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BEFORE THE BOARD OF SUPERVISORS  
OF THE TOWNSHIP OF WESTTOWN  
CHESTER COUNTY, PENNSYLVANIA

**VOLUME 3**

IN RE:           CONDITIONAL USE APPLICATION  
                  **TOLL PA XVIII, L.P.**

Hearing was held at the Westtown  
School, Barton Test Theatre, 975 Westtown  
Road, West Chester, Pennsylvania, on  
Wednesday, April 19, 2017, beginning at 6:09  
o'clock, p.m.

BEFORE:       MICHAEL T. DIDOMENICO, Chairman  
              CAROL R. DEWOLF  
              THOMAS HAWS

ALSO PRESENT:     ROBERT R. PINGAR,  
                          Township Manager

ELEANOR J. SCHWANDT, RMR  
COURT REPORTER

**ORIGINAL**

## 1 APPEARANCES:

2 PATRICK M. MCKENNA, Esquire  
on behalf of the Board of Supervisors

3  
4 GREGG I. ADELMAN, Esquire  
on behalf of the Applicant

5 KRISTIN S. CAMP, Esquire  
6 MICHAEL S. GILL, Esquire  
on behalf of Westtown Township  
7 Planning Commission

8 KATHRYN L. LABRUM, Esquire  
on behalf of Thornbury Township

9 MARK THOMPSON, Esquire  
10 on behalf of Neighbors for Crebilly, LLC

11 - - - - -

12

13 THE CHAIRMAN: Okay. We are  
14 going to get started. Good evening, everyone.  
15 Welcome to the third conditional use hearing  
16 for the Crebilly tract and Toll Brothers  
17 developers.

18 For those who may not know who is  
19 up here let me introduce Westtown Board of  
20 Supervisors. I would like to introduce Mrs.  
21 Carol DeWolf, who is to my right, she is our  
22 vice chair; Mr. Thomas Haws, to my far right,  
23 who is our police commissioner; and I'm Mike  
24 DiDomenico, the Chair. Further to my left is

1       our Township Manager, Mr. Rob Pingar. And to  
2       my immediate left is Mr. Patrick McKenna, our  
3       Township Solicitor.

4                       So at this time I will turn over  
5       the proceedings to Mr. McKenna.

6                       MR. MCKENNA: Thank you, Mr.  
7       Chairman. Can everyone hear me okay?

8                       All right. The first order of  
9       business, I want to note for the record that we  
10      were continued from the hearing on March 29th,  
11      2017. I want to ask -- I forgot to ask the  
12      last time -- is there anyone here this evening  
13      who is recording the hearing? Anyone  
14      recording?

15                      Yes, sir. Would you mind  
16      identifying yourself.

17                      MR. BRAXTON: John Braxton.

18                      MR. MCKENNA: Spell your last  
19      name, please.

20                      MR. BRAXTON: B as in boy,  
21      R-A-X-T-O-N.

22                      MR. MCKENNA: Okay. Is it video,  
23      audio or both?

24                      MR. BRAXTON: Both.

1 MR. MCKENNA: Thank you. I have  
2 a couple of housekeeping matters as well. I  
3 have additional Board exhibits that have to be  
4 marked for this evening.

5 Exhibit B-27 is Pennsbury  
6 Township Resolution 2017-03-15-1, dated March  
7 14th, 2017, expressing concerns with the  
8 conditional use application.

9 Exhibit B-28 is a review letter  
10 from Al Federico of Kimley Horn, Westtown  
11 Township Traffic Engineer, dated April 3rd,  
12 2017.

13 Exhibit B-29 are the party status  
14 forms for the individuals and entities that  
15 were granted party status.

16 Exhibit B-30 is the party status  
17 forms for individuals and entities that were  
18 denied party status.

19 Ladies and gentlemen, as with the  
20 prior two hearings, this evening the applicant  
21 will present their witnesses. We have a list  
22 of parties this evening who will be permitted  
23 to ask questions of those witnesses.

24 I would remind everyone to please



1 save statements or argument for the appropriate  
2 time. This evening will just be for  
3 statements. As we have said, public comment  
4 will come at the conclusion of the presentation  
5 of all the evidence from all of the parties, so  
6 that will be at a future hearing date. You  
7 will be notified well in advance of when that  
8 will happen.

9 The applicant has three witnesses  
10 this evening which are going to cover historic  
11 resources, sanitary sewage, I believe, and the  
12 fiscal impacts. We hope to get through them  
13 all this evening, and then we will discuss when  
14 the next continued date is, and who we  
15 anticipate being with us, at the appropriate  
16 time. So unless there is anything further from  
17 the Board, I'm going to turn it over to Mr.  
18 Adelman to start his presentation this evening.

19 MR. ADELMAN: Thank you, Mr.  
20 McKenna. At this time I would like to recall  
21 Paul Scott to testify. I believe he was  
22 previously sworn.

23 MR. MCKENNA: That's correct.

24

1                   (PAUL S. SCOTT, having been  
2           previously duly sworn, was examined and  
3           testified further as follows:)

4                   REDIRECT EXAMINATION

5           BY MR. ADELMAN:

6           Q.   Mr. Scott, after your testimony before  
7           the Board of Supervisors at the March 29th  
8           hearing, did you go back out to the property to  
9           conduct further soils testing?

10          A.   Yes, we did.

11          Q.   I would like to show you what I have  
12          marked as Exhibit A-22.

13                   MR. MCKENNA:   Mr. Adelman, would  
14           you mind reminding everyone what Mr. Scott is  
15           and what he does for a living.

16                   MR. ADELMAN:   Mr. Scott is a  
17           geologist, professional geologist.  That's what  
18           he was qualified as.  And he does soils testing  
19           on the property.

20                   MR. MCKENNA:   Thank you.

21                   MR. ADELMAN:   You are welcome.

22           BY MR. ADELMAN:

23          Q.   Paul, I would like to show you what I  
24          have marked as Exhibit A-22.  Would you please

1 identify this document for the record?

2 A. This is our letter report,  
3 "Supplemental Preliminary On-Site Wastewater  
4 Disposal Feasibility Evaluation."

5 Q. And what is the date of that letter?

6 A. April 13th, 2017.

7 Q. And did you prepare or supervise the  
8 preparation of that letter?

9 A. Yes.

10 Q. What areas or additional areas on the  
11 site did you test?

12 A. We tested all of the proposed disposal  
13 areas for drip irrigation on the plan.

14 Q. Are those locations indicated in your  
15 letter?

16 A. Yes, they are.

17 Q. Where are they located and indicated?

18 A. They are situated, there are two large,  
19 relatively large proposed disposal areas --

20 Q. Let me interrupt you.

21 A. Sorry.

22 Q. Is there a map in your letter?

23 A. I'm sorry.

24 Q. That's fine. If you could reference

1 the map and then please provide the detailed  
2 information.

3 A. It is attached to the letter report and  
4 it is entitled "Supplemental Test Pit Location  
5 Plan Crebilly Farm."

6 Q. And it is the third sheet of  
7 Exhibit A-22; is that correct?

8 A. Correct.

9 Q. Please go ahead.

10 A. So we did 15 test pit locations, and  
11 they were distributed across the site, within  
12 each of the proposed disposal areas. As I was  
13 saying, two of the largest disposal areas, one  
14 is up at the northwestern corner of the site,  
15 also another in the southeastern corner of the  
16 site, most of the test pits were located in  
17 those areas. And then there are three smaller  
18 disposal areas more in the central portion of  
19 the site, and we did a couple of locations in  
20 each of those as well.

21 Q. And what type of testing did you  
22 perform?

23 A. We performed soil profile evaluations  
24 to evaluate soil texture and general

1 appearance, and permeability, and also some  
2 preliminary percolation testing.

3 Q. And again, what was the overall purpose  
4 of that testing?

5 A. To supplement the previous evaluation  
6 that we had performed to evaluate the  
7 feasibility of drip irrigation implementation  
8 at the site.

9 Q. What were the results of your  
10 additional testing?

11 A. The soils appeared to be suitable for  
12 wastewater disposal by drip irrigation. Soil  
13 permeabilities looked suitable. And  
14 percolation test results generally indicated  
15 suitable permeability.

16 Q. Are the soil profiles contained in your  
17 letter?

18 A. They are.

19 Q. And again, was your supplemental  
20 testing consistent with your prior testing?

21 A. It was.

22 Q. Based on your supplemental testing, is  
23 it still your opinion that on-site wastewater  
24 treatment and disposal is feasible for this

1 site?

2 A. Yes.

3 MR. ADELMAN: I have nothing  
4 further for Mr. Scott.

5 MR. MCKENNA: Thank you, Mr.  
6 Adelman. I'm going to open up the floor then  
7 for questions based on that limited testimony.  
8 I'm going to go through the list, and I would  
9 ask that when your name is called, if you are  
10 here to let me know so I can mark it down, so  
11 we don't have to ask that question all evening.  
12 If someone sees someone who comes in late and  
13 is a party, please just let me know. I don't  
14 want to leave anyone out. At the same time, I  
15 don't want to go over the list every time, as  
16 we did last time.

17 Ms. Camp, for the Planning  
18 Commission?

19 MS. CAMP: I have no questions  
20 for Mr. Scott.

21 MR. MCKENNA: Mr. Crawford, for  
22 the Birmingham Township, is not here this  
23 evening.

24 Ms. Labrum, for Thornbury

1 Township, any questions?

2 MS. LABRUM: No questions.

3 MR. MCKENNA: Mr. Thompson, for  
4 Neighbors for Crebilly?

5 MR. THOMPSON: No questions.

6 MR. MCKENNA: Peter DuFault for  
7 Brandywine Thornbury HOA?

8 MR. DUFAULT: No questions.

9 MR. MCKENNA: John Martin or John  
10 Bertinatti, excuse me, of Radley Run III HOA?  
11 I do not hear anyone present for Radley Run III  
12 HOA.

13 William Hoffman for Arborview  
14 HOA? No one here for Arborview.

15 Gary Bevilacqua for West Glen  
16 HOA?

17 MR. BEVILACQUA: No questions.

18 MR. MCKENNA: Mr. Bevilacqua.

19 How about for the West Chester School District,  
20 Mr. Bevilacqua.

21 MR. BEVILACQUA: No questions.

22 MR. MCKENNA: Mr. McFalls, for  
23 the Presbyterian church?

24 MR. MCFALLS: No questions.

1 MR. MCKENNA: Thank you. Chris  
2 Feryo for the Quarry Swimming Association?

3 MR. FERYO: No questions.

4 MR. MCKENNA: Mr. Spackman, for  
5 Thornbury Farm Trust?

6 MR. SPACKMAN: No, I have no  
7 questions.

8 MR. MCKENNA: Amy or Bradley  
9 Harkins?

10 MS. HARKINS: No questions.

11 MR. MCKENNA: Thank you. Laura  
12 or Leonard Mammucari? Mammucaris are not here  
13 this evening.

14 Andy Gadaletto? Mr. Gadaletto is  
15 not here this evening.

16 Phillip Jones? Mr. Jones is not  
17 here this evening.

18 Mr. Moscharis?

19 MR. FOX: Not here yet. No  
20 questions.

21 MR. MCKENNA: Allison Cocoran,  
22 any questions? Ms. Cocoran is not here.

23 Mr. Skupp, any questions? Mr.  
24 Skupp is not here.



1 Diana Leraris, any questions?

2 She is not here.

3 Ed Boyer, any questions for the  
4 witness? Mr. Boyer is not here.

5 Amy Murnane, any questions? She  
6 is not here.

7 Kurt Wolter for Westtown Village,  
8 LLC? Mr. Wolter is not here.

9 Mr. Crognale, any questions?  
10 Nothing from Mr. Crognale.

11 Mr. Daull, Robert Daull, any  
12 questions? Mr. Daull is not here.

13 Scott Sobers, any questions? Mr.  
14 Sobers is not present this evening.

15 Walter Pavelchek, any questions?  
16 No questions for Mr. Pavelchek.

17 Phillip Yeager, any questions?  
18 Mr. Yeager is not here.

19 Mr. Cahill, any questions? Mr.  
20 Cahill is not present.

21 David Pryze, any questions?

22 MR. PRYZE: I'm here, but no  
23 questions yet.

24 MR. MCKENNA: Thank you.

1 Jennifer or Jeffrey Kramer, any questions?

2 Kramers are not present.

3 Megan Bruns, any questions?

4 MS. BRUNS: No, thank you.

5 MR. MCKENNA: Thank you.

6 Ed Skros, any questions? Mr.

7 Skros is not present.

8 Eileen Carey, any questions? Ms.

9 Carey is not present.

10 Jim McDermott, any questions?

11 Not hearing any from Mr. McDermott.

12 I will note that there is a  
13 number of people coming in at this time, so we  
14 will probably have to go through the list a  
15 second time.

16 Dennis and Patricia McFadden, any  
17 questions?

18 MR. MCFADDEN: No questions.

19 MR. MCKENNA: Thank you.

20 Carol Weller, any questions?

21 MS. WELLER: No questions.

22 MR. MCKENNA: Thank you, Ms.

23 Weller.

24 Linda or Matt Reichert, any

1 questions? Reicherts are not present.

2 All right. Back to you, Mr.  
3 Adelman. We have gone through our list.

4 MR. ADELMAN: I have nothing  
5 further for the witness.

6 MR. MCKENNA: Thank you.

7 MR. HAWS: Actually, I have one  
8 question.

9 MR. MCKENNA: I'm sorry. I  
10 apologize. Do you have your mike?

11 MS. DEWOLF: Is this on? Okay.  
12 Why did you do further testing?

13 THE WITNESS: I was asked to do  
14 so by Toll Brothers.

15 MS. DEWOLF: Excuse me?

16 THE WITNESS: I was asked to do  
17 so by Toll Brothers, and it was to supplement  
18 the previous evaluation that we had performed.

19 MS. DEWOLF: Okay. I notice that  
20 there was slower permeability on test sites  
21 number 512, 512 and 512-1, which lowers the  
22 ability for that to be a disposal area for the  
23 drip irrigation site. In light of that, did  
24 you have to change your northwest corner area

1 defined as a result of that not being a good  
2 permeability site for drip irrigation?

3 THE WITNESS: No. Again, there  
4 are about 25-and-a-half acres available, as  
5 shown on the plan, for wastewater disposal.  
6 That's a relatively very small fraction of  
7 that, and so there is plenty of area. That  
8 particular location is probably marginal, but  
9 there is plenty of other area.

10 MS. DEWOLF: So you would just  
11 make some of those other areas work as a result  
12 of your most recent study?

13 THE WITNESS: Well, again, this  
14 is very preliminary, preliminary and early, so  
15 the actual distribution of the system will  
16 depend on further evaluation. But those  
17 smaller areas may not even need to be used. It  
18 is extra area.

19 MS. DEWOLF: Do you get into any  
20 of the setbacks of the two existing property  
21 owners on the west side if you need to extend  
22 this area?

23 THE WITNESS: I don't believe  
24 that they are going to inhibit the placement of

1 the system in those areas.

2 MS. DEWOLF: Thank you.

3 MR. HAWS: Just one question. So  
4 how did you determine where you placed the test  
5 pits?

6 Because I see that on the  
7 catercorner corners there is more test pits on  
8 the, I guess, what is that, north part of the  
9 property versus on the back end there was only  
10 three test pits.

11 THE WITNESS: The location where  
12 there are six shown --

13 MR. HAWS: Yes.

14 THE WITNESS: -- is I believe the  
15 southeastern portion.

16 MR. HAWS: South, sure.

17 THE WITNESS: And the three are  
18 shown in the northwestern portion, so there are  
19 fewer up in the northwest because we had  
20 already done substantial evaluation of that  
21 area, which was detailed in our previous  
22 report.

23 MR. HAWS: So moving forward  
24 would you compile both reports to have one

1 overview, and overlay with all of the data on  
2 one report?

3 THE WITNESS: I don't believe  
4 that's necessary at this point. This letter is  
5 an addendum to that previous report and so they  
6 go together.

7 MR. HAWS: Okay. No further  
8 questions.

9 MR. MCKENNA: All right. Mr.  
10 Adelman, I think we are back to you.

11 MR. ADELMAN: I have nothing  
12 further for this witness.

13 MR. MCKENNA: Thank you, Mr.  
14 Scott.

15 THE WITNESS: Thank you.

16 (Witness excused.)

17 MR. ADELMAN: At this time I  
18 would like to call Fred Ebert to testify and be  
19 sworn.

20 (Discussion off the record.)

21 FREDERICK E. EBERT,  
22 the witness herein, having first been  
23 duly sworn on oath, was examined and  
24 testified as follows:

## 1 DIRECT EXAMINATION

2 BY MR. ADELMAN:

3 Q. Fred, please state your name and  
4 business address for the record.5 A. Frederick Eric Ebert, Ebert  
6 Engineering, 4092 Skippack Pike, Skippack,  
7 Pennsylvania.8 Q. Fred, I would like to show you what I  
9 have marked as Exhibit A-23. Can you please  
10 identify this document for the record.

11 A. This is my professional profile.

12 MR. ADELMAN: If the Board so  
13 pleases and we could dispense from  
14 qualifications, I ask for Mr. Ebert to be  
15 qualified as an expert in wastewater  
16 engineering and permitting. He is a Licensed  
17 and Registered Professional Engineer in the  
18 Commonwealth of Pennsylvania, with multiple  
19 decades of experience in wastewater engineering  
20 and permitting. I would offer him as such an  
21 expert.22 MR. MCKENNA: Mr. Ebert, do you  
23 work for clients other than Toll Brothers?

24 THE WITNESS: Yes, I do.

1 MR. MCKENNA: Any parties, any  
2 counsel have any questions for the witness?

3 Any objections to admitting him  
4 as an expert in wastewater engineering?

5 MS. CAMP: No objection on behalf  
6 of the Planning Commission.

7 MR. MCKENNA: I'm not hearing any  
8 objections. He will be admitted as an expert.

9 MR. HAWS: I'm sorry, just one  
10 question since it doesn't list, you know, his  
11 company or companies that he has worked in, can  
12 he just maybe give a brief history of his  
13 experience. It just says 20 years of  
14 engineering experience and he lists the clients  
15 he works for, but it doesn't say, you know, it  
16 doesn't give a curriculum vitae of what his  
17 work history is per se.

18 MR. ADELMAN: I'm sure Mr. Ebert  
19 can supply that for you, Mr. Haws. Fred,  
20 please go ahead if you can.

21 THE WITNESS: Absolutely. When I  
22 graduated from Lafayette College I worked for  
23 Chambers Associates, municipal engineer. I  
24 then worked for Robert F. Preston Engineering,



1 where I became a partner. I had, approximately  
2 12 years ago I formed my own firm, Ebert  
3 Engineering, taking the partner, number of  
4 employees from Robert F. Preston Engineering,  
5 and we are now approximately 14 engineers  
6 located in Skippack, Pennsylvania, representing  
7 approximately 24 municipalities as well as  
8 approximately 50 private clients.

9 MR. ADELMAN: Pat, is the Board  
10 okay?

11 MR. MCKENNA: I'm not hearing any  
12 other questions, Gregg, so I think you are  
13 fine.

14 MR. ADELMAN: Great. Thank you.

15 BY MR. ADELMAN:

16 Q. Mr. Ebert, could you please describe  
17 your involvement in Toll Brothers' proposed  
18 develop at the Crebilly Farm?

19 A. Yes. I was retained to determine, to  
20 perform an evaluation of the feasibility for  
21 the treatment of the wastewater, to review the  
22 preliminary soil data, determine the best  
23 methodology for the disposal of the wastewater,  
24 and to describe that in an expert report to the

1 Board.

2 Q. Fred, I would like to show you what I  
3 have marked as Exhibit A-24. Could you please  
4 identify this document for the record.

5 A. This is a copy of the "Wastewater  
6 Engineering Report for the Crebilly Farm  
7 Wastewater Treatment Plant and Drip Disposal  
8 System" that I personally prepared, dated April  
9 18th, 2017.

10 Q. If you could tell us, in general, what  
11 type of wastewater treatment will be required  
12 to service the wastewater generated by the  
13 proposed development?

14 A. It would be an activated sludge  
15 wastewater treatment plant which utilizes a  
16 biological treatment system to provide both  
17 nitrification and denitrification of the  
18 wastewater, so that the disposal system and the  
19 soils do not have to perform any additional  
20 treatment and solely have to dispose of the  
21 fully treated and disinfected effluent.

22 Q. Could you please tell the Board, what  
23 is activated sludge?

24 A. Activated sludge is a biological

1 process that, where the wastewater is treated  
2 in a enhanced environment, basically by  
3 biology, by bugs, microorganisms that eat and  
4 decompose the wastewater, utilizing oxygen to  
5 reduce the biological oxygen demand and to  
6 perform the nitrification process where ammonia  
7 is converted to nitrates and nitrites, and then  
8 denitrification for the nitrogen is given off  
9 as a gas.

10 Q. And is this done as part of a  
11 mechanical process?

12 A. Yes, it is a mechanical process where  
13 we add aeration and control the environment to  
14 optimize the conditions for the treatment of  
15 the wastewater.

16 Q. And what specific methods of wastewater  
17 treatment could be used to adequately treat the  
18 wastewater generated by the proposed  
19 development?

20 A. We evaluated three different biological  
21 treatment processes. The first one is what is  
22 known as a sequential batch reactor process in  
23 which there would be two treatment trains.  
24 Each train would come in and would fully treat

1 the wastewater, going through an aerobic zone  
2 where the nitrification process occurs, air  
3 would be turned off, would become an anoxic  
4 condition, which would perform denitrification,  
5 where the nitrogen is given off as a gas,  
6 followed by settling, where the solids and  
7 sludge falls in biomass, settles to the bottom  
8 and clear supernatant rises to the top, which  
9 is de-cantered off to a post-equalization tank,  
10 where it is then conveyed for ultra-violet  
11 disinfection for disinfection prior to going to  
12 the effluent storage.

13 We evaluated a second process  
14 which was the Modified Bardenpho Process, MLE  
15 process, which is a flow through process of  
16 treatment. Does the same thing but utilizes  
17 multiple zones or multiple tanks to accomplish  
18 that.

19 The wastewater, after it being  
20 equalized in an influent equalization tank,  
21 which basically handles the diurnal variation  
22 flows, peak flows that occur in the first two  
23 to four hours in the morning, 6:00 to 9:00,  
24 peak flows that occur from 5:00 to 7:00 at

1 night are basically brought into this  
2 equalization tank, they are stored and evenly  
3 distributed through the biological process  
4 throughout an 18- to 24-hour depth. The flow  
5 in the Modified Bardenpho would flow into an  
6 aeration tank, where biological oxidation  
7 demand is reduced, the nitrification process  
8 occurs where ammonia is converted to nitrates  
9 and nitrites and then flows into an anoxic  
10 zone, where denitrification occurs, followed by  
11 a final clarifier, where the solids are settled  
12 to the bottom. Clear supernatant flows over a  
13 weir into a post-equalization tank for  
14 disinfection.

15 The last and the third process --  
16 and there were multiple other processes that  
17 could be utilized -- is the Biologically  
18 Engineered Single Sludge Treatment Process,  
19 proprietary process by Purestream. It involves  
20 the flows coming into an anoxic zone first  
21 where denitrification occurs, followed by an  
22 aeration zone where biological oxygen demand is  
23 reduced, nitrification occurs.

24 And the difference here is it

1 goes through what is know as an up flow  
2 clarifier. The advantage of this is it is  
3 slightly more efficient in removing solids,  
4 especially small solids such as pin floc prior  
5 to it flowing over a weir to post equalization,  
6 followed by, followed by disinfection via  
7 ultra-violet disinfection to the post effluent  
8 storage tank.

9 Q. Based on your knowledge and experience  
10 in wastewater treatment design and engineering,  
11 do you have an opinion as to whether these  
12 methods would be approved by the Pennsylvania  
13 Department of Environmental Protection?

14 A. Yes, I do.

15 Q. What is your opinion?

16 A. I believe that all three processes  
17 would be permitted by the Pennsylvania  
18 Department of Environmental Protection.

19 Q. And what is the basis for your opinion?

20 A. I have permitted, I have designed,  
21 permitted, constructed, and they are currently  
22 operating, all three of these processes, within  
23 the last seven years, and multiple times for  
24 multiple of these processes, not just one, but

1 I have done probably seven SBRs, three to five  
2 MLE or Modified Bardenpho, and at least two  
3 BESST systems.

4 Q. Now, turning to the method of disposal,  
5 what is the proposed method of sewage disposal  
6 or wastewater disposal for the treated effluent  
7 and how does that method work?

8 A. The proposed method is drip irrigation,  
9 where dripping emitters or drip tubing is  
10 plowed into the soil at a depth of  
11 approximately eight to 12 inches deep. The  
12 emitters are all -- are sized to every two  
13 feet, every two linear feet in the tubing. The  
14 tubing is placed two to four feet apart. The  
15 emitters are designed to uniformly convey  
16 approximately .6 gallons per hour out of each  
17 emitter at a pressure range from 7 to 70 PSI.

18 And the key to this is that no  
19 matter where you are at on the site, high or  
20 low, the same amount of water goes into each,  
21 goes to each emitter into the zone.

22 And then the zones are dosed  
23 multiple times a day, depending on the drainage  
24 classification of that, and there is various

1 drainage classifications across the various  
2 proposed drip irrigation fields.

3 So if it is a moderately deep,  
4 well-drained soil it would be allowed to have  
5 3,500 gallons per day per acre, whereas an area  
6 that had deep, well-drained soils would be  
7 allowed to have up to 6,000 gallons.

8 So we would do, we would dose the  
9 areas that had better soils, deep, well-drained  
10 soils, for a longer duration, more frequently  
11 throughout the day, in order to achieve the  
12 required loading.

13 Q. Can drip irrigation function during the  
14 winter months?

15 A. Yes, it does. It is all year round it  
16 goes through there.

17 There is also an effluent storage  
18 tank, which is required by DEP, that we will  
19 store, we have to have the ability to store  
20 three days of treated effluent. And the reason  
21 for that is that if there is a mechanical  
22 failure of a controller or a lightning strike  
23 that these components can have time to be  
24 replaced and that the treated effluent is



1 stored on site during that time period.

2 The advantage of drip is that you  
3 break the disposal fields into many smaller  
4 zones and sub zones, so that if there is a  
5 mechanical area which is a small area, you may  
6 lose 5 percent of your overall disposal  
7 capacity, and not the entire system or not even  
8 an entire field.

9 So each field is broken down into  
10 various zones and sub zones.

11 What we do when we dose the  
12 fields after approximately 50 doses, we will  
13 then what is known as flush the system, and  
14 that is where the waste, treated effluent is  
15 run through the drip emitter or drip tubing at  
16 a rather high velocity to scour any solids or  
17 prevent any biological growth from occurring.

18 We do always design in the  
19 capability to inject a root inhibitor twice a  
20 year, and there is the ability to do a very  
21 dilute acid wash to prevent any biological  
22 growth from occurring in the drip fields, and  
23 that is returned directly back to the treatment  
24 plant for treatment.

1 Q. Have you reviewed GTA's preliminary  
2 on-site wastewater report and the supplemental  
3 report?

4 A. Yes, I have.

5 Q. And based on that review, your  
6 knowledge and experience in wastewater disposal  
7 engineering and design, do you have an opinion  
8 as to whether there is sufficient and suitable  
9 ground available for drip disposal of the  
10 treated wastewater?

11 A. Yes, I do.

12 Q. And what is your opinion?

13 A. I believe that there is adequate  
14 disposal capacity. The reason is that the  
15 soils that have been identified by drainage  
16 class in the 25.5 acres are either well-drained  
17 soils that have a loading rate of approximately  
18 6,000 gallons per day per acre, or moderately  
19 deep, well-drained soils that have a loading  
20 rate of approximately 3,500 gallons per day.

21 If you were to assume that all  
22 the soils were at the lower rate of 3,500  
23 gallons per day, multiply it by 25.5 acres of  
24 usable drip disposal capacity, it will result

1 in 89,000 gallons of disposal capacity, which  
2 is approximately 110 percent of the projected  
3 wastewater that will be generated on the site  
4 of 80,750 gallons per day.

5 Q. And, Fred, ultimately what entity or  
6 regulatory entity reviews, overviews and  
7 permits the system?

8 A. The Pennsylvania Department of  
9 Environmental Protection.

10 Q. And would DEP, Pennsylvania Department  
11 of Environmental Protection, set the operating  
12 parameters for the system?

13 A. Yes, they would.

14 Q. And what type of operating parameters  
15 would you expect for this type of system?

16 A. The operating parameters will be  
17 established in the water quality management  
18 permit. And as far as the treatment component,  
19 it would identify a level of treatment that  
20 would be put down in there, and, as we  
21 described here, we are proposing a  
22 denitrification system.

23 It would then, through the review  
24 and approval of the planning module, would

1 identify the disposal capacity of each field or  
2 sub field in there, which would identify the  
3 loading rate of each field, which we would then  
4 utilize in the detailed design to design the  
5 amount of dosing and duration that each field  
6 or sub field would be dosed at, in accordance  
7 with the PA DEP approved loading rates for  
8 those fields.

9 Q. And how are these systems typically  
10 operated and maintained, and by whom?

11 A. Operated and maintained by a licensed  
12 operator. The first, the desire of everyone  
13 would be to have it dedicated to either the  
14 township and/or their authority.

15 If they didn't take dedication we  
16 would then look to a regional authority to  
17 accept dedication. If the regional -- if there  
18 was no regional authority that wanted to  
19 operate and maintain it, we would then go to a  
20 third-party Public Utility Commission regulated  
21 entity such as Aqua PA, American Water, to, and  
22 have them operate and maintain it in accordance  
23 with both DEP requirements, as well as the  
24 Public Utility Commission requirements.

1 MR. ADELMAN: I have nothing  
2 further.

3 MR. MCKENNA: Thank you, Mr.  
4 Adelman. We will open it up for questions.  
5 Kristin Camp on behalf of the Planning  
6 Commission.

7 MS. CAMP: Thank you.

8 CROSS-EXAMINATION

9 BY MS. CAMP:

10 Q. Mr. Ebert, do you have a preference as  
11 to which of the three processes you described  
12 in your report that you would suggest Toll  
13 utilize?

14 A. My preference would be for the  
15 sequential batch reactor process, the reason  
16 being is that there is multiple advantages  
17 during the initial start-up. I have the  
18 ability to not only adjust the operating level,  
19 which is a water level in the tank, to reduce  
20 the capacity so that I can start at a lower  
21 flow, I have the ability to only operate one of  
22 the two sequential batch reactors and utilize  
23 the influent equalization tank during that time  
24 period.

1           The third thing is that I can  
2       reduce the number of treatment cycles that are  
3       done per day. Normally they are designed for  
4       each reactor to treat four to five treatment  
5       cycles per day. You can reduce that down to  
6       two in order to have the start-up flows.

7           I believe that the SBR process  
8       has a very controlled environment where we can  
9       control and adjust through the duration of each  
10      cycle the level of treatment, so that we can  
11      optimize it to insure that denitrification  
12      occurs and to insure that we have adequate time  
13      to, for it to settle, so that we only receive  
14      the best effluent or the cleanest effluent off  
15      the top.

16           Q. Okay. And is there another alternative  
17      available for public sewer?

18           A. Yes.

19           Q. That could be a fourth option?

20           A. Public sewer is always a preference.

21           Q. Always?

22           A. In every situation.

23           Q. So you mentioned that you represent 24  
24      municipalities. If a municipality asks for

1 your advice in the alternative between  
2 designing a drip irrigation system versus  
3 connecting to a public sewer system, is your  
4 advice typically to suggest that they connect  
5 to public sewer?

6 A. In every situation.

7 Q. And why is that?

8 A. It is an already established entity  
9 that has, it is an asset of the township. It  
10 is managed by professionals. You have no  
11 issues with the initial start-up flows. It is  
12 less infrastructure.

13 The long-term results are that  
14 the residents of this community will have a  
15 lower operating cost and a lower sewer rental  
16 fee. It also helps the overall community and  
17 all the existing public sewer customers  
18 because, by having a larger user base that's  
19 fully utilizing that, the fixed costs of the  
20 existing authority and treatment plant are  
21 spread over a larger user base, which results  
22 in less frequent and less significant increases  
23 in sewer rental rates as utilities and other  
24 operational costs increase over time.

1           Q.    Thank you.  And you are aware that the  
2           township sewer engineer, Carroll Engineering,  
3           in their correspondence of January 6th, 2017  
4           recommends that the Board, recommended to the  
5           Board for this particular development that they  
6           connect into public sewer?  You are aware of  
7           that?

8           A.    Yes, I am aware of that.

9           Q.    And you also support that  
10          recommendation then?

11          A.    Yes, I do support that recommendation.

12          Q.    And so as part of assuming that the  
13          Board were to approve the conditional use and  
14          the applicant was to proceed through land  
15          development, as part of the planning module  
16          process, it could go through the process of  
17          amending the township's Act 537 plan to have  
18          this property be part of the public sewer  
19          service, that would typically be what could  
20          occur?

21          A.    That's exactly, exactly what would  
22          occur.  And DEP would actually require that  
23          that alternative be reviewed and determined to  
24          not be feasible in order for them to go to a



1 community system.

2 Q. And have you done any analyses as to  
3 the comparable costs for Toll to design, permit  
4 and install a community system with drip  
5 irrigation versus the cost to design, install  
6 and connect to a public sewer system? Have you  
7 done any of that analysis?

8 A. I have not done a detailed analysis of  
9 that. But based on similar projects, it would  
10 be my opinion that the connection to the public  
11 sewer would be significantly less expensive.

12 Q. What about the time involved in terms  
13 of getting DEP permits, is it typically less,  
14 less of a timeframe or easier to get the permit  
15 approved through DEP if it is connecting to a  
16 public sewer versus trying to get approval for  
17 a community system using drip?

18 A. Significantly less time consuming and  
19 would be supported by DEP.

20 Q. And what about ongoing maintenance? I  
21 think you mentioned for a drip system typically  
22 the maintenance involved is maybe more  
23 cumbersome or more difficult?

24 A. It absolutely is. The fields, which is

1 a grass crop that's grown on it, needs to be  
2 maintained at a level of eight to 12 inches  
3 above there, which means that it needs to be  
4 mowed, and the grass clippings or whatever crop  
5 is chosen needs to actually be bailed and  
6 removed, because any nitrogen that's given off  
7 of the treated effluent is biologically used by  
8 the grass or crop, and that contains a high  
9 level of nitrogen.

10 So that is actually removed so  
11 that we don't add additional nitrogen back into  
12 the groundwater.

13 While drip irrigation areas are  
14 common, connection to a public sewer is  
15 significantly less cumbersome as far as  
16 operation and maintenance.

17 Q. Are you aware if Westtown currently,  
18 today, has any public works employees that  
19 would be capable of maintaining a drip  
20 irrigation system?

21 A. I do not know, but I would say if they  
22 don't have one, most likely they are not. But  
23 I do not know their staff.

24 Q. If they do not, they would have to have

1 someone who is specifically trained in being  
2 able to maintain a drip irrigation system?

3 A. That is correct. Or they would have to  
4 utilize a contract operator who would have to  
5 be trained in that. And that's normally what  
6 other municipalities do.

7 Q. You answered the question that a drip  
8 irrigation system does work in winter months?

9 A. Yes.

10 Q. Does poor weather or cold temperatures  
11 make it more difficult to maintain a drip  
12 irrigation system?

13 A. Actually, no, not at all, and  
14 especially in this case, because in this case  
15 we are providing the mechanical treatment, it  
16 is doing all the treatment. So I'm not relying  
17 on the soils or crop uptake for nitrogen  
18 removal. I'm doing that all biologically.

19 So what we do during the winter  
20 months is prior to the winter months we  
21 establish a healthy crop, make sure that the  
22 crop installation is approximately eight to 12  
23 inches tall over the top of it, and then what  
24 we will do is we will increase the frequency

1 that we are disposing of the drip. So if I  
2 normally during the summer would do five dose  
3 cycles, I would increase it to six to eight  
4 dose cycles during the winter. The reason is  
5 you are always injecting 50- to 60-degree water  
6 into the ground, and it prevents ice lenses  
7 from forming down below it.

8 And this has had a proven  
9 history. Drip irrigation is actually fairly  
10 common in Canada, and actually a lot of our  
11 technology came from Canada and our drip  
12 emitters came from Canada.

13 Everyone in Pennsylvania, myself  
14 included, had questions on it when we first  
15 started utilizing and installing it ten years  
16 ago. We have -- I am not aware of any issues  
17 with wet weather, ice lenses coming that would  
18 prevent -- or allow the wastewater to come to  
19 the surface.

20 Q. Are there any odors associated with the  
21 drip fields?

22 A. No. With drip fields, no, because it  
23 is fully treated effluent and it is discharged  
24 and the drip emitters are installed eight to 12

1 inches below the grade, compared to spray  
2 irrigation where it is aerated out, and any  
3 odors would be stripped out.

4 Here there is no exposure of the  
5 wastewater to the atmosphere or to the air. It  
6 is all done subterranean, so there is no --  
7 limited chance for any gases to be released.

8 Q. And what about limitations on the drip  
9 field in terms of how they can be used, what  
10 type of limitations of activity could occur on  
11 the property?

12 A. Basically, no real activity can be  
13 there. It would be passive recreation.

14 Normally what we do is we install  
15 fences around them. Somebody cuts through and  
16 walks on it, no problem at all. That's not an  
17 issue. But what you don't want is repetitive  
18 area, you don't want a trail where you have 50  
19 people walking the same area that would cause  
20 compaction. The goal of it is to prevent  
21 compaction. So any activity that did not  
22 result in compaction, not a problem.

23 You know, somebody runs their dog  
24 across it, that's not an issue at all. Kids

1 playing soccer in it, that's not an issue at  
2 all.

3 But what we do is, the reason we  
4 keep the grass or the crop eight to 12 inches  
5 is it basically discourages people from  
6 utilizing those areas.

7 Q. Do you know if Toll has conducted any  
8 preliminary analyses as to whether or not their  
9 proposed development could connect into the  
10 public sewer system?

11 A. I do not know. My scope was solely for  
12 the treatment and disposal based on a unit  
13 assessment.

14 MS. CAMP: Nothing further.

15 MR. MCKENNA: Ms. Labrum, any  
16 questions for Thornbury?

17 MS. LABRUM: No.

18 MR. MCKENNA: Thank you. I will  
19 just point out for the sake of the public, if  
20 you have questions, there are two microphones  
21 at either ends of the auditorium here this  
22 evening, and we do have a floating microphone  
23 down front in the audience. I would ask you if  
24 you do have questions, please come to a

1 microphone so we can hear all of you.

2 Mr. Thompson for Neighbors of  
3 Crebilly?

4 CROSS-EXAMINATION

5 BY MR. THOMPSON:

6 Q. Good evening, Mr. Ebert. I believe you  
7 indicated that one of the options would be for  
8 the township or its sewer authority to own a  
9 proposed treatment plan; is that fair?

10 A. It would be offered for dedication to  
11 them first.

12 Q. So the township would ultimately need  
13 to be the permittee before the DEP if that were  
14 to happen; is that correct?

15 A. Yes, if they were to own and operate,  
16 they would be the permittee.

17 Q. How many townships for projects that  
18 you have worked on have accepted for dedication  
19 wastewater treatment plants?

20 A. The vast majority.

21 Q. And they operate these wastewater  
22 treatment plants?

23 A. Yes, they are offered for dedication to  
24 them. There are a few that are offered by

1       third-party PUC.  And the only ones that are  
2       privately owned and operated are commercial  
3       entities where the -- where one property owner  
4       owns the entire property.  But all the other  
5       ones have been ultimately owned and operated by  
6       the township.

7               Q.  Of the three processes that you  
8       discussed in your report, I think you said that  
9       the sequential batch reactor was the preferred  
10      process; is that correct?

11             A.  That's correct.

12             Q.  And how many have you designed and  
13      permitted in Pennsylvania of that type of  
14      system?

15             A.  Country Crossing Wastewater Treatment  
16      Plant in Warwick Township, Bucks County.

17                       THE COURT REPORTER:  I'm sorry,  
18      sir?

19                       MR. ADELMAN:  He asked how many.

20                       THE WITNESS:  More than a dozen.

21      BY MR. THOMPSON:

22             Q.  What is the level or number of units  
23      that you had permitted as far as those systems  
24      goes?  Is it more or less than the units that



1 are proposed?

2 A. Honestly, both. Starting from 10,000  
3 gallons, 6,000 gallons per day, going up to  
4 numerous ones at 100,000, numerous ones in the  
5 300,000 range, going up to 1.2 million gallons  
6 per day.

7 Q. So this is in the middle of the range  
8 or the high end of that range?

9 A. And this is exactly the reason that I  
10 selected the sequential batch reactor process.  
11 If the flows were significantly lower, like  
12 10,000 gallons, I would have gone with the flow  
13 through, Modified Bardenpho Process. Or if it  
14 would be in excess of two million gallons, I  
15 would have gone with a flow through process  
16 with primary clarifiers and things like that.

17 Every situation is unique. But  
18 in my opinion, between 60,000 gallons and  
19 400,000 gallons sequential batch reactor  
20 process is probably -- it is the most popular  
21 for a reason. It is the best application. It  
22 is the most efficient from an energy  
23 standpoint, from a sludge standpoint, and, most  
24 importantly, it produces the best quality

1 effluent.

2 Q. And the other options, the Modified  
3 Bardenpho Process and the BESST Process, are  
4 those typically used in Pennsylvania?

5 A. Oh, yes.

6 Q. So all throughout the northeast?

7 A. Oh, yes. I can only speak to  
8 Pennsylvania, Jersey and Delaware, and  
9 Maryland, and all three of them are commonly  
10 utilized in those three states as -- go ahead.

11 Q. Sorry. You have been involved in  
12 getting those systems permitted through the  
13 DEP?

14 A. Yes, I permitted, I have designed and  
15 permitted each one of those three systems.  
16 That's why I felt qualified to make that  
17 recommendation.

18 Q. Okay. Correct me if I'm wrong. I  
19 think you said that the system would handle  
20 89-, or at least the areas that are designated  
21 on the plan to be drip irrigation areas would  
22 handle up to 89,000 gallons per day?

23 A. That would be the least conservative.  
24 On the treatment process, the design of the

1 treatment plant is 317 residential units, two  
2 community centers, each being assigned six --  
3 or three EDUs each, for a total of 323 EDUs,  
4 multiplied by the township's defined -- EDU is  
5 an equivalent dwelling unit -- multiplied by  
6 the township's defined flow per EDU of 250  
7 gallons per day per EDU equals 80,750 gallons.

8 What I then testified on the drip  
9 disposal was that the disposal fields using the  
10 worst -- not the worst but moderately  
11 well-drained soils, which was the lower of the  
12 two drainage classifications, would result in  
13 89,000 and change gallons per day disposal  
14 capacity.

15 Q. And so is that a safety factor that DEP  
16 usually factors in?

17 A. No. What it is is the actual soils  
18 that were identified by the soils scientist  
19 were in excess. As we go through, we actually  
20 design the disposal fields so that it has, it  
21 maxes the treatment capacity.

22 Q. Well, no. So my question is: Is there  
23 a design, a safety design factor that DEP  
24 requires?

1           A. No, there is not. The safety factor is  
2 designed into the flow per EDU and the fact  
3 that the residential units will produce less  
4 than 250 gallons per day. And going there, DEP  
5 does not require a 10 percent factor of safety  
6 or any factor of safety. The factor of safety  
7 is all borne out through the science and your  
8 disposal capacity as to equal your treatment  
9 capacity.

10                           There is nothing that will  
11 prevent you, that would prevent you from not  
12 designing and permitting and constructing  
13 excess. But there is no regulatory requirement  
14 that I'm aware of.

15           Q. Do these systems wear out over time?

16           A. They are constantly -- that's why we  
17 have ownership and maintenance by municipal or  
18 third-party PUC. As components wear out they  
19 are replaced.

20           Q. How about the drip irrigation areas, do  
21 they eventually stop working?

22           A. Well, no. And that's the reason that  
23 we rely upon a biological treatment system, so  
24 that the treatment, mechanical treatment plant

1 does all the treatment and does not rely on the  
2 soils to do any treatment. So we try to put  
3 the cleanest effluent possible, so the only  
4 thing the soils have to do is absorb it.

5 And the reason we pick the best  
6 drainage classifications is rain has fallen on  
7 that ground for 200 years and it is still  
8 permeable and still properly draining.

9 The reason on-lot, individual  
10 on-lot systems fail is that they are relying on  
11 the soils to do the treatment, as well as the  
12 disposal, and that treatment creates different  
13 biology, which inhibits the permeability of the  
14 soils.

15 Here, we are trying to mimic  
16 Mother Nature and we are trying to put effluent  
17 on there that, as closely as possible, matches  
18 rainwater. So we want to do this and have it  
19 just do it as is naturally done, absorb the  
20 rainwater, absorb the treated effluent and go  
21 down. And that's why we chose drip irrigation,  
22 because it uniformly distributes it across the  
23 entire field.

24 And we do what is known as a

1 mounding analysis so that it does not raise the  
2 naturally occurring groundwater table to within  
3 four feet of the emitters. That's our  
4 requirement to meet.

5 Q. Are there certain parameters that you  
6 have to meet under DEP standards for, let's  
7 say, effluent pollutants? I mean, you  
8 indicated that nitrogen was one of the things  
9 that was going to be put into the ground and I  
10 guess grown as a grass, so to speak. Are there  
11 levels of pollutant parameters?

12 A. Yes. Yes, there are. The parameters  
13 are identified by the PA DEP in the water  
14 quality management permit, which is the permit  
15 that the DEP issues to the owner and operator,  
16 which defines the level of treatment that is  
17 required by the mechanical treatment plant  
18 prior to it being discharged to the drip  
19 disposal fields.

20 Q. So there is some level, it is not  
21 entirely clean, the effluent?

22 A. Oh, no, absolutely not. There always  
23 will be a level of nitrogen in there, which we  
24 are designing for less than ten. I actually

1 conservatively design for 15, design the  
2 treatment plant for less than ten milligrams  
3 per liter of total nitrogen, but I do my basis  
4 of design and my disposal fields based on 15  
5 milligrams per liter, which I guess would be  
6 your factor of safety.

7 We also, in order to reach those  
8 levels of denitrification, you have to reduce  
9 the biological oxygen demand to less than ten  
10 milligrams per liter. All three treatment  
11 systems that I have suggested will also reduce  
12 the total suspended solids down to less than  
13 ten milligrams per liter.

14 Our goal is to make the soils  
15 work, to utilize the soils as least amount as  
16 possible in the treatment of wastewater.

17 Q. But the soils are utilized?

18 A. Soils will naturally treat wastewater.  
19 Any contaminant that comes into it, Mother  
20 Nature does a great job, and those microbes  
21 that are in there will gobble up any carbon  
22 source or any nitrogen that you have, the same  
23 way fertilizing a lawn. The grass and the crop  
24 is gorgeous because it is equivalent of

1 irrigating and fertilization. Basically, what  
2 we are doing here is exactly what a golf course  
3 does.

4 Q. So you mentioned nitrogen as a  
5 pollutant that would be in that water. What  
6 are the other parameters that DEP tests for?

7 A. Normally it is just biological oxygen  
8 demand and total suspended solids coming out of  
9 the treatment plant.

10 There is also additional, there  
11 will be monitoring wells located both  
12 upgradient and downgradient of every disposal  
13 field. They are tested quarterly. There is a  
14 series of parameters that they test. I don't  
15 remember them all off the top of my head.  
16 Nitrogen is the largest one that we're normally  
17 concerned about. But they would include  
18 temperature, I mean everything, the pH, making  
19 sure that we are not changing the  
20 characteristics of the groundwater table.

21 And then we -- what is required  
22 is normally we sample them quarterly, there is  
23 a requirement to do an annual report, every  
24 year, and at the end of five years there is a



1 significantly more involved, water quality  
2 report that's done to the PA DEP, and it is  
3 reviewed by their staff, hydrogeologists, as  
4 well as the soil scientists.

5 Q. What happens if the testing of those  
6 wells determine that there is excess nitrogen  
7 in the water?

8 A. The level of treatment would be  
9 required to be increased such that the total  
10 level of nitrogen leaving the property will be  
11 less than ten milligrams per liter.

12 Q. Now, how does the system, either of the  
13 three options, how do those systems handle  
14 pharmaceuticals or chemical compounds that are  
15 flushed down the toilet or down the sink?

16 A. It is a biological system. It breaks  
17 down biologically the same way our bodies do.  
18 When we take pharmaceuticals in, it goes in,  
19 the microorganisms that are in our stomach that  
20 break that down, that allow it to be utilized  
21 by our body are the same microorganisms that  
22 are flushed down the toilet and become the  
23 biomass at the treatment plant.

24 The advantage there is that there

1 is a highly concentrated amount of biomass that  
2 comes in and can take all those pharmaceuticals  
3 and biologically degrade them the same as our  
4 bodies do.

5 MR. THOMPSON: That's all I have.

6 MR. MCKENNA: Thank you, Mr.  
7 Thompson.

8 Peter DuFault, Brandywine at  
9 Thornbury, any questions?

10 MR. DUFAULT: No questions.

11 MR. MCKENNA: All right. Bear  
12 with me, ladies and gentlemen. There is a  
13 number of people who came in late. I'm going  
14 to run through my list again a second time to  
15 confirm who is here and who isn't here as  
16 quickly as possible.

17 Anyone here for Radley Run III  
18 HOA?

19 Anyone here for Arborview HOA?

20 MR. HOFFMAN: Yes. William  
21 Hoffman.

22 MR. MCKENNA: Mr. Hoffman, do you  
23 have any questions?

24 MR. HOFFMAN: I do not.

1 MR. MCKENNA: Mr. Bevilacqua, do  
2 you have any questions for West Glen HOA or the  
3 school district?

4 MR. BEVILACQUA: No questions.

5 MR. MCKENNA: Mr. McFalls, any  
6 questions for the church?

7 MR. MCFALLS: No.

8 MR. MCKENNA: Mr. Feryo, do you  
9 have any questions for the Swimming  
10 Association?

11 MR. FERYO: No, we do not.

12 MR. MCKENNA: Mr. Spackman, any  
13 questions for the Thornbury Farm Trust?

14 MR. SPACKMAN: Yes, I have a  
15 question.

16 MR. MCKENNA: If you wouldn't  
17 mind coming to the microphone.

18 MR. SPACKMAN: Hello. I'm  
19 getting over a cold, so I lost a little of my  
20 voice.

21 MR. MCKENNA: Mr. Spackman, if  
22 you can get right up real close to that  
23 microphone, I'd appreciate it.

24 MR. SPACKMAN: I'm getting over a

1 cold too. It is not helping the situation at  
2 all.

3 I have a small background in  
4 soils from farming myself. One question I had  
5 is you said that you have a three-day holding  
6 capacity for the effluents in case of a power  
7 failure or mechanical failure. How many  
8 gallons is that for a three-day holding  
9 capacity?

10 THE WITNESS: Approximately  
11 242,350 gallons per day. It would be 80,750  
12 gallons times three, so it would be actually  
13 242,250 gallons.

14 MR. SPACKMAN: How is that  
15 conveyed or how is that held, above ground or  
16 below ground structure? What is that? That's  
17 a very sizable --

18 THE WITNESS: It can be either.  
19 I normally recommend a precast post-tensioned  
20 underground tank. The reason is that I want to  
21 keep it underground where the temperature of  
22 the wastewater, of the treated effluent is  
23 maintained at approximately 50 to 60 degrees,  
24 same as a geothermal. I don't want to chill

1 that wastewater, for it to occur during the  
2 winter, where I would have the chance of  
3 putting 35-degree effluent out into a disposal  
4 field.

5 So I try, my preference is to  
6 keep it at grade and under so that I retain as  
7 much heat as possible. Heat is also retained  
8 by the selection of precast post-tensioned  
9 tanks. Concrete is a very good insulator,  
10 surrounded by soil.

11 That's my preference. But,  
12 honestly, I have millions of gallons located  
13 above grade in Upper Uwchlan Township. We have  
14 above-grade precast post-tensioned tanks. I  
15 have done it with steel tanks, above grade, and  
16 it never had a problem.

17 You know, the goal is that you  
18 are utilizing that, but it is a mechanical  
19 system.

20 MR. SPACKMAN: All right.

21 THE WITNESS: Things are going to  
22 break. Lightening strikes. Electrical issues  
23 happen. You have to be prepared for it.

24 MR. SPACKMAN: One of my other

1 questions, in a system of this size, it sounds  
2 very impressive, where will the infrastructure  
3 be located on the site? It would be a gravity  
4 system, so the power from the homes, how is  
5 that going to get to your --

6 THE WITNESS: What would normally  
7 happen is, the majority of the site, and I did  
8 not do a collection system, but I'm generally  
9 familiar with the site --

10 MR. SPACKMAN: Right.

11 THE WITNESS: -- we follow the  
12 concourse of streams down to the bottom. At  
13 that point there would be a pump station which  
14 would have an emergency generator. Emergency  
15 generator would be sized for 24 hours of  
16 continuous run with a diesel tank, which would  
17 then pump it to the treatment site.

18 There are various areas across  
19 the site that we can locate the treatment  
20 plant. The treatment plant is recommended but  
21 not required to be located a minimum of 250  
22 feet away from any occupied dwelling unit. So  
23 we have analyzed the site and come up with  
24 various locations across the site where we can

1 locate the treatment plant.

2 From there it would be pumped.  
3 The treatment plant would also have an  
4 emergency generator on it, which would provide  
5 power to, to that, and that would be able to  
6 dose all the disposal fields out, out in the  
7 system.

8 MR. SPACKMAN: Are you  
9 using chlorine as a dosing --

10 THE COURT REPORTER: I'm sorry,  
11 sir. Are you using that?

12 MR. SPACKMAN: I'm sorry. Are  
13 you using chlorine as a dosing for the  
14 sanitation for the end product?

15 THE WITNESS: As part of the  
16 disinfection, no, I'm not. We are using  
17 ultra-violet disinfection, which is  
18 ultra-violet light, which kills it. It is a  
19 biological system. And grass.

20 So I don't want to increase, even  
21 though you can use a dechlorination agent, I  
22 want to minimize the amount of chemicals that  
23 are on the site and ultimately being conveyed  
24 to the groundwater table.

1 MR. SPACKMAN: Okay. Thank you.

2 MR. MCKENNA: Thank you, Mr.

3 Spackman.

4 Bradley or Amy Harkins, do you  
5 have any questions?

6 MS. HARKINS: No questions.

7 MR. MCKENNA: Mammucaris here?

8 Do you have any questions?

9 Mr. Gadaletto, are you here? Do  
10 you have any questions?

11 MR. GADALETO: I'm here. I don't  
12 have any questions.

13 MR. MCKENNA: Phillip Jones, are  
14 you present?

15 Mr. Moscharis, are you present?

16 Allison Cocoran, are you present?

17 Benjamin Skupp, are you present

18 at this time?

19 Diana Leraris, are you here this  
20 evening?

21 Ed Boyer, are you present? Have  
22 any questions?

23 MR. BOYER: I am. No questions  
24 at this time.



1 MR. MCKENNA: Amy Murnane, are  
2 you present and have any questions?

3 Kurt Wolter, are you present this  
4 evening?

5 Mr. Crognale, do you have any  
6 questions? Are you present this evening?

7 Robert Daull, are you here this  
8 evening?

9 MR. DAULL: I am. I have one  
10 quick question.

11 Hi. It is Bob Daull, D-A-U-L-L,  
12 163 Lake Drive, Westtown Township. We live in  
13 very close proximity to Crebilly Farm. It is a  
14 small, two-street development, Lake Drive and  
15 Serpentine Drive. We are all on wells and  
16 septic systems. And I asked this question at  
17 the last meeting, but I would like to get a  
18 second opinion. We also have underground  
19 streams running from Crebilly Farm. We are  
20 down hill from Crebilly, and we have  
21 underground streams running from Crebilly into  
22 our area.

23 Do you take into consideration  
24 nearby developments that are on septic and on

1 wells, and whether or not this system that you  
2 are suggesting for Crebilly could have an  
3 adverse effect if something did go wrong?

4 THE WITNESS: Yes. We absolutely  
5 do. The first thing is that we ask -- the  
6 reason we have monitoring of wells surrounding  
7 our drip fields, so that's an early warning if  
8 for some reason the nitrogen levels were to --  
9 are required to be less than ten milligrams per  
10 liter, which is a safe drinking limit, so we  
11 have, we have an obligation to maintain less  
12 than that at the property line, so we have a  
13 network of monitoring wells located adjacent,  
14 downstream, downgradient of each disposal field  
15 that we monitor quarterly.

16 So we will look for -- and an  
17 engineer is required to evaluate that at the  
18 end of the year. What we are looking for are  
19 trends, where the factor of nitrogen level is  
20 maximum of 6.4 milligrams per liter, we are  
21 looking for trends that over time it is  
22 creeping from six to seven to eight, at that  
23 point we could proactively look at the  
24 treatment system, see what is going on, or

1       redistribute the amount of effluent that's  
2       going somewhere.

3                       Maybe there is an issue with the  
4       control logic, that this field is being dosed  
5       twice as much as another one.  Someone entered  
6       the wrong data.  We know that.  So that's a  
7       stopgap that the DEP puts in place, and that is  
8       then monitored by the professional engineer on  
9       an annual basis, and that report is then  
10      reviewed by a professional hydrogeologist  
11      that's at the Department of Environmental  
12      Protection.

13                      So the township engineer or  
14      third-party PUC engineer, whatever consulting  
15      engineer, can't fake the numbers and can't not  
16      identify it, because it is double checked.  DEP  
17      has placed the checks and balances in place  
18      there.  So we know anything that is going to  
19      happen, we have various checks and balances in  
20      place before it would leave our property to the  
21      point where it could impact a private  
22      residence.

23                      MR. DAULL:  So the probability of  
24      something adversely affecting our wells is

1 very--

2 THE WITNESS: Very low. I'm not  
3 aware of it happening in a recently designed,  
4 recently, 1990 plus, you know, system, on-site  
5 disposal system, and that's the reason that we  
6 are not relying on the soils and the  
7 groundwater to do the work of the treatment.  
8 We are doing it mechanically. And we are  
9 testing it on a weekly basis at the treatment  
10 plant so that we know what we are putting in  
11 the soil.

12 The soil then, you know, as the  
13 other person had said, the soil is going to  
14 still do treatment. No matter what you put in  
15 there, rainwater, it is going to treat. So we  
16 have done all those parameters, and I am not  
17 aware of any that have had issues or put under  
18 consent order, to my knowledge. I'm not saying  
19 they don't exist. I'm not aware of that.

20 MR. DAULL: Okay. Thank you.

21 MR. MCKENNA: Thank you, Mr.

22 Daull.

23 Scott Sobers, are you present  
24 this evening?

1 Mr. Pavelchek, are you here this  
2 evening?

3 Phillip Yeager, are you present?

4 Jim Cahill, are you here tonight?

5 David Pryze, do you have any  
6 questions?

7 MR. PRYZE: I do. Most of what  
8 we talked about has been all about drip  
9 irrigation, and I've heard a couple of the  
10 effluent going into several different tanks. I  
11 just want -- I can't see the plans from back  
12 there, so, therefore, I'm going to ask a  
13 question. Is there going to be any retention  
14 ponds at all with any aeration?

15 We know that aeration clears  
16 completely black water, but I just want to make  
17 sure that that is going to be the case, because  
18 at that point then we are worried about the  
19 stench, and then also what that is going to do  
20 to bring the geese into, more into the  
21 neighborhood.

22 THE WITNESS: There are no  
23 proposed storage lagoons, aeration storage  
24 lagoons. The mechanical treatment plant is

1 located -- it is a pre-cast concrete tank,  
2 probably 40 by 40. Two trains there. But  
3 there would be grading on top of that. And  
4 that's where all the treatment contains in that  
5 one thing.

6 But there is no storage lagoons  
7 like you would see if you drove north on Route  
8 100, where you would see that in Upper Uwchlan  
9 Township. That's where most people are  
10 familiar with. There they are treatment in a  
11 lagoon and they also did storage in a lagoon.

12 In this case we are doing it all  
13 in a pre-cast concrete tank. And then the  
14 actual three days of storage, I'm recommending  
15 and would design it that it would be covered  
16 storage. The reason it would be covered  
17 storage is I don't want to have sunlight get  
18 in, which would cause algae to form, which  
19 would cause me to do additional filtration, so  
20 it wouldn't qualify dripping methods.

21 So once I've got it clean, I want  
22 to keep it underground in a storage tank,  
23 covered, so no air gets into it, and I want to  
24 maintain that water level as low as possible at

1 all times.

2 The goal is to get it in, treat  
3 it as fast as you can, and dispose of it as  
4 fast as you can, in accordance with the  
5 application rates. And that's just the number  
6 one rule in wastewater.

7 MR. PRYZE: Thank you.

8 MR. MCKENNA: Thank you, Mr.  
9 Pryze.

10 Jennifer or Jeff Kramer, are you  
11 present?

12 MS. KRAMER: I am present. No  
13 questions.

14 MR. MCKENNA: Ms. Bruns, any  
15 questions?

16 MS. BRUNS: No questions.

17 MR. MCKENNA: Thank you.

18 Mr. Skros, are you present?

19 MR. SKROS: Here. No questions.

20 MR. MCKENNA: Eileen Carey, are  
21 you present?

22 Jim McDermott, are you present?

23 Dennis or Patricia McFadden, any  
24 questions?

1 MS. MCFADDEN: I have a question.  
2 I'm confused about whether the drain fields can  
3 be utilized by youth. I thought I heard you  
4 say fence go around it because it can't be  
5 compacted, but then you said, I thought, that  
6 kids could play soccer on it, but then I heard  
7 grass has to stay eight to 12 inches high. So  
8 it seems like there is some, I don't know,  
9 maybe I'm confused.

10 THE WITNESS: No, no. I'll  
11 clarify it. You really -- passive recreation  
12 is allowed. We discourage it because we don't  
13 want any compaction and go down through there.  
14 So we would not want any planned active  
15 recreation on there.

16 What the point I was trying to  
17 make is that you can't control kids. I have  
18 two boys. If they want to go out and play on  
19 it, they are not going to have an impact.

20 If we had an organized soccer  
21 league coming on there, it would cause me more  
22 concern. All the literature, it is done  
23 elsewhere. I like to protect wastewater fields  
24 as much as I can so that it just serves that



1       sole purpose of disposing of the treated  
2       effluent, so that's why we discourage it.

3                       But what I want everyone to know  
4       is that, oh, my gosh, kids ran across it, did  
5       they just do damage? No, they didn't do damage  
6       to that. We farm that field --

7                       MS. MCFADDEN: I understand. You  
8       discouraging it, though, I had a neighborhood  
9       volleyball game on my yard for 20 years, and  
10      there was a lot of people, and it was very  
11      organized, but I'm sure my neighbors weren't  
12      encouraging it either, but things happen, and  
13      organization becomes the norm. So, you know,  
14      you discourage it. Who is maintaining this  
15      discouragement that's not supposed to compact  
16      it? Who is paying attention to it?

17                      THE WITNESS: The operator does.  
18      The operator does that by, through the actions  
19      and maintenance of the field. You can't stop  
20      it. By allowing the grass to be eight to 12  
21      inches high discourages people from playing  
22      volleyball, because who is playing volleyball  
23      on eight to 12 inches high of grass.

24                      And it would be owned and

1 maintained by the township, so a private  
2 resident can't go out and cut it. That's why  
3 we put the fence around, so someone doesn't  
4 drive their lawn mower out there.

5 Will it cause a problem? No. We  
6 have sand mounds and the vast majority of  
7 people's backyards, we have played on them  
8 forever and it has not caused an issue.

9 But when you have this many  
10 people in a specific purpose, in the  
11 engineering world we try to maximize the  
12 disposal fields for the sole purpose of  
13 disposal of effluent there.

14 MS. MCFADDEN: Okie-dokie. Thank  
15 you.

16 MR. MCKENNA: Ms. Weller, any  
17 questions?

18 MS. WELLER: No questions.

19 MR. MCKENNA: Linda or Matt  
20 Reichert, are you present?

21 Okay. Does the Board have any  
22 questions?

23 MS. DEWOLF: Yes. For this  
24 development, you have said that the costs would

1 be spread over a larger user base. Can you  
2 explain how for a new development your costs  
3 would be shared by other existing customers or  
4 residents?

5 THE WITNESS: That was in the  
6 question, the reference to that question was if  
7 we were to connect to the public sanitary sewer  
8 system, and not build this community system.  
9 If we were to connect to the public sanitary  
10 sewer system we would become an existing  
11 customer of the authority, and we would be  
12 joining a larger user base. That was solely in  
13 reference to connection to public sewer.

14 MS. DEWOLF: Are you familiar  
15 that we do not have an authority?

16 THE WITNESS: Then it would be  
17 the township which goes to the authority. I  
18 misspoke then.

19 MS. DEWOLF: So what I hear you  
20 say, is this correct, you are saying that your  
21 costs would be subsidized by other residents if  
22 we went to public sewer? That's your  
23 expectation?

24 THE WITNESS: No, that's not. My

1 statement was that the sewer user rates, the  
2 residents, the future property owners of this  
3 development would enjoy a lower sewer rental  
4 rate if they were connected to public sewer.  
5 The installation of the collection conveyance  
6 and the purchase of capacity if public sewer  
7 were the selected option would be borne solely  
8 by the developer.

9 So he would install the entire  
10 collection system, all necessary, all necessary  
11 wastewater infrastructure to convey it to the  
12 existing public sewer system. He would then  
13 purchase capacity, which would include two  
14 parts of capacity, one part of the tap-in fee,  
15 through the purchase of tap-in fees. The  
16 tap-in fee is comprised of two units. One unit  
17 is for the treatment proportion as to where he  
18 purchases his share of the existing treatment  
19 plant. The other portion is for the  
20 conveyance, where he pays back the township  
21 and/or authority who install the existing  
22 infrastructure which he would utilize from his  
23 connection point to convey the raw wastewater  
24 to the wastewater treatment plant.

1 MS. DEWOLF: The second question  
2 I have is in respect to a comment you made  
3 about groundwater. You said that in the drip  
4 irrigation that you cannot raise the  
5 groundwater to the ground table or you could  
6 not raise groundwater table more than  
7 something. And I'm not sure, are you familiar  
8 with what the groundwater level is at this  
9 time? The geotechnical specialist at our last  
10 meeting referenced groundwater at 4.4 feet in  
11 that disposal area.

12 THE WITNESS: And how that is --

13 MS. DEWOLF: How much is that  
14 groundwater going to increase by a system put  
15 on it? And explain how you are not going to be  
16 able to elevate that groundwater by this system  
17 and disposing in that area.

18 THE WITNESS: Okay. As part of  
19 the sewage facilities planning requirements we  
20 are required to do a mounding analysis. And  
21 the purpose of the mounding analysis, the first  
22 step in the mounding analysis is to drill our  
23 monitoring wells in the proposed disposal areas  
24 to monitor the groundwater table. They then

1 use the pit and well program and a series of  
2 pumping tests to determine the transitivity  
3 between the monitoring wells, how you  
4 distribute, based upon that they will establish  
5 the seasonal high groundwater table based on  
6 the ten-year, the highest groundwater, the  
7 highest calculated groundwater table in ten  
8 years as a starting point.

9 They then add the impact of the  
10 treated effluent disposed in that area. That's  
11 known as the map. That's taking the ten-year  
12 seasonal high-water table, the mound is then  
13 calculated on top of that.

14 The requirements by the DEP are  
15 that there has to maintain four feet from the  
16 top of that mound at the highest point of any  
17 disposal field to the groundwater surface. If  
18 that is not maintained, the area with a high  
19 groundwater table would be removed, or the  
20 application rate would be reduced in that area  
21 to maintain that four-foot elevation from the  
22 ten-year seasonal high groundwater table, plus  
23 the application of our treated effluent to the  
24 soil.

1 MS. DEWOLF: So from what you  
2 have just said it sounds like this disposal  
3 area would have to be elevated from its current  
4 level significantly, if groundwater is at four  
5 feet now, as you testified.

6 THE WITNESS: That area --

7 MS. DEWOLF: Not you but a prior.

8 THE WITNESS: That area would  
9 most likely be excluded from that, and that is  
10 why they tested in excess areas of what is  
11 required as you go --

12 MS. DEWOLF: Would be excluded  
13 from what?

14 THE WITNESS: Would not be  
15 approved as part of the planning module. So  
16 what they would do is you would test areas as  
17 our application did here, where we test, and if  
18 we used every area at the lowest application  
19 rate, we would have 89,000. I only need  
20 80,750. Half of the areas were deep,  
21 well-drained soils at an application rate of  
22 6,000 gallons per acre, and half of them were  
23 at 3,000. I would probably have an excess of  
24 approximately five acres that would not be

1 required.

2 So areas that are marginal, have  
3 a seasonal high groundwater table, would be  
4 excluded from that. But DEP's hydrogeologists  
5 will guarantee that. And we will do detailed,  
6 a license soil scientist will do detailed test  
7 pits that are witnessed by DEP, and then the  
8 mounding analysis which must be performed by a  
9 professional hydrogeologist is then reviewed by  
10 DEP's professional hydrogeologists to insure  
11 that both of those things occur.

12 It is not uncommon for us to lose  
13 disposal capacity, and that's why we start out  
14 testing 25.5 acres, knowing that we really only  
15 need, I'm not sure of the exact number, 20  
16 acres, 18 acres, because you will lose some  
17 during the approval process.

18 MS. DEWOLF: Have you figured out  
19 what that acreage is that you need for this EDU  
20 expectation for the 323 homes?

21 THE WITNESS: I have -- the  
22 detailed soil, DEP-witnessed soil testing has  
23 not been completed, nor has the final mounding  
24 analysis been done.



1                   The previous expert did perform a  
2 mounding analysis which concluded that there  
3 was areas. But that's out of my area of  
4 expertise as to where it is. I looked at it on  
5 the worst case scenario, assuming that if we  
6 used the 25.5, we use the lowest loading rate  
7 of 3,500 for moderately well-drained. Did not  
8 take credit for any deep, well-drained soils  
9 that are present on the site that would have a  
10 loading rate of 6,000 gallons. And that's what  
11 I based my opinion on.

12                   MS. DEWOLF: Given that some, I  
13 guess my question is, because you are  
14 discouraging recreation from those drip  
15 irrigation areas, did you use this area as part  
16 of your calculation for your open space and  
17 your prior recreation acreage?

18                   THE WITNESS: That's out of my  
19 field of expertise.

20                   MS. DEWOLF: I guess I would have  
21 that for another person testifying on your  
22 behalf.

23                   One question. Are you familiar  
24 with the drug take-back program?

1 THE WITNESS: I think that's out  
2 of my area of expertise.

3 MS. DEWOLF: Okay. You commented  
4 on pharmaceuticals and how they could all be  
5 decomposed biologically through a drip  
6 irrigation system. You testified on that.

7 THE WITNESS: What I testified  
8 to--

9 MS. DEWOLF: We have a program in  
10 Westtown and throughout the county that we  
11 specifically tell people to bring their drugs  
12 to us.

13 THE WITNESS: Oh, absolutely.

14 MS. DEWOLF: Because they do  
15 not--

16 THE WITNESS: Never want anyone  
17 to flush a pharmaceutical or anything other  
18 than wastewater down the toilet. So --

19 MS. DEWOLF: And isn't that true  
20 for a drip irrigation system as well?

21 THE WITNESS: Absolutely. Any --

22 MS. DEWOLF: Why is that so?

23 THE WITNESS: You never want to  
24 -- you do not want to flush them down. The

1 question was asked, what happens if a  
2 pharmaceutical is flushed down. Because  
3 accidents happen. People drop pills in  
4 toilets. In every municipally owned and  
5 operated wastewater treatment plant, in any  
6 drip plant, everything is handled in the  
7 biological treatment plant.

8 Is it desirable? Absolutely not.  
9 Is it discouraged by any means possible?  
10 Through education, through great programs like  
11 you just described, absolutely.

12 But does it happen? Yes. Has it  
13 caused failures in every municipal treatment  
14 plant? No.

15 MS. DEWOLF: My question is not  
16 the treatment process but the application onto  
17 the soils having that our groundwater and our  
18 aquifers are so high to the actual ground where  
19 you are disposing, do you think that those  
20 pharmaceuticals would have an effect?

21 THE WITNESS: I think it is  
22 significantly better if it were to occur in  
23 this system compared to an individual on-lot  
24 system that does not have a biological

1 treatment.

2 MS. DEWOLF: What does better  
3 mean?

4 THE WITNESS: It would be -- will  
5 have a significant opportunity to biologically  
6 degrade that pharmaceutical compared to an  
7 on-lot treatment system since it is an  
8 individual sand mound which does not have a  
9 biological treatment component. Simply has a  
10 septic tank and then it goes into the  
11 groundwater through that.

12 So this is a significantly better  
13 scenario for that. A larger municipal system  
14 is significantly better. The more biomass that  
15 you have that can consume that, the better off  
16 you are.

17 The goal is for you to educate  
18 your residents so that they do not dispose of  
19 any pharmaceuticals through the wastewater  
20 system, and it sounds like you have a very good  
21 program in place for that, that would benefit  
22 the wastewater treatment plant.

23 MS. DEWOLF: That's all I have.

24 MR. HAWS: Sure, I just had a

1 couple questions. So you were talking about  
2 the public sewer, and if it was to be connected  
3 to public sewer that the conveyance and  
4 collection system would be, you know, putting  
5 it in would be on the builder.

6 THE WITNESS: That is normally  
7 how it is done and that's what my expectation  
8 would be here, that they would bear 100 percent  
9 of that cost. The builder would have to verify  
10 that.

11 MR. HAWS: Sure. I just want to  
12 clarify, you had just said that, but any  
13 upgrades to any existing structures that would  
14 be needed to take on that collection could also  
15 be associated to the builder too, correct?

16 THE WITNESS: Yes. That could be  
17 discussed and included in the land development  
18 agreement or the sewer connection agreement.  
19 That would absolutely be there. It would be  
20 identified during the sewage planning process.

21 MR. HAWS: Okay. I just wanted  
22 to make sure. You had talked about the  
23 building of the system, but you hadn't talked  
24 about any upgrades to any of the existing

1 systems that were currently in place.

2 THE WITNESS: Yeah.

3 MR. HAWS: So I know that the  
4 plan would be to either offer for dedication,  
5 if you were to go back to the drip irrigation  
6 system, to offer dedication to either the  
7 township, you know, another authority or a  
8 third-party public utility company. And I know  
9 that there is quarterly testing and annual  
10 testing.

11 But, as I'm sure a lot of people  
12 are familiar, the DEP is constantly changing  
13 their regulations on stormwater management, on  
14 wastewater management, and so it is not like if  
15 today ten of the nitrogen is the level that you  
16 are looking at, you know, five, ten, 15 years  
17 from now, those baselines that you have to  
18 adhere to could be changing. I guess my  
19 question is: What capacity does this  
20 development have for stricter regulations by  
21 DEP that would require additional processing of  
22 that wastewater treatment or to lower  
23 reductions in phosphorus or nitrogen or what  
24 have you?

1                   So, I know that as today the  
2                   system and the area, the acreage is comparable  
3                   for what is today's regulations. But what  
4                   about in the future?

5                   THE WITNESS: They would mostly  
6                   be handled, the standards are established in  
7                   the water quality management permit which  
8                   establishes those standards for a period of  
9                   five years. Every five years is the  
10                  opportunity for re-evaluation and more  
11                  stringent standards. All the standards would  
12                  impact the level of treatment, and it would not  
13                  increase the amount of effluent that needs to  
14                  be disposed.

15                  So that's why we are relying  
16                  solely on the mechanical treatment plant of all  
17                  treatment, and not the soils, because if you  
18                  relied on the soils you may have to have more  
19                  area, which we won't have the opportunity once  
20                  it is fully developed. So what would end up  
21                  happening is the level of treatment would have  
22                  to be increased such to meet whatever  
23                  regulatory standards.

24                  Obviously, regulatory standards

1 are established based on best available  
2 technology. So there has to be a level of  
3 technology.

4 What would happen, and this is  
5 the reason that DEP wants to have either  
6 municipal ownership or third-party PUC, because  
7 the residents couldn't come up with a million  
8 dollar upgrade, wouldn't have a million  
9 dollars. So either the authority, township or  
10 third-party PUC could take out a loan on their  
11 behalf, guaranteed by their sewer rates, and be  
12 able to do the required upgrade to meet the  
13 effluent requirements. And the result of them  
14 taking a loan would be that the sewer rental  
15 rates of all the residents connected to that  
16 would have to be increased to cover not only  
17 the operational costs but that additional debt  
18 service.

19 MR. HAWS: Sure. I guess I  
20 should have clarified my question more. So I'm  
21 actually talking about the treatment facility.

22 THE WITNESS: Yeah.

23 MR. HAWS: The footprint that you  
24 are going to design with the different tanks



1 and the clarifiers and the like, you know,  
2 let's say five, ten years from now you need to  
3 add additional clarifies or other systems to  
4 treat that effluent to get it to the new  
5 standards. Will the footprint of where you are  
6 planning the wastewater treatment plant be  
7 sufficient enough for expansion?

8 THE WITNESS: There is always  
9 excess area. There is areas for additional  
10 treatment.

11 I can't answer that question. I  
12 don't have a crystal ball. If I knew what  
13 level to expect, I would design it in today.  
14 That's why we are over-designing it slightly  
15 today. We are using the same treatment  
16 technologies that every -- that the treatment  
17 technologies I described here are very similar  
18 to the vast majority of the treatment  
19 technologies that every municipality, public  
20 sewer system uses, so we would be subject to  
21 the same improvements that they have.

22 I don't know, just as I don't  
23 know what the new standard would be, I don't  
24 know what the available technology at that time

1 would be to treat it, to know how big of a  
2 footprint it has.

3 So we do include extra area for  
4 the future because we don't know. But is it  
5 adequate? I don't know.

6 MR. HAWS: Sure. Let me ask  
7 another question. I'm sorry to hammer on this  
8 point. Let's just say as it is built today,  
9 the design that you have looked at, the  
10 treatment plant takes two acres. How much of  
11 that acreage are you going to dedicate for  
12 future expansion?

13 THE WITNESS: It is a buffering  
14 around it, depending on the configuration,  
15 which would depend on the style of treatment  
16 plant. Usually what I do is I allow room for  
17 an additional treatment train, which is a rule  
18 of thumb that I use. I provide, whatever the  
19 treatment train length is, so if it is 40 feet,  
20 I provide an additional 40 feet.

21 We also have an additional buffer  
22 of 250 feet that could be utilized as well.  
23 And we try to locate it where we have  
24 additional area, be it closer to a stream

1 corridor or a thing like that.

2 But the rule, the rule of thumb  
3 is that if I have two treatment trains, I  
4 reserve the area for a third treatment train,  
5 is how I do it, and it is just my best guess.

6 MR. HAWS: Okay. Thank you. So  
7 I know in your report you had stated that I  
8 think it is four times a year -- I could be  
9 wrong. I quickly was reading it as you were  
10 testifying as well. -- that there is a mild  
11 acid that gets flushed through the piping, the  
12 tubing four times a year.

13 THE WITNESS: Yes.

14 MR. HAWS: Do you know which acid  
15 that is?

16 THE WITNESS: It's usually sodium  
17 hypochlorite.

18 MR. HAWS: Okay. And is that  
19 just flushed through? I think I heard you say  
20 it comes back and you collect it? Or is that--

21 THE WITNESS: Comes right back to  
22 the treatment plant for treatment and disposal.

23 MR. HAWS: Is there any seepage  
24 into the ground when that, when that action

1 happens?

2 THE WITNESS: Yes, because it  
3 goes through the drip emitter.

4 MR. HAWS: Okay.

5 THE WITNESS: In order to go  
6 through the drip emitter, part of it goes out.  
7 That's where we use a very dilute. Everyone  
8 doesn't like to hear acid, but it is the  
9 reality.

10 A lot of our treatment plants  
11 don't actually do it. I always recommend and  
12 design it in. I don't want biological growth  
13 in there.

14 MR. HAWS: So I know you  
15 testified that daily flows for this property  
16 were based off of the 323 EDUs that you had  
17 calculated, times the 250 gallons per day rate  
18 for an EDU, for 80,750 gallons per day, and  
19 that the system is designed for a maximum of  
20 approximately 89,000 gallons per day.

21 THE WITNESS: Of the disposal.

22 MR. HAWS: Yes.

23 THE WITNESS: It hasn't been  
24 designed at all. I did a quick -- in order for

1 me to determine, did the soils scientist who  
2 testified before me identified sufficient areas  
3 that I felt comfortable testifying that there  
4 was enough disposal capacity, that's how I did  
5 that, to know that if it was 80,000 I wouldn't  
6 feel as comfortable. He has approximately 10  
7 percent over, so if there is areas that get  
8 removed, which happens, you know, the rule of  
9 thumb that I do is I always design 110 percent  
10 when I start the approval process, because  
11 through the mounding analysis, through soils,  
12 through something I lose 10 percent.

13 I just did a design for Upper  
14 Uwchlan. Absolutely. But I always anticipate  
15 losing something.

16 MR. HAWS: Sure. So I mean not  
17 that home owners would do this, but I guess the  
18 concern with your daily flow rates doesn't  
19 account for residents hooking their sump pump  
20 into the systems and things of that nature.  
21 What would that impact have on a drip  
22 irrigation system?

23 THE WITNESS: Well, the actual  
24 wastewater production based on pump and haul of

1 individual residents, and these are large,  
2 Upper Uwchlan, Toll Brothers houses, is 146  
3 gallons per day, per house.

4 So we design 250. Why do we  
5 design for 250? Because some residents are  
6 going to put their sump pump in. There are  
7 going to be future leaks in laterals. Some kid  
8 is going to drive over top of a clean-out with  
9 his lawn mower, not tell his dad and hide it,  
10 and so water is going to get in.

11 You know, sanitary sewer pipes  
12 crack over time. Not the PUC, the way they do  
13 survey and lie pipeline. Some road maps, they  
14 are going to repave the road and all of a  
15 sudden the manhole is the low area instead of  
16 being flush, and some water is going to get in  
17 there. So we definitely account for it that  
18 way.

19 But what was actually required is  
20 what's known as a Chapter 94 report which is  
21 done annually, every year. So if we start to  
22 see these things, an increase of I&I, that's  
23 analyzed every year, and then those sources of  
24 I&I have to be identified and removed.



1 the fields, we break them out into sub zones  
2 because at some point, it is a piece of  
3 plastic, it will wear out. Whether that's 50  
4 years, 75 years, some point it is going to wear  
5 out. There is a membrane that pulses, any  
6 piece of rubber that pulses eventually is going  
7 to tear, and you will get more flow there.

8 So the way it is set up and  
9 sectionalized is that you can take, you know,  
10 there will be 20 different pipes, 50 zones on a  
11 tract this size, you can take two zones out, so  
12 you would only lose about 4 percent of your  
13 total capacity, where you rip those tubes out,  
14 you plow in new tubes right next to them and  
15 you go on.

16 And you would have a capital  
17 replacement, the same as we are going to have  
18 to replace every blower, every piece of piping  
19 that goes in, everything wears out. So you  
20 just have to have an area to do it. That's why  
21 we put them two to four feet on centers,  
22 because I can then have a new place to plow it  
23 in.

24 So when I rip it out I'm



1 disposing, I'm going to do it, and it is eight  
2 to 12 inches down, so you have got to get and  
3 rip it out. It is going to cause it to open  
4 up.

5 What I would probably do then, I  
6 would rip everything out. I would do, like a  
7 good farmer, I would basically disk it, turn it  
8 over, plant a new cover crop, and then the  
9 following year, once the cover crop is  
10 established, two growing seasons, I would  
11 install new drip tubing and go through and give  
12 me a chance to really look at what the soils  
13 are, more following change or anything like  
14 that. That's really how we do it.

15 But I'm talking hypothetically  
16 because I've never done it, and I'm not aware  
17 of anyone who has ever done it.

18 MR. HAWS: You had testified  
19 that, just talking about pharmaceuticals and  
20 chemicals, that the biological process that you  
21 have in there is just like your body. So I  
22 mean, yes, I understand that people drop down  
23 their pharmaceuticals down to the drain, but as  
24 our body breaks down medicines, they are

1 excreted through sweat, urine, feces, and there  
2 is by-products of either the parent or any of  
3 the, you know, metabolites of that drug.

4 THE WITNESS: Mm-hmm.

5 MR. HAWS: So I guess my question  
6 is: At a wastewater treatment facility where  
7 it is fully treated and clarified, and then the  
8 effluent is discharged, and let's say into a  
9 stream, and it is dispersed and it is diluted  
10 out even further, have you seen any cause for  
11 concerns of having concentrated either parent  
12 or metabolite pharmaceuticals into various ground  
13 areas of concentration?

14 THE WITNESS: Can we take back  
15 and add another step, if that happens, that I  
16 glossed over. I mean further explain some  
17 other things.

18 Normally what happens is when it  
19 comes in, the biology in the bugs that are in  
20 the treatment plant all come from our bodies.  
21 The vast majority of those bugs that would eat  
22 these and would absorb this become part of the  
23 sludge, which is dropped out and taken by a  
24 contractor hauler to, and then it is either put

1 into a landfill or into a incinerated, so that  
2 becomes part of the sludge.

3 So basically what happens is --  
4 and great point that you brought up -- is that  
5 the bugs' biology biomass that eats it, absorbs  
6 it. Only clean water is discharged to the drip  
7 system. The majority of that pharmaceutical,  
8 same as we excrete it biologically, gets tied  
9 up into the sludge and goes through that.

10 Is there some that could become  
11 soluble and be discharged into the drip system?  
12 Absolutely, that's a possibility.

13 I'm not aware of any cases, to my  
14 knowledge, where they have picked up  
15 pharmaceuticals in the monitoring well or it  
16 has become an issue on any of the known drip  
17 irrigation and/or spray irrigation fields that  
18 I'm aware of or have listened to at any  
19 conference of that nature.

20 So I can't answer your question.  
21 But pharmaceuticals have been around for a long  
22 time. They have been put into our individual  
23 on-lot systems. And I have not seen a  
24 pervasive problem where it has contaminated a

1 groundwater supply.

2 MR. HAWS: Okay. And you had  
3 said that they haven't tested, they haven't  
4 tested positive in any of the test wells. Do  
5 you know if they actually test for  
6 pharmaceuticals in those test wells?

7 THE WITNESS: Oh, in these test  
8 wells? I don't know what they have tested for,  
9 so far. What I'm referring to is that they are  
10 tested in public drinking wells.

11 MR. HAWS: Okay.

12 THE WITNESS: And I haven't seen  
13 a direct impact of a drip disposal/spay  
14 irrigation disposal on an existing public  
15 supply well. That's the only place I'm aware  
16 of that has been tested for, could be tested  
17 individually by EPA or DEP sporadically. But  
18 wastewater plants don't test for it. We only  
19 test what we are required for.

20 But all the public water supply  
21 was, so that's what the basis of my answer was.

22 MR. HAWS: Just another  
23 clarification. Most bugs in the body are  
24 broken down either by the liver or the kidney,

1 and there are some that are broken down by the  
2 gut, bacteria in the stomach, and small and  
3 large intestines. So anything that's coming  
4 out of the hemo body has already done that  
5 first pass and broken down the parent drug into  
6 metabolites. So it is more of, I guess it is a  
7 question -- I think I know the answer -- you  
8 don't know the answer?

9 THE WITNESS: Yeah.

10 MR. HAWS: But, yes, I understand  
11 that individual on-lot management septic, like  
12 a sand mound or a septic system we are looking  
13 at one individual. What I'm looking at is you  
14 have 317 properties that are going to be  
15 conveying their waste to a place that's going  
16 to be concentrated and treated, and then even  
17 though it is a concentrated effluent of those  
18 300-some homes are going to be over a small  
19 area of acreage.

20 So I guess my concern is: Has  
21 anyone in the history or has this been a topic  
22 of discussion with the DEP of having  
23 concentrated areas where chemicals or  
24 pharmaceuticals that aren't fully processed out

1 in specific areas?

2 THE WITNESS: No, that's never  
3 been a topic, because it hasn't risen, it  
4 hasn't shown up in public supply wells.

5 MR. HAWS: Okay.

6 THE WITNESS: That's normally how  
7 it is determined.

8 MR. HAWS: Just one final  
9 question. You had said that the sludge would  
10 be hauled off about monthly, I think is what  
11 the report showed.

12 THE WITNESS: Well, what the  
13 report is is that the sludge aerobic digestion  
14 is sized for 30 days' detention. That's to  
15 maximize the bugs eating themselves and  
16 reducing the mass down. Normally sludge is  
17 hauled off weekly by a contract hauler. So a  
18 certain percentage of it is. You don't fill  
19 the tank and empty it. You always take 15 --  
20 you always take 25 percent out each week, so  
21 that way you always have excess.

22 You never know when there is  
23 going to be snow, can't get to it for a week,  
24 you know. That's how it is designed.

1                   MR. HAWS: You had said that  
2                   sludge would be either transported to the  
3                   township treatment plant or a third-party  
4                   treatment facility?

5                   THE WITNESS: Yes. What is  
6                   required is a manifest that takes it to a PA  
7                   DEP approved treatment and disposal facility.  
8                   It depends on how you write your sludge  
9                   contracts.

10                   A lot of my clients, municipal  
11                   clients don't want to dispose ultimately in a  
12                   landfill, so they are required to go to a  
13                   wastewater treatment plant that does it, that  
14                   utilizes an incinerator. East Norriton Joint  
15                   Sewer Authority, Hatfield Township Sewer  
16                   Authority, Delcora has an incinerator.

17                   Or if you go to a larger, Goose  
18                   Creek Wastewater Treatment Plant sees a lot of  
19                   sludge. Pottstown sees it. And there it is  
20                   processed through by their treatment process  
21                   and disposed of in accordance with their  
22                   permit.

23                   MR. HAWS: Okay, great. One  
24                   final question around the O&M agreement, the

1 operation and maintenance agreement.

2 THE WITNESS: Okay.

3 MR. HAWS: You had said that if  
4 the township or third party or public utility  
5 were to take ownership of this treatment plant,  
6 but prior to taking ownership would it be the  
7 applicant's responsibility to generate and  
8 create an operation and maintenance plan that  
9 meets the current regulations?

10 THE WITNESS: Normally what  
11 happens is, the concern of the township is the  
12 shortfall finances. It is going to cost more  
13 to operate it than the income coming in. So  
14 normally the developer will contract with the  
15 township to have and will subsidize their side,  
16 or what is also common is that a third-party  
17 contract operator comes in and operates the  
18 system, which is paid for by the developer  
19 until such time as the sewer rental income  
20 exceeds the operating costs of it, and that's  
21 the time that the township normally takes over  
22 dedication.

23 MR. HAWS: Okay.

24 THE WITNESS: They wait until it



1 operates in the black.

2 MR. HAWS: Thank you. No further  
3 questions.

4 THE CHAIRMAN: One question. You  
5 stated that many municipalities use drip  
6 irrigation and you chose three types this  
7 evening, and then you chose the sequential for  
8 this project. Those other municipalities, do  
9 they mainly use the sequential type?

10 THE WITNESS: Upper Uwchlan  
11 Township, which is probably the closest one  
12 that has a large-volume drip disposal, utilizes  
13 sequential batch reactor process. Started out  
14 with lagoon and now they have a sequential  
15 batch reactor process.

16 Applecross, East Brandywine  
17 Township Municipal Sewer Authority has a  
18 300,000 gallon plant that utilizes community  
19 drip irrigation and utilizes the sequential  
20 batch reactor process. So, yes, that's the  
21 reason that they do, and the reason it produces  
22 probably the best quality effluent.

23 THE CHAIRMAN: Thank you.

24 MS. DEWOLF: I have one more

1 question. Sorry.

2 MR. HAWS: Me too.

3 MS. DEWOLF: I want to back up a  
4 second to your document, Exhibit 24, of your  
5 report, section 4, and you refer to the "Report  
6 of Preliminary On-Site Water Feasibility  
7 Evaluation," dated March 2017, and that your  
8 project proposes to dispose of, and you go into  
9 the whole paragraph about what it does based on  
10 that.

11 Do you agree that you need to  
12 re-evaluate based on your April 2017 data that  
13 you came up with and some of the re-evaluation  
14 as a result of that?

15 THE WITNESS: Ultimately, all of  
16 the soil work and hydrogeologic work will have  
17 to be redone and witnessed by DEP. And that's  
18 why, based on my analysis, I wanted to insure  
19 that there was more than sufficient, because as  
20 you do more, additional detailed data, there  
21 will be areas that will be lost, there will be  
22 areas that will have higher application rates,  
23 and areas that will have lower.

24 So in order to determine the

1 feasibility at this time I wanted to make sure  
2 that there was an excess at the lowest known  
3 application rate, in order to feel confident in  
4 drawing a conclusion.

5                   Ultimately, we will do complete  
6 testing --

7                   MS. DEWOLF: It states -- excuse  
8 me. It states "drip fields were identified  
9 by," it goes into details and reference. I  
10 just want to make sure that you are  
11 acknowledging you have an April 2017 report as  
12 well that will be considered in your disposal  
13 calculations and location, and that further  
14 plans will need to be submitted here based on  
15 what your current findings are?

16                   THE WITNESS: The answer is yes,  
17 additional information is taken into, the  
18 report can be updated and to include that.

19                   I don't believe that there is  
20 anything in that April -- I did review the  
21 April 13th report -- that showed me that we  
22 would lose a significant area, and I believe  
23 that was the testimony of the expert before me.

24                   And the area is, that's not my

1 field of expertise. My field of expertise is  
2 in the treatment and disposal of it, and I rely  
3 upon that expert to determine the required  
4 areas.

5 MS. DEWOLF: Okay. But your  
6 required evaluation in your report is based on  
7 that March 2017 report, and you stated that you  
8 would need to sort of re-evaluate it based on  
9 some of your test borings that you had, and so  
10 I want you just to acknowledge that you do have  
11 some further mapping and reconfiguration of the  
12 plan that we have before us, given some of your  
13 recent data from your --

14 THE WITNESS: We could always  
15 reevaluate that --

16 MS. DEWOLF: -- April report.

17 THE WITNESS: -- and to see what  
18 impact that would have on it.

19 MS. DEWOLF: I have one more  
20 question before I'll hand it over to Tom for a  
21 second. You said you didn't, when Kristin  
22 asked you, you did not do any cost analysis.  
23 How did you come about thinking that a public  
24 sewer would be less expensive than a drip

1 irrigation?

2 THE WITNESS: 20 years of  
3 experience. I have looked at this and done  
4 this analysis probably seven to ten times every  
5 year, probably more frequently than that.

6 MS. DEWOLF: Okay. So did you do  
7 a cost analysis -- excuse me -- a cost for the  
8 drip irrigation?

9 THE WITNESS: Did I do a  
10 detailed? No.

11 Do I know what it costs in  
12 connection with public sewer? Absolutely.

13 MR. HAWS: Sorry. One final  
14 question. What would be the annual cost to  
15 operate a drip irrigation facility?

16 MR. ADELMAN: The witness is  
17 using a calculator.

18 A VOICE: Is it big enough?

19 THE WITNESS: Including  
20 treatment?

21 MR. HAWS: Yes.

22 THE WITNESS: Approximately  
23 250,000, 200-, 250,000 dollars, and that would  
24 also include capital depreciation. When you

1 fully include capital depreciation, that would  
2 be -- and that is based upon a similar size  
3 one, and the analysis that I did for that,  
4 generated in user fees.

5 MR. HAWS: That includes the, I  
6 guess the operator --

7 THE WITNESS: The operator,  
8 analysis, maintenance of the drip fields, a  
9 five-year replacement plan to replace every  
10 pump, replacing wall works on a 15-year plan,  
11 replacing all filters on a 20-year plan,  
12 replacing the concrete tanks on a 75-year  
13 design life. All of that goes into  
14 depreciation, along with your major cost is  
15 labor, followed by electricity, followed by  
16 sludge, followed by chemical production,  
17 followed by maintenance of the drip fields.

18 MR. HAWS: Thank you very much.

19 MR. PINGAR: I have a few  
20 questions.

21 MS. DEWOLF: Sorry, this is my  
22 last one.

23 MR. HAWS: After that I have some  
24 more. No.

1 MS. DEWOLF: You mentioned that  
2 the system would need a generator and I didn't  
3 see a generator located on the plan. Where  
4 would that generator be for back-up power,  
5 etcetera? And I assume it is an on-ground  
6 structure like a mini --

7 THE WITNESS: It is normally  
8 located in the control building. So it is  
9 normally located in the control building for  
10 the wastewater treatment plant. It could be  
11 located outside in a housing enclosure.

12 (Discussion off the record.)

13 MS. DEWOLF: Where on the plan is  
14 it shown?

15 THE WITNESS: I don't believe the  
16 treatment plant is shown on that plan.

17 MS. DEWOLF: Okay. Is it on any  
18 plan?

19 THE WITNESS: No.

20 MS. DEWOLF: It is not located on  
21 a plan as a building at this time?

22 THE WITNESS: That is correct.

23 MS. DEWOLF: Thank you.

24 MR. PINGAR: Good evening. A few

1 questions. There is a lot of talk about the  
2 pharmaceuticals and what happens to them, and I  
3 know there is concerns with them entering the  
4 groundwater or a stream, and there was talk  
5 earlier about a public system.

6 Do you have an opinion on if the  
7 public system has a better chance of removing  
8 those pharmaceuticals than a system of this  
9 type?

10 THE WITNESS: Definitely does,  
11 for two reasons.

12 Number one, dilution is a factor.  
13 It is a larger plant. So what a larger plant  
14 does is it takes longer for it to flow through  
15 the plant, so there is a more likely chance  
16 that it would be caught and captured in the  
17 sludge. So larger plants normally capture more  
18 of those things.

19 Although we are treated to a  
20 higher level, probably, than the municipal  
21 plant would be here on a standard, the more  
22 sludge you take out, the more chance you have  
23 of catching that pharmaceutical.

24 MR. PINGAR: Thank you. My



1 questions are having to do with the footprint  
2 of this facility, and I think you just  
3 testified that the location of the plant is not  
4 shown on the plan.

5 THE WITNESS: It is not shown on  
6 the.

7 MR. PINGAR: Can you approximate  
8 where it could be? Can you point that out on  
9 the plan?

10 THE WITNESS: I have looked at  
11 various locations where it could go on the  
12 plan, on the treatment plan. The primary  
13 location would be on the northeast corner of  
14 the property, up close, up close to Route 202  
15 and the church property.

16 So that, in that area we have the  
17 footprint of the treatment plant, and from the  
18 perimeter of the treatment plant to the nearest  
19 proposed or existing side yard setback, front  
20 yard setback, building envelope, was more than  
21 250 feet.

22 A second location that we have  
23 evaluated is on the south central portion of  
24 it, below, south of the stream corridor, there

1 is an area in there that would be more than  
2 adequate for the treatment plant, including the  
3 buffer area.

4 There is at least one other area  
5 on the western side that has sufficient area  
6 for the treatment plant, including the buffers.

7 So I have identified at least  
8 three areas. Primary location was on the  
9 northeast corner, basically being to the  
10 proximity of the Route 202, and less existing  
11 residential units in that area, and less  
12 proposed residential units. It would have good  
13 access off of Route 202 for municipal or  
14 third-party people to come in, have good access  
15 for three-phase power, all the other utilities  
16 that would be required in there.

17 But there are three locations  
18 that I have identified. There may be  
19 additional areas on the site.

20 MR. PINGAR: And the pump station  
21 I will imagine would be near the bottom of the  
22 grade?

23 THE WITNESS: Yes.

24 MR. PINGAR: Down closer to the

1 intersection of 926 and South New Street?

2 THE WITNESS: Yes.

3 MR. PINGAR: Somewhere in that  
4 vicinity. So are you suggesting that the raw  
5 sewage would flow to that pump station, and  
6 then be pumped up to some distance away to the  
7 treatment facility?

8 THE WITNESS: Yes.

9 MR. PINGAR: And you had  
10 mentioned, did you anticipate there was going  
11 to be one or two treatment trains?

12 THE WITNESS: Oh, two treatment  
13 trains.

14 MR. PINGAR: But the thought was  
15 if you want to have room for possibly a third  
16 one, going to Mr. Haws' questions with future  
17 regulations and possible additional needs for  
18 treatment, you would want to have room for  
19 that?

20 THE WITNESS: Yes, yes.

21 MR. PINGAR: And would they  
22 essentially be identical in size?

23 THE WITNESS: Yes. I just  
24 reserve a space for future excavation. And I

1 try to keep all utilities out of it, so my  
2 internal yard piping, I try to keep one area  
3 clear.

4 MR. PINGAR: And so you would  
5 need, if you were to design this and operate  
6 it, you would need to have enough room for  
7 potentially three treatment trains; is that a  
8 fair statement?

9 THE WITNESS: Yes. And it  
10 wouldn't be for a third treatment train. It  
11 would be for additional technology. But, yes,  
12 when I design it, I don't shoehorn myself in,  
13 because I never know when DEP is going to  
14 require an adjoining development to tie in, or,  
15 you know, becomes a regional treatment plant in  
16 the future. I always try to provide as much  
17 flexibility as possible, because I don't know  
18 what the future boards will do.

19 MR. PINGAR: And the 250-foot  
20 buffer would be, would consider that additional  
21 facility or facilities for other technology?

22 THE WITNESS: Yes. When I did my  
23 layout, I included that area, and then I did a  
24 buffer zone extended beyond that.

1 MR. PINGAR: And finally, this  
2 goes to both the pump station and the treatment  
3 facility, is it an accurate statement that they  
4 could not be in the floodplain or wetlands or  
5 the stream buffer that's required by our  
6 ordinances?

7 THE WITNESS: I would say yes.

8 Could they go in there through a  
9 zoning waiver, have they done that? Yes. Have  
10 people built in floodplains? Yes.

11 Would that be where we are  
12 proposing it? No.

13 MR. PINGAR: And there is  
14 sufficient room in these open space areas, I'll  
15 call them, outside of those sensitive areas  
16 that are typically not permitted by regulatory  
17 agencies?

18 THE WITNESS: Yes.

19 MR. PINGAR: That's all my  
20 questions. Thank you.

21 MR. MCKENNA: Mr. Adelman,  
22 redirect?

23 MR. ADELMAN: I have no redirect.

24 MS. CAMP: Pat.

1 MR. MCKENNA: I presumed you  
2 would, Ms. Camp, have additional questions.

3 MS. CAMP: Very brief, very  
4 brief.

5 RECROSS-EXAMINATION

6 BY MS. CAMP:

7 Q. More just clarification. Mr. Ebert,  
8 you mentioned that your recommendation is a  
9 250-foot separation between a treatment  
10 building and a residence. Is that because  
11 there is odors associated with the treatment  
12 buildings?

13 A. Yes. It is a treatment plant. There  
14 will be odors associated with it. And that's  
15 the recommended buffer so that houses aren't  
16 built up to what would cause a nuisance or  
17 impact the existing residents.

18 Q. So will the applicant make sure that  
19 this treatment building is also 250 feet from  
20 residents off of the property?

21 A. Yes.

22 Q. And are there odors associated with  
23 pump stations?

24 A. There is potential for odors. Any

1 wastewater has potential for odors, yes.

2 Q. So the pump station buildings, also,  
3 your recommendation would be that those  
4 buildings be located at least 250 feet from the  
5 residents?

6 A. No, that's not. Only for the treatment  
7 plant. And pump stations are routinely located  
8 literally within 15 feet of a residence.

9 Q. But you are recommending that there are  
10 odors associated with pump stations?

11 A. Yes. So we try to identify locations  
12 that are as far away as possible. I try to  
13 have 50 feet. But I design them, and haven't  
14 had issues with them. But it is wastewater,  
15 you don't want to put it right next to a  
16 proposed residential or existing residential  
17 house.

18 Q. How large, and I know you haven't  
19 specifically designed this one yet, but  
20 typically how large for this type of a system,  
21 this number of EDUs, would the treatment  
22 building be in terms of square footage?

23 A. Well, the actual control building would  
24 probably be 30 by 40. The treatment plant

1 would probably be 80 by 40.

2 Q. What --

3 A. One plan, 30 by 40.

4 Q. So the total land area needed for the  
5 treatment plant?

6 A. Hard part is I configure it according  
7 to the topography. Some of them are long and  
8 skinny. Some of them are square. It is hard  
9 to give a landmass, you know.

10 Because some of them are spread  
11 out, you know. If you're on the southern tier  
12 it would be a long, long. If it would be up in  
13 the northeast, be more of a rectangular. So it  
14 is hard to say.

15 Does a physical footprint,  
16 without the buffers, fit in within an acre?  
17 Probably does fit in within an acre, the  
18 physical footprint of it.

19 When you include the buffer area  
20 are you at two acres? Probably.

21 Q. There was some conversation about the  
22 use of the drip fields for passive recreation  
23 and whatnot. Would you suggest that if the  
24 Board did approve the development with the use



1 of drip fields that there would be some  
2 condition imposed upon the residents of the  
3 development that it cannot be using those  
4 fields for even walking through?

5 A. It would be a great thing. Normally  
6 what we do is we have to have an access road  
7 around it, so we try to appease the residents.  
8 You want to go. It is a beautiful piece of  
9 green lawn. So we have a walking trail that  
10 goes along with it.

11 But it would be a great idea if  
12 it were to be imposed that they couldn't. And  
13 the education is the key.

14 Q. Is there something that's contained  
15 within the homeowners' declarations with  
16 respect to restrictions on these fields, if you  
17 know, ones you have been involved with?

18 A. I honestly don't know, because by the  
19 time I'm done my approval process, and I have  
20 left before the HOA documents are done.

21 Q. But as an expert in this field, do you  
22 think that's a good recommendation, that if the  
23 Board, again, were to approve the development  
24 with the use of drip irrigation that they could

1 impose upon the applicant to include within  
2 their homeowners' declarations such  
3 restrictions?

4 A. Yeah, limited it down to passive  
5 recreation or something, that they could only  
6 walk through. Yes, anything that would  
7 discourage that I would appreciate from a  
8 wastewater standpoint.

9 Q. You wouldn't want to see actual trails  
10 throughout these fields, correct?

11 A. No. The areas that are not wetted I  
12 actually encourage trails to go around.

13 Q. Around but not through?

14 A. Yeah. Unless I had a great -- you  
15 know, certain times, certain middle portions  
16 that aren't used, I wouldn't have a problem.  
17 And normally what we do is we actually pave a  
18 trail around there.

19 Upper Uwchlan Township has  
20 established trails around the upland farm  
21 disposal fields that would go around it. But  
22 they fence the actual wetted areas to prevent  
23 them from going in.

24 So I always encourage active

1 recreation around it. If we are going to put a  
2 trail in for access, why not have the people  
3 there, because people will follow the trail and  
4 not go off of it, given the choice.

5 Q. You also talked about quarterly testing  
6 of monitoring wells, and you said that if there  
7 was an issue that the testing of wells might  
8 reveal higher levels of certain chemicals. If  
9 that occurs, what happens then? What has to  
10 happen?

11 A. Basically what happens is when it is  
12 submitted to DEP, the professional engineer  
13 would identify it, come up with a corrective  
14 action plan. I don't know what it would be.

15 Most likely the first thing it  
16 normally is, it is something malfunctioning.  
17 Something is not programmed properly. A valve  
18 has broken. It is overdosing one field. So  
19 the first thing you do is an evaluation of the  
20 physical field.

21 The next thing you do is an  
22 evaluation of the level of treatment coming  
23 out. Is it meeting the design.

24 And if it is doing both of that,

1 and it is not malfunctioning, it is meeting the  
2 design, then you look for outside influences.  
3 And that's why we do upgrading at monitoring,  
4 because it may not be caused by the drip  
5 irrigation field. It may be because of failing  
6 systems a half mile away that are polluting the  
7 groundwater table.

8 We clearly do a detailed  
9 evaluation, and that's why both DEP and  
10 professional engineer are required to analyze  
11 it. There is not a recipe for what the answer  
12 is.

13 Q. I mean, is there any way to know in  
14 that situation where a well, monitoring well  
15 reveals high level chemicals that shouldn't be  
16 there, is there also testing done downstream to  
17 make sure that the downstream wells and/or  
18 streams aren't being impaired as well?

19 A. Yeah, normally it would happen.

20 Q. And how do you, if that occurs, how do  
21 those wells and streams get remedied?

22 A. I have never had it happen so I don't  
23 know. But it would be no different than a gas  
24 station contaminating a groundwater system.

1 DEP would become involved. They would take  
2 enforcement action against the polluter, and it  
3 would be remediated the same way gas station  
4 pollution or any other pollution that goes into  
5 groundwater in the Clean Streams Law.

6 MS. CAMP: Thank you.

7 MR. MCKENNA: Any other counsel  
8 have questions at this point?

9 Any other parties have additional  
10 questions?

11 Sir, I'm sorry, I don't know who  
12 you are.

13 MR. FOX: Could I ask a question  
14 on behalf of Mr. Moscharis?

15 MR. MCKENNA: You are not his  
16 attorney, though?

17 MR. FOX: No.

18 MR. MCKENNA: Then I can't have  
19 you do that, unfortunately. You are not a  
20 party; is that right?

21 MR. FOX: Correct.

22 MR. MCKENNA: Then I'm going to  
23 have to defer on that.

24 Any further redirect, Mr.

1 Adelman?

2 MR. ADELMAN: I don't have any.

3 MR. MCKENNA: Sir, thank you for  
4 your testimony.

5 (Witness excused.)

6 MR. MCKENNA: Unless the Board  
7 has anything further, at this point we will  
8 take a 15-minute recess and come back in with  
9 the next witness.

10 (Recess taken.)

11 MR. MCKENNA: Ladies and  
12 gentlemen, we are going to go back on the  
13 record and continue the hearing. I do want to  
14 take a brief moment to thank everyone here at  
15 Westtown School for hosting us this evening. I  
16 particularly would like to thank anyone and  
17 everyone responsible for the sound system this  
18 evening. It is a vast improvement over what we  
19 had the last time. So thank you again for  
20 facilitating the meeting this evening.

21 Mr. Adelman, we will turn the  
22 floor back over to you for your next witness.

23 MR. ADELMAN: Thank you, Mr.  
24 McKenna. At this time I call Mr. Wise to be

1 sworn and testify.

2 ROBERT J. WISE, JR.,

3 the witness herein, having first been  
4 duly sworn on oath, was examined and  
5 testified as follows:

6 DIRECT EXAMINATION

7 BY MR. ADELMAN:

8 Q. Bob, if you could please state your  
9 name and business address for the record.

10 A. Sure. Robert Wise. The business is  
11 RGA, Incorporated. It is 259, 259 Prospect  
12 Plains Road, Cranberry, New Jersey.

13 Q. Bob, I would like to show you what I  
14 have marked as Exhibit A-18. Would you please  
15 identify this document for the record?

16 A. Yes, this is my resume.

17 Q. If you could please briefly describe  
18 for the Board your educational background.

19 A. I have a degree in history from  
20 Dickinson College, a Master in Science for  
21 historic preservation, and master of business  
22 management, business administration from Penn  
23 State. And the preservation degree is from the  
24 University of Pennsylvania.

1 Q. Thank you. Would you please describe  
2 your professional work experience?

3 A. Yes. I am an historic preservation  
4 planner. I'm a principal planner and  
5 architectural historian at RGA. I have been  
6 there since 2015.

7 Prior to that I had my own firm,  
8 Wise Preservation Planning, for roughly 23  
9 years. And before that I worked for the  
10 Brandywine Conservancy as their senior planner  
11 in historic preservation.

12 MR. ADELMAN: If it is the  
13 Board's pleasure, I can dispense with further  
14 qualifications. I'm offering Mr. Wise as an  
15 expert in historic preservation and planning.

16 MR. MCKENNA: I'm very familiar  
17 with Mr. Wise. Does any member, any of the  
18 parties or any counsel have any questions on  
19 Mr. Wise's credentials? Does the Board have  
20 any questions for him?

21 All right. We will accept him as  
22 an expert in historic preservation planning.

23 MR. ADELMAN: Thank you.

24



1 BY MR. ADELMAN:

2 Q. Bob, could you please describe your  
3 involvement with Toll Brothers' proposed  
4 development at the Crebilly Farm?

5 A. Yes. I was retained by Toll Brothers  
6 to produce a history and architectural  
7 description of the property.

8 Q. I would like to show you what I have  
9 marked as Exhibit A-19. Would you please  
10 identify this letter report for the record.

11 A. Yes, this is a letter from me to Toll  
12 Brothers, and it describes the historic  
13 resources on the Crebilly Farm property.

14 Q. And what is the date of the letter?

15 A. The date is December 13th, 2016.

16 Q. And did you prepare the entire letter?

17 A. Yes, or members of my firm.

18 Q. Okay. And what approach did you take  
19 in examining the structures on the property?

20 A. Well, our approach was to go out into  
21 the field and look at every single resource.  
22 We look at historic resources and evaluate  
23 historic resources from many different angles,  
24 but it is based on the National Register,

1       excuse me, the criteria as set forth in the  
2       National Register of Historic Places, and it  
3       looks at several things including architecture,  
4       history, setting, events that may have taken  
5       place on the property, people associated with  
6       the property, and the design of the buildings  
7       and historic archeology.

8             Q.    Let's go through I guess the structures  
9       on the property.  How did you organize them in  
10      terms of your evaluation?

11            A.    Well, the property has, is a large  
12      property containing two farms, two rather  
13      historic farms, a 20th century equestrian  
14      center in the center of the property, and then  
15      there are some other buildings that are on the  
16      eastern end of the property.

17                        So we basically said there is  
18      four areas of resources.  There is the two Hunt  
19      properties, the Joshua Hunt property which is  
20      the historic resources along New Street, there  
21      is the Eli Hunt property, his brother, which is  
22      the historic property along Street Road.  It is  
23      where the sign Crebilly Farms is.

24                        And then there is the equestrian

1 center, as I mentioned, which is sort of  
2 between these two areas. And then the other  
3 separated parcels near Route 926 and 202.

4 Q. And how did you evaluate each one of  
5 their significance, if you want to take us  
6 through by structure.

7 A. Well, I'll take you -- structure, there  
8 is a lot of structures. I'll take you through  
9 those clusters if I may.

10 Q. Sure.

11 A. And we have looked at the, obviously,  
12 the history of the resources and their  
13 architectural, their architecture, to see  
14 whether there is any architectural significance  
15 in the resources and their historic setting.

16 So we started with the Hunt  
17 properties as they are the primary resources.  
18 The Hunts came to the property, offered --  
19 purchased the property around 1748, and then  
20 these brothers ended up living on the property  
21 during the American Revolution, and during the  
22 Battle of the Brandywine William Hunt lived on  
23 the property, and then subsequently they were  
24 passed down or sold off in mid-1800s.

1                   The McClure father and son owned  
2 both these farms at one time, and then the,  
3 again, they were passed through as we got into  
4 the 20th century, and the Robinsons purchased  
5 the property in 1935, and soon after developed  
6 the horse farm in the center of the property  
7 and also greatly expanded the property out  
8 towards 202, south of 926, and west of New  
9 Street.

10                   When you look at agricultural  
11 properties as these are, there is a specified  
12 historic context that the State of Pennsylvania  
13 has developed that, as you examine these  
14 properties, examine their historic resources,  
15 examine things such as how much did they  
16 produce on the farm and how that compares to  
17 other farms. So we looked at these.  
18 Unfortunately, both of them are missing major  
19 resources.

20                   In the case of the Eli Hunt  
21 property, again off 926, their historic  
22 farmhouse is no longer there. It was replaced  
23 in 1959 by the current farmhouse. And their  
24 springhouse was greatly altered into a chapel I

1 believe around 2000 or 2005. The barn is  
2 intact. However, what you see on that  
3 beautiful barn is actually a rebuild from 1908  
4 when it was damaged by fire.

5 So the stone structure is intact,  
6 but the framework on top really dates to 1908.

7 And likewise, the Joshua Hunt,  
8 Joshua and Lydia Hunt property along New Street  
9 no longer has its historic barn. That was  
10 burned in I think 1886. It was rebuilt, and I  
11 believe it was burned again in 1922, and then  
12 subsequently in the 1990s, if I have those  
13 dates right.

14 So, again, both these farms, as  
15 beautiful as they are, they both lack major  
16 buildings that are part of an agricultural  
17 landscape.

18 Next we looked at the equestrian  
19 center. Again, that was built primarily in the  
20 1940s. When you look at resources to see if  
21 they meet, among other things, National  
22 Register criteria, first you have to say  
23 whether they are 50 years and older, and so  
24 this meets that mark. These buildings, again,

1 were built in the late '30s and through the  
2 1940s. And that is an intact equestrian  
3 center. It consists of the barn, the carriage  
4 house, a manager's house, a stud barn, a  
5 farrier's house, building, and also an  
6 additional barn that was constructed by German  
7 POWs during the Second World War who worked on  
8 the farm.

9 Q. Is that all of the clusters?

10 A. Well, there is another cluster, there  
11 is buildings out near 202 and 926. One, of  
12 course, is the Darlington Tavern which is a  
13 serpentine building right on the intersection,  
14 which was constructed in 1823. And that  
15 building is actually eligible for the National  
16 Register. The state has determined that some  
17 years back.

18 And then there are two other  
19 buildings. One is an outbuilding that's on the  
20 north side of 926, a former tenant house on  
21 926. And then the Michael Brennan house sits  
22 up towards the center of the property, just  
23 south of the Presbyterian church.

24 Q. And you just mentioned the Darlington

1 Tavern. Did you conclude that, in addition to  
2 that structure, were there any structures on  
3 that property that have historical  
4 significance?

5 A. We, we were -- again, we concluded, at  
6 least our conclusion was that the agricultural  
7 clusters probably did not meet National  
8 Register standards.

9 However, it was concluded that  
10 the, because of the equestrian center and  
11 because of this agricultural property's change  
12 to more of a, quote-unquote, gentleman's farm,  
13 more of an estate setting with the equestrian  
14 added center, that that would be eligible for  
15 the National Register.

16 Q. Okay. In the report I see you  
17 photographed the exterior of the buildings; is  
18 that correct?

19 A. Yes.

20 Q. And is that common practice for  
21 historic planning and preservation?

22 A. Yes, for a district type of resource of  
23 this size, yes.

24 Q. Do you know which structures Toll

1 Brothers intends to save on the property?

2 A. Yes. Some of the property, some of the  
3 buildings -- most of the buildings will be  
4 saved. The Joshua Hunt property, again, along  
5 New Street, will be parcelled out, so it will  
6 not be part of development. And some of the, I  
7 think the corncrib and the barn ruin will also  
8 be on separate parcels. So those will be  
9 separate parcels, not part of the development.

10 The only building that will not,  
11 that will be taken down is the former  
12 springhouse from the Joshua Hunt property.  
13 That probably dates to the early 1800s, but  
14 then it was enlarged as a residence.

15 On the Eli Hunt property off of  
16 926, the 1959 house will be taken down, as will  
17 some small outbuildings up on the hill. But  
18 the barn and the springhouse will remain.

19 The Darlington Tavern will  
20 remain, as will I believe the garage next to  
21 it, although I'm not exactly sure of the final  
22 plans for that. But I believe the tenant house  
23 on 926, which is the small frame 1890s house  
24 and the Brennan house in the, near 202 will be



1 taken down.

2 And then finally, the equestrian  
3 center is going to be partly used for a  
4 community center. So I believe at this point  
5 the barn and maybe a couple of the other  
6 buildings will remain as part of that center,  
7 but I'm not exactly sure of the final plans.

8 Q. Do you know how Toll Brothers intends  
9 to use or reuse the structures that will be  
10 saved?

11 A. The only two that I know exact, well, I  
12 know what the plans are is the two barns will  
13 be reused for community centers for the  
14 development.

15 Q. Now, there has been a lot of discussion  
16 about this property, as I'm sure you are aware,  
17 regarding its involvement in the Battle of the  
18 Brandywine; is that correct?

19 A. Yes.

20 Q. And do you have any professional  
21 experience with respect to the preservation of  
22 land involved in the Battle of the Brandywine?

23 A. Yes. When I was employed by the  
24 Brandywine Conservancy from 1993 to 1997, I was

1 part of the Brandywine Battlefield Conservation  
2 Easement Initiative where we took the study  
3 that was done in 1989 and determined I believe  
4 30 or 33 of what we believe were the most  
5 important properties to preserve in terms of  
6 battlefield action, and we contacted property  
7 owners, we also got grant money from a private  
8 source and eventually the federal government to  
9 contact property owners and really work with  
10 them to donate conservation easements or to  
11 otherwise sell, barter/sell the land, come up  
12 with some means of preserving the property or  
13 properties, and through that effort we  
14 preserved much of the land around the  
15 Birmingham Meetinghouse, Sandy Hollow.

16 Q. During your time at the Brandywine  
17 Conservancy do you recall whether the Crebilly  
18 Farm was one of those properties identified for  
19 conservation?

20 A. No, it was not, to the best of my  
21 knowledge.

22 Q. Have you researched how the Crebilly  
23 Farm may have been involved in the Battle of  
24 Brandywine?

1           A. Yes, it is, well, the periphery of the  
2 battlefield and it is not part of the national  
3 landmark that much of the rest of the  
4 battlefield is in.

5                   The British came up to Osborne  
6 Hill, north of the property, and north of  
7 Street Road, they formed up in the afternoon of  
8 September 11th, 1777, some 17,000 troops, and  
9 they began to march down to the south, towards  
10 Street Road.

11                   The American Army, meanwhile, was  
12 being alerted to this flanking action on the  
13 part of the British Army, moved up from the  
14 vicinity of Chadds Ford, and set the divisions  
15 up or attempted to across Birmingham Road, so  
16 basically just south of Street Road as you go  
17 up the hill.

18                   And while that was taking place,  
19 the British saw an opportunity and launched  
20 their attack on the American forces.

21                   The far left flank of the British  
22 forces, which was I believe the British 14th  
23 Infantry Regiment, and consists of German  
24 Jaegers, which means hunters in German, they

1       were in the, again, far left flank, and that  
2       far left flank passed in the vicinity of New  
3       Street. New Street was not there at the time.  
4       It was probably a farm lane.

5                   As far as where exactly did the  
6       troops enter the property or if they entered  
7       the property is not certain. But maps show,  
8       some maps show troops moving through the very  
9       far western end of the property. Some maps do  
10      not show any troop movement on the property.

11           Q.    Okay. What materials did you review or  
12      have you reviewed with respect to the Battle of  
13      the Brandywine and Crebilly Farm's involvement  
14      in that battle?

15           A.    Well, I have looked at various maps  
16      that have been produced over the years. Some  
17      on site, like the Robertson map, that were  
18      produced by the British just after the battle.

19                   The British won, as you probably  
20      know, and they were on the battlefield about  
21      four or five days after the battle, so they  
22      were able to map the battle action as they saw  
23      it.

24                   There are several books, behind

1 me is a book by Michael Harris, which was done  
2 in 2014, which I believe is a very  
3 comprehensive study on the battlefield, taking  
4 into account many, many other accounts and  
5 also, of course, primary and secondary  
6 information.

7 The county also through the  
8 American Battlefield Protection Program just  
9 produced a series of studies and maps on the  
10 battlefield. And then in 1989, I'm going back,  
11 the County of Delaware, and I believe with  
12 Chester, developed a study, comprehensive study  
13 on landmark, which again provided history and  
14 mapping of the battle.

15 Q. And were you present at the Township  
16 Planning Commission meeting or meetings when  
17 this subject matter was discussed?

18 A. Yes.

19 Q. So you are aware of what the township  
20 presented with respect to the Crebilly Farm's  
21 involvement in the battle; is that correct?

22 A. Yes, I believe that was Sean Moir's  
23 presentation.

24 Q. Yes. I would like to show you what I

1 have marked as Exhibit A-20. Could you please  
2 identify this document for the record, please.

3 A. Yes, this is one of Chester County maps  
4 that was part of the American Battlefield  
5 Protection Study, showing the battlefield in  
6 blue -- I'm sorry, let me backtrack.

7 The green basically shows the  
8 national historic landmark boundaries, and the  
9 blue in 1989 looks at areas that could be  
10 extended.

11 Q. Just so we can identify it further for  
12 the record, it is entitled "Map 3.5  
13 Cartographic Boundaries, 1977 to 1992," is that  
14 correct?

15 A. Yes. Sorry, my contacts aren't on, so  
16 it is hard to read that last number.

17 Q. That's fine. Let's just rehash what  
18 you said. What is defined by the solid black  
19 line and the green area again?

20 A. Again, the solid black line is the  
21 national historic landmark of the Brandywine  
22 Battlefield.

23 Q. When was that established?

24 A. That was established I believe in the

1 early 1960s.

2 Do you want me to go on?

3 Q. Yes, if I could then ask the next  
4 question. You stated that the blue area was a  
5 planning boundary area; is that correct?

6 A. Yeah, the blue area was examined in the  
7 1989 study and recommended for -- which  
8 recommended that the battlefield landmark be  
9 expanded into those areas.

10 Q. Do you know whether it was ever  
11 expanded into those areas?

12 A. I don't believe it was ever expanded  
13 into those areas.

14 Q. And where is the Crebilly Farm located  
15 on this Map 3.5?

16 A. Sure, the Crebilly Farm is located on  
17 the north side of the, or the north side of the  
18 green national historic landmark area, up near  
19 its upper right corner.

20 Q. So is it not located within the  
21 national landmark boundary?

22 A. It is not located within the national  
23 historic -- national landmark boundary,  
24 correct.

1 Q. Is there any portion of the 1989  
2 planning boundary that is on the Crebilly Farm?

3 A. Yes, just the far east -- excuse me --  
4 the far western end of the property, along New  
5 Street.

6 Q. Does it encompass the entire Crebilly  
7 property or just a small portion?

8 A. Just a small portion along New Street.

9 Q. I don't think you have a pointer with  
10 you, do you?

11 A. I don't. I apologize.

12 Q. Could you come over to Map 3.5 and just  
13 maybe point it out, if you stand on your  
14 tippy-toes.

15 A. So Crebilly Farm property is --

16 Q. Hold on. Let me give you a portable  
17 mike.

18 MR. HAWS: Maybe have him use the  
19 computer and use the pointer. That may be  
20 better.

21 THE WITNESS: Let me -- yes.  
22 Right where the cursor is just showing, that is  
23 the Crebilly Farm property, and to the left of  
24 the cursor is New Street, which forms the



1 western end of the Crebilly Farm property. And  
2 that blue area was recommended as an area to be  
3 expanded, and it includes several hundred feet  
4 of the western boundary of the property.

5 BY MR. ADELMAN:

6 Q. Bob, I would like to show you what I  
7 have marked as Exhibit A-21. Could you  
8 identify the map and the accompanying text for  
9 the record?

10 A. Yes, this is the Robinson map. And it  
11 was done by Archibald Robinson -- I'm sorry --  
12 Archibald Robertson who was a British engineer  
13 who was on the battlefield, again, in that  
14 four-or five-day timeframe after the battle and  
15 was able to develop a map and comments  
16 narrating the battle. And the map and  
17 narration is used by the Brandywine Battlefield  
18 to interpret the battle for educational  
19 purposes, and the comments provided by Tom  
20 McGuire. Tom McGuire is one of the foremost  
21 battlefield experts of probably the  
22 Revolutionary War and certainly the battles  
23 associated with the Philadelphia Campaign,  
24 which was a major component of that campaign.

1 Q. Why are these types of accounts  
2 important in terms of the historic preservation  
3 and planning?

4 A. Well, I think first most it is good to  
5 have a firsthand account by someone who was  
6 actually at the battle or there at the center.

7 Q. Okay. If I could have the Jaeger maps  
8 up. I don't know, Andrew, if you can rotate  
9 it.

10 MR. SEMON: I can't.

11 Q. Could you please tell us, Bob, where  
12 the Crebilly property is located on the  
13 Robertson map?

14 A. Yes, it is basically that square right  
15 where you are defining there.

16 Q. In the yellow circled area?

17 A. That's correct.

18 Q. Okay.

19 A. And the line right there where the  
20 cursor is is New Street. Unfortunately, this  
21 map is, north is to the left, so the map we  
22 just looked at north was to the top, so it is  
23 spun around.

24 Q. Spun around to the left?

1           A.    Yes.

2           Q.    Based on this map and the account that  
3           Robertson put together, did any significant  
4           battlefield action occur on the Crebilly Farm?

5           A.    Not based on this account or this map,  
6           this particular map.

7           Q.    What does Robertson state in his  
8           account regarding troop movements in the area  
9           of the Crebilly Farm?

10          A.    Well, he doesn't specifically -- first  
11          of all, Crebilly Farm and that name was not  
12          there at that point.  There is nothing  
13          specifically stated in this narrative of troops  
14          moving through the Crebilly property.  However,  
15          there are some notes of troop movement nearby.  
16          Now, again, whether they came through or not,  
17          it is difficult to tell.

18                                But he concentrates on the  
19          British setting up forces along Osborne Hill,  
20          and then again coming south, in this case on  
21          the west side of Birmingham Road, and then  
22          coming across New Street -- excuse me -- Street  
23          Road to attack the American forces on  
24          Birmingham Hill.

1           Q.    Does the Robertson account specifically  
2           express the detail when the British or Hessians  
3           received fire?

4           A.    Specific timeframe?

5           Q.    Or locations?

6           A.    Locations.  Not specific timeframe.

7           Q.    Correct.  What locations were those?

8           A.    They are scattered throughout the map,  
9           but generally they are in red, and they are  
10          again scattered across Birmingham Hill, and  
11          through the Meetinghouse, along Meetinghouse  
12          Road.

13          Q.    Is that located south of what is now  
14          Crebilly Farm?

15          A.    Yes.

16          Q.    Have you reviewed other analysis of the  
17          Battle of Brandywine relevant to the Crebilly  
18          Farm?

19          A.    Again, I heard the Sean Moir  
20          presentation back in December at the Planning  
21          Commission.  I have looked at various accounts  
22          of the battle and the maps, and the American  
23          Battlefield Protection/Chester County study  
24          that was done some years ago.

1           Q.   And I believe earlier you testified to  
2           some of this, but did you determine what extent  
3           the Crebilly Farm was involved in the Battle of  
4           Brandywine?

5           A.   It would appear that most likely troops  
6           from the, again, the far British left flank and  
7           the German Jaegers, who were aligned with them  
8           or fought with them, could have come into the  
9           far western end of the Crebilly Farm property,  
10          basically coming down New Street and maybe  
11          spilling over to the property.

12                    It would be very difficult to say  
13          from accounts exactly where these troops were.  
14          They could have been, you know, 25 yards on the  
15          west side of New Street. They could have been  
16          50 yards on the east side of New Street.

17                    Again, this was the, from the  
18          accounts that I have looked at, the Sean Moir  
19          account notwithstanding, this is basically  
20          troop movement in preparation to attack the  
21          American troops on the south side of Street  
22          Road.

23           Q.   What has Toll Brothers proposed with  
24          respect to preserving a portion of the property

1 where some of the troop movements may have  
2 occurred?

3 A. Well, the plan that is put before you  
4 shows the bulk of the development,  
5 approximately 600 feet east of New Street, and  
6 then the wet areas on the southwest corner will  
7 not be built on, and also there is more open  
8 space on the northwest corner. So basically  
9 pushes development back some 600 feet to start  
10 from New Street.

11 Q. If you just bear with me a moment, I  
12 wanted to pull up Exhibit A-6, which is a color  
13 rendering of the plan just so you could  
14 highlight those areas again. Just put up A-6.

15 If, Bob, you could go back and  
16 highlight again, what is Toll proposing along  
17 New Street in terms of where troops may have  
18 occurred? You have a mike. Go ahead, please.

19 A. Yes, so the furthest extent of the  
20 building or the construction is roughly 600  
21 feet from New Street. So the development  
22 basically is pushed back well off New Street,  
23 roughly in the vicinity of the 1989 recommended  
24 additions to the National Historic Landmark.

1 Q. So would you say that's generally  
2 consistent with the planning boundary from '89?

3 A. That's generally consistent, give or  
4 take, yes.

5 Q. And in order to note the potential  
6 historical significance, do you know if Toll  
7 Brothers is willing to provide some type of  
8 historical marker or other cutout area with  
9 respect to the troop movements that may have  
10 occurred on the property?

11 A. I think Toll Brothers would have to  
12 answer that. But we have briefly discussed it  
13 and there is space to provide some type of  
14 pull-offs for interpretive purposes we will see  
15 of the battlefield.

16 MR. ADELMAN: I have no further  
17 questions for Mr. Wise.

18 MR. MCKENNA: Ms. Camp, any  
19 questions for the Planning Commission?

20 MS. CAMP: My partner, Mr. Gill,  
21 will be conducting the cross-examination for  
22 Mr. Wise.

23 MR. MCKENNA: Thank you. Go  
24 ahead, Mr. Gill.

1 MR. GILL: Thank you, Mr.  
2 McKenna.

3 CROSS-EXAMINATION

4 BY MR. GILL:

5 Q. Thank you, Mr. Wise. Michael Gill on  
6 behalf of the Westtown Township Planning  
7 Commission.

8 Before we talk about the Battle  
9 of Brandywine, let's just double back to your  
10 study of the historic resources on the Crebilly  
11 Farm property. You have your letter there of  
12 December 13th, 2016?

13 A. Yes.

14 Q. That's marked as Exhibit A-19, I take  
15 it?

16 A. Yes.

17 Q. You identified a number of structures  
18 that are on the Crebilly Farm property. Did  
19 you examine any of the structures individually  
20 for National Register eligibility?

21 A. No. We looked at the grouping of  
22 resources as you normally would do for an  
23 agricultural type property.

24 Q. Is it your --



1           A. Let me just backtrack on that. We did  
2 look at the tenant house and the Michael  
3 Brennan house individually from an earlier  
4 study.

5           Q. Okay. It is your conclusion, then,  
6 that none of the individual structures, the  
7 Darlington Tavern notwithstanding, are eligible  
8 for listing on the National Register. Is my  
9 understanding correct?

10          A. That's correct, individually.

11          Q. But collectively, the entire property  
12 is eligible as a gentleman's farm?

13          A. Yes.

14          Q. What were the --

15          A. Probably a more technical term for  
16 that, but, yes, as a 20th century agricultural  
17 property to estate type setting.

18          Q. Okay. What will the impact of the Toll  
19 Brothers' proposed development have, be on that  
20 eligibility?

21          A. I would think that it would, it would  
22 probably delete the eligibility.

23          Q. And since you haven't looked at any  
24 individual resources other than the, or you

1 haven't concluded, excuse me, any of the  
2 individual resources other than the Darlington  
3 Tavern are eligible, the effect of the proposed  
4 Toll Brothers' development upon eligibility of  
5 any of portion of the property, again, other  
6 than Darlington Tavern will be that all  
7 eligibility will be lost, correct?

8 A. I think what it would cause is an  
9 adverse effect on the, let's call it historic  
10 district. It would create an adverse effect on  
11 the district.

12 Now, whether or not there are  
13 ways to mitigate that effect, to reduce that  
14 adverse effect and enable the eligibility to be  
15 maintained is a different story. I have not  
16 delved into that. It is not part of my purview  
17 as a historian for this project.

18 Q. For this project?

19 A. For this project, yes.

20 Q. Looking at ways to mitigate adverse  
21 effects of development upon historic resources  
22 is within your purview as an historic planner,  
23 correct?

24 A. Yes.

1 Q. And you just haven't been asked to do  
2 that for this particular project?

3 A. No. Only examine the historic  
4 resources, the physical description and with  
5 the history.

6 Q. Okay. With regard to the Darlington  
7 Tavern property, you mentioned that it is  
8 Toll's -- I'm sorry -- it is the applicant's  
9 intention to maintain or to preserve that  
10 resource, correct?

11 A. To save it. In terms of what they  
12 actually will do with it, I do not know.

13 Q. Are you familiar with the scope of  
14 roadway improvements which will be necessary,  
15 necessarily associated with the project?

16 A. I am somewhat familiar with it. I  
17 realize the intersection I believe will be  
18 expanded.

19 Q. What will the impact of that expansion,  
20 to use your word, be on the Darlington Tavern?

21 A. Again, I haven't studied that. I've  
22 just looked at the map. Certainly, whenever  
23 you expand towards an historic resource it can  
24 create a direct impact, and when you bring a

1 busy intersection close to an historic resource  
2 that usually constitutes an adverse effect.

3 Q. Can you offer -- let me take a step  
4 backwards. Can I assume that you haven't  
5 examined ways to mitigate that adverse impact  
6 upon the Darlington Tavern?

7 A. No.

8 Q. Can you offer any thoughts as you  
9 testified here this evening with regard to what  
10 that mitigation might look like?

11 A. No.

12 Q. Would examining the mitigation of the  
13 adverse impacts on that resource in particular  
14 be within the normal purview of an historic  
15 planner?

16 A. If asked for a particular project,  
17 certainly.

18 Q. You haven't been asked to look at that  
19 with regard to this particular property?

20 A. That's correct.

21 Q. Am I understanding correctly that what  
22 you have been asked to do is to go out and look  
23 at each of the individual structures on the  
24 property, and to inventory them, and to produce

1 what has become Exhibit A-19?

2 A. That's correct.

3 Q. Have you had the opportunity to review  
4 a letter which Ms. Camp wrote to the Board of  
5 Supervisors on behalf of the Planning  
6 Commission, dated February 16th, 2017, in which  
7 she articulated the Planning Commission's  
8 recommended conditions, should the Board be  
9 inclined to approve this project?

10 A. I don't believe so.

11 MR. GILL: Okay. Mr. Adelman, do  
12 you have Exhibit B-21?

13 Q. While Mr. Adelman is looking for that--

14 A. I have it.

15 Q. Okay. Before we get to B-21, were you  
16 present at the meeting of the Planning  
17 Commission when the Planning Commission voted  
18 upon these, voted upon the conditions which it  
19 would suggest the Board impose if the Board is  
20 inclined to grant conditional use approval?

21 A. I don't believe so. Can you tell me  
22 the date of that meeting?

23 Q. I cannot.

24 A. I have been to one meeting in December,

1 I think it was the 21st. I do not believe I  
2 was at that meeting that you are talking about.

3 Q. Okay. Well, let's just move on then to  
4 Exhibit B-21. Would you turn, please, to page  
5 7 of that letter. Do you see there what is  
6 identified as item number 25?

7 A. Yes.

8 Q. Where Ms. Camp, on behalf of the  
9 Planning Commission, informs the Board or  
10 suggests to the Board that it impose a  
11 condition with regard to retention or  
12 preservation, excuse me, of certain resources  
13 on the property?

14 A. Yes.

15 Q. Is the list of resources that's  
16 identified there coextensive with the list of  
17 resources that you said earlier Toll is  
18 proposing to preserve?

19 A. I believe it is, yes. Without getting  
20 my report out and looking at it, appears these  
21 are the resources that are to be preserved.

22 Q. The chapel and springhouse, that's not  
23 the springhouse that you just said during your  
24 direct testimony is going to be removed?

1           A.    That's correct.  This is the  
2           springhouse on the Crebilly Farm that's off of  
3           Street Road.

4           Q.    Okay.  So, and that's the springhouse  
5           that was converted to a chapel?

6           A.    That's correct.

7           Q.    In the late 20th century?

8           A.    That's correct, serpentine building.

9           Q.    Okay.  So as far as you are aware, your  
10          client, the applicant, doesn't have any concern  
11          with agreeing to condition number, proposed  
12          condition No. 25?

13                   MR. ADELMAN:  I'm sorry, can we  
14          go off the record for a moment so my client can  
15          review that list again.

16                   MR. GILL:  Sure.

17                   MR. ADELMAN:  Thank you.

18                   (Discussion off the record.)

19                   MR. ADELMAN:  We can go back on  
20          the record.  Thank you for the opportunity.

21                   MR. GILL:  Thank you, Mr.

22          Adelman.

23          BY MR. GILL:

24           Q.    Do you need me to repeat the question?

1           A.    Yes, please.

2           Q.    My question was:  Is there any reason,  
3           to your knowledge, of why the applicant should  
4           not or will not accept, again assuming that the  
5           Board is inclined to grant conditional use  
6           approval, why the applicant would not accept  
7           condition No. 25 as proposed in Mrs. Camp's  
8           letter?

9           A.    I don't know of any reason they would  
10          not.  But I can't speak for them.

11          Q.    Would it be your recommendation as an  
12          historic planner that they do accept that  
13          condition?

14          A.    Again, I was brought in to examine the  
15          history and the historic resources and not --

16          Q.    Well, based upon your -- excuse me.  Go  
17          ahead.  I'm sorry.

18                         Based upon your examination of  
19          the resources and identification of their  
20          historic merit or historic worth, are any of  
21          the resources that Mrs. Camp identified here  
22          not worthy of preservation?

23          A.    I don't think any of them are not  
24          worthy of historic preservation.  I will say



1 the one garage, stable that's on New Street, is  
2 a relatively new building. I think it dates to  
3 the 1970s. It is a very nice stable building.  
4 But I wouldn't consider it historic.

5 Q. Okay. I want to make sure I understand  
6 your answer to that question, because I think  
7 it was phrased in a double negative. You said  
8 you do not know of any reason why they would  
9 not be, should not be preserved. Is it your  
10 testimony that it is your opinion that they  
11 should be preserved, subject to your caveat  
12 about the garage?

13 A. It is -- again, I am not here to say  
14 whether what should be or not, or shouldn't be  
15 preserved.

16 Q. Why not?

17 A. I was retained to do the history of the  
18 project, of the property, and come up with a  
19 physical description of the historic resources.  
20 I have not been retained to examine how the  
21 development may impact the historic resources.

22 Q. Well, I think you have already  
23 testified about how the development is going to  
24 impact the historic resources, and that was

1 that it would delete the eligibility, correct?

2 A. It could delete the eligibility. There  
3 are mitigation, methods to mitigate that  
4 adverse effect.

5 Q. But you can't offer any --

6 A. No.

7 Q. You can't offer any thoughts on what  
8 that mitigation might look like?

9 A. No, not at this point.

10 Q. Well, you can because of your  
11 expertise. You just haven't been asked?

12 A. I would have to study it more.

13 Q. Taking a look at condition or proposed  
14 condition No. 26, which is with regard to the  
15 Darlington Tavern, do you see that?

16 A. Yes, yes.

17 Q. You testified just a moment ago that  
18 construction of the roadway improvements would  
19 likely have an adverse impact upon the  
20 Darlington Taverns resource, correct?

21 A. Yes.

22 Q. The Planning Commission recommends that  
23 the resource be moved to another location on  
24 the property. Is movement of an historic

1 resource to another location that might be out  
2 of context an acceptable, a generally accepted  
3 means of mitigation of adverse impacts upon  
4 that resource?

5 A. Yes. And I think when you say  
6 generally out of context, if you were to cross  
7 the street into the parking lot of the shopping  
8 center, that would be out of context, and it  
9 could lose its eligibility for the National  
10 Register.

11 Q. I hadn't suggested the shopping center.

12 A. The old shopping center. If you move  
13 the building a hundred yards back into the  
14 existing farmland there or field, that would  
15 stay within its existing context, so that is an  
16 acceptable means of dealing with an adverse  
17 impact.

18 Q. But, again, based on your lack of  
19 having examined how the impacts could be  
20 mitigated, you can't offer any thoughts as we  
21 stand here tonight, or as I sit here this  
22 evening, on whether or not that movement should  
23 take place, where it should take place to?

24 A. No. I haven't studied where it should

1 take place or if it should take place.

2 Q. You are familiar with the property,  
3 correct?

4 A. Yes, I am.

5 Q. And you are familiar with the  
6 development plan?

7 A. Yes.

8 Q. And you are familiar with the resource?

9 A. Yes.

10 Q. And you have been qualified as an  
11 expert in historic planning?

12 A. Yes.

13 Q. Based on all of that I'll ask you  
14 again: Can you offer any thoughts as to where,  
15 to where on the property the Darlington Tavern  
16 should be moved?

17 A. As I said before, if it was moved a  
18 hundred feet back, I think I said a hundred  
19 feet back or something, so it is just off the  
20 road, that might be a good way of addressing  
21 that adverse effect.

22 A better way of maybe addressing  
23 adverse effect is putting a new or expanded  
24 highway into the new building across the street

1 and that would avoid that issue altogether.

2 Q. Which new building is that?

3 A. I think it is a CVS. Used to be an  
4 Exxon. That's south of 926.

5 Q. Yes, I'm familiar.

6 A. But I have not studied traffic plans, I  
7 have not studied the specific traffic plans  
8 with respect to the impact of the building, and  
9 I have not examined means of addressing any  
10 impact that that would create.

11 Q. And, again, not to belabor the point,  
12 but that's because you have been retained only  
13 to inventory the resources, not to offer  
14 suggestions or recommendations with regard to  
15 mitigation of the adverse impacts of this  
16 development?

17 A. Exactly.

18 Q. Are you familiar with the concept --  
19 let me rephrase it. Can I assume that you are  
20 familiar with the concept of adaptively reusing  
21 historic resources?

22 A. Yes.

23 Q. What does that mean, to adaptively  
24 reuse a resource?

1           A. To take a resource, say maybe a  
2 residential building, and adaptively reuse it  
3 into another use, perhaps commercial or office  
4 or something like that, or other type of  
5 residence.

6           Q. A use that would be consistent with the  
7 historic nature of the structure?

8           A. Sometimes. Not often. Often with  
9 federal tax credit programs it is not the use,  
10 it is how the building is rehabilitated.

11          Q. Okay. I understand. We will get to  
12 that in just a moment.

13                         Then can you take a look at  
14 proposed condition No. 28, also on page 27 --  
15 I'm sorry -- on page 7.

16                         MR. MCKENNA: Have you had a  
17 chance to read it?

18           A. Yes.

19          Q. Is there any reason, based on your  
20 expertise as an historic planner, why you  
21 wouldn't recommend to the applicant that it  
22 accept condition No. 28?

23           A. I did not know it was permitted by the  
24 ordinance, so I can't really answer that

1 question.

2 Q. Subject to that caveat, Mr. Wise, is it  
3 your testimony that you can't recommend to your  
4 client that it agree to a condition that their  
5 client adaptively reuse historic resources that  
6 are going to be preserved? Is that your  
7 testimony?

8 A. That I can't? No, that's not my  
9 testimony. I could. I have not been retained  
10 to do that.

11 Q. I'm asking you the question right now  
12 whether you have any reason, from the  
13 perspective of an expert in historic planning,  
14 why the applicant should not accept condition  
15 No. 28?

16 A. I don't know all the plans from the  
17 applicant. I have nothing to do with the plan  
18 of this project. So that would be my hesitance  
19 to say that it should or I recommend that they  
20 adaptively reuse these buildings.

21 Q. Well --

22 A. Certainly, if they could, it would be  
23 great. But I have not been retained to  
24 recommend one way or another for these

1 buildings.

2 Q. I understand. From the perspective of  
3 an expert in historic planning, would adaptive  
4 reuse be preferable to demolition of the  
5 resources?

6 A. Yes.

7 Q. Are there any other alternatives that  
8 you are aware of between, other than demolition  
9 or reuse?

10 A. You mentioned moving the buildings.  
11 There is mitigation. You may have a  
12 development that impacts a historic resource in  
13 one way or another, and there may be ways to  
14 mitigate that impact.

15 Q. Again, you can't offer us any thoughts  
16 on what that mitigation might look like  
17 specifically to this particular project?

18 A. Not, not at this time, no.

19 Q. With regard to the renovation or  
20 rehabilitation of historic resources, that  
21 typically takes place on the exterior of a  
22 building, on the facades, correct?

23 A. Or interior.

24 Q. Okay. But renovation or rehabilitation



1 of exteriors of historic structures is not  
2 uncommon, correct?

3 A. Correct.

4 Q. And is it your understanding, I know  
5 you are not a lawyer, but is it your  
6 understanding that the extent of historic  
7 preservation ordinances or regulations  
8 generally goes to the exterior of structures or  
9 that which is visible from public  
10 rights-of-way?

11 A. Yes.

12 Q. So I'm going to ask you then to take a  
13 look at condition No. 29, proposed condition 29  
14 on page 8 of Mrs. Camp's letter.

15 A. Yes.

16 Q. As an expert in the field of historic  
17 preservation planning, is there any reason why,  
18 in your mind, why the applicant should not  
19 agree to condition No. 29 as proposed?

20 A. I have not been inside these buildings.  
21 I have not or had -- I have not seen a  
22 structural analysis that's been done on these  
23 buildings. They may not be worthy of a  
24 conservation easement.

1           Q.    If the buildings are preserved and  
2           adaptively reused, would that change your  
3           opinion or change your answer?

4           A.    I, I -- I don't know, to answer your  
5           question. Buildings can be adaptively reused  
6           and preserved in other ways. Certainly a  
7           facade easement or some type of restriction on  
8           a building can certainly help maintain that  
9           building.

10          Q.    Okay. Are there any, moving on, are  
11          there any or were there any structures on the  
12          Crebilly Farm property which, to your  
13          knowledge, were demolished in the months or 12  
14          to 24 months leading up to the time when the  
15          applicant filed the conditional use  
16          application?

17          A.    There may have been buildings that were  
18          demolished along 202, near the intersection of  
19          926 and 202.

20          Q.    There may have been or there were?

21          A.    Well, there were, but I don't know when  
22          they were demolished or why or who demolished  
23          them.

24          Q.    Were those buildings of historic

1       significance?

2           A.    The Darlington Corners District was  
3       determined to be a district several years ago,  
4       and then that determination was withdrawn by  
5       the Pennsylvania Historical Museum Commission.  
6       I don't believe any of the buildings, either  
7       collectively as a district or individually,  
8       were eligible for the National Register.

9           Q.    Okay.  Let's talk about the events of  
10      September 11th, 1777.  You made reference to  
11      the Michael Harris text.  Do you have a copy of  
12      that there?

13          A.    Yes.

14          Q.    Before we get to that, you mentioned  
15      that you had served as a consultant to the  
16      Brandywine Conservancy with regard to its  
17      conservation easement program, correct?

18          A.    I was employed at the conservancy, yes.

19          Q.    You were directly employed?

20          A.    Yes.

21                   MR. GILL:  Can we go back to  
22      Exhibit A-20, is it?  The different study  
23      areas.

24                   MR. ADELMAN:  He is going to pull

1 it up. A-20.

2 BY MR. GILL:

3 Q. Mr. Wise, am I correct in my  
4 understanding of the development or the  
5 progression of our modern understanding of the  
6 Battle of Brandywine that the scope of areas on  
7 your study has expanded from the time that the  
8 battlefield landmark was created to the present  
9 day?

10 A. Yes.

11 Q. So it is not your testimony, is it,  
12 that the current study areas or the current  
13 scope of our understanding of the battle is  
14 exhausted, correct?

15 A. I didn't know if that was my testimony.  
16 But history is always evolving, so I would say  
17 yes.

18 Q. So the fact that --

19 A. I mean, it is not exhausted is what I  
20 mean to say.

21 Q. So the fact that the property at  
22 Crebilly Farm property may or may not be  
23 included in either the 1977 or the 1989 or the  
24 1992 study areas is not determinative of

1       whether or not there was action associated with  
2       the battle on the Crebilly Farm property,  
3       correct?

4             A.   That is correct.

5             Q.   And we can agree before we even open up  
6       Mr. Harris' book that there was action  
7       associated with the battle in close proximity,  
8       we can at least agree on that, in close  
9       proximity to the Crebilly Farm property,  
10      correct?

11            A.   Yes, generally south of Street Road.

12            Q.   Well, the property itself is north of  
13      Street Road?

14            A.   Yes.

15            Q.   Generally speaking, before we get into  
16      any specific questions, is protection and  
17      preservation of the landscapes and viewsapes,  
18      the orientation of natural resources as they  
19      would have appeared on the day of an historic  
20      event, is that important to our modern  
21      understanding and interpretation of that event?

22            A.   I think it was at one time. But as you  
23      just alluded to, things have expanded, and  
24      certainly the way this battlefield, and now the

1 Battle of the Clouds, such as it was, the  
2 process has expanded to be far more than just  
3 the battlefields where bloodshed may have  
4 occurred, troop movements may have occurred,  
5 but it entails bringing the population into the  
6 mix and what was happening with the civilians  
7 at the time, etcetera.

8 And so certainly part of that is  
9 the knowledge of what the features were during  
10 the time of the battle. But just because they  
11 are encompassing a much greater area, you would  
12 have things that certainly were not there at  
13 the time of battle.

14 Q. Okay. But given the opportunity to  
15 preserve a landscape that existed at the time  
16 of the battle, it is, from an historic  
17 preservation planning perspective, is it more  
18 preferable than not to retain that landscape,  
19 even if other portions of the surrounding area  
20 have been adulterated?

21 A. Yes.

22 Q. And again, from an historic  
23 preservation planning perspective, do you see  
24 completion of a full and thorough investigation

1 of a property that at the very least was in  
2 close proximity to the action on that day, do  
3 you see that as important to our, again, as we  
4 have agreed, our ever-evolving understanding of  
5 the events of that day?

6 A. Yes.

7 Q. Short of a no development alternative,  
8 what would that full investigation and inquiry  
9 look like, again from an historic preservation  
10 and planning perspective?

11 A. Well, I think to a large degree it has  
12 been done. You have the same book I have,  
13 which really doesn't talk about anything  
14 occurring on that particular property, showing  
15 troop movements through the area certainly on a  
16 map.

17 So as far as the history goes, as  
18 I said, at the Planning Commission meeting back  
19 in December, you know, it is ever evolving and  
20 new things come to light, and Sean Moir has  
21 brought things to light, his perspective on  
22 what he believes happened that day on the  
23 battlefield.

24 Otherwise, other than the

1 possibility of troop movement through this  
2 particular property, I have not encountered  
3 anything that shows actual battle, any type of  
4 battle happening there. Skirmish, certainly,  
5 certainly a possibility.

6 Q. Okay. I'm not sure that answered my  
7 question. My question was -- and if you  
8 disagree, please let me know. My question was:  
9 Given the indisputable proximity of the  
10 Crebilly Farm property to activities associated  
11 with the battle, short of not building anything  
12 at all on the property, and other than placing  
13 a pull-off area and a marker, what, if  
14 anything, should be done to examine the scope  
15 of activities that may or may not have happened  
16 on the Crebilly Farm property on the day of the  
17 Battle of Brandywine?

18 A. You are sort of asking two different  
19 things. One, you are asking what kind of  
20 investigation, what more investigation should  
21 take place. Is that --

22 Q. That's one of my questions.

23 A. Okay. I think your other question is  
24 what can be done in light of that



1 investigation.

2 Q. Let's take the one first. What  
3 investigation should be done?

4 A. So I think I answered that before. I  
5 think a lot of history has been written about  
6 the battle by this point, and you have read  
7 this book, or you have at least looked at it,  
8 and the very beginning it's all the accounts  
9 the battle and how he addresses those accounts,  
10 and then with his additional primary resource,  
11 secondary research, etcetera, he then goes in  
12 to write this book.

13 This is a rather, my opinion,  
14 comprehensive book, as is other works by Tom  
15 McGuire and this 1989 study primarily by a  
16 Nancy Webster, the Delaware Planning  
17 Commission, and then, of course, we have the  
18 American Battlefield Protection Program that  
19 Sean Moir has done maps for, which has a  
20 comprehensive review using a military comp  
21 analysis to describe the battle.

22 So a lot of the investigation,  
23 short of I guess walking the property or doing  
24 any type of physical investigation of the land,

1 a lot of that investigation has been done.

2 Q. Is it your testimony, then, that no  
3 further investigation of, whether it is the  
4 Crebilly Farm property or anywhere, is  
5 necessary for our, as we both now agreed, our  
6 ever-evolving understanding of the battle?

7 A. As an historian I could never say no  
8 and shut the door to something like that.

9 Q. Well, I don't mean to be flippant, but  
10 I think you are saying that.

11 MR. ADELMAN: I object. I don't  
12 think that's what he said. We could read back  
13 the record if you like.

14 MR. MCKENNA: Mr. Gill, do you  
15 want to ask another question?

16 MR. GILL: I will.

17 BY MR. GILL:

18 Q. Have you received the Chester County  
19 Planning Commission review letter with regard  
20 to this application, which is marked as Exhibit  
21 B --

22 MR. ADELMAN: B-12.

23 Q. -- B-12?

24 A. No, I have not.

1 Q. You haven't seen that? I think Mr.  
2 Adelman is giving it to you now.

3 A. I have not seen this, no.

4 Q. Okay. Well, I do believe that's what  
5 Mr. Adelman just handed you, so if you want to  
6 take a moment to look at it and, in particular,  
7 page 4 of the letter.

8 MR. MCKENNA: While Mr. Wise is  
9 doing that I just want to point out to everyone  
10 present it is 9:30. We are going to conclude  
11 this evening at 10:00 o'clock regardless of  
12 where we are in the testimony, and we already  
13 have another hearing date scheduled, which we  
14 will discuss at the end of the proceedings. So  
15 if the witness isn't done, he can come back for  
16 the next set of hearings. But I just want to  
17 point out that 30-minute, last 30 minutes.

18 BY MR. GILL:

19 Q. Have you had a chance to look at that  
20 page 4?

21 A. Very briefly. But --

22 Q. Do you see the image there?

23 A. Yes.

24 Q. Okay. The area in pink is defined or

1 described, excuse me, as the "Brandywine  
2 Battlefield Swath." Is it your testimony that  
3 you disagree -- and I'm sorry, in parenthesis  
4 it says "troop movements and battlefield  
5 skirmishes."

6 Is it your testimony that you  
7 disagree with the Chester County Planning  
8 Commission's characterization of the area in  
9 pink as a Brandywine Battlefield swath of troop  
10 movements and battlefield skirmish area?

11 A. I don't disagree with it. I question  
12 it, but I don't disagree with it.

13 Q. And you would question it because of  
14 the, again, I don't want to mischaracterize  
15 your testimony, but because in your opinion  
16 there has already been exhaustive research done  
17 on the scope of activities associated with  
18 that?

19 A. That's partly, and my examination of  
20 historic maps and, again, this other  
21 information about it. There is discrepancy as  
22 far as how far the eastern flank of the British  
23 Army was. So when I said before give or take,  
24 really don't know whether this swath is correct

1 by 10 feet or by 500 feet. That would be my  
2 only -- this is, this line, this pink line, it  
3 would be tough to say that this is the  
4 definitive line of the battlefield.

5 And, now, I don't know exactly  
6 how they came up with this definitive line. It  
7 may be based on some investigations. It may be  
8 based on what the KOCO analysis believes is  
9 the troop movement. I believe this roughly  
10 follows that KOCO analysis. But whether or  
11 not it is simply troop movement or whether  
12 there was skirmish activity there, I don't  
13 know.

14 I know the KOCO analysis also  
15 shows that artillery basically ended or the  
16 extent of the artillery was Street Road, or  
17 maybe just over, as you get to the southeast --  
18 excuse me -- southwest corner of the property,  
19 very southwest.

20 But, so I'm not disagreeing with  
21 this. I just want to make it clear that this  
22 line I don't think should be looked at as a  
23 definitive place where the battle occurred and  
24 the battle didn't occur.

1 Q. Okay.

2 A. And I don't know where that line is.

3 Q. Thank you for saying that, because I  
4 don't know either, and I don't know anybody who  
5 does.

6 But it was your testimony on  
7 direct, if I'm not mistaken, that there were  
8 no, other than the possibility of skirmishes  
9 and troop advances, that there was no military  
10 action on the Crebilly Farm property, maybe 25  
11 feet on, maybe 50 feet off, we can't say for  
12 sure whether there was or there wasn't,  
13 correct?

14 A. We can't say for sure. I do know this  
15 fact, as far as I know, that the William Hunt  
16 farm that was there did not sue for any  
17 sufferages for the battle or state any losses  
18 for the battle.

19 And one of the things that often  
20 go missing or get broken or damaged in these  
21 battles as you try to get hundreds of troops or  
22 thousands of troops is the fences are often  
23 knocked down and taken down to facilitate troop  
24 movement, especially under fire. And that was

1 not mentioned or not brought up at all. So  
2 there were no sufferages by the Hunt family.  
3 They may have got lucky. Troops may have  
4 walked around them. But that's -- and, again,  
5 that's not an indication nothing occurred here.  
6 I just need to bring that to light.

7 Q. Understood. Before we move on from  
8 this point of trying to define or at least  
9 state you can't definitively state, you can't  
10 definitively exclude, I want to come back to  
11 your work on behalf of the Brandywine  
12 Conservancy. You were there from 1993 to 1997,  
13 correct?

14 A. Correct.

15 Q. Was the area around the Brandywine  
16 Battlefield under development pressure at that  
17 point in time?

18 A. Absolutely.

19 Q. Did the conservancy establish  
20 priorities as to which property that it would  
21 target for conservation associated with the  
22 battle activities?

23 A. Yes.

24 Q. It is not your testimony, is it, that

1 the absence of the Crebilly Farm property from  
2 that priority list demonstrates that no  
3 activity occurred at the Crebilly Farm  
4 property?

5 A. That's correct.

6 Q. Just that it wasn't a funding priority  
7 at that point in time for the Brandywine  
8 Conservancy?

9 A. Well, we, because of the funding and  
10 lack thereof, we concentrated on properties  
11 that we thought were most threatened or most  
12 bloodshed, and also there was a scenic element  
13 to that as well.

14 So most of the major and priority  
15 battle -- excuse me -- properties were in the  
16 vicinity of the Brandywine -- I apologize --  
17 the meetinghouse, Birmingham Meetinghouse, in  
18 that vicinity, in Sandy Hollow. That was one  
19 base priority area, and then there were some  
20 others I believe down in Chadds Ford and others  
21 west of the Brandywine River.

22 Q. Okay. If we could turn to Mr. Harris'  
23 text.

24 MR. GILL: If we can bring up,



1 I'm not sure what the exhibit number is, the  
2 development plans up. A-4?

3 MR. MCKENNA: A-6.

4 MR. GILL: A-6.

5 MR. MCKENNA: Mr. Gill, for our  
6 benefit, can you tell us the name of the book  
7 that we are referring to again and the author?

8 MR. GILL: It is called  
9 *Brandywine A Military History of the Battle*  
10 *that Lost Philadelphia but Saved America,*  
11 *September 11th, 1777,* by Michael C. Harris.

12 MR. MCKENNA: Thank you.

13 BY MR. GILL:

14 Q. Mr. Wise, I'm sorry, we are trying to  
15 toggle back and forth between this and  
16 Exhibit A-21, the Archibald map.

17 So, Mr. Wise, would you please  
18 turn to page 282 in the Harris text.

19 A. Yes, the map.

20 Q. So that's a map that is titled "Assault  
21 on Birmingham Hill," 4:00 o'clock p.m. to 5:30  
22 p.m. on the day of the battle, correct?

23 A. Correct.

24 Q. And the extreme right flank -- excuse

1 me -- left flank of the British advance is  
2 identified as the Hessian Jaegers?

3 A. Yes.

4 Q. Using Exhibit A-6 and taking that on  
5 its face, the map on page 282, where would the  
6 Jaeger advance be relative to the Crebilly Farm  
7 property?

8 A. Bear with me. These are small maps.  
9 But essentially it would be this western end,  
10 probably over these two ends of the development  
11 pieces, and then swinging down possibly as far  
12 as, to the immediate east of the creek.

13 Q. What do you mean by the "two ends"?

14 A. Well, I'm sorry, these two road  
15 systems, so it would come across somehow and  
16 then sort of swing down right in here.

17 Q. Is that generally consistent with the  
18 battlefield swath that the Chester County  
19 Planning Commission identified?

20 A. Yeah, again, give or take -- oh, that  
21 swath. I would say that's generally  
22 consistent, yes.

23 Q. Okay. Now, the map on page 282 -- and  
24 perhaps, Mr. Adelman, is there any objection if

1 we simply mark the text, mark the book itself  
2 as an exhibit? Or would you prefer we mark  
3 individual --

4 MR. ADELMAN: I would rather mark  
5 individual exhibits that are testified to.

6 MR. GILL: We will provide  
7 photocopies then.

8 MR. MCKENNA: I would much rather  
9 have the pages rather than the entire book.

10 MR. ADELMAN: I don't want to  
11 have to bring the author in to cross-examine  
12 him on each page.

13 MR. GILL: Then we will offer, we  
14 will mark -- excuse me -- the map on page 282  
15 of the text as Exhibit PC-1, and we will  
16 provide copies.

17 BY MR. GILL:

18 Q. Now, the map does indicate that the  
19 extreme left flank of the British advance,  
20 British Hessian advance, engaged with Stephen's  
21 Division of the American line north of  
22 Dilworth, correct?

23 A. Correct.

24 Q. Is that consistent with your statement

1 that there might have been troop movements  
2 across the property, if not necessarily combat?

3 A. I would say that's consistent with.

4 Q. Thank you. Can we move to  
5 Exhibit A-21, the Archibald map. Okay.

6 We can't turn it, correct?

7 MR. SEMON: Correct.

8 MS. DEWOLF: Rotate it.

9 THE WITNESS: You are going to  
10 have to lean to the left.

11 BY MR. GILL:

12 Q. I'm afraid that's quite impossible for  
13 me.

14 A. Well, I mean, I can help a little bit,  
15 with the British coming in this direction.

16 Q. Okay.

17 A. If that helps.

18 MR. MCKENNA: Wait.

19 THE WITNESS: This is Street  
20 Road.

21 MR. MCKENNA: Hang on. That  
22 doesn't help, for the record. In this  
23 direction, I need you to tell me a little bit  
24 better what we are talking about when you talk

1 about this direction.

2 THE WITNESS: Okay. The left  
3 side of this map is oriented to the north. The  
4 British came from the north. So they were  
5 moving in this direction, across Street Road  
6 and then --

7 MR. ADELMAN: Bob, what is "this  
8 direction"?

9 THE WITNESS: Right or south.  
10 And they moved south across Street Road and  
11 then generally encountered the American forces  
12 on Birmingham Hill.

13 MR. MCKENNA: For purposes of  
14 clarification for the record, realizing this  
15 exhibit is tilted, let's use north-south for my  
16 purposes, because it is going to make it a lot  
17 easier when we look back at the record, please.

18 THE WITNESS: Okay.

19 BY MR. GILL:

20 Q. All right. Where on Exhibit A-21 is  
21 Birmingham Hill?

22 A. Well, Birmingham Meetinghouse is, you  
23 can see it marked here. That's the Birmingham  
24 cemetery just to the, to the -- move that hand

1 over a little bit more. Right there. So  
2 Birmingham Meetinghouse is to the south of  
3 that, and there is a knoll there, but the main  
4 Birmingham Hill moves across here as you see  
5 all the letters, that's where Stephen's forces  
6 generally were, according to this map.

7 Q. Stephen's forces were to the east of,  
8 east and south of the meetinghouse?

9 A. Yes. They actually held the  
10 meetinghouse area, and then came across  
11 Birmingham Road as it goes towards Route 202.

12 Q. Okay. And again, the meetinghouse  
13 would have been in the center point of the  
14 battle, while the extreme right side of the  
15 American line would have been east of the  
16 meetinghouse?

17 A. Extreme right side, yes.

18 Q. Okay.

19 A. Although these weren't fixed  
20 fortifications. This is an extremely fluid  
21 battle. So things were moving throughout the  
22 day.

23 Q. So my question to you was: Where is  
24 Birmingham Hill? You pointed out where the

1 Birmingham Meetinghouse is. But where is  
2 Birmingham Hill?

3 A. Birmingham Hill is basically to the  
4 south of the hand, excuse me, and then going  
5 east towards, the sub degree towards Route 202  
6 which is that, that other line.

7 MR. ADELMAN: Bob, for the  
8 record, when you said "south of the hand,"  
9 where was the hand located on?

10 THE WITNESS: The hand at that  
11 point was located at the Birmingham cemetery.  
12 The Birmingham Meetinghouse is just south of  
13 the cemetery.

14 MR. ADELMAN: Thank you.

15 THE WITNESS: And the hill sort  
16 of generally goes in that direction to the east  
17 of, before it gets to Route 202.

18 BY MR. GILL:

19 Q. Okay. If you could grab the text  
20 again. I ask you to turn to page 315 through  
21 page 321. We are going to focus really on page  
22 315 and 316. There is a section of text called  
23 "Assault on Stephen's Division," do you see  
24 that?

1 A. Yes.

2 Q. Down at the bottom of page 315 there is  
3 a reference made to a Lieutenant Colonel Ludwig  
4 von Wurmb. Do you see that?

5 A. Yes.

6 Q. Do you know who he was?

7 A. He was a Jaeger commander. I don't  
8 know much more about him other than that.

9 Q. Was he present at the battlefield that  
10 day?

11 A. Yes, I believe he was.

12 Q. Would he have been in command of or  
13 associated with the Jaeger troops that were  
14 marching, according to the map on page 282,  
15 across the, what is now the Crebilly Farm  
16 property?

17 A. I believe he was in that general area.

18 Q. Okay. So if you turn to page 316 --  
19 well, excuse me, stay on 315. And, I'm sorry,  
20 I'm going to do great injustice to his name  
21 again. Ludwig von Wurmb said: "I saw that the  
22 enemy wanted to form for us on a bare hill, so  
23 I had them greeted by our two amusettes and  
24 this was the beginning of General Howe's



1 column's [arrival]."

2 And the next sentence says: "The  
3 bare hill described by von Wurmb was the  
4 eastern extension of the rise that Birmingham  
5 Meetinghouse sits upon. The jaegers  
6 encountered American skirmishes on the end of  
7 this rise about 1500 feet east of Birmingham  
8 Road."

9 Can you show us on Exhibit A-21  
10 where that would have been?

11 A. I don't think I can, because this map  
12 is not worthy of showing that. You need a topo  
13 map.

14 There are two hills here that he  
15 may be speaking about. They are both,  
16 according to the Michael Harris book, appear to  
17 be south of Street Road.

18 There is a knoll that Birmingham  
19 -- the cemetery area sits on, and that sort of  
20 moves almost in a, in a slight curve to the  
21 northeast.

22 There is then a larger ridge.  
23 This is Birmingham Hill that runs across  
24 generally where all these letters are, where

1 the main American lines were. And what the  
2 Jaegers were trying to do, and that British  
3 contingent which had split, part of it went  
4 after his forces at the cemetery and the  
5 meetinghouse. The other force was attacking  
6 head on and then also trying to flank them on  
7 American's far eastern end of their line, and  
8 that is where they talk about this happening in  
9 the book.

10 Now, exactly where they  
11 encountered skirmishers, I don't know where.  
12 It could have been on Crebilly Farm. It could  
13 have been south of the road. I don't know  
14 exactly the land formations at that time, and  
15 where the force, where it also describes.

16 I have looked at those pages very  
17 carefully, and I have not determined exactly  
18 where he is talking about. I'm not denying  
19 where it is. I just don't know where he is  
20 talking about.

21 Q. In light of that uncertainty, and in  
22 light of the importance of the Battle of  
23 Brandywine, is it still your testimony that a  
24 marker or a pull-off area is the most

1 appropriate way to further our modern  
2 understanding of the battle? Or are you, can  
3 you now be prepared to offer any thoughts on  
4 what any additional investigation or inquiry of  
5 the Crebilly Farm property might be relative to  
6 the Battle of Brandywine?

7 A. Well, I think because this skirmish  
8 element that Sean Moir has brought up, in light  
9 of these plans, there may be further  
10 investigation into that.

11 The problem is the extent that  
12 may have occurred there. I'm not trying to  
13 diminish it. Just in terms of the battle at  
14 hand, where there were some 26,000 troops  
15 involved, this is, it appears, a very tiny part  
16 of that entire battle. It may have occurred in  
17 this property. There may have been some  
18 skirmish. Skirmishers during this war were  
19 often put out in front of troops, in front of  
20 the lines.

21 Again, this line was newly  
22 formed, so it wasn't like they were there for a  
23 week waiting for the British to come. But they  
24 would ride out. They would do reconnaissance.

1 And they would also try to disrupt any advance,  
2 even demoralize the advancing armies.

3 So whether they were there and  
4 whether they were there in force, or whether  
5 there were a few soldiers there forming up, it  
6 is difficult to know exactly what was going on  
7 at that time, because the bulk of that  
8 description that you have in your hand then  
9 concentrates almost solely on what was  
10 happening south of Street Road and the actual  
11 assault on Birmingham Road, and then the  
12 retreat by the American Army as they moved back  
13 towards Dilworth.

14 Q. Was Stephen's Division -- Stephen's  
15 Division held the line, correct?

16 A. Stephen's Division, from what I  
17 understand, held the line. Sullivan's and  
18 Stirling's dissolved and moved up towards  
19 Radley Road.

20 Q. I don't claim to be an expert here, Mr.  
21 Wise. But is Stephen's Division holding of the  
22 line integral to the, was that integral to the  
23 ability for the Americans to organize an  
24 orderly retreat from the battlefield that day?

1           A.    It certainly didn't hurt.

2           Q.    Given that, and given --

3           A.    I don't mean -- and I mean that it  
4           certainly wouldn't have hurt. Did they prevent  
5           the British from demolishing the American Army  
6           at that point? I don't know that.

7           Q.    Given that possibility, and in light of  
8           the title of the book, the battle which we lost  
9           but saved America, isn't the activity of  
10          Stephen's Division, in light of that Jaeger  
11          advance, critically important to our modern  
12          understanding of the importance of the Battle  
13          of Brandywine?

14          A.    Absolutely, I think that is. And there  
15          were some other British contingents that found  
16          themselves on the far western flank and ended  
17          up coming down the Brandywine to, in my  
18          opinion, scare Washington, who his fort,  
19          General Wayne, by now was still down in Chadds  
20          Ford, waiting, thinking that was the main  
21          British assault.

22                            And I think if these few  
23          detachments hadn't come down here and started  
24          to attack the American right flank at Chadds

1 Ford, Wayne may have stayed there, and then  
2 they definitely would have been encircled and  
3 defeated.

4 So that's my interpretation of  
5 what is happening in the far end of the  
6 battlefield. But certainly holding on and then  
7 retreating, other troops then came in I think  
8 under General Greene -- I may be wrong on  
9 that -- around Dilworth, and really stopped the  
10 British in their tracks. By that time the  
11 armies were exhausted and it was the end of the  
12 day.

13 Q. Bear with me one moment, please.

14 Okay. Mr. Wise, just a couple of  
15 final questions. Again, in light of how we  
16 ended our conversation a moment ago, from  
17 historic preservation planning perspective,  
18 again, in light of these uncertainties that we  
19 have identified here this evening, is it not  
20 prudent to shift, if it is possible, to shift  
21 development out of an area where such an  
22 important aspect of the battle might have taken  
23 place into an area of the property, the  
24 Crebilly Farm property, where we all agree the

1       likelihood of action associated with the battle  
2       is null?

3             A.    I don't know the particulars of why  
4       they planned it this way, and how they planned  
5       it, and for what purpose.  So you would have to  
6       talk to the developer.

7                     MR. GILL:  Okay.  That's all the  
8       questions I have on cross for Mr. Wise.

9                     MR. MCKENNA:  All right.  Thank  
10      you, Mr. Gill.

11                    Mr. Adelman, at this point it is  
12      almost five minutes of 10:00.  My preference  
13      would be to conclude the hearing for this  
14      evening, because I have a feeling there is  
15      going to be sufficient additional questions to  
16      bring Mr. Wise back in May.

17                    MR. ADELMAN:  I didn't want to  
18      interrupt you.  Can we poll the other  
19      attorneys, to ask Mr. Thompson --

20                    MR. MCKENNA:  We can, but there  
21      is also 38 parties and Board members.

22                    MR. ADELMAN:  I am aware of that,  
23      Mr. McKenna.  I just ask the other attorneys,  
24      do they have a sufficient number of questions

1 based upon Mr. Wise's testimony?

2 MR. MCKENNA: Mr. Thompson, were  
3 you going to have some extensive cross?

4 MR. THOMPSON: I would like to  
5 reserve some time for cross, yes.

6 MR. MCKENNA: Ms. Labrum, are you  
7 going to have any questions?

8 MS. LABRUM: No, I'm not.

9 MR. ADELMAN: Frone is not here.

10 MR. MCKENNA: Frone is not here.

11 MR. ADELMAN: He is just one.

12 MR. MCKENNA: In terms of  
13 counsel, correct.

14 MR. ADELMAN: Absolutely. I'm  
15 just talking about, I meant counsel as in  
16 attorneys.

17 MR. HAWS: I'm just letting you  
18 know, I will have extensive questions.

19 MR. ADELMAN: I'm sure you will.  
20 I'm not going to try to do it tonight. I was  
21 just curious.

22 MR. MCKENNA: Any objection to  
23 continuing the hearing tonight at this point,  
24 Mr. Adelman?



1 MR. ADELMAN: Not at this time,  
2 no.

3 MR. MCKENNA: Okay. Ladies and  
4 gentlemen, we are going to continue the hearing  
5 until Tuesday, May 23rd, at 6:00 p.m. The  
6 hearing that evening will be back at Rustin. I  
7 can assure you all that the sound quality will  
8 be improved from the last time we were there.

9 I would like to also apologize  
10 for the fact that we have to keep moving the  
11 hearings, but that's a bit out of our control.  
12 We do not have further meeting dates beyond May  
13 scheduled at this time. However, I anticipate  
14 over the next month that will be a discussion  
15 among the Board and counsel to try to pick  
16 additional dates.

17 Mr. Wise will be back to finish  
18 his testimony. I believe Mr. Babbitt will  
19 likely go then, who is the fiscal impact  
20 analysis for Toll.

21 Outside of that I can't tell you  
22 who is going to testify that evening. I hope  
23 to have more of that information prior to the  
24 hearing, and when we do it will go out on the

1 LISTSERV and it will be posted on the website.

2 Is there anything additional from  
3 the Board at this point? Anything additional  
4 from counsel?

5 MR. ADELMAN: No.

6 MR. MCKENNA: Thank you, ladies  
7 and gentlemen. We will stand in continuance.

8 (Proceedings conclude at 9:56  
9 p.m.)

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By Mr. Gill		555		

E X H I B I T S

BOARD OF SUPERVISORS EXHIBITS

B-27 - Pennsbury Township Resolution  
2017-03-15-1, March 14th, 2017, expressing  
concerns with conditional use application

B-28 - Review letter, Al Federico, Kimley Horn,  
Westtown Township Traffic Engineer, April 3rd,  
2017

B-29 - Party status forms for individuals and  
entities that were granted party status

B-30 - Party status forms for individuals and  
entities that were denied party status

1       APPLICANT'S EXHIBITS

2       A-18 - Robert J. Wise CV

3       A-19 - RGA historic structures letter, 12/13/16

4       A-20 - Cartographic Map 3.5 of Brandywine  
5       Battlefield

6       A-21 - Archibald Robertson manuscript map and  
7       text of the Battle of Brandywine

8       A-22 - GTA Supplemental Preliminary On-Site  
9       Wastewater Disposal Feasibility Evaluation,  
10      4/13/17

11      A-23 - Frederick Ebert CV

12      A-24 - Ebert Engineering, Inc. Wastewater  
13      Engineering Report, 4/18/17

14

15      PLANNING COMMISSION EXHIBITS

16      PC-1 - Map, page 282, *Brandywine A Military*  
17      *History of the Battle that Lost Philadelphia*  
18      *but Saved America*

19

20      CERTIFICATE OF REPORTER

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1 Commonwealth of Pennsylvania )  
2 Chester County )

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CERTIFICATE OF REPORTER

I, Eleanor J. Schwandt, Registered Merit Reporter and Notary Public, do hereby certify that the foregoing record, pages 408 to 608 inclusive, is a true and accurate transcript of my stenographic notes taken on April 19, 2017, in the above-captioned matter.

IN WITNESS WHEREOF, I have hereunto set my hand and seal this 1st day of May, 2017.

\_\_\_\_\_  
Eleanor J. Schwandt

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