from this drawing where the
7 trenches may have run on the plant site?
8 MR. SCHWARTZBACHER: Now, are you talking
9 about -- excuse me. I am on the wrong side. When you
10 ask about trenches do you mean drainage trenches or
11 pipe trenches? There has been a lot of confusion about
12 that on the record.
13 MR. SHAFER: I don't mean drainage
14 ditch, I mean any type of trench that may have been
15 constructed there and used in the operations.
16 A. No information on that. You couldn't tell
17 from that map where they went.
18 Q. Did you otherwise know where they went?
19 A. No.
20 Q. Were those things that would usually appear
21 on drawings of the plants?
22 A. Not this type of drawing.
23 Q. On some other type of drawing?
24 A. A detail of any of these operations right in
25 here they would show where the piping went and the

depths from the piping, cross sections showing exactly where it went.

Q. It would be a much more smaller scale type drawing?

A. They would take an area like that and blow it up as big as this one.

Q. You are showing an area a couple inches square?

A. This whole area here would be picked out and put on a size of that.

Q. I had asked yesterday about a drainage ditch that Mr. French referenced in a memorandum that may have existed before 1941 and you said this might help you recall where that goes. Do you recall anything more about it now than what you explained to us yesterday?

A. I can't do that for you, I am sorry.

Q. Let's sit down. I have some questions on other matters now. Mr. Horner, I would like you to read the two exhibits that have been marked 110 and 111. Please take a moment to look those over.

A. Which now? What numbers?

MR. SCHWARZBURG: This document here and the next page.

MR. STATON: And the next page.

MR. SCHWARTZBAUER: Mr. Horner, here is a copy of the next one.

MR. COYNE: Off the record.

(At this time a discussion was held off the record.)

BY MR. SHAMAN:

Q. Mr. Horner, have you had a chance to read the correspondence between you and Mr. Mootz identified as Minnesota Exhibits 118 and 119?

A. I have read them both.

Q. What was Mr. Mootz' role with the company?

A. At this time he was circulating among the plants to advise on their condition of operation, I believe. He changed from a plant manager to -- he had various jobs and I think at that time that he wrote here he was correlating all our plants to a common factor of efficiency and operation and equipment and trying to bring all the plants up to the same standards.

Q. Was his concern with both refining and wood treating?

A. He is referring only to the maintenance of the equipment here, he is not getting into buying logs or doing anything like that.

Q. I wasn't asking about this memorandum, I was asking about the work you described him doing when he

1 visited the plants. Was he visiting both refining
2 plants and wood treating plants?
3 A. All plants. This is a combination plant hard
4 wood treating plant and also a refining plant. Very
5 few of our plants were just wood treating. They made
6 their own creosote oil from tar, most of them did.
7 Q. What was his particular education or training?
8 A. He was a graduate of Notre Dame and a doctors
9 degree -- I have forgotten where he got his doctors
10 degree, but he was a doctor of science.
11 Q. Could you know if that was particularly in
12 chemistry?
13 A. I thought it was primarily a chemical type of
14 degree, but because he was working for us as he was
15 getting his degree and he was very much interested in
16 the chemistry of the treating plants, so I would
17 imagine that was what he was taking in college but it's
18 been so long ago and things have gone by that I
19 couldn't say which degree he took.
20 Q. He says in here we should try to make only a
21 single pumping from the well to supply the plant being
22 the plant at Saint Louis Park. What do you understand
23 to mean only a single pumping?
24 A. As I would understand that, to have a storage
25 tank large enough so that they could pump for at least

1 days operation then they wouldn't have to have it
2 automatically kick in every so often to start it up and
3 let it run for enough time that the tank was full and
4 it would be operating off of the tank rather than a
5 pump.
6 Q. That would be a pressurized tank?
7 A. No. He is talking against that as I
8 interpret it. He just referred to an open tank, not a
9 pressure tank. An overhead tank is by far the best
10 system in the experience of the pressure tank --
11 experience. The pressure tank which he is objecting to
12 if I take it right, that's that last paragraph.
13 Q. That's your letter that went back to him, is
14 that what you are reading from?
15 A. That's what I am reading from.
16 Q. That's that Minnesota 119?
17 A. And he agreed with me, I am sure.
18 Q. If you would look at the paragraph before,
19 are you there comparing the overhead tank with the
20 pressure tank?
21 A. I am talking against the pressure tank to say
22 that every time it dropped a few pounds, bingo, on she
23 comes. It's an uneconomical way of handling the plant
24 water system.
25 Q. You favored the overhead tank?

A. Oh yes.

Q. And did you consult others in Indianapolis on whether they should go ahead with an overhead tank?

A. Well, I think I was in the downtown office at that time and I sent Holstrom a copy of it so they could decide between them which they would really want. I just expressed my opinion on what their program was and suggested that they give that some consideration, that's all I was entitled to do.

Q. Who would have been making the decision within the company?

A. Well, I expect if I wanted to put the pressure on I would have had what I wanted.

Q. Would Mr. Reilly ultimately have had to give it the okay.

A. All I would have to do is tell Mr. Reilly this is the way to do it and it would have been done that way. That's not a very good way to keep friends though.

Q. You didn't do that in this case?

A. I didn't have to.

Q. The last line of your letter you asked for some information. Do you see that, "as soon as we have received the information you mentioned"?

R. SCHWARTZBAUER: The next letter. I

1 am sorry, you are on that one. The last paragraph
2 there.
3 A. Well, the cost data and everything involved
4 to switch the two systems around, how much is it going
5 to cost us and everything like that before we can reach
6 a decision, that's all I meant. I probably didn't
7 write it very well.
8 Q. In the previous letter Mr. Wootz says they
9 are measuring the depth of the water in the well and
10 will send this to us?
11 A. Yes.
12 Q. Why would knowing the depths of the water in
13 the well be important to this decision?
14 A. This is only a part of the problem. That
15 would be only a part of the problem, how much a draw
16 down on our requirements do we have in the well, but
17 now that's only a part of the problem. Can we tolerate
18 getting by with that draw down. That's a part of the
19 decision. To me it would be a lot beter to have what
20 Frank is talking about here, a big overhead tank that
21 would give us a lot of leeway as to how we could get
22 the water up there fast enough that we would not
23 require the amount at any one time that they are using
24 water. When their stills are down use of water is
25 dropped to nothing. If you ever looked at our records

there you will find a record of the use of water somewhere in these files and it jumps way up like this and down to a pretty low level.

Q. Is the draw down a possible limitation ongoing to a different system?

A. Very much. The draw down is very critical if you are just going to rely on the capacity of the pump for taking care of your peak wants and operation.

Q. The storage tank would help accommodate the peak needs?

A. The storage tank would help take care of that problem.

Q. We earlier looked at a 1955 letter from Mr. Wolstrom to you talking about a hydropneumatic system. Is the pressure tank discussed in this correspondence with Mr. Wootz, is that a similar thing?

A. Same thing.

Q. And you don't recall whether they went ahead with that?

A. We would have taken care of it one way or the other. I am sure that the pump would be either replaced or we would be using City water which I wanted all our plants to do.

Q. You think City water --

A. I think City water under any conditions would

be cheaper.

Q. When Mr. Sinderaker was questioning you the other day he referred to a situation in 1953 in which a pump in the deep well had been freezing up and I wanted to know if you had recollections of that being a recurrent problem, the pump freezing?

MR. SCHWARTZBAUER: You mean seizing?

MR. SHARMAN: I mean by the bearings freezing. But as Mr. Sinderaker said the pump seized and wouldn't operate.

A. I don't know how to answer those things because they are insignificant to the problems we have had in the plant that are critical to our production and for the things that we should be spending our time on.

Q. I just wanted to know if you heard about the problems, that's all.

A. This darn trouble with a pump where you could buy water got under my skin. We are spending time on something that we could avoid entirely and I wouldn't want to answer that question.

Q. I guess my question is did you remember it happening, the pump freezing, that's all.

A. Oh, I had many many other problems that got under my skin, as I say, that's running a big plant for

one reason and letting a little pump have a critical problem that would shut that dam thing down didn't appeal to me one farm bit and it would be cheaper to spend more money for your water and get it without spending time on a little problem like that.

Q. Your answer was the City water supply?

A. If you can't get it outside of these special types of pumps and very high pressure go to City water I don't know, I am sure they got City water in there. Now whether they got it to run the plant or not I don't know.

Q. That exhibit Mr. Windecker showed you, Minnesota 39, was dated in 1958 and what we were just looking at was 1942, that's some 16 years there. Do you know why over the 16 years your recommendation was never pursued or that idea was never pursued of going to the City water?

A. Probably because I was doing something else and they got by with what -- they got by with what they had.

Q. You don't recall anyone here telling them though to stay with what they had, do you?

A. No.

Q. I want to ask you to look at Number 33 in this book.

(At this time a discussion was held off the record.)

BY MR. [illegible]:

Q. I just wanted to direct your attention to a couple things in there if I may. Everything I am going to ask about is on the second page. Please read as much as you would care to.

A. Well, I have read this letter before. Where are you going to ask the question?

Q. The top of Page 2, that first full paragraph. Do you see where it begins "a couple of years? Let me just read that sentence for you. "A couple of years ago we attempted to make use of our own well water again and found that the peat strata caused such a severe pumping problem that it would be cheaper to use Saint Louis Park water supply."

A. That's as you know I thought we had got it across but I think that was finally decided on.

Q. Let me ask you what you meant by "the peat strata caused a severe pumping problem"?

A. Regardless of how careful -- how much -- I drew a picture there of this going down through the rock underneath that peat strata.

Q. The picture you drew for us?

A. Yes, that first picture.

Q. This is on Exhibit 132?

A. There is this area from the ground water down here. This is all peat strata.

Q. Is that the one you call muck?

A. Muck. It's the worst muck you possibly could get it into.

Q. Could you put an [illegible] on this drawing? I think you put one on the second drawing?

A. Way down to here almost.

Q. All the way down to where are you indicating?

A. Yes, and we got into rock.

Q. Almost into rock?

A. I think we got into rock in most of these things.

Q. That's what you mean by the peat strata?

A. Yes, that's a peat strata. Well, you have in your file a picture of how that peat strata comes in.

MR. SCHWARTZBAUER: Yes, that was the document that Mr. Hinderaker marked I think as Exhibit 52 when he started on Monday, is that right?

THE WITNESS: Yes, it was.

MR. SCHWARTZBAUER: What soil report.

THE WITNESS: It was not a soil report it was a report.

MR. SHANKAN: I will get it for you in

just a second, Mr. Horner.

THE WITNESS: On our piling for that treating plant.

MR. SCHWARTZBAUER: Off the record.

(At this time a discussion was held off the record.)

BY MR. SHAKMAN:

Q. Let's go back on the record. Mr. Schwartzbauer is now showing you Saint Louis Park Exhibit 52.

MR. SCHWARTZBAUER: Correct.

BY MR. SHAKMAN:

Q. Towards the back of that there is a page headed, 'Log of Test Borings.' When you are referring to peat strata in this Minnesota 33 --

A. Fibrus peat and muck. It's described very particularly right there in this whole area down here for almost ten feet until you get down into the clay. Now, the clay and gravel is higher here than almost any other place that I bumped into.

Q. So you are referring to the area above the clay that's called fibrus peat and muck and in this case is about 10 feet thick, is that correct?

A. Just about ten feet. Now, when you are pumping out of this thing, this whole water level pro

down and some of this muck will come into your system.

Q. Why wouldn't the casing on the well take care of that problem?

A. If you could get it clear down tight into the rock and be sure that are you pulling nothing but water below the rock point then you are all right. But --

Q. Could that be explained by holes in the casing that would enable this muck water to --

A. Twelve inch cases was pulled in -- was into rock and sealed tight enough so that this muck water wouldn't run down along the side of it, you would be all right. But my fear, and that's why I recommended avoiding it, that you are relying too much on a very difficult job to be sure that you are sealed all the way -- sealed tight all the way down.

Q. Could you help me with this? If we assume from what's on Saint Louis Park Exhibit 52 that that muck is at a depth of 10 or 20 feet below the ground and there is a casing going down almost 400 --

A. Almost -- this is 90 feet or 120 feet rather. But if you are sure that this casing --

Q. Let me assume it goes go down 350 or 400 and my question would be what is the path by which the water from 10 or 20 feet gets into the well which has a casing of 400 feet?

1 A. How do you make this casing? You drive that
2 casing down through this rock. You have no control of
3 how tight that casing is against this rock and you
4 break this rock to drive your casing down and I have
5 never seen a 100 percent job where you can drive this
6 casing down through rock and say that you are not going
7 to get any leakage down where you are driving it down.
8 Q. So the space between the outside of the
9 casing and the rock would allow water to move down?
10 A. Water to move down. That's why I have always
11 been against -- where we have this situation trying to
12 get a good well out of it.
13 Q. Would holes in the casing also be a possible
14 explanation for --
15 A. If you had a hole up here it would definitely
16 be. You would be right the same as this all the way
17 down.
18 Q. Way up there, you mean near the --
19 A. If you had the contamination and the casing
20 was right in here you would get water down here in
21 nothing flat.
22 Q. If you have the creosote and coal tar
23 materials in that muck as suggested in that Exhibit 52
24 could they go down the outside of the casing and get
25 into the water as well?

1 MR. SCHWARTZBAUER: Excuse me. I think
2 you misspoke. I don't think Exhibit 52 indicates there
3 is creosote materials in the duct. Maybe it does.
4 MR. SHAKMAN: Let's look at Exhibit 52
5 then. I wanted to go back to that Saint Louis Park
6 Exhibit 52. Ed, can you read the number stamp on that?
7 I can't.
8 MR. SCHWARTZBAUER: Wait a minute. It
9 maybe 29 C. I think that's all right although the
10 second digit is not clear. I think it's a zero, it
11 could be 9. Looking back at the first page it is
12 303321.
13 MR. SHAKMAN: With a C as a prefix.
14 MR. SCHWARTZBAUER: C as a prefix.
15 BY MR. SHAKMAN:
16 Q. My question, Mr. Horner is if we assume that
17 what was described on this page of the Saint Louis Park
18 Exhibit 52 that ends 303324. if we assume that there
19 were creosoted coal tar materials in there would they
20 also move down the outside of the casing with the water
21 that moves down?
22 A. Bore in mind that if it's creosote oil --
23 MR. LIND: Off the record, Steve.
24 (At this time a discussion was held off the
25 record.)

THE WITNESS: Does he want the answer to that question?

MR. SCHWARTZBAUER: Do you have the question in mind or do you want him to read it?

A. What the oil is doing. The gravity of the oil would put that right down to the bottom.

Q. Because the heavier --

A. It's heavier and it doesn't like to run around very well and it would take a heck of a lot of water flow if you had oil -- if oil had fallen in over here someplace and got down, it would go through this and go clear down to here and I would be very happy it where it is right there. It would take a heck of a flow down this way to disturb that oil.

Q. You are saying it wouldn't go down in my example to 300 or 400 feet?

A. Creosote oil?

Q. Yes.

A. It would go down as far as you had water, something to take it down.

Q. Okay.

A. And then even in the ground it likes to get down to a good substantial base.

Q. Let me ask you to look at the last paragraph back in that 1952 memo and that recounts an incident in

1 [illegible] Why don't you take a minute to look at that last
2 paragraph?
3 A. That was all done.
4 Q. Let me ask you about the first sentence. The
5 first sentence says, "When Mr. Mitchell and I were in
6 Minneapolis in 1940 we went to the State Board of
7 Health." Where did that take place?
8 A. Where did the place -- where did they meet?
9 Q. Yes. Where did you meet with them?
10 A. At our office at Saint Louis Park.
11 Q. And when you say the Board of Health, was it
12 more than one person?
13 A. Several people there, yes, there were.
14 Q. Do you know the background to that meeting,
15 why it was arranged?
16 A. It was arranged because of the complaint of
17 creosote oil -- contamination by creosote oil.
18 Q. Was that the purpose you and Mr. Mitchell
19 went up there for?
20 A. That was the purpose, to find out what their
21 complaint was and see if we could reach some conclusion
22 or some way of satisfying their objection to our plant
23 there.
24 Q. Now, in the next sentence it says, "One of
25 their complaints was possible source of underground

1 water contamination originating from oil dripping from
2 the trains onto the ground immediately after they were
3 pulled out of the treating cylinder. You had written
4 one of their complaints. Did they have some other
5 complaints too?
6 A. You can read on some of their other thoughts.
7 We were satisfied with that but that was not the
8 complaint.
9 Q. I don't see their other thoughts. That's the
10 only one I see in that paragraph because you then
11 describe that incident.
12 A. Don't you have where they recommended some
13 work on phenol.
14 Q. Because no, I see in the last sentence they
15 say, "Remove phenol from water distillation and install
16 oil separator ?
17 A. Yes, that was done.
18 Q. Their complaints were about the drainage
19 water then?
20 A. No, their complaint was first that the
21 drippage of creosote oil onto the ground has seeped
22 down into the underground water supply.
23 Q. Couldn't that have been correct based on the
24 spill you told us about earlier?
25 A. Now, that spill was something entirely

1 different. That didn't show on the surface, but they
2 went out -- we went out of the treating plant where the
3 trams come right out with -- after all this treating
4 where creosote oil and regardless of what you do, there
5 is going to be a little drippage from those as they are
6 pulled out. We can't leave them in there long enough
7 to completely dry up and so that behind any of the
8 treating plants you see that little drippage onto the
9 ground and they thought that was where their trouble
10 was, that that drippage was going on down into the
11 ground water. So we demonstrated to them that it was
12 only a surface drippage, we just went down through that
13 surface just a few inches and you have got their and
14 four inches down it was perfectly clean.
15 Q. You did that yourself?
16 A. Did that myself to prove to them that it was
17 not coming from our own plant at that time.
18 Q. And their concern was the creosote oils
19 getting into the underground water supply?
20 A. That's their concern. Our concern, I don't
21 think we had any.
22 Q. I was just asking for their concern.
23 A. That is that that was their concern of that
24 drippage getting into the underground water supply.
25 Q. This was right out by the retort?

A. That was the -- as the trams came right out of the retort.

Q. Did you tell them at that time about the spill that had taken place in '26 or '28 by the retort?

A. That spill was never mentioned until it was mentioned by me in this meeting. I thought you ought to know about it and I talked with Carlton Edwards and he thought the same thing, he didn't remember it or if he ever knew about it, but it always worried me a little bit because Mr. Reilly was very much concerned about that and the letter that was sent down to me before the retort -- before the -- he took and he said he was going to put this in his lock box. No one has been able to get their hands on it.

Q. I recall that. Going back to this incident with the health officials, did Mr. Larkin or Mr. Mitchell or anyone else from the company mention that spill to the health officials?

A. I didn't and they didn't know about it, apparently, or I don't know if Larkin was -- I am sure he knew of the spill and I think most of them knew of that spill up there. Well, they had to, they had the tank off its foundation with a lot of oil on the property, but it was never mentioned to me or to anyone else that I knew of that that occurred.

1 Q. And the health officials didn't raise it?
2 They didn't have any knowledge of it that they reported
3 to you, did they?
4 A. I don't think they did until --
5 Q. And your opinion at the time?
6 A. And they knew the spill and it was never
7 brought to our attention that they knew about it and it
8 came back to us that it had to be taken care of.
9 Q. That never happened?
10 A. That didn't occur. I think they knew about
11 it because we complained to them about their lack of
12 consideration by opening their dikes and running all
13 that water down on our plant. We complained very
14 bitterly about that.
15 Q. On this occasion in 1940, you complained
16 about that?
17 A. On that occasion. That's what caused the
18 problem. They opened everything they had on that water
19 level.
20 Q. Were you satisfied you complained about that
21 to the State health officials in 1940?
22 A. We complained to the State health official
23 about that.
24 Q. About the water?
25 A. About the water coming down.

Q. But you didn't tell them that it knocked the tank over too?

A. Yes, they knew about that too.

Q. With the people you met with in 1946?

A. They didn't know about it, I don't believe. We didn't mention it ever again after that.

Q. I want to ask you --

A. The original occurrence.

Q. I want to ask you about 1966, a time when they put an oil lubricated pump in at the deep well at Saint Louis Park. Were you aware of that pump being installed?

MR. SCHWARTZBAUER: I am sorry. You said 1966?

MR. SHAKMAN: '66, yes.

MR. SCHWARTZBAUER: All right.

A. Well, I expect at the time I knew about it, but my memory doesn't stir up any particular problems. I can't say yes or no to that question.

Q. I am going to skip to another topic. I wanted to ask about the water main at the Saint Louis Park plant and perhaps if we looked at the plan drawing you could show us where the water main is.

Q. Is there a code on this Exhibit 133 that shows water mains under the heading here at the bottom

1 legend?

2 A. I think there is. There should be.

3 Q. It says water main and hydrant?

4 A. Water mains, yes, that's these dotted lines.

5 I am sure you can follow those. Sewer lines.

6 Q. I would like to ask if you know?

7 A. Water line is a dashed line.

8 Q. Dashed line?

9 A. I am trying to get down here but I will have

10 to start.

11 Q. I was pointing you to the direction of the

12 refinery cooling pond area where there are a number of

13 dashed lines and I would like to ask you to look over

14 that area.

15 MR. SHERMAN: This is Exhibit 133 that

16 Mr. Horner is looking at for the record.

17 MR. SCHWARTZBAUER: I think he is just

18 looking for dotted lines. Maybe you ought to help him.

19 BY MR. SHERMAN:

20 Q. Mr. Horner, there are a number of dotted

21 lines in the vicinity of the cooling pond and the

22 refinery, is that correct?

23 A. Right.

24 Q. Would it be correct that water came from this

25 little rectangle by the cooling pond that's number 1?

and moved in the direction of the refinery or hooked up with other lines?

A. Well, this is a deep well pump and it could come the reverse way but it also --

Q. You are saying the deep well pump but the refinery water might have moved from there toward the cooling pond?

A. This is a 10 inch well, another well out here that could be going in that same system. And these little hydrants, fire hydrants I imagine, look like it to me.

Q. Let me give you a document while you are here that is dated November 5, 1940 from Mr. Holstrom to the home office and copied to you, Minnesota Exhibit 12[illegible]. I just wanted you to look at the first sentence of it, this is November 5, 1940 and in it Mr. Holstrom says, we are attaching an estimate from Barnett in regard covering our contract with them from the construction of the water main and drainage system. My question would be what was the water main that was under construction in 1940?

A. My recollection, that's why I was trying to think that I was almost certain that our plant [illegible] showed it that it was a fire protection system. Now that's from memory. I probably should have said I will

1 have to look that up. Before you write it down as a
2 fact why let me see if I can get further information on
3 it. I can't see it on this map.
4 Q. Why would you look for that information?
5 A. I think I would call Dick Hennessy, although,
6 darn it, unfortunately most of our engineering records
7 were dumped but he might have some further information
8 on that. I know when I was out there I am sure I could
9 lay my hands on it pretty darn quick, but my
10 recollection is he put fire protection in.
11 Q. So right now that's nothing?
12 A. Read that again.
13 Q. He said, "We are attaching an estimate from
14 Barnett and Record covering our contract with them for
15 the water main and drainage system. The next sentence
16 says, "The water main is completed and in service. We
17 have, however, asked for them a final test on the line
18 in full accordance with the specification submitted to
19 them. This has not yet been done but enough tests have
20 been made to warrant the 85 percent payment which is
21 now due on the water main. The rest of the memo
22 discusses another matter?
23 A. The date of that was what?
24 Q. November 5, 1980. It mentions in the latter
25 part of the memo the sump, the settling basin, and the

1 tile line as other matters that were being worked on
2 if that helps refresh your recollection about the water
3 main?
4 A. As I say, from just a vague memory here, we
5 got in some fire protection. I know it was worrying us
6 a great deal about lack of fire protection.
7 Q. Is that a concern about the insurance company?
8 A. No, not the insurance company. They accepted
9 it as it stood but from our own standpoint we hate the
10 fires that might originate in those type of plants.
11 Q. When you put a water main in in 1940 how many
12 years of useful service would you expect from a main?
13 A. It would be put in right. It would be almost
14 100 years because it would be outside culvert and put
15 in accordance with specifications, we wouldn't expect
16 any problems.
17 Q. What did they coat those with?
18 A. Tar.
19 Q. Coal tar product?
20 A. We do, specially treated coal tar.
21 Q. In a 1954 memorandum that was designated
22 Minnesota 10, Mr. Lauck reported that the water main
23 had corroded and had wooden plugs in many places on it.
24 Why would a water main that was put in in 1940, if that
25 is the same main that Mr. Lauck is referring to, be

that corroded by 1954?

A. It must be one of the old type of mains that has some damage to it. If it was put in the way I can remember there was quite a bit of discussion as to whether it would be justified as far as our insurance policies are concerned, but if that was put in as we put in our fire mains it would be there today as well as it was installed -- as good as it was installed.

Q. Lauck described it as a four inch screwed pipe, does that give you a better idea?

A. If that is described that way that just doesn't mean -- that could be most any pipe.

Q. So it wouldn't be the coated kind that could last 100 years?

A. Yes, it would have been to be fire main specifications. I know that we wanted to do it for a long time and whether we ever did it my memory ceases there.

Q. You mentioned just a moment ago it mentions Mr. Hennessy too, that some of the engineering documents for Saint Louis Park were gone. Do you know when those were lost or destroyed?

A. Well, when they ran out of room.

Q. Where was that at?

A. I think Dick said -- he went over there very

carefully himself and I think it was four or five years ago, maybe six years ago, that he said that he had to take more room and he thought going back to 1930 and 1931 was too long in keeping records so he just -- he got rid of a lot of stuff.

Q. That was after you had retired?

A. Oh, yes. I would object to taking any of that old stuff away.

Q. Showing you an exhibit that was marked as Minnesota 13, which is a 1954 memo to Mr. Lauck. I just wanted to direct your attention to Number 5, the lower numeral II up here, and if you don't mind I will read along in the record as you are reading it there. "The next problem of importance is the condition of the condensers and pans in the refinery and the vapor system out to the building. The condensers and pans are badly deteriorated. The condenser coils are not complete since they were replaced on the job and it was impossible to fit all lengths of pipe into the condensers as originally designed. As a result, the coils are too hot and excessive vapors accumulate." It's the end of the quote and then continues to discuss these vapors. Were you familiar with those condensers in the refinery?

A. This is Joe Lauck's report?

1 Q. I can show you the front page back here.
2 It's from Mr. Lauck to you dated January 28, 1951.
3 It's called Saint Louis Pork Plant Inspection.
4 A. We circulated -- we started this system about
5 that time and Joe Lauck was one of the first that we
6 used for that system of circulating among all our
7 plants and trying to bring them up into a better order.
8 This is one of his recommendations. I can't remember --
9 before we would go ahead on any of these -- this is
10 just a recommendation of a man walking through a plant
11 not running a plant, just walking through a plant, and
12 they are suggestions to -- that somebody ought to be
13 giving some thought to these problems. I am sure that
14 we would correspond and just see how bad this thing was
15 and how serious it was. We couldn't bring all our
16 plants up to standard in a few months expenditures.
17 Q. Carl Lesher described to us box condensers.
18 Is that what these are? Are these box condensers that
19 Mr. Lesher is referring to on Exhibit 5?
20 A. Well, I have never heard them called box but
21 Carl Lesher has that terminology in his own mind and
22 they probably picked up from one of the plants but it's
23 a group of coils going through a box of water and that
24 was one of the standard condensers for the still.
25 Q. And the purpose is for the water to cool the

vapors that are inside the coil?

A. The water was to cool, the vapors or the oil either one, that was being drawn from the stills.

Q. Well, do you know the water requirement of those condensers, how much water they used?

A. Well, it would be rather insignificant because of the -- there was only 60 gallons of actual water distilled out of the tar per run which is insignificant, so there wouldn't be very much of a water problem.

Q. 60 gallons of oil would --

A. No, no..

Q. I am sorry.

A. Out of 50 gallons -- out of 5,000 gallons of coal tar going into the still about 60 gallons of it is water that comes out the first end.

Q. That's the wet cut water?

A. That's the wet cut, yes.

Q. I was interested in the water that is used for this cooling in these condensers, that's why I was interested in the amount of water.

A. You got me on to the wrong water. I would say that there is no circulation of water. I mean there isn't enough -- you ask your question again.

Q. What is the flow rate of water in those

condensers if that helps?

MR. SCHWARTZBAUER: Cooling water?

MR. SHAKMAN: Cooling water. Thank you.

Q. Have you read this report all the way through?

Q. Yes.

A. Is it here?

Q. No.

A. I don't know when I can find one of Joe Liekens reports or not, but --

Q. From your general knowledge could you estimate the amount of water used in this type of condenser?

MR. SCHWARTZBAUER: Steve, you understand that the water isn't used. Cooling water isn't consumed, is it? Is it used over and over again?

THE WITNESS: These condensers are rather peculiar. The coils go down into a pan of water and I would say that that pan has not got running water through it. It just condences -- something below boiling water. They wouldn't want it to be boiling water when they were operating but it condences very easily.

Q. Will the water get much warmer in the course of this process?

A. If it does they are all equipped and I think

the, to keep very little circulation to keep it down to a temperature so that's substantially below boiling.

Q. Do you know what the optimal temperature will be for the water?

A. I would have to look up those kind of detailed things that I wouldn't be able to just say just exactly what temperature they are keeping them at. It would have to be below boiling water temperature.

Q. Do you know how much makeup water would go into the condenser initially?

A. Well, it would be a guess.

MR. SCHWARTZBAUER: I don't think we want you to guess, do we?

MR. SHAMAN: No. If he doesn't know let's move on to something else.

BY MR. SHAMAN:

Q. If the water gets quite a bit warmer than whenever it started out at, if the water warms will that decrease the efficiency of the condensers?

A. Well, you get -- your water would have to reach a boiling point before it would actually be boiling, before it would be in real trouble, so they would circulate that or discharge that water by circulating, adding fresh water to those boxes to keep it down definitely below boiling.

Q. Do you know why the condencers would have deteriorated?

A. Well, the water tanks of that nature with [illegible] years of service I think you could expect could be pretty well deteriorated because that refinery goes back to 1917.

Q. So that would just have been worn out?

A. Normal wearing.

Q. I have a few questions about the boilers. I might be able to finish in 15 minutes, if possible. Let me show you what's been marked as J.J. Exhibit 7. I just wanted to direct your attention to the first two paragraphs there.

A. Is this one of the reasons that --

Q. Let me read this two paragraphs to you because the copy isn't very good. It's a 1934 memo from you to Mr. Holstrom called Saint Louis Park Equipment Boilers. The first paragraph reads, The Hartford Report dated May 17 covering an inspection of the bottom housing boiler made by Mr. R. T. Holm on [illegible] 6 needs attention. Mr. Lauck is recovering from an operation or I would have arranged with him to visit the Minneapolis plant and reach with you a conclusion on our water problem. One of the reasons that Hartford dropped our risk a number of the years ago was the loss

of the Ironton boilers resulting from a similar condition. They took their feed water in a pond that became contaminated with tar and oil and from this report we are duplicating that experience." My first question would be what happened at Ironton that you were referencing in this memo?

A. They had a rather bad explosion, as I recall that's just off the top of my head.

Q. A boiler explosion?

A. (Indicated in the negative.)

Q. A boiler explosion?

A. No, not a boiler, but a pan explosion. They had a fire originating from leakage, as I recall. I shouldn't say what I recall, I probably should say I don't know.

Q. Let me ask you to look at the second paragraph on your memo. It says, "One of the reasons that Hartford dropped our risk a number of years ago was the loss of the Ironton boilers"?

A. Yes, that's right.

Q. That's what I was asking if you could recall the boilers particularly?

A. Well, I didn't read that part of the letter.

Q. I read after that.

A. I see what they are talking about now. That

1 was a rather serious explosion. They had a fire too. As
2 I remember and it's very obvious from this little
3 paragraph there that that's what was being referred to.
4 Now, I can answer some of your questions.
5 Q. Okay. What was the cause of the loss of the
6 Ironton boiler?
7 A. The oil getting into their boiler.
8 Q. Coal tar oil?
9 A. Coal tar oil from this condenser.
10 Q. Is that how it occurred, it went from the
11 condenser?
12 A. That's where the contamination started, as I
13 see it here. Do you want me to see if I can find any
14 more information on that and answer your question on
15 that tomorrow?
16 Q. If you could find more I would appreciate it.
17 If you remember anything further now on that I would
18 like to hear that too?
19 A. I would like to -- that's rather a
20 complicated situation. I don't believe I should
21 comment on it without a refresher.
22 Q. Where would you look for the information to
23 refresh yourself?
24 A. I don't know. I might have to go down to
25 the office. I don't know.

1 Q. When you say here that we are duplicating
2 that experience in that last line, we are duplicating
3 that experience, does that mean that Saint Louis Park --
4 A. Getting in the same situation.
5 Q. Getting oil from the condenser going into the
6 boiler intake?
7 A. I am afraid it is.
8 Q. And what would be the path that it gets from
9 the condenser to the boiler, how would that occur?
10 A. That's what I would have to review. There
11 would be several routes and one of the most logical
12 routes would be rather hard to explain. Let me review
13 my own thoughts on that if you need that answer. I
14 don't answer it properly to my satisfaction. I will
15 put an opinion in that and we will come back to it
16 tomorrow.
17 Q. Were you ever responsible for seeing that the
18 Reilly facilities obtain the necessary permits for
19 operations that may have been required by government?
20 A. Only if they were questioning on the
21 facilities at the plant and then they probably would
22 ask me about it. Robert Boyle is doing that.
23 Q. He was in charge of that area?
24 A. He was more likely to have that
25 responsibility.

1 Q. Was that seen as the responsibility of
2 someone out at the plant?
3 A. No.
4 Q. Or someone here?
5 A. No, the downtown office.
6 Q. Mr. Doyle at the downtown office?
7 A. Yes. If there were any problems he would ask
8 me about it.
9 Q. I need to go over one other area we touched
10 upon. Are you personally represented by an attorney
11 here today at this deposition?
12 A. Not personally, no. The company is
13 protecting me.
14 Q. And could I ask you in regard to our
15 discussion earlier this morning about the documents at
16 home whether you have made a decision as to whether you
17 can bring them down here for us tomorrow to examine?
18 A. I don't think they are worth bringing down
19 honestly I don't. It would just complicate things
20 because they are -- most of that has nothing to do with
21 the company, most of that you would find would be some
22 company offering services for the type of service that
23 we would be interested in and how much it's going to
24 cost and where we are going out and buying services. I
25 don't think there is more than two or three pages of

rather insignificant actual Reilly laboratory -- what you would be interested in. Anything detailed of our plant is very much more completely covered than I ever thought of here. I don't have any of Joe Liekens or any of the other men running these monthly tests and the office downtown is full of them.

Q. I could appreciate that the documents or some company wanting to sell you services we would not have an interest in.

A. Yes.

Q. But there are some others in there that you have said you have looked at at other times this week and those are the ones we would be interested in. I would just renew that request that if you could bring those others down we would like to take a brief look at them.

MR. SCHWARTZBAUER: Can you be at all specific, Steve, in what you want? I mean, you can't serve a document production request or a subpoena on somebody and say bring with you anything specific.

MR. SWARMAN: Anything, Mr. Horner has looked at this week to refresh or recollect his memory and any of the documents that he said he would like to look at. If he said he hadn't looked at them, if there are things he would like to look at -- let me confer

1 with my colleague a minute.

2 (At this time a brief discussion was held.)

3 MR. SHAPIRO: While I cannot specify it

4 now, those documents that he may have and and because

5 he removed them the company could not review them to

6 determine if they were responsive to our document

7 production request which, as you recall, was quite

8 extensive and since I understand you cannot give us an

9 assurance at this moment that everything he has was

10 reviewed or whether it was responsive to that request

11 or not, we have that area of documents that can't

12 better be defined at this moment that we are also

13 interested in.

14 MR. SCHWARTZBAUER: I haven't the

15 foggiest idea of what if anything he has.

16 MR. SHAPIRO: Could I confirm, Mr.

17 Schwartzbauer and Mr. Polack, that neither of you

18 represent Mr. Horner personally here today?

19 MR. SCHWARTZBAUER: Well, you know what

20 that's right.

21 MR. SHAPIRO: Mr. Horner, I just

22 tomorrow want to wrap up those questions about the

23 problem with Ironton and the similar problem with Saint

24 Louis Park and that concludes my questions for you.

25 THE WITNESS: I would want a copy of

this letter for sure a copy of this letter.

MR. SCHWARTZBAUER: You are referring now to U.S. Exhibit 7, May 23, 1954. Mr. Horner, when you said you want a copy of this letter which one do you mean?

THE WITNESS: That's this one here that refers to this and then Joe Liekens report, I would like to take this going back on this one.

MR. SCHWARTZBAUER: Those are things that Mr. Horner wants from you, I guess. Will you give him one?

MR. SHAKMAN: Sure.

MR. POLACK: Off the record.

(At this time the deposition recessed and reconvened on the 11th day of March 1975 commencing at approximately 9:00 a.m.)

BY MR. SHAKMAN:

Q. Mr. Horner, this is the continuation of your deposition and I am sure you are aware that you are still under oath?

A. Still under oath.

Q. When we stopped yesterday afternoon I had given you three documents to take home for your review and I wanted to ask you about those.

A. And I came off this morning without bringing them with me. I am awfully sorry about that. They are on the top of my desk and I am a little behind schedule and I forgot to bring them down.

Q. That's no problem at all. Those were extras for your use and we have them all here. The first one of these is a memo dated May 15, 1954 from Mr. A. J. Larkin to the home office, Indianapolis, and you are listed as a copyee and that was earlier marked by Mr. Linderaker as Saint Louis Park Exhibit 54 and that one I just wanted to bring to your attention, the last and the first sentence reads, "I quote, 'I know that when Mr. Bolstrom's letter of May 10 reached you you were startled because of the recent experience with the boilers at Provo," end of quote. As I mentioned, this was May 15, 1954. Does this letter help you recall anything more about the time and nature of the boiler loss at the Provo facility?

A. That situation is rather vague in my mind and I haven't been able to come up with any conclusions. I had some vague memories of what my recommendations were at that time but I wouldn't want to answer yes or no to

that question.

Q. Setting aside the recommendations, do you remember any more about what had actually occurred at Provo?

A. I know what actually occurred.

Q. What was that? You may have told us yesterday but could you just go over that once more?

A. I was getting some material in the water that shouldn't be there.

Q. Is that the makeup water for the boiler?

A. Makeup water for the boiler.

Q. What were the consequences?

A. Well, if you don't have good water you are going to have trouble in a steam plant.

Q. Is that trouble with the tubes in the boiler?

A. Tubes in the boiler.

Q. Was the material a tar and oil material that got into the boiler there?

A. That would be awfully hard to say now and it was hard to say at that time.

Q. Let me show you another of those three documents we were on at the end of the day yesterday, that's United States Exhibit 7 dated May 27, 1957 from you to Mr. Wolstron. I want you to read again the second paragraph there. I will read that paragraph to

you to highlight some information that may help you recall. That second paragraph reads, One of the reasons that Hartford dropped our risk a number of years ago was the loss of the Ironton boilers resulting from a similar condition. They took their feed water from a pond that became contaminated with tar and oil and from this report we are duplicating that experience." That's the end of the passage. Do you have any reason now to think that was not a correct account of what the contamination was at Ironton?

A. I have no -- that's why I was trying to convince myself, was there anything else that was coming that. There is possibilities of other things that were going that out I wouldn't want to comment on it. I would leave that stand as it is.

Q. Did you look at any other documents to try and find out?

A. I couldn't find them. I was cleaning off the top of my desk. I wanted to save some things for my successor, I just didn't want to throw everything away and I was doing that gradually on my front porch when we were downstairs and we moved up because my wife couldn't take the dampness. We are next to a lake, the dampness on the first floor, we moved to the second floor. And these documents were put in our locker room,

which is full to the ceiling, and I dug last night until 1:00 to try to find this stuff and couldn't find it.

Q. Then you say you moved, was that just recently?

A. This last fall -- early fall, September and I couldn't find them. Now, I was getting rid of stuff then and whether I threw the whole darn bunch out I have forgotten.

Q. Those are the papers you brought back when you retired from Reilly?

A. That's right.

Q. So you are not sure now whether you have them or not?

A. I am not sure whether I can find them now. We were throwing so much away right at that time. We used to have a big house and room was no problem and moving into an apartment -- we moved into three separate apartments, the highrise over there on Washington Street, and the apartment next to us, and then this one and have been staying there for the last 10 years. So things have gotten lost in the shuffle and thrown away. I don't know where it went. I couldn't say.

Q. Within the last three years were those papers

1 you had reviewed with Mr. Kennedy or Mr. Polack or
2 anyone else at the company?
3 A. It was my job to get rid of the stuff on top
of my desk and that was only the stuff that -- a pile
5 about that long (indicating), with books about that
6 high.
7 Q. A couple feet long and a foot high, is that
8 what you are showing for Mr. Kennedy?
9 A. That I kept for my own information and I
10 thought maybe Carl Lesner might be interested in some
11 of them. That was the only reason I was not throwing
12 them away entirely is they appeared on top of my desk.
13 That's probably what I should have done.
14 Q. Have you reviewed these materials at any time
15 with Mr. Schwartzhauer?
16 A. No.
17 Q. Or with his associates?
1 A. Just the one book that had no comments on the
19 problems that we are faced with. In fact, no comments
20 on Saint Louis Park at all.
21 Q. Were these documents you reviewed with Mr.
22 Polack?
23 A. He has looked at them yes occasionally,
not in any way at all in detail.
25 Q. So last night in regard to Ironton you looked

1 there but couldn't find anything, that's correct?

2 A. I couldn't find any of that stuff but, as I

3 say, we moved and the stuff is piled high in that thing

4 and I waded -- tried to wade through and get what was

5 in there and I probably would take another couple hours

6 to get it really pulled out and get clear back to the --

7 I don't know. I would have to wait and see whether I

8 could get any further information.

9 Q. Did you talk to anyone further about Ironton

10 or Provo?

11 A. No.

12 Q. They are the same, aren't they, Ironton and

13 Provo?

14 A. No I haven't talked to anyone.

15 MR. SCHWARTZBAUER: Are they the same?

16 THE WITNESS: Same thing.

17 BY MR. SHAMAS:

18 Q. In exhibit United States 7 the last portion I

19 read said that, 'We are duplicating that experience.

20 And since your memo is to Mr. Holstrom and mention 'Saint

21 Louis Park' equipment,' I read that to mean we are

22 duplicating that experience at Saint Louis Park. Could

23 you understand that to mean otherwise?

24 A. Well, whereabouts?

25 MR. SCHWARTZBAUER: He is reading the

1 second paragraph.

2 A. I think that's correct. You interpreted that

3 correctly.

4 Q. When it referenced a Baudensen, it's in the

5 second line near the top of that page, earlier there

6 was mention of a Riley boiler. Would that be one in

7 the same, Riley and Baudensen?

8 A. Baudensen boiler. Too bad these things don't

9 print more clearly, isn't it, you have to scratch your

10 eyes.

11 Q. That is hard to read.

12 A. Awfully hard to read.

13 Q. I was only directing my question to whether

14 the Baudensen boiler and a Riley boiler were one in the

15 same?

16 A. No, they are different.

17 Q. And do you know if they had also a Riley

18 boiler at Saint Louis Park?

19 A. Whether they had it at this time or later I

20 don't know, but they had a -- that Riley is not spelled

21 the same way.

22 Q. Right. I understand that.

23 A. You understand that?

24 Q. Yes.

25 A. All right.

1 Q. Could you know the difference in capacity or
2 power of the Riley and the Baudensen boilers?
3 A. Well, one Riley would probably take the place
4 of two or three of the others. One of them is just an
5 ordinary straight tube boiler, round, some tubes going
6 through it. The other one is -- has a fire box with
7 tubes up the side of the fire box and different
8 construction.
9 Q. Would the second one with the fire box be the
10 Riley boiler?
11 A. That's the Riley boiler. They developed that
12 type.
13 Q. Do you know, did they need both boilers going
14 at once?
15 A. Not with the Riley boiler going, it had more
16 capacity but it had to be cleaned and taken care of and
17 that's -- it had to be taken out of service for a while
18 every so often.
19 Q. The other boiler was a back up then?
20 A. That's back up. It was used occasionally too.
21 I wouldn't want to say how often, but --
22 Q. Would you know if the boilers were not
23 operating, and if you would assume a material oil
24 contaminant got into the steam line, would it be
25 possible for that to move backwards down the steam line

and in that way to contaminate the boiler?

MR. SCHWARTZBAUER: I am sorry, could you repeat that?

MR. [illegible]: I will ask Mr. Kennedy to read that.

(Thereupon the requested portion of the record was read by the Court Reporter.)

A. I don't quite understand it because, as I understand it, it would be impossible. But, no, I don't know exactly what you mean. You mean it sometimes comes out of a boiler and could it in anyway get back into the boiler, is that what you meant.

Q. No. I am assuming that the steam lines coming from the boiler have a break or a hole in it and some oil is able to get in the steam line. Could that oil then pass through that steam line back to the boiler and in that way cause a contamination of the boiler?

MR. SCHWARTZBAUER: How would oil get in the steam line?

A. When it was running you have high pressure inside your line and zero pressure outside. You would just get steam lost through a hole in the steam line.

Q. I am assuming when the steam is not being generated and there is not that pressure in the line.

1 A. Steam -- that boiler out of service?

2 Q. At least for the moment, yes. What would be

3 your answer then? Is it possible?

4 A. Well, almost everything is possible. It

5 would be very very very difficult to pick a spot where

6 it would happen. It would have to be up in a vertical

7 line going down into the boiler and those -- I don't

8 recall any such line in any of our boilers.

9 Q. Would you explain what you mean by a vertical

10 line? If it would help you to make a drawing --

11 A. This contaminant is a fluid and to get a

12 fluid to flow back you have to have a drop in the line

13 and some way of getting in. Here is the top, this

14 boiler came out like that and these were all steam

15 lines.

16 Q. The circle is the boiler?

17 A. The circle is the boiler. I am giving you a

18 head-on view of the boiler, and these are all -- there

19 is a header down here and there is a multiple line of

20 pipes going up from here to here and the steam also

21 goes through some pipes through here.

22 Q. Could you make an arrow to show which way the

23 steam is flowing?

24 A. Well, here is a fire box in here and these

25 are water walls.

1 Q. Those lines are --

2 A. You have water walls from here to a water

3 level right up here.

4 Q. So we will be able to understand your

5 testimony, could you put a W for the water wall?

6 A. W. So your water is from here down to here

7 and your fire in that box is right here.

8 Q. Is the water contained within the water wall?

9 A. The water is contained within these water

10 walls, looking down on the thing.

11 Q. The note for the record, Mr. Horner, is now

12 drawing at the top of the page to give the view looking

13 down.

14 A. These water walls come out of this thing like

15 that and go down like that. See, you wouldn't have

16 this big indentation in there. That's the way they

17 circulated and so you have to get water down here and

18 put water down in here to get that circulation.

19 Q. Could you put a W in the top drawing where

20 you have the water walls from the above view?

21 A. It would be like that and the same thing on

22 this side. These all come up and tie into that.

23 Q. So I understand that the water is rising up?

24 A. Well, you have a fire box here.

25 Q. Through those water walls?

A. You are generating steam way up here.

Q. The steam is in that circle in the bottom drawing?

A. No, that's water. Here is your steam up in here.

Q. The steam is at the top of the circle?

A. The steam is at the top, comes out here, and goes to wherever you want it.

Q. And it's going in a pipe?

A. Going in a pipe. Of course, that's a very crude drawing because you have to take care of expansion here and you have to take care of expansion here. It would make it too complicated a drawing to put down in a few minutes.

Q. Could I ask you for a P to designate the pipe so we know that the pipe coming out of the boiler?

MR. SCHWARTZBAUER: Why don't you put steam pipe or something of that nature.

MR. SHAKMAN: Steel pipe would be a good idea.

A. There it is, wherever you are going.

Q. Within that steam pipe is there any type of valve or other device to insure that flow can only go in one direction?

A. This boiler is -- I have forgotten what they

were operating on, 100 pounds at least. There is no chance for any flow back against that pressure. Now when they are cleaning that part of it this is all shut off. Now, it would take -- I couldn't imagine any contamination from some pipe that goes in this direction where you go up to a tank or something like that.

Q. A pipe coming off the steam line?

A. That would come back. That type of design would be very unsatisfactory and I wouldn't tolerate it if I saw it coming like that but say it did, I would say it would be almost impossible for them to get back through here because this valve is shut off tight to our steam system and when this boiler goes out of service.

Q. For the record could you write "valve" where you have drawn a valve there?

A. Valve. That valve protects anything that's going back into the boiler from steam that's being generated on this same line from a -- this would be one of the others. They only had one of this type and this is just simply a water tube boiler. They just have some tubes in here and that's all they have. They do not have any side walls.

Q. That's the drawing you are making in the

lower right corner of the page?

A. That's the other boiler and it ties into this steam line like that and you have to shut that valve off otherwise you would be getting steam in here where you are servicing this boiler.

Q. What kind of valve would that be?

A. One of the best type valves you can possibly buy, that's an important valve there.

Q. Would you have a name for it? Not by the company, but how you describe it to someone in your business?

A. Golly, names are awfully hard for me to remember, simply a gate valve, completely open, nothing stopping the flow here. Let's look at that.

Q. You are going to draw that in the super right this gate valve?

A. Here is the gate valve. It completely goes around that thing like that and -- well, I made that a little bit short. Here is the gate valve open by a [illegible] valve up here, coming down through a deal like that. When it's closed it comes down here. I should have made that a little bit rounder like that. When it's closed this valve goes down and seals it off like that against a very carefully wedged surface so it comes right.

1 Q. What force does it open or close?

2 A. When pulling on this -- usually on the top

3 of a boiler. This valve here would be about in this

4 position here because that's a very important valve.

5 Q. You are showing with your hands that it is

6 about 3:00 and 9:00?

7 A. You have to work hard to get it moved out of

8 or the other and it comes down into here and you have

9 to pull very hard to get that tight without any

10 possibility of steam coming back here and getting

11 somebody burned badly.

12 Q. You have to do the same to open it up again

13 too?

14 A. You have a very considerable problem opening

15 it up if you don't have a good valve well taken care of.

16 It's an important valve.

17 Q. Do you know for a fact they have such a valve

18 at the Riley boiler at Saint Louis Park?

19 A. This boiler would not have been accepted

20 without one of the very best valves right there because

21 that could very easily -- if that valve failed and this

22 valve was going and a man was working down here he

23 would never come out alive.

24 Q. When you say this one, when the Riley was

25 producing steam one one was not that could be

1 seen going from one boiler to the other boiler?

2 A. Yes so fast that a man probably couldn't get

3 out.

4 Q. When it came to the boiler that --

5 A. They had to open all these places for

6 cleaning.

7 Q. Is that the water tubes that open?

8 A. Water tubes, they have to get those cleaned

9 this cleaned. They could be right up in here and then

10 he would be a dead duck.

11 Q. When you say "here" --

12 A. Cleaning this portion of the unit.

13 Q. But do you call that portion that you have

14 drawn the circle on?

15 A. That's the header.

16 Q. That's the header?

17 A. Yes.

18 Q. All right.

19 A. It's called 100 different ways. We call it

20 the boiler tubes and I have always called it the boiler

21 header.

22 Q. I have heard a reference to the boiler drum?

23 A. That's the boiler drum.

24 Q. Same thing?

25 A. Same thing.

Q. Okay.

A. This type -- this is usually the drum. When they say the drum here you know what they are talking about.

Q. On the bottom housing type they more commonly call it the drum?

A. Yes, but this Riley boiler, sometimes it's called the header because it heads up all these valves and these valves are doing most of the generation of steam or these pipes coming down here are where you get your maximum generation.

Q. This has been a helpful explanation. Just so that we understand this sheet and we use it for later reference could I ask you to write in which is the Riley pile boiler, which I understand to be the lower left? Is that R-i-l-e-y, is that the correct spelling?

A. It's spelled differently. I don't know --

Q. I think my document showed an R-i-l-e-y.

MR. SCHWARTZBAUER: So do mine.

MR. SCHWARTZBAUER: R-i-l-e-y like in James Whitcome Riley.

BY MR. [illegible]:

Q. In the lower right is the bottom housing or what would you call it?

A. This is -- I would call it just a boiler.

simple boiler or a steam boiler and that's the simplest design. I would call it that, just the boiler.

Q. You are going to write boiler in there. Maybe I can give you a better pen.

A. That to my knowledge or my memory is all they had outside of this Riley boiler.

Q. That pen seems to have stopped. Could I ask you to write "boiler," and could I ask you to write "boiler" there for your simple boiler?

A. All right.

Q. Then in the upper left, did I understand that was the view from above of the Riley boiler?

A. Yes.

Q. Do you call that a planned view?

A. That would be a good name for it.

Q. And could you write "Riley" so we know that's the R-i-l-e-y boiler?

A. R-e-i--.

MR. SCHWARTZBAUER: No, R-i.

BY MR. CHAPMAN:

Q. No. R-i-l.

A. Put it down.

Q. I think I have it right. R-i-l-e-y. And then that drawing in the upper right, was that the valve?

A. Shut-off valve.

1 . Could you just put valve in there and then
2 we will know that's the valve you have drawn on the
3 steam line below?
4 A. It's a very important valve, especially when
5 this header picks up two valves on two or more steam
6 generating units.
7 Q. Here you have written valve form below
8 this is the one in the same valve?
9 A. That's the one that has to be a good one and
10 one that was -- as you can see, if a man has to get in
11 here to clean this thing.
12 Q. Into the header?
13 . If you have 90 pounds pressure and you have
14 bad valve here that man would be cooked in nothing flat
15 if it leaked.
16 Q. Just to confirm for Mr. Kennedy's report, the
17 two valves you have written are one in the same valve
18 you have just given us a better drawing?
19 A. That's right.
20 Q. And this would be marked as Minnesota Exhibit
21 135.
22 (At this time State of Minnesota Deposition
23 Exhibit 135 was marked for identification by
24 the Court Reporter.)
25 MR. O'BRIAN:

1 Q. Mr. Horner, there was one last book that that
2 I have you yesterday that was written by Mr. Lauck. Is
3 that Joe Lauck?
4 A. Joe Lauck.
5 Q. And that was Minnesota Exhibit 10 dated July
6 20, 1959. I think you earlier described Mr. Lauck as
7 someone who was with the engineering department
8 traveling around to the different plants, was that
9 correct?
10 A. That's correct.
11 Q. How long did he do that?
12 A. He did that for three or four years, I
13 believe, something like that.
14 Q. Did he then get another position with the
15 company?
16 A. No, he retired from the company, not for age
17 but for -- his job was too hard for any man. He was a
18 very good man, a very capable man, but that -- and we
19 didn't try to replace him because -- well, the letter
20 right there would tell you the reason why that
21 sometimes the plant manager would object to being told
22 that he was running a dirty plant.
23 Q. As Mr. -- excuse me, finish.
24 A. And that was awfully hard to do but he put
25 down what he thought, not what they wanted him to put

1 Job.

2 Q. Did you know Mr. Lauck's opinions and

3 observations to be accurate?

4 A. I thought we lost a very very fine man and I

5 was awfully sorry that we gave him that job.

6 Q. Do you know where he is today?

7 A. I don't know where he is today because he

8 left with not hard feelings against me but against

9 generally the -- well, it wasn't a very pleasant

10 situation.

11 Q. I understand. I want to direct your

12 attention to just one paragraph in Mr. Lauck's memo,

13 Exhibit 17, and this is page 4, the next to the last

14 paragraph, and this also touches on something we

15 discussed earlier yesterday. Yesterday we had an

16 Exhibit 120 and 120 which were some specifications

17 about an air lift pump system and I just wanted you to

18 have that in mind while I read this paragraph from Mr

19 Lauck. It says, The 12 inch well is over 100 feet

20 deep and contains a 12 inch casing of unknown length,

21 152 feet of 4-1/2 inch pipe and 141 feet of 1-1/2 inch

22 pipe. Water level is approximately 40 feet below the

23 ground. That's the end of Mr. Laucks description and

24 we had a description also from Mr. Holstrom in Exhibit

25 120 A and then you did a drawing of a well such as was

described in Exhibit 132 A?

A. That's right, they are the same thing.

Q. We have so a new information here in that we have the lengths of both of 4-1/2 inch pipe at 152 feet and the 1-1/2 inch pipe at 141 feet. Do those facts lead you to want to change in any way the drawing and explanation you gave yesterday that we have in Exhibit 132 A?

A. This is the four inch pipe and there is the 1-1/2 inch pipe up there.

Q. This is in Exhibit 132 A for the record.

A. Right. And he calls it -- where is this 4-1/2? Where is it?

Q. He says 152 feet of 4-1/2 inch pipe.

A. He calls it 4-1/2 but it probably is on the outside, but it's normally called a four inch pipe. This is the 1-1/2 inch pipe. You see, they are the same thing. These dimensions here I wouldn't say are correct and I wouldn't say that these are correct because it's kind of hard to get those dimensions unless you find -- unless you are sure of the drilling and accept the drilling.

Q. It still would be your understanding?

A. It would be the same thing.

Q. Your understanding that the air went down the

1 4-12 inch pipe and the water came up the 1-1/2 inch
2 pipe?
3 A. That's right. And that's what I understand
4 from this too.
5 Q. Could you know a reason why you would have
6 the 4-1/2 inch pipe in this case 11 feet longer than
7 the 1-1/2 inch pipe?
8 A. I could see no objections to putting this
9 pipe any place within your water, if you wanted to
10 shorten up this or lengthen this.
11 Q. By "this one" you mean the 1-1/2 inch?
12 A. This is the 1-1/2. Shorten up that any
13 distance you want as long as you stay at this ordinary
14 water level, you get the same results.
15 Q. Thank you.
16 A. Here in mind that both of these dimensions
17 would be dimensions as reported by -- you can't check
18 those dimensions without tearing your well down.
19 Q. Did you have occasion to discuss that well
20 with Mr. Lauck?
21 A. I discussed it generally every time I got it
22 but I don't recall any specific comments on that well.
23 Q. We have had testimony that in the late 1950's
24 gravel or other fill material was put in that well to
25 fill it in up to a depth of about 150 feet. Do you

1 have any knowledge of that well being filled in the
2 1940s -- late 1950s?
3 A. I can't recall anything like that being done
4 and it wasn't my recommendation.
5 Q. Do you recall that being done at any time?
6 A. I don't recall it being done.
7 Q. Do you recall it being discussed at any time?
8 A. I don't recall it being discussed. I can't.
9 Q. In the 1950s if a plant manager wanted to
10 undertake filling in a 200 foot well with 250 feet of
11 gravel wouldn't, in the ordinary course of business,
12 that have been something that he would have brought to
13 Indianapolis for review?
14 A. I don't think I would object to him doing
15 anything they wanted. My idea was to go to City water
16 period. Those wells were a pain in the neck.
17 Q. Do you know what the company management would
18 have wanted? Was there a policy that would be given
19 for that type of improvement?
20 A. I don't know why they -- I can't understand
21 why -- I do too, because there was such a waste of
22 water in any of the operations and you would have to be
23 very careful when you went to City water that you
24 didn't waste it. After that you pump out of your
25 ground is a heck of a lot cheaper than water that you

have to buy from the City. And I think the only reason they didn't go, now this is -- well, I probably shouldn't make that, but I would also question that unless they agreed to cut down on that water -- waste of water. They would have to not waste any water if they went that way.

Q. I was trying to focus --

MR. SCHARTENAUER: Which way, you mean if they went to City water?

THE WITNESS: City water. You are wasting dollars if you use more water than needed and that's hard to change a plant to using water as much as they want it without any costs -- additional costs, than buying City water where every dollar -- every gallon costs you some money. That would be the only reason that I could think of that. Then the management of our company -- financial management of our company would question whether they would take that into consideration.

BY MR. SCHARTENAUER:

Q. You had a system at that time of work orders did you not?

A. That's right.

Q. If a well were filled in with gravel as I have described, would the usual course of business be

for so some at the light to fill out a work order describing that kind of work and send it on to Indianapolis?

A. If they are going to spend a lot of money they would have to; but if they are going to keep within their budget to do it they wouldn't have to do that. If they wanted to fill it in they could fill it in.

Q. Would filling a well with 250 feet of gravel be within their budget that they could do it on their own?

A. I am sure that would be within their budget.

Q. Would that be the case if they hired a well driller to do it?

A. They wouldn't have to hire anybody to do that.

Q. In the summer of 1982 an investigation funded by the United States Environmental Protection Agency and the State of Minnesota explored that well we have referred to as the Republic deep well; and the investigation disclosed coal tar oils and coal tar materials in that well at depths of 590 to 640 feet and again at 690 to 740 feet. These were some oil materials some heavier materials, mixed in with some sand. When they removed all that material it amounted to about [illegible] gallons. Were you aware that there was

1 such an investigation last year?

2 A. The first time I have known it is right now

3 that investigation.

4 Q. Do you know of any facts which would account

5 for the coal tar oils and the coal tar materials being

6 there?

7 A. I would be very interested in knowing that

8 because that's the first indication where that 300 or

9 1,000 gallons of creosote oil went to.

10 Q. That's what you talked about in the late

11 1920s the other day?

12 A. Yes. that's gone someplace down there and

13 that would be an indication to me that that's where it

14 decided it would be a good home.

15 Q. That's the oil you described as having a

16 tendency to sink in water?

17 A. Gravity, it would sink. But why they would

18 pick certain spots to stay would be what they rest on

19 and how they would be able to level out.

20 Q. If some of that material in the well as you

21 speculate it is from the 1920 spill, how would it have

22 reached the well from the tank that spilled?

23 MR. SCHWARTZBAUER: If you know.

24 THE WITNESS: Pardon me?

25 A. SCHWARTZBAUER: I say answer that if

you know.

A. I don't know. Unless I could get exactly where you are asking, I wouldn't be able to make any comment.

Q. I can show you on the plant drawing here if I could ask you to step over to this plant drawing, it's Minnesota Deposition Exhibit 133. In our discussions yesterday, just to the left and below the building you identified as the refinery, a deep well. Here it says, 'Eight inch well 309 feet.' Do you see where I am indicating?

A. Yes.

Q. And would it be correct that -- well, this says eight inch well, that is probably what we say Mr. Lauck describe as a 12 inch 300 foot deep well?

A. (Indicated in the affirmative.)

Q. So if we have a well, as you pointed out yesterday, there are a series of tanks between that refinery and the tar well and there is also tanks up near the retort?

A. Yes.

Q. Looking at either of those sets of tanks do you see a way that the spill that you believe occurred could have moved from either of those sets of tanks to the deep well?

A. The only reason I could think that that would occur is the only other absolute knowledge of another spill occurred and this is the one Mr. Neill was very much interested in because the spill occurred when he was running the plant in early 1960s or late 1920s.

Q. Is that the Riley Street?

A. Riley Street plant. That oil, and we don't know that's the case, that oil traveled more than this distance right here.

Q. By this distance right here?

A. This, from where the water came down.

Q. You are showing the north --

A. It came down this way.

Q. For the Court Reporter this elevation is the northeast corner of the plant site?

A. The northwest corner at the plant site is at this same elevation here, but I am talking about the very steep embankment coming down into this area. We don't have any good pictures of that or elevations of that.

Q. To summarize, you are saying that the material at Riley Street moved a greater distance than the distance shown?

A. From here to here.

Q. From here to here is from the report area to

the feed well area?

A. If it was in this area I am sure it could have moved this far or if it was in this area it could have moved that far. But I don't know how that gross level flows.

Q. As well Mr. Kennedy's report, when you said this area or this area were you pointing to the two tank areas?

A. Two tank areas. It had to be in one or the other and I couldn't tell you which area it was in.

Q. One tank is by the retort?

A. Yes.

Q. And the other tank area is by the tar well and the refinery?

A. I think this is where it occurred.

Q. This is by the retort you are indicating?

A. Because it was all creosote oil and that's where usually the creosote oil was kept.

Q. If I may look through my notes for just a minute I think I may be concluded with my questions, Mr. Horner.

On the spill in Indianapolis Riley Street, did that also come out of a tank?

A. That is long before my time and the only information that I have is from Mr. P. C. Neilly,

1 Senior and he described it as a broken tank, not
2 isolating it as the tank failed, and it went down the
3 sewer line. Something like that. I think he was a
4 little bit uncertain of exactly how that spill occurred,
5 whether it was that way or the tank failed or whether
6 it was somebody dumped into the tank or -- he didn't
7 specify that exactly.
8 MR. SCHWARTZBAUER: I didn't get what
9 you said though. Did you say a broken pipe?
10 THE WITNESS: No. This is the one that
11 goes back to Riley Avenue.
12 MR. SCHWARTZBAUER: Right.
13 THE WITNESS: I got that information
14 from Mr. Reilly who just described it as a break -- a
15 failure of a tank. It went down into the ground and 2
16 or 25 years later they found the oil at the other end
17 of the plant.
18 BY MR. SCHWARTZ:
19 Q. And you were the one who worked on recovering
20 it?
21 A. We were excavating for construction at that
22 spot and the excavator suddenly came to my office and
23 said, 'You know, you are getting some oil in this hole
24 and I don't know what to do.' I went out to look at it
25 and there was a substantial trickle just coming out of

1 the side of the well about eight feet down.

2 Q. When you say the well you mean the cert.?

3 A. The wall going down into the ground.

4 Q. The wall had been constructed --

5 A. The wall of the hole in the ground. It was

6 coming out about waist high when I got down there a

7 little trickle, and Mr. Neilly came out later in the

8 week to see his brother. He came out there quite

9 frequently to talk to his brother and I told him about

10 it and he wanted to go down and see the same thing. We

11 went down that hole and here it was still trickling and

12 we recovered about 1,000 gallons of oil.

13 Q. What kind of oil was it?

14 A. Creosote oil. And he said that was about the

15 same amount of oil that they lost on this tank failure

16 or whatever it was, 20 or 30 years ago before that.

17 Quite interesting to me and to him. He was very

18 interested in it because how in the devil did that

19 stuff stay there that long, but it just found a nasty

20 hole that there is where she stayed.

21 Q. How were you able to recover it?

22 A. It was just flowing out of the ground. A

23 bit somewhere where it had reached a static position

24 but it had -- the flow line where the accident occurred

25 was at least 1,200 feet away from where we found it.

1 Q. Do you recall that the subsoil material was
2 at the level that you found the creosote oil?
3 A. It was very substantial down there in that
4 area. It was filled and refilled with gravel and
5 cinders, everything down to about three feet below the
6 surface.
7 Q. What do you mean when you say that the subsoil
8 was substantial?
9 A. Yes, the subsoil was very substantial.
10 Q. What do you mean by that?
11 A. I mean by that that it was -- had been there --
12 there had been no disturbance of that soil down there
13 for years when I say it's substantial. You are getting
14 down to original ground at that level.
15 Q. Was it a clay?
16 A. No, it was a gravel but very well packed with
17 clay. It was a solid area. You had to really take a
18 pick axe to get through it.
19 Q. Was it a fine gravel?
20 A. Well, there was a little gravel and as I
21 recall it, you are going back 20 years too. Golly, as
22 I recall it we had a heck of a time drilling that hole --
23 digging that hole out anyway.
24 Q. Did any of the oil move through that hard
25 gravel?

A. There was a little on top of that very hard part because we had gone down a few feet below it before it started to trickle out. It was up to my waist almost where it began to trickle out.

Q. After you did this recovery at Wiley Street did you ever find any more of the oil at Wiley Street?

A. It had to dry out before we could do any more for that construction that we were doing and we just kept buckets down there and, as I say, it was a little over 1,000 gallons that ran out there, probably a week.

Q. After that week was there of another time you found it --

A. It was certainly a batch of oil that had gotten underneath there. We got below it at just the right spot where it would flow.

Q. Before you could use the oil you recovered what did you have to do with it?

A. It was sent from Wiley Avenue over to Minnesota Street plant and processed as though it were crude oil redistilled.

MR. [illegible]: I have no further questions, Mr. Horner. I thank you for your cooperation throughout the last three days.

THE [illegible]: Thank you for being considerate to me.

MR. SHAKMAN: Let's take a few minutes break and Mr. Hird will resume.

CROSS-EXAMINATION

BY MR. HIRD:

Q. Good morning, Mr. Horner. My name is David Hird. I represented United States. It seems you have gone up the governmental ladder from the City of Saint Louis Park, State of Minnesota and now are at the United States and unless we have somebody from the [illegible] to question you this is probably as far as you will go. I would like to remind you that you are still under oath and I would like to ask you if you do not understand any of my questions to please explain to me what your difficulty is and I will try to make it easier for you. I would also like to ask you to catch me when my voice tends to get softer because I am a very soft-spoken person by nature and if left alone it may become too soft for you to hear.

A. I will try to make sure that I hear.

Q. Well, please tell me when you don't and I will try to correct it. Mr. Horner, so that you are aware of what we will be discussing today and perhaps tomorrow, I hope not tomorrow. I would like to let you know that the major focus of my questioning is going to

be about the settling basins which I believe you talked about at the point with Mr. Underaker back on Tuesday. I will be asking about some other things, but most of my questions will be focused on the settling basin such as the one you described in Saint Louis Park and at Maywood. I would like to ask you first off whether you were familiar with any other settling basins at any other Reilly plants besides Maywood and Saint Louis Park?

A. Yes. Cleveland. I think eventually almost every plant in the company.

Q. And this was the same design as at Maywood?

A. That isn't our design, that's a standard procedure.

Q. And that was the standard procedure at the time that you built the Maywood settling basin?

A. Right, that's standard procedure. I don't know who developed it but it had been standard procedure for the oil companies and everybody that has our problems, standard design.

Q. Was the Maywood design the -- I am sorry. Was the Maywood settling basin the first of the Reilly tar settling basins?

A. I couldn't say positively but I think that's correct.

1 A. But, in any event, it would have been one of
2 the early ones?
3 A. One of the early ones, right.
4 Q. And it would have predated the settling basi
5 at Point Louis Park?
6 A. Yes.
7 Q. Were you involved in the settling basin at
8 Maywood?
9 A. Right.
10 Q. Were you the detail engineer, the man who
11 prepared the drawings?
12 A. It's been a long time since I prepared any
13 drawings. I think it was Dick Hennessy that did the
14 detail work on the drawings. I don't know which one of
15 our men did the detail work of design, but they did it
16 on specifications of other companies results.
17 Q. Would you have given the specifications with
18 respect to the Maywood settling basin?
19 A. It was in the literature and we didn't have
20 to go to any other one person but it was in the
21 literature and any of the professional groups we
22 discussed that at many meetings and it was developed
23 from the entire engineering field to come in contact
24 with that type of problem.
25 Q. I guess maybe I should step back a step and

Give you an idea of what I am trying to ask you. I understood that you said that you were involved in the design of the Maywood settling basin?

A. That's right.

Q. I am trying to find out what your specific role was in the design of the settling basin in Maywood. What did you do personally in connection with that design?

A. Outside of direction, I did nothing towards it, I mean, physical drawings or calculations. I had very good men doing that job and I had other duties to perform but I checked what was done and that was all.

Q. But you directed them to follow the oil company design that had been in use?

A. That's right.

Q. And with the Saint Louis Park settling basin you directed them to follow the same type of design?

A. Right.

Q. I understand that one of the important principles in that settling basin technique is the idea of detention time. Could you explain to me why detention time is important?

A. Do you want me to make a picture?

Q. It wouldn't be necessary.

A. [illegible]: Off the record.

(At this time a discussion was held off the record.).

M. WILD: Back on the record.

BY MR. WILD:

Q. Mr. Horner, I am going to show you what has been previously marked as United States Exhibit 7. For your information this was a drawing of the settling basin at Saint Louis Park that Mr. Hennessy has made for us. So if you would like to use that and refer to that to help you in your testimony it might save you the trouble of making a drawing of your own, unless you find anything you think is inaccurate about it or if you find it too confusing.

A. It would be easier for me to put this to one side. I can see that it is in complete form but it is hard to describe it. It would be easier just to --

Q. I was just giving it to you to make it easier. That is another copy of that.

A. I could describe it better.

Q. Okay. I wanted to just make that available to you. If that would help you you can use it. If you would like to see it at any time during the examination just tell me and I would be happy to have you look at it.

A. Okay.

Q. Could you then describe the concept of detention time and why that's important in the use of the settling basin?

A. In simple form, yes. You have got a material that you are wanting to get rid of. That material will probably have a gravity of greater and also part of it will be gravity of less than water. I mean, the individual weight. So you have to calculate from the depth of the material how long those particles have to stand. Really you can't do it but stagnants to go to the top or to the bottom. You have to get those particles either to the top or the bottom because when it goes -- when -- what you are trying to do is get those out of the water and this long basin like that shows this is the time that those particles have to go up or down. You have both of them. Then when it comes over to the final part where you are taking it off you have it concentrated.

Those particles are concentrated and you take them off and treat them elsewhere for getting rid of it. Instead of being one part per billion probably over here it's one part -- one to one water, you see, of the compound that you are trying to get rid of.

So it's a matter of time that that has to settle or raise that you have to get your body of water

in here because you have them going both ways. You have some light oils in there that go to the top. You have some heavy oils going to the bottom. You have to have that stagnant enough so that movement up and down takes place, fundamental reason -- that's the fundamental basis of those settling basins.

How you get it out and how you get it off and how you go over those things is a detail. You can't apply it to all the settling basins.

Q. Am I correct in saying that the appropriate detention time or the detention time of a settling basin is a function of the size of the basin?

A. Right.

Q. And the flow rate of water?

A. You are right. And that has to be determined by laboratory tests and every way you can find out how long is it going to take that particle to get to the bottom, or how long is it going to take to separate from the water. And that time limit has got to be in the length of this --

Q. What kind of detention time is advisable in terms of making the settling basin effective? What time period would be advisable?

A. That would be entirely a guess. I would not that good. But we determined that in the

laboratory, that time limit, and we built them with enough size so that the travel of that liquid from where we pumped the water in to where we take the water out was based on laboratory tests of how much time we had to take to get those things separated.

Q. So you --

A. Sometimes we were right and sometimes we were wrong. Some of them were large and some of them were really too large.

Q. So I'm correct that you vary the size of the settling basin in order to achieve the detention time you thought was appropriate?

A. Right.

Q. I think you mentioned that at the end of the settling process there would be a discharge of water but that there would still be particles in that water and that it should then go to some other process. Did you understand the settling basin as being preliminary to some further effluent cleaning process?

A. All the settling basins that I know of either ours or someone else's, do use essentially the same followup treatment.

Q. What kind of followup treatment is that?

A. We found most successful and others have duplicated that same thing, that a straw filter is the

most successful way of picking up those other fine products.

Q. Do you know whether the straw filter was added to the Haywood settling basin at the same time that the basin was installed?

A. According to my recollection we installed that after the installation of the other. We decided we could do a better job and clean it up with a straw filter and it would be a much better material going down the stream.

Q. So at Haywood you first installed the settling basin and then at sometime later installed the straw filter?

A. That's my recollection.

Q. Do you have any sense of how much later it was that you put in the straw filter?

A. I couldn't tell you.

Q. Would it have been a couple of years or would it have been a decade?

A. I don't think so. It was where we were not satisfied that we were doing the best job we could and I don't think that took us very long. That's from memory. Let's just forget about that.

Q. Do you think it would be less than a couple years?

A. I would think so because we had our problems the first year.

Q. And the Maywood basin was installed before the Saint Louis Park basin was installed?

R. SCHWARTZBAUER: Basin or filter?

MR. HIRD: Basin.

R. SCHWARTZBAUER: Oh, the settling basin, okay.

A. Now I have a question mark in my mind and I really can't answer that absolutely correctly because they had a little unit of something up there that wasn't very successful, but where they -- after we had the experience at Indianapolis why that was taken care of at Minneapolis, changed to some extent.

Q. I am sorry, a little unit of something. Would you be referring to the phenol extraction tank when you said "a little unit of something?

A. No, that's a different unit. That is a different problem and it was in their rather small settling basin.

Q. Before they put the straw filter on the end of the settling basin?

A. That was even before they enlarged their settling tanks as I recall.

Q. What is your recollection of their enlarging

the settling tank, what is it based on?

A. A time element for getting as much material over -- separated from the water as we possibly could. So, that's from memory. Your records may be just as correct as mine.

Q. Well, I guess what I am getting at is our records, or at least the documents we have seen have not shown any expansion of the settling basin.

A. That may be right.

Q. So you don't have any independent recollection of the settling basin at Saint Louis Park being expanded?

A. I had better say I do not know for sure about that.

Q. Do you know whether there was any effluent control or effluent decontamination device of some sort at Saint Louis Park before the settling basin was put in?

A. Well, now you are getting back to the question that I would say that I don't know. If it was, it was a smaller settling basin.

Q. But you don't know?

A. I don't know definitely that that is true.

Q. I think you told Mr. Linderaker that these settling basins worked very well if they were properly

maintained. What would be required to keep them properly maintained?

A. To keep a flow of water going at the right rate you have to watch it carefully because even a valve changes its supply of water, depending on a little difference in the amount -- the pressure that's retaining. You have to watch that flow of water into it quite carefully. Do you get the picture of what I am saying?

Q. I think I do. Let me ask a question or so to explore that further. What would happen if the flow suddenly increased or increased tremendously?

A. That would change the time that that water -- time of the given cross section of the water staying in that settling basin. You have to separate both ways the little particles that are in there and if you change -- if you got good results going this fast that's the speed that that should go through and if you go that fast why your settling basin isn't worth a damn. You are going to the end with the same material mixed up as you are starting with. It takes time to separate those particles.

Q. Do you have to make sure the flow is going slow enough?

A. That has to be right on the button all the

time.

Q. What if it goes too slow?

A. Harmonize?

Q. What if the flow rate is too slow or goes too fast, when it decreases to a trickle or something like that?

A. If it's too slow you are not getting the capacity that you designed for. If it's too fast you are wasting your time.

Q. What if the bottom of the settling basin begins to fill up with sludge, would that affect the effectiveness of the settling basin in doing its job?

A. Depending on how much it was. There is going to be some settling all along there but it has to be cleaned at proper intervals to keep that under control.

Q. What interval would be proper to clean a settling basin like those at Saint Louis Park and Maywood?

A. I think it would vary all over the map on the size and everything else, on the quantity of material that is being dumped. The operator should realize that this thing is getting dirty and shut her down and clean it up. I don't think there was any definite time period that you can put on that.

Q. Would once a year be too long to wait it out

cleaning?

A. The thing could go 10 years if it didn't build up enough without cleaning because the cleaning of it doesn't help the separation a bit and that's not you are trying to get. But if you are getting a lot of dirty stuff on the bottom which might be gradually going down towards the discharge plant -- discharge you are going to get some dirty water over there occasionally. That you had better clean pretty quickly or you are concentrating it and going to get really in trouble.

Q. So I guess the question would be how high the material on the bottom was coming up?

A. How badly it accumulated.

Q. If it accumulated about two feet would that be too high usually?

A. Two feet? A couple inches would be high to me because you are wasting time. If it's settling out too much here at the start why you are wasting time, speed that up a bit.

Q. So if you had material on the bottom coming up about two inches you would be losing effectiveness in your settling basin?

A. I would say you had better clean that and watch your speed very carefully.

1 Q. And two feet would be much worse
2 troublesome?
3 A. Oh, golly, that would be horrible. If I got
4 in there and saw it under that condition I would say we
5 were really in trouble because you are losing the --
6 what you need is that particular depth for that
7 particular speed and you are losing your depth.
8 Q. And if you are losing your depth?
9 A. You are getting scuff over the wall that
10 should be down taking it off the bottom. You see you
11 are changing your speed with the amount of depth.
12 Q. And that would be --
13 A. Do I make myself clear?
14 Q. I think you are. I am taking it one step
15 farther. Would that mean that you are getting a lot of
16 material that you want to settle out, instead of
17 settling out it would be coming out the other end?
18 A. Sure. You have designed it for a certain
19 speed to get it settled and if you got that well filled
20 with settlement why you just increased that speed by
21 probably two times as fast as you have designed it for.
22 Q. So the material that should settle out would
23 instead go right through it and come right out down in
24 the ditch?
25 A. That's right, so it has to be very clean.

[illegible]. If two feet would be bad, six feet of material building up would be much much worse I imagine?

[illegible]. You have a settling basin that isn't doing a darn thing.

[illegible]. What would be the effect of the settling basin on materials that are very very close to the specific gravity of water? Would those materials be able to settle out or would they go right through the settling basin?

[illegible]. If there is any difference at all and you want to get -- and you feel that you should get that difference you design your settling basin for the most difficult ones that you feel that you have got to get out of there.

[illegible]. But things that are extremely close to the specific gravity of water would not be settled out they would go out with the water?

[illegible]. If they are right on the button they would go out right on the button, different materials of the same gravity, they would go together.

[illegible]. What about emulsions containing oil or tar or I guess it would be oil and not tar and water. Would emulsions tend to be separated out or would they go straight through a settling basin?

[illegible]. That's one of the problems that you are faced

with and there is quite a number of ways of attacking so correct that by adding materials that would break a that emulsion and adding time to your travel through your settling basin that those chemicals will break up the emulsion before they get to the end because those emulsions would go right straight through.

Q. Would you add chemicals to break up the emulsion in the settling basin before or after?

A. That could be done before.

Q. Could that be done by the phenol extraction tank or would you need a separate device?

A. It could be done any place that you are doing it if you have the facilities to do it.

Q. But the phenol extraction tank would not break up emulsions?

A. No, not in itself, but you could add stuff to break those emulsions without any problems.

Q. Do you know whether those materials that would break up emulsions were added to the phenol extraction tank in use at Saint Louis Park?

A. Well, that problem was never put to me while I was on the job, but I wouldn't tolerate it if I was on the job. There is ways of doing that without any questions and it could be you could break those emulsions.

Q. So if you knew the emulsions were not being broken up at Saint Louis Park --

A. I did not know that.

Q. But if you would you would have stopped it?

A. I would have stopped it, absolutely. You are wasting your time if you are letting the stuff go through.

Q. Would a zinc chloride solution be settled out in a settling basin?

A. I don't know the gravity of that material. I wouldn't be able to answer that without looking up some figures.

Q. What would happen if you put sulfate water through or sulfate liquor through a settling basin like the one designed at Saint Louis Park?

A. I really would want to do some testing on that before I would make any comments because if it could be broken down by any pretreatment we would do it that way. But I don't -- I was not familiar with that problem at Saint Louis Park and I wouldn't want to make a positive answer. There is nothing to indicate that it would be impossible to do. We do do it if we have the time and the effort to make provisions for that. But you have to break it up so show or other. You have to break it up so it will settle.

1 Q. What would happen if you didn't break it up?
2 A. It would go through like it was, it wouldn't
3 separate.
4 Q. There are baffles in the bottom of the
5 settling basin, aren't there, in the design?
6 A. Some of them. We tried to avoid that because
7 you have to have a double settling operation if you
8 have those baffles. Sometimes you have to have them
9 but if you can work it without you are a heck of a lot
10 better off.
11 Q. But weren't there baffles in the settling
12 basin at Saint Louis Park?
13 A. That I cannot answer. I had very little to
14 do with that installation.
15 Q. Were there baffles in the settling basin in
16 Maywood?
17 A. I don't recall any.
18 Q. What would be the use of the baffles if they
19 were in the settling basin in Saint Louis Park?
20 A. I can't figure one out. I don't know.
21 Q. How would the heavy oil be separated from the
22 effluent by the settling basin in Saint Louis Park?
23 A. I can visualize a requirement for those but I
24 wouldn't know if I was correct in my vision until I
25 actually saw the installation and saw exactly what we

were trying to do. I can visualize a situation that you would have to do that, but I wasn't familiar enough with that installation to say that it was necessary or not.

Q. Further baffles were necessary?

A. I wouldn't want to comment on those baffles.

Q. I think you said at one point that baffles would do double work if they were there. What did you mean by "double work"?

A. Well, I will go back to the principle of this whole unit. You have a material in there -- a complicated material that you are using the gravity to separate them. Now, you design this to take that long to separate them and you have to keep that speed so that the speed going through there doesn't hold them up where they -- you want to get rid of them, you have to send that through at a speed that those things would settle. Now if you put a baffle in here you are going to change that and you may have to because it's got two different materials and you are trying to separate two different materials onto the bottom after this other baffle. But I would want to study that an awful lot before I would make a comment on it. Other than that that would be a very difficult problem, engineering problem, design problem to get that in there and have

1 those baffles do that you want. I don't know whether
2 it would be possible to do it with my experience.
3 Q. If I understand what you are saying, though
4 the baffles would slow down the flow through the
5 settling basin?
6 A. If I were designing it now I would take that
7 unit here that would do the job that you want and I
8 would come out of that thing and I would have an
9 entirely different unit for different gravity and put
10 it in separate units, but I wasn't involved in that one
11 at all. I don't know their problem and I couldn't
12 comment whether it was done right or not, but that's
13 what you are doing when you put a baffle in the bottom.
14 Q. I would like to talk a little bit about the
15 straw filter apparatus. In order for that to work
16 properly how frequently do you think the straw filter
17 would have to be changed?
18 A. Well, I will tell you how we did it
19 originally, how this thing did -- in later years of
20 it's use I can't comment on. Originally the straw
21 filter built a certain restriction to the flow in that
22 trench. You have a trench coming along here. Let me
23 draw you a picture.
24 MR. WARTMAN: If you need to do
25 that to explain your answer.

A. Here is the ground line like that. You have got a trench down here with a bottom here. And you have got a flow with the water coming down like that and it's flowing against -- well, this goes down below that. That's a packed fill there, which is develop in this head and this -- this head has to flow freely beyond that point right there. Now, as this backs up the material deposited in this straw filter creates a resistance to flow through the filter and after so long a time this comes up like that going through that filter. When you get too much of a head in here, more head than you want, you shut her down and take this out and put another one in. But that's the reason, you get a head here that you don't want to get too much of a velocity through there down there. So that's the principle. That's the determination of the life of that filter per se. So that if it goes -- if your back pressure builds up to a point where you want to run it at this lower level as the ideal level, you see. So that when back pressure builds up a little bit take your straw filter out and put another one in.

Q. Could I ask you to mark the straw filter -- straw filter? Just write the word straw filter and put that in.

A. All right.

. And could I ask you to draw an arrow showing the direction of the flow? And just write "flow direction" underneath those arrows or over those arrows. Okay.

MR. HIRD: Mr. Kennedy, could you please mark this as U.S. Exhibit 31?

(At this time United States Exhibit 31 was marked for identification by the Court Reporter.)

BY MR. HIRD:

Q. Mr. Horner, what would happen if the straw filter continued to get dirty and you did have a back up of the flow and nobody changed the straw filter?

A. Nobody changed the straw filter here? I probably should be up a little bit higher. It will eventually fill that trench full of water and you will get -- you will flood your whole plant. If you leave it on there long enough it will be a blockage rather than a filter. But it is so easy to do and it's such simple operation that any plants that I caught doing it would get the devil, that's one of the simplest and most -- it's really a God-send to people with problems that that darn straw filter does a wonderful job. You can't let it back way up there like that, you have to keep it clean.

1 All you have to do, you have two of them
2 here, the one packed and you pull that dern thing out
3 and put another one in in 10 minutes, anybody that
4 would leave it in too long is just either lazy, or does
5 not know what they are doing because the strainer and
6 and your mechanism it is very simple and you can have
7 two of them and fill it with straw and pull this one
8 out and put another one in its place would take about
9 10 minutes, not over. Wouldn't you raise the devil if
10 somebody let it build way up?
11 Q. I think I might.
12 A. I am sure you would.
13 Q. Am I correct in saying that the straw filter
14 is generally useful in getting rid of the oils that are
15 lighter in specific gravity than water?
16 A. They have been very successful all over the
17 country.
18 Q. But not in getting the oils that are heavier
19 it's not used to dealing with the oils that are heavier?
20 A. It doesn't make any difference whether it's
21 top or bottom. That's the advantage of the. It does
22 a clean-up job. If you don't build it big enough so
23 that velocity through there is to high it will go right
24 through. You have to build it wide enough and keep the
25 flow down to a minimum, if you can, so that it doesn't --

1 had a chance to do its job.

2 Q. Did you ever see the settling basin and

3 screw filter in operation at Saint Louis Park?

4 A. I think Malcolm and I went out and looked at

5 it when we were there. He offered some suggestions I

6 remember.

7 MR. [illegible]: Is that Malcolm Mitchell?

8 A. My visits to Minneapolis have been few and

9 far between and they have always just been a day visit.

10 I felt, and everybody else felt, that they had some

11 very fine men up there running that plant, very capable.

12 Q. By Malcolm you mean Mr. Mitchell?

13 A. Mr. Malcolm Mitchell, yes. We went together

14 one time and then I don't know whether I ever went up

15 with Dick or not.

16 Q. But you recall when you did go up there that

17 the settling basin was in use?

18 A. We had some critisims of its use, I know that.

19 We passed our comments off to the plant, I know that.

20 Q. When was this, approximately, was it in the

21 1940's?

22 A. You can look that up on the records where

23 Malcolm and I were together. We both looked at it I

24 think, and we both offered some suggestions to them.

25 Q. This is when the settling basin was already

in place or was it before they had put the settling basin in place?

A. I think -- I think they -- you had better leave that. My memory is a little bit shy on that.

Q. So you don't remember whether you saw it or not?

A. I don't remember exactly when it was done.

Q. Do you remember what criticisms and comments you gave about the settling basin?

A. I would have to have something to help my memory on those to get what I wrote down after we got back to say what we commented on.

Q. Mr. Horner, you talked a bit about flooding and you mentioned one particular flood at the Saint Louis Park plant. What would be the effect of flood on the settling basin?

A. We talked about that time that we lost the tank. Is that the one you are figuring on?

Q. That's the one example of a flood.

A. Where they floaded the tank off.

Q. Yes, but I think that occurred in 1926 or '28?

A. Something like that, long before we had a basin in there.

Q. But if a flood like that were to occur after

you have a settling basin what would be the effect?

A. The magnitude of a flood that would lift a tank off its foundations would just tear out the settling basin and you wouldn't have any.

Q. So if there was a flood of great force it would rip out of settling basin?

A. It wouldn't have done any good.

Q. Even if the settling basin was partially buried in the ground?

A. I don't think a flood like that would lift a tank off its foundations, that the flow would be affected by anything we had in the plant, any settling basin we had in the plant, because the whole plant is covered with water, you know, and we would probably have six or eight foot of water over that settling basin. So it's all going down the river that velocity.

Q. Could you protect the settling basin by building trenches around it?

A. I don't see how you could protect it. It wouldn't do any good if you did protect it because there is such a rush of water down there. It's taking everything with it almost.

Q. Do you understand that flood that occurred in 1927 or '28 to be an unusually great flood for Saint Louis area?

1 A. I think it's the worst they ever had and
2 we never lost a cent before. In looking in our records
3 you have seen several comments on our answers up tier
4 to the Saint Louis Park officials, but this one I think
5 was probably by far the worst one we ever experienced.
6 Q. So your comments about what one could do to
7 protect this particular settling basin against the
8 flood really has to do with this one tremendous flood
9 and you might be able to protect it against smaller
10 floods?
11 A. I don't think we could have done anything to
12 protect against that flood.
13 Q. But you could have protected against smaller
14 floods?
15 A. Smaller floods it could be protected. I
16 don't think it would help very much because that would
17 extend -- if it came up to the level of that trench it
18 would spread out all over the place.
19 Q. What if you raised the walls of the settling
20 basin, would that help protect it against flood?
21 A. If you could raise them high enough to get
22 over the top and have it above any flooding conditions
23 yes, it would help.
24 Q. Were you familiar at all with the types of
25 materials that were discharged into the effluent at

Saint Louis Park? Maybe I should rephrase the question. I was going to ask you whether you were familiar with the sources of waste water at Saint Louis Park?

A. And can you repeat that question?

Q. Okay. I think what I would like to ask you is where do you think -- where do you understand the waste water came from, what parts and what processes at Saint Louis Park did it come from before it went into the settling basin? Did it come from the treating plant and if so what part of the treating plant? Did it come from the tar refinery? If you don't know just say you don't know.

A. Any place where you have tar you can have spills of course, you know that.

Q. Yes.

A. But the principle origination of contamination is from the distillation units, any place.

Q. That would be the tar refinery?

A. The tar refinery.

Q. What kind of water would come from the tar refinery?

A. There is about 30 gallons per run of water coming over and unless you are equipped to take care of that properly it's coming over with light oils and you would have to correct for it to take care of it

(At this time United States Exhibit 22 was marked for identification by the Court Reporter.)

BY MR. [illegible]:

Q. On the on record. Mr. Horner, I have just shown you what has been marked U.S. Exhibit Number 22.

MR. [illegible]: Off the record.

(At this time a discussion was held off the record.)

MR. [illegible]: Back on the record.

BY MR. [illegible]:

Q. Mr. Horner, I have shown you what has been marked as United States Deposition Exhibit 22, which is a seven page document running from Date stamp numbers 302991 through 303002. Mr. Horner, do you recognize the handwriting in this exhibit, United States 22?

A. I do not recognize it.

Q. Do you recognize the stationery as being Reilly Tar interoffice correspondence stationery?

A. Well, I never used this stationery.

Q. Okay. Thank you, Mr. Horner.

A. I don't think we ever had any.

MR. [illegible]: Off the record.

(At this time a discussion was held off the record.)

BY MR. HIRD:

Q. Mr. Horner, just so you will know in advance I am going to ask you about off the record.

(At this time a discussion was held off the record.)

MR. HIRD: On the record.

BY MR. HIRD:

Q. Mr. Horner, I notice that Minnesota 79 was written by a Mr. A. J. McLellan. Do you know who Mr. McLellan was?

A. To my knowledge I never met him but I have seen a lot of his letters and have a great deal of respect for him.

Q. Was he a Reilly Tar employee at Saint Louis Park?

A. Saint Louis Park, as far as I know.

Q. Was he an engineer?

A. I can't answer that.

Q. Let me ask you, Mr. Horner, in the middle of the first page Mr. McLellan lists six items of waste material going to the drainage ditch at Saint Louis Park. Do you have any reason to believe that Mr. McLellan was inaccurate in his description of these materials?

A. What do you mean by inaccuracy, that their

1 sources are inaccurate or what?

2 Q. Well, Mr. Horner, I think that you were not at

3 the plant very often. Mr. McLellan isn't with us and I

4 just want to make sure that you or someone with Reilly

5 Tar experience knew if Mr. McLellan had made any

6 mistakes or inaccuracies in the description of the

7 sources of material?

8 A. We wouldn't -- in the engineering department

9 we wouldn't separate those in that form, but I just

10 don't know what he is trying to accomplish and I would

11 have to read it to find out what he is -- very

12 carefully to try to find out just exactly why he has

13 separated these in that manner.

14 Q. But you have no reason to believe that this

15 is a wrong description of what was actually going into

16 the ditch?

17 A. I don't see that it makes any difference but

18 he may have some reason for dividing that up that way.

19 MR. SCHWARZBAUM: Off the record.

20 (At this time a discussion was held off the

21 record.)

22 BY MR. BIRD:

23 Q. I would like you to turn your attention now

24 to the final page of Minnesota 70, that's page 3.

25 A. This one or --

Q. Do the one that you are looking at.

MR. SCHWARTZBAUER: 72 the final page.

MR. HIRD: Yes, I think it's a three page document.

BY MR. HIRD:

Q. I am going to ask you about the second to the last paragraph.

MR. SCHWARTZBAUER: He had the one that begins in 1929.

MR. HIRD: Yes.

(At this time a discussion was held off the record.)

MR. HIRD: Back on the record.

BY MR. HIRD:

Q. Are you ready?

A. Yes.

Q. Mr. Horner, in that paragraph at the bottom of Minnesota 72 Mr. McLellan states that in 1929 quote we gave some consideration to installing settling basins similar to those at Mobile and Maywood. Do you recall any consideration in 1929 of installing a settling basin at Saint Louis Park?

A. I don't recall the date or when they started using a separating tank, no, I have no knowledge of that.

Q. Do you recall whether Saint Louis Park considered installing a settling basin for a number of years before they actually did?

A. That would only be a guess on my part.

B. SCHWARTZBAUER: I don't think he want you to guess.

THE ITNESS: I would have to say no I have no knowledge then.

BY DR. [illegible]:

Q. Reading that paragraph, the second to the last paragraph at the end of Minnesota 79, would that indicate to you that as of the date of this exhibit, which is July 27, 1[illegible], the Saint Louis Park plant had not installed a settling basin?

A. Would you repeat that, please?

Q. I think I should. Is your understanding of reading that paragraph in this letter, that as of the date of Minnesota Exhibit 79 the Saint Louis Park plant had not installed the settling basin?

A. They hadn't installed one similar to the Raywood plant and wanted to, that's all I can get out of that

(At this time United States Exhibit [illegible] was marked for identification by the Court Reporter.)

MR. HIRD: On the record.

BY MR. HIRD:

Q. Mr. Horner, I have shown you what has been marked United States Exhibit 33, which is a one page memorandum from you to R. L. Danz dated March [illegible] 19[illegible] Bates stamped 303035. Mr. Horner, do you recognize United States 33 as your own?

A. I recognize the H down here.

Q. And you wrote this document.

MR. SCHWARTZBAUER: 44 years ago Thursday.

MR. HIRD: Mr. Schwartzbauer, you have a better memory for days of the week than I do.

BY MR. HIRD:

Q. Who is Mr. Danz?

A. Well, he is the gentleman that wrote me, I guess, and that's the extent of my personal contact with him by mail. I don't know what position he had in the Minneapolis office. The name came up frequently in his correspondence. I don't know what his actual -- whether his --

Q. Were you talking in United States 33 about a proposed settling basin to be put into --

A. I can't hare you.

Q. Let me start again. Were you talking in

1 United States 32 about a proposed settling basin to be
2 installed in Saint Louis Park?
3 A. We are trying to get the information so that
4 we could design one for Saint Louis Park, that's right.
5 Q. In United States 33 there is a discussion as
6 to where the settling basin might be located. What
7 difference would it make in terms of what sort of the
8 process you would locate the settling basin?
9 A. It was a gravity flow system. We had very
10 little elevation differential in that plant and we
11 wanted that located so that we would have a gravity
12 flow from all the points of contamination. We had to
13 handle that. So it's a very important part of the
14 design of the detention pond without putting in
15 elevations and everything else. It's one of the
16 important things that you have to know, otherwise you
17 might be spending money that you didn't have to spend.
18 Q. So you should generally try to locate a
19 settling basin at the lowest point so that all effluent
20 can pour into it?
21 A. That you could pick it all up without
22 mechanical lifting.
23 Q. In the middle of United States Exhibit 32 you
24 say, and I quote, You no doubt have determined whether
25 the drainage contains sufficient foreign materials to

1 make it objectionable to dumping into the public
2 ditch, close quote. What did you mean by the public
3 ditch?
4 A. Public ditch is the ditch outside our plant.
5 Q. How would Mr. Tenz make a determination
6 whether there was sufficient foreign material to make
7 it objectionable to dump into the public ditch?
8 A. Chemically. What you have got -- what you
9 are dumping there.
10 Q. In other words, by analyzing the effluent?
11 A. Yes, you would have to know what you are
12 dumping.
13 Q. What would you understand would be the
14 determination point of when there was sufficient
15 material to make it objectionable to dump into the
16 public ditch?
17 A. We check the public ditch, how much
18 contamination it had outside our plant property.
19 Q. Was there a standard quantitative level for
20 all Reilly plants as to how much was objectionable or
21 was it done on a plant by plant basis?
22 A. No, it was done on that basis. If that ditch
23 which was taking water from elsewhere outside of our
24 plant was badly contaminated, and it was, as I recall
25 pretty badly contaminated, water coming from elsewhere

1 would give us a lot of leeway, we couldn't put enough
2 water in to dilute that very much. But if we were under
3 the contamination of that water that was in the ditch
4 we would be improving it rather than degenerating it.
5 That was our effort. So I put myself -- am I clear --
6 stating a clear statement there?
7 Q. I think you are, but I think it was a little
8 bit off the track of my question. My question is was
9 there a quantitative point at which you determined we
10 are adding so much objectionable material and that's
11 too much or was it simply an ad hoc basis; in other
12 words, if there was x percent of objectionable material
13 in your effluent was that too much or was it not done
14 in any standard?
15 A. Well, to complete, I thought I answered that
16 that if that ditch that was outside of our plant and
17 was badly contaminated by other sources, then that
18 would be our criteria that we would have to put or if
19 it was not -- if it were clean water, absolutely clean
20 water we could take the attitude that that water that
21 we dumped into there would be just as clean as the
22 ditch, if that's an extremely dirty ditch. So felt if
23 we were under that in contamination we were improving
24 the quality of that ditch.
25 Q. So --

1 A. So that's as far as we would want to go
2 because every time you take care of more and more of
3 the complications of a ditch by the much more
4 expensive it is and it would soon become almost
5 impossible to handle.
6 Q. So the factor that you would use to enter in
7 how dirty you would allow your water to become would
8 be how dirty the ditch it was pouring into?
9 A. That's right.
10 Q. And the dirtier the ditch the dirtier you
11 would allow your water to become?
12 A. If it was tremendously dirty, not do a good
13 job on it, but not spend so darn much money that it's
14 going to cost us something that the management would
15 not approve.
16 Q. What other sources of contamination were you
17 aware of for the public ditch at Saint Louis Park in
18 1930?
19 A. I went down and looked at the ditch and it
20 was a filthy looking ditch and that's to the extent of
21 my knowledge of what goes in there.
22 Q. But did you know where the materials that
23 made the ditch filthy back in 1930 came from? Did they
24 come from anywhere else but the Reilly plant?
25 A. There was a flow other than the Reilly plant

into that ditch, yes, and I can't tell where it was coming from. We weren't that interested in it or we couldn't spend the time to trace the flows to where they actually came from; but there was one in a little shop, as I recall, down on the left-hand side going down to look at the ditch that was putting out a lot of oil. There was a substantial amount of contamination in that ditch that Reilly was not responsible for.

Q. How could you tell that Reilly was not responsible for it? Did you follow the flows?

A. I could tell it by taste and smell. Reilly is a very positive coal tar product, but a petroleum product smells entirely different and you can check in a minute whether that's Reilly or petroleum.

Q. Where in the ditch did you examine, how far away from the property?

A. You are asking something that's 30 or 40 years old and I am not -- that was before the railroad came in, before that embankment came in and it has so changed down there on my last view I couldn't figure out where anything came from.

Q. When was your last view of the ditch?

A. The report from -- what is that report?

MR. SCHWARTZBAUER: Well, there was a 1969 letter that Mr. Wheeler that you jointly wrote.

1 A. Yes, Doctor Wheeler and I went up to either.

2 Q. So your last view was in 1971?

3 A. That was the last time I went up.

4 Q. But at the time you first looked at the site

5 there was contamination coming from Reilly?

6 A. Right, there was some contamination from

7 Reilly which we were planning on correcting. And the

8 last time I went down and looked at the same litter on

9 it was very much improved from both sources by the way so

10 was quite good and where it was coming before they had

11 improved theirs substantially.

12 Q. Do you recall who it was that it was coming

13 from before?

14 A. I don't recall. I don't recall. I never

15 traced that source of supply back to where it was

16 originating from. It could have been a half a dozen

17 different places. It would take quite a while to do.

18 (At this time United States Exhibit 24 was

19 marked for identification by the Court

20 Reporter.)

21 BY MR. HIAM:

22 Q. Mr. Horner, I have shown you what has been

23 marked United States 24, which appears to be a letter

24 on Republic Creosoting stationery from D. D. Jones to

25 you dated March 17, 1970. Do you recognize it?

A. I recognize it.

Q. In the middle of it Mr. Danz says "I presume you have in mind that the waste water entering the settling basins be treated in order to dispose of the water soluable ingredients such as phenol, sodium sulfate, et cetera." What did you have in mind to treat the waste water in order to dispose of sodium sulfate?

A. I think there is only one way of treating that and I don't know whether it was ever put into effect properly and let's not let it get in there.

Q. Would sodium sulfates be the same thing as sulfate water and sulfate liquor?

A. Anything that's completely soluable in water should be kept out. That's a serious thing to get out of the waters after it once gets in and the way to correct it is to keep it from getting in.

Q. But the phenol extraction tank would not take it out of the water?

A. I didn't get that.

Q. I am sorry. But the phenol extraction tank would not keep sodium sulfate out of the water?

A. I don't think so. It would have to have additional work on that. I think it was done, as I recall. But the easiest way for each of them is to

1 keep it out of the water.

2 Q. I'm sorry, you said you think it was done.

3 I am not sure what you think was done --

4 A. That corrected it by keeping it out.

5 Q. By keeping phenol out of the water?

6 A. In that case it was treating the phenol

7 entirely seperate from the regular water runoff of the

plant.

9 Q. So you think --

10 A. By distillation, if I recall correctly, and

11 that was where that little distillation unit was --

12 what it was doing, getting rid of the phenol.

13 MR. SCHWARTZBROWN: I think as to ask

14 you now about the sodium sulfate and what was done, if

15 anything.

16 A. Sodium sulfate, I can't answer that question.

17 Q. So you don't remember whether anything was

18 done?

19 A. I don't remember the details.

20 Q. But the phenol extraction tank would never

21 deal with phenol and not sodium sulfate?

22 A. That's right. That would have gotten rid of

23 it before we put it into the water. What we did with

24 the sulfate I have forgotten. I know we did something

25 about it because it was a toughy.

Q. But you don't recall specifically what was done about sodium sulfate?

A. I can't get it going around my head. I can't remember. I imagine it will come to me bango like that after the meeting is over.

Q. But it wasn't done through the phenol extraction tank?

A. I won't think so. I said I can't remember period. I don't know how it was done. I know we did a lot of work on it but I have just forgotten the detail of it.

Q. I would like you to look again at Minnesota 134. I think Mr. Shakman showed you Minnesota Exhibit 134 earlier. I am going to ask you something about the middle paragraph.

MR. SCHWARTZBAUER: I think he is finished.

BY MR. [illegible]:

Q. Mr. Forner in the middle paragraph Mr. Holstrom talks about the progress of the drainage system and says, "It will not be so rapid because of the difficult encountered with water at the sump and settling basin." Mr. Holstrom is talking about the settling basin at Saint Louis Park here?

A. That would be -- I am sure that would be [illegible]

part. I don't remember who was handling this installation, whether it -- I wish some names were down there, it would bring my memory back in shape.

Q. Well, we have talked with Mr. Hennessy a little bit about it so I know he was involved in it. I guess what I am going to ask you about is if you have any recollection of what this difficulty that Mr. Holstrom is discussing was?

A. I just couldn't answer that question. I wouldn't -- I don't recall it.

Q. Okay. Well, I appreciate that, Mr. Horner.

A. I just don't recall that particular difficulty or whether it was just a matter of snow and ice. This was written in November, you know it's still cold then or it's already cold. Whether it's difficult in completing it from the weather conditions or something else, I would imagine that it was wet conditions that he is referring to rather than actual problems in accomplishing the job.

Q. But you really don't remember?

A. I don't remember which one it is because it's such a single job that I can't imagine why it would be held up by other than weather.

Q. Putting weather conditions to one side --

A. Even November you get some rough weather in

however up there.

Q. Putting weather conditions to one side, how long do you think it would take from design to installation of a settling basin of the type we have been discussing?

A. Well, I think it would be largely due to how you contracted it, whether it would be a fixed job or you needed part of it and a contractor came in and did part of it. I think that's the way they did it. That would be a more lengthy time.

Q. About how long would it be, a rough estimate to just do the work? For example, it takes a lot longer to build a ski scraper than it does to build a dog house. I am just trying to get a sense of about how much time it would take to build an oil-water separator like this?

A. That type of installation, I think they had to do some concrete work, if they did it in November I am sure it's frozen down quite a ways. They are doing it at a time of year that would -- weather would be the big problem. If that were summer weather and everything easy to do they ought to do it in a couple weeks -- three weeks at the most.

Q. How long would it take to put in a strain filter apparatus?

A. I think a carpenter could build one in half a day and it would take about five minutes to put it in. That's the simplest mechanism that I can possibly think of.

(At this time United States Exhibit 35 was marked for identification by the Court Reporter.)

MR. HIRD: Back on the record.

BY MR. HIRD:

Q. Mr. Horner, I have shown you what has been marked United States 35, which is a letter from you to Mr. Larkin dated November 6, 1940, Bates Stamp Number 303054. Mr. Horner, in the middle of United States 35 you, I believe, refer to a problem at the Fairmont plant. Do you have any recollection of that problem at the Fairmont plant?

A. Duplication of what's happened to all our plants. There is stuff that was going out of them that should never have gone out of them if we had our same standards then as we do now. But that's a problem that has gone through our entire organization.

Q. By stuff that's gone out of them you mean materials that has gone out in the effluent?

A. That's right. They are all similar. Maywood, Saint Louis Park, Ironton, Seattle, all of them that

were doing distillation. Those that were just treating they haven't got those problems.

Q. At or around the time when you wrote United States 35, which I believe was dated in 1949, had you visited the Fairmont plant?

A. I can't remember the exact times that I went down there but I was down there several times.

Q. What steps were taken to clean up the effluent of the Fairmount plant well?

A. Well the only thing that I can remember on it is not the final and ultimate clean up, the first thing they had to do was concentrate those contaminants into one spot, they were letting it go anyway just as if it went over the hill. You had to concentrate that into one spot so you could treat it and let it go over the hill in a clean fashion so that it was cleaned up. As common with most plants, if they go over the hill and disappeared in the very early days that was entirely satisfactory.

Q. Was the settling basin like the one we have been discussing installed in Fairmont?

A. I don't answer that. I know that we did the job and it did -- it was perfectly satisfactory to the officials of the area. I have forgotten exactly how handled it.

Q. In United States 35 you refer to a 10,000 -- 12,000 gallon digester. Is this the same thing as the phenol extraction tank?

A. Yes.

Q. At Saint Louis Park?

A. Yes.

Q. What were the particular contaminants in the Fairmont effluent, did they differ to any degree from the kinds of effluent at Saint Louis Park?

A. The Fairmount plant was entirely refinery, had no treating operations and treating operations does have some discharges that had to be taken care of in the water system. Fairmount did not have those.

Q. But the refinery operation at Fairmont would have been similar to Saint Louis Park?

A. They would be similar, yes. They would be similar. We put in adequate equipment at Fairmount.

(At this time a brief recess was held.)

MR. KIRD: On the record.

BY MR. KIRD:

Q. For the record, Mr. Horner, I have shown you what has been marked as United States Exhibit 36, which is a one page document from R. L. Renshaw to [illegible] Horner dated January 2, 1941 and dates 303053.

(At this time United States Exhibit 37 was marked for identification by the court reporter.)

BY MR. [illegible]:

Q. Mr. Horner, do you know who Mr. [illegible] was?

A. I do.

Q. Could you tell us, please?

A. He is -- Well, I would say that he is [illegible] brother-in-law.

Q. He is who?

A. They both married sisters. That tells you his background, but he was with the company quite a long time, as long as he was capable of working. His principle activity was checking our installations in both -- all the roofing that the company did in places and pipeline installations where we used our material on pipe lines. He was an expert in this particular field, like the application of --

Q. I am sorry, I interrupted you. I am sorry.

A. He is an expert.

Q. He is an expert in waterproofing?

A. Waterproofing. His experience, that was the best we had.

Q. And waterproofing would have been important for the settling basin in Saint Louis Park, would it

not?

A. It would rake it or break it, that's right.

Q. That settling basin was made out of wood, is it not?

A. Yes, the waterproofing of it was, as we described here, a canvas like a roof, tar roof.

Q. But the basin itself was made out of wood?

A. The basin itself was cut in dirt and you had to have something to tack that roofing paper to so that the wood was only the supporting member, not keeping the water in place. It was the paper that was cut to [illegible] and mopped with tar.

Q. So you wouldn't put the settling basin into operation until the waterproofing had been done?

A. Oh, no. It would destroy it.

Q. Is Mr. Renshaw alive today?

A. No, he passed on several -- quite a long time ago.

Q. I notice at the bottom of United States [illegible] there is a carbon copy to Mr. H. J. Lillig in Chicago. Do you know who Mr. Lillig was?

A. Yes, he was one of the salesmen [illegible] there handling roofing paper.

Q. Was he a Neilly employee or an employee of another company?

1 A. Billy employee.

2 Q. So Mr. Billig would have been contacted to

3 purchase the waterproofing material for the settling

4 basin?

5 A. I don't know who he put that on. For some

6 reason or other they were probably having similar

7 problems.

8 Q. Mr. Porter, would it be the common practice

9 of Neilly when a new settling basin was installed to

10 prepare written instructions for its care and

11 maintenance?

12 A. When these settling basins became so

13 important to our operation, yes. In the old times a

14 hole in the ground was all that was needed, but in

15 recent years it was a real problem to keep any of our

16 material from getting out of control and that appears

17 to be the best way to keep it that way.

18 Q. But back in the '30's and '40's it would not

19 be the common practice for written instructions to be

20 prepared to take care of a settling basin?

21 A. It wouldn't go back further than the '30's. In

22 the 20's and back along in that time way those problems

23 that we have today were not given thought.

24 Q. But when the settling basis were put in such

25 as this one put in about 1931 or 1941, the company

1 would not prepare written instructions as to what
2 should be done to take care of them?
3 A. That's right. Later, for instance -- well,
4 don't say. As we tried to improve our precision and
5 get everything that people objected to taken care of
6 then they became quite important.
7 Q. But not at the time of Mr. Hensha's letter
8 to you, United States 26?
9 A. That was beginning to be important at that
10 time, that's the reason he was recommending this type
11 of installation.
12 Q. But there was no other written instructions
13 that you recall as to how to care for the settling
14 basin once it had been installed?
15 A. Well, it's common knowledge now to care for a
16 roof and it's the same thing as caring for a roof.
17 Q. So there would be no special writing for
18 these instructions?
19 A. No, there would be no special writing.
20 (At this time United States Exhibit 27 was
21 marked for identification by the Court
22 Reporter.)
23 MR. A. ALLEN:
24 Q. For the record, United States Exhibit 27 is
25 one page document, dates Item, 303099 and carbon copy is

to Mr. Horner. It appears to be a signature at the bottom of the page of U.S. 27. Mr. Horner can you recognize that signature?

A. I don't recognize it.

Q. I would read it as John [illegible]. Graves. I could be wrong. Do you know a John [illegible]. Graves?

A. I can't recognize the signature and I can't recognize anything that I can make out of that signature.

Q. Would you recognize the name John [illegible]. Graves?

A. That wouldn't mean anything to me.

Q. Mr. Horner, in United States 27 there is a description of a washing process of drainage water from the Saint Louis Park plant. To your understanding would the washing process be similar to what would have been done by the phenol extraction tank at Saint Louis Park?

A. I have been unable to read this in its entirety and I would like you to read it for me where you are talking. This is not entirely legible to me.

Q. Let me see if I can help you. It begins, [illegible] samples of drainage water were tested for their benzo[illegible] content by Chagin test method, both at the Saint Louis Park plant and at the laboratory. The results are as follows: -- Then there are a series of results. [illegible]

tests were conducted in the laboratory using creosote oil samples received for extracting the phenol. There is a sample number and a date which I omitted. I am not interested so much in the specific samples as whether the process seems to be similar to what went on in the phenol extraction tank. The memo goes on to say the procedure consisted in washing the drainage water twice with equal volume of the oil." Would that refresh your recollection as to whether that process would be similar to what would go on in the phenol extraction tank?

A. I would expect so, yes. This looks like all laboratory work to me though and that's why I am interested in this memo and it looks like it was written on Reilly Laboratory's paper and it must have been some assistant to the on --

Q. I would tend to agree with you that it looks like laboratory work. I guess what I am trying to see is if the laboratory is duplicating the process occurring in the phenol extraction tank and seeing how effective it would be. Is that your understanding of the document?

A. My understanding of the document would be to get some idea of the capacity that we might expect.

Q. Of the phenol extraction tank?

A. Of the plant's installation.

Q. Of the phenol extraction tank?

A. Of the phenol -- I don't think it's data on designing the tank or not but just the capacity of this washing operation too. It is a substantial reduction but it still leaves a lot of stuff -- contamination.

Q. I see. So what you are saying is you believe this document is describing a laboratory test as a first run for what might occur in a phenol extraction tank?

A. That would be my guess. That's a guess.

MR. HIRD: Off the record.

(At this time a discussion was held off the record.)

BY MR. HIRD:

Q. On the record. Mr. Horner, I would like you to take a look at a document that has been previously marked United States 7.

(At this time a discussion was held off the record.)

MR. HIRD: Back on the record.

BY MR. HIRD:

Q. Mr. Horner, there is a reference in United States Exhibit 4 to an visit sit which Mr. Larkin says he had with you and C. F. Edwards. Do you recall that

visit around 1951?

A. I don't -- I can't place it. So, I can't place that call.

Q. Do you recall a meeting between you, Mr. Edwards and Mr. Larkin discussing the discharge water at Saint Louis Park?

A. I can't correlate the date and the -- I would have to have some -- I would have to spend a lot of time trying to determine just exactly the situation that this was made. I know it wasn't made on a joint visit at Saint Louis Park so I would judge that I would like to have more papers which we would probably find in the files whether it was made at the Indianapolis laboratory or the downtown office.

Q. So it could have been a visit from Mr. Larkin to you in Indianapolis?

A. I think I could find out but that's what I would judge it to be.

Q. Do you recall Mr. Larkin having any concern about the purity of discharge water at Saint Louis Park around 1950 or 1951?

A. I think it goes back farther than that. We have always had the desire and the hope that our effluent will be that at all our plants.

Q. Mr. Horner, just for your information, will

in response to the State of Minnesota interrogatories, indicated that the settling basin was installed at Saint Louis Park in about 1941 and I believe Mr. Wennessy has testified here and has confirmed that. United States 4 appears to be dated about some 10 years after that. Do you know of any new concern that arose after the settling basin had been put in to the Saint Louis Park plant?

A. I recall that in one of my very limited number of visits to the plant that I felt the original installation was under capacity and I vaguely remember redoing that at a later date and bringing it up to full capacity to handle the needs.

Q. What do you mean by "under capacity"?

A. That it wasn't capable of doing the job.

Q. How was it not capable of doing the job?

A. Not giving enough settling time.

Q. How would you correct that, would you build a new settling basin?

A. Or enlarge it, one or the other, and I have forgotten which we did but I recall and that's what I think the difference in time is involved in there.

Q. Mr. Larkin here states that he learned that "The plant we have can be expanded and changed in a way that will give us pure water released from the plant a

we have when certain changes are made. What do you understand to mean by the plant can be expanded and enlarged? Do you have any sense --

A. I got everything except the last sentence.

Q. I am sorry. What is your understanding of what he is talking about when he says that the plant can be expanded and changed in a way to give Saint Louis Park purer water?

MR. SCHWARTZBAUER: We don't want the witness to speculate, do we, David? I think what Mr. Kirk is just asking you about is whether you remember what occurred back in 1951. I don't think we want you to just sit and interpret the document. If you can remember.

A. Well, I can remember that we had to do things to their existing plant to bring it up to our standards. Now, that's all I remember.

Q. By "the plant" do you mean the whole plant or do you mean the settling basin?

A. By the settling basin, we do something to the settling basin to make it satisfactory.

Q. Could that have been the installation of a straw filter, would that be what you are trying to remember?

A. That may have been. I know eventually that

not a straw filter. When it was installed, I can't give you that information.

Q. That could have been what you remember was done?

A. That could have been part of it. I know they enlarged their facilities and that's part of the discussion here.

Q. How do you know that they enlarged their facilities?

A. Well, I visited before and after. The settling basin was substantially larger on the last visit.

Q. Mr. Horner your last visit was in 1969, was it not?

A. Yes, it was.

Q. I understand that Mr. Hennessy has testified that in and around 1969 and 1970 there was a design for a larger settling basin at Saint Louis Park but that was never installed. Is that what you are thinking about when you think about how it was enlarged? I am sorry, are you having trouble hearing me?

A. No, the original installation was undersized and it was -- it was enlarged. I don't know whether it was before or after, but I recall definitely we had to enlarge it but it was a rather minor enlargement.

Q. To what degree do you [illegible] by minor enlargement?

A. It wasn't a big investment.

Q. Do you have any idea how many cubic feet you might have added to it?

A. I can't remember that but it was large enough to do the job, period.

Q. Mr. Horner, I believe you testified that Mr. Lauck made surveys of various plants and reported on his findings including the state of equipment that he found there, is that correct?

A. Right.

Q. I would like you to turn to United States Exhibit Number 9, I believe it's in that book. I am only going to ask you to look at something that appears on about the fifth page in United States 9 under heading marked "Waste". So if you could turn until you see -- if I could help you and refer you. Off the record.

(At this time a discussion was held off the record.)

[illegible] IPD: Back on the record.

BY MR. [illegible]:

Q. If you look again at the first page of United States 9, this is a report by Mr. Lauck on the Saint

1 Louis Park facilities, is it not?

2 A. Yes.

3 Q. I am sorry, I don't think the Court reporter

4 could hear you.

5 A. Yes.

6 Q. Under the section marked waste, which I

7 would ask you to look at, Mr. Lauck describes a

8 settling basin that was 10 feet by 10 feet by 15 feet.

9 Would this be the wooden settling basin we have been

10 discussing at Saint Louis Park?

11 A. Say that last again, will you?

12 Q. I am sorry. In the section marked waste Mr.

13 Lauck describes the settling basin which is 10 feet by

14 10 feet by 50 feet. Would that be the settling basin

15 that we have been discussing at Saint Louis Park?

16 A. The second one. The second settling basin.

17 The replacement of the original with the second one

18 because the original one was not that large.

19 Q. Was not that large?

20 A. No.

21 Q. Do you would think, Mr. Horner, that some

22 time after the date of United States 4 when Mr. Larsen

23 came to speak with you and Mr. Edwards the settling

24 basin at Saint Louis Park was enlarged to the size of --

25 A. I can't tell when it occurred and I can

1 recall that it was not doing a good enough job and
2 there was changes made.
3 Q. But by the date of Mr. Lauck's report those
4 changes had been made?
5 A. The changes were made before this. This
6 sounds like the final installation.
7 Q. So the changes were made before Mr. Lauck's
8 report?
9 A. Before that.
10 Q. Which is United States Number 2?
11 A. Yes.
12 Q. What's correct?
13 A. I think it's correct, to the best of
14 memory.
15 (At this time United States Exhibit 2 was
16 marked for identification by the Court
17 Reporter.)
18 BY MR. LIND:
19 Q. Mr. Horner, I have shown you a document which
20 has been marked United States 32 and it is a letter
21 from Mr. Holstrom to the Reilly Lab, attention to you
22 Bates Stamp Number 101621. Mr. Horner, in United
23 States 32 Mr. Holstrom refers to a difficulty we
24 have encountered in clearing oil from our waste water
25 Do you know whether this was the same problem or

1 different problem from the one that we were discussing
2 in connection with United States Exhibit 7?
3 A. It's the same general problem of getting the
4 waste out of the water.
5 Q. I see that United States 38 is dated April 9,
6 1947 and United States 4 is dated July 11, 1951. Do
7 you know of anything that was done during that time
8 period to improve the discharge at Saint Louis Park?
9 A. As I mentioned before, that's the same
10 problem that I can't isolate date-wise when it happened
11 but my recollection is that their original installation
12 was enlarged to capacity that can do the job. Now,
13 that's from memory only.
14 Q. But you don't remember a separate problem
15 appearing other than the one you have already told us
16 about?
17 A. It's all the same problem is to get the stuff
18 out of the water that we are discharging.
19 Q. So you don't remember anything that was
20 specifically done between 1947 and 1951 to deal with
21 that problem?
22 A. Date-wise I can't isolate that change.
23 Q. Perhaps the next document may help you.
24 A. All this is doing is getting the dates right
25 which I couldn't remember.

1 Q. I wanted to know what your memory was and
2 whether this could help you.
3 A. This gives you the later by this letter and
4 you are all set and I was all wrong in my guess.
5 Q. So after reading this letter your memory now
6 is that the straw filter was installed sometime after
7 July 25, 1951?
8 A. Yes, that's right. You have got the right
9 figures here on both. I was off in my memory by when
10 it took place. I should have said I don't know.
11 Q. Would the enlargement of the settling basin
12 have required an additional work order?
13 A. There again it's a matter of dates that I
14 can't correlate with some of these things. At a
15 certain point in our operation we required the work
16 order approval of everyone involved. Up to that time
17 we were all delegated under certain conditions to
18 justify the expenditure necessary to correct the
19 problem. Now again, I am not going to monkey with
20 these dates. I don't know which one it comes under.
21 Q. Well, let me just ask you one question that
22 might help you place it. Would the key date in terms
23 of when you needed a work order and when you didn't be
24 related to Mr. Reilly's death? In other words, if you
25 need work orders after Mr. Reilly died but not before

that or was that a key factor?

A. Not before when Mr. Reilly was alive and operated if we went down to him and said we have to have this he would say yes or no.

Q. After he died the work order system came in?

A. After he died? I don't know how soon after he died but Tom was very insistant on keeping everything under control. He had to, there was a tremendous crash when he died as far as financin was concerned.

Q. Who did you mean when you said Tom?

A. Tom Reilly, Junior.

Q. What kind of --

A. Not Tom Reilly, Junior, Tom Reilly, Senior.

Q. Tom Reilly, Senior?

A. Senior.

Q. What did you mean by there being a tremendous financial crash tied to Mr. P. C. Reilly, Senior's death?

A. Well, he had a lot of places where his money wanted to go excepting into the company, so it was a difficult time for the company to survive those period.

Q. He wasn't putting any more money into the company as he used to do?

A. Yes. There was financial problems and it

problems that had to be all worked out.

Q. How long did that period of financial difficulty last?

A. Not very long. They recovered have rapidly and very successfully. Tom Neilly and Pete Neilly did a damn good job -- much better job than they anticipated.

Q. Mr. Corner, if I could turn your attention to the second paragraph of Minnesota 31, there is a sentence there where you say, "The major difference between the two ponds is that the Maywood has a mechanical means of removing sludge." Could you tell us what you meant by "mechanical means of removing sludge"?

A. Scraper. It would be quite a complicated deal to even attempt a drawing on that, but where this settles at different spots, if you scrape over you can move all that material, if it's scraped slow enough not to create a disturbance of the water so you can scrape those down to a spot where they can be drawn off.

Q. So these scrapers would move the sludge to a point where it was easier to clean the settling basin?

A. Yes, that's right.

Q. And the settling basin at Saint Louis Park did not have these scrapers?

A. To my knowledge -- I hate to guess at all

these things. I can't say that positively one way or the other.

Q. Are the different --

A. If it's in this it's correct, which is much more correct than what I tell you now. This I think is a very complete discussion on what was there and what wasn't there and what had to be there to do a good job.

Q. Do you know whether the scrapers were put into the haywood settling basin at the time of it's original construction or whether they were put into haywood later on?

A. It was installed in the original construction. The petroleum people developed this. They had this problem before we did and solved the problem before we did and they made all their exterience and design available to us.

Q. Is this what has been called an API separator?

A. Yes, that's right. It is developed by the petroleum industry as a whole and they cooperated with that -- mutual problem and we were finally accepted as part of the people that were having that problem and their design was turned over to us to use or not to use as we saw fit. It was very much to our advantage to accept a design that had been proven satisfactory.

Q. As an API separator the type of separator

that used a mechanical scraper?

A. With those -- with that -- it was -- if you had an old modern design, they went through our same problems. They developed over at least a 10 year program in developing their equipment to make water satisfactory to the State or to the federal government.

Q. But they used scrapers as part of that design?

A. Where you have that problem they use scrapers.

Q. And a settling basin with wooden baffles would not be an API separator?

A. Just baffles alone would not be an API scraper no.

Q. Separator?

A. It would not be an API vapor.

Q. I am sorry, you said vapor. Did you mean to say scraper or separator. I think we were talking about API separator.

A. I am not familiar with the word API scraper. Maybe there is a confusion of terms and I should -- if you want I am sure we could get the design out of the office. Again, I have been out of there for quite some time.

Q. I am sorry to belabor this point, but I am afraid that it's somewhat important that our terms be kept precise. We had been talking about the scraper.

which I think you stated were the mechanical pieces that moved around a separator to remove sludge, and I believe you testified that an API separator would have mechanical scrapers is that correct?

A. That's right, to the best of my knowledge. Even this goes back 20 years for me, doesn't it?

Q. So my next question --

MR. DE [illegible]: So.

BY MR. [illegible]:

Q. A separator, without these mechanical scrapers but with wooden baffles, would not have been an API separator, is that correct?

A. I think you are right. I am not too sure.

MR. DE [illegible]: Mr. Werner, are you getting tired?

THE WITNESS: I am beginning to get pretty tired but go ahead.

MR. [illegible]: I was beginning to suggest a break.

MR. [illegible]: Off the record.

(At this time a discussion was held off the record.)

(At this time the deposition was recessed and reconvened on the 12th day of March 19[illegible])

commencing at approximately [illegible] o'clock a.m.)

CONTINUED CROSS-EXAMINATION

BY MR. [illegible]:

Q. Mr. Horner, I believe when we left yesterday you were looking at Minnesota Exhibit [illegible]. I wonder if I could ask you to take another look at that exhibit?

(At this time a discussion was held off the record.)

BY MR. [illegible]:

Q. Mr. Horner I would like to direct your attention to the third paragraph of Minnesota [illegible].

A. On the first page?

Q. On the first page. In that paragraph -- well, the paragraph reads in part that at the [illegible] plant, quote, "we found that the addition of sulfate liquor from the acid operation changed the gravity of the water in the settling pond so that the oil that had previously been settled rose to the surface and was discharged thus contaminating seriously our effluent. What did you mean by the acid operation? Was the acid operation part of the refining process?

A. I read that over and I may have -- I did not

1 understand that myself.

2 Q. You didn't understand that you [illegible] the

3 acid operation?

4 A. I don't know what we referred to by that term.

5 I think it was something that was used quite frequently

6 and, probably, we could have answered it at that time

7 what it consisted of. I don't think it's to important.

8 Q. How would the addition of sulfate water have

9 changed the specific gravity of the water in the

10 settling basin?

11 A. Could you ask that again, please?

12 Q. I am sorry. How would the addition of

13 sulfate water have changed the gravity of water in the

14 settling basin or settling pond?

15 A. Well, all the impurities in water slightly

16 change with the -- if it's accepted as a part of the

17 water, water always has some dissolved, you might call

18 it, impurities in it and that's just increasing the

19 gravity of that water. Did that answer the question?

20 Q. I think it does. Let me ask so that I can

21 see if I understand correctly. Is the effect of adding

22 sulfate water to pick up the materials that are already

23 in the water, whatever impurities, and react chemically

24 to change with those impurities so that the ultimate

25 specific gravity of the whole changes?

A. I don't think there is any chemical reaction it's just solubility reaction.

Q. Solubility. In other words, it dissolves the impurities into the sulfate water?

A. Changes the gravity of the water.

Q. And thus the addition of sulfate water would have the effect of raising oil that had previously settled to the surface of the basin?

A. Because of the change in gravity, but when you add something to it it changes, the actual gravity of water.

Q. Thank you. Mr. Horner, I am showing you United States Exhibit 9, which is a memo from Mr. Leach to you, dated November 23, 1984 and has been previously identified. I am interested in asking you only about the item on page 2 under the Item Number 13 called Maintenance Program. Mr. Horner, are you familiar with the maintenance program which Mr. Leach is discussing in item 13?

A. He worked under my directions, yes.

Q. Was there a maintenance program designed at Maywood with a preventive maintenance check off for that you recall?

A. This program did not last very long and whether it was cut off shortly after this date or later --

1 [illegible] I am sorry these got into the record because
2 they are entirely confidential, or at least we thought
3 they were entirely confidential, and Lauck was talking
4 to me on these. Some of the we could get done
5 immediately and we all knew it and some would drag on
6 for years to come about. We didn't want to lose sight
7 of what that problem was.
8 [illegible] Well, first of all, let me assure you, Mr.
9 Horner, that we have no intention of turning your
10 documents over to your competitors or anything like
11 that.
12 [illegible] Our competitors wouldn't be interested.
13 [illegible] So in terms of the confidentiality I just
14 want to make you feel more comfortable in that.
15 [illegible] Well, this looks like everything is wrong
16 with the plant, that's what I meant, but it was
17 something that we had to bare in mind that we are
18 coming up now immediately or coming up later. This
19 gives you the impression that that plant was in a
20 really bad condition, had an awful lot of stuff to be
21 done, but that was not the basic reason for this. We
22 had to anticipate what's going to happen in the plant
23 and provide for it.
24 [illegible] Well, what I would like to focus on is
25 whether at Haywood there was a written program of

maintenance. In other words, Mr. Lauck here [illegible] mentions [illegible] check off form, something that everyone [illegible] to check off to see that things were done. Was that in existence in Maywood?

[illegible] That was what was causing the rather bad feelings also at times and so we just -- we really discontinued this type of operation.

[illegible] So this check list system was in place at Maywood but other plants objected to using the same type of system?

[illegible] Maywood is so close that there was no problems there but when the man had been spending his life running this plant, this kind of stuff kind of got under skin and we didn't want that so we discontinued it entirely.

[illegible] I guess I am a little confused whether you are talking now about discontinuing Mr. Lauck's visit or discontinuing the preventive maintenance check off?

[illegible] Oh, no. We placed that responsibility where it belonged. This was just a help for that management and the management did a good job by itself without this addition. He knew everything like this was listed here and he had it programed in his own mind [illegible] like it in writing. Now, that's just typical. [illegible] went through all the plants that way and it wasn't [illegible]

good way to take care of it.

Q. So at one --

A. My responsibility -- I didn't like it after it got going a little while, it was to -- to get it down in writing like this made kind of a bad feeling that the man wasn't doing the job, but he was doing a damn good job.

Q. So at one point the managers were required to fill out some kind of preventive maintenance form?

A. Yes.

Q. And then you stopped that very quickly?

A. Very quickly. We could see it very questionably. It was creating a bad feeling in our organization which it never had before.

Q. In 1954 Mr. Holstrom was the plant manager at Saint Louis Park?

A. I can't remember how those changed.

Q. Do you remember if Mr. Holstrom complained at all about Mr. Lacks visit and the idea of preparing maintenance reports for headquarters?

A. I couldn't -- I don't know whether it was being complained to me with this or other plants. You see, we visited all our plants.

Q. Do you remember any specific complaints from the Saint Louis Park plant?

1 A. Indirectly, but they didn't come out and sa
2 this is a hell of a thing, but it just worked against
3 us but we felt the change in attitude between the plant
4 managers and the engineering department which had
5 always been very very close and so that was why it was
6 discontinued.
7 Q. But your understanding was that the Saint
8 Louis Park plant objected to this program as well as
9 the other plants?
10 A. I don't think so. I don't think there is any --
11 I couldn't put my finger on any one of them that
12 objected to it. I think it was Maywood more than
13 anything else I mean, or rather the Reilly Laboratories
14 itself, one of them, which had this same type of report
15 that people kept coming up.
16 Q. But the plants generally objected to them as
17 a whole?
18 A. I wouldn't call it objected to it. They felt
19 that they were encroaching on their own responsibility --
20 we were trying to encroach on their own responsibility.
21 Q. And this was true of the plants as a whole?
22 A. It was -- I could feel that it was changing
23 very close relationship to one that was not so close.
24 So we got rid of this just as soon as we felt that.
25 Put it in with the idea of helping people, not creatin

1 not this would be to any plant manager. That's going
2 back quite a ways. If you have any more of these you
3 ought to keep that in mind, that this is not so strain
4 that we are degenerating the plant operation about at
5 it's something that we might look forward to and at as
6 we possibly can.
7 Q. I understand that. I appreciate your
8 informing me about that. It's hard to know what these
9 documents are reading them cold without asking you.
10 A. I was surprised to see this in your documents.
11 I am kind of upset about it, how in thunder it got in
12 your documents.
13 Q. Could I ask you to take a look at Minnesota
14 Exhibit 20, which Mr. Shakman is about to ask you?
15 (At this time a discussion was held off the
16 record.)
17 MR. HIRT: Back on the record.
18 BY MR. HIRT:
19 Q. Mr. Orner, if I could direct your attention
20 to the third paragraph in Minnesota 20 where there is
21 mention by Mr. B. Pull her of -- well, a suggestion
22 rather that emulsion material might be vented on the
23 ground in the yard to treat the soil and fill there
24 around the lower storage. Do you know whether
25 emulsions from the bottom of tanks were -- well, let

1 [illegible] Do you know whether it was unusual for the
2 plants to take emulsions from the bottom of tanks and
3 spray them around their yards or was that not an
4 unusual practice?
5 A. This is really out of my jurisdiction. If it
6 was in my jurisdiction we would never consider it and I
7 don't think any plant ever just deliberately spread the
8 stuff over the ground to get rid of it.
9 Q. So you think that would be inappropriate
10 behavior?
11 A. I don't know whether I commented on it when
12 read it at the time but I talked to Frank Coots about
13 it. See, Frank Coots didn't come into our group. He
14 was entirely different moving back and forth among the
15 plants. It was nothing to do with new construction or
16 anything like that.
17 Q. But you wouldn't --
18 A. I would hate to see them following this
19 method of handling the problem.
20 Q. You think it would be inappropriate to spray
21 material from the bottom of a tank on the plant grounds?
22 A. What we were trying to do is correct what's
23 going on out that window and this wouldn't --
24 Q. Spraying the material over the ground?
25 A. I don't think it would ever be [illegible] on

1 over outside of the ditch but there is that
2 possibility that it could.
3 Q. But even so it would be adding contamination
4 to the ground as well as the ditch?
5 A. I am sure we stopped it before it was ever
6 done because I can recall getting kind of hot under a
7 collar with it and Frank Boots was a very close friend
8 of mine too.
9 Q. As Mr. Boots a very careful man and very
10 concerned with proper maintenance of plants?
11 A. Frank Boots?
12 Q. Yes.
13 A. Well he was a doctor in chemistry. He had
14 had his doctors degree. He ran our -- let's see. I
15 can't give all the jobs that he has had with the
16 company but he was the top chemical engineer, one of
17 the best that we ever had in our organization.
18 Q. So you respected him professionally?
19 A. Accepted him as 100 percent, excepting when
20 we was talking about getting into this job. I talked
21 with him personally and I think he was the one that
22 stopped any consideration of that when he thought we
23 just were not were doing something we shouldn't be doing.
24 He was a top man though. In fact, I still get a
25 Christmas card from him.

Q. Could I ask you to now look at Minnesota 33 please Mr. Horner? I am going to ask you mostly about Page 2 of the document.

MR. [illegible]: He has the small copy again.

MR. [illegible]: Are you able to read that okay?

THE [illegible]: I am having difficulty. I think if you have yours it's probably a better copy.

A. Page 2 now you say?

Q. Yes.

A. And you wanted me to read the --

Q. Let me tell you. I'm going to ask you mostly about the last two paragraphs but you can read as ever much you feel is appropriate. I am not going to ask you anything except about the last two paragraphs.

A. The last two paragraphs?

Q. Yes.

A. All right. I can remember that very distinctly.

Q. Mr. Horner, if I could direct your attention to the second to the last paragraph on Page 2 of Minnesota exhibit 33, there is a sentence there where you state, "We may not be improving the swale water with our drainage. Why would you not be improving t

swamp water with the drainage?

Q. Because the water we are running into that swamp was not -- had never been and at that time was a little better than the swamp water that it was running into. So that the -- you take a sample of that swamp water and compare it to our discharge going into it our discharge going into it was less offensive with all the materials that are going into it than what was already in that swamp water.

Q. Do you know if samples being taken at this time, 1990, that would confirm that?

A. Well, I don't know when the samples were taken but the results of the samples were tested and I think we could lay our hands on some of that. I don't know. I would have to go out to the laboratory. The laboratory pretty well changed. But my recollection was that that was very definitely the case.

Q. How did the swamp water get bad?

A. Well, have you ever been into those swamps that had no flow from Reilly or any other plants? Have you ever been into those swamps that are in that general area?

Q. No, I'm afraid I haven't.

A. You had better go some day. You had better go. Get down in there and even take a little taste of

the water that's in there. I did that just to see whether we were doing anything at all and there was one that Harry Holstrom told me about that was way beyond our -- anything that we could put in the water and I went over and I took a taste of the water and I wish I had never tasted that water in those swamps. You are getting Real vegetation that is decomposing all the time in those swamps and the water is horrible.

Q. You go on to say in the sentence that I read you on Minnesota 33, "but we are not certainly the prime contaminators." Was Reilly a contaminator of the swamp?

A. Now, you will have to -- I didn't -- let me speed this thing up a little bit.

. HIRD: Off the record. Could you like a recess?

(Thereupon the requested portion of the record was read by the Court Reporter.)

. HIRD: Let me rephrase that question.

M. SCHWARTZBAUER: I think since the record should show that we went off the record and Mr. Hird asked Mr. Horner whether he was tired and he responded that he is tired and that he only got two hours sleep last night. Go ahead.

[illegible]:

[illegible] Mr. Horner, I am going to do my best to [illegible] this as easy for you as possible and my request as to whether you were tired was in order that this is not a strain on you and please notify me if you feel too tired to go on at any point and if you would like a break.

[illegible] Okay.

[illegible] Mr. Horner, I think I will attempt to rephrase my last question. In Minnesota 30 we were discussing a sentence where you wrote, [illegible] say not [illegible] improving the swamp water with our drainage but we certainly are not the prime contaminators. [illegible] question to you is was Reilly a contaminator at all of the Saint Louis Park swamp?

[illegible] Now, what do you mean by that?

[illegible] Well, Mr. Horner, you say that Reilly was not a prime contaminator. That would suggest to me that Reilly was a contaminator, if not the prime one [illegible] I just wanted to see whether you would confirm that suggestion?

[illegible] I probably did not say the right words there that the swamp was so badly contaminated that the water that we were running into had no effect on the total contamination. Any water that has been slightly contaminated or any water coming from an operating

1 [illegible] might have a little difference than drinking
2 water and that was what I was thinking, that the water
3 that we were running in there would be drinkable rather
4 than undrinkable as in the swamp area.
5 Q. But was the water that you ran into the swamp
6 area in Saint Louis Park --
7 A. Yes.
8 Q. -- impure?
9 A. Impure? Well I would take a drink of it
10 without any problem but I certainly wouldn't drink that
11 swamp water.
12 Q. When did you drink of that water?
13 A. When did I take a drink of the water? I took
14 a drink of the water just as a quick comparison between
15 the swamp and what we were putting into it.
16 Q. This was at the --
17 A. I wouldn't want to go and drink that water
18 all the time myself but it was drinkable, but the swamp
19 water you couldn't get -- even take a swallow of.
20 Q. This was back in the 1930's?
21 A. That goes way back. I checked it every time
22 I went up there.
23 Q. By taking a drink of it every time?
24 A. Oh, just tested it. I never drank it. Just
25 testing it. That is a good way of seeing how pure it is

quick way of seeing how bad it is anyway. Let me read that again. Where was that? Where were you reading from on this third --

Q. Minnesota 33.

MR. SCHWARTZBERGER: I don't think there is any question before you right now, Mr. Horner. I think you have answered the question.

THE WITNESS: Okay. Thank you.

MR. WIRE: If Mr. Horner wants to add anything he should feel free to add what is appropriate.

THE WITNESS: No, I don't want to add anything.

BY MR. WIRE:

Q. Could I ask you now to look at Minnesota 45? I am going to ask you about the fifth paragraph on page 1 of Minnesota 45?

A. Fifth paragraph?

Q. Yes.

A. All right.

Q. Are you ready?

A. Yes.

Q. Mr. Horner, in the fifth paragraph in Minnesota Exhibit 45, page 1, Mr. [illegible] Reilly refers to -- speaks to Mr. H. L. Finch about a drainage problem and suggests, quote, "The best solution which might be a

compromise involving a mixture of capital investment and certain acceptable operating headaches close quote.

A. Is that in the fifth one? One, two, three, four, five, or is that one someplace else?

[illegible]: There is the beginning of the sentence, right there.

A. Okay, what did you want to know about that paragraph?

Q. I just wanted to know whether you were familiar with the phrase "acceptable operating headaches" and what that would mean to you?

A. The first time I ever read it it's still an unknown quantity as far as I am concerned.

Q. Then we will move on.

A. In fact, I think I called Tom on that and asked him what it meant.

Q. We may very well do that.

A. I can vaguely recall that.

Q. The document indicates that you got a copy of it so you might have been familiar with the term.

A. I am sure that I would have had. It [illegible] off there.

Q. I would like you to take a look at Minnesota Exhibit 2[illegible].

1 A. I have read far enough.

2 Q. What do you mean by far enough?

3 A. You are getting me mad when I was mad at that

4 time. You are getting me mad all over again.

5 Q. You were mad at this time?

6 A. Oh, boy.

7 Q. Did you know about the settling basin being

8 filled with six to eight feet of sludge?

9 A. I got mad.

10 Q. How did you find out about the settling basin?

11 A. This letter.

12 Q. Why were you mad at the time when you saw

13 Minnesota Exhibit 22?

14 A. There was no excuse for it and I doubt

15 whether it was that condition, I am sure.

16 Q. I believe you testified that you regarded J.

17 J. Boots as being an expert engineer and you would

18 trust his opinion?

19 A. He is expert.

20 Q. Would you distrust his observation?

21 A. I would not distrust at all. I would see him

22 about it in detail and which I did.

23 Q. In Minnesota Exhibit 22 Mr. Boots talks about

24 the condition of the settling basin at Saint Louis Park

25 and says, quote The pond has not been cleaned in 20

years and it now has limited capacity because of the six to eight feet of sludge in the bottom. Close quote I believe you testified that two inches of sludge in the bottom of a settling basin would not make it work effectively.

MR. SCHWARTZBAUER: Two inches or two feet?

MR. [illegible]: I think he said two inches.

A. I doubt that. I wouldn't put that --

Q. About two inches would be enough that you would feel that it should be sufficiently cleaned?

A. That doesn't talk about that particular unit does it?

Q. Well, why don't we withdraw the question and let me ask you --

A. This is a settling pond. It isn't -- it's a settling pond that they are talking about, not the -- which goes back to -- it's similar to the pond that is directly connected to the underground water, that's what he is talking about. It could be the underground water that is --

Q. Did you know of any other --

A. Have you a got a plant map that's a little bit more distinct?

MR. SCHWARTZBAUER: Well we have --

THE WITNESS: I don't know whether I can find it on that map. I will take a look.

A. It isn't shown on that map. That split the pond in two, that's what he is talking about. When 7 was built it cut right through the pond.

MR. SCHWARTZBAUER: When what was built?

THE WITNESS: This doesn't show it either. 7 is down into here.

MR. SCHWARTZBAUER: Highway 7, is that what you mean?

A. Highway 7. And the little flow that goes down and disrupted by Highway 7 had some --

Q. Mr. Horner, would there be any separate its other than a settling basin that we have been discussing through which the plant effluent would flow?

A. Well, it flows from here down and eventually it disappears or disappeared as soon as they put that 7 into the pond. Now, I may be wrong. They weren't thinking about --

Q. Mr. Horner, perhaps I should phrase it this way. Do you have a clear recollection of there being anything other than the a settling basin through which the effluent at Saint Louis Park, and I am asking whether you have a clear recollection of it. If you are confused I think Mr. Schwartzbauer suggested on

occasion that you shouldn't guess.

A. I am not guessing there at all. I don't know what they are talking about that pond. The settling area was always kept clean, mind to. But so they could be talking about this pond or this pond or not. I don't know what they were talking about.

Q. You don't know what they were talking about?

A. I don't know what they were talking about.

Q. But if the settling basin that we have been discussing was filled with six feet of sludge it would not be effective?

A. That's what I say. I shouldn't answer that question because I don't -- I can't envision in my mind what pond it is.

Q. Let's for the moment look aside from Innesota Exhibit 22 and just ask you this. We have been talking about a settling basin for the last two days. If there were six feet of sludge in the bottom of that settling basin that we have been discussing it would not work effectively?

MR. SCHWARTZBAUER: Object to that. This is all very repetitious.

MR. LINE: Mr. Schwartzbauer, we are in the danger of a confused record and I would like to just clarify because I think the witness may have so a

1 [illegible] being confused in his mind and it would be
2 appropriate just to make a clarification so that we
3 know exactly what he is saying.
4 [illegible] MR. [illegible]: You go ahead.
5 Unfortunately I can't stop you.
6 [illegible] MR. [illegible]:
7 [illegible] Mr. Horner, would you like a break right now
8 would that be useful?
9 A. Well, it would be a good idea to just discuss
10 that in private, I think it would.
11 Q. Who would you discuss it in private with?
12 A. There is that one that you are talking about
13 now?
14 Q. Well, I am looking away from the exhibit
15 right now and I just want -- all I am trying to
16 establish is that we started yesterday morning talking
17 about a settling basin at the Saint Louis Park plant.
18 A. That is a mechanism that has to be kept clean
19 to function and it was always kept clean. That
20 separating pond where they had baffles, was that the
21 one?
22 Q. What would have to kept clean?
23 A. Bring that drawing out. I think you have got
24 the right picture of it.
25 Q. United States Exhibit 2?

1 A. Is this the point that you are talking about?

2 Q. I am looking away from Minnesota Exhibit [illegible]

3 and I want you to go back to what we had been talking

4 about when we first started questioning you yesterday

5 morning, talking about the settling basin at Saint Louis

6 Park. If there were six feet of sludge in the bottom

7 of that settling basin it wouldn't work properly, is

8 that correct?

9 A. That would put the sludge way up to there.

10 That would not work correctly.

11 Q. You were referring to United States Exhibit

12 when you said "there"?

13 A. Yes.

14 MR. FINN: I don't have any more

15 questions. Thank you very much, Mr. Horner.

16 THE ITNESS: I am sure you would never

17 find it that deep. It would be taken care of because

18 the flow of that water is almost stagnant. This was

19 indicated by Dick, that it does flow, but from here

20 down it is all parallel flow there. So I can all

21 through too. I got my say there, that would never get

22 that way.

23 MR. [illegible]: I have some

24 questions for the witness but I need your assistance in

25 getting just a couple of documents out. Could we take

about a five minute break before we do that?

(At this time a brief recess was held.)

MR. SCHWARTZBAUER: Let's go back on the record.

DIRECT EXAMINATION

BY MR. SCHWARTZBAUER:

Q. Mr. Horner, I know you are tired after being here for five days.

A. We are all tired, aren't we?

Q. I am. We are in the home stretch now and we will try to wind this up fairly soon if we can.

A. That's wonderful.

Q. First of all, I would like to ask you some additional questions about that incident that occurred in 1927 to 1928, that period of time where the dikes were opened up above the Reilly property and the flood waters came down and lifted that tank off its foundation. First of all, clarify it for me, who opened the dikes?

A. The men servicing the Saint Louis Park -- whether they were just mechanics that went around and kept those dikes closed and opened them, I don't know,

1 and it was opened by order of Saint Louis Park.

2 A. The City, do you mean?

3 A. The City.

4 Q. And I understand that you found out about

5 that both from talking to somebody at the Saint Louis

6 Park plant and from receiving a written memo from the

7 Saint Louis Park plant, is that correct?

8 A. That's correct.

9 Q. At that period of time was there a practice

10 within Neilly Ver & Chemical Corporation to send

11 written memos concerning significant or important

12 events?

13 A. It was.

14 Q. And and was this memo that you received one

15 of those memos?

16 A. One of those memos.

17 Q. Based on what you learned from that memo, did

18 the Saint Louis Park plant been given any warning that

19 that was going to occur?

20 A. None whatsoever.

21 Q. Can you think of something that the people at

22 the plant might have done to minimize the problem if

23 they had been forewarned?

24 A. If they had been forewarned they would have

25 done one of two things, and probably would have to

oil into that tank to give it plenty of stability.

Q. What would --

A. What would keep it on its base.

Q. What would keep it stable and would that oil

it heavier?

A. Right. If they didn't have that then they would just fill it with water.

Q. Prior to the time that this deposition was taken this week had you ever been told that that oil or tar or any other oil or tar ended up at the bottom of the Reilly deep well on the property?

A. I have never been told that there was any indication that it was at the bottom of the deep well.

Q. I am going to ask you to look again at a couple of the exhibits. Let's look together at my so of State of Minnesota Exhibit 127. Will you read this through again, Mr. Horner?

A. All right.

Q. Have you read it?

A. I have read it.

Q. Now, this was written in 1933, therefore, r Mr. C. Reilly who wrote it must have known when he wrote it of the incident of this tank being picked up off its foundation, isn't that correct?

A. MR. [illegible]: Objection, leading.

A. From my recollection that is correct.

Q. Now he says in this memo, quote, but at any rate, close up the wells and do anything that is necessary to prevent any chance for the allegation being made that the swampy taste of the water comes from our property, end quote. Now, based on your knowledge of that 1926 - '28 incident, and based on your knowledge of phenols, is it reasonable to believe as of 1933 that the swampy taste of the water does not come from the Reilly property?

A. I don't think there is any question that that is true. I don't see how it can.

Q. Can you elaborate on that and explain your reasons?

A. Because all the phenols that come off of that first 50 gallons, it has always been that -- water cut it is called, has been handled very carefully.

Q. Do you know whether there are phenols in meat?

A. I think maybe -- I don't know whether -- my records have been gotten rid of as fast as I could. May I may have some records? You could find that answer if we spent the time looking for it. There is phenol in meat.

Q. Well, I am not asking you --

A. You have a list there that would tell you.

that, if you want to go through that list, and it co[illegible] naturally from it the source of phenol.

[illegible]. The list that you are talking about, is that that German document that you retrieved?

[illegible]. German document.

[illegible]. That had to do with coal, I believe, didn't it?

[illegible]. Coal.

[illegible]. Are there any historical or chemical similarities between coal and peat?

[illegible]. Well, if you leave the stuff long enough in its position it becomes coal.

[illegible]. You mean peat becomes coal?

[illegible]. Peat becomes coal.

[illegible]. Based on your general knowledge of the subject, your knowledge of chemistry, then would you expect that there would be phenols contained in peat as well as in coal?

[illegible]. [illegible]: Objection, leading.

[illegible]. [illegible]:

[illegible]. That's okay.

[illegible]. Absolutely correct.

[illegible]. Mr. Willy states in his letter of April 7, 1923. Further, I think the state chemist will [illegible] it phenol can be generated from other things than creosot[illegible]

1 oil. Would you agree with that statement?

2 A. I would agree that the amount of phenol that

3 would be generated, as he said, possible from the tar

4 is insignificant as compared to an area that is

5 gradually turning to coal.

6 Q. In your opinion, if you had an area where the

7 soils consisted of a great deal of peat and in that

8 area you also had a deposit of creosote oil in the

9 ground, do you have an opinion as to whether or not it

10 would be more likely that the ground water would pick

11 up phenols from the peat or whether it would be more

12 likely that the ground water would pick up phenols from

13 the oil?

14 MR. [illegible]: Objection, foundation.

15 A. Would you say that again? I want to be -- I

16 got a little off the subject when I heard the objection

17 there.

18 Q. If you had had an area like this one where

19 you had large deposits of peat in the soil and you also

20 had deposits of oil or creosote oil or coal tar in the

21 soil, would it be more than likely that the ground water

22 would pick up phenols from the peat or more likely that

23 the ground water would pick up phenols from the coal tar

24 or the oil?

25 A. I wouldn't want to decide which factor. I

1 think it would be so parallel. But whether one would --
2 the oil in contact with each of the would reach a
3 point of saturation on picking it out and I don't know
4 which one it would come from first.
5 Q. Let me ask you this. Would you say that
6 creosote oil or coal tar to be highly soluble in water?
7 A. Creosote is very insoluble in water.
8 Q. How about coal tar?
9 A. Coal tar would have some of the phenols in it.
10 Now, the creosote oil has gone through a distillation
11 where the first 50 gallons of our still charge, which
12 is about 5,000 gallons, would contain phenol. But the
13 rest of it I don't imagine very much phenol in the
14 creosote oil.
15 Q. But as to the question of solubility, both
16 coal tar are only slightly soluble or highly soluble
17 in water?
18 A. Very, if possible. It would only take part of
19 that coal tar out -- the water would only take part of
20 it. It wouldn't take it as a unit. It might remove the
21 phenol that is in the water from some other source. It
22 might pick up some of that but that would be all out
23 beyond my knowledge of the workings of the tank to
24 answer it correctly.
25 Q. If you had many soils would the water

saturate the peat?

[illegible]: Where is this?

[illegible]: Which water?

[illegible]: Groundwater.

[illegible]. It would pick -- if you had that water flowing through this where it would not stand stagnant where it could get rid of the saturation point on either side, then it would take some of that phenol along with it.

[illegible]. In peaty soil would you have a great many surfaces where the ground water would pass over.

[illegible]: If you know.

[illegible]:

[illegible]. If you know.

[illegible]. That peaty surface is -- in all the areas around that point it is pretty well saturated with water. Can you get that cross section out? I think I could explain it with that cross section showing the piles going down into the ground and how far they go down into the ground.

[illegible]. If that would help you. I think the witness is referring to the document that he brought with him on the first day we have what was marked as --

[illegible]: Saint Louis Park [illegible].

[illegible]: [illegible] or [illegible].

[illegible]: For clarification, are you talking about the soil at Saint Louis Park or are you talking about peaty soil in general? I think there is a confusion between your questions and what the witness has answered.

BY [illegible]:

Q. I am asking you about peaty soil in general picking up, yes.

A. I think it would go the other way. This peaty soil always is pretty well saturated with water. If you add more water it would pick up some of that from the peaty soil but it would not be very much. I am not helping you very much I am sure of that.

Q. I am thinking about a conversation that you and I had in the Reilly Tar conference room, Mr. Bonner. Do you remember discussing the facts of this case with me?

A. Yes.

Q. In the Reilly Tar conference room?

A. Yes.

Q. And to jog your memory, if I may did you tell me that you thought the groundwater would be much more likely to pick up phenols from peat than from creosote oil because there are so many more surfaces for the ground water to pass around?

A. [illegible]: Objection, leading.

A. That is correct.

A. SCHWARTZBERG: Of course it's leading and I am using a leading question to refresh the witness' recollection.

A. That is correct. Stated that way that is absolutely correct.

Q. Is that still your opinion?

A. I see what you are trying to get at and that is correct.

Q. Mr. Reilly also states in his April 7, 1980 letter, It is just inconceivable to me that any phenol has gotten into the water from our plant.' Is that also your opinion in 1980?

A. It has to come from that water distillation if it's gotten into the water. They are very careful with that water distillation. If they dumped all that into the water they might increase the amount but they don't do that, they keep that water from the distillation pretty well under control.

A. Let me repeat my question. Mr. Reilly says It is just inconceivable to me that any phenol has gotten into the water from our plant.

A. That's right.

Q. Is that your opinion?

Q. That's my opinion.

Q. Is that still your opinion?

A. Still my opinion.

Q. I am going to show you Saint Louis Park Exhibit 53. Would you reread that, please?

A. All right.

Q. Have you had a chance to reread that?

A. I reread that.

Q. This is Mr. Edwards' memo to Mr. McLellan at the Saint Louis Park office written back in 1960 and he enclosed a copy and sent it to you at that time. Is that right, as far as you know?

A. That's right.

Q. Mr. Edwards states in this letter, "We are now following the suggestions of the Board of Health of the State of Minnesota with respect to our drainage system and that is as far as we can go." Do you know what he is referring to there when he says, "We are now following the suggestions of the Board of Health"?

A. That is right up in here, isn't that?

Q. Right after the reference to Mr. Jones's well he states, beginning right here, I am pointing to it, "We are now following the suggestions of the Board of Health of the State of Minnesota with respect to our drainage system and that is as far as we can go."

is he referring to?

A. I am going to have to guess on that. You don't want a guess, do you?

Q. No, I don't want a guess but I am asking you whether you can remember?

A. I can't recall whether the installation of this -- first installation of this separating tank was been installed and he is referring to that. I am not too sure that that is the case. It could be that the -- we are controlling the flow and not letting any of that water get into the discharge of the system and we did that first. Now, whether the second method of keeping that was done at this time, I think it was. We had already made the original installation of getting some of that phenol problem, but we definitely, when we got started getting into trouble, we prevented that phenol water from getting into the ground water.

Q. Through the phenol extraction tank?

A. Well now, that's the thing I don't know whether it's been put in at that time.

Q. Okay.

A. From disposing of that water.

Q. Let me direct your attention to another sentence in this memo. I will point to it and I will read it too. You have a very important piece of

evidence in the statement of Olie Petersen that some of the wells in this vicinity had the same odor and taste before we purchased the property." Was that your understanding at that time?

A. That's my understanding.

Q. Do you remember Mr. Petersen incidentally?

A. Vaguely I do. I think later he changed his mind but he was one of those kind of men.

Q. Was this statement about some of the wells in this vicinity having the same odor and taste before Reilly purchased the property, was that general knowledge within the company at that time?

A. That was general knowledge and I think it's general knowledge to everybody living in that area at that time.

Q. Let me show you another document this one hasn't been marked yet.

(At this time Reilly Bar Company Exhibit 50 was marked for identification by the Court Reporter.)

BY MR. SCHWARTZBAUER:

Q. Mr. Horner, I have just handed you Reilly Bar Exhibit Number 50. Would you take a moment and read that, please?

A. I think someplace in your files you would

find the results of that which substantiate Malcolm Mitchell's account that it was very substantially reduced.

Q. Let me ask you some other questions before I get back to that, Mr. Horner. Does the document Reilly for Exhibit 50, which for the record is a memo from Mr. Mitchell to Mr. Holstrom dated January 22, 1941, does that appear on its face to be one of these memos that Reilly customarily sent in order to record significant events?

A. That's right.

Q. In addition Mr. Mitchell says in the second paragraph of that memorandum that you and he had discussed a meeting that you had had with the State Board of Health. Do you remember such a meeting occurring sometime before January 22, 1941?

A. Right.

Q. Now, I believe you have had two meetings at least with the State Board of Health, you and Mr. Mitchell, have you not, Mr. Horner?

A. I think that's correct but this one was the most -- Malcolm Mitchell and I went -- I think twice is correct but together.

Q. Perhaps it would help you in that regard if again showed you Saint Louis Park Depositon Exhibit 51,

which was written in the year 1969, and if you just
rested the -- pardon me. I may have misstated that.
Let me begin again. You and Mr. Mitchell went to the
Saint Louis Park plant twice, did you not?

A. I think that's right.

S. [illegible]: Objection, leading.

BY MR. [illegible]:

Q. Let me refer again to Saint Louis Park
Depositon Exhibit 51 and ask you to look at that and
determine for us whether that document relates to a
meeting that you and he had in Saint Louis Park at
about the time that it was written.

MR. [illegible]: Is you in your question
Mr. Mitchell.

MR. SCHWARTZBAUER: Mr. Horner and Mr.
Mitchell.

A. This was Wheeler that was with me at this
time.

Q. I'm sorry. So you went to Saint Louis Park
with Mr. Mitchell sometime shortly before 1941 and then
you went with Mr. Wheeler later on?

A. Yes, later on, that is 100 percent correct.
The I went to the second one with Malcolm Mitchell we
went together. But this is definite, Wheeler and
Myself went together on that.

Q. Thank you for that clarification. Now the reason that I am laying both of these in front of you at the same time, Mr. Horner, is that the later one which tells the story of your 1[illegible] trip has attached to it a Board of Health report written back in 1[illegible] is that correct?

A. That's correct.

Q. Can you tell us whether you had reviewed that 1[illegible] Board of Health report before you made your 1[illegible] trip?

A. I can't find any dates on it.

Q. Right up on the top?

A. I don't recall having seen this until [illegible] picked it up on this trip that was being discussed here.

[illegible] I[illegible]: Excuse me, Mr. Horner. [illegible] way of clarification when you say, "this trip discussed here" what were you referring to?

[illegible] II [illegible]: This is [illegible]. I could have -- we could have. This is the first time we went with Heeler, I went with Heeler, and I -- we tried to get at least two people there at the same time because [illegible] one would pass up the other would pick up.

[illegible]. All right. In answering some questions earlier this week, Mr. Horner, about the 1[illegible] trip [illegible] said that you tried to get [illegible] down to press [illegible]

1 you remember that testimony?

2 A. That's right.

3 Q. What did you mean by that?

4 A. In some of these reports such as this we

5 they identified the fact that this is a sample of the

6 water that we are producing and damaging the City. What

7 they did it up at the wrong spot and this flow sheet

8 is highly questionable in my mind, it has always been

9 highly questionable. They are talking about areas that

10 would be difficult because we checked. As I mentioned

11 to you this morning, this is the swampy area that I am

12 referring to a little while ago. We never checked

13 those things without feeling that it has not changed in

14 all the time we have been going there. And they did

15 that we are now damaging this swamp area.

16 Q. Let me show you the comment that Doctor

17 Wheeler makes in the next to the last paragraph on page

18 2 of his letter. Quote, "The Reilly Republic proj

19 left with the impression that while the City has

20 legitimate concern for the quality of their drinking

21 water, the meeting had been handled in a rather curious

22 fashion and other issues might well be involved." End

23 quote. Do you agree with Doctor Wheeler's

24 characterization of the meeting?

25 A. Absolutely. It was a wash-out and it is

reaching any conclusion.

Q. In what way was the meeting handled in a curious fashion?

A. During the meeting they made many -- what we would call comments that they couldn't support by anything they had there at the meeting. It seemed as though they had a wish but had nothing to support that wish by, that was what we felt. Does that answer your question?

Q. What was the wish that they expressed to you?

A. Wished that they could say that this is coming from Reilly Tar & Chemical Company and it's causing a lot of trouble.

Q. Did you and Doctor Wheeler make an effort at this 1960 meeting to obtain some definitive standard from the City, standards concerning your waste waters?

A. We talked about it but we got no where.

Q. Now going back to the 1940 meeting which is summarized in Mr. Mitchell's memo of January [illegible], 1941.

A. Right.

Q. Reilly exhibit [illegible]. Did you similarly make an effort to obtain a definite standard with respect to your waste waters at that meeting?

A. No we didn't.

Q. I want you to read the second paragraph on

that [illegible] beginning with, [illegible] did however -- .

[illegible]: [illegible] which [illegible] are you on?

[illegible]: Exhibit [illegible].

[illegible] Yes, that is correct.

[illegible] Now, you have just read the second paragraph [illegible] second sentence on Mr. Mitchell's [illegible]?

[illegible] Right.

[illegible] Did you and he try to get a definite commitment from the State Board of Health at that meeting?

[illegible] We tried to get a definite commitment if you stay within this -- this type of contamination -- this type of water contamination that we caused no problem.

[illegible] Now, if you had been able to get a definite commitment what was your intention with respect to complying with it?

[illegible] We would hold it to that maximum contamination because you can't even send it through a house with all its probable contamination from the water lines in a house without doing something to the water. This is a very much larger operation and the impression that we got, that if they were in a position to do that they would have done it gladly, but I think from the general feelings they were afraid to do that. That was the impression that we got. They were afraid

to come down to brass tacks. You can go so far in no further. It's an awful position to be in, I will tell you that. But it would have been very satisfactory on both sides if you say, 'Now you get so much beyond this point it's going to be -- the water is going to be affected by taste throughout the whole area. We are going to raise cane with you.'

Q. Still talking about this 1977 meeting --

A. Uh-huh.

Q. -- reflected in Exhibit 20.

A. Yes.

Q. That was your perception after concluding at meeting as to whether or not you were, Willy that is was not complying with the State Board of Health demands?

A. We gave them what we were doing. We did not get the answer whether this is good, bad or indifferent. They had never set up what we would like to have had them set up that if you exceed whatever they tend to set up this contamination of our plant we are going to get in trouble. That's what we needed, some definite shot to shoot for.

Q. At that meeting did you describe to the Board of Health representatives what Willy intended to do?

A. We had samples of these ponds and they

were contaminated. And we knew that contamination or the fact certain of that contamination because we went all around the plant, that they were all contaminated and they couldn't find any direct connection from our plant to some of these contaminated ponds that we sampled. We felt that if we stayed within that figure of contamination that we ought not be -- we ought to be able to operate. Does that answer your question?

Q. Did you tell them that?

A. We told them that. We wanted something to shoot for.

MR. [illegible]: Stay within that figure of contamination? That wasn't clear to me.

THE WITNESS: Pardon?

MR. [illegible]: When you say we would stay within that figure of contamination --

THE WITNESS: Whatever they set up. As ponds were contaminated in a great excess of what our own effluent was and if they could set up a figure that if you put so much pound down the drain you're going to get into trouble or something for us to shoot at for our own discharge.

MR. [illegible]: Let me ask one question for clarification. Did you mean they should set a standard but not the level found in these ponds?

THE [illegible]: Not out of the ponds for the plant.

[illegible]: I say, for your plant should they set a standard equal to the level found in the ponds.

THE [illegible]: That's right.

[illegible]:

[illegible]. Mr. Mitchell mentions in his letter, [illegible] however, mention some figures of around 50 parts per million and it is our recollection that this concentration of phenol in the waste water, when considered in connection with the small amount of flo of such water would be acceptable to the State Board of Health. Did you mention that figure of 50 parts per million to them?

[illegible]. That's what we used as something that would be below the concentrations that we found in the ponds that we had no control over, something which was far enough away from our plant that we would not be affected by it.

[illegible]. And when you and Mr. Mitchell said that did the State Board of Health argue with you?

[illegible]. No they didn't. They didn't answer it yes or no that this would be satisfactory. I can sympathize with them, but that's what we need or we

needed at that time. There was such a large flow of such a large amount of water there compared to the flow that we were putting into it that we had to have something like that.

Q. Well, Mr. Horner, did Neilly Mr or Mr. Neill, ever failed to give you the authority that you needed to do everything necessary to comply with public department requirements or to protect the public health?

A. He was a strong believer in the best you could do of anybody I ever knew. If we couldn't do it he would have gotten somebody else in there that would do it.

Q. I am going to show you again Minnesota Exhibit 91. Could we have that back? Minnesota Exhibit 91 is a document dated July 25, 1951, Mr. Horner, that's your memo to Mr. Larkin which, among other things, recommends installation of a straw filter and that has been shown to you a couple of times previously in this deposition. Do you remember that?

A. I remember it, yes.

Q. In that letter you indicate that the recommendation for the straw filter was based on some experience that you had had with Haywood, is that correct?

A. That's correct.

Q. At the time that it was decided to install the straw filter at Maywood where did you learn about straw filters?

A. I wish I had brought down some of that information. We were not the only ones that relied on those straw filters. Now, these methods of separating did not originate with our businesses. They are the petroleum businesses that were in trouble first and they spend an awful lot of money trying to get their effluent up to standard and they developed the straw filter to finally clean up the job. We didn't until after we had found the same problem to clean up the job, those straw filters did a wonderful job. The stuff going out past the straw filters you could drink without any problems.

Q. Well, was it one of your duties at the Reilly Tar & Chemical Corporation to see that the Reilly plants corrected any problems that might arise with respect to contaminated effluent?

A. It unfortunately was my job to make sure that that was done.

Q. Did you stay current with respect to the techniques and methods of doing that?

A. I think we did. Yes, I think we did.

Q. How did you do that?

[illegible] -- [illegible] not only [illegible] anything that [illegible] printed in the our own operations and I could have brought that down to show you some of the things that were done and done publicly for the benefit of the whole unit. We did that for the petroleum boys too and the petroleum boys were ahead of us on the use of the two units, the detention pond or separation and the straw filter for clean up.

Q. Did you keep up on existing literature concerning waste control practices?

A. About that high (indicating).

Q. You are designating about two feet from the floor?

A. Two feet from the floor was on [illegible] left and it was all on that type of operation.

Q. Based on your own observations and within the coal tar industry and your own observations of practices of Reilly and other companies, how would you characterize Reilly Tar's practices with respect to the industry as a whole?

B. [illegible] : Objection lack of foundation.

A. Comparable, but Mr. Reilly I think was more forceful in trying to keep his plants from causing trouble with his neighbors of anybody that [illegible]

into in the field.

Q. I take it you know that in spite of that Reilly Tar's activities in Saint Louis Park did result in some spillage of tar oil onto the ground or into the swamp, did you know that?

A. That is absolutely correct. Any of our plants. Our Cleveland plant, which was one of our most modern in design, somehow or other, either ourselves or our neighbor broke a line -- interconnecting line that was run overhead down to their plant and we had a heck of a spill. But it was taken care of. Everybody that was managed was taken care of. What we reported to the management for this digger that got into our pond, which I mentioned to you the other day, and dropped that contamination into the ground and it came up in our neighbors yard, we didn't have a lawsuit. We corrected that by supplying them with City water at a very substantial investment for them, they were given City water. I would say that we were trying to be as good a neighbor as we possibly could be with the type of operation that we had.

Q. Getting back to Saint Louis Park and your knowledge of the fact that that activity in Saint Louis Park would have and did result in spillage of oil or tar onto the ground and into the swamp, did you

1 perceive that as any health risk?

2 A. I didn't because the sweep we did -- the

3 effect of that in the sweep was insignificant compared to

4 what we had done. You could check it by the most careful

5 examination of the material that was in that sweep. But

6 if anyone would have complained about it we would have

7 taken care of it. I am sure of that.

8 Q. Getting back to this meeting in 1969 which

9 is described in Exhibit 51 by first Doctor Heeler and

10 then by you, on the top of Page 2 Dr. Heeler states

11 quote, Dr. Cherches indicated that our waste problems

12 could be corrected before we had to take the report to

13 the City Council after which the problem might become a

14 political or newspaper issue. Did you interpret that

15 as a threat?

16 MR. HIRD: Objection, leading.

17 A. I don't think it was a threat. As I recall

18 we wanted to keep us out of trouble and that we should

19 do something promptly, which we did. You see, all

20 these things were not necessary that we had been dealing

21 core of here, air pollution was one of the problems.

22 Q. Getting back to the question that I asked you

23 a little earlier, what was curious about the meeting?

24 A. Well, I think what still was thinking about in

25 this letter, that specifics were avoided very -- I don't

throughout the entire meeting. We couldn't get [illegible] say well, if we cut down to one part of [illegible] to 1,[illegible] parts of water would that satisfy you or do would it be possible to cut any further. It's unwillingness on their part to set up some standards that we had to meet. We couldn't get anything out of them.

Q. He says in the last sentence in the next to the last paragraph, "And other issues might well be involved." Did you agree with that?

A. I am sure that we agreed with it and I think it's political operation and political matter that is what we both thought.

Q. What other issues?

A. This one, for instance, why he would not let us use that air pollution was not discussed with city representatives, why they didn't -- why they wouldn't discuss it with us I wouldn't know. We felt that we were taken as undesirable to anything we might do.

Q. What do you mean by that, Mr. Horner?

A. That even if we met the standards that we would still be undesirable in that we were an operation that they would like to keep away from this area.

Q. Based on what you heard and saw at the meeting?

1 Q. That's the impression that we could get.

2 Q. Let me finish my question.

3 A. Okay.

4 Q. Based on what you saw and heard at the

5 meeting, which appeared to be more important to the

6 Saint Louis Park representatives, getting rid of the

7 plant or cleaning up pollution?

8 A. Getting rid of the plant.

9 Q. You partially described an incident at

10 Haywood in your testimony earlier this week where you

11 said the Federal Government did something which brought

12 some sludge down into the Haywood pond. Can you

13 clarify what the Federal Government did and what it

14 brought down?

15 A. The Federal Government built the plant on the

16 far side of the street from our Haywood plant. I am

17 going to try to be exact on this statement?

18 A. I don't be any more exact when you asked that

19 question earlier in the year, but the -- their plant

20 across the railroad from us seemed to be isolated to

21 them but their flow of water was in exactly the same

22 area that our flow of water was in and our effluent

23 coming from the plant actually was better than their

24 effluent. We had facilities in our plant that they did

25 not have in theirs. And some of the problems that we

developed were a combination problem between what they were doing to the area and what we were doing to the area. We felt that if they would put in the detention pond and clean up their effluent that we would all be better off. And they never did it. Now, after they -- I think way after the war and so, after that I think they are in recent years trying to do a better job out there.

Q. Do you remember what kind of plant the Federal Government was running?

A. The Federal Government was first making ammunition out there and one day we -- our -- well I got a report, I was in the laboratory, to come over and take a look at something. We went over and saw in the well water that we used for fire protection a yellow -- it filled up almost waist high, not quite. I got down in it and the water was that high at 1[illegible] foot below ground line and it was -- you could just see the [illegible] of copper that were there. We knew where it was coming from.

We complained about it to the [illegible]. They would just dump one of their ponds and it came through the ground into our well water and we had to shut that off. They finally came over and looked it over carefully and saw what they had done and they finally, after

considerable pressure on our side, let us look into the [illegible] that they [illegible] put out over the plant. [illegible] the kind of things that didn't sit very well from [illegible] two plants. Does that answer your question?

Q. I think it does. This copper that you found in the well then, that came from the federal [illegible] plant?

Q. That's right.

Q. Is that what led up to the incidents you described earlier this week where a contractor cut a [illegible] and that resulted in some contamination of some other wells?

Q. Yes, that's right.

Q. You also stated earlier in the week that Reilly Ser had a policy to go to City water wherever you could and also that that was your personal policy is that correct?

Q. That is my personal hope rather than the company's hope.

Q. I think --

Q. It's a very difficult thing to be sure when you are taking from a well that you are not getting something that you don't want into that well [illegible] if you are getting it from a source that has been carefully checked and [illegible] out before it [illegible]

that did you are too better off.

Q. Shifting not to waste water, did you have any policy with respect to emptying its waste water into City sewers wherever they were available?

A. Wherever they were available we used the City sewer system after they had checked it and okayed it and their checking was again checked after were hooked in on it because they always told us that we don't know just exactly what this is going to do to our operations. And we never ran into any difficulty with their operations, they could handle them very satisfactorily.

Q. In those instances where Reilly waste water were disposed of into the City sewer was any pretreatment necessary?

A. The pretreatment was always through this settling pond which took out almost 100 percent of anything that we might be getting into trouble. And it not only took out that portion of it but the lighter oils too we could separate at that pond level and reprocess ourselves. So it would take it out by redistillation or something like that where a good lot of light oils into it was that was the only way to get into it before we dumped it into their sewer system always at time.

[illegible] if it been possible and permitted in [illegible] would it have been preferable in your opinion to discharge wastes into the City sewer?

[illegible] If their City sewer was set up to take care of that it would have been very fine.

[illegible] Another thing that you said earlier this [illegible] was a little bit unclear to me. You were being asked some questions about the experience reported by the Saint Louis Park plant in 1957 where the pulp bearings had seized and one of the attorneys asked you a question as to whether that was a recurring problem and your answer was a little bit unclear to me. I think you said, I had that as well as a number of problems over the years. I am not quite sure what you meant by that answer. So specifically would you tell me whether or not the seizing of the bearings in the pulp at Saint Louis Park allegedly with tar, was that a recurring thing reported to you over the years?

[illegible] We have gotten into trouble over the years on the same subject but it is something that the plant is not doing their job right. That's what concerns us. Our own effluent on all our plants went through a retention pond where it should take out anything that would seize the plant -- seize the bearings and they weren't taking care of it if they got into that trouble.

Q. I am confused, Mr. Horner, as to whether in giving that answer you are talking about Saint Louis Park or someplace else.

A. Any of the plants. All of them had these detention ponds. Eventually I think everyone got those detention ponds in, everyone. We got it in Saint Louis Park I know.

Q. Just now when you said to me, "We got into trouble over that subject," are you talking about the --

A. Previously to the installation of the units to correct that trouble.

Q. Well, what units are you referring to?

A. Without some treatment our waste would be objectionable to going through any sewer that wasn't particularly set up for treating coal tar wastes and we had to do that before we put the stuff into their sewer. Does that answer your question?

Q. Not quite but let me try it a different way. Can we see Minnesota Exhibit 39 again?

[illegible]: We are going to take a short recess, Mr. Horner.

(At this time a brief recess was held.)

[illegible]:

Q. Back on the record. I just showed Mr. Horner Minnesota Exhibit 3[illegible], which is the [illegible] from Mr. Holstrom to him dated March 5, 1[illegible]. I know, Mr. Horner, that you haven't had a chance to reread all of it but I am just going to ask you a question about the first paragraph. In the first paragraph Mr. Holstrom tells you that his well in Saint Louis Park has been contaminated with tar. Do you see that statement?

A. (Indicated in the affirmative.)

Q. My question is whether or not that's the only report made to you concerning contamination of the well with tar or whether there were others.

A. LIFE: If you remember.

BY A. COMMISSIONER:

Q. If you know.

A. Well, this was in '[illegible]2.

Q. No, no. That's the Court Reporter's writing on there now.

A. I see it down there, '5[illegible]. Well, it got in there some way that would not be --

Q. Excuse me, Mr. Horner. Now are you starting to answer some other question? I didn't ask you how it got in there. Let me ask my question again. Is that the only report that you had of the bearings becoming related with tar or did you have many of the ?

1 [illegible] No. That was the only one we ever used.
2 [illegible] Now, I am going to direct your attention to
3 exhibit 19 and ask you about some other testimony which
4 confused me. For the record that's Minnesota exhibit
5 19 and that's Mr. Mitchell's report dated July 19, 19[illegible]
6 to Mr. Edwards. I am just going to turn over - could [illegible]
7 of pages here. You were asked some questions about
8 ditches or trenches which confused me at least. I don't
9 know whether it confused anybody else. Mr. Finch says
10 here, "Prior to 1941 an open ditch about six feet [illegible]
11 and five feet deep ran through our south yard and the
12 water was handled quite readily. Much time and effort
13 was spent to keep this ditch clean and to maintain the
14 culvert bridges under our roadways and trackage. The
15 ditch was hazardous in our operation and was a
16 continuous worry and source of complaint" end quote.
17 I believe that when you were asked about that you also
18 stated that ditches were hazardous. Now in your [illegible],
19 are ditches hazardous if at all?
20 [illegible] Well, we avoid them because they are the only
21 hazard that I have ever had my own mind on those were
22 open ditches. If there was a spill of tar or anything
23 else they get into our water system which we don't want
24 and wherever we have designed a plant for operation
25 those ditches do not exist. We either put it in a

[illegible] don't get it. So for that reason that you have to control -- if you have a drill, and I don't think anybody even the most modern and well controlled controlled plant have those occasional accidents that can be really hazardous if they aren't properly taken care of. An open ditch is something that you don't control. Does that answer your question?

Q. Yes. Do you know whether the open ditch at Saint Louis Park was subsequently eliminated?

A. I am sure it would be. If it was possible to do it it would be eliminated and I think it was. We don't have any of the Saint Louis Park boys here with us.

MR. CHAIRMAN: Mr. Frauenstadter could clarify? Was we talking about an open ditch on the site or a ditch off the site?

BY MR. FRAUENSTADTER:

Q. Which were you talking about?

A. Well. The one that you were reading there this open ditch. I think there was but it was discontinued as soon as I saw it, I am sure of that. No open ditch.

MR. [illegible]: That's through the south yard you are talking about?

THE WITNESS: Yes. I would correct

that.

[illegible]:

[illegible]. Mr. Corner, you have been asked a lot of questions over the past week concerning dripping of oil at the Saint Louis Park plant and about the fact that Reilly at the Saint Louis Park plant discharged its plant waste into a [illegible]. Do you remember those questions in general?

[illegible]. Yes.

[illegible]. Now during all of the years you were with Reilly Tar did you see anything hazardous to the public health about those activities?

[illegible]. I see none whatsoever. I don't -- you [illegible] when you are not running the plant and only visiting once a year or once every two or three years sometimes they get into bad habits, but I think we had enough men going up there that if there were any bad habits like that they would have been reported and corrected. I feel confident of that. Now, an open ditch that [illegible] open ditch like along side of a road that we might be running through there to just take the rain water where there is no chance of any of our product getting to there. We wouldn't worry about it because you have to keep your area drained like they do in any roadway [illegible] if there was any chance of getting tar or oil or

anything else in that field we would close it off.

Q. Do you remember in the old days the practice of refinery workers chewing the pitch?

A. That's right. I have tried that myself several times, I don't like the taste of it.

Q. Why was that a practice?

A. Because it was a very easy way to tell exactly how far along the distillation was and what kind of end-product you were going to get. Those old time operators were expert on just giving a lump on it and if it stuck to their teeth why they would continue the distillation. If it snapped off, if you just took a bite and you were able to open your mouth again you were ready to shut off the operation.

Q. Right.

A. They were experts on it. I don't know whether that comes down from England. In England, their operators over there, which probably needed to perform operations that was standard practice.

Q. And are you aware of any ill effects from that kind of practice?

A. To my knowledge none of them died from cancer.

Q. Or any other ill effects?

A. I don't -- I tried it to just see what it

[illegible] like during its progress through [illegible]
[illegible] not [illegible] to say that you [illegible]
have [illegible] in your still that it should be [illegible]
when you had [illegible] in your still instead of [illegible]
the experts could tell you just exactly [illegible] you should
shut that off to have your coke.

[illegible] You have told us here this week about the
fact that you spent most of your life working for
Reilly Tar, is that correct?

[illegible] Right.

[illegible] Can you think of any other people that [illegible]
most of their lives working for Reilly Tar?

[illegible] Well, Nick Hennessy came right from [illegible]
into the operation at Reilly and he retired from Reilly
Carl [illegible] had done the same thing [illegible] is now still
working for the company but he came right off of his
college education and we saw him through until he was
capable of running the whole business. I could [illegible]
the line. I am sure Carlton [illegible] worked for -- I
won't have the name of the company, but he switched to
Reilly Tar before I even came there. He was working for
this company during the war and I was flying during the
war that was about the difference. I could [illegible] -- [illegible]
you [illegible] to list them I guess I could [illegible]
[illegible] of them that have put lifetime in [illegible]

Q. Both in the home office and in the plants?

A. Home office and in the plants.

Q. What are your observations as to why people stay with a company as long as they do?

A. Well, Mr. Reilly was the prime mover for that -- was the -- and his sons. You couldn't find a kinder man if you were in trouble than Mr. Reilly, Senior. I had a -- I came down with a rather sudden disease and Doctor Richie, I don't know as anybody knew Doctor Richie in this area, but he was an outstanding physician in this whole area, and Mr. Reilly didn't think very much of the man that was taking care of me. He said, I am going to get you Doctor Richie and you are going to do what he says. He was that much of father in looking after the people that were working for him. He could be the devil if he wanted to. He would give you the devil but then again he was your father.

MR. [illegible]: That's all I have.

THE WITNESS: And I think that applies to everybody. He did have men that would stay with him as long as they possibly could. The shutting down of these plants would have been disasterous. He wouldn't have done that unless he was losing sing his shirt on them. It was necessary to do that after his death.

because he didn't have the things lined up so that [illegible] would go in the right places.

[illegible]: That's all I have.

[illegible]

[illegible]:

. I have some questions, Mr. Horner. Can we just proceed ahead?

. Yes.

. You just mentioned these closings of some of the refineries. Were you acquainted with the reasons for the closing of the Saint Louis Park plant in [illegible]?

. That's after I retired. I had known of the reasons and they were good reasons and I think it was very wisely done.

. What were the reasons you had known of?

. The lack of control, the cost of the raw materials. When they started concentrating on chemicals why that was the right way to go I thought too.

. That was true not just for this Saint Louis Park plant but for other Mailly refineries too?

. The whole organization was changed at the same time. It's a chemical operation now very largely.

. You mentioned a couple times including [illegible]

Mr. [illegible] that when you left you left so files behind and you also mentioned that you were semi-retired. Would you help clarify, when you say you left that sounds as though that's the final retirement. How many years between when you were semi-retired and when you were retired?

A. When Mr. Reilly died, George Reilly, who was an attorney in Chicago, was asked to come down and join the Reilly group to take over the responsibilities of Mr. Reilly, Senior. I was over 75 and I was still working and they thought if I could spend time with George Reilly until he got thoroughly familiar with all the operations of the plant that I would be doing them a great favor, which I did.

I worked with George Reilly for a couple years after I should have been out of the organization entirely but that was the only reason. George was a wonderful young man, a good lawyer, but they needed him in the operation to keep the whole group of plants together. It was a neck of a job the way Mr. Reilly left his estate.

Q. I believe the interrogatories that the company has prepared indicated Mr. Kennessy becoming the chief engineer about 19[illegible]. Would that be the same time period that you were still helping out [illegible] Mr.

Kennessy was more the [illegible]?

[illegible]. I dropped all those to Dick and [illegible] whole time with George Reilly developing our treating operations because that's what he started with, to try to get our treating operations on a profitable operating basis. When he died George Reilly died very suddenly. Tom and Pete both felt it would be unwise for me, which I agreed with them 100 percent to go back into the general operations. So I closed up my desk and left.

Q. What was just after Mr. George Reilly's death?

A. Shortly after his death.

Q. When you speak of leaving the books that was the time when you left them?

A. That's the time that I cleaned off my desk with notes to Dick what was what in that desk. Some of them I took were largely my own personal information and which I had intended to go through and return that might be of any interest to the plant. I did follow that through for quite a while and now it is of no particular value what I have.

Q. Did you ever get through all the papers?

A. I did by having a wastepaper basket there [illegible] think they are pretty well gone. I can't put my hands on it quick enough because when I retired [illegible]

[illegible] and I had an office [illegible] and plenty of room to [illegible] those all out, but in [illegible] you have to get rid of the pretty fast. I don't [illegible] whether they are all gone or not.

Q. You mentioned to Mr. Schwartzbauer that [illegible] from [illegible] at Indianapolis were coming up to the plant at Saint Louis Park and we have discussed with you several [illegible] from Mr. Lauck and those were in the year 19[illegible]. Who were the men who came up to Saint Louis Park from Indianapolis after 1954?

A. Well, when they were in trouble -- you are talking about -- I can't do it in my mind right now. In '54 I think I was still spending some time at the plant. And I know that I went up to Minneapolis with Dick so that I could pass on to Dick all my comments about the Saint Louis Park plant. We did the same thing with all our other plants, and also with -- [illegible] I can find in here who else I went with. I don't think it makes any difference, but that's all the reason I was staying, passing on to our successors the information that they won't find in our record books by personal knowledge of the operation. I spent quite a number of years in building up the technical side of our company.

Q. Perhaps your memory isn't that good on it [illegible]

1 we'll have the name of Mr. Latch as one person who
2 was doing detailed reports.
3 A. That's right.
4 Q. And even if you can't recall the years or
5 you recall other individuals from the engineering
6 department who were doing those kinds of visits?
7 A. Dick Jennessy was doing those kind of visits.
Joe Latch was doing those kind of visits. There was
one young man whose name I can't pull out of my head
10 that was doing those kind of visits.
11 Q. Did they keep up right up to the time you
12 retired, those kind of visits?
13 A. They followed that -- I think even up into
14 today's operations, by them or by other people that
15 were doing the same sort of work. If I sit here I
16 might be able to think of the other man's name.
17 Q. It wasn't something that you were doing
18 yourself though, was it?
19 A. No. I was just passing on all the information
20 I could about the problems that should be watched very
21 carefully and the problems were that the expense of
22 completely correcting would not be justified under any
23 condition excepting by avoiding the pitfalls in that
24 type of operation which we were able to do by very
25 careful supervision of what we were doing.

Q. You had mentioned to Mr. [illegible] pretreatment of effluent and you mentioned basin settling pond for that purpose. Is that the same as a settling basin that we earlier saw the diagram that Mr. Hennessy had drawn off?

A. Yes. That's not our design, it's a [illegible] design used by the petroleum industry primarily. We have just picked it up and used it for our operation and changed it very slightly for our operation.

Q. Did these settling ponds or basins remove phenols from water passing through?

A. Yes, but they cut the area of distillation to get rid of the phenols down very materially because they -- do you know how these ponds work?

Q. We have had some explanation. If you could give me an explanation that's directed to their [illegible] on phenols that would be helpful.

A. Well, there are partitions under the floor in the ponds and as they -- as the material goes over those partitions a difference in gravity will drop the off quicker as they go along and then you have taken out from the light oils, which are the phenol [illegible] lot of material that would cause you trouble in distillation and that's the only way you can fix it.

Q. Do these light oils contain the phenols?

Q. Yes.

Q. The light oils contain the phenols?

A. Yes.

Q. Are there also phenols that are soluable in the water?

A. There are phenols soluable in the water too.

Q. Is it correct to say phenols soluable in the water would not be removed by the settling basin?

A. Yes, it would only be removed by the little distillation unit that is always along side this settling pond. There is enough in the boiling point in the two materials to separate it by distillation.

Q. Is that distillation unit the same as the phenol extraction tank?

A. The phenol is really a distillation. That little extraction tank is really distillation, temperature difference -- boiling temperature difference.

Q. In regard to the swamps south of the Reilly facility in Saint Louis Park, you had used the word insignificant. I had understood that you thought the Reilly contribution to that swamp was insignificant. Perhaps I didn't fully understand. Could you explain what you meant when you were using that word in response to Mr. Schwartzbauer's questions?

[illegible] when I say insignificant, the extent of the area involved was insignificantly affected by the amount that went into the pond from our operations of the amount of undesirable materials in it, solubles in it was rather insignificant coming out of the Reilly operations.

Q. Apart from soluble materials now about the solids that settled on the bottom of the pond were you aware of those?

A. The solids once that settle on the bottom of the pond, if operated properly there would be none of them coming from our own plant.

Q. By pond I meant the swamp.

A. If they were -- if the water that was being put through there carried them, which sometimes it did then this would separate that because it had baffles in it for dropping down. It was a difference in gravity.

Q. I perhaps should not have used the word pond I meant the swamp we were talking about. Did you understand me to mean swamp?

A. Yes.

Q. Did you, in 19[illegible] or other times [illegible] accusations from Saint Louis Park that Reilly [illegible] contaminated that swamp?

A. Yes, I think we all felt that they [illegible] --

they thought we had contaminated it.

Q. And did [illegible] ever go out and test the bottom of that swamp such as by a boring to see what was out there?

A. [illegible] quite a bit of time [illegible] sure that we were not degenerating that area more than it was already degenerated by the decaying material in the swamp.

Q. Did you ever test the bottom of the swamp?

A. We tested it all over. We checked the gravity of the material on top and on bottom and clear down where you get into solid rock. I remember checking -- personally going out there to see if we could be accused of degenerating those areas. [illegible] I don't think we did very much of the degeneration of those areas. I think actually we improved them with what we took off.

Q. How did you collect a sample from the bottom of the swamp?

A. It's a little thing that you can close off or open up as you get down closer to what you want to pick up and the thing opens up and you just drop it with a [illegible] drop and it will enter that soft dirt that [illegible] in the bottom then you close it off and bring [illegible] sample of that bottom soil. [illegible]

sample and other times when you wanted a big one it [illegible] a little tiny one.

[illegible] Did you do that yourself at Saint Louis [illegible]?

[illegible] I worked a long time up there to try to get something down and see what is on the bottom of the swamp. I think I got some very good samples but they had to be done very very carefully. I agree with that. If you had to scrape it you never knew what you got. You had to have enough weight on it so it gets [illegible] picks it up. Then the little opening -- when you pull it back up it closes like a mushroom type hanger where you see these mushroom types for digging they come open like that and then they close. That's what we used and we were successful in getting samples.

[illegible] You were able to get pretty good samples?

[illegible] Yes.

[illegible] There is a photograph here next to Mr. Kennedy. Can you show me on P.T.C. Exhibit 2 where it is on that photo?

[illegible] I will try to. I think that [illegible] over there was changed when I went out this morning.

[illegible] It's the aerial photograph here that I [illegible] reference to Mr. Horner.

[illegible] This is our plant and this is our little swamp.

. On this one it shows State Highway 7 going across the lower third?

. Republic Creosoting Company [illegible] that is Republic, that's just Republic Avenue. Here is our plant?

. Oh, I see. Highway walker, here is this line here it comes down here.

. It doesn't show the flow. It does here very well. I will translate from here over there if I can. I am trying to find --

. Would you like to take a minute or two break and look over this --

. I am trying to locate exactly where this thing is. Our banks come down very rapidly right here and I am trying to see those banks right over here.

[illegible]: Off the record for a minute.

(At this time a discussion was held off the record.)

[illegible]:

. Back on the record. Mr. Horner, just while we were off the record you took a look at the aerial photo and you just weren't able to say where that was is that correct?

. Yes that's correct.

Q. Do you recall whether any of those samples you took were sent in for a chemical analysis of any kind?

A. What do you call chemical analysis distillation so that you separate the good from the [illegible]

Q. Any kind of analysis to tell you what's in it.

A. No, we didn't analyze for the content. [illegible] checked the amount of -- one of the distillations that we made. As I recall, we couldn't justify in our distillation exactly where the continuation of our own effluent was located, if that's what you are trying to get at, because it would be -- what we were dumping in there I would have thought we would have a much higher phenol than we were able to get out of the pond itself.

Q. I was interested in the material on the bottom of the pond, whether you could describe that in any way by chemistry or just by how it looked?

A. Well, we were trying to find where the phenol was concentrated in at all times and we couldn't.

Q. If you can recall.

A. Our product wouldn't carry -- wouldn't -- the solids from our plant would not be carried by the flow that we had. So it would be a liquid flow that we were putting in that sway, not a solid flow particle. [illegible] would have some liquid flow in there, there is no

question about that.

[illegible]. I just want to know what it looks like at [illegible] sample at the bottom.

[illegible]. The bottom of the swamp?

[illegible]. Yes, where you took the sample.

[illegible]. Well, we found very little tarry matter [illegible] because I can recall that very definitely. We thought there would be more tar there but I think the tar [illegible] probably was carried on a little bit further, the tar that we might have lost at times. But, as I recall the samples that we had were almost tar free.

[illegible]. Would you recall what years roughly these samples were taken?

[illegible]. Well, I would say they are probably from somewhere between 10 and 15 years ago.

[illegible]. Around the time in 19[illegible] when you and Doctor Chesler went up there?

[illegible]. Yes.

[illegible]. And do you know if there were ever any written documents describing this sampling set together?

[illegible]. They passed the results on verbally, and I have never seen it in writing. I am sure that the laboratory would probably have it in writing if you wanted to get it.

[illegible]. It was done right down here at the [illegible]

Indian Wells?

[illegible]. It [illegible] right here yes.

[illegible]. And that's about all that you recall? Is there anything further you recall about that?

[illegible]. That's right. What would be in the laboratory records, there is no question about it.

[illegible]. In the exhibit, Saint Louis Park 51, there are some flow charts that Mr. Kinderaker showed you and you just looked at these again in talking with Mr. Schwartzbauer and I noted that you had some misgivings about those flow charts. Could you explain whether you thought they were not an accurate measure of the flow? This is a copy of the same document, it may be a little easier for you to read.

MR. SCHWARTZBAUER: Off the record.

(At this time a discussion was held off the record.)

BY MR. SHAPIRO:

[illegible]. I think earlier in your deposition Mr. Kinderaker asked you about this and it was determined that it showed a rate of flow between 25 and 35 and that may have been gallons per minute. I am not clear on that but it was 25 to 35. Is that what you had question about whether that was an accurate flow?

[illegible]. Well, I had never -- I have never seen

recorded that I would take 1[illegible] percent accuracy from that spot right there that one up here or this. I just [illegible] -- we tried to get this [illegible] mill and I [illegible] up there. What is the record on the flows there? [illegible] couldn't get them from your -- from your [illegible] that [illegible] with us [illegible] no such record as this. [illegible] may have had it but we didn't see it.

[illegible] Well this same exhibit includes the Minnesota Department of Health report and in that report on the first page, the second paragraph, and this is 1[illegible], reads and I quote, "On May 1[illegible] the volume of waste flowing in the ditch draining to the swamp [illegible] estimate at [illegible] gallons per minute and on May 1[illegible] at 1[illegible] gallons per minute" and of quote. Those figures are higher than 25 to 35. Would you think from your knowledge those are more accurate?

[illegible] These would be very much more accurate than that.

[illegible] By this, the Department of Health report?

[illegible] Yes. We wouldn't have that kind of a flow there. This runs up that high there, but it's way [illegible] below that, isn't it?

[illegible] You are looking at the graph [illegible] which goes up and down?

[illegible] Yes.

[illegible] that's really all I wanted to [illegible] on the [illegible]

[illegible] Where is this flow recorded in this [illegible]? I don't see it right quick.

[illegible]: The copy I have does not show a left extra. Could I ask other counsel if they have a left [illegible] on theirs?

[illegible]: Yes, I do. Do you want to look at this one, Mr. Horner? [illegible] 10, 20, 30, 40, 50, 60, 70, 80.

[illegible]: Gallons per minute sounds about right. Where does it say particularly what it is? Flow reports. This doesn't say in gallons per minute, but I imagine that's what it is from my recollection of the flow, around 40 gallons per minute. Do you say any records of what that means?

[illegible]: No. I think all counsel will agree that we have been trying to figure out whether that's gallons per minute or not and the exhibit itself doesn't tell us that.

[illegible]: Nothing in the records though. Well, I would say it would be gallons per minute and it would be about that, from memory, we are discharging there.

[illegible]:

[illegible] about [illegible] or [illegible]?

A. 30 or 40 gallons per minute. This would be unusual. Somebody dumped water in there.

Q. You are pointing to the 30?

A. Yes.

Q. And that's what you referred in your [illegible] the dry weather effluent flow, your [illegible] being [illegible] 31. On the third page of that it says, "Attached is copy, and then number 2 is dry weather effluent flow, dated January 25, 1941."

A. Yes, that would be about right.

Q. Back in 1940 you had a meeting with the Board of Health and you had some discussion about that in your examination just a moment ago. Do you recall who was there for the State Board of Health?

A. With this one?

Q. Back in 1940.

A. I don't ever recall.

Q. Do you recall when you met with the Board of Health in 1940 along with Mr. Mitchell who attended it for the Board of Health?

A. I don't recall any other direct contact with the Board of Health, but we could have when Bill Meeler was there. I was with Bill Meeler [illegible] in later but I can't recall definitely whether we had a Board of Health man come out and discuss it with us or not.

Q. In 1940 when you met I am trying to find out if you remember the people you met with either my dial or my name on the health report there and the names of Mr. Temple and Mr. Whittaker. Are those people who you recall being there?

A. My memory for names is not particularly good. If it's on there as being members that were there that would be better than my memory.

Q. It didn't show them as members there. They had done a report earlier, that's why I asked. You don't recall?

A. I don't recall the man's name that we talked to but they were representing the Board of Health.

Q. In that same time period in 1940 Mr. Schwartzbauer pointed out a complaint about the taste of well water. When you were out there did you ever taste water from any well at the Republic site?

A. I am sure we did but our experience with wells -- you have heard me express the opinion that our own water should be -- our own wells should be abandoned and using City water wherever we can.

Q. Yes. You have testified --

A. I have expressed that. That would be my job to have accomplished that, discontinue the use of the water that we would get out of our own land.

[illegible] when you tasted the wells at the [illegible] site [illegible] water have any unusual taste to it

[illegible] I can't say that it was due to what we were putting in the soil because unless it had been properly treated any of that water around Minneapolis would have a sour taste in my opinion.

[illegible] And you remember that it did have a sour taste?

[illegible] I think there was a taste in that water but I am sure that the taste would be in any water anywhere around that area -- [illegible] around Minneapolis. I think you would get that same kind of sour taste to the water unless it had been treated by your plant which did a [illegible] job of getting rid of it.

[illegible] There was a question about whether the material in the deep well that I described could have come from that spill and you answered that question. I wonder if you know anyone else who might have some knowledge about that material in the deep well?

[illegible] ACT ANTEPRENDER: Are you talking about the material that was found in the 1[illegible] explorations?

[illegible] CONTINUED: Yes, I am.

[illegible]:

[illegible] coal tar materials that you described yesterday is there anyone else that has discussed that

with you or you think might know about that?

A. In 1[illegible]?

Q. That's when it was found, yes.

A. It was found in that well in 1[illegible]?

Q. Yes, Mr. Korner, it was.

A. That's the first time I knew that after it was sold. Then after the property was sold they examined these wells and found that much in the bottom of one of these wells?

Q. Yes.

A. I don't know how in the devil it got in unless there was a very gradual seepage from the [illegible] areas. I don't know how it got in.

Q. And do you know anyone else who might know more about that?

A. I would say that it's very much of a surprise to me that that occurred and that that existed and I couldn't say. I don't think Bill Wheeler could say or I don't think Dick Hennessy could say why that occurred other than it was an accumulation that had come from some other place than our plant. Myself, I can't see that that plant could have degenerated that by dismantling.

Q. One last topic. Mr. Schwarzbauer mentioned a conversation you had with him in the Bailly Bar

1 conference room in regard to heat materials. Was that
2 just a recent conversation?
3 A. I think that was recently, wasn't it? When
4 did that take place?
5 MR. SCHWARZBERG: Do you mind if I
6 tell him?
7 MR. [illegible]: No.
8 MR. SCHWARZBERG: That was when I came
9 down in January to talk to you.
10 A. I didn't think it was going back to the time
11 I didn't know you then.
12 Q. Were there some company reports that you
13 reviewed at that time?
14 A. I think I had some papers that were brought
15 down and discussed it with you.
16 MR. SCHWARZBERG: You had your witness
17 kit. They know that you have had a witness kit and the
18 Court has said that we don't have to bring those for
19 because those documents they already have?
20 MR. [illegible]: They already have.
21 MR. SCHWARZBERG: Yes.
22 BY MR. [illegible]:
23 Q. Are there any materials of your own that you
24 brought to the meeting?
25 A. I have no materials like that in my life

1 outside of our own problems in the plant, and they are
2 being destroyed as rapidly as I can. I don't have
3 anything.
4 Q. Are there other people with you at the
5 meeting or who had been with the company and are no
6 retired?
7 A. I think that's the time when Bill Hedler
8 is retired now, and of course Dick is retired. Those
9 are the only two people that I had gone up there with.
10 MR. [illegible]: Just take one minute here
11 to flip my pages. I am finished, Mr. Horner.
12 THE WITNESS: You are finished?
13 MR. [illegible]: Yes.
14 (At this time a brief recess was taken.)
15
16 CROSS-EXAMINATION
17 BY MR. [illegible]:
18 Q. Mr. Horner I think you and I have already
19 been introduced. My name is Kathy Martin. I represent
20 the City of Saint Louis Park in these proceedings. I
21 would like to clarify some of your earlier testimony,
22 and please bear with me if I duplicate the efforts of
23 other counsel. It has been a long week and we are
24 trying to get near the end of that week in the next
25 half hour or an hour. Is it correct to assume that you

are not a hydrologist?

[illegible]. I have no title such as that.

[illegible]. Have you ever had any training in the area of hydrology?

[illegible]. None other than what you [illegible] into when you are building a plant on sand.

[illegible]. Is that true as to the area of geology, [illegible] you had any special training or hold yourself out to an expert in geology?

[illegible]. I am no expert in anything.

[illegible]. Or would that also be true with the area of hydrology?

[illegible]. That's right.

[illegible]. Or excuse me, you are not a hydrogeologist as well, is that correct?

[illegible]. That's right. When we need that special field of engineering or science we always hire them.

[illegible]. Is it a correct summation of your earlier testimony that during the course of your employment with Reilly Tar that you visited the Reilly Tar operations at Saint Louis Park between three and five times?

[illegible]. Well, I would say that that would [illegible] in the right order of magnitude, whether it was [illegible] out a little. It [illegible] that I wouldn't want to [illegible]

[illegible] would some of those documents include information or articles or publications concerning control of waste effluent from particular operations?

[illegible]. Right.

[illegible]. Not specifically Reilly Tar?

[illegible]. Right.

[illegible]. Throughout the week we have discussed a flooding of the Reilly Tar property sometime between 1926 and 1928 that apparently involved an oil tank the content of which spilled onto the Reilly Tar site. When you were speaking with Mr. Schwartzmeier earlier you stated that men servicing Saint Louis Park were responsible for opening up certain dikes which led floodwater to flow onto the Reilly Tar site. Is that a correct [illegible] of your earlier testimony?

[illegible]. Say that again about --

[illegible]. Who was responsible for opening up these dikes?

[illegible]. Men hired by the City to service their roadway or whatever it is, but it was their duty to keep the -- really anyway they were working for Saint Louis Park, not us.

[illegible]. What leads you to believe that these were Saint Louis Park people who opened the dikes?

[illegible]. The only reason that I believe it [illegible]

[illegible] in the capacity of a [illegible] [illegible] [illegible]?

[illegible] [illegible].

[illegible] In anticipation of this particular [illegible] or in any relation to the proceedings that we have [illegible] discussing, did you review those documents?

[illegible] I don't think I looked at a single one but [illegible] [illegible] into what I have left out there to try to look at something but I found nothing of any significance excepting the ones that were given to [illegible] to look at. I couldn't get anything further out of [illegible] files than what I now been given.

[illegible] Is it a correct summation of your earlier testimony that some of those documents that we have been referring to as your personal documents or your personal file related to industry-wide problem solving or industry-wide means of controlling waste effluent?

[illegible] The only thing that I have referred to is [illegible] general interest which we would be perfectly willing through our stiffest competitor to see at the [illegible] [illegible] I mean it's information on overall problem.

[illegible] Something that would be of general application to the industry as a whole?

[illegible] As anyone that's in the industry. If they [illegible] that information they would be very well [illegible] [illegible] I have

I [illegible] would be on the under side [illegible] little too high. I don't know.

[illegible] when you visited the Saint Louis Park operations, if you have a firsthand observation of how the Saint Louis Park site was handling its effluent?

[illegible] To the extent of how it was put into the [illegible] before the new highway was put through. Now after the new highway I have never examined it to see how our effluent was getting under or over that highway.

[illegible] When you refer to the pond are you referring to the [illegible] area in the southern part or to the south of the plant site?

[illegible] Well it actually extends into our property at that line I think, but that's the pond that I [illegible] referring to.

[illegible] Mr. Horner, during the past week [illegible] have [illegible] some discussion of some records or documents that you may have collected and may have had in your person [illegible] control after you retired from Reilly Tar. Could you tell [illegible] those documents, which you thought you [illegible] in possession of but which you cannot now locate [illegible] they were accumulated while you were [illegible] Reilly Tar?

[illegible] They were collected at that time.

[illegible] Do they come into your possession [illegible] you

1 were in the capacity of a Reilly Tar employee?

2 A. Right.

3 Q. In anticipation of this particular deposition

4 or in any relation to the proceedings that we have been

5 discussing, did you review those documents?

6 A. I don't think I looked at a single one but I

7 may have dug into what I have left out there to try to

8 look at something but I found nothing of any

9 significance excepting the ones that were given to me

10 to look at. I couldn't get anything further out of my

11 files than what I had been given.

12 Q. Is it a correct summation of your earlier

13 testimony that some of those documents that we have

14 been referring to as your personal documents or your

15 personal file related to industry-wide problem solving

16 or industry-wide means of controlling waste effluent?

17 A. The only thing that I have referred to is a

18 general interest which we would be perfectly willing

19 through our stiffest competitor to see at the same time.

20 I mean, it's information on overall problem.

21 Q. Something that would be of general

22 application to the industry as a whole?

23 A. As anyone that's in the industry. If they

24 needed that information they would be very well come to

25 what I have.

Q. And would some of those documents include information or articles or publications concerning control of waste effluent from particular operations?

A. Right.

Q. Not specifically Reilly Tar?

A. Right.

Q. Throughout the week we have discussed a flooding of the Reilly Tar property sometime between 1926 and 1928 that apparently involved an oil tank the content of which spilled onto the Reilly Tar site. When you were speaking with Mr. Schwartzbauer earlier you stated that men servicing Saint Louis Park were responsible for opening up certain dikes which led floodwater to flow onto the Reilly Tar site, is that a correct summation of your earlier testimony?

A. Say that again about --

Q. Who was responsible for opening up these dikes?

A. Men hired by the City to service their roadway or whatever it is, but it was their duty to keep the -- well, anyway, they were working for Saint Louis Park, not us.

Q. What leads you to believe that these were Saint Louis Park people who opened the dikes?

A. The only reason that I believed it was, it

was reported to me that that's who they were and the people that were reporting to me should have been personally acquainted with those men.

Q. As I recall the spill occurred over a weekend when no one was at the plant site?

A. That spill has been kind of a bane in my life because I was -- I got the information and passed it on to Mr. Reilly and no one else has been advised of it.

Q. But did you tell us earlier that you were informed that the spill occurred over a weekend when no one was at the plant site?

A. If I said that there was no one at the plant site I may have exagerated a little because we always had a watchman on the plant.

Q. And was it reported to you that a specific conversation occurred between a Reilly Tar employee and Saint Louis Park personnel?

A. Yes. That is as I understand it from the man who was supposed to give us the information on that day.

Q. Who was the man who was supposed to have given you the information?

A. One of the watchman, as I recall it, I have forgotten his name.

Q. So it was the watchman's belief that Saint Louis Park had been responsible?

A. That's as I recall it. When I mentioned this, because of it's not being mentioned generally, I am a little confused when I talk about it myself.

Q. Did you ever speak with anyone at Saint Louis Park when this incident occurred?

A. I think when Malcolm Mitchell and I went together to talk with the man, I mentioned this damage to them.

Q. The flooding?

A. That was when -- those men that were talking about the problem and it came as a surprise to them I think.

Q. Mr. Horner, if effluent from the Reilly Tar operations had not been handled carefully could the Reilly Tar operations have contributed to the contamination of the Saint Louis Park water supply?

MR. SCHWARTZBAUER: I guess I will object to that on the grounds of no foundation, beyond the witness' knowledge.

BY MS. MARTIN:

Q. You can answer the question.

A. I think that's a correct answer. It's possible to go one way or the other on that question because it all depends on how competent your operations are in detecting those and how careless we are in

1 getting it out of control.

2 Q. Do you recall when the settling basin was

3 installed at Saint Louis Park, the approximate date of

4 the installation?

5 A. Say that again. I didn't hear that.

6 Q. Do you recall the approximate date of the

7 installation of the settling basin at the Saint Louis

8 Park facilities?

9 A. I can't remember those dates. It's in the

10 records here I notice.

11 Q. We have been discussing certain meetings that

12 you attended with the Board of Health for the State of

13 Minnesota that occurred in approximately 1941 and 1969.

14 Do you recall whether at those meetings government

15 officials expressed concern that the Reilly Tar

16 operations may be contaminating the water surrounding

17 the Saint Louis Park site?

18 A. Well, it's awfully hard to accuse them of

19 that but it was -- it would be rather easy to suspect

20 that.

21 Q. But did they express concern to you as a

22 Reilly Tar representative that perhaps Reilly Tar was

23 contaminating the waters, was that their concern in

24 these meeting?

25 A. We could see no other reason for the meetings

so that you had to come to that conclusion. But they were all goodwill meetings, I mean, there was no conflict.

Q. What would be the official reason for wanting to get rid of the Saint Louis Park plant?

A. For us to get rid of it or for our neighbors wanting us to get rid of it.

Q. Well, I think you commented to Mr. Schwartzbauer earlier today that based upon your observations of the meetings that occurred with the Board of Health in 1941 and 1969 that state officials were more concerned with getting rid of the Saint Louis Park plant than cleaning up pollution that maybe occurring as a result of the Saint Louis Park operations?

A. That's the impression we always got from the discussions with them.

Q. What is the basis of that impression?

A. Number 1, we know the composition of the ponds there and we have records going back before the plant was responsible for any of it, that they insisted that we were even contaminating the ponds.

Q. Well, why would they want to get rid of the Reilly Tar operation at Saint Louis Park?

A. We could never realize that but --

1 Q. Would a possible explanation be that they
2 thought any amount of contamination from the Reilly Tar
3 site would be in any way harmful?
4 A. They never said that in those terms. They
5 may have thought that but their own records and their
6 own analysis that they submitted to us wouldn't
7 indicate they had any reason for it.
8 Q. Mr. Horner, what is your understanding of
9 health risks that may be associated with coal tar?
10 A. Say that again.
11 Q. What's your understanding of health risks
12 that might be associated with coal tar?
13 A. House risks.
14 Q. Health risks.
15 A. Oh, health risks. Well, I am eighty-nine
16 years old and I have been with it since the early
17 1920's and I don't think anybody has been into the
18 dirty parts as much as I have and I don't see any
19 effect on my own physical condition on contamination
20 from the association with that situation.
21 Q. You worked mainly at the lab, didn't you,
22 here in Indianapolis?
23 A. The lab was just my headquarters. I spent --
24 I was not involved in the laboratory work at all. It
25 was all -- the engineering department occupied a

1 portion of what was called the laboratory. That was
2 the engineering office.
3 Q. So you spent the majority of your time in the
4 engineering office?
5 A. I started it and I headed it up as long as I
6 was actively in this operation. The last few years I
7 passed it over to Dick and worked with other people in
8 the organization to solve some of their problems.
9 Q. Would you say that generally speaking you
10 spent more time doing your engineering work in the
11 engineering department or discussing things at
12 operations than actually inspecting plant facilities?
13 A. Well, that takes a lot more time to do design
14 work than to look at a plant and see what condition
15 it's in. But we kept -- that's the reason we
16 originally set about the inspection reports from our
17 own men like Joe Lauck went to all the plants at least
18 twice a year.
19 Q. I am talking about you personally, Mr. Horner.
20 A. Personally I couldn't get to the plants as I
21 would like to.
22 Q. Because you were involved with the design
23 phase?
24 A. We were building plants. There was a great
25 deal of engineering work involved in every plant we

1 built and we were building plants all that time that I
2 was with them.
3 Q. Now, it's my understanding that you never
4 actually worked in a refinery or treating facility at
5 any of the Reilly Tar operations, your role was as an
6 engineer throughout the entire period of your
7 employment?
8 A. That's right.
9 Q. Did you or did you ever direct anyone to
10 conduct tests or study in any way the health risks
11 associated with coal tar, creosote oil or plant
12 effluent?
13 A. Well, I don't quite know how to answer that
14 because I could answer it yes and no.
15 Q. Why would you answer it no?
16 A. From our own experience. We got rashes from --
17 the people subject to sunburn could get in some of
18 those fumes and get a sunburn from the fumes, I could
19 myself.
20 Q. Did that ever happen to you?
21 A. I have had it happen to me.
22 Q. In your limited exposure to the operations?
23 A. But that's no more than sunburn as we felt at
24 that time and it has never -- when I got out of it the
25 the burn disappeared, why there was no bad effects from

1 it.

2 Q. Were there any other effects that you noticed

3 during your employment at Reilly Tar?

4 A. Well, I went into the hospital soon after I

5 retired on a broken hip and that's the first time I

6 have had any problems in my life.

7 Q. Did you hear of anyone else working for

8 Reilly Tar having any rashes or any other type of

9 problem?

10 A. Doctor Derby headed up the research

11 organization and he had a son that was very subject to

12 sunburn. I had a son that was very subject to sunburn

13 and those two boys -- either those two boys, if they

14 worked under certain conditions, they would get a

15 sunburn from their activity in the summertime during

16 the Reilly laboratory -- in our plants. Both of them,

17 with that peculiar red hair, they both had red hair and

18 that very light complexion that sunburn is awfully hard

19 on them and the same thing would be true with some of

20 the other things. But they have no after effects of it

21 and they are still perfectly active. My son I think is

22 fifty-one or fifty-two.

23 Q. Other than these observations, I take it that

24 you didn't conduct any study of the health risks or

25 anyone at Reilly Tar didn't study?

A. I am not worried about it at all.

Q. And you didn't have any cause to be worried about it while you were at Reilly Tar?

A. I had no reason to be worried about it. I wouldn't have had my sons working in it, the one that was very subject to sunburn especially, but he got a little sunburn and shortly thereafter he cleared up and there was no problems.

Q. You are not aware of anyone else at Reilly Tar who may have been concerned about the health effects of working at the various plants?

A. It's a surprise to me that anybody has had any problems.

Q. When you are talking about sunburn that your son and Doctor Derby's son and perhaps others may have experienced while working at the operations of Reilly Tar, are you referring to a rash that may have developed on the skin?

A. No, it isn't a rash, it's just --

Q. A reddening?

A. A reddening of the skin.

Q. And a heating up of the skin?

A. Which can be partially due that they worked in the summertime and they were working outdoors, it could have been a regular sunburn.

Q. But it went away as soon as they left the operations?

A. It went away as soon as they got under cover from the sun, it was gone in both cases.

A. I don't think -- anyway, he is a perfectly sound man ever since and has no problems.

MS. MARTIN: Thank you, Mr. Horner. I don't think I have any other questions.

MR. HIRD: I have a few. Would you prefer another break? This shouldn't take too long.

RECROSS-EXAMINATION

BY MR. HIRD:

Q. Mr. Horner, in the course of these few days we have asked you from time to time about facilities on the Saint Louis Park plant site and sometimes you have been able to successfully identify them, other times you have been a little confused and lost. I wanted to ask you whether you would think that Mr. Finch would be more familiar with the layout and facilities of the Saint Louis Park site than you would be?

A. Very much so. He lived with them. I just saw them for probably a half a day or full day or once or twice two full days in a row. But that's the extent of my comments and my association with all their

problems.

Q. Would you think that Mr. Hennessy would be more familiar with the layout of the Saint Louis Park site than you would be?

A. I think so because he was sent up there to stay days at a time. I believe he was there one time for probably a week. I have forgotten. I have never been there more than probably two days at the most. He felt the men that were there we would give them our help but they were very competent to take care of their problems.

Q. So if we were trying to figure out exactly how the plant was laid out you would recommend to us that we listen more closely to Mr. Finch and Mr. Hennessy and follow their memories more than yours?

A. I would say that's correct where the thing -- where we were putting some new equipment in there or new operations in there and the reasons for them, I think I would probably be better to discuss those with you than either of those two men, but that's from the design prospective?

A. That's the design prospective for their particular production.

Q. When you were talking with Mr. Schwartzbauer and then Mr. Shakman you used the phrase "detention

pond. Did you mean the same thing as the settling basin that we were talking about earlier?

A. The detention pond is the thing that I was referring to, the pond that you are speaking of.

Q. That's the same thing as the settling basin?

A. Settling basin and pond would probably -- probably the settling basin is the better term than I was using.

Q. Could it also be called the settling pond?

A. Well, the settling pond could be used in conjunction with that or it could be the pond on the outside -- just on the outside of our property line which is where our water goes into that and then on further down the way.

Q. But it also could be used to mean the settling basin?

A. Yes.

Q. Mr. Schwartzbauer asked you a bit about a problem at the Maywood plant involving what you described as a Federal plant across the way which may have disturbed the Maywood plant effluent, if you remember. Are you sure, Mr. Horner, that that plant which you described as a Federal plant wasn't actually a private plant run by a government contractor and not a plant run by the Federal Government?

A. I don't know the background of that but it was built at the start of World War II for and by contractors that were working directly for the government. Now, whether they worked through operating for the plant as the real final decision on what they should -- how they should build it I am not too sure about it.

Q. So you don't know whether the manufacturing operation at that plant was run by the Federal Government or run by people who were making things for the Federal Government to use as part of the war effort?

A. It was much more carefully supervised than the Federal Government did for our own operation. We were making stuff directly for the government.

Q. But you weren't making ammunition, were you?

A. We weren't making ammunition but we were making stuff that they needed before the ammunition chemically and we were almost as busy or we were as busy as the plant across the street. But we did not have supervision by the government in any way, shape or form.

Q. But you are not as familiar with exactly how the Federal Government supervised this plant across the street?

A. Except discussing it with the men that were

1 doing the job over there. I used to take them down to
2 our service club, which is World War I veterans,
3 occasionally and they were pretty -- had pretty much a
4 tight grip on what was going on over there. Maybe it
5 was -- maybe they were saying it was to -- more
6 controlled than they actually had but it is true that
7 the plant was taken over directly after the war and
8 continued under the present operation.
9 Q. Taken over by whom after the war?
10 A. What's the name of that company? Don't ask
11 it.
12 Q. But by a private company?
13 A. Yes, that's one of the large eastern
14 companies.
15 Q. Mr. Schwartzbauer asked you something about
16 the old time practice of chewing the pitch. In modern
17 refineries do refinery workers chew the pitch or did
18 that go out with the old days?
19 A. Well, I don't think there are any old-timers
20 in that business anymore. They might do it just out of
21 a curiosity knowing that it was done. The only way
22 that they could do it in those days, they had the --
23 they didn't have the rapid distillation or rapid
24 checking on special distillation equipment in their
25 laboratory to give that up but a few minutes after a

1 telephone call. But they could get that same data by
2 chewing the pitch.
3 Q. But modern refinery workers don't tend to
4 chew the pitch?
5 A. I haven't seen it since the early days of our
6 own operation. I think since they had to use younger
7 operators -- is was just the old-timers that did that
8 and they did it with a bang, they could tell just the
9 minute that they had to shut off that fire under the
10 stills.
11 Q. Mr. Hennessy, you have almost reached
12 eighty-eight years of age, and I realize you are not a
13 Doctor and you don't have medical training but have you
14 seen in the course of your lifetime great developments
15 in medical knowledge?
16 A. Tremendous.
17 Q. And wouldn't it be fair to say that we know
18 things now about medical problems and things that could
19 hurt us from a health prospective than what we did know
20 when you were a young man?
21 A. Well, you are asking a very very difficult
22 question. I am an old man myself and one that would
23 side with the doctors that -- I had no fear of that
24 because they had so many other contacts that would
25 result in the same results if they weren't used

1 carefully. I know Doctor -- this thing came up and
2 Doctor Fritsche was one of the top doctors. I don't
3 know whether you were that familiar with that name or
4 not but he headed up our physicians in this area and
5 extending pretty well nationwide. I asked him that
6 same question. We have a young lady here so I won't
7 tell you exactly how he worded his reply but it
8 wouldn't be worded to the ladies in front of him. He
9 was thoroughly disgusted with how the combination of
10 getting that thing together would be complicated where
11 it would effect somebody.
12 Q. When did this conversation with Doctor Richie
13 take place, do you recall?
14 A. I think that was when he was about to retire.
15 He had been taking care of both myself and my wife and
16 our kids. We went down to -- she went on down to see
17 him and he said, "I want some X-rays right away, we are
18 going to check that immediately," and where we would
19 get the best X-rays and he told her it was a little
20 place around here. He said, "Go up and you will get it
21 right there," and we couldn't follow his instructions.
22 He says, "Oh, come on, I will come with you." He sent
23 in and got her X-rays and he started to tell all these
24 stories about his -- that's where I got his comment on.
25 Q. Let me go back. I am not talking

1 specifically about coal tar problems, I am just talkin
2 in general and I just wanted to ask whether it's your
3 experience that people today know more about health
4 risks of any kind, things that could hurt them than the
5 causes of cancer, the causes of heart disease, et
6 cetera, than they did when you were a young man?
7 A. Well, from personal knowledge I can't answer
8 that yes or no. I do know some of the younger
9 generation has an entirely different outlook on life
10 than I have had but I would say from my own personal
11 experience that some of the things they are doing today,
12 they are a great deal more hazardous than what they are
13 drinking or eating. I can't get along with that idea
14 that it's a really serious problem because we have
15 lived with it for so long and of all the men I know
16 that have lived the same life with it that I have, not
17 a single one of them would blame their contact with
18 coal tar, although it's a really -- you have to know
19 it's an effect and you can't -- you have to take care
20 of yourself.
21 Q. But you wouldn't advise drinking water that
22 had been contaminated with coal tar, would you?
23 A. I wouldn't advise anybody to drink
24 contaminated water with anything.
25 MR. HIRD: Thank you, Mr. Horner.

MR. SCHWARTZBAUER: I don't have anything else.

(At this time a discussion was held off the record.)

MR. SCHWARTZBAUER: I would like the record to show that we have had a discussion off the record and that Mr. Horner is willing waive the right to read and sign the deposition, however, the United States takes the position that he should read and sign it.

MR. SHAKMAN: The State also does not waive the reading and signing.

MR. HIRD: What about Saint Louis Park?

THE WITNESS: Well, then I would certainly read it and sign it. We don't have to fight about it then, do we?

MR. SCHWARTZBAUER: When they take that position then it will be submitted to you. We will be glad to read it.

1 H.R. HORNER

2

3

4 I, H.R. HORNER, do hereby certify that I have
5 read the foregoing transcript of my Deposition, and
6 believe the same to be true and correct, (or, except as
7 follows, noting the page and the line number of the
8 change or addition desired and the reason why):

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23 _____

24 Dated this ___ day of _____, _____.

25

STATE OF MINNESOTA)
) ss.
COUNTY OF WASHINGTON)

Be it known that I took the deposition of E.R. HORNER, on the 8, 9, 10, 11 & 12th days of March, 1983 at Indianapolis, Indiana;

That I was then and there a Notary Public in and for the County of Washington, State of Minnesota, and that by virtue thereby I was duly authorized to administer an oath;

That the witness before testifying was by me first duly sworn to testify the whole truth and nothing but the truth relative to said cause;

That the testimony of said witness was recorded in Stenotype by myself and transcribed into typewriting under my direction; and that the deposition is a true record of the testimony given by the witness to the best of my ability;

That I am not related to any of the parties hereto nor interested in the outcome of the action;

That the reading and signing of the deposition by the witness was executed as evidenced by the preceding page;

That Notice of Filing was waived.

WITNESS MY HAND AND SEAL this 14th day of March, 1983.

Kirby A. Kennedy
Court Reporter

Mr. H. R. Horner

Temporary Address & Phone Because of Fire:
6531 Cambridge Street
Minneapolis, Minnesota 55423
Phone: 929-5595

SOIL ENGINEERING SERVICES, INC
615 NORTH COUNTY RD. 18 · MINNEAPOLIS, MINN 55427 · 5..

S. BRAUN, P.E.

OCT 14 1968

October 8, 1968

Republic Creosoting Company
Division of Reilly Tar and Chemical Coporation
7200 Walker Street
Minneapolis, Minnesota 55426

Attn: Mr. W.H. Barton

Re: 68-322 SOIL BORINGS
Proposed Hydraulic Loader Foundation
Republic Creosoting Company
St. Louis Park, Minnesota

Gentlemen:

Per your request, two penetration test borings have been taken to assist in determining general soil and water level conditions for the proposed hydraulic loader foundation proposed just east of the A&B Mill in St. Louis Park, Minnesota.

The borings were taken at the locations which you indicated in the field and as shown on the attached sketch. Surface elevations were referenced to the top of the fire hydrant approximately 100 feet north of the proposed foundation, as also shown on the attached sketch.

The borings were taken, on October 10, with a truck-mounted core and auger drill equipped with hollow-stem augers. Samples were obtained using the standard 2-inch OD split sampler driven by a 140-pound hammer falling 30-inches, thru the hollow-stem augers. Blows per foot of penetration (BPF) were recorded. In soil conditions similar to those encountered on this site, the use of the hollow-stem augers eliminates the driving of casing and the need for jetting water. In addition to the split barrel samples, an undisturbed thin-wall Shelby tube sample was obtained of the soft clay indicated in one of the borings.

Mineral soils encountered in the borings were visually classified in accordance with the U.S. Bureau of Chemistry and Soils Classification System. A copy of that chart is attached. Some representative soil samples will be retained in this office for a period of 60 days to be available for your examination.

S&P DEPO. EXH. 52
2/9/83
KIRBY A. KENNEDY
COURT REPORTER

C303928

OUR LETTERS AND REPORTS ARE FOR THE EXCLUSIVE USE OF THE CLIENT TO WHOM THEY ARE ADDRESSED AND THEIR COMMUNICATION TO ANY OTHERS ...

Both immediately after completion of the individual borings, and again prior to leaving the site, after completion of the second boring, both of the borings were probed to check for the presence of ground water.

RESULTS

Logs of soils encountered, penetration resistances, and water level observations are plotted on the attached soil boring log sheets. Results of the laboratory tests on the undisturbed thin wall Shelby tube sample are shown on the attached tabulation.

Both borings encountered fill to the 4-foot depth. This fill material was mostly a brown and black loam and contained a few cinders and concrete chunks. Below the fill, both borings encountered a brown to black fibrous peat and muck to the 13-foot depth. A grey clay was indicated below the peat and muck and extended to the 17-foot depth in boring ST-1 and to the 16-foot depth in boring ST-2. A brown medium to coarse sand was indicated below the grey clay in both of the borings and to the 18-foot termination depth in boring ST-1 and to the 20-foot termination depth in boring ST-2.

A penetration resistance of 11 BPF was recorded in the grey clay of boring ST-1. This penetration resistance would seem to indicate that the grey clay in this boring is rather stiff. However, a penetration resistance of only 4 BPF was recorded in the grey clay indicated below the peat and muck in boring ST-2 and the unconfined compression strength of this material was found to be only about 200 pounds per square foot (psf). The granular soils encountered below the grey clay were found to be of medium density.

The dry density of the undisturbed Shelby tube sample was found to be only 79 pounds per cubic foot (pcf). This clay was also found to have a very high moisture content, approximately 35 percent.

Water was indicated at depths ranging from 2 to 3.5 feet below the ground surface or between about elevations 93 and 94 on the assumed datum when measured just prior to leaving the site. If given additional time to stabilize, the water level in boring ST-2 would probably rise to about the same elevation as that indicated in boring ST-1. Water levels should be expected to show normal seasonal and annual fluctuations.

RECOMMENDATIONS

The proposed structure supported on the inplace fill and underlying organic materials and rather soft clays encountered in these borings would be subject to severe and erratic differential settlement. It would then appear that it would be necessary to either excavate the inplace fill and underlying soft and organic materials and place a controlled compacted backfill or to support the proposed structure on piling.

The existing A&B Mill is only about 6 feet away from the proposed hydraulic loader foundation. If an excavation-backfill approach would be followed, it would be necessary to remove all of the inplace materials down to the underlying brown sands. This would involve removing about 16 to 17 feet of inplace material. In order to provide sufficient lateral stability against possible shear failure, it would be necessary to oversize the backfill sufficiently in order to provide a minimum fill sideslope of 1:1 from the proposed footing locations. Obviously, this would not be possible with the existing building to the west.

It would then appear that it would be necessary to support the proposed structure on piling. Discussion with you indicated that the structural elements of the mill are in rather sound condition although the floor slab appears to be settling. Since these organic materials probably extend into the mill area, it is possible that the structural elements of the mill are supported on piling while the floor slab has merely been placed on fill over the existing soft and organic materials. Driving of piling adjacent to the structure could cause the floor slab of the exisiting mill to settle excessively. Therefore, if the proposed foundation is to be placed at this location, it would appear that it would be necessary to support the structure on cast-in-place piling. These borings were not extended a sufficient depth into the underlying sands in order to assist in determining the piling length. If the project is to proceed, an additional deep penetration test boring may be desirable in order to assist in determining the necessary piling length. Mobilization costs for cast-in-place piling might be excessive for the small proposed installation.

Depending upon the settlement tolerance and permanence of the proposed loader, excessive costs of cast-in-place piling might dictate consideration of other approaches. An alternate approach, with obviously some risk, would be to remove the tracks and the upper 8 feet of inplace material, place compacted fill to footing grade, then place an overload equal to about 1.5 times the design load and monitor the rate of selltement until the ultimate settlement appears to have been achieved, and then place the structure on the fill and underlying soft and organic materials. The risk of detrimental settlement would be minimal provided the water level is stabilized enough so that the peat will be permanently below the water table and thus not be subject to decomposition. Since repeated impact loadings, as might be anticipated on a loader, could possibly cause some continuing compression of the peat, it would be desirable to incoporate provisions for correcting such settlement into the design of the facility.

Of necessity, the area of the borings in relation to the area of the foundation, and the depth of the borings, are limited. Suggestions and/or recommendations of this report are opinions based upon the data obtained from the borings.

If we can be of further assistance in evaluating these data, or taking an additional deep penetration test boring, kindly contact us at your convenience.

Very truly yours,

SOIL ENGINEERING SERVICES, INC.

D. L. Glasspoole CGK

D. L. Glasspoole

J. S. Braun, P.E
Soils Engineer

JSB/DLG:js

C303981

68-322

LABORATORY TEST RESULTS

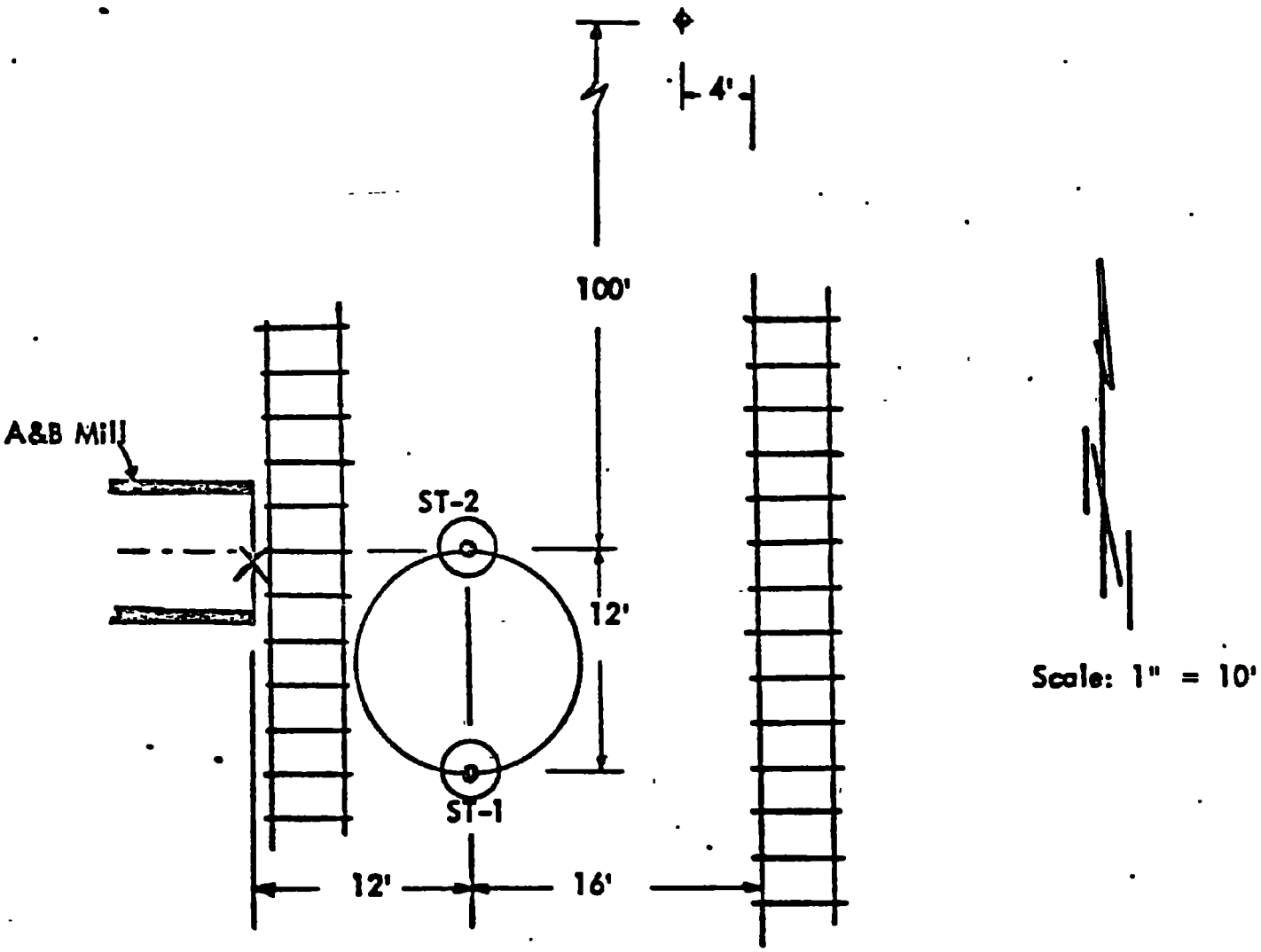
Sample#	TW-1
Boring #	ST-2
Surface Elevation	96.4
Depth, feet	15

Unconfined Compressive Strength, psf	200
Dry Density, pcf	79
Moisture Content,%	34.5

Class (U.S. Bureau of Chemistry and Soils)	Clay

68-322

SKETCH SHOWING LOCATION OF PENETRATION TEST BORINGS



⊙ Location of penetration test borings

✕ Elevation of concrete below door in A&B Mill = elevation 100.5

✦ Assumed Bench Mark: Top of fire hydrant approximately 100' north and 12' east of boring ST-2 = elevation 100.0

CX.3023

LOG OF TEST BORINGS

PROJECT #: 68-322
DESCRIPTION: Hydraulic Loader Foundation
Republic Creosoting Company
St. Louis Park, Minnesota

SOIL ENGINEERING SERVICES INC

VERTICAL SCALE: 1" = 3'

ST-1

DEPTH		BPF
0'	SURFACE ELEVATION: *96.2	
	I , Sandy Loam, and cinders, black mottled with brown, moist	
	Water Level	
4	Fibrous Peat and Muck, brown to black, moist to wet	3
		3
		3
13	Clay, grey, wet (rather stiff)	3
		11
17	Medium to Coarse Sand, brown, wet	
18	Water level down 3' when measured immediately after completion and down 2' when rechecked 2 hours later.	12

* See attached sketch for description of assumed bench mark

ST-2

EPTH		BPF
0'	SURFACE ELEVATION: 96.4	
	I , ndy Loam, non plastic with a little Fine Gravel and a few concrete chunks, brown mottled with black, moist	
	Water Level	
4	Fibrous Peat and Muck, brown, to black, moist to wet	
		2
13	Clay, grey, wet (soft)	3
		4
16	Medium to Coarse Sand with a trace of Fine Gravel, brown, wet (medium)	TW*
		15
20	Water level 5' down when measured immediately after completion and down 3.5' when rechecked 3/4 hours later - boring then backfilled.	11

*TW denoted Shelby tube thin-wall

LOG OF TEST BORINGS

PROJECT #: 68-322
DESCRIPTION: Hydraulic Loader Foundation
Republic Creosoting Company
St. Louis Park Minnesota

SOIL ENGINEERING SERVICES INC

VERTICAL SCALE: 1" = 3'

ST-1

DEPTH		BPF
0'	SURFACE ELEVATION: *96.2	
	I , Sandy Loam, and cinders, black mottled with brown, moist	
	Water Level	
4	Fibrous Peat and Muck, brown to black, moist to wet	3
		3
		3
13	Clay, grey, wet (rather stiff)	3
		11
17	Medium to Coarse Sand, brown, wet	
18		12

Water level down 3' when measured immediately after completion and down 2' when rechecked 2 hours later.

* See attached sketch for description of assumed bench mark

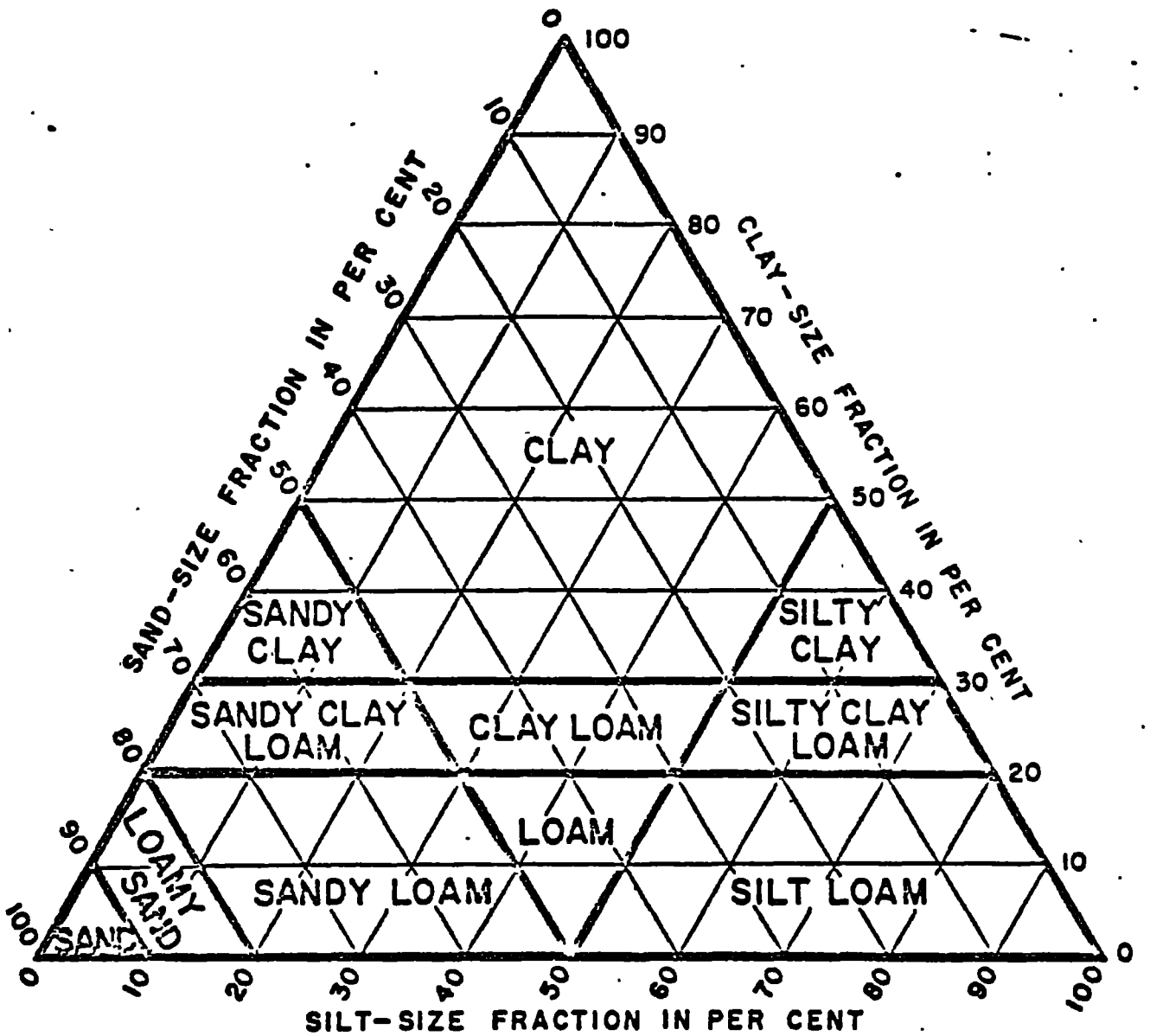
ST-2

EPTH		BPF
0'	SURFACE ELEVATION: 96.4	
	I , ndy Loam, non plastic with a little Fine Gravel and a few concrete chunks, brown mottled with black, moist	
	Water Level	
4	Fibrous Peat and Muck, brown, to black, moist to wet	
		2
13	Clay, grey, wet (soft)	3
		4
16	Medium to Coarse Sand with a trace of Fine Gravel, brown, wet (medium)	TW*
		15
20		11

Water level 5' down when measured immediately after completion and down 3.5' when rechecked 3/4 hours later - boring then backfilled.

*TW denoted Shelby tube thin-wall

SOIL ENGINEERING SERVICES INC.



SOILS

TEXTURAL CLASSIFICATION CHART

ADAPTED FROM U.S. BUREAU OF CHEMISTRY AND SOILS

SIZES OF SOIL SEPARATES

FRACTION	PARTICLE DIAMETER
SAND	FROM 2.0 TO 0.074 MM.
SILT	FROM 0.074 TO 0.005 MM.
CLAY	LESS THAN 0.005 MM.

INTER-OFFICE CORRESPONDENCE

REILLY TAR & CHEMICAL CORPORATION

TO: Mr. T. E. Reilly

OFFICE: Laboratory - Indianapolis

FROM: Dr. W. R. Wheeler

DATE: November 19, 1969

SUBJECT: St. Louis Park - Underground Water Pollution

Mr. Horner and I visited St. Louis Park November 14 to discuss possible pollution of ground water, at the request of the City Manager. Mr. Finch briefed us on pollution problems and took us on a tour of the area before the meeting.

You will recall that the plant is located on the lower slope of a horseshoe shaped depression having a large bog extending back from the open side. The bog once overflowed into (dry) Minnehaha creek but has now been effectively dammed off by construction of a road across the open end of the horseshoe. Between this road and the plant light manufacturing buildings rest on filled ground where the state highway crosses the bog.

Processing waste from the plant is pumped to a wooden settling basin built about 1942, then flows underground to the edge of the property where it discharges to a ditch which carries it to the edge of the bog. Old analyses indicate that phenol contents of 10-20 ppm may be typical. As the area has no storm sewer much of the drainage from higher sections flows across the plant to the bog, frequently causing curtailed operations, and presumeably carrying plant waste into the swamp.

We met the City Manager at 2:00 P.M. Present were: Chris Cherches-City Manager, E. A. Hichok-Consultant (Hydrologist) for the City Council, H. J. McPhee-Health Officer for the City, William Justin, William R. Wheeler, H. A. Horner, H. L. Finch-(Reilly-Republic)

It was thought that Mr. Hichok would present a detailed report but this was not done. He simply explained that the area is largely sand to a depth of 80-200 feet, below which is a porous, water bearing layer known as St. Petersburg sandstone; below this is Shaope limestone, originally impermeable, but now cut by numerous fractures. Below this at 400-600 feet is the main aquifer of Jordon sandstone. The only piece of data offered was that one of the city's wells, 4000 feet east in line with the normal underground flow, now has a phenol content of 0.2 ppm (recommended maximum for potable water is 0.001 ppm). He stated that the most likely source of phenol was the bog into which the plant effluent flows.

SLP DEPO. EXH. 51
3/3/83
KIRBY A. KENNEDY
COURT REPORTER

Mr. Cherches hoped aloud that our waste problems could be corrected before he had to take the "report" to the City Council, after which the problem might become a political or newspaper issue.

In response to our question on use of the city sewers they indicated general agreement provided that the sanitary sewers in the area were of adequate size, and the Minneapolis Sanitary District (which treats their sewage) approve the connection.

Mr. Hichok acknowledged that the long delayed construction of a storm sewer for the area might be reactivated, but doubted that we would be permitted to put storm waste from the plant into it unless free of phenol; when pressed for a limit he suggested "perhaps one ppm". This opinion may be of some consequence as he is a member of a regulatory commission for Minnehaha creek into which such a sewer would run.

Air pollution was not discussed with the city representatives.

In response to Mr. Finch's query about the status of the Louisiana Avenue extension which is laid out to pass through the plant refinery Mr. Cherches suggested that its exact location might be reconsidered.

The Reilly-Republic group left with the impression that while the city had a legitimate concern for the quality of their drinking water, the meeting had been handled in rather a curious fashion, and other issues might well be involved.

Mr. Finch is to look into the possibility of connecting into the city sanitary sewer, and the charges for which we may be obligated. Beyond this, it may be wise to proceed slowly, awaiting some indication of the city's attitude on roads, storm sewers, and air pollution problems.

Very truly yours,

Dr. W. R. Wheeler

WRW:skh

cc: H. R. Horner
P. C. Reilly
R. J. Boyle
T. J. Ryan
R. J. Hennessy
H. L. Finch

G-102AT 5M 11-59P

INTER-OFFICE CORRESPONDENCE

REILLY TAR & CHEMICAL CORPORATION

Supplementing the above letter

Attached is a copy of:

1. Minnesota Dept. of Health report dated May, 1938.
2. Dry weather effluent flow dated January 25, 1941.
3. Area map showing approximate outside area draining into plant, operating area serviced by sewers, location of main sewer and points where plant effluent was sampled.
4. Summary of analytical examination of St. Louis Park waste water.

Mr. Hichok intimated that the contamination of the well as mentioned in the above letter originated in the peat bogs shown on the map. Our analysis shows a material reduction of the contamination as it enters the bogs however we have not analyzed the surface water on these bogs and I think it would be a good idea to do so. In 1940 you will note the phenol was higher in the south bog which is further away from the plant and is now completely sealed off by excavating for the sub base of highway 7 to the bottom of the bog which as reported was approximately 25'. Therefore an analysis at location 4 would be little affected by our discharge.

It is reported that there is a sewer in Walker St. and our sewer runs into an open ditch on the berm of this street. This would be very convenient for making a sanitary sewer connection. There is also a lift station for either a sanitary sewer or storm sewer system. This latter location would require approximately 2000' of sewer within our plant.

The total drainage area that passes through our plant in relation to our own plant area and operating area indicates the magnitude of our flooding problems.

At the time that I was in the plant I noticed an extremely objectionable odor and it was reported that this was the basis of our neighbor's complaint. To me this is not a straight coal tar distillation odor and I have suggested that Dr. Mootz investigate the possibility of our supplier adding benzol still cuts or other contaminates to our tar. If this odor is not from a contaminate in the tar I feel we should consider burning rather than attempting to scrub it out.

Very truly yours,

H. R. Horner

H. R. Horner

MINNESOTA DEPARTMENT OF HEALTH
Division of Sanitation

Report on Investigation of Disposal of Wastes at
the Republic Creosoting Company,
St. Louis Park, Minnesota
May, 1938.

This plant processes crude coal tar and treats railroad ties. Creosote and road oil are the principal products with benzol, tar acids, and cake, being developed as by-products. Approximately 16,000 gallons of tar can be processed per day. Wastes discharge into a peat bog where they seep into the ground. This bog has an area of about four acres and is located directly south of the plant. It is divided by State Highway No. 12 which was constructed through it in 1936. The road fill extends through about 25 feet of peat to a clay and sand foundation.

A survey of the waste production in the plant indicated that, exclusive of spills and surface runoff, approximately 6,000 gallons of wastes are discharged to the swamp weekly. On May 16 the volume of waste flowing in the ditch draining to the swamp was estimated at 200 gallons per minute and on May 19 at 150 gallons per minute. This, however, was mostly surface runoff and ground water. A thick accumulation of tar was present on the sides and bottom of the ditch. The waste was milky, contained floating oil, emulsified oil, and settleable tar. The road ditch between Walker Street and the plant contained a tar accumulation about six-inches deep. Oily water extended over the surface of the bog and much of the vegetation and peat was covered with tar.

Complaints have been made regarding tarry tastes present in water drawn from nearby wells. A survey indicated that at least eight wells had been affected. The location of these wells, together with the location of others that were examined, is indicated on a sketch attached to this report. Several of the affected wells are situated only a short distance from the bog. The two most distant ones are located on a straight line due east of the bog.

Tarry tastes in the underground waters of this vicinity were first reported in 1932. At that time the Village of St. Louis Park drilled a municipal well that yielded water containing sufficient tarry taste to cause its abandonment.

This well is located about three-quarters of a mile due east of the bog, is cased to a depth of 280 feet and drilled to 540 feet. (It is probable that much of this water is drawn from the Jordan sandstone). About the same time the Prestolite Company drilled a well to a depth of approximately 200 feet.* The water drawn from this well had a tarry taste which was being removed by passing the water through a small filter.

A group of small residence wells located about a quarter of a mile northeast of the bog have been affected. According to information obtained from a local well driller**, these wells are about 80 feet deep and extend to the Plattville limestone or the gravel layer overlying this limestone. Most of the wells have been abandoned.

The larger of the two wells at the Medberg Freidheim and Company, gravel pit also produces water with a tarry flavor. It is situated approximately one and one-quarter miles east of the bog. According to the well driller*** this well was first bored into the St. Peter sandstone at 280 feet and yeilded water with no tarry taste when pumped at 500 gallons per minute. Two years ago this well was extended to 410 feet, which is in the Jordan sandstone, and then pumped at 750 gallons per minute. Immediately a strong tarry taste developed in the water.

Analytical Data: See attached sheet.

Samples of water were collected for laboratory analysis from wells that yielded water having tarry tastes and from wastes flowing in the ditch at Walker Street, a point located below all sources of waste at the creosoting plant.

Analyses of the well water samples confirmed the presence of tarry tastes and odors and demonstrated the presence of phenolic substances.

The waste sample contained a small amount of floating and emulsified oil and a large amount of phenolic substances.

*Manager of Prestolite Company, St. Louis Park
** Dr. Edward Lenner
***

C302826

Phenol and its analogs are organic compounds that have very marked bactericidal properties and hence are of value for pole treating and other preservative uses. They have characteristic odors and flavors and when present in water can often be detected in concentrations of one part in ten million.

Ordinarily, organic compounds filtering through soil are rapidly destroyed by bacteria and other microscopic life. However, phenolic substances kill bacteria when present in even very small quantities and therefore may travel long distances underground before they are diluted sufficiently to be destroyed or to cease causing tastes in the ground water.

Wastes discharged into the bog contain oil and phenolic substances that might be objectionable if the wastes were discharged into a sewerage system. The oil might be of such a nature that it would cause an explosion or fire hazard. The phenolic substances may be present in sufficient concentration to upset the operation of a small sewage treatment plant that employed biological processes.

It is possible that the oil might be largely removed by flotation, sedimentation, and evaporation if the wastes were retained a sufficient length of time in a shallow, open settling tank. The addition of acid may be of value in this separation. Evaporation of the lighter boiling fractions, which are the ones most likely to cause fires or explosions in sewers, would be accentuated by the fact that the wastes are hot when discharged.

Processes have been developed for removal of phenol from gas plant wastes. These processes might be applied to the water portion of these wastes.

Recommendations

The present method of disposing of wastes containing oil and phenolic substances by soil absorption should be discontinued.

A new place for final disposal of the wastes should be obtained. The wastes should be treated sufficiently to prevent their causing undesirable conditions. The treatment necessary will depend on the method of final disposal selected.

Conclusion

A number of wells have been abandoned because of tarry tastes in the water. This investigation did not disclose any source of materials that could be responsible for these tastes other than wastes discharged from the Republic Creosoting Company that are subsequently absorbed into the ground. The aforementioned recommendations are offered to prevent further pollution of the underground waters.

L. L. Kempe,
Assistant Public Health Engineer.

Approved:

H. A. Whittaker, Director.

hks

C302828

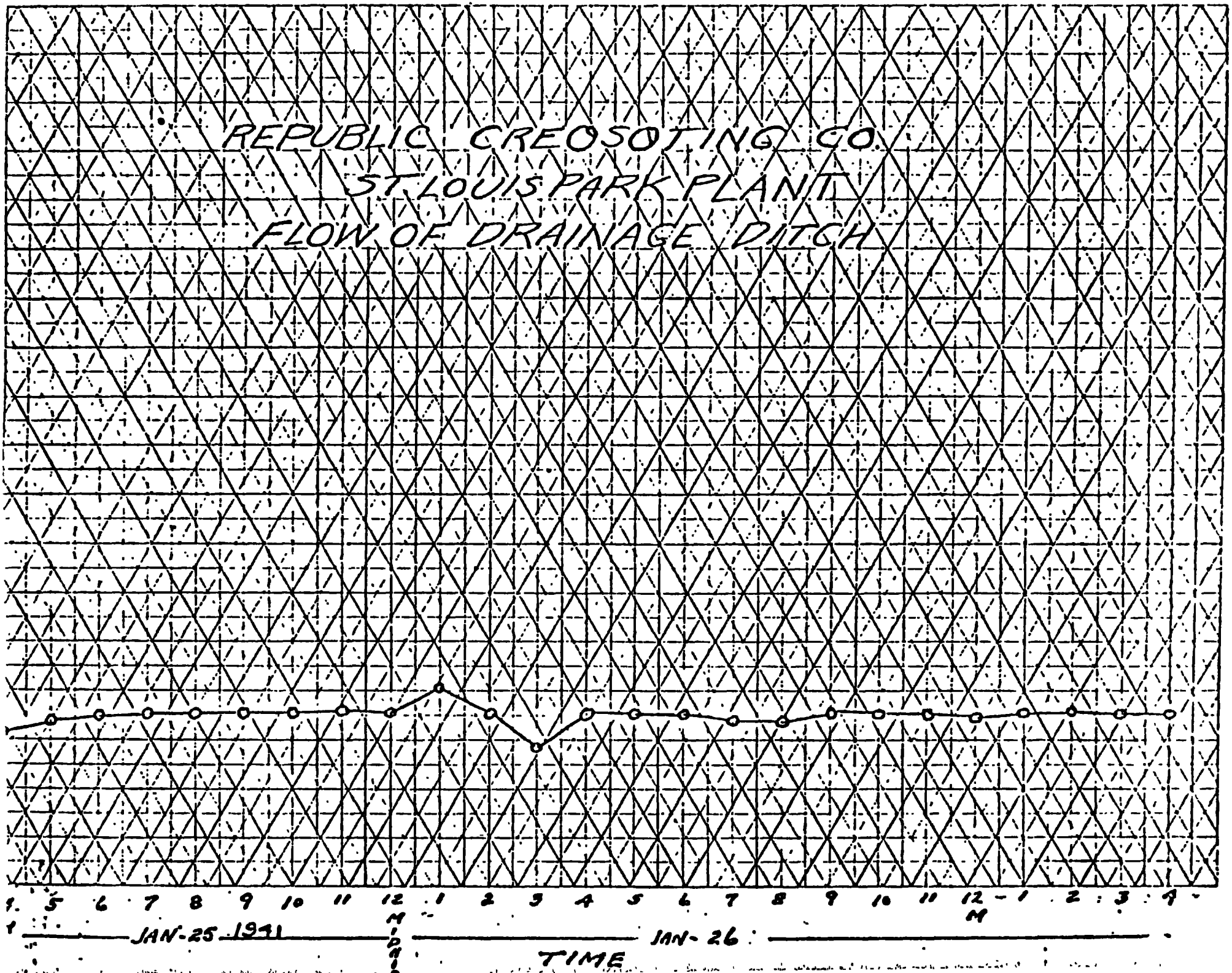
MINNESOTA DEPARTMENT OF HEALTH

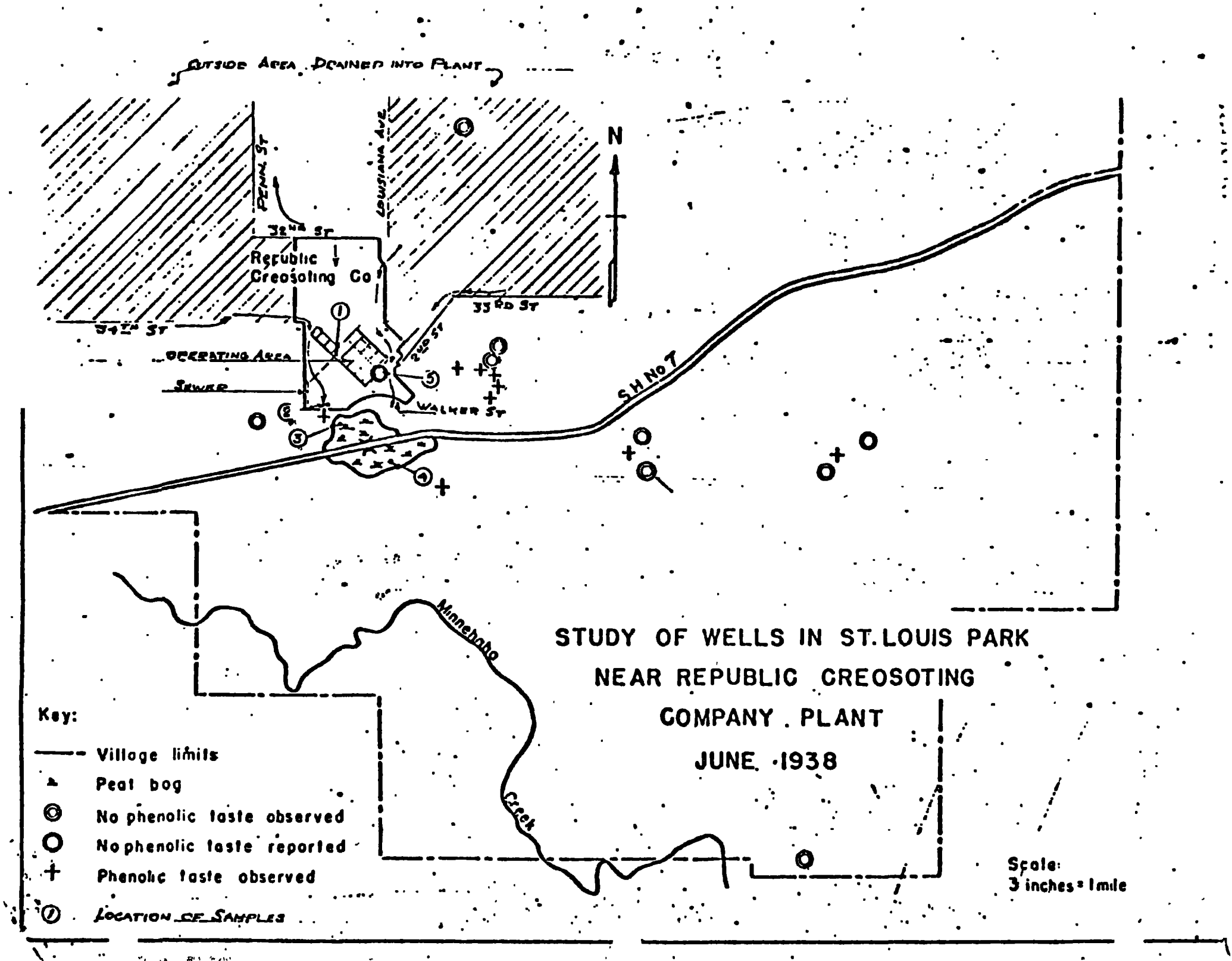
DIVISION OF SANITATION

Analytical Examination of Water

NO	TOWN, ETC.	MAP LOCATION	SPECIFIC LOCATION	SOURCE
60469	St. Louis Park	Residence Well	3363 Brownlow Ave.	Well
60470	"	Gravel-washing well	Hedberg-Gravel pit	"
60492	"		3355 Brownlow Ave.	"
60493	"		Repub. Creosoting Co.	Ditch outside

Specimen Number	60469	60470	60492	60493		
Station Number						
Collected by	LLK	LLK	LLK	LLK		
Date Collected	5/16/38	5/16/38	5/19/38	5/19/38		
BACTERIAL: Exam. by						
Bacteria per c.c. 37° C. 24 hours						
Coli-aerogenes group (100 ml. / M.P.N. per 100 ml.)						
PHYSICAL: Exam. by	DMT	DMT	DMT	DMT		
Turbidity						
Color						
Odor	Tarry	Phenolic	Tarry			
CHEMICAL: Exam. by (parts per million except as noted)	DMT	DMT	DMT	DMT		
Total hardness						
Alkalinity	520.	320.	440.			
pH value	7.4	7.4	7.1			
Iron	9.0	1.8				
Manganese						
Chlorides			11.			
Residual Chlorine						
Sulphates						
Nitrates						
Dissolved Oxygen						
Biochemical Oxygen Demand (Five-day)						
Total solids				4400.		
Total suspended solids						
Settleable solids c.c. per liter				4.5		
Phenol	0.221 ppm	0.00813ppm	12.3ppm	50.ppm		
Total Volatile Matters				1900.		


REPUBLIC CREOSOTING CO.
ST. LOUIS PARK PLANT
FLOW OF DRAINAGE DITCH
5 6 7 8 9 10 11 12 1 2 3 4 5 6 7 8 9 10 11 12 1 2 3 4
M
M
JAN-25-1941
MIDNIGHT
JAN-26
TIME


Outside Area Drained into Plant
Penn St
Louisiana Ave
N
32nd St
Republic Creosoting Co
33rd St
34th St
Operating Area
Sewer
2nd St
Walker St
S H No 7
Minnehaha Creek
STUDY OF WELLS IN ST. LOUIS PARK
NEAR REPUBLIC CREOSOTING
COMPANY . PLANT
JUNE 1938
Key:
Village limits
Peat bog
No phenolic taste observed
No phenolic taste reported
Phenolic taste observed
Location of Samples
Scale:
3 inches = 1 mile

TITLE: SUMMARY OF ANALITICAL EXAMINATION OF ST LOUIS PARK WAST WATER

DRAWING NO.
DATE:
BY:
SHEET OF
SCALE:

	DATE	OIL-PPM	PHENOL PPM	SOURCE
① OIL-WATER SEPORATOR.				
INFLUENT	6/24/68	435.0	20.0	TWIN CITY TESTING
EFFLUENT	6/24/68	66.0	16.0	" "
	1/20/69	2.0	0.76	" "
② OPEN DITCH AT PROP. L	5/-/38	+1900.0	50.0	MINNESOTA DEPT. OF HEATH
	5/24/40	—	82.0	REILLY LAB.
	6/24/68	25.0	13.0	TWIN CITY TESTING
	1/20/69	0.76	0.5	" " "
③ NORTH PEAT BOG	5/24/40		145.0	REILLY LAB
④ SOUTH PEAT BOG	5/24/40		155.0	" "
⑤ PLANT WELL	6/24/68	2.0	0.2	TWIN CITY TESTING

○ SEE MAP FOR LOCATION
+ TOTAL VOLATILE MATTER.

302834

Mr.W.J.McLellan
St.Louis Park Office

Indianapolis

C.B.Edwards

November 4, 1940

E. D. JONES - WELL WATER

cc-Mr.H.R.Horner, Reilly Lab.

This will acknowledge receipt of your letters of October 14th and 31st on this subject. We did not understand that you desired a response to your first letter. We are not at fault and our plant cannot be held responsible for any contamination of Mr.Jones's well. We are now following out the suggestions of the Board of Health of the State of Minnesota with respect to our drainage system and that is as far as we can go. You state it is undoubtedly decayed vegetable matter that is responsible for the trouble.

We have had these complaints for years and Mr.Jones's is no different than any of the others. We are confident that none of them has been caused by our operation. You have a very important piece of evidence in the statement of Ole Peterson that some of the wells in this vicinity had the same odor and taste before we purchased the property. This statement should be drawn up in writing, signed by Ole Peterson and notarized so it can be used at some later time.

We will take the same position with respect to Mr.Jones's complaint as we have in other cases of this kind.

CBE.S

REPUBLIC CREOSOTING COMPANY

C. B. Edwards

Encl. to Mr.Horner - Mr.McLellan's letters of October 14 & 31st

SLP DEPO. EXH. 53
3/6/83
KIRBY A. KENNEDY
COURT REPORTER

REPU LIC C O DTIN CO PANY

HOME OFFICE- INDIANAPOLIS

A. E. Larkin

MILEY BOILER

ATT: Mr. C. B. Edwards

St. Louis Park

May 15, 1944

I know that when Mr. Holstrom's letter of May 13 reached you, you were startled because of the recent experience with the boilers at Provo.

Regarding the situation Mr. Holstrom refers to in his letter about the water from our tar system getting into our pond; you will be glad to know he has worked out a fool-proof arrangement so that this can not happen at any time in the future.

Yours very truly,

A. E. Larkin

RECEIVED
1 . 1944
LABORATORIES

DS
cc: Mr. Zorner

Even if we are again fooled but

101247

SLP DEPO. EXH. 54
3/8/87
KIRBY A. KENNEDY
COURT REPORTER

INTER-OFFICE CORRESPONDENCE

REPUBLIC CREOSOTING COMPANY

TO: HOME OFFICE - Indianapolis

OFFICE: St. Louis Park, Minn.

FROM: W. J. McLellan

DATE: June 1, 1939

SUBJECT: DRAINAGE DITCH

We have heard nothing from you in connection with our drainage ditch problem here and are very anxious to come to some decision in connection with the problem of our waste water as we are sure to hear further from the State Board of Health and must have your instructions before we can discuss the matter with them.

We have given you a number of samples from our drainage ditch together with weir readings and will be very glad to give you further information of this sort if you desire it, but as we understand it, the purpose of this information is to determine the size and capacity of settling basins, which, of course, will take care of any suspended matter in the waste water but the thing the State Board of Health are objecting to is the phenols and similar soluble acids in the waste water as well as light oils and this material could not be kept from flowing into the swamp area by the use of settling basins alone as far as we can see. Perhaps you have something in mind in connection with the treatment of this water to remove such acids and light oils but if so, we have not been so advised.

Will you please give this matter your attention again and let us hear from you as promptly as possible?

Yours very truly,

WJL:LR
cc - Mr. H. R. Horner, Indpls.
cc - Mr. T. E. Courtney, Indpls.

SCP DEPO. EXH. 5
3/8/83
KIRBY A. KENNEDY
COURT REPORTER

SM.0033

FORM 96-T-25M-4-38

COPY

REILLY TAR CHEMICAL CORPORATION

Mr. C.E. Edwards, Director, The Reilly Laboratories.

T.E. Courtney. November 18, 1938.

DRAINAGE WATER SAMPLES FROM ST. LOUIS PARK PLANT.

The following tests have been made on the samples referred to in Mr. Danz's letter of 10/12/38, and 11/10/38.

SAMPLE.	DESCRIPTION.	TOTAL SOILDS.	OIL.	BENZOPHENOL.
#4929A.	Water from Benzol Tank.	4544ppm.	6060 ppm.	2870 ppm.
#4929B.	Sulfate Water,	300000	----	5370
#4929C.	Water from Tar Storage.	29860	956	812
#4981E.	Well Water 11/9/38.	352	---	---
#4981B.	Drainage Water 11AM.11/7.	371	106	---
#4981I.	" " 3 PM.11/9.	561	436	---
#4981A-D.	Composite 11/7/38.)	560	330	112
#4981F-I.	" 11/9/38.)			
Same above sample filtered.		524	188	---

The total solids in the above test are the residue on drying at 100°C., the oil was determined by extracting with ether, drying and removing the ether and the phenol was determined by the Chapin test.

Samples #4981B & I were the two drainage water samples which appeared respectively to be cleanest and most contaminated. The average rate of flow of the drainage water was 2820 gallons per hour over the period of 9 A.M. to 3 P.M. on 11/7/38 and 11/9/38.

Very truly yours,

T. E. Courtney

TEC:R

cc. Mr. Edwards.

cc. Mr. Horner.

cc. Mr. Danz.

SCP DEPO. EXH. 56
3/8/83
KIRBY A. KENNEDY
COURT REPORTER

SLP DEPO. EXH. 57
3/9/83
KIRBY A. KENNEDY
COURT REPORTER

[illegible]	[illegible]	144.?	-25.5?	Kekulé?	ChB. 21, 1009 [1883]
[illegible]	[illegible]	144.?	-24.?	Jacobsen	ChB. 10, 1010 [1877]
[illegible]	[illegible]	145.?	8.?	K. E. Schulze	ChB. 20, 613 [1887]
[illegible]	[illegible]	146.0	—	[illegible]	LA Suppl. 5, 367 [1867]
[illegible]	[illegible]	146.7	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	—	—	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	ChB. 20, 134
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	ChB. 28 [illegible]
[illegible]	[illegible]	[illegible]	—	G. Schultz	ChB. 42, 3617 [1909]
[illegible]	[illegible]	161.?	[illegible]	G. Schultz	ChB. 42, 3612 [1909]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	-42.5	[illegible]	C. 1906 I, 110
[illegible]	[illegible]	[illegible]	[illegible]	G. Schultz	ChB. 42 [illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	165.?	[illegible]	G. Schultz	ChB. 42, 2512 [1909]
[illegible]	[illegible]	165.?	[illegible]	[illegible]	ChB. 29, 2609 [1896]
[illegible]	[illegible]	166.?	[illegible]	[illegible]	BrennCh. 21, 396 [1940]
[illegible]	[illegible]	170.5	-40	Kraemer, Spilker	ChB. 23, 78 [1890]
[illegible]	[illegible]	172.?	-44.?	Reinhold, Engler	LA. 184, 117 [1886]
[illegible]	[illegible]	[illegible]	[illegible]	Kraemer, Spilker	ChB. 29, 562 [1896]
[illegible]	[illegible]	172.?	-46.5	[illegible]	ChB. 21, 1018 [1888]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	ChB. 27 [illegible]
[illegible]	[illegible]	[illegible]	-11.5	[illegible]	ChB. 25 [illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	LA. 164 [illegible]

Hemellitol C_9H_{12}	[structure]	176.1	-25.5?	Jacobsen	ChB. [illegible]
Hydrinden C_9H_{10}	[structure]	[illegible]	[illegible]	[illegible]	[illegible] 757 [1909?]
2,3,4-Collidin $C_8H_{11}N$	[structure]	182	[illegible]	Eckert, Loria	MCh. 38, 238 [1917]
Phenol? C_6H_6O	[structure]	182.?	41.0	[illegible]	AFP. [illegible]
Inden C_9H_8	[structure]	182.4	-1.6	Kraemer, Spilker	ChB. 23, 3276 [1890]
[illegible] C_6H_7N	[structure]	184.4	-6.2	[illegible]	AFP. 21, 55 [illegible] [1934]
o-Kresol C_7H_8O	[structure]	191.0	31.0	[illegible]	LA. 166, 275 [1873]
Benzonitril C_7H_5N	[structure]	191.3	-13	Kraemer, Spilker	ChB. 23, 78 [1890]
[illegible] $C_{10}H_{14}$	[structure]	197.0	-80	K. E. Schulze	[illegible] 3024 [1885]
Iso-Durol $C_{10}H_{14}$	[structure]	198.4	[illegible]	Kruber, Marx?	Br. 32, 244 [1951]
p-Toluidin C_7H_9N	[structure]	200.4	45	Kruber, Rappen	ChB. 73, 1178 [1940]
1,3,5-Xylenol $C_8H_{10}O$	[structure]	201.5?	63	[illegible] Frank	BrennCh. 20, 392 [1939]
[illegible]	[structure]	203.?	-24.4	Kruber	ChB. 76, [illegible]
[illegible]	[structure]	202.?	[illegible]	Tiemann	ChB. 11 [1878]
Acetophenon C_8H_8O	[structure]	202.4?	20.5	Weissgerber	ChB. 30?, 734 [1898]
m-Kresol C_7H_8O	[structure]	[illegible]	12.2?	[illegible]	ChB. 6 [1873]
m-Toluidin C_7H_9N	[structure]	203.3	-31.5	Kruber, Rappen	ChB. 73
2,3,4,5-Tetramethylpyridin $C_9H_{13}N$	[illegible]	206	[illegible]	H. E. Jahn, A. M. [illegible]	[illegible]
2,3,5,6-Tetramethylpyridin $C_9H_{13}N$	[illegible]	[illegible]	75?	H. E. [illegible]	[illegible]
[illegible] phenol $C_8H_{10}O$	[structure]	204.5	-38?	[illegible] Frank	20, 392
o-Toluonitril C_8H_7N	[structure]	205.?	-13	Kruber	BrennCh. 32, 244 1951
Prehnitol $C_{10}H_{14}$	[structure]	205.?	-6?	Kruber	BrennCh. 32, 244 [1951]
[illegible] $C_{10}H_{12}$	[structure]	208.?	[illegible]	[illegible]	BrennCh. 32, 244 [1951]
p-Toluonitril C_8H_7N	[structure]	210	—	[illegible]	ChB. [illegible] [1881?]

[illegible]		[illegible]	[illegible]	[illegible]	[illegible]
[illegible] $C_8H_{10}O$		211,5	24	Hopkins	DRP. 447 540 [1926]
[illegible]		214	—	Kruber, Rappen	ChB. 73, 1173 [1940]
1,2,3-Xylenol $C_8H_{10}O$		217,1	75	[illegible]	AngCh. 41, 1048 [1928]
[illegible]nitril C_9H_9N		217,6	—	Franck	AngCh. 64, 381 [1951]
Naphthalin $C_{10}H_8$		217,9	80,3	Gordon	BerzJb. 8, 180 [1834]
[illegible]		218	15,5	Kruber, Rappen	ChB. 73, 1173 [1940]
[illegible]		218,3	45	Kruber, Schade	ChB. 64, 2270 [1931]
[illegible]		218,8	—	Franck	AngCh. 64, 381 [1951]
[illegible]		219,3	−4	Kruber, Schmitt	ChB. 64, 2270 [1931]
[illegible]		219,4	9,0	Steinkopf	Hamburg 1941
[illegible]		220	[illegible]	Kruber, Rappen	ChB. 73, 1173 [1940]
[illegible]		220,6	73,1	Steinkopf	Diss. Hamburg 1941
[illegible]xylenol		221,3	64	K. E. Schulze	ChB. 20, 410 [1887]
[illegible]		[illegible]	—	Kruber	ChB. 73, [illegible]

[illegible]		[illegible]	42	[illegible], Kruber	[illegible] [1930]
[illegible]		222,8	—	Steinkopf	Diss. Hamburg 1941
[illegible]		224,8	44,4	Steinkopf	Diss. Hamburg 1941
[illegible]		[illegible]	65	K. E. Schulze	ChB. 20, 410 [1887]
[illegible]		227,9	—	Steinkopf (Kruber, Lauenstein)	Diss. Hamburg 1941 ChB. 81, 221 [1948]
[illegible]		227,3	14,8	Steinkopf (Kruber, Lauenstein)	Diss. Hamburg 1941 ChB. 81, 221 [1948]
[illegible]		~ 229	—	Ahrens	[illegible] [1835]
[illegible]		[illegible]	78	Kruber, Lauenstein	ChB. 81, 321 [1948]
[illegible]		[illegible]	76	Kruber, Schade	ChB. 64, 2270 [1931]
[illegible]		[illegible]	[illegible]	Kruber, Schade	ChB. 64, 2270 [1931]

[illegible]		[illegible]	[illegible]	[illegible]	[illegible]
[illegible]		~ 240	[illegible]	Kruber, Schneider	ChB. 65, 438 [1932]
[illegible]thionaphthen C_9H_8S		240	[illegible]	Weißgerber, Moehrle	BrennstCh. 2, 1 [1921]
[illegible]thionaphthen C_9H_8S		240,[illegible]	[illegible]	Weißgerber, Moehrle	BrennstCh. 2, 1 [1921]
β-Methylnaphthalin $C_{11}H_{10}$		241,0	34,5	K. E. Schulze	ChB. 17, 842 [1884]
Iso-chinolin C_9H_7N		243,3	26,5	Hoogewerff, van Dorp	RecTravCh. 4, 125 [1885]
α-Methylnaphthalin $C_{11}H_{10}$		244,6	−30	K. E. Schulze	ChB. 17, 842 [1884]
Chinaldin $C_{10}H_9N$		246,5	−2	Jacobsen, Reimer	ChB. 16, 1082 [1883]
4-Oxy-[illegible] $C_9H_{10}O$		247,0	50	Kruber, Schade	ChB. 72, 653 [1939]
[illegible]		247,4	78	Kruber, Lauenstein	ChB. 81, 221 [1948]
[illegible]chinolin $C_{10}H_9N$		247,6	−30	Jantzen	Habil.Schr. Hamburg [1932]
[illegible] $C_{10}H_{10}O$		~ 248	119	Kruber	ChB. 64, 2270 [1931]
Benzoesäure $C_7H_6O_2$		249,0	121,7	[illegible]; Kruber, [illegible]	[illegible]
Paraffin		~ 250	80	K. E. Schulze	ChB. 20, 410 [1887]
[illegible]		[illegible]	[illegible]	[illegible]	[illegible]

[illegible]chinolin $C_{11}H_{11}N$		251,4	64,1	Jantzen	Habil.Schr. Hamburg [1932]
Hexamethyl-[illegible]		251,9	108	Kruber, Marx	ChB. 73, 1175 [1940]
Indol C_8H_7N		254,7	52,5	Weißgerber	ChB. 43, 3520 [1910]
Diphenyl $C_{12}H_{10}$		254,9	70,5	[illegible]	ChB. 8, 23 [1875]
[illegible]-Oxy-hydrinden $C_9H_{10}O$		255,0	55	Kruber, Marx	ChB. 73, 1175 [1940]
[illegible]-Methyl-isochinolin $C_{10}H_9N$		255,2	10,4	Jantzen	Habil.Schr. Hamburg [1932]
[illegible]chinolin $C_{10}H_9N$		255,3	21,6	Jantzen	Habil.Schr. Hamburg [1932]
[illegible]chinolin $C_{10}H_9N$		[illegible]	30	Jantzen	Habil.Schr. Hamburg [1932]
[illegible]naphthalin		258,0	—	Kruber, Schade	ChB. 66, 1332 [1933]
[illegible]		258,6	−22	Jantzen	[illegible] Hamburg [1932]

[illegible] $C_{..}H_{..}N$	[illegible]	[illegible]	27	[illegible]	Ballauf, Hamburg [1932]
[illegible]	[illegible]	[illegible]	111	Weißgerber, Kruber	Ch.B. 52, 964 [1919]
[illegible]	[illegible]	262,2	27	Weißgerber, Kruber	Ch.B. 52, 964 [1919]
[illegible]	[illegible]	262,4	30	[illegible]	[illegible] [1933]
[illegible] $C_{..}H_{..}N$	[illegible]	262,7	19	Jantzen	Diss. Hamburg [1933]
[illegible]	[illegible]	[illegible]	—	Kruber, Schade	Ch.B. 69, 1728 [1936]
[illegible]	[illegible]	[illegible]	-4,2	[illegible]	Ch.B. 72, [illegible] [1939]
[illegible]	[illegible]	[illegible]	15,2	[illegible]	[illegible] 1128 [1951]
[illegible]	[illegible]	[illegible]	9	[illegible]	Hamburg [1933]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible] [1939]
[illegible]	[illegible]	[illegible]	95	Kruber, [illegible]	Ch.B. [illegible] 2732 [1939]
[illegible]	[illegible]	~ 267	—	Kruber	Ch.B. 65, 1382 [1932]
[illegible]	[illegible]	[illegible]	85	Kruber	Ch.B. 65, [illegible] [1932]
[illegible]	[illegible]	[illegible]	—	Kruber, [illegible]	Ch.B. 51, 498 [1918]

Name	Formel	Kp	Fp	Entdecker	Literatur
2,8-Dimethyl-chinolin $C_{11}H_{11}N$	[illegible]	269	[illegible]	Kruber, Rappen	Ch.B. 81, 483 [1948]
2,4,8-Trimethyl-chinolin $C_{12}H_{13}N$	[illegible]	[illegible]	48	Kruber, Rappen	Ch.B. 81, 483 [1948]
Acenaphthen $C_{12}H_{10}$	[illegible]	278,0	95	Berthelot	C. r. 65, 507 [1867]
2-Phenylpyridin $C_{11}H_9N$	[illegible]	277,8	[illegible]	Kruber, Rappen	Ch.B. 81, 483 [1948]
2,4,6-Trimethyl-chinolin $C_{12}H_{13}N$	[illegible]	278,6	67	Kruber, Rappen	Ch.B. 81, 483 [1948]
4-Benzyl-pyridin $C_{12}H_{11}N$	[illegible]	281,5	76/77	Bockmann	unveröff. [1957]
1,5,7-Trimethyl-naphthalin $C_{13}H_{14}$	[illegible]	281,2	12,6	Kruber	Ch.B. 72, 1972 [1939]
[illegible] $C_{..}H_{..}N$	[illegible]	282,1	22	Schumann	unveröff. [1954]
[illegible] $C_{13}H_{15}N$	[illegible]	283,9	-60	Oberkobusch	unveröff. [1954]
[illegible] $C_{..}H_8O$	[illegible]	286,1	85	Kraemer	Ch.B. 23, 1692 [1890]
[illegible] diphenyl $C_{12}H_{10}O$	[illegible]	286,7	69	Kruber, Lauenstein	Ch.B. 81, 221 [1948]
2,3,5-Trimethyl-naphthalin $C_{13}H_{14}$	[illegible]	285,0	25,8	Kruber	Ch.B. 73, 1178 [1940]
α-Naphthol $C_{10}H_8O$	[illegible]	288,4	96	E. E. Schulze	L.A. 227, 132 [1885]
2,3,6-Trimethyl-naphthalin $C_{13}H_{14}$	[illegible]	286,5	102	Kruber	Ch.B. 72, 1972 [1939]

[illegible] naphthalin $C_{..}H_{..}$	[illegible]	268,2	105	Weißgerber	[illegible] 278 [1912]
[illegible] $C_{..}H_{..}N$	[illegible]	269,8	60	Kruber	[illegible]
[illegible] $C_{..}H_{..}N$	[illegible]	270,3	5	Kruber	[illegible]
[illegible] $C_{..}H_{..}$	[illegible]	~ 271	45	Kruber	Ch.B. 65, 1382 [1932]
2,6-Dimethyl-naphthalin $C_{12}H_{12}$	[illegible]	271,4	48	Kruber, Schade	Ch.B. 72, 1972 [1939]
[illegible] $C_{..}H_{..}N$	[illegible]	272,0	107	Ernst	[illegible]
[illegible] $C_{12}H_{..}N$	[illegible]	272,3	53	Kruber	[illegible] [1953]
[illegible]	[illegible]	—	—	Kruber, Kayser	[illegible] 58 [1940]
[illegible]	[illegible]	[illegible]	—	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	—	Kruber, Dingue	[illegible]

2,3'-Dimethyl-diphenyl $C_{14}H_{14}$	[illegible]	[illegible]	[illegible]	Oberkobusch	unveröff. [1954]
3,5-Dimethyl-diphenyl $C_{14}H_{14}$	[illegible]	~ 290	21	Kobusch	unveröff. [1954]
3,4'-Dimethyl-diphenyl $C_{14}H_{14}$	[illegible]	291,9	15	Kruber	[illegible]
4,4'-Dimethyl-diphenyl $C_{14}H_{14}$	[illegible]	[illegible]	122	Kruber	[illegible]
[illegible]	[illegible]	295	[illegible]	[illegible]	[illegible]
Fluoren $C_{13}H_{10}$	[illegible]	297,9	115	Berthelot	[illegible]
1-Methyl-dibenzofuran $C_{13}H$	[illegible]	[illegible]	45	Kruber	Ch.B. 65, [illegible]
4,5-Benzindan $C_{13}H$	[illegible]	298,9	6,7	Kruber	Ch.B. 65, 1382
α-Naphthonitril $C_{11}H_7N$	[illegible]	298	37	Kruber	Ch.B. 65, 1978 [illegible]
[illegible] naphthalin $C_{..}H_{..}$	[illegible]	299,0	[illegible]	Snyckal	unveröff. [1954]

Formula	Structure	B.P.	M.P.	Source	Ref.
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Anthracene $C_{14}H_{10}$	[illegible]	340.1	217	Benzene, Extract	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	Crude	[illegible]
2,6-Dihydroxanthone $C_{13}H_8O_3$	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
3,6-Benzacridine $C_{13}H_9N$	[illegible]	350	91	Kruber, Chlorobenzene	C.R. 14, 908 [illegible]
2-Methylphenanthrene $C_{15}H_{12}$	[illegible]	351.5	85	Kruber, Mass	C.R. 11, 1473 [illegible]
2-Dibenzofuranone $C_{12}H_8O_2$	[illegible]	[illegible]	171	Kruber	C.R. 63, 307 [illegible]
Carbazol $C_{12}H_9N$	[illegible]	[illegible]	245	Crude, Glycol	J.A. 63, 343 [1873]
[illegible]	[illegible]	[illegible]	[illegible]	Kruber	C.R. 62, [illegible]
2-Methylphenanthrene $C_{15}H_{12}$	[illegible]	[illegible]	93	Kruber, Benzol	C.R. 87, 1489 [1954]
2-Methyl-3,6-benzacridine $C_{18}H_{11}N$	[illegible]	[illegible]	81	Kruber, Chlorobenzene	C.R. [illegible] [1963]
2-Oxydiphenylenoxyd $C_{12}H_8O_2$	[illegible]	~[illegible]	84–86	Benzol	[illegible] [1904]
1-Methylanthracene $C_{15}H_{12}$	[illegible]	~[illegible]	95	Pyrrol	Ann. [illegible] [illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible]	[illegible]	[illegible]	[illegible]	275	Cook, Perry	[illegible]	[illegible]	[illegible]	[illegible]	631	Wieland, Müller,	Lieb. 564, 189 [1949]
[illegible]	[illegible]	[illegible]	[illegible]	864	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	885	Long	[illegible]	[illegible]	[illegible]	[illegible]	444–449	Long	Angew. 62, 319 [1950]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible] Im Vertikal-Rohrtestator
[illegible] Im Vertikal-Rohrtestator
[illegible] 1,2,3,4-Tetramethyl-benzol
[illegible] 2,4,6-Trimethyl-phenol
[illegible] 3,4,6-Trimethyl-phenol
[illegible] 2,3,6-Trimethyl-phenol
[illegible] 1,2,4,5-Tetramethyl-benzol
[illegible] 1,2,3,5-Tetramethyl-benzol
[illegible] 3-Methyl-6-äthyl-phenol
[illegible] 2-Methyl-chinolin
[illegible] 2,3,5,6-Tetramethyl-phenol
[illegible] 3,4,5-Trimethyl-phenol
[illegible] 4-Äthyl-chinolin
[illegible] 3-Methyl-indol
[illegible] 2,3-Benzo-diphenylenoxyd
[illegible] Im Vertikal-Rohrtestator
[illegible] Tetraphen
[illegible] 2,3-Benzo-diphenylensulfid
[illegible] Naphthacen
[illegible] 2,3-Benzo-[illegible]

Über die Darstellung der Temperaturabhängigkeit der Viscosität von Mineralölen durch Interpolationsformeln

Von Wolf Weber*)

*) Mitteilung aus der Physikalisch-Technischen Bundesanstalt

1. Einleitung

Es ist sich längst bekannt, daß die Temperaturabhängigkeit der Viscosität von Mineralölen sich nicht durch eine einfache Formel darstellen läßt. Nach Erk und Erk[1]) ist bei höheren Temperaturen [illegible] und für einen größeren Temperaturbereich die Interpolationsformel mit minimalem Gleichungen [illegible] Konstanten notwendig. Derartige Gleichungen sind für den Gebrauch in der Praxis unbequem; es ist daher wichtig, daß es Diagramme mit solcher Teilung gibt, daß die Viscosität-Temperatur-Kurve (V.T.-Kurve) in erster Näherung zur Geraden wird. Drei derartige Diagramme, [illegible] Gleichungen mit nur zwei [illegible] Konstanten zugrunde [illegible] werden: 1) Das Diagramm [illegible] [illegible] allgemeinere Bedeutung, [illegible]

Im folgenden Abschnitt für die in folgenden [illegible] Verwendung der Interpolationsformeln und der zur Durchführung der Diagramme an Hand von Versuchsergebnissen gibt die Herausgabe des DIN-Blattes 51 563 „Berechnung der Viscosität-Temperatur-Verhalten", in welchem an Stelle der bisher [illegible] V.T.-Kurve von Ubbelohde-Walther das V.T.-Diagramm nach Cornelius verwendet wird. Außerdem soll bei dieser Gelegenheit auf ein für viele Zwecke brauchbares Diagramm hingewiesen werden, das auf einer Idee von Vogel beruht. Der Vergleich der Interpolationsformeln erfolgt in sogenannten mit Hilfe eigener Messungen an Öfen im Temperaturbereich 0 bis 200 °C, ergänzt durch Messungen anderer, besonders im Gebiet höherer Viscosität. [illegible] Für die Verwendung Nachteile bei einzelnen Gleichungen [illegible] der Bereich ihrer Zweckmäßigkeit angegeben werden [illegible]

2. Interpolationsformeln für die Temperaturabhängigkeit der Viscosität [illegible] eigener Versuche

2.1. Im Gebiet von [illegible] wurde empirisch die Gleichung [illegible]

Bei Mineralölen kann man für die Konstante p den Wert 0,8 cSt einsetzen, so daß für diese gilt:

$$\log \log (\nu + 0{,}8) = K - n \log T \qquad (1a)$$

Es bedeuten: ν die kinematische Viscosität in cStokes bei der Temperatur T in °K, n, K Konstanten.

Ohne die Konstante a wurde Gl. (1) schon früher von Le Chatelier[2]) zur Darstellung der Temperaturabhängigkeit der Viscosität von Ölsäuren benutzt.

Trägt man in einem Diagramm, bei dem die Ordinate nach $\lg \log (\nu + 0{,}8)$ und die Abszisse nach $\log T$ geteilt ist, die Viscosität ν als Funktion der Temperatur auf, so erhält man für Flüssigkeiten, für welche Gl. (1a) gilt, eine Gerade, wobei in die Steigung der Geraden eingeht (Richtungskonstante n nach Walther). Es läßt sich also aus einer Bestimmung der Viscosität bei [illegible] Temperaturen graphisch ermitteln. Genaue Messungen haben gezeigt, daß die Anfangsgerade der experimentellen Werte nach kleinen Viscositäten hin bei vielen Mineralölen eine zur T-Achse schwach konkav gekrümmte Kurve ergibt. Die Krümmung kann durch passende Wahl der Konstanten a, die zu ν addiert wird, verringert werden; wählt man $a = 0{,}8$, so lassen sich die meisten Mineralöle, deren Viscosität bei 20 °C größer als 50 cSt ist, befriedigend darstellen (Erk und Erk[1])). Der additive Wert 0,8 liegt auch dem bekannten Ubbelohde-Walther-Diagramm zugrunde; ν soll zweckmäßigerweise allein in Betracht gezogen werden. Das Ubbelohde-Walther-Diagramm wird ferner in dem ASTM-Standard D 341-42 „Viscosity Temperature Charts for Liquid Petroleum Products" benutzt; es wird dort in zwei Fällen herausgegeben: 1) „High Range", umfassend den Viscositätsbereich von 1 bis 10⁷ cSt, und 2) „Low Range" von 0,85 bis 100 cSt. Für den Low-Range-Diagramm hat die additive Konstante den Wert $a = 0{,}8$ cSt. Die Temperaturachse ist in beiden Diagrammen nach °Fahrenheit beziffert und in $\log T_F$ (T_F = Fahrenheitgrade in Zählung vom absoluten Nullpunkt) geteilt. T und T_F unterscheiden sich um einen konstanten Faktor, die Umrechnung in Fahrenheitgrade bedeutet also keine prinzipielle Änderung gegenüber dem Ubbelohde-Walther-Diagramm.

2.2. Die Gleichung von Underwood, Von Sprecher[3]) ist eine analoge Gleichung mit zwei weiteren Konstanten für die Temperatur [illegible]

[illegible] Dissertation, Karlsruhe [illegible]

[1]) [illegible] Erk u. H. Erk, Forschungsbericht [illegible]

[2]) [illegible] Le Chatelier, [illegible]

[3]) [illegible] Dissertation, Karlsruhe, 30, 128 [illegible]

[illegible] Brennstoffchemie [illegible]

[illegible] Band VIII [illegible]

[illegible] *Literarischen Leb*[illegible] *der Gesellschaft für Teerverwertung mbH.*

[illegible] der [illegible] Fabrikation der Gesellschaft [illegible] Duisburg-Meiderich. Im Anfang dieses [illegible] wurde [illegible] Anzahl der bisher im Steinkohlen[illegible] im großen Teil im hiesigen, eigenen wissenschaftlichen Laboratorium entdeckten Einzelstoffe Erwähnung getan. Von verschiedenen Seiten wurde damals nach einer [illegible] nicht [illegible] bisherigen Zusammenstellung [illegible]. Die Gesamtzahl der bis jetzt im Steinkohlenteer mit [illegible] Einzelstoffe — es sind noch keine [illegible] auf den fachkundigen Chemiker erschütternd und [illegible] ernüchternd wirken, wenn man bedenkt, [illegible] den Teer zusammensetzender Stoffe auf etwa 10 000 geschätzt werden[**], vor allem aber, wenn [illegible] daß die praktisch in reiner Form verwendeten [illegible] an den Fingern hergezählt werden können[***], [illegible] die bisher gefundenen Stoffe mengenmäßig schon den [illegible] Teil des Gesamtteers ausmachen.

Die Einordnung in die nachstehende Tabelle erfolgte nach [illegible]. Diese und die Schmelzpunkte wurden, soweit [illegible] werden konnten, nach Literaturangaben [illegible]. Als Grundlagen der Literatur wurden für die [illegible] die vom „Chemischen Zentralblatt" für den [illegible] Sigel verwendet.

Sigel	Vergleichender Titel
A.Ch.	Annales de Chimie [illegible]
A.Ph.	Annalen der Physik
Bl.	Bulletin de la Société Chimique de France
BrennCh.	Brennstoff-Chemie
C.	Chemisches Zentralblatt
Ch.B.	Chemische Berichte
Ch.Z.	Chemiker-Zeitung
Cr.	Comptes Rendus Hebdomadaires des Séances de l'Académie des Sciences
H.	Hoppe-Seyler's Zeitschrift für Physiologische Chemie
J.ApplCh.	Journal of Applied Chemistry [illegible]
J.Ch.Soc.	Journal of the Chemical Society [London]
J.InstFu.	Journal of the Institute of Fuel
J.SocChInd.	Journal of the Society of Chemical Industry
JbCh.	Jahresbericht für Chemie
LA.	Liebigs Annalen der Chemie
MCh.	Monatshefte für Chemie
Natl.	Nature [London]
Naturw.	Naturwissenschaften
RecTravCh.	Recueil des Travaux Chimiques des Pays-Bas

*) Anschrift von Dr. phil. Otto Kruber, Dr.-Ing. Armin Raeithel und Dr.-Ing. Georg Grigoleit, Gesellschaft für Teerverwertung mbH., Duisburg-Meiderich.

**) *H. G. Franck*, Angew. Chem. 63, 260 [1951].

***) *O. Kruber*, Angew. Chem. 61, 89 [1949].

Name Formel	Konstitution	Kp (°C)	F (°C)	Entdecker	Literatur
[illegible]	[illegible]	[illegible]	—	Thiessen	Hoppe-Seylers Z. physiol. Chem. [illegible]
[illegible]	[illegible]	38,2	-135,5	Schorlemmer	LA. 124, 136 [1863]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	82,?	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	49,?	-122	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Ch.B. [illegible], 477 [illegible]
[illegible]	[illegible]	68,1	[illegible]	[illegible]	LA. 163, [illegible] [1866]
[illegible]	[illegible]	69,5	-94,3	Schorlemmer	LA. 165, 307 [1863]
[illegible]	[illegible]	70,4	[illegible]	[illegible]	Ch.B. 20, 411 [1887]
[illegible]	[illegible]	80,3	[illegible]	[illegible]	[illegible] [1862]
[illegible]	[illegible]	~ 80	—	[illegible]	[illegible] 12, 177 [1926]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible] 26, 426 [1893]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible] 12, 117 [1882]
[illegible]	[illegible]	[illegible]	[illegible]	F. Mayer	Ch.B. [illegible], [illegible]

Name Formel	Konstitution	Kp (°C)	F (°C)	Entdecker	Literatur
Iso-Heptan C_7H_{16}	[illegible]	~ 98	—	Kruber	BrennCh. 22, 137 [1941]
n-Heptan C_7H_{16}	[illegible]	98,4	-90	Schorlemmer	LA. 125, 103 [1863]
[illegible]	[illegible]	[illegible]	-95,1	[illegible]	J.Ch.Soc. 1, 934
Thiophen C_4H_4S	[illegible]	118	—	[illegible], Kruber	Ch.B. 17, 787 [1884]
Pyridin C_5H_5N	[illegible]	115,3	-41,8	Anderson, [illegible]	JbCh. 1854, 496
n-Oktan C_8H_{18}	[illegible]	125,6	-56,8	Schorlemmer	LA. 125, 103 [1863]
α-Picolin C_6H_7N	[illegible]	129,4	-66,7	Anderson	LA. 60, 86 [1846]
Pyrrol C_4H_5N	[illegible]	130,0	—	Runge	A.Ph. 31, 67 [1834]
Äthylbenzol C_8H_{10}	[illegible]	136,2	-94,8	Nölting, Palmer	Ch.B. 24, 3865 [1891]
[illegible] C_5H_6S	[illegible]	[illegible]	[illegible]	K. E. Schulze	Ch.B. 17, 2852 [1884]
p-Xylol C_8H_{10}	[illegible]	138,3	13,2	R. Fittig	LA. 153, 265 [1870]
m-Xylol C_8H_{10}	[illegible]	139,0	-47,8	R. Fittig	LA. 153, [illegible] [1870]
n-Propylbenzol C_9H_{12}	[illegible]	141,3	-81	Kruber, Marx	Ch.B. 71, 2485 [1938]

Fortsetzung der Tabellen auf Seite [illegible] am Schluß der Arbeit.

INTER-OFFICE CORRESPONDENCE

REPUBLIC CREOSOTING COMPANY

TO: HOME OFFICE - Indianapolis
Attention: Mr. H. R. Horner

OFFICE: St. Louis Park, Minn.

FROM: A. E. Larkin

DATE: July 24, 1939

SUBJECT: FUEL OIL - BOILERS

Referring to your question about Bunker "C" fuel oil, we are buying this oil now for use here at a delivered price of 3-3/10¢ per gallon.

This price has been steady for sometime and yet we cannot never tell when it will change.

There is some difficulty unloading this type of material in the cold winter months and, of course, we have experienced some difficulty keeping it hot enough to flow through the lines to the burners in the winter time and usually buy some lighter oil, but with the new set up planned for the new boiler, expect we can make arrangements so that this type of oil can be used even in cold weather.

We are planning to revamp the piping system at the refinery in order to save the tremendous waste we now exprience as outlined in a recent letter from Mr. Holstrom.

We shall plan to make these changes as it is possible and convenient to do so with our own people but it does seem as though it is a great waste of money to allow this condition to continue; namely, the use of obsolete lines that are subject to very great losses on account of condensation when they come in contact with water from the outside.

We are calling this to your attention now because as we get into the installation of the boilers and tearing out of the old ones and with our plant running at a minimum capacity, we can pick up some work of this kind to advantage and get it done cheaper than we could at any other time.

We are anxious to get the major changes made before cold weather and particularly the rainy season hits us again, which causes us the most distress because we are not properly or sufficiently protected against the surface water conditions on some of the lines.

We have today received your purchase order and contract and we are going over it carefully so that we shall be familiar with all details.

We note you are planning on an operating pressure of 125# and we were under the impression that we could operate at 150# and would like to know if you think there would be any reason why we should not operate at 150 rather than 125.

DEPO. EXH.
3/9/82
KIRBY A. KENNEDY

102218

REPUBLIC CREOSOTING COMPANY

HOME OFFICE - Indianapolis
Page #2
FUEL OIL - BOILERS
July 24, 1939

It is our thought and I believe Harry Holstrom agrees with me that if we could operate the new generator at 150# we could handle our load with the one boiler without much difficulty and particularly after we get rid of some of the obsolete steam transportation conditions existing now.

Yours very truly,

AEL:LR
cc - Indianapolis
cc - Harry Holstrom, St. Louis Park

COPY

REPUBLIC CREOSOTING COMPANY

HOME OFFICE - Indianapolis St. Louis Park, Minn.

A. E. Larkin August 8, 1939

STEAM COSTS

Referring to Mr. Edwards' letter of August 2nd, this is indeed a very constructive letter and careful attention given to all of the points you raise at all of the plants will certainly reduce costs.

We think we are doing a very good job at this plant with reference to economizing every place possible on storage and working tank heating, and our steam losses through leaks get constant attention but in spite of this feeling on our part I have had all those men concerned in this organization in for a visit on this subject in order to make sure nothing is left undone to get the best possible results.

As a great deal of correspondence has been exchanged between this office and yours and particularly with Mr. Horner about our obsolete steam transportation lines, we feel that Mr. Horner has all of the information in his file that we can possibly give him on the necessity of making our steam lines dry and changing the system to eliminate waste that we have estimated amounts to conservatively 50 h.p. and we have been urging you to give us authorization to make these changes certainly before cold weather strikes us.

You will see in the files that the cost of these changes will be paid for in one year's operation and this is a very conservative statement.

During periods of heavy rainfall and snowfall the losses are much greater so the 50 h.p. saving is actually conservative because of so many of our lines in old conduits that are subject to flood conditions when these lines become nothing more or less than steam condensors.

We have felt that with the information Mr. Horner has on this subject the recommendations we made for the Riley generator was based on making these changes and we are sincerely hoping to get authorization from Mr. Horner to proceed with this work so that when the new boiler is ready to go into operation, our steam use will be reduced to the minimum and this large waste eliminated.

We wish to call your attention to the fact that we have been aware of this waste at this plant for a matter of years and have kept you advised of the necessity of changing it to eliminate this obsolete condition and, therefore, feel encouraged by the last paragraph on your first page of your letter of August 2nd that we may get this authorization prompt to correct a situation that needs correcting very badly.

DEPO. EXH. 1
3/7/83
KIRBY A. KENNEDY

102157

COPY

REPUBLIC CREOSOTING COMPANY

HOME OFFICE - Indianapolis
PAGE 2
PAGE COSTS
August 8, 1930

If we could proceed with this work at the same time the old boilers are being torn out and the new one installed, this will prevent some of our men going on the unemployment insurance list and as this work must be done eventually, now is the time to do it.

As we understand Mr. Edwards' is on his vacation or about to go, we are depending upon Mr. Horner to give this matter his serious consideration and if possible get an authorization to us so that this work and the boiler work can go along simultaneously during the low spot in our creosoting plant operation.

Mr. Holstrom is writing to you and Mr. Horner on this same subject in greater detail most of which has already been covered in the correspondence recently.

As the St. Louis Park plant has to contend with the longest and coldest operation weather of all of our plants, this matter is of greater importance here than at any other plant.

Yours very truly,

AEL:LR
cc - Mr. H. R. Horner, Laboratory, Indpls.
cc - Mr. J. Mitchell, " "
cc - Mr. H. J. Holstrom, St. Louis Park

102158

REPUBLIC CREOSOTING COMPANY

St. Louis Park, Minn.
April 4, 1933.

TO: Mr. P. C. Reilly, President - Indianapolis

FROM: A. E. Larkin 543

SUBJECT: VILLAGE OF ST. LOUIS PARK WATER SUPPLY

After the new mains were laid in St. Louis Park, all connected with the Minneapolis water supply, the cost of buying this water prompted the Village to put in their own well and supply tank so as to be independent of the City of Minneapolis supply, and this work was started just about a year ago and the well put into operation in June or July of last year.

The first water drawn from the well was satisfactory and approved by the State Department of Health but as they drew more heavily on this supply, a taste and odor developed indicating contamination from some place and we heard last summer that the taste and odor indicated swamp water.

The St. Louis Park well at that time was down to 393 feet and all cased to shut off the surface water and neither the engineer in charge nor the McCarthy Company, who built the well, could explain where the swampy taste came from, but at an additional expense the Village put the well down another 150 feet and added some 8-inch casing, shutting off a further supply and drawing their supply from farther down, hoping in this way to eliminate the objections.

At this time the Village turned back to the use of the Minneapolis City water until they could get a satisfactory water of their own and they have been using Minneapolis City water ever since because the added depth of the well did not relieve the situation and, in fact, after further pumping the State Chemist reports a trace of phenol, which he claims gets to their water from our plant.

Last week Mr. McCarthy of the McCarthy Well Company and Mr. Bradley, the Village Engineer, called to explain the situation confidentially to me in an effort to avoid, if possible, any further charges that we were responsible for the difficulty the Village is having in getting a suitable supply of water.

Apparently Bradley and McCarthy have developed every possibility they can think of to correct the situation and as McCarthy has a record of ~~building~~ all the wells in this neighborhood, he is of the opinion that the contamination comes from one of our wells that is not cased below 373 feet and which goes down 909 feet and the other well which we are not using and which was here when we purchased the property that goes down to 955 feet but is only cased to about 150 feet from the surface.

There is a lime-rock and sand-rock formation that contains horizontal fissures that is the heaviest water bearing strata in this section and that all the wells tap and as neither of our wells case off that supply, it is possible for contamination from our operation to reach this lime-rock strata and being carried in the horizontal cracks and crevices to the two holes on our property, namely the old well that is not based and the new one that is cased part way, and in this way get down to the

MN DEPO. EXH. 126
3/9/83

302977

lower strata and finally into the water bearing strata below from which the St. Louis Park well draws its supply.

We are on sand and gravel and the storage of treated ties could easily account for the soluble portion of the oil being washed from the ties onto the ground and finally from the ground into the lower strata through the sand and gravel.

If our main well is cased down an additional distance to prevent the water from coming into it through the lime-rock strata and the old well is carefully plugged full length, McCarthy and Bradley believe this will eliminate the trouble at the St. Louis Park well.

To explain further, while this lime-rock supply of water is a fairly good water for our purposes, yet we are not dependent upon it because our well taps the supply below and we can safely cut off this lime-rock strata and get an improved supply of water that will be better for our purposes, especially in connection with the boiler-feed water, and this in itself would be an advantage because the lower water is softer and this has been learned from actual tests but at the time we built our well we did not want to limit ourselves to the lower water because it cost more to pump it, and at that time we were drawing our water with a surface pump and did not have to go into a deep well pumping proposition.

Since that time, however, we have had to follow the water down considerably lower and are now on a deep well pumping proposition with air because we found we could no longer raise it to the surface with a suction pump and this happened several years ago when the general level of the water receded.

As we are already equipped to get the water from lower down, the only change is that we will get a better water than we are getting at the present time for industrial purposes.

The most important part of this entire matter is to avoid any claims on the part of the Village and if we case this well off and plug the other old well, we shall, in the opinion of the engineers and McCarthy, eliminate any possible question of contamination from this plant and we think it is wise to do this before the matter goes any further because there already is a suspicion existing on the part of a number of people in St. Louis Park that the contamination is coming from our plant, and of course they are all anxious to get rid of the cost of water from the City of Minneapolis and until this matter is cleared up they cannot put their own well into operation.

There is, of course, no guarantee that the work we would do on our well would eliminate the objectionable odor and taste, but at least after protecting our wells as above no one could claim that the contamination is coming from our plant.

302978

REPUBLIC CREOSOTING COMPANY

April 4, 1933.

To: Mr.Reilly-Indianapolis
Re: Village of St. Louis Park Water Supply

This work at our plant could be done in two or three days and the estimated cost is $500.00 for taking care of the two wells and we believe this work should be done, and promptly.

I thought I would have an opportunity to visit with you this week about this matter and get it settled but as the situation has some danger in it, especially if the people in the Park become impatient because of the delay in getting the water from their own well, I would like very much to get as prompt a reply from you as possible.

One can see in the background the possibility of claims being made by the Village for the expense they have been put to over a period of many months for water from the City of Minneapolis and no end of complications if we did not do everything we could to eliminate such charges and claims, especially when we have learned the condition exists, as outlined above.

We have drawings of all the wells in this neighborhood from actual records made by the McCarthy Company, showing the various strata that have been encountered in each well, and from their experience in the entire territory they are very familiar with all of these water bearing strata and the explanation they have made of the situation impresses me with the necessity of protecting our company by doing the work on the two wells we have referred to.

Yours very truly,

~~REPUBLIC CREOSOTING COMPANY~~

A. E. Tallin

Manager

AEL:FJ

302979

Mr.A.E.Larkin, St.Louis Park INDIANAPOLIS

P.C.Reilly April 7, 1933

VILLAGE OF ST. LOUIS PARK - WATER SUPPLY

I have yours of the 4th.

We cannot think that at a depth of 543 feet theSt.Louis Park water supply is contaminated with material from our plant, especially as it had to go through a lime rock which would have taken care of the phenol so it would not appear in the water. But you do not say how deep the lime rock is and perhaps the wells you speak of, not cased, may have conveyed some oil from our property to the water, although I think it is highly improbable that it is the case. But at any rate,* close up the wells and do anything that is necessary to prevent any chance for the allegation being made that the swampy taste of the water comes from our property. Further, I think the State Chemist will admit phenol can be generated from other things than Creosote Oil; that there is practically no phenol in the Creosote Oil used in treating timbers and the little there is would quickly go off in vapor the minute the treated charge were drawn from the cylinder in its heated state. It is just inconceivable to me that any phenol has gotten into the water from our plant.

Yours very truly,

R.S.

REPUBLIC CREOSOTING COMPANY

President.

* before closing the wells drop some (a quantity) lime in them and then wash it down with water. Consult Rademacher how to do this, - to remove alltraces of phenol.

P.C.R.

AN DEPO. EXH. 127
3/9/83
KIRBY A. KENNEDY
COURT REPORTER

REPUBLIC CREOSOTING COMPANY

TO: Dr.I.H.Derby, Reilly Lab. INDIANAPOLIS

FROM: P.C.Reilly May 12, 1933

SUBJECT: VILLAGE OF ST. LOUIS PARK WATER SUPPLY

I do not know whether you are acquainted with the supposed complaint that might be made against our plant at St.Louis Park on the theory it was contaminating the St. Louis Park water supply but for fear you are not I shall relate the circumstances.

Mr. Larkin reported it was alleged that the ground at our plant was saturated with phenol and that it had reached the water supply of St. Louis Park and that it had contaminated it. As a result of two contractors telling him this he had, before we had a chance to question the complaint, made a contract with these contractors for $500.00 to dig the well deeper or to do something or other, just what I do not know, but we do know it cost us $500.00 on some alleged complaint.

It is our contention that the water could not be and was not contaminated from our operation of our plant. The contamination was said to be phenol. To make sure whether the water was contaminated or not I sent to Minneapolis for a sample of the water which was received today and I am sending it over to the Laboratory and I would wish it tested and ascertain if there is any phenol in it and if there is whether it is phenol from coal tar or phenol from decayed vegetation, as is possible, for our ground and surrounding country is swamp land, filled with decayed vegetation.

Yours very truly,

R.S

REPUBLIC CREOSOTING COMPANY

P.C.Reilly

President.

MN DEPO. EXH. 128
3/10/83
KIRBY A. KENNEDY
COURT REPORTER

302960

Phenol Sampl
1764 from St. Louis Park Plan

supposed to be in the water supply of the Village of St. Louis Park, a number of samples were tested for their content of phenols. Sample 1658 is water from the St. Louis Park plant well after the casing was installed; Sample 1668 is water from the same well before the casing was installed; and Sample 1674 represents swamp water in the vicinity of the plant.

Phenol determinations were made by the Gibbs methods which is based on the blue color produced with 2,6-dibromo quinone-chloroimide. Twenty parts per billion or more of phenols produce this color distinctly. Lower concentrations can be determined by concentrating the sample.

The results obtained were as follows:

Sample 1658 (taken after casing was put in)	20 parts per billion
Sample 1668 (taken before casing was put in)	50 parts per billion
Sample 1674 (swamp water)	10 parts per billion
Sample 1676 water from Maywood Plant	40 parts per billion

These concentrations are much too low to be tasted in unchlorinated water. However, if the water is chlorinated, objectionable tastes begin to appear at one part per billion.

The values for phenol found in Samples 1658 and 1668 do not suggest that the trouble with the Village water supply is due to phenolic materials from the plant, as a well at even a short distance away from the plant might be expected to show a phenol content much below the 20 parts per billion found in the plant well water.

It should be noted that the values reported above are all maximum values, as a very slight accidental contamination would have produced the val found

Truly yours,

TLC:C

DEPO. EXH.

NNEDY

302968

Mr.R.L.Rademacher,St.Louis Park — INDIANAPOLIS

P.C.Reilly — May 24, 1933

VILLAGE OF ST. LOUIS PARK WATER SUPPLY

Please refer to your letter of May 18th. We have found the swamp water contains phenol, ten parts to the billion, whereas the phenol from our property is twenty parts to the billion. I think the greater percentage in our property is due to its saturated condition from the sugar refinery which was established there at one time.

Dr.Derby feels before the Village again begins pumping its supply of water that we should start pumping our wells letting the water go to the surface of our ground, - this for the purpose of drawing any water that might have phenolic content in and about our place away from that water which would be drawn by the Village pump. It would be preferable to spray the water rather than to pump it in volume, for instance if it could be used in spraying our grass or garden about the place or in the open field it should be done in this way. We do not want it sprayed on that part of the ground on which the ties are stored because the ties have a phenolic content. The point is to get drawing on our wells so we would be taking that water from our section, both the swamp section and our yard, and thus prevent it getting into the flow which the Village pump will make when working.

Yours very truly,

R.S

REPUBLIC CREOSOTING COMPANY

President.

MN DEPO. EXH. 130
3/10/83
KIRBY A. KENNEDY
COURT REPORTER

302969

After taking out the pipe it was 70'6" to water from the top of the pump base. This is 9" lower than the water level was previous to installing the packer. The well was left in this condition and at this writing the pump has never been removed and they have been attempting to use the water with the hope that it would clear up by pumping for sometime.

FM'D J. Fred McCarthy

INTER-OFFICE CORRESPONDENCE

REPUBLIC CREOSOTING COMPANY

TO: Mr. H. R. Horner, Indpls., Ind. OFFICE: St. Louis Park, Minn.

FROM: H. L. Danz DATE: June 30, 1938

SUBJECT: STILLS-NUMBER ONE BATTERY-FIRE AND EXPLOSION.

Complying with your letter of June 21st. We are sending you herewith reports on condition of stills of first battery No. 1-2-3-4.

The last reports we submitted on the condition of these stills was in February this year, and we indicated at that time the life of this battery was practically exhausted. The welded joints were opening up continuously. No. 1 still has been rewelded in eighteen places as indicated by the report. The length of welds being from 6" to 24" long. The bottom is very distorted, and we believe it safe to say that even if the explosion had not occurred we were very near, if not already at the point, where it would be a definite hazard to continue the use of this still. Referring to the report you will note No. 1 still had 404 coking runs before the new bottom was welded on in 1935, since then 376 coking runs have been made or a total of 780 runs. The brick-work surrounding this still is in a dilapidated condition.

The report covering Still No. 2 reveals 6 rewelded places in the joints and two cracks which opened up during the fire. This still has not given as much trouble from seams opening as No. 1 still. However, the general condition is much the same as No. 1. Before the new bottom was welded on in 1935, 394 coking runs had been made, sice then 361 coking runs have been added or a total of 755 coking runs. The brick-work of this setting is in very poor shape.

Still No. 3 suffered the worst in the recent fire. The most damaging explosion occurred in this still. Notations on the report covering this still indicate it is practically destroyed. This still had 418 coking runs before the new bottom was welded on in 1935, since then 352 runs were made, or a total of 770 coking runs.

Referring to the report on No. 4 still, we find 7 places rewelded 6" to 48" long, and 4 cracks which opened up during the explosion. The general condition of this still and setting is much the same as the first three stills of this battery covered by this report. No. 4 still had 427 coking runs up to 1935 when the new bottom was installed and 349 runs since or a total of 776 coking runs.

In our opinion the limit has been reached in the life of this battery of stills, and any attempt to rebuild them for continued use would be a mistake.

Mr. McLellan will write the home office in a few days when additional information will be available.

Yours very truly,

DEPO. EXH. 125
3/9/83
KIRBY A. KENNEDY
COURT REPORTER

HLD:LK

102523

CORRESPONDENCE

REPUBLIC CREOSOTING COMPANY

TO: MR. H. R. BURNER - REILLY LAB. OFFICE: St. Louis Park

FROM: H. L. Holstrom DATE: April 28, 1955

SUBJECT: BOILER WATER - ST. LOUIS PARK

You, no doubt, know that we have been using city water for a period of about two months without any charge to us.

We are now preparing to make connections to a meter to the city water, so we will have to pay for the water we use, starting in the very near future. This brings to our mind that we should lay immediate plans to install our own hydro-pneumatic system with a deep well pump on our well. The estimated cost for this installation is as follows:

Pump, installed	$ 1620.00
One 72" x 16' ASME tank	989.00
Fittings, Valves and Connection	260.00
Installation of tank	100.00
	$ 2969.00

We, of course, do not know just how much water we use, but we believe it to be in the neighborhood of 400 cubic feet per hour, which, at the rate of 20¢ per 100 cubic feet, would be 80¢ an hour, which will amount to about $5,400.00 per year. The highest possible estimate we can make for the cost of operating our own system, including depreciation, would be about $1000.00 per year. You can readily see, therefore, that it would be to our advantage to proceed with the installation of a hydro-pneumatic system as soon as possible.

Will you kindly give this matter your serious consideration, and your recommendations, so it will not be delayed too long?

Yours very truly,

HLH:ep

H. L. Holstrom

100834

DEPO. EXH. 120
3/7/83
KIRBY A. KENNEDY
COURT REPORTER

INTER-OFFICE CORRESPONDENCE

REPU L C C EOSOTING COMPANY

TO: Mr. H. R. Horner
Reilly Laboratories.

OFFICE: Indianapolis.

FROM: P. C. Reilly.

DATE: August 16, 1939.

SUBJECT: STEAM COSTS

I have a letter today from Mr. Larkin, in answer to my letter of the 10th. It is full of what he thinks plausible and sound reasons for the deficiency in the installation of the past equipment at Minneapolis. I attach it hereto. I, also, enclose copy of my answer thereto.

I asked Stanley yesterday, to call you and Mr. Mitchell and to say that neither Mr. Holstrom nor Mr. Larkin must have anything to do in the installation of the new boiler and equipment at Minneapolis. The original work must be done right so that we shall have no alibis why the plant has been operated expensively, later. Neither Mr. Larkin nor Mr. Holstrom is good enough engineer to do or direct the installation or construction of the new equipment; but both believe they are. This letter of Mr. Larkin's is just all wrong in its foundation. 'Tis the old story that I have heard many times about Columbus asking a man if he could stand an egg on end. He was asked if he could do it, and he answered, "Yes." They tried every way to stand the egg on end and failed. He (Columbus) took the egg, cracked the end of it and stood it on end. Everybody could do that afterwards. So, if an installation fails it is easy for everybody to tell about it, and how the errors could have been corrected. It is very difficult for them to do it at all, the first time.

REPUBLIC CREOSOTING COMPANY

PCR:RS

INCLOSURE -Letters (3)

P.S. I, also, attach herewith copy of letter I wrote Mr. Larkin on August 10th, to which he refers in his letter.

P.C.R.

cc-Mr. C. B. Edwards
Office

MN DEPO. EXH. 124
3/9/83
KIRBY A. KENNEDY
COURT REPORTER

102146

Mr. F. J. Mootz

H. R. Horner

WELL WATER - ST. LOUIS PARK

Indianapolis

April 3, 1942

The efficiency of an airlift pump depends largely upon the percent of submergence in relation to the total lift of the pump. A well designed airlift well should run 70% efficient based upon the energy in the air, and a good compressor should run 65% efficient giving an overall efficiency of 45-1/2%. This efficiency is comparable to the average deep well turbine and it is much better than a steam operated plunger pump. Therefore, before we condemn the St. Louis Park installation we should know the water level, the level of the foot piece so that we can calculate the submergence, and the amount of air used per gallon of water pumped.

It is, of course, rather uneconomical to use a two-stage pumping system for plant service, but to avoid this it would be necessary to use an overhead tank of sufficient elevation to give us satisfactory water pressure in the plant or a pressure tank of sufficient size to give a storage of sufficient water and hold it against an air head to give us approximately a 15-minute pumping period between the maximum and minimum allowable pressure differential.

The over-head tank is by far the best system and in our experience the pressure tank has so much maintenance when used in conjunction with a turbine type deep well pump that unless the Minneapolis airlift efficiency is very low we would not recommend the change.

As soon as we have received the information you mention in your letter we will check this efficiency and advise.

Very truly yours,

HRH:D
cc to Mr. H. L. Holstrom, St. Louis Park

Minnesota DEPO. EXH. 119
3/7/67
KIRBY A. KENNEDY
COURT REPORTER

101391

Dice

St Louis Park

Depth of Well 90'

Static level 48'

Draw Down 5'

Pumping Approx 150 gal per min

Size of Well 12"

Air Lift 1½" pipe 120' long

Pumping @ 45# Pressure.

1½ Pipe inside of 4" Pipe

Opr Pressure 60#

Water Temp 50°

MN DEPO. EXH. 120A
3/10/83
KIRBY A. KENNEDY
COURT REPORTER

108251

219924

219919

DEPO.
3/9/83
KIRBY A. KENNEDY
COURT REPORTER

LMN DEPO. EXH. 121A

2-8
#3 Cylinder
9/16/29

2-7
East end of
cylinders,
#1 in final
position
[illegible]
temporary.

Forward #5.5

INTER-OFFICE CORRESPONDENCE

REILLY TAR & CHEMICAL CORPORATION

MAR 30 1942
REILLY LABORATORIES

TO: Mr. H. R. Horner - Laboratory OFFICE: Indianapolis

FROM F. J. Moots DATE March 27, 1942

SUBJECT WELL WATER - ST. LOUIS PARK

To be air lift 65% Compressor.

At the present time the well water at St. Louis Park is being pumped by the use of an air-lift. The water then spills into a rectangular tank which overflows to their pond. All the water for the plant is pumped from the pond. It appears to me that the method of handling the water is a little more expensive that what it should be. The air-lift is operated under about fifty pounds air pressure which is supplied from the plant air compressor using a 35 H. P. motor. Estimates are that this compressor operates about six hours our of an eight hour day. The air-lift has been installed since the plant started and they are a little doubtful as to its efficiency now. I believe that the well is a ten inch well and the air-lift is operated through a four inch pipe which is in the well approximately 60 to 80 feet. They are measuring the depth of the water in the well and will send this to us. They believe now that it is about 20 feet, but we will have definite information on this. It is my thought that the pond should be used as a storage for water, and we should try to make only a single pumping from the well to supply the plant with water and not use the air-lift which I do not believe is an economical way of pumping this water. We would like to have you study this and make recommendations on how this can best be handled.

From some data they took a few years ago, they found that the small compressor in the pump room would lift 164 gallons of water per minute. This was ample to take care of the plant needs by operating it eight hours a day, five days a week. Now they use the large compressor and with fifty pounds air pressure they find that it lifts 214 gallons per minute and it is still ample to take care of the plant needs by operating only approximately eight hours a day, five days a week.

Another water problem which I believe it would be well to provide for is that the boilers use and have available only the water which is pumped from the pond. Thereis no standby water. It would seem to me that having City water in the boiler house for standby water in event of failure of the plant water supply would be very worthwhile having and may at some time save a substantial loss. Would it be possible to have City water hooked up to the water heater? In this way it would not have a back pressure on it of our own water supply which might contaminate the City water which you mentioned to me as being the most serious objection to hooking City water directly to plant supplies.

REILLY TAR & CHEMICAL CORPORATION

F J Moots

FJM:LdeH

DEPO. EXH. 18
3/7/63
KIRBY A. KENNEDY
COURT REPORTER

101392

Retyped June, 1978, Ground Water Quality Control Unit, Minnesota Department of Health, from copy of original

McCARTHY WELL COMPANY

Minneaplis and St. Paul
ST. LOUIS PARK MINNESOTA.
REPAIR JOB 1933.

Dec. 13, 1934

This well always had a creosote taste to the water and we found two old abandoned wells at the Republic Creosoting Co. plant about one half mile away which were being used to drain creosote down to the ground, and it was thought that this creosote was going down in these old wells and passing over through the crevices in the Shakopee Dolomite and being pumped up into this well, although when the first test was made on this well after pumping 24 hours steady there was no taste of creosote, but when the well had been in operation for about two weeks the creosote taste was noticeable.

There were lots of theories passed by the village and the engineer as to where this was coming from. They talked of possibly recasing this hole and drilling down to the Hinckley Sandrock, so as to get away from the creosote, and also perforating the 16" pipe up in the glacial drift, sand and gravel, and plugging off the rock below and taking water from the drift, with the possibility of getting away from the creosote, and another plan was to case off from the top of the Jordan sandrock to the surface, thereby shutting off the creosote from entering the well through the Shakopee Dolomite crevices, so in Feb., 1933 we were employed by the village on a per hour basis to furnish 12" pipe and packer to shut off everything above the top of the Jordan Sandrock.

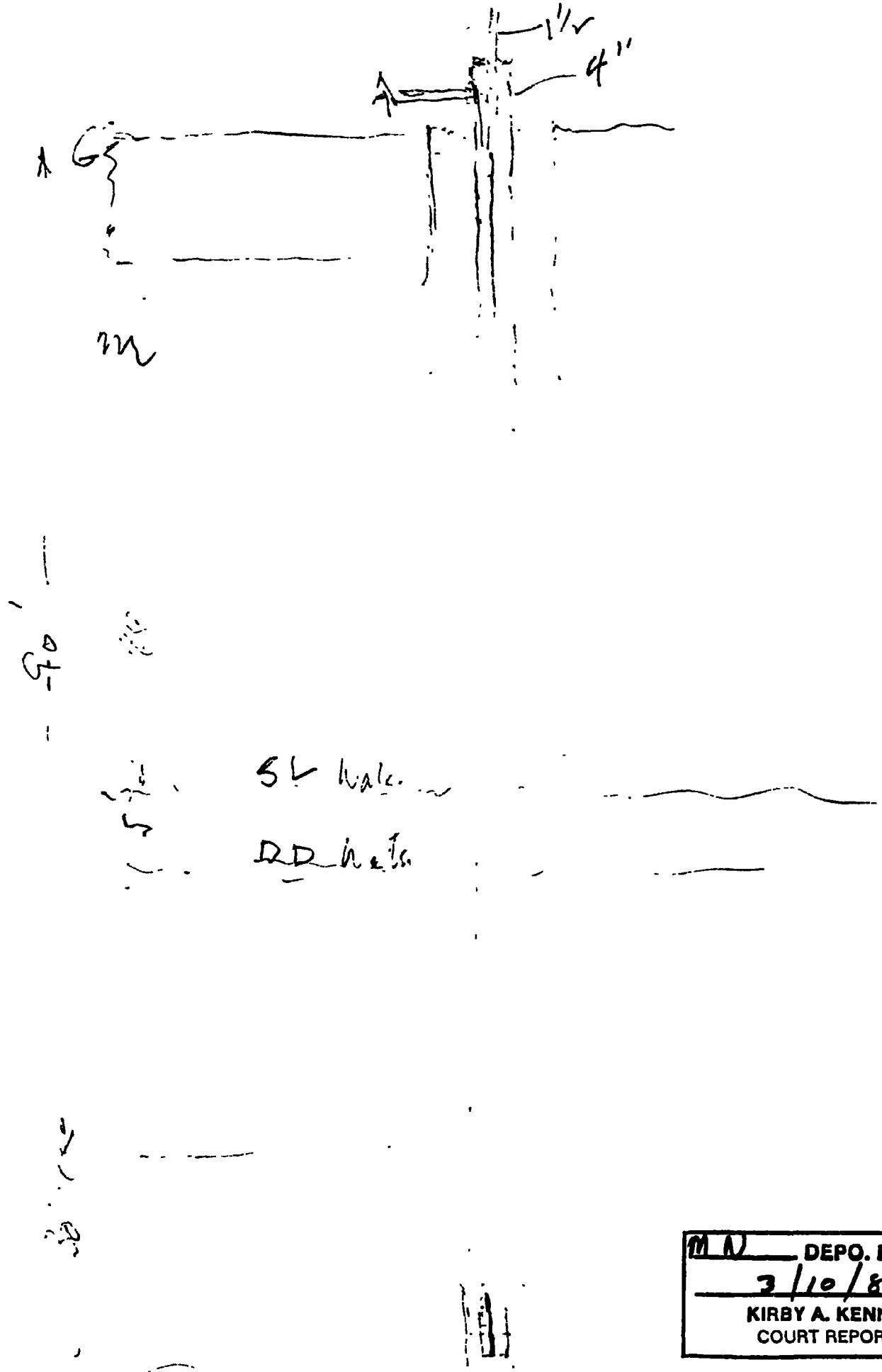
So we installed the packer and on top of the packer we had an 8 x 10 bushing, because the packer was threaded for standard 10" pipe, and on top of this bushing we had 197 feet of 8" pipe, and on top of this we had a swedge nipple out to 12" pipe, and on top of this we had 183'6" of 12" pipe, which brought the pipe up to the surface. We had to have 12" pipe in here because the bowls of the pump were of such size that it had to be a 12" hole where the pump was set. This is a Layne turbine. Before setting the packer it was 69'9" to water. After setting the packer it was 76'8" to water, and on the following Monday morning, after the packer was set it was 78'3" to water, and when we set the packer it only settled 8" and came t. a stop.

It was 68'9" to water before any packer or pipe was installed, so after packer was set we installed the turbine pump and the pump operated at 250CFM 24 hours per day, and this is all the well would supply drawing the water down 125' below surface. This was pumping water out of the Jordan sandrock only.

The village then kept pumping this well off and on for a period of over a month and they took various tests of the water, but the creosote did not seem to clear up so ordered us to remove the pump and pipe and packer again, because we agreed to take this material all back again without charge to them. So when we went in to remove the packer we could not get the packer loose, and we had to jack on the pipe to start it loose. It jumped loose and the 8" pipe stripped out of the 8 - 10 cast bushing which was on top of the packer, and all of the pipe was taken out and they decided not to attempt to remove the packer, so their permanent pump was installed back in the well again, and the well was left in the same condition as it was originally when we completed the drilling in the first place, except that there is now this Larkin hook well packer designed to run on 10" pipe and to pack in a 15-12" hole with an 8 x 10 bushing on top of the packer. This packer is now located at 393'7" below pump room floor.

MN DEPO. EXH. 3
3/10/83
KIRBY A. KENNEDY

MN DEPO. EXH. 132
3/10/83
KIRBY A. KENNEDY
COURT REPORTER



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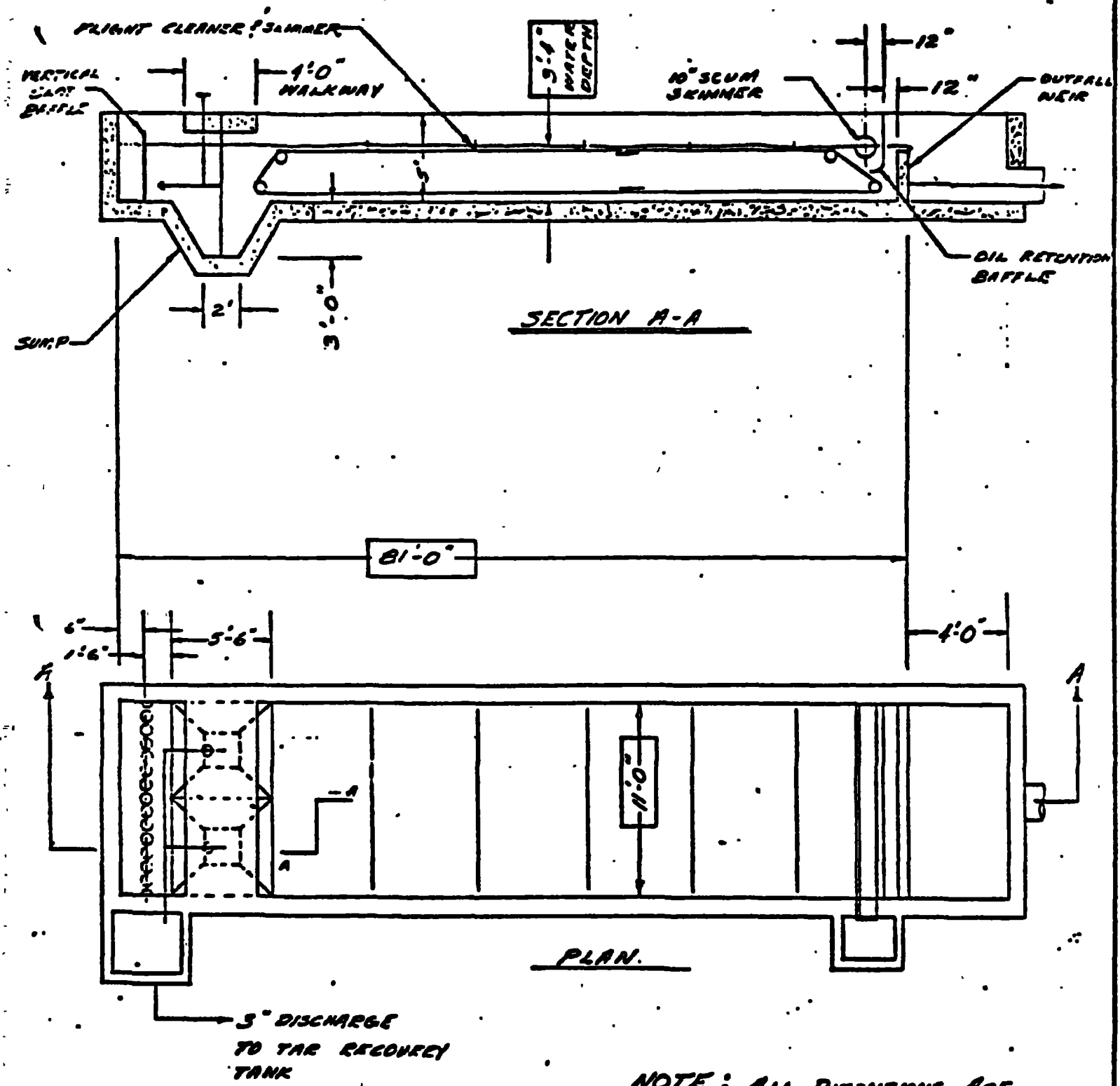
PRELIMINARY - DESIGN OF API OIL-WATER SEPARATOR - MINNEAPOLIS PLANT



NOTE: ALL DIMENSIONS ARE AVAILABLE FOR SUGGESTED MODIFICATION

Minnesota 1-10-83 80A

36,2542

REPUBLIC CREOSOTING COMPANY
INDIANAPOLIS INDIANA

COPY

REILLY TAR & CHEMICAL CORPORATION

Mr. H. L. Finch - St. Louis Park Indianapolis

R. J. Hennessy September 30, 1970

St. Louis Park Plant - Waste Water - W. O. 701210.

Attached are two prints of each of our drawings 701210-1 and 701210-2 showing the layout and flow diagram of the proposed oil water separator at St. Louis Park. The method of separating the oil from our contaminated water is as follows (refer to the flow diagram, drawing 701210-2):

1. Process water would be collected in a sump from which it is pumped to the inlet of an Edens Model 150M separator. The liquid level in this sump is controlled so the flow is not intermittant but matches the flow in the collecting sewer. This will permit operation of the separator at top efficiency. The maximum flow would be 200 g.p.m. but would normally be less than 100 g.p.m.

2. Light and heavy oils collected in the separator will be pumped to cone bottom tanks for further settling. The oil layers from these tanks will be pumped to storage tanks 1 and 3 for reuse in the creosoting operation and the water layer will be drained into the contaminated sump from where it will be pumped into the Edens separator.

3. Sanitary sewers will bypass the Edens separator and discharge into the sump pumping to the city sewer.

4. The sewer from the effluent sump to the city manhole in Walker Street will be a 4" steel schedule 40 pipe protected with a coating to prevent external corrosion. The use of a 4" pressure sewer will enable us to obtain the necessary cover to prevent freezing with a fall of only 2 ft. in 865 ft.

Mr. Justin is taking samples of our influent in St. Louis Park for tests to determine the quality of the effluent after it passes through the separator. I believe we should tell the City how much oil will remain in the discharge and see if they will accept it. If we ask them what specification we must meet they may insist on something ridiculous.

Because of the cold winters it is our plan to cover the Edens separator with a pole barn. If this scheme meets with approval we will prepare an estimate and proceed with detail design.

Very truly yours,

R. J. H.

R. J. Hennessy

RJH:db
Enclosure.

cc: Mr. T. E. Reilly
Mr P C R

STATE MN: FIN... DEP.
EXHIBIT 20

30257S

REPUBL C CREOSOT NG COMPANY

TO: HOME OFFICE - INDIANAPOLIS

OFFICE: St. Louis Park, Minn.

FROM: H. L. Holstrom

DATE: November 5, 1940

SUBJECT: BARNETT & RECORD - WATER MAIN & DRAINAGE SYSTEM

We are attaching an estimate from Barnett & Record covering our contract with them for the construction of the water main and drainage system.

The water main is completed and in service. We have, however, asked them for a final test on the line in full accordance with the specifications submitted to them. This has not yet been done, but enough tests have been made to warrant the 85% payment, which is now due on the water main.

The progress on the drainage system will not be so rapid because of the difficulty encountered with water at the sump and settling basin. The tile line from the property line to the loading dock is completed, and work is in progress on the sump.

They have called us several times to find out if payment would soon be made in accordance with the agreement.

We have, therefore, given you the present status of the work to guide you in making payment.

Yours very truly,

H. L. Holstrom

H. L. Holstrom

wk

cc to: Mr. H. R. Horner

MN DEPO. EXH. 135
3/10/83
KIRBY A. KENNEDY
COURT REPORTER

303057

MN DEPO. EXH. 132
3/10/83
KIRBY A. KENNEDY
COURT REPORTER

MN DEPO. EXH. 135
3/11/83
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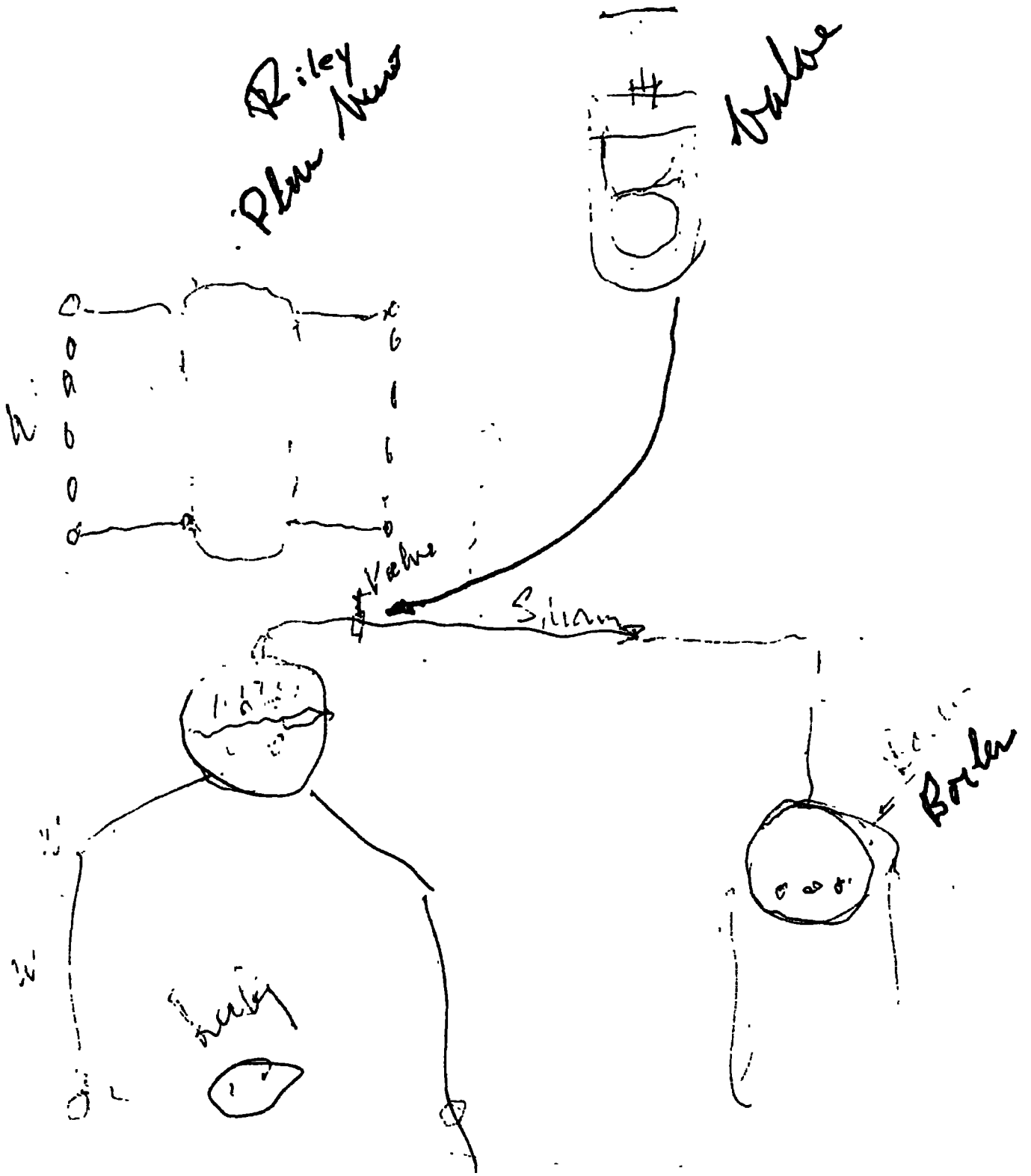

[illegible] to [illegible] answers to State's interrogatories

INTER-OFFICE CORRESPONDENCE

REILLY TAR & CHEMICAL CORPORATION

TO: OFFICE: Lab

FROM: William R. Roder DATE: May 2, 1979

SUBJECT: TRIAL PREPARATION:
HISTORY OF WELLS IN THE ST. LOUIS PARK AREA

Wells on the Plant Site:

Thirteen wells were on the plant site at time of purchase from the Minnesota Sugar Beet Co.

Twelve of the wells were shallow.(1) Attempts to use these shallow wells were unsuccessful, due to clogging of the well screens with sand and silt.(2) Reports have placed the depth of the shallow wells at 50-60 ft.(3) and from 100-200 ft.(4) Based on the clogging information the wells are probably located in the middle and lower drift Aquifers (80 ft. and not in the St. Peter sandstone; if the wells were 100-200 ft. deep.

The middle drift aquifer is a silt and clay formation, while the lower drift contains some sand. The St. Peter sandstone is a light yellow to white, well sorted quartzose sandstone.

One deep well was on the site. It was drilled in 1898 to a depth of 866 ft. to the Mt. Simon-Hinckley sandstone (a medium to coarse grained sandstone).(5) The deep well was located in the southeast corner of the plant site 600 ft. from the pump house.(6) The well had a 16" casing to 58 ft., 12" casing to 100 ft., and a 10" casing to 150 ft. was added in 1917. The well was plugged and sealed about 1933 on the advice of the McCarthy Well Co., in belief this would eliminate the problem the city of St. Louis Park was having with the taste of the water from their newly drilled well.(7)

An additional deep well was drilled 909 ft. into the Mt. Simon-Hinckley sandstone by the McCarthy Well Co. in 1918, close to the pump house. The well was cased with a 12" casing to 65 ft.(8) In 1933 a 10" casing was added to a depth of 73 ft., an 8" casing to 260 ft. and a 4 1/2" casing to 373 ft., again on the advice of the McCarthy Well Co.(9

The site well water was analyzed by Mr. T. E. Courtney of Reilly Labs, for phenol content, in May 1933, using the Gibb Method: The phenol concentrations were as follows:(

well with casing to only 65 ft. = 0.050 ppm
well with casing to 373 ft. = 0.020 ppm
water from peat bog N.W. of site = 0.010 ppm
Maywood boiler feed water = 0.040 ppm

The well water was reanalyzed by Mr. Courtney in June, 1933. The phenol content was 0.030 ppm.(11)

The 0.010 ppm phenol concentration of the peat bog located northwest of the plant site indicates another source of phenol contamination, to the northwest of the plant site. Since the drainage of the area is to the south and east thru the plant site.(12)

The Chapin method was used in Nov., 1938 to determine the phenol concentration of the site well; no phenol was detected.(13) This well water had 352 ppm told solids.

A letter written by Mr. McLellan in 1940 indicates the site well water was never used for drinking purposes due to taste and odor.(14)

A new hydro-pneumatic pumping system was installed in the well in 1955.(15) Tarry material caused this pump to fail in 1958. The plant personnel were of the opinion the well had become contaminated with tar to the 226 ft. level. Therefore, a packer was placed inside the 8" casing to a depth of 260 ft.(16) I could not determine the status of the site well after 1958 with the information I have available. Except, the plant office and showers were hooked up to city water in the early 1960's.(17)

The site well was opened in 1977 by the Barr Engineering Co. for testing. A tarry material was on the pipe to 40 ft. below the well head.(18)

The following phenol determinations have been made on the site well water over the years.(19)

Year	Lab.	Method	Phenol PPM
1933	Reilly	Gibb	0.020 - 0.050
1938	Reilly	Chapin	0.000
1968	Twin City Testing	Unk.	0.020
1977	Serco Labs	4-Aminiantipyrine	
After 1 minute of pumping 100 gpm			0.020
" 15 " " " "			0.011
" 30 " " " "			0.008
" 100 " " " "			0.005

The above phenol determinations indicate the phenol content of the site well water has remained constant over the years; since the coal tar creosoting operation began. The phenol content is above the allowable federal limits of 0.001 ppm phenol for drinking water. But, apparently the site well water always has been since the water was never used for drinking purposes.

According to the Barr Engineering Report, the Mt. Simon-Hinckley formation is isolated

from the prairie du Chien-Jordan aduifer, except for recharge thru wells that provide a direct pathway between the Mt. Simon-Hinckley and the upper aquifer.[20] Therefore, if the site well was a direct pathway for contamination to the Mt. Simon-Hinckley aquifer, why didn't the phenol concentration of the site well water increase over the years?

City of St. Louis Park Municipal Wells

Available information indicates the City started drilling for their water supply in the early 1930's.

The first complaint from the city was in 1933, when a well drilled southeast of the plant site (6021 W. 36th St.) had a swampy taste. The well was originally drilled to a depth of 393 ft. (Jordan formation) and cased the entire depth. The well was extended another 150 ft. to the St. Lawrence sandstone. The taste was not eliminated and a trace of phenol was reported.[21] This was when the McCarthy Well Co. advised the plant manager to seal the old deep well and case the 909 ft. well to 373 ft. The City well water was approved by the State Sanitation Dept. and used for a short period.[22] The well was also in service in 1938.[23] The well water was analyzed by E. A. Hicokok Assoc. in 1969. The phenol content was 0.012 ppm.[24]

The city draws its water from the St. Peter, Jordan and Hinckley aquifers. A 1969 E. A. Hickok and Assoc. report indicated water from the Jordan and Hinckley formations to be less than 0.005 ppm.[25]

The following phenol concentrations have been reported over the years on the following city wells.[26]

ST. LOUIS PARK MUNICIPAL WELLS

#	GEO. FORMATION	LOCATION FR. PLANT SITE	Phenol PPM 1946	1947	1948	1968	1969	1974	1977
2936 Idaho Ave.	St. Peter	N	-	-	-	-	0.014	<0.002-0.035	-
2924 Idaho Ave.	St. Peter	N	-	-	-	0.002	0.012	-	<0. 2
W. 41st & Natchey	Jordan	SE	0.100		0.005-0.070	0.008	0.014	-	-
Wyo & 34th St.	Jordan	W	0.020	-	-	-	0.014	-	-
W. 42nd & Zarthan	Jordan	S	-	0.007	0.015	0.0025	0.023	-	-
29th & Jersey	Jordan	N	-	-	-	-	0.014	<0.002-0.013	<0.002-0.(
29th & Idaho	Hinckley	N	-	-	-	0.000	trace	-	-
42nd & Zarthan	Hinckley	S	-	-	-	0.000	0.018	-	-
Cedar Lake Rd. & Ala.	Hinckley	NE	-	-	-	0.000	0.018	-	-
Cedar Lake Rd. & Ala.	Jordan	NE	-	-	-	0.000	0.009	-	-

The phenol concentration of the city wells were determined to be less than 0.005 ppm by the Minnesota Dept. of Health on April 16, 1970.(27)

The above data shows no indication that the city's wells have become contaminated over the years. The upper aquifers appear to have no higher phenol content than the lower aquifers, and I find little evidence from this data that the wells to the south and east of the plant site are higher in phenol than the wells to the north or west.

However, according to the Barr Engineering Report, their information was not sufficient to explain the reason for the phenolic contamination of the city's St. Peter and Jordan wells located in the city's well field north of the Plant Site. Since their calculated flow time through the aquitards are on the order of 55 year through the siltstone stratum of the St. Peter and at least 34,000 years through the various aquitards between the Jordan and the Mt. Simon-Hinckley, thrus under the assumed permeabilities and gradients it seems unlikely that the coal tar derivatives that are known to be present at the base of the glacial drift and in the platteville limestone could have traveled to the Prairie du Chien-Jordan through the siltstone stratum of the St. Peter, or to the Mt. Simon-Hinckley through the Eau Claire.(28) However, the water level gradients are sufficient to transmit seepage from uncased wells to the City's wells in the St. Peter Aquifer. However, not enough time has elapsed for this to be (29) the source of phenol in the city's St. Peter wells.

In the case of contamination of the citys Jordan wells, the computed water gradients indicate ground water could not be transmitted from the plant site to the City's Jordan well field north of the plant site.(30)

The Barr Report, also, stated the phenol concentration in the Mt. Simon-Hinckley wells on the plant site and the city well field could be attributed to movement of coal tar derivatives from the Mt. Simon-Hinckley well on the site to the City's Mt. Simon-Hinckley wells.(31) If this is the case why isn't the phenol concentration higher in the Mt. Simon-Hinckley aquifer, due to the direct pathway for contamination?

One attempt to explain the phenol concentration in the city's wells to the north of the plant site was by high volume pumping of the wells north of the site creates a cone of depression around the wells and corresponding a local reversal in the direction of ground water flow occur.(32) However, the observed movement of ground

water in the St. Louis Park Area is in a southeasterly direction.[33]

Why, could not one explanation be that the phenol contamination, also have come from some source north or west of the plant site before the creosoting operation begun. Phenol Concentrations of 0.010 ppm[10,12] were found in a peat bog Northwest of the plant in 1933 and the plant site water has never been suitable for drinking. The time element of 55 years through the siltstone of the St. Peter could be explained, plus the reason for phenol in the city's well field to the north.

Polynuclear Aromatic hydrocarbons have also been reported in the city's well water. In 1977 the Barr Report showed no PNA in City Well #3 at detection limits of 0.030 ppm. However, a 1978 Minnesota Dept. of Health Report on PNA in the St. Louis Park drinking water reported the following wells should be abandoned due to high PNA concentrations.[3

Well #	and Location	Direction Fr. Plant Site	Geo.Formation	1978 PNA ppm	1969 Phenol PPM
7	2500 Louisianna Ave.	North	Jordan	0.000139	0.013
9	"	North	"	0.000248	0.013
10	29th & Jersey Ave.	North	"	0.001363	0.014
15	"	North	"	0.001924	-

All the city wells were tested and only wells 10 and 15 exceed the allowable limits for PNAs in drinking water. All the wells with high PNA concentrations were in the Jordan aquifer and to the north of the plant site.

Again, why not explore a source of contamination to the north or west of the plant site before 1900. We found phenol north and west in 1933, the time element can be explained, through the St. Peter and this could be the reason the Jordan Wells to the north are contaminated, with phenol & PNA. Since the Barr Engineering report states the Jordan wells north of the plant site, could not be contaiminated with phenols from the plant sites ground water.[36]

Residential and Commercial Wells in the St. Louis Park Area

The first written complaint by a resident in the plant site vicinity due to a phenol taste in their well water occurred in 1938.

The Minnesota Dept. of Health in 1938 sampled and analyzed for phenol, two residential wells and one commercial well. All located east of the plant site.[37]

Location of Well	Geo. Formation	Phenol PPM
3363 Brownlow	lower drift	0.221
3355 Brownlow	"	12.30
Hedberg-Friedheim Gravel Pit	Jordan	0.00818

The commercial well was drilled originally to the St. Peter and no tarry taste present, however, after extending the well to the Jordan, a tarry phenolic taste was observed.(38)

The Prestilite Co. also had a 300 ft. well (Prairie du Chien formation) with a phenolic taste to the water. They were reported to be able to remove the taste with some type of filter.(39)

In 1940 a Mr. E. D. Jones filed a complaint with the plant that his well water had an obnoxious taste, due to our coal tar operations. The Jones well was located at 3320 Louisianna Ave. on the hill east of the plant site. The depth of the Jones well was 85 ft. Two employees at the time, Ed Weiner and Frank Williams, neighbors of Jones, indicated they had to abandon their wells, along with others in the area over the last 10 years (1930-1940).(40)

Ole Peterson, the creosoting foreman at the time, stated wells in the area had had the phenolic taste and odor before Reilly purchased the plant site. Jim Smith of Mpls. Gas and Light back up Mr. Peterson's statement.(41)

All the wells were sampled and analyzed by the State Board of Health, and were passed as safe.(42)

Most of the residential and commercial wells in the area which were drilled to the Platteville have now been abandoned.(43)

Phenol analysis of various residential and commercial wells in the area over the years have been tabulated.(44)

RESIDENTIAL AND COMMERCIAL WELLS

1 Co. & Location	Geo. Formation	Direction of Site	Phenol PPM 1938	1968	1969	1974	1976	1977
berg Gravel -	Jordan	E	0.00818	-	-			
me Ind. Lake St. & Taft	Prairie du Chein	S	-	-	0.028	0.002-0.004	0.002	0.002-0
ourt Plasl. 27th W. of La.	St. Peter	E			0.023			
Pmd. 36th Brunswidk	Prairie du Chein	SE		0.008	0.020	<0.002-0.007	<0.002	
CO -	St. Peter	SE				1.0 - 1.4	0.14-0.17	0.3
rilized Diaper	Jordan	E					<0.002	
nesota Rubber	Jordan	SE				<0.002-0.009	<0.002	
dick Grain	Jordan	E				<0.002-.017	<0.002	
hodist Hospital	Jordan	SE					<0.002	
tman's 3700 Colorado Dr.	St. Peter	SE					<0.002	
53 Brownlow	lowerdrift	E	0.221					
55 Brownlow	"	E	12.3					

Only the Midco Register Co., formerly Robinson Rubber Co. had a phenol content considerably higher than found in any of the city wells or commercial wells. Again the well is located in the St. Peter and contamination would have to be by a direct pathway to the St. Peter aquitard.(45) Could the well have been contaminated by the former owner, the Robinson Rubber Co. One commercial well has been analyzed for PNA's, the Flame Industry well located south of the plant site at Lake St. and Taft Ave. The well is drilled to the Prairie du Chien aquitard, and no PNA's were detected with a detection limit of 0.03 ppm.(46)

Monitoring Wells:

Monitoring wells were drilled by the Barr Engineering Co. for their investigation of the area.

The following phenolic concentrations were obtained.(47)

HISTORY OF WELLS

onitoring Well #	Formation	Direction Fr. Plant Site	Phenol PPM 1976	Phenol PPM 1977
W-1	Platteville	NE	<0.002	<0.002
W-2	Middle Drift	N	<0.002	<0.002
W-3	Middle Drift	N on Site	<0.002	-
W-5	Middle Drift	SE Corner Site	0.153	0.035-0.022
W-6	"	SW Corner Site	0.043	0.050-0.19
W-7	"	West	<0.002	
W-8	"	South	<0.002	<0.002
W-9	Middle Drift	SE	3.00	1.10-0.60
W-10	"	SE	0.002-0.004	-
W-11	"		0.004-0.023	-
W-12	"	SE	0.014	-
W-13	"	SE	-	56-4.8
W-14	St. Peter	SE	-	<0.0068-0.002
W-15	Lower drift	SW Corner Site	-	0.028-0.037
W-16	Lower drift	S		0.002-0.004
W-17	Lower drift	SE		0.340-0.032

The monitoring well data does indicate the higher phenol content is in the south east corner of the plant site and across the property line to the southeast between Walker and Lake St., with the higher concentration in the glacial drift.

Monitoring wells 9,13,14 and 17 were analyzed for PNA's. No PNA's were reported in well 14 at detection limits of 0.03 ppm. Well 17 had a PNA concentration of 1.7 ppm.(48)

Well 17 is located the farthest from the plant site approximately (1000 ft.) and drilled into the lower drift. Why, it has a higher PNA concentration than wells 9 and 13 which are closer to the plant site and drilled only to the middle drift was not explained. Well 14 is in the same area, but drilled to the St. Peter.

Other Wells

The following is a list of other reported wells in the St. Louis Park and plant site area. No phenol or PNA determinations have been made on these wells.(49) Wells identified by Sunde (1974) in his survey of well logs, but not located in the Barr Engineering field survey:(47)

Milwaukee Rd.	Hinckley	cased to 1st bedrock
3612 Alabama	St. Peter	"
Strom Block Co.	"	"
Strom Block Co.	Jordan	cased to the St. Peter
Black Top Service Co.	"	"
		and may be sealed

Wells not identified by Sunde in 1974 survey, but located during field survey:

Mill City Plywood	lower drift	tarry taste, no
Lakeland Door Co.	Platteville	no tarry taste, not in use
Ace Mfr. Co. 3825 Edgewood	No log available	
Hartman Well 3700 Colorado	160 ft.	no smell or taste
Methodist Hospital	St. Lawrence	Cased to Jordan

Wells for which logs were found, but had not been previously reported.

Rogers 7401 Walker St.	St. Peter	Cased to Platteville
Lake Land Door Co.	Platteville	
Terry Excavating 3326 Republic	112 ft.	Cased to 1st bedrock

This report was based on information gathered from correspondence between the Republic Creosoting plant at St. Louis Park, Minn. and the main office of Reilly Tar and Chemical. Correspondence between the above offices and the City of St. Louis Park and various offices of the State of Minnesota. Plus the following reports to

the MPCA:

Barr Engineering Report June, 1977

Eugene A. Hickok & Associates Report "Ground Water Investigation Program at St. Louis Park, Minn. progress Report 1. Sept. 1969

Minn. Dept. of Health - Division of Environmental Health Section of Health Risk Assessment" Health Implications of Polynuclear Aromatic Hydrocarbons in St. Louis Park Drinking Water. Nov. 1978

Very truly yours,

William R. Roder

References and Documentation Used in Report

1. 1x 17-10-29 A. E. Larkin
2. 1x 17-11-3 A. E. Larkin
3. 1x 17-11-3 " "
4. 1x 17-9-5 " "
5. 1x 17-10-5 " "
6. 1x 17-10-16 " "
7. 1x 33-4-4 " "
   1x 34-3-26 W. J. McLellan
8. 1x 17-10-29 A. E. Larkin
   1x 17-11-5 A. E. Larkin
   1x 17-11-13 " "
   1x 17-11-26 McCarthy Well Co.
   1x 17-12-10 A. E. Larkin
9. 1x 33-4-4 " "
   1x 33-4-8 " "
   1x 33-5-10 R. L. Rademacher
10. 1x 33-5-23 T. E. Courtney
11. 1x 33-6-22 " "
12. 1x 33-5-18 R. L. Rademacher
13. 1x 38-11-18 T. E. Courtney
14. 1x 40-10-14 W. J. McLellan
15. 1x 55-4-28 H. L. Holstrom
16. 1x 58-3-5 H. L. Holstrom
17. 1x 62-7-18 H. L. Finch
18. Barr Engineering Report 1977-6 page III-34
19. 1x 33-5-23 T. E. Courtney
    1x 38-11-18 " "
    1x 68-6-24 Twin City Testing Lab.
    Barr Enginerring Report 1977-6 page III-34
20. Barr Engineering Report 1977-6 page IV-19
21. 1x 33-4-4 A. E. Larkin
22. 1x 33-7-12 R. L. Rademacher
23. 1x 38-6-3 A. E. Larkin
24. E. A. Hickok & Associate Report 1969-9 page 5
25. E. A. Hickok & Associate Report 1969-9 page 17
26. E. A. Hickok & Associate Report 1969-9 pages 5-6
    Barr Engineering Report 1977-6 table #6
27. MCPA Report 439 1970-4 page 2
28. Barr Engineering Report 1971 -6 page IV 20
29. Barr Engineering Report 1971 -6 page VII 3-4
30. " " " " " " "
31. " " " " " " "
32. E. A. Hickok & Assoc. Report 1969-9 page 13
33. Barr Engineering Report 1977-6 page VII-1
34. " " " " page III 33-34
35. Minnesota Dept. of Health "Health Implications of Poly nuclear Aromatic Hydrocarbons in St. Louis Park Drinking Water" 1978-11 Table I

36. Barr Engineering Report 1977-6 page VII 3-4
37. Minn. Dept. of Health Division of Sanitation Report or Investigation of Disposal of Wastes at the REpublic Creosoting E. St. Louis Park, Minn. 1938-5
38. Same as 37
39. " " "
40. 1x 40-10-14 W. J. McLellan
41. 1x 40-10-14 " "
42. 1x 40-10-14 " "
43. E. A. Hickok and Assoc. Report 1969-9 page 17
44. Same as 37
    E. A. Hickok & Assoc. Report 1969-9 Table I & II
    Barr Engineering Report 1977-6 table #7
45. " " " " page IV - 15
46. " " " " page III 33-34
47. " " " " table #5
48. Barr Engineering Report 1977-6 page III 33-34
49. " " " " page III 22-24

Sample: 1x 17-10-29 A. E. Larkin
1x = Reilly Tar & Chem. Co. correspondence
17 = year 1917
10 = month
29 = day
A. E. Larkin writter.

WR/jr

REPUBLIC CREOSOTING COMPANY

TO: Mr. H. L. Holstrom, St. Louis Park OFFICE: Indianapolis

FROM: M. Mitchell DATE: January 28, 1941

SUBJECT: PHENOL IN WASTE WATER

I have delayed answering your letter of January 20th with the hope that I could report the phenol analysis of the samples you sent to us with that letter. These samples have not yet been analyzed as Mr. Courtney has been extremely busy, and as soon as this analysis is available I will forward it to you. At the same time we expect to investigate a little more fully the effect of the base content of the extracting oil on the removal of phenol from waste water.

Mr. Horner and I have discussed the meeting we had with the State Board of Health, and it is our recollection that the State Board of Health did not give any specific figure of phenol concentration in the waste water as being a satisfactory percentage for disposal. We did, however, mention some figures of around 50 ppm and it is our recollection that this concentration of phenol in the waste water when considered in connection with the small amount of the flow of such water would be acceptable to the State Board of Health, although they have avoided any definite commitment.

We are glad the extraction of the phenol from your waste water is progressing satisfactorily and hope that you will keep us informed of future laboratory determinations of the phenol reduction you obtain and call on us for any assistance we may be able to give in improving the operation of your equipment.

Very truly yours,

M. Mitchell

MM:D
MO

RTC DEPO. EXH. 10
3/12/83
KIRBY A. KENNEDY
COURT REPORTER

303067

INTER-OFFICE CORRESPONDENCE

Mr Hawkins
Harry I want
Like to discuss
this with you
Mac 7/22

PLANT

DATE July 20th 1938

U.S. DEPO. EXH. 32
3/11/83
KIRBY A. KENNEDY
COURT REPORTER

TO:

FROM:

SUBJECT:

General analysis of water taken from ditch at point where it leaves property at Walker St.

Work done on composite sample obtained by collecting a sample each day for 6 days.

Samples collected during period from July 11th to July 16th.

Sample No. 1

This sample taken from first 3 inches of surface water

appearance: Turbid - Medium Dark Tan Color
Traces of Oil & Tar present:

302396

Specific Gravity - @ 60°F - 1.00 H
Total Solids - by evaporation - 0.2%
Phenols - (Chapter Method). 1: 16000 approx.

Barium Chloride when added produced a white precipitate of Barium Sulphate insoluble in [illegible] - indicating the [illegible]

PLANT

DATE

TO:

FROM:

SUBJECT: Sodium Sulphate.

Sample No. 2

This sample was collected in the same way as sample No. 1 except that is was obtained from bottom of ditch and included the material found on the bed of ditch.

Appearance

The bottom of ditch was found to have a layer of tar spread out quite uniformly from 3 to 4 inches deep in the sand of the ditch bed. The water flowing over the bed was found to be the same as in sample No. 1. Therefore, except for the larger quantity of tar and oily matter the sample was about the same as sample No. 1

302937

PLANT

DATE

TO:

FROM:

SUBJECT

General:

The above discription of this water, can be regarded only as approximate. The quantities of the various substances contained in this water are in such minute proportions that only laboratories equipped for this class of analytical work can handle with any degree of accuracy.

The Specific Gravity of 1.004 @ 60°F indicates a slightly higher reading than pure water. This can be expected from the fact that sulphate water from by-product and boiler blow-off is present.

The water showed total solids by evaporation of .2% which is about half the amount found in McKemp analysis.

B02998

The phenol content which was determined

in is ad to

INTER OFFICE CORRESPONDENCE

PLANT

DATE

TO:

FROM:

SUBJECT:

such as found in coal tar dips and cresols. Therefore the ratio of 1 in 16000 is only approximate. The test however, very definitely shows up the presence of phenol even in very small traces, by the red color which develops when treated with Millons reagent.

The presence of Sodium Sulphate can be determined by the addition of Barium Chloride to its aqueous solution. A white precipitate of Barium Sulphate forms which is insoluble in Hydrochloric acid.

302999

During the week the samples were being taken, the by-products was in full operation, Carbolates were being sprung every day, resulting in large volumes of sulphate water going to the ditch. No water from benzole tank use ditch during this time.

PLANT

DATE

(1)

TO:

FROM:

SUBJECT:

(a) The water and benzol are stored in ground tanks having capacity of 13000 gallons where it is allowed to settle for proper separation. When ground tanks are full the benzol is pumped out to storage and the water to ditch. Our average operating schedule based on three still runs per week will produce approximately 4800 gallons of this water per month. The average production being 100 gallons per still, Four Stills operated 3 times per week yield 1200 [illegible] per week [illegible] 800 per month.

~~30[illegible]~~

B [illegible] material [illegible] is the 303000 emulsion formed in extracting tar acid from Oil with caustic Soda. There is very little of this emulsion which cannot be separated into carbolate and Oil. The emulsion is placed in storage tanks where heating and settling over a period of time results in recovery of the oil and carbolate, occasionally there is a layer between the carbolate and oil which will not break

PLANT

(2)

DATE

TO:

FROM:

SUBJECT:

up. This portion is set aside and used for weed killing around the plant, and will amount to about 600 gallons per month. None of this material goes to the ditch.

(C) The figure suggested of 6000 gallons waste material entering the ditch per week we think is high. Our normal operating schedule will produce about 2000 gallons sulphate water from tar acid sponging and 1200 gallons from Benzole tank, will bring the amount per week between 3000 to 4000 gallons. We do not believe the amount will ever exceed 4000 gallons.

303001

(D) The fact that this sample contained 25% settleable oil indicates that it was not representative of the material entering the ditch. Only the oil free water is pumped to ditch, and will contain only traces of oil. The only phenols and Cresols [illegible] amounts soluble

(3)

PLANT

DATE

TO:

FROM:

SUBJECT:

to produce a saturated solution, this is generally recognized as being 1 in 15 or 6.67% on phenols, while cresols are soluble to the extent of 1 in 50 or 2%.

(E)

Analysis indicates sample was not representative. The fact that 25% tar acid was found, shows analysis was made on the oil, as the water could not contain the amount of tar acids.

303002

INTER-OFFICE CORRESPONDENCE

REPUBLIC CREOSOTING COMPANY

TO: REILLY LAB - INDIANAPOLIS

OFFICE: St. Louis Park

FROM: H. L. Holstrom

DATE: April 8, 1947

SUBJECT: FILTRATION OF WASTE WATER

ATT: Mr. H. R. Horner

We are attaching the paper on disposal of refinery waste which you loaned to Mr. Larkin on his recent visit to Indianapolis.

We are very glad indeed to have this information because of the difficulty we have encountered in clearing the oil from our waste water. We believe we should proceed at once to develop this idea to improve our situation. We have taken notes and gathered all the information we need from this paper to proceed with the problem in an intelligent manner, and will, therefore, not need it again.

We appreciate the fact very much that you have brought this matter to our attention.

Yours very truly,

H. L. Holstrom

H. L. Holstrom

HLH: jn
Enc:

101,24

U.S. DEPO. EXH. 38
3/11/83
KIRBY A. KENNEDY
COURT REPORTER

REILLY TAR & CHEMICAL CORPORATION

Laboratory Analysis of DRAINAGE WATER. At REILLY LABS. Plant

Date Analysis made FEBRUARY 14, 1941. Sample #6327.

Source St. Louis Park Plant. Date Received 1/22/41.

Consignee / Consignor SEE MR. BURGER'S REPORT 12/12/41; AND MR. WERNSINGS REPORT 1/6/41.

New samples of drainage water were tested for their benzophenol content by the Chapin test, both at the St. Louis Park plant and at the Laboratory. The results are as follows:-

SAMPLE.	St. Louis Park Results.	Laboratory.
#6327B, "Water Before Washing".	1900 ppm.	2050 ppm.
#6327C, "Water after washing with Light Oil".	337	318
#6327A, "Water after Washing and Diluting".	35	37

Similar tests were conducted in the laboratory using creosote oil sample #6301, received 12/30/40 for extracting the phenol. The procedure consisted in washing the drainage water twice with equal volume of the treated oil. The results of this investigation follow:-

	PHENOL BY CHAPIN TEST.
Water Before Treatment (#6327B),	2050 ppm.
Water after treatment with oil, (All acids removed from oil; only 3.75% bases present).	64 ppm.
Water after treatment with oil to which bases were added. (All acids removed from oil; Base content brought to 8%).	61 ppm.

In order to raise the base content of the wash-oil to 8% after the acids had been removed, only high boiling bases were used so as to reduce the possibility of aniline's being present, which would interfere with the Chapin test. As it was, 1.7% of the bases added showed up as phenol by the Chapin test.

Since bad emulsions were formed during the washing process, filtration of the drainage water was attempted before treatment with the wash-oil. Little success was attained in reducing the quantity of emulsion by filtration alone.

The fact that little noticeable improvement was affected by adding more bases to the acid-free wash oil would indicate that the oil be used ~~only~~ with only the acids removed.

JWG:R
cc. Mr. Mitchell (2)
cc. Mr. Horner.

Very truly yours,

John W. Graves

U.S. DEPO. EXH. 37
3/11/23
KIRBY A. KENNEDY
COURT REPORTER

303069

CDE

V536

REPUBLIC CREOSOTING COMPANY

Mr. H. R. Horner — Indianapolis

R. L. Renshaw — January 2, 1941

WATERPROOFING SETTLING BASIN FOR DRAINAGE DITCH AT ST. LOUIS PARK

First: Apply 4' creosoted cant strip all around each compartment floor line, nailing with 16d. nails every 18" alternating top and bottom.

Second: Line all surfaces which will be exposed to water with A-2-Ply fabric water proofing paper nailed (such as used for exporting purposes) on a 9" square over the entire surface with large head galvanized roofing nails 3/4" long; with a cushion under each head to prevent cutting the sheeting paper.

Third: Lay floor deck with usual 3-Ply 15-lb. felt, hot mopped using 12" laps. (Note: Do not gravel in until all other work finished) and extending 2-3 and 4' respectively above cant strip.

Fourth: To flash. Hot mop 3-Plys of 15-lb. felt 10'-12' and 14" wide respectively with standard roofing pitch, the edges of which will extend 1 inch beyond the preceeding one.

Fifth: The counter flashing and side wall covering will be applied to the sheeting paper by hot moping with steep roofing pitch with all vertical seams broken at least 12" and extending over the flashing on to the deck. The first Ply to be nailed every 18", 2" but from the cant strip; the other two Plys should extend 2" and 4" onto the deck past the first Ply.

Sixth: Apply a pea size gravel in a graveling in operation over the entire floor and extending out above the cant strip using plenty of pitch

Very truly yours,

RLR:W
cc: Mr. H. J. Lillig, Chicago
cc: Mr. A. M. Larkin, Jr., St. Louis Park
MO

U.S. DEPO. EXH. 36
3/12/83
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303003