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UNITED STATES DISTRICT COURT
DISTRICT OF MASSACHUSETTS

Civil Action
No. 82-1672-S

SKINNER, D. J.
and a Jury

ANNE ANDERSON, ET AL

V.

W. R. GRACE & CO., ET AL

Fifty-Eighth Day of Trial

APPEARANCES:

Schlichtmann, Conway & Crowley (by Jan Richard Schlichtmann, Esq., Kevin P. Conway, Esq., and William J. Crowley, III, Esq.) on behalf of the Plaintiffs.

Charles R. Nesson, Esquire, on behalf of the Plaintiffs.

Herlihy & O'Brien (by Thomas M. Kiley, Esq.) on behalf of the Plaintiffs.

Hale & Dorr (by Jerome P. Facher, Esq., Neil Jacobs, Esq., Donald R. Frederico, Esq., and Deborah P. Fawcett, Esq.) on behalf of Beatrice Foods.

Foley, Hoag & Eliot (by Michael B. Keating, Esq., Sandra Lynch, Esq., William Cheeseman, Esq., and Marc K. Temin, Esq.) on behalf of W. R. Grace & Co.

Courtroom No. 6
Federal Building
Boston, MA 02109
9:00 a.m., Tuesday
June 10, 1986

Marie L. Cloonan
Court Reporter
1690 U.S.P.O. & Courthouse
Boston, MA 02109

1 Q And in connection with your duties in the seventies,
2 especially with respect to the sewers and condition
3 of the stream or river, did you have occasion to be on the
4 so-called 15 acres and walk that access road?

5 A I walked it before, yes.

6 Q And over the years, approximately how many times?

7 A At least a dozen, maybe more.

8 MR. SCHLICHTMANN: Objection.

9 THE COURT: The answer is in.

10 MR. FACHER: That's all.

11 MR. CHEESEMAN: I have no questions, your
12 Honor.

13 MR. SCHLICHTMANN: No questions.

14 THE COURT: All right.

15 MR. FACHER: May I have a moment to clear
16 this space, your Honor, and we can call the next witness.

17

18 ELLIS KOCH, SWORN

19 Direct Examination by Mr. Facher

20 Q Would you state your full name, please, sir?

21 A My name is Ellis Koch.

22 Q Spell that for the record, please.

23 A E-l-l-i-s. K-o-c-h.

24 Q Where do you live, Mr. Koch?

25 A I live at 21 Erie Street, Terryville, New York.

1 Q And what is your profession, sir?

2 A I am a hydrogeologist.

3 Q And for how long have you been a practicing hydro-
4 geologist?

5 A Since 1967; approximately 19 years.

6 Q Would you tell us, please, what your college training
7 or undergraduate training was, please?

8 A Yes. I received a Bachelor of Science in geology in
9 Brooklyn College and City University of New York.

10 Q And when was that, sir?

11 A 1965.

12 Q And do you have any further degrees in your specialty
13 or profession?

14 A Yes, I do. In 1967 I received a Master of Science in
15 Geology from Virginia Polytech Institute.

16 Q Are you a registered geologist in any states, sir?

17 A Yes, I am, in the State of Georgia, Virginia, and
18 Arizona.

19 Q And are you a Certified Professional Geologist?

20 A Yes, I am.

21 Q And is that with some organization?

22 A Yes. I am certified by the American Institute of
23 Hydrology, American Institute of Professional Geologists.

24 Q And what is required for certification?

25 A Certification is granted upon demonstration of proficiency

1 area which is swampy area, that is really part of the river
2 system.

3 Q And just to bring it into context, this green area is
4 the area on which there was a large -- the very large
5 so-called site objects map or chalk was drawn?

6 A Yes.

7 Q And we have it on this blueprint, and the blueprint shows
8 the land area and it also shows the swamp. And the land area
9 shown on the blueprint which was Exhibit -- I'm sorry, I
10 don't have a number, your Honor.

11 MR. FEDERICO: B-367.

12 Q B-367, the land area on that is the land area in green?

13 A Yes, it is.

14 Q So most of this area, then, is swampy and can't be
15 walked on?

16 A Cannot be walked unless special precautions are provided.

17 Q All right, sir.

18 Now, you also show Wells G and H. What other
19 features?

20 A Well, Wells G and H are indicated by these symbols.
21 We also have some local features -- Salem Street,
22 Washington Street, W. R. Grace up in the northeast corner
23 here, DeCosta Sausage Factory, Riley Tannery on the west side
24 of the railroad tracks, Olympia Ave. going along north of the
25 site, and Hemingway Trucking over here.

1 Q Now, will you point out to the jury the placement of the
2 wells in the river or the test wells, whatever they are
3 called, in the river, and show what symbol was indicated by
4 them?

5 A Yes. This is wells that are indicated as SB wells with
6 a triangle in the river itself are the wells that were
7 installed in the river. And there is 10 wells together
8 and in clusters of two. One over here, one by Cluster S9
9 one down here, SB5 and 6, another cluster down by S92, and
10 the last cluster down by S95.

11 And I would also like to point out these
12 clusters that are next to the stream bed wells, although
13 they seem to be outside the river channels themselves,
14 are also installed in this marsh deposit, and on days like
15 today, after a large rainfall we had a couple days ago, these
16 areas flood and these wells have water around them, and you
17 have to walk on a series of planks installed by the EPA so
18 they could be measured.

19 Q Did you also take into account any data regarding the
20 Riley production wells?

21 A Yes, I have looked at the report describing the
22 installation of the Riley Wells, and some testing done after
23 they were installed.

24 Q Would you resume your seat at the moment, please?

25 You have told us the information you looked at

1 and what you saw and observed. Will you tell us what you did
 2 with the data that you reviewed and the activities that you
 3 undertook?

4 A Yes. What I have done with the data was to prepare a
 5 description of the groundwater flow system after the 30-day
 6 test to determine how groundwater would flow in response to
 7 pumping Wells G and H.

8 Q And after the pumping of -- pumping test in December,
 9 1985, what is your opinion whether Wells G and H, which
 10 were then pumping together, were drawing groundwater from
 11 underneath the Riley site which was passing under the
 12 river, supposed to be passing under the river, what is your
 13 opinion on that?

14 A My opinion is that water that was under the Riley site
 15 did not flow towards the Wells G and H at the end of the 30-
 16 day test.

17 Q Can you tell us, please, in words for the moment what the
 18 bases or reasons for your opinion are?

19 A Yes. There are several bases. One of the bases is the
 20 groundwater configuration that resulted after the 30 days of
 21 pumping had finished, and when I say after the 30-day test,
 22 what I really mean is just before the wells were shut down,
 23 a round of water levels was taken to show the maximum effect
 24 of these wells at the end of the 30-day period.

25 The configuration of the -- Now all the wells

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1 in the area that I had water levels for were used to prepare
2 this water table map. And from that map, apparently it is
3 easy to draw arrows showing the groundwater flow direction
4 because groundwater will flow from the higher to lower eleva-
5 tion.

6 In addition to that, there was other data
7 collected to support the analysis that I had done as far as
8 the groundwater flow map. One of the pieces of data was the
9 discharge measurements collected by the United States
10 Geological Survey of the Aberjona River. And when I say
11 discharge measurements, what they have done is actually
12 measured the amount of water in the river during the pumping
13 test. And they have done it up by Olympia Ave. where the
14 river first intersects the site and down by Salem Street where
15 the river leaves the site.

16 And from those measurements, you can tell
17 whether or not the river is either gaining or losing water
18 as it flows through the site.

19 And at the end of the test, what the grouped
20 water map showed me was that there was a high point created
21 underneath the river which caused water to flow away from it.
22 When I say away from it, I mean east of the river, groundwater
23 flow towards Wells G and H. West of the river the groundwater
24 flowed to the west.

25 And the reason the mound was created was

1 because the river at the end of the test was losing over 550
2 gallons a minute. And this water was seeping out of the river,
3 going into the groundwater system, and forming a long mound
4 that caused groundwater to flow away in both directions.

5 Q And the term "flow boundary" has been used. Do you have
6 some opinion with respect to whether there was a flowdown
7 boundary created?

8 A Yes. Flow boundary is a feature that will be a boundary,
9 as it says, to a flow in a certain direction. And in this
10 case, the river became a flow boundary to the propagation ✓
11 of the cone of the depression formed by the Wells G and H.
12 The river actually stopped the cone from moving any further
13 than the river itself. So it became a boundary to the flow
14 for Wells G and H in the westerly direction.

15 Q What is your opinion as to whether the peat is any kind
16 of an impediment or barrier to the flow of water from the
17 river to the aquifer?

18 A Yes. I don't think the peat retarded movement of the
19 water at all.

20 Q And do you have any opinion as to whether it would take
21 10 or 20 years to get river water to the wells?

22 A I would say that river water could flow to Wells G and
23 H in a period of three or four months.

24 Q Under the proper conditions?

25 A Under the proper conditions, yes.

1 Q Now, with respect to prior tests that were done before
2 the pumping tests began, the so-called "step drawdown tests,"
3 do you know what I mean by that?

4 A Yes, I do.

5 Q All right. Can you learn anything about the direction
6 of groundwater from that step drawdown test?

7 A No, you can't.

8 Q Why not?

9 A Well, the step drawdown test was an eight-hour test
10 for Well G and Well H during which the pumping rate was
11 increased from two hours up to a certain increment and then
12 certain observation wells were measured around those wells
13 to see what the change in water level was. However, in
14 order to be able to determine groundwater flow directions,
15 you can't just look at a couple of wells and say if the
16 water level changes in the well then it's in the cone of
17 influence. What has to be done is to take water level
18 data from a large array of monitoring wells, such as we have
19 at the site, which I did at the end of the tests and
20 the water level data for all the wells in relation to each
21 other. In that way water level contours showing the elevation
22 of the water table can be drawn and groundwater flow can be
23 determined for that draw. During the step drawdown tests only
24 a small number of wells, in eight hours, which wasn't enough
25 time.

1 Q What is your opinion as to whether the cone of
2 depression of Wells G and H pumping together extended under
3 the river and drew water under the river from the Riley site?

4 A The cone of depression did not extend under the
5 river. It did not draw any water from the Riley site.

6 Q So far your opinions have been with respect to G and H
7 pumping together; is that correct?

8 A That's correct.

9 Q Was the activity of G and H pumping together, was
10 that the normal pumping conditions or were they the exceptional
11 or minority pumping conditions?

12 A Actually they were the exceptional pumping conditions.

13 Q Most of the time G and H were not pumping together?

14 A Yes. Most of the time Well G was pumping by itself
15 during the 1964 to '79 period and it didn't pump continuously
16 either. It was on and off, cycled on and off. Well H really
17 only began to pump in '74 and even at that time it was only
18 cycled on and off for short periods.

19 Q What is your opinion as to whether Well G alone could
20 draw any contaminants from the Riley site by its cone
21 of depression?

22 A Well, Well G again, since it would create less of a
23 stress than that shown during the thirty-day tests, would be
24 even less likely to draw contaminants from the other side.
25 As a matter of fact, it won't.

1 Q Is that your opinion?

2 A Yes, it is.

3 MR. FACHER: With your Honor's permission,
4 this would be a good place to break.

5 THE COURT: All right. It is almost one
6 o'clock. All right. Tomorrow is Wednesday. We will meet
7 again at nine o'clock.

8 MR. SCHLICHTMANN: Could I see you?

9 THE COURT: Yes.

10

11 CONFERENCE AT THE BENCH AS FOLLOWS:

12 MR. SCHLICHTMANN: One is I would like for
13 Defense counsel to give me the water table elevations that
14 he is going to be using for his opinion tomorrow, because
15 we had to divulge the basis of our opinion of our expert.

16 THE COURT: Do you have the water table
17 information that he is using?

18 MR. FACHER: Sure.

19 MR. SCHLICHTMANN: All the elevations, all the
20 data he would use for his opinion, I'd like to have this
21 afternoon.

22 MR. FACHER: I have the data, but you already
23 took his deposition.

24 MR. SCHLICHTMANN: You did not provide us
25 the data and you didn't let us look at the exhibits.

1 MR. FACHER: I will get it for you. Sure.

2 MR. SCHLICHTMANN: Grace has given us a
3 long list of witnesses, but has not given us the order of
4 witnesses, unless I am to presume the witness list is in
5 order.

6 MR. KEATING: It is.

7 MR. SCHLICHTMANN: Is it?

8 MR. KEATING: If we change it I will give you
9 48 hours notice.

10 MR. SCHLICHTMANN: So, as you have given it
11 to us on the list, is as it appears?

12 MR. KEATING: It was intended to give, as
13 close as we could, the order we wanted to present the
14 witness. If there is any changes---

15 THE COURT: How many witnesses do you propose?

16 MR. KEATING: Well---

17 MS. LYNCH: We're trying to cut down the list
18 that we gave Mr. Schlichtmann. We will give him a revised
19 list.

20 MR. SCHLICHTMANN: I have 68.

21 THE COURT: Is that the current list, 68?

22 MS. LYNCH: It is being cut back, your Honor.
23 Considerably.

24 THE COURT: What do you think is the final
25 number?

1 MR. KEATING: I would guess that we're dealing
2 with the situation of if we don't have to bring keepers of the
3 records and that sort of thing in, I suppose we might be
4 dealing with eight, ten -- what? -- twelve.

5 Mr. Cheeseman says twelve to fifteen.

6 MR. KEATING: We're still cutting.

7 THE COURT: How many are experts?

8 MR. KEATING: Two. Two or three. A number
9 are very short witnesses. Strike the two or three. I stand
10 corrected. There could be as many as four or five, I suppose.

11 (Discussion off the record.)

12 END OF CONFERENCE AT THE BENCH.

13 (Whereupon, the trial adjourned, to reconvene
14 at 9 a.m. tomorrow morning.)

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