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I N D E X

PAGE NO.

WITNESS PANEL:
(*resumed*)

SARAH BARNUM
LEE CARBONNEAU
DENNIS MAGEE
JACOB TINUS
ROBERT VARNEY

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[WITNESS PANEL: Barnum~Carbonneau~Magee~Tinus~Varney]

1 **P R O C E E D I N G**

2 CHAIRMAN HONIGBERG: All right. Good
3 morning, everyone. I think we're ready to
4 resume questioning of the environmental panel.

5 And, Attorney Connor, you may
6 proceed.

7 MS. CONNOR: Thank you, Mr. Chairman.

8 (Continuation of the
9 cross-examination of **Sarah**
10 **Barnum, Lee Carbonneau,**
11 **Dennis Magee, Jacob Tinus,** and
12 **Robert Varney.**)

13 MS. CONNOR: Can we have Exhibit 328?
14 It's already up. Gosh, you're good.

15 BY MS. CONNOR:

16 Q. We have on the screen Exhibit 328. And I'm
17 going to ask Dr. Barnum whether or not you can
18 identify the snake that is depicted there?

19 A. (Barnum) That's the hognose snake. Eastern
20 hognose snake.

21 Q. And am I correct that the hognose snake is
22 "State endangered"?

23 A. (Barnum) That is correct.

24 Q. Can you tell me approximately how many of these

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1 fellows we have here in the State of New
2 Hampshire?

3 A. (Barnum) I don't know how many there are
4 altogether.

5 MR. WAY: Excuse me for a moment.
6 Chairman, I'm not getting anything on my screen
7 here.

8 CHAIRMAN HONIGBERG: Off the record.
9 *[Brief off-the-record discussion*
10 *ensued.]*

11 CHAIRMAN HONIGBERG: All right.
12 We're back online. Everybody can see the
13 picture, I think.

14 BY MS. CONNOR:

15 Q. All right. We're now going to switch pictures.
16 We'll see how this works. Exhibit 327.

17 Dr. Barnum, do you have that picture up?

18 A. (Barnum) Yes, I do.

19 Q. Okay. Can you identify this snake?

20 A. (Barnum) Yes. This is a northern black racer.

21 Q. And am I correct that the black racer is a
22 "State threatened" species?

23 A. (Barnum) That's correct.

24 Q. All right. I now would like the map exhibit,

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[WITNESS PANEL: Barnum~Carbonneau~Magee~Tinus~Varney]

1 Counsel for the Public 136. Great.

2 Dr. Barnum, I've pulled up from the
3 Arrowwood Report a couple of maps that depict
4 the habitat within which one would anticipate
5 to find either the black racer or the eastern
6 hognose. Do you see those maps?

7 A. (Barnum) I do.

8 Q. I'm assuming you've seen those maps before?

9 A. (Barnum) Yes.

10 Q. And do those maps accurately reflect the area
11 within which you would expect to find these two
12 snakes along the proposed path?

13 A. (Barnum) This is data from New Hampshire Fish &
14 Game, and that's the range that they currently
15 have documented for these two different
16 species.

17 Q. Okay. And we've got the black racer on the
18 left and the hognose on the right?

19 A. (Barnum) Correct.

20 Q. Am I correct that it appears that the black
21 racer is likely to be more impacted than the
22 hognose, because its habitat coincides with a
23 greater proportion of the proposed path?

24 A. (Barnum) You could look at it from that point

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[WITNESS PANEL: Barnum~Carbonneau~Magee~Tinus~Varney]

1 of view. However, there are considerably more
2 black racers, a larger population in New
3 Hampshire, also found in a greater number of
4 places outside the right-of-way.

5 So, I would actually say the racer is
6 likely to be less impacted. The hognose snake
7 has got an extremely limited distribution, and,
8 in fact, the right-of-way in Concord is one of
9 the places where it's known to be
10 preferentially -- the habitat that the existing
11 right-of-way provides for hognose snakes is its
12 preferred habitat. Maintaining the
13 right-of-way without cover and so forth
14 provides preferential habitat for the species.

15 Q. Can you describe for me the type of habitat
16 these two snakes prefer?

17 A. (Barnum) Yes. The eastern hognose snake is
18 really associated with sandy soils. And, so,
19 open areas with sandy soils, but then also it
20 feeds preferentially on the American toad. So,
21 if, in conjunction with those sandy soils,
22 there are wetlands where there would be wetter
23 areas where toads can breed, and you could have
24 toads that would provide really sort of ideal

[WITNESS PANEL: Barnum~Carbonneau~Magee~Tinus~Varney]

1 habitat for them.

2 The northern black racer is much more of a
3 generalist. It uses open areas, it uses
4 forested areas. It needs open areas,
5 obviously, to sun and it was going to lay its
6 eggs in more open areas where they're going to
7 get sun. So, again, the right-of-way is really
8 providing an ideal habitat for the species.
9 But it uses a mix of habitats. And I think
10 that's one of the reasons why it still has a
11 much larger distribution in our state, because
12 it's more of a generalist than the hognose
13 snake.

14 Q. Am I correct that this Project can impact the
15 snakes through direct mortality during
16 construction, as well as destruction of their
17 nests and changes to their habitat?

18 A. (Barnum) The primary impact to both these
19 species from the Project will be disturbance
20 during construction. Post-construction, the
21 right-of-way, like I said, currently offers
22 ideal habitat for both these species, and
23 post-construction it will continue to do so.

24 Q. I want to talk a little bit about their nests.

[WITNESS PANEL: Barnum~Carbonneau~Magee~Tinus~Varney]

1 I have learned, through my introduction to this
2 Project, that the racer hibernates in communal
3 nests, is that correct?

4 A. (Barnum) They hibernate in suitable locations,
5 underground, below frost line. A lot of times
6 these locations, not being super common on the
7 landscape, get used by multiple snakes and
8 multiple species.

9 Q. And because -- well, let's differentiate
10 between the racer and the hognose. It's my
11 understanding that the hognose will typically
12 next alone, as opposed to in groups?

13 A. (Barnum) So, there's a difference between
14 "nesting" and "hibernation". Nesting is
15 actually laying eggs. And snakes do not take
16 care of their nests. They lay their eggs, and
17 they slither off and go about their business.
18 The sun warms the eggs and the young hatch.

19 Hibernation is over wintering, and that's
20 the behavior that, for racers, you often see in
21 sort of a group setting. For hognose snakes,
22 they don't tend to hibernate in crevices, under
23 rocks, below frost line, the way the racers do.
24 They look more for trash piles and where

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1 temperature is going to be maintained for other
2 reasons. They're less likely to be
3 underground.

4 And I couldn't speak to whether they tend
5 to use those resources communally or not. I
6 haven't seen any research about that.

7 Q. How many racer hibernacle, and I may have
8 mispronounced that, are within this Project
9 path?

10 A. (Barnum) Within the Project path, there is one
11 known black racer hibernacula.

12 Q. And when was that found?

13 A. (Barnum) In 2013, I went with Mike Marchand on
14 a snake search, and we found a few. He put --
15 he captured them and took them to a vet, had
16 transmitters -- transmitters inserted in them
17 by the veterinarian. They released those
18 snakes and followed them. And, apparently, one
19 of the snakes that we tagged ended up
20 hibernating within the right-of-way.

21 Q. What studies have been undertaken to confirm a
22 current inventory of the hibernaculum?

23 A. (Barnum) Could you repeat that please?

24 Q. Sure. What studies have you undertaken to

[WITNESS PANEL: Barnum~Carbonneau~Magee~Tinus~Varney]

1 confirm an inventory of these areas where they
2 hibernate?

3 A. (Barnum) I personally haven't undertaken
4 studies. Again, I worked with Fish & Game, who
5 have been doing an ongoing multiyear study of
6 black racer habitat use and hibernacula. And,
7 based on their recommendations, I'm using their
8 data. That was what they requested I do.

9 Q. So, in terms of the black racer, we have one
10 that's known of?

11 A. (Barnum) One that's known, that is correct.

12 Q. From 2013?

13 A. (Barnum) Well, that's when the snake was
14 tagged. I don't know what winter they actually
15 got the location from. The radio tags can last
16 multiple years.

17 Q. How many hibernaculum -- I'm going to have
18 trouble with that word -- do we know with
19 regard to the hognose snake?

20 A. (Barnum) There's one known outside of the
21 right-of-way, near, but outside of the
22 right-of-way.

23 Q. And when was that discovered?

24 A. (Barnum) I don't have a date for that one.

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[WITNESS PANEL: Barnum~Carbonneau~Magee~Tinus~Varney]

1 Q. And, again, have you undertaken any personal
2 studies to confirm whether there are more than
3 this one that has been located right outside
4 the right-of-way?

5 A. (Barnum) Again, Fish & Game has been conducting
6 research for multiple years on the hognose
7 snake. And, on their advice, I'm using their
8 data.

9 Q. Can we pull up 336? And I want to zoom in on
10 "Snakes", which is the third column. I pulled
11 up Exhibit 336, which we were also talking
12 about yesterday. These are the best management
13 practices, and we've zoomed in here on snakes.
14 One of the recommendations within this is that
15 there's going to be "no ground-disturbing
16 activities...in any location known by Fish &
17 Game to host a hibernaculum". You see that?

18 A. (Barnum) Correct.

19 Q. Am I correct, though, that there is no
20 obligation to determine whether there are any
21 such areas that aren't on the list?

22 A. (Barnum) That is correct.

23 Q. And would you agree with me, since -- that it
24 is difficult to locate the areas where these

[WITNESS PANEL: Barnum~Carbonneau~Magee~Tinus~Varney]

1 guys hibernate?

2 A. (Barnum) For the racers, most of the
3 hibernacula will be associated with rocky
4 outcrops, which we're going to be avoiding for
5 small-footed bats as well. There are multiple
6 reasons to avoid that resource. So, although
7 we may not know exactly where additional
8 hibernacula are, the steps that we're putting
9 in place should avoid them in general.

10 Q. Can we pull up Applicant 124, the public
11 version? Can we go to Page 2?

12 You mention that you've been working with
13 Fish & Game. I've pulled up the Fish & Game
14 minute notes from February 14, 2017. They
15 indicate that, from their perspective, "for
16 turtles and snakes, avoidance through seasonal
17 restrictions should be emphasized over sweeps."
18 Do you see that?

19 A. (Barnum) I do.

20 Q. Okay. Is that the plan as we're going forward,
21 to have seasonal restrictions?

22 A. (Barnum) The plan is to search the appropriate
23 habitats, based on the season of work.

24 Q. So, in other words, in these best management

[WITNESS PANEL: Barnum~Carbonneau~Magee~Tinus~Varney]

1 practices, the Applicant is not agreeing to
2 seasonal restrictions, except with regard to
3 ground-disturbing activities?

4 A. (Barnum) Could you repeat?

5 Q. Sure. Wouldn't a seasonal restriction that
6 precluded construction in any areas where the
7 snakes might be located provide the best
8 protection for the snakes?

9 A. (Barnum) The snakes are expected to be present
10 within the Project area throughout the entire
11 year. So, having a seasonal restriction to
12 avoid them would be impractical.

13 Q. So, instead, the best management practice, if
14 we go back to Exhibit 336, indicates that
15 "contractors are going to be trained to search
16 for snakes." Is that the plan?

17 A. (Barnum) The Environmental Monitor will be
18 responsible for the search.

19 Q. Well, at the very last bullet, on the best
20 management practice, it indicates that
21 "contractor training" --

22 A. (Barnum) Correct.

23 Q. -- is going to take place.

24 A. (Barnum) Correct. So, in addition to the

[WITNESS PANEL: Barnum~Carbonneau~Magee~Tinus~Varney]

1 Environmental Monitor being the primary
2 responsible person for searching, or people for
3 searching, we also want our contractors to know
4 what these animals look like. And, so, when
5 they see them, that they stop what they're
6 doing, and they contact the Environmental
7 Monitor, and the appropriate steps are taken.

8 Q. How many environmental monitors are going to be
9 required in order to search the entire
10 construction zone for snakes?

11 A. (Barnum) There will need to be multiple people,
12 absolutely.

13 Q. Well, how many?

14 A. (Barnum) That will depend on how large the
15 construction zones are, how many different
16 construction zones are within the known
17 distribution of the snake. So, I can't answer
18 exactly how many will be present at this point.

19 Q. The best management practices don't require a
20 certain number of environmental monitors, do
21 they?

22 A. (Barnum) That is not specified in these
23 instructions, no.

24 Q. And, in fact, these instructions refer to the

[WITNESS PANEL: Barnum~Carbonneau~Magee~Tinus~Varney]

1 "Environmental Monitor" in the singular, do
2 they not?

3 A. (Barnum) Yes.

4 Q. And, yet, you will agree that, in order to try
5 to locate snakes in any construction zone,
6 you're going to need many more than one?

7 A. (Barnum) Yes. Absolutely.

8 Q. And, yet, we have no commitment as to how many
9 there are going to be?

10 A. (Barnum) Not in this document, no.

11 Q. What type of -- the best management practice
12 talks about "snake training".

13 A. (Barnum) Uh-huh.

14 Q. What would be required to educate a contractor
15 to know how to identify these two particular
16 snakes, versus any other garden variety snakes?

17 A. (Barnum) Yes. So, in my experience working
18 with contractors, what generally happens is
19 that, when the project starts out, you have a
20 meeting. And you bring pictures, and you have
21 a conversation with them. And everybody is
22 trained to know what they look like and how to
23 respond to a situation where a snake is
24 present.

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1 And, after that, we also leave materials
2 with all personnel, with photos clearly
3 identifying the different animals that might be
4 of a concern, and instructions, phone numbers,
5 who to reach out to when you encounter an
6 animal, and you don't have an environmental
7 monitor present at that particular moment.

8 So, the training is relatively thorough.
9 And this is a approach that we -- or, that is
10 used widely for construction. I've seen it in
11 multiple states throughout New England.

12 Q. So, as I understand the best management
13 practice, from October 15th through April 30th,
14 no ground-disturbing activities can take place
15 where we have a known hibernaculum?

16 A. (Barnum) That is correct.

17 Q. What is involved within "ground-disturbing
18 activities"?

19 A. Anything that could cause an opening in the
20 rocky outcrop to become closed. So, it could
21 be heavy equipment moving. It could be
22 drilling, blasting, other activities like that.

23 Q. Okay. And, then, from April 15th to
24 October 30th, when presumably you can have

[WITNESS PANEL: Barnum~Carbonneau~Magee~Tinus~Varney]

1 ground-disturbing activities, that's the area
2 or time frame within which these sweeps have to
3 take place?

4 A. (Barnum) Correct.

5 Q. And, if Fish & Game thought that a seasonal
6 restriction should be emphasized over a sweep,
7 what would be the critical season, in terms of
8 protection for these snakes?

9 A. (Barnum) It would be the wintertime. Because,
10 in the wintertime, you can't find the snakes.
11 Once they're active, you can reasonably expect
12 to find them, if you're looking for them.

13 Q. Well, that doesn't seem to make sense.
14 Because, if you're not going to have any
15 disturbances while they are hibernating, then
16 Fish & Game wouldn't be concerned about the
17 importance of having a seasonal restriction.
18 There wouldn't be a need for one, if you're not
19 going to do anything during that time frame?

20 A. (Barnum) Well, at a known hibernacula, we won't
21 be having any activities.

22 Q. Wouldn't it be better to also require a
23 seasonal restriction when the snakes are
24 nesting for purposes of the next -- for their

[WITNESS PANEL: Barnum~Carbonneau~Magee~Tinus~Varney]

1 eggs?

2 A. (Barnum) They could be laying eggs any time
3 during the summer. And, again, the snakes are
4 expected to be present at any time during the
5 entire year. So, having a blanket seasonal
6 restriction would be impractical.

7 Q. Well, I understand they could be present at any
8 time. But isn't the nesting cycle more
9 confined?

10 A. (Barnum) It is. But it's not -- it's not
11 guarantied to be just this two weeks or
12 whatever. It's more drawn out, so --

13 Q. More drawn out to which months?

14 A. (Barnum) June, July, August.

15 Q. Well, we saw that there were restrictions in
16 the best management practices for birds during
17 the nesting cycle. Why not also have a
18 restriction for the snakes during their
19 breeding time frame?

20 A. (Barnum) Like I noted earlier, it's not like
21 there's a nest, which then is being guarded by
22 an adult, where you'd be disturbing -- I mean,
23 once the snake lays its eggs, it's gone.

24 So, --

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[WITNESS PANEL: Barnum~Carbonneau~Magee~Tinus~Varney]

1 Q. Well, that snake might be gone. But, if you
2 don't avoid those three months, and there's
3 construction activities, all of the eggs are
4 going to be destroyed?

5 A. (Barnum) Potentially. There is a risk of
6 mortality to the snake or its eggs. And,
7 because there is a risk, we are implementing
8 best management practices that include
9 avoidance, minimization, and mitigation. The
10 mitigation we're offering should compensate for
11 any direct impacts that occur.

12 Q. Did you perform any studies to estimate how
13 many black racers or hognose snakes might be
14 affected, in terms of decreases due to nests
15 that are run over?

16 A. (Barnum) I did not.

17 Q. And do you anticipate that, in fact, is a
18 probability in this Project?

19 A. (Barnum) I do.

20 Q. And that's why Fish & Game was suggesting, in
21 this exhibit, that a seasonal restriction would
22 be better over just simply sweeping, because
23 that way you get both the nests, as well as the
24 adults?

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[WITNESS PANEL: Barnum~Carbonneau~Magee~Tinus~Varney]

1 A. (Barnum) Potentially.

2 Q. The best management practice, which is still
3 up, Exhibit 336, talks about the fact that the
4 Environmental Monitor is going to look for
5 adult snakes, and contractors are going to be
6 trained to look for adult snakes. It does not
7 appear that there is a best management practice
8 that anybody is going to be looking for the
9 nests, is that correct?

10 A. (Barnum) That's correct.

11 Q. So, the nests are on their own?

12 A. (Barnum) Yes. They're cryptic. They're
13 difficult to find. I'm not saying it's
14 impossible, but it's difficult.

15 Q. So, outside of having a seasonal restriction,
16 apparently there is no protection for the snake
17 eggs?

18 A. (Barnum) That is why we're offering mitigation
19 to compensate for any impacts that occur. As I
20 noted earlier, the current right-of-way
21 provides excellent habitat, and the
22 right-of-way in the future will also provide
23 high-quality habitat. And one of the things
24 that we're including is a recommendation on

[WITNESS PANEL: Barnum~Carbonneau~Magee~Tinus~Varney]

1 mowing to help reduce impacts in the future,
2 when standard maintenance takes place.

3 So, there will be benefits to the snake
4 from having the Project in place, and the
5 ongoing vegetation maintenance, maintaining
6 that high-quality habitat for them.

7 Q. But the proposal is to skip avoidance, and it
8 skips minimization, and goes directly to
9 mitigation?

10 A. (Barnum) We are doing avoidance minimization
11 through searches for the adults.

12 Q. I'm going to turn to Exhibit 329. Can you
13 identify that exhibit?

14 A. (Barnum) This is a Blandings turtle.

15 Q. And can you explain the level of protection
16 afforded to the Blandings?

17 A. (Barnum) The Blandings turtle is "State
18 endangered".

19 Q. Do you know how many -- what the current
20 population of the Blandings is?

21 A. (Barnum) I do not know what the current
22 population is.

23 Q. Can we pull up Exhibit 330? Can you identify
24 Exhibit 330?

[WITNESS PANEL: Barnum~Carbonneau~Magee~Tinus~Varney]

1 A. (Barnum) This is a spotted turtle.

2 Q. Can you explain the level of protection
3 afforded to the spotted turtle?

4 A. (Barnum) The spotted turtle is a "State
5 threatened" species.

6 Q. Do you know what the current population of the
7 spotted turtle is?

8 A. (Barnum) I do not.

9 Q. How about Exhibit 331?

10 A. (Barnum) This is a wood turtle.

11 Q. Can you explain the level of protection
12 afforded to wood turtles?

13 A. (Barnum) I believe wood turtles are also -- no,
14 with "special concern", yes.

15 Q. Do you know what the current population of
16 woods turtles are?

17 A. (Barnum) I don't.

18 Q. Am I correct then, between "State endangered",
19 "threatened", and "special concern", the one we
20 want to worry about the most is the "State
21 endangered"?

22 A. (Barnum) Yes.

23 Q. Can we have the map, Exhibit 136? Perfect.

24 Dr. Barnum, do you recognize Exhibit 136?

[WITNESS PANEL: Barnum~Carbonneau~Magee~Tinus~Varney]

1 A. (Barnum) Yes, I do.

2 Q. What is it?

3 A. (Barnum) These are also maps from the Counsel
4 for the Public's expert testimony. But what
5 the underlying data is is the data from Fish &
6 Game. Their known distribution, based on the
7 records that Fish & Game and Natural Heritage
8 hold.

9 Q. And, as I understand it, this map depicts, from
10 left to right, locations along the Project
11 where you would expect to encounter, first, the
12 Blandings turtle, then the spotted turtle, and
13 then the wood turtle?

14 A. (Barnum) Correct.

15 Q. Am I correct that one of the more important
16 times, in terms of doing construction work in
17 the turtle area, would be the April to October
18 time frame?

19 A. (Barnum) That is the time period when,
20 generally speaking, turtles are active, yes.

21 Q. And do the best management practices, which I'd
22 like to pull up now, avoid construction
23 activities during this active time frame?

24 A. (Barnum) They do not.

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[WITNESS PANEL: Barnum~Carbonneau~Magee~Tinus~Varney]

1 Q. Why not?

2 A. (Barnum) Because we feel that we can avoid and
3 minimize impacts to turtles by doing the sweeps
4 prior to construction, and then fencing, to
5 keep the turtles out of the construction zone,
6 or continuing to do the sweeps.

7 Q. Okay. So, the best management practices, with
8 respect to turtles, don't have any seasonal
9 restrictions, instead they reference "sweeps",
10 is that correct?

11 A. (Barnum) That's correct.

12 Q. And the only reference within the best
13 management practice to "nesting" is that
14 "nesting spots, if identified, should be fenced
15 off"?

16 A. (Barnum) Correct.

17 Q. Is there any consideration in the best
18 management practice as to what happens if the
19 nests that are discovered have eggs, and
20 they're fenced off?

21 A. (Barnum) So, what should happen with the -- and
22 it's explained in the current version of the
23 AMMs, is that potential nesting areas should be
24 identified prior to construction activities

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[WITNESS PANEL: Barnum~Carbonneau~Magee~Tinus~Varney]

1 beginning and fenced, so that turtles don't
2 enter and use them.

3 If that's not the case, fencing is placed
4 around them, after turtles might have used
5 them, turtle eggs take three or four months to
6 hatch. So, you could keep an eye on the area
7 and remove the fencing when they hatch, and
8 then the hatchlings could make their way to
9 wherever they need to go.

10 Q. And I take it there is no Fish & Game map that
11 indicates all of the potential nesting spots of
12 turtles?

13 A. (Barnum) No, there isn't. We did some
14 searches. We looked at areas where there were
15 sandy soils. And, because the right-of-way is
16 cleared, and there's no overstory, it gets
17 plenty of sun, any area with open, sandy soils
18 is potentially nesting habitat.

19 In the right-of-way when -- where we
20 looked, and generally speaking, the sandy areas
21 that are open are open because they are being
22 used by off-road recreational vehicles. So,
23 they're not high-quality nesting areas to start
24 with, because they're constantly being

[WITNESS PANEL: Barnum~Carbonneau~Magee~Tinus~Varney]

1 disturbed. But there are some areas. And, so,
2 they're fairly easy to identify.

3 Q. And the nesting season for turtles is during
4 the summer, but what months in particular?

5 A. (Barnum) Yes. So, for these three species,
6 June is the month they're laying eggs
7 primarily. It could be early May, it could be
8 into early July -- excuse me, I misspoke. It
9 could be late May, it could be into early July.
10 But June is the primary month of egg-laying.

11 Q. So, wouldn't it be possible to have a best
12 management practice where the Environmental
13 Monitor or multiple Environmental Monitors
14 searched the site for eggs?

15 A. (Barnum) That would be impractical. The best
16 way to approach this issue would be, like I
17 said, to identify locations that might be
18 impacted, and fence them to prevent egg-laying
19 from occurring in those locations.

20 Q. Why would it be impractical to find the eggs?

21 A. (Barnum) It's hard to -- turtles bury their
22 eggs. They go find the place that they want to
23 nest, they dig a hole. If you've ever seen a
24 film of sea turtles nesting, which is the thing

[WITNESS PANEL: Barnum~Carbonneau~Magee~Tinus~Varney]

1 that most people get to take a film of, because
2 they're out on the beach, it's the same
3 process. The turtle backs in, uses her hind
4 legs to dig a hole, she lays her eggs. She
5 crawls up out, and she covers that hole back up
6 with here hind legs, she smoothes it out with
7 her body, and she leaves.

8 And, you know, if you're there and
9 watching, you know where the hole is. If you
10 come back maybe a day or two later, you might
11 be able to spot where she disturbed the ground.
12 But, after a few days, sun, rain, wind,
13 *etcetera*, you don't know where that spot is
14 anymore.

15 Q. And isn't that difficulty that you just
16 described then also going to make it difficult
17 to fence out all of the locations where the
18 turtles could potentially lay eggs?

19 A. (Barnum) The locations within the right-of-way
20 currently are limited. Having done some
21 inspection of those potential locations, I can
22 attest to the fact that they're not abundant.
23 It would be relatively straightforward to
24 identify those locations and fence them.

[WITNESS PANEL: Barnum~Carbonneau~Magee~Tinus~Varney]

1 Q. So, the eggs are typically laid in June. Am I
2 correct that the young turtles typically hatch
3 in August?

4 A. (Barnum) Yes. Or, even later sometimes,
5 September.

6 Q. And, since we, once again, we have a limited
7 time frame between June to August, wouldn't it
8 be appropriate to give better protection to the
9 turtles to have a seasonal construction
10 restriction as suggested by Fish & Game, back
11 when they met with you in February of 2017?

12 A. (Barnum) You might afford them some additional
13 protection through a seasonal restriction, but
14 we feel that the approach we've suggested is
15 appropriate. And this is also consistent with
16 the approach that's used in construction
17 projects throughout New England.

18 Q. Well, I understand it may be used in other
19 construction projects, but, in terms of Fish &
20 Game, did they not, in fact, suggest a
21 "seasonal restriction should be emphasized"?

22 A. (Barnum) They did suggest that, yes.

23 Q. There's also been a suggestion in the best
24 management documents here that, in terms of the

[WITNESS PANEL: Barnum~Carbonneau~Magee~Tinus~Varney]

1 adult turtles, that there's going to be some
2 attempt to actually locate them, grab them, and
3 move them?

4 A. (Barnum) Correct.

5 Q. And is this part of the contractor's job or the
6 Environmental Monitor's job?

7 A. (Barnum) This is also part of the Environmental
8 Monitor's job. The area that needs to be --
9 the areas that will be searched for turtles are
10 also the snake areas. So, the Environmental
11 Monitor will be responsible for both species.
12 The search effort for both -- for all species
13 is similar. When they're looking for one set
14 of reptiles, they're likely to encounter
15 another set of reptiles. If they are present,
16 they will be prepared to deal with whichever
17 species they find.

18 Q. The best management practice indicates that
19 "the Environmental Monitor is going to search
20 woody and grassy wetland vegetation within the
21 construction zone".

22 A. (Barnum) Uh-huh.

23 Q. Those terms, "woody and grassy wetland
24 vegetation" are not defined within the best

[WITNESS PANEL: Barnum~Carbonneau~Magee~Tinus~Varney]

1 management practice. Do we know what those
2 terms are going to encompass?

3 A. (Barnum) Essentially, that recommendation will
4 encompass all wetland vegetation.

5 Q. Beyond the wetlands, this best management
6 practice doesn't protect any turtles that
7 prefer open-water wetlands, does it?

8 A. (Barnum) That's correct. Turtles using open
9 water, I don't know if you've ever tried to
10 catch a swimming turtle, but that's very
11 difficult. Turtles are restricted in their
12 ability to move when they're on land. But,
13 when they're in the water, they are quick, and
14 will have no trouble avoiding whatever they
15 need to avoid.

16 Q. So, any of the turtles that may be spotted by
17 the environmental monitor then can escape to
18 the water, and then they're on their own?

19 A. (Barnum) That's correct.

20 Q. Is there any best management practice where
21 there's going to be an inventory taken that
22 indicates "we saw however many turtles escape
23 into the open water, so we know we've got them
24 in the zone"?

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1 A. (Barnum) Yes. So, as part of the sweeping,
2 when these species are seen or captured, they
3 will need to -- the Environmental Monitor will
4 need to be filling out forms, which they will
5 be submitting back to Fish & Game.

6 Q. But there's no follow-up that prohibits
7 construction activities from ongoing, even
8 though you know turtles may be in the area?

9 A. (Barnum) That's correct.

10 Q. You mentioned a little bit earlier that there's
11 a proposal, a mitigation proposal, to create or
12 protect suitable nesting habitat as an offset.
13 Have any specific protocols been written, in
14 terms of how many nesting habitats are going to
15 be created as an offset?

16 A. (Barnum) There have not, at this point.

17 Q. What's going to go into the determination of
18 how many nesting habitats are going to be
19 offered as an offset?

20 A. (Barnum) This is part of our ongoing discussion
21 with Fish & Game.

22 Q. Have you prepared an estimate as to the number
23 of nesting habitats that are going to be
24 impacted by this Project?

[WITNESS PANEL: Barnum~Carbonneau~Magee~Tinus~Varney]

1 A. (Barnum) I have not.

2 Q. Do we have any outer perimeters on how many
3 nesting habitats you're going to propose to
4 provide as an offset?

5 A. (Barnum) Because the assessment of nesting
6 habitat within the right-of-way that I
7 conducted didn't reveal any high-quality
8 habitats that were going to be impacted, like I
9 say, we haven't done an estimate yet, but we
10 anticipate it will be a relatively small
11 number.

12 Q. So, the representation to this panel that "we
13 don't need to worry about the eggs that are
14 destroyed during construction, because we have
15 this offset", really isn't true, if we're going
16 to have such a small offset?

17 A. (Barnum) Well, there isn't much to impact. So,
18 there doesn't need to be a whole lot to offset.

19 Q. Is the Environmental Monitor going to take any
20 steps to try to figure out if there are eggs
21 that are destroyed during the Project? Are
22 they going to go look for them?

23 A. (Barnum) They will look for suitable habitat.
24 And, based on the habitat, they will be -- the

[WITNESS PANEL: Barnum~Carbonneau~Magee~Tinus~Varney]

1 offset will be based on habitat, not on eggs.

2 Q. And you're telling this panel that it's going
3 to be a small offset?

4 A. (Barnum) Relatively, yes.

5 Q. Well, are we talking about less than a dozen?

6 A. (Barnum) I would think of -- I would think of
7 it in terms of area, rather than number. And,
8 in terms of area, I can't estimate, but, you
9 know, ten acres, something to that effect
10 perhaps.

11 Q. Ms. Barnum, have there been any discussions
12 about whether your office will be hired as the
13 Environmental Monitor on this Project?

14 A. (Barnum) There have not.

15 Q. I'm going to move on to Exhibit 336 -- we can
16 do the pictures first.

17 MS. MERRIGAN: I'm sorry.

18 MS. CONNOR: That's all right.

19 BY MS. CONNOR:

20 Q. We have Exhibit 313 up. Dr. Barnum, can you
21 recognize what this picture is?

22 A. (Barnum) This is a brook trout.

23 Q. And what is the brook trout's status under New
24 Hampshire?

[WITNESS PANEL: Barnum~Carbonneau~Magee~Tinus~Varney]

1 A. (Barnum) I'm going to let Lee Carbonneau work
2 with this species.

3 A. (Carbonneau) Sorry. I've got the aquatics.

4 Q. Okay.

5 A. (Carbonneau) The brook trout is a game fish in
6 New Hampshire.

7 Q. Next photo. Ms. Carbonneau, do you recognize
8 Exhibit 325?

9 A. (Carbonneau) Not personally, but it's labeled
10 as an "Eastern Pearlshell Mussel".

11 Q. And what is the status of the Pearlshell
12 Mussel?

13 A. (Carbonneau) I believe it's a "species of
14 concern".

15 Q. Now we can go to 336. 336, with respect to the
16 brook trout, indicates "to the extent
17 practicable, all sediment discharges and
18 instream disturbance...between October 1st and
19 June 30th should be avoided". Can you tell
20 this panel what the importance of that time
21 frame is?

22 A. (Carbonneau) That is the time period in which
23 brook trout will be spawning, and their eggs
24 and/or young will be in the streams.

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1 Q. And, if there were sediment discharges and
2 instream disturbance during that time frame,
3 what would the impact be upon the brook trout?

4 A. (Carbonneau) Well, it's possible, if the eggs,
5 which are fairly sticky, adhere to the
6 substrate, that sediment could potentially
7 smother those eggs. Any additional fine
8 particles in the water can cloud the water, it
9 can have a temperature effect on the stream
10 water itself. It can just make the conditions
11 less favorable for eggs and small fish.

12 Q. Am I correct, as we discussed at some length
13 yesterday, that the best management practices
14 don't define a protocol for determining whether
15 something is "practicable"?

16 A. (Carbonneau) When we've used the term
17 "practicable", we are basically using the term
18 as it's defined in the 404 regulations, which
19 is loosely, don't quote me, but sort of
20 available and capable of being done, given
21 technology, logistics, costs, in light of the
22 overall project purposes.

23 Q. Well, you would agree with me that, in fact,
24 the Applicant has the ability to avoid all

[WITNESS PANEL: Barnum~Carbonneau~Magee~Tinus~Varney]

1 sediment discharges and instream disturbance
2 during this time frame?

3 A. (Carbonneau) We're actually not anticipating
4 very much work in -- instream work at all
5 anyway. The exception would be in the
6 locations, the 29 locations where culverts will
7 be replaced on the off-right-of-way access
8 roads. And, in that case, New Hampshire DES
9 has required that that work be conducted during
10 low flow conditions. That typically happens in
11 August and September. So, we're likely not to
12 be doing any instream work during this time
13 period.

14 Q. Then, can this best management practice be
15 rewritten, so that we can strike the phrase "to
16 the extent practical", and know that all
17 sediment discharges and instream occurrence
18 shall not occur between October 1st and June
19 30th?

20 A. (Carbonneau) I don't know if that's likely to
21 be necessary. I think that there could be some
22 occasion where some other culvert is found in
23 the construction area that may need
24 replacement. If that's the case, then not all

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1 streams are brook trout streams. That's a
2 situation where, if some additional work for
3 some reason needed to take place outside of
4 that time frame, or within that time frame,
5 some further review to determine if there would
6 be an actual impact to brook trout might be
7 appropriate.

8 Q. Can we pull up again Applicant -- exhibit from
9 the Applicant 124, public version? Go towards
10 the bottom. These again are the meeting minute
11 notes from Fish & Game from February 14th,
12 2017. And it appears that I'm not the only one
13 that has had some concern with the extent to
14 which the best management practices seem to
15 have an exception whenever somebody decides
16 something is not practicable. Mike Marchand,
17 at Fish & Game, referenced that "A number of
18 the BMPs specify "extent practical" and it's
19 difficult to understand the meaning of this
20 phrase with respect to avoiding and minimizing
21 impacts to specific species". You see that?

22 A. (Carbonneau) I do.

23 Q. And, so, despite the concern, apparently, of
24 Fish & Game as well, with regard to the manner

[WITNESS PANEL: Barnum~Carbonneau~Magee~Tinus~Varney]

1 in which these best management practices are
2 written, that phrase appears not have been
3 deleted. And it gives the Applicant the out to
4 avoid compliance, does it not?

5 A. (Carbonneau) I would point out that the AMMs or
6 best management practices that you are showing
7 are the ones that are under discussion now.
8 So, they are not the final approved. We have
9 two conditions, 7 and 9, in our New Hampshire
10 DES permit approval, that states that, you
11 know, ongoing consultation with Fish & Game and
12 with the Natural Heritage Bureau, is an
13 essential part of the Project, right up before
14 and during construction.

15 So, these are things that, if there is an
16 issue that comes up, and we can -- or, the
17 Project has a legitimate reason why it is not
18 practicable to do something, then the permit
19 approvals allow for continued consultation with
20 the agencies to come to an acceptable
21 resolution.

22 Q. But, even today, with respect to something like
23 the brook trout, where you say "we don't
24 anticipate having any discharges or disturbance

[WITNESS PANEL: Barnum~Carbonneau~Magee~Tinus~Varney]

1 during this time frame", you're not willing to
2 commit to avoiding that escape clause?

3 A. (Carbonneau) It's a long construction period,
4 it's several years. And I don't know all of
5 the possible reasons why there might be a
6 single time period during which adhering to
7 that is not practicable. It's possible that
8 something might come up. It's also possible
9 that this will not be an issue at all, in any
10 case.

11 Q. Well, I understand that, and that would be
12 perfect in the perfect world. But the idea of
13 these best management practices is to minimize
14 the impact. And, as drafted, they don't do
15 that, because the Applicant can decide, with
16 respect to each species, that the restrictions
17 are not practicable.

18 A. (Carbonneau) I disagree. I think they do a
19 very good job of minimizing the impact. We
20 have not said that there will never ever be any
21 chance of an impact from this Project. So, it
22 is remotely possible that, in some case, it
23 won't be practicable to adhere to this. But we
24 don't expect that to be a common problem.

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1 We're not anticipating that. But we can't
2 predict every possible scenario that might
3 occur during construction.

4 Q. Ms. Carbonneau, do you agree that this board is
5 going to have some difficulty deciding whether
6 this Project is going to have an adverse impact
7 on the state resources, when the best
8 management practices are written with an escape
9 clause?

10 A. (Carbonneau) No. I disagree with that. I
11 think, given the fact that the New Hampshire
12 DES permit approvals indicate that we must come
13 to some agreement and resolution with the
14 natural resource experts that are responsible
15 for stewardship of these resources, that they
16 can feel confident that that will occur. It's
17 a requirement, and it will be done.

18 Q. Well, again, whether DES agrees with the
19 actions, nobody gets to override the Applicant,
20 who decides whether something is practicable,
21 right?

22 A. (Carbonneau) No. I disagree with that. I
23 think that Fish & Game and the Natural Heritage
24 Bureau, in their areas of expertise, would have

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1 the right to say "I'm sorry, that we disagree.
2 That we are going to hold you to those." I
3 think they get the final say in this.

4 Q. They may get the final say as to whether you
5 apply the restrictions in 336, but, as drafted,
6 they don't require you to comply with what's
7 written.

8 A. (Carbonneau) Again, as drafted, you're looking
9 at an older version of what we have -- we are
10 now working with. I expect there will probably
11 be some language in the wildlife AMMs that we
12 currently have in the Natural Heritage Bureau
13 AMMs that say, if the rare occurrence occurs,
14 where the Project is saying "Look, it's just
15 not practicable for us to follow this
16 particular AMM", it is required for us to
17 consult with the Natural Heritage Bureau and
18 find the most least-damaging way of moving
19 forward on that particular issue. And it could
20 very well be that they say "Well, we disagree.
21 We think that you're still going to need to
22 follow that." They do get the final word. We
23 expect that there will be similar language in
24 the Avoidance and Minimization Measures for

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1 Fish & Game.

2 Q. Well, it would certainly be helpful if, today,
3 the panel could commit one way or another, so
4 that we know, in this hearing, whether these
5 BMPs are going to be amended to omit the escape
6 hatch, or to allow a specific protocol as to
7 who gets to make the decision as to whether
8 they're followed. And, as I understand it, you
9 tell us that you're talking about it, but we
10 don't have that protocol?

11 A. (Carbonneau) It's being drafted as we speak.
12 It's in the process. We are continuing to work
13 with Fish & Game. And, actually, that's what
14 we're required to do. That --

15 Q. Well, I understand that -- sorry, didn't mean
16 to cut you off.

17 A. (Carbonneau) I'm sorry. I was going to add
18 that, that is one of the conditions of the
19 Project approvals is that we continue to do
20 that. And, in addition to working through the
21 Avoidance and Minimization Measures as they're
22 written, we also continue to find ways to
23 continue to reduce and minimize and avoid
24 impacts. And, actually, that effort is

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1 continuing.

2 Q. But you had known since February 14th, 2017
3 that at least one individual at Fish & Game was
4 concerned about this particular phrase, and it
5 hasn't been omitted yet?

6 A. (Carbonneau) I would say, in some cases, it has
7 been changed in a variety of the
8 species-specific Avoidance and Minimization
9 Measures. It may not be eliminated completely
10 from all of them.

11 Q. Am I correct that, if there have been any
12 changes to reduce the escape clause of what's
13 practicable from the best management practices,
14 they haven't been introduced to this panel,
15 have they?

16 A. (Carbonneau) No, not yet.

17 Q. I'm going to move on to wetlands. Which I
18 understand is also your area of expertise?

19 A. (Carbonneau) Yes.

20 Q. Can you confirm the magnitude of the
21 anticipated permanent impact to wetlands with
22 this Project?

23 A. (Carbonneau) Yes. Permanent impacts to
24 wetlands is approximately two and a half acres.

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1 Q. And what about the magnitude of the anticipated
2 temporary impact to wetlands in conjunction
3 with this Project?

4 A. (Carbonneau) The temporary impacts is
5 approximately 138 acres.

6 Q. Am I correct, in a very general sense, not
7 being a wetlands expert, that the difference
8 between a temporary impact and a permanent
9 impact is that you anticipate the temporary
10 impact will ultimately be restored?

11 A. (Carbonneau) That's correct.

12 Q. Would you agree that there is no guarantee that
13 all of the anticipated temporary impacts will,
14 in fact, be restored?

15 A. (Carbonneau) A guarantee? I think the Project
16 is required to restore all temporary impacts to
17 the satisfaction of New Hampshire DES, and they
18 have standards in place. So, I would say that
19 the permit approvals do, in fact, although they
20 don't use the word "guarantee", they do require
21 that that occurs. And, so, if there were some
22 location where the restoration was considered
23 to be inadequate, then New Hampshire DES would
24 require that some additional work take place so

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1 that that area would be restored to their
2 satisfaction.

3 Q. How many years are allowed before a temporary
4 wetland impact returns to its natural state?

5 A. (Carbonneau) Well, the general approach to
6 restoration is to restore the soils and put
7 down some vegetation initially. For a wetland
8 to resume its complete vegetation as it was
9 before the impact could take many years,
10 depending on what type of vegetation was there.

11 However, generally speaking, New Hampshire
12 DES requires that you monitor a restored
13 wetland for three years, to determine that it's
14 going in the right direction. So, we're not
15 necessarily restoring every shrub, every tree
16 that might have been in a wetland area. But we
17 are stabilizing it. We're putting in natural
18 native seeds, making sure that the soils are
19 appropriate and the hydrology is there.

20 Q. So, we have three years, on the low side, in
21 terms of remediation. How much longer might it
22 take?

23 A. (Carbonneau) Depends on what type of wetland it
24 is. Most of the wetland impacts are going to

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1 be associated with the existing right-of-way.
2 They are maintained and mowed in many cases.
3 They're herbaceous. It does not -- it
4 shouldn't take more than three years in that
5 case. If shrubs start to develop, they get
6 mowed down as well in some cases, not in all
7 cases. And, so, it takes a few more years for
8 a mature shrub to develop.

9 Q. So, would you anticipate then that all
10 140 acres of the anticipated temporary impact
11 to wetlands will be restored within five years?

12 A. (Carbonneau) I think that the restoration goals
13 that are required will be met in three years.
14 That's the requirement.

15 Q. Well, the goals differ from complete
16 restoration of all 140 acres, do they not?

17 A. (Carbonneau) It depends on what you're calling
18 "complete restoration". I mean, they will be
19 restored adequately under what is typically
20 considered a "restoration program". Vegetation
21 changes constantly. So, they will -- even
22 natural wetlands, the vegetation is constantly
23 changing, and that's a natural process. So, we
24 are restoring stability and all of the features

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1 that are required for a wetland to function.

2 Q. So, you're anticipating that the 140 acres of
3 temporary impacts will be restored within three
4 years?

5 A. (Carbonneau) To the level that is required by
6 any project that New Hampshire DES regulates,
7 yes.

8 Q. How many acres are affected by secondary
9 impacts?

10 A. (Carbonneau) Approximately 180 acres.

11 Q. Am I correct that these -- well, let's start
12 with what are "secondary impacts"?

13 A. (Carbonneau) "Secondary impacts" are defined by
14 the federal agencies. They're not regulated at
15 all by the State of New Hampshire. But they
16 include the conversion of a forested wetland to
17 a different type of wetland by the removal of
18 the tree canopy. It also includes clearing of
19 forest canopy adjacent to a vernal pool or a
20 stream. And it also includes potential
21 compression impacts to deep organic soils.

22 Q. Am I correct that these secondary impacts are
23 primarily located in the northern part of the
24 state where the new right-of-way is being

[WITNESS PANEL: Barnum~Carbonneau~Magee~Tinus~Varney]

1 constructed?

2 A. (Carbonneau) The vast majority are in the
3 northern portion, because that is the location
4 where most of the tree clearing associated with
5 the Project will take place, yes.

6 Q. And is there any expectation that the 180 acres
7 affected by secondary impacts will be
8 remediated?

9 A. (Carbonneau) Well, there's a couple of things
10 that affect the restoration of secondary
11 impacts. There's within -- along the streams,
12 there is a replanting planned, so that woody
13 vegetation will eventually cover the streams.
14 There cannot be an allowance for trees to grow,
15 because it's in the right-of-way, and that
16 would be a hazard for the lines.

17 So, while there will be some restoration
18 of low woody vegetation in these locations,
19 there won't be an allowance for trees to grow.
20 And, for that reason, secondary impacts are
21 addressed through compensatory mitigation for
22 the most part.

23 Q. Do you agree that there were alternative routes
24 available that would have involved a smaller

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1 number of impacted wetlands?

2 A. (Carbonneau) I suppose there could be other
3 routes that involve less clearing.

4 Q. And certainly burying more of the line would
5 impact less wetlands, correct?

6 A. (Carbonneau) If the lines were buried in
7 previously disturbed areas, potentially, yes.

8 Q. The wetland acreage calculations we just
9 discussed do not include staging, storage, and
10 laydown areas, do they?

11 A. (Carbonneau) There were -- we did evaluate some
12 laydown areas. They were found to not have
13 wetland issues associated with them. Any
14 future laydown areas that are found for the
15 Project, and I may be using the term slightly
16 differently than others, but these locations,
17 I'm thinking of the large locations that the
18 construction panel indicates they need to
19 stockpile materials prior to moving them to the
20 right-of-way, those locations have a
21 requirement that they be selected based on not
22 having wetland impacts or having wetlands or
23 sensitive natural resources. So, things like
24 old gravel pits, possibly parking areas, old

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1 paved parking areas, maybe other open areas
2 that don't require a great deal of new
3 disturbance or clearing of trees or impacts to
4 wetlands.

5 For on the right-of-way, my understanding
6 is that the work pad that is constructed or
7 established for the erection of structures will
8 be used as a temporary stockpile or laydown
9 area within the right-of-way. And, so, no
10 additional impacts would be necessary for that.

11 Q. But the laydown areas that you just talked
12 about, that you identified, but did not include
13 in your calculations, could have been
14 calculated before we got to this hearing?

15 A. (Carbonneau) If they were known to be available
16 to the Project, we had evaluated them and
17 included them in the Application.

18 Q. Can you describe what a "vernal pool" is?

19 A. (Carbonneau) Yes. A "vernal pool" is,
20 basically, a depression in the landscape which
21 holds water for a portion of the year during
22 which certain species use it to breed. For
23 example, several amphibian species are sort of
24 dependent upon using vernal pools. There are

[WITNESS PANEL: Barnum~Carbonneau~Magee~Tinus~Varney]

1 some other invertebrate species that can be
2 used to identify a vernal pool. But these are
3 small areas, usually that do not contain fish,
4 and that meets certain other criteria.

5 Q. In terms of wetland protection, am I correct
6 that vernal pools have priority?

7 A. (Carbonneau) Vernal pools are typically a type
8 of wetland. Not every vernal pool meets
9 wetland criteria, but most do. They, in the
10 State of New Hampshire, yes, they're considered
11 a valuable wetland resource. But they're not
12 called out separately. It is required that you
13 identify them in a project, and address their
14 value as a vernal pool, with respect to their
15 wildlife habitat value.

16 Q. It's my understanding that the proposed route
17 of this Project attempted to avoid vernal
18 pools, did they not?

19 A. (Carbonneau) Yes.

20 Q. You're aware that the expert for the Public,
21 Arrowwood, has identified at least 15
22 additional vernal pools that they believe could
23 be avoided with minor shifts in the work area?

24 A. (Carbonneau) I recall that was in their report,

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1 yes.

2 Q. For example, if we could pull up Page 25 from
3 the Arrowwood Report. Okay. Can we blow that
4 up a little?

5 MS. MERRIGAN: Uh-huh.

6 BY MS. CONNOR:

7 Q. Ms. Carbonneau, am I correct that the vernal
8 pool is sort of the blue area that's outlined
9 in yellow?

10 A. (Carbonneau) Yes.

11 Q. Okay. And, if we look at this particular
12 diagram, which is from the Arrowwood Report, it
13 certainly appears that, in the very first
14 picture, DUVP9, could be avoided by simply
15 moving the access road a little bit to the
16 left?

17 A. (Carbonneau) It's possible.

18 Q. But that wasn't done, even after it was pointed
19 out by the experts for Counsel for the Public?

20 A. (Carbonneau) These minor shifts, in some cases,
21 will be possible. And it is the Project's
22 intention to make minor shifts with the matting
23 and the road access as depicted on the plans,
24 with the inputs of some additional field

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1 information. So, the contractor's plan is to
2 do a walk-down of the right-of-way. And, if it
3 is possible, in fact, to make that shift, then
4 that is definitely something that will take
5 place.

6 Q. Well, will you agree today to make that change,
7 to save DUV9?

8 A. (Carbonneau) I can't make that decision without
9 consulting the engineers, to see if there is
10 some additional reason why that shift can't
11 take place. There are often other landscape
12 features or other reasons why it can't. But
13 it's certainly something that the Project will
14 continue to try to minimize impacts to, yes.

15 Q. The next diagram shows a vernal pool, DF-VP2,
16 that seems to be also something that could be
17 avoided with just a very minor shift, does it
18 not?

19 A. (Carbonneau) It does appear that that could be
20 possible.

21 Q. Pull up the next page. And, again, blow it up
22 a little. This is the next page from the
23 Arrowwood Report, again, just a couple
24 illustrations with regard to the 15 vernal

[WITNESS PANEL: Barnum~Carbonneau~Magee~Tinus~Varney]

1 pools they have identified. The first one,
2 SKVP4, again, looks like just a small change
3 would avoid that vernal pool in its entirety?

4 A. (Carbonneau) Yes. Although, in this case, it
5 looks like, if you did shift the road to the
6 south, that you would have a much greater
7 wetland impact as well.

8 Q. Well, you would have a wetland impact of the
9 same degree as the vernal pool, but the vernal
10 pool has higher priority?

11 A. (Carbonneau) No. It looks like, if you shifted
12 that road, it would have a -- the area of
13 wetland impact would greatly exceed the area of
14 vernal pool that you would not impact.

15 Q. What about the next picture, vernal pool
16 MDHVP1? Doesn't it look like that one could
17 have been avoided as well?

18 A. (Carbonneau) Again, it looks like it's
19 possible. However, it could result in a
20 greater overall impact. Not all of these
21 vernal pools are considered "high value". In
22 some cases, a further impact to the wetland
23 might be a reason not to relocate it.

24 Q. It appears that the Arrowwood Report was

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1 published in December 30th, 2016. So, the
2 Applicant has had available to it a
3 considerable period of time to address the 15
4 vernal pools that Arrowwood has identified. No
5 changes have been made to make tweaks in the
6 route based upon that information, have they?

7 A. (Carbonneau) Yes, they have, actually. There
8 are a number of locations, particularly where
9 there's been impacts to high value wetland
10 pools, where the Project has made some edits to
11 the plans. And these have been provided to New
12 Hampshire DES.

13 Q. Which of the 15 vernal pools identified by
14 Arrowwood have been saved by these tweaks?

15 A. (Carbonneau) There is one in Deerfield,
16 Deerfield Vernal Pool 1, I believe. There is
17 another one, I think it's in Whitefield. There
18 were three high-value vernal pools that were
19 temporarily impacted by the Project. And I
20 will remind you that these are -- we're talking
21 about temporary impacts here. And those, we've
22 been able to eliminate the impacts to two of
23 those high-value vernal pools. The other one
24 just can't be avoided, but it is a temporary

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1 impact.

2 And I'm not sure that the report, I did
3 not see where all of these 15 locations are.
4 They gave some examples, but I don't think they
5 named all of the vernal pools that they believe
6 can be avoided.

7 Q. Well, wouldn't it have been appropriate to have
8 some communications to determine whether
9 additional, beyond two, could have been
10 avoided?

11 A. (Carbonneau) We, as I said, we continue to look
12 at ways to minimize these impacts. And the
13 contractors and the Construction team have to
14 be involved in that. In many cases, it's a
15 decision that can't be made until they get out
16 in the field and they identify how those timber
17 mats are going to be laid down across those
18 areas.

19 Q. I take it from your testimony, though, that you
20 are committing the Applicant to continue to
21 look at the vernal pools as we go forward, and,
22 to the extent you can avoid them in the way
23 that Arrowwood has suggested, that is something
24 that you will consider doing?

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1 A. (Carbonneau) Yes.

2 Q. Ms. Carbonneau, I think I know from your
3 testimony, but I just want to clarify that,
4 after Arrowwood's Report came out in December
5 of 2016, it appears that no efforts were made
6 to communicate with them to determine the
7 location of the 15 vernal pools that they
8 believe should be saved?

9 A. (Carbonneau) I have not reached out to them
10 directly. But I will point out that it is a
11 requirement, in our New Hampshire DES permit
12 approval, that we continue to look for ways to
13 minimize impacts to all wetland resources. And
14 that's exactly what we're doing.

15 MS. CONNOR: At this moment, Chair, I
16 am done with the cross that can be done in the
17 public session. I do have a small amount for
18 non-public or confidential.

19 CHAIRMAN HONIGBERG: What do you
20 think is the timing, roughly, on the amount you
21 have to do in confidential?

22 MS. CONNOR: I think it's less than a
23 half an hour.

24 CHAIRMAN HONIGBERG: Okay. Let's go

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1 off the record for a second.

2 *[Off-the-record discussion*
3 *ensued.]*

4 CHAIRMAN HONIGBERG: All right.
5 We're going back on the record, in public
6 session, to clarify the situation with respect
7 to the confidential information that Ms. Connor
8 needs to cover with this panel.

9 Mr. Roth, I'll ask you to start us
10 off.

11 MR. ROTH: I do not represent the
12 Natural Heritage Bureau in this proceeding, nor
13 have I done so in any other proceeding in the
14 past. Although, I do represent the interests
15 of State agencies generally.

16 Our cross-examination this morning
17 will, in the confidential aspect, will use two
18 plan sheets that were prepared by the
19 Applicant, which include data provided by the
20 Natural Heritage Bureau, with respect to the
21 locations of certain rare plants.

22 It's my understanding that there's a
23 very limited number of people in this
24 proceeding, and I think the Applicant probably

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1 has a better understanding of who they are than
2 I do, but who have access to that information
3 by virtue of authorization from the Natural
4 Heritage Bureau. And I know that my team is
5 also authorized. And I assume the Applicant is
6 as well. Beyond that, I am uncertain who else
7 may have been authorized. But, if that's the
8 case, that it's a very limited number of
9 people, then the room is going to be very, very
10 quiet.

11 CHAIRMAN HONIGBERG: What's the
12 source of the confidentiality? Is it a state
13 statute? A federal statute? Both? Do you
14 know?

15 MR. ROTH: I'm not certain, but I
16 believe it is a state statute.

17 CHAIRMAN HONIGBERG: All right.
18 Mr. Needleman.

19 MR. NEEDLEMAN: Mr. Roth is correct,
20 it's state statute that requires us, as the
21 Applicant, to maintain protection of this
22 material, and, in turn, would require others
23 who want access to it to do so through the
24 Heritage Bureau.

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1 CHAIRMAN HONIGBERG: And that is not
2 the SEC statute? That is not part of 162-H, is
3 that correct?

4 MR. NEEDLEMAN: That is correct.

5 CHAIRMAN HONIGBERG: Is there -- who
6 has an understanding of who can be here and who
7 cannot? Mr. Bisbee, is that something you know
8 or --

9 MR. BISBEE: I'm not totally sure. I
10 know that Counsel for the Public has obtained
11 access. I believe AMC has. City of Concord
12 was seeking it, I don't know if they have
13 gotten it yet.

14 CHAIRMAN HONIGBERG: I think we've
15 confirmed that the City of Concord does not yet
16 have it in place.

17 Does the Society for the Protection
18 of New Hampshire Forests?

19 MS. MANZELLI: No, we don't.

20 CHAIRMAN HONIGBERG: All right. Is
21 there anyone else in the room who has made --
22 who has the necessary authorization?

23 *[No indication given.]*

24 CHAIRMAN HONIGBERG: All right. It

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1 sounds like the answer is "no". So, this is
2 going to be a very small group of people who
3 are allowed to stay for this portion of the
4 cross-examination.

5 So, with that understanding, if you
6 do not have the requisite permission to be
7 here, we're going to ask you to step out for
8 the remainder of Ms. Connor's
9 cross-examination. We will then take a short
10 break. And, when we come back, we will be in
11 public session.

12 (End of public session.)

13 **Page 63 through Page 95** contain
14 information deemed to be
15 **CONFIDENTIAL and PROPRIETARY** and
16 is therefore provided under
17 separate cover so designated in
18 the transcript identified as
19 **DAY 17 Morning Session ONLY -**
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[WITNESS PANEL: Barnum~Carbonneau~Magee~Tinus~Varney]

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1 *[Public session resumed at 11:27*
2 *a.m.]*

3 CHAIRMAN HONIGBERG: I think we're
4 ready to resume. Questioning next is Melissa
5 Birchard, from the coalition of the Appalachian
6 Mountain Club, the Conservation Law Foundation,
7 and the Ammonoosuc Conservation Trust. I
8 believe you have questions and Mr. Plouff also
9 has questions?

10 MS. BIRCHARD: That is correct.

11 CHAIRMAN HONIGBERG: All right.
12 Ms. Birchard, you may proceed.

13 MS. BIRCHARD: Thank you. As the
14 Chair has indicated, I am a member of the
15 intervenor grouping comprised of several
16 different organizations. I, myself, am an
17 attorney for Conservation Law Foundation.

18 BY MS. BIRCHARD:

19 Q. Mr. Varney, if I may direct some questions to
20 you. Your testimony references or cites
21 Ms. Julia Frayer of London Economics'
22 testimony?

23 A. (Varney) Yes.

24 Q. And relies on that testimony for a range of

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1 conclusions, is that correct?

2 A. (Varney) Yes.

3 Q. Can you tell us which of London Economics'
4 various reports and materials you have read and
5 relied upon in providing your testimony?

6 A. (Varney) I believe they're referenced in my
7 testimony. It was the -- I believe it was
8 October 2015, with the initial submission, and
9 then the Updated Report and testimony that she
10 submitted.

11 Q. Mr. Varney, are you indicating two reports and
12 two pieces of testimony, 2015 and 2017?

13 A. (Varney) Yes. Her initial report was Appendix
14 43, I believe.

15 Q. Is that the extent of your review?

16 A. (Varney) The two reports and her testimony
17 submitted for the docket.

18 Q. Thank you very much. How did you go about
19 assessing London Economics' modeling
20 assumptions and estimates?

21 A. (Varney) I didn't. I relied on their modeling
22 and their judgment.

23 Q. Have you had the opportunity to crunch any
24 numbers or do any calculations regarding

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1 emissions reductions?

2 A. (Varney) No.

3 Q. Have you had the opportunity to crunch any
4 numbers or do any calculations with regard to
5 other specific impacts of the Project?

6 A. (Varney) No.

7 Q. Apart from orderly development, which will be
8 covered later, of course?

9 A. (Varney) Uh-huh.

10 Q. You also reference the Department of Energy's
11 Draft Environmental Impact Statement?

12 A. (Varney) Yes.

13 Q. Have you also reviewed the Supplemental Draft
14 Environmental Impact Statement?

15 A. (Varney) Yes. November 2015, I believe.

16 Q. And is it fair to say that you rely on London
17 Economics and the Department of Energy for your
18 technical assessments?

19 A. (Varney) Yes. I reviewed both of them and
20 their conclusions.

21 Q. Were you able to or had the opportunity to do
22 any of the analysis yourself to confirm the
23 Department of Energy's numbers and data?

24 A. (Varney) No. I didn't do any modeling

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1 associated with it. I simply reviewed the
2 information that was presented.

3 Q. Okay. Mr. Varney, on Page 5 of your initial
4 testimony, you state that "Northern Pass has
5 said that its contractors will be required to
6 develop BMPs and written protocols" to help
7 address the temporary emissions associated with
8 the construction. I assume "BMPs" here means
9 "best management practices", is that right?

10 A. (Varney) Yes.

11 Q. Have you reviewed these best management
12 practices?

13 A. (Varney) I've reviewed the ones that were
14 submitted, I believe, as part of a response to
15 discovery. And I've also reviewed the DES
16 Factsheet, relative to fugitive dust and BMPs
17 associated with limiting and managing fugitive
18 dust emissions.

19 Q. Am I correct that Northern Pass did not consult
20 you in the development of these best management
21 practices?

22 A. (Varney) They didn't need to consult me, in the
23 sense that these are standard BMPs that are
24 used for normal construction activity,

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1 practices such as wetting and sweeping
2 surfaces, covering and enclosing stockpiles,
3 vegetative controls, windbreaks, stone aprons.
4 Those are all very standard in the construction
5 industry and are typically employed by DOT and
6 communities working on infrastructure projects,
7 and contractors with their development
8 activity.

9 Q. Will you be following up to confirm the
10 appropriate implementation of these best
11 management practices?

12 A. (Varney) My understanding is that the BMPs will
13 be built into the contracts with the
14 contractors working on the Project. There will
15 be policies established. There will be
16 internal training associated with those
17 expectations. And there will be supervision to
18 ensure that they are, in fact, being carried
19 out.

20 In addition, I would expect, as you
21 normally see during any construction project,
22 again, with DOT or other municipal projects
23 even, as well as private sector contractor
24 projects, that they routinely coordinate and

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1 communicate with residents in the area, to
2 ensure that, if there are any issues of
3 concern, that they're addressed.

4 Q. So, you trust that they will be implemented
5 adequately? Are you going to be following up
6 in any regard?

7 A. (Varney) Typically, again, the --

8 Q. I guess that's really a "yes" or "no" question,
9 sorry. If it's "no", that's fine, we'll move
10 on. We can move onto the next question.

11 A. (Varney) Well, could you repeat the question?

12 Q. Will you personally be following up to ensure
13 the appropriate implementation of the best
14 management practices?

15 A. (Varney) No. I personally will not be doing
16 so.

17 Q. Have you done an assessment of to what extent
18 the proposed Project may impact the development
19 of clean energy resources, such as wind and
20 solar resources?

21 A. (Varney) No. I relied upon the market
22 analysis, energy market analysis and modeling
23 by London Economics.

24 Q. Are you suggesting that London Economics has

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1 done analysis on that particular subject?

2 A. (Varney) I am suggesting that I relied on their
3 estimates looking forward.

4 Q. And, if I were to suggest to you that they have
5 not done analysis of the impacts on wind and
6 solar in the future, would you feel comfortable
7 with that?

8 A. (Varney) I don't have an opinion on that. I
9 wasn't present for any of that discussion with
10 Julia Frayer.

11 Q. Did London Economics seek your input prior to
12 their modeling or other projections?

13 A. (Varney) No. They're highly capable and --

14 Q. Granted. Thank you. Are you aware that the
15 TDI/Clean Power Link and National Grid/Granite
16 State Power Link Projects both propose to
17 transmit a combination of wind energy and
18 hydroelectric power?

19 A. (Varney) Yes.

20 Q. Are you aware that Eversource has previously
21 proposed at least one other project, other than
22 Northern Pass, which is, of course, intended to
23 transmit only hydroelectric power, but that
24 they have proposed another project that would

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1 transmit both wind or connect wind and
2 hydroelectric power?

3 A. (Varney) No.

4 Q. And, Mr. Varney, you have a Master's degree in
5 Urban Planning, is that correct?

6 A. (Varney) Yes.

7 Q. Where did you receive your Master's degree?

8 A. (Varney) Oh, boy. That was a long time ago.

9 Q. I'm sure it was.

10 [Laughter.]

11 BY MS. BIRCHARD:

12 Q. Oh, I'm sorry. That wasn't meant to be an
13 insult. I also have a Master's degree, and
14 it's been quite a while since I received mine.
15 So, you're not alone in that regard.

16 A. (Varney) I believe it was 1979.

17 Q. You know, the question actually wasn't "when",
18 or at least I didn't --

19 A. (Varney) Oh.

20 Q. I think it was "where"?

21 A. (Varney) Oh. Where?

22 Q. Yes. That one might be a little easier.

23 A. (Varney) I believe it was in my prefiled
24 testimony, Michigan State University.

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1 Q. Thank you. And you don't yet have a Ph.D,
2 correct?

3 A. (Varney) No.

4 Q. Not yet. There's still time.

5 A. (Varney) I declined the opportunity.

6 Q. All right. We have that in common as well.
7 Have you earned any degrees in the scientific
8 area?

9 A. (Varney) No.

10 MS. BIRCHARD: Okay. Thank you.
11 That concludes my questioning for these
12 witnesses.

13 CHAIRMAN HONIGBERG: Mr. Plouff.

14 MR. PLOUFF: Thank you, Mr. Chairman.
15 I have some questions for Dr. Barnum. And,
16 later on, I'll have questions for Mr. Magee and
17 for Ms. Carbonneau. For the members of the
18 panel, my name is Bill Plouff. And I'm
19 representing the Appalachian Mountain Club.
20 And we are part of the so-called "NGO" group of
21 intervenors.

22 I have a couple of exhibits that
23 Dr. Publicover is going to put up here, and
24 just give him a minute.

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1 I'm going to start, Dave.

2 DR. PUBLICOVER: Okay.

3 BY MR. PLOUFF:

4 Q. So, Dr. Barnum, in Appendix 36, Section 9.4, of
5 the Application, you discuss "Forest
6 Fragmentation and Forest-Nesting Birds". And
7 one of the primary purposes of your assessment
8 was to look at the impact of the proposed
9 32 miles of new right-of-way between Pittsburg
10 and Dummer on interior forest habitat,
11 particularly on birds that use that interior
12 forest habitat. Is that correct?

13 A. (Barnum) That's correct.

14 Q. So, we are talking about this new right-of-way
15 to be cut through the North Country, to use the
16 vernacular. And, according to your Report, the
17 new right-of-way can potentially impact
18 forest-nesting birds through three related, but
19 separate, mechanisms: Habitat conversion is
20 one, so-called "edge effects", and the creation
21 of habitat fragments. Is that correct?

22 A. (Barnum) Correct.

23 Q. So, I'm going to talk first about "habitat
24 conversion". And you state, in Section 9.4.2

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1 of your Report, and I'm quoting: "The
2 potential impact of habitat conversion created
3 by adding the right-of-way to the project area
4 was evaluated qualitatively".

5 Did you evaluate it from a quantitative
6 perspective? And I want to ask you, secondly,
7 if you did, how much forest will be permanently
8 cleared for the new right-of-way?

9 A. (Barnum) I didn't evaluate the effect
10 quantitatively. But will you help me here, how
11 much is being removed?

12 A. (Carbonneau) I think that, just in the North
13 Country, it's --

14 Q. Between Pittsburg and Dummer?

15 A. (Carbonneau) Between Pittsburg and Dummer, I
16 think it's in the range of 400 to 450 acres,
17 something like that.

18 A. (Barnum) Yes.

19 Q. I think, in your Report, you used the figure
20 "485 acres", ballpark, does that sound about
21 right?

22 A. (Barnum) I think it's a little bit less. But
23 450, something to that effect.

24 Q. Okay. Let's settle on 450. Now, regarding the

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1 "edge effects", do you agree that -- first of
2 all, let me ask you what your understanding is
3 of "edge effects"?

4 A. (Barnum) "Edge effects" are the effects that
5 occur by having a physically different -- two
6 physically different vegetation types coming
7 together. Common effects that occur, if you
8 had a forested habitat and you now have a
9 non-forested edge. You have -- wind can enter
10 the area, temperatures are likely to be
11 greater, because there's greater insulation.
12 Edges are often locations which are convenient
13 for predators or nest parasites to travel
14 along, invasive species, plant species that is,
15 can also become established along edges,
16 because there's more sunlight and, again,
17 you've got the wind to bring propagules and
18 animals bring the propagules.

19 So, there's a whole host of different
20 effects that occur.

21 Q. So, in layman's terms, we're cutting this
22 corridor about 120 feet wide, I believe?

23 A. (Barnum) Correct.

24 Q. Through what is now deep forest, if you will?

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1 A. (Barnum) I disagree with that characterization.
2 The forest that it's affecting is a working
3 forest. It's been logged continuously for the
4 last 150 years. There are many different age
5 classes of forest present. There are large
6 sections which have been cut recently, and I
7 would characterize as "clear-cut" or
8 "regenerating clear-cut".

9 I do think "deep forest" is an incorrect
10 characterization of the habitat that we're
11 impacting.

12 Q. And I'd say the area is heavily forested in the
13 North Country, --

14 A. (Barnum) You can say --

15 Q. -- of different age classes.

16 A. (Barnum) You could say it's "mostly forested",
17 yes.

18 Q. Okay. So, after we do that, we are creating an
19 edge on each side of the right-of-way?

20 A. (Barnum) In locations which aren't already cut,
21 yes.

22 Q. Yes. And, in that edge, the nature of the
23 forest or the habitat, if we look at it from an
24 animal species perspective, changes, is that

[WITNESS PANEL: Barnum~Carbonneau~Magee~Tinus~Varney]

1 correct?

2 A. (Barnum) That is correct, yes.

3 Q. Okay. And did you read Dr. David Publicover,
4 Appalachian Mountain Club expert, did you read
5 his prefiled testimony?

6 A. (Barnum) I did.

7 Q. All right. So, in his prefiled testimony,
8 Dr. Publicover cites a report for the
9 proposition that "the detrimental effects of an
10 edge can extend from 150 to 350 feet into the
11 forest interior." Do you take issue with that
12 statement?

13 A. (Barnum) I do not. That is a common number
14 from the literature. "100 meters" is commonly
15 cited in the literature, and that equates to
16 about 300 feet.

17 Q. Okay. So, as far as the forest interior birds
18 are concerned, the clearing of the new corridor
19 will not only cause a direct loss of habitat
20 within the right-of-way, except where it's
21 already clear-cut, which is, I suspect, not a
22 large portion of the 32 miles, but also reduces
23 the suitability of the remaining habitat
24 adjacent to the corridor, i.e., within the area

[WITNESS PANEL: Barnum~Carbonneau~Magee~Tinus~Varney]

1 subject to the edge effect?

2 A. (Barnum) Yes. That's correct.

3 Q. So, your Report states that the new
4 right-of-way will create "about 64 miles of new
5 forest edge", which is "an increase of about 11
6 percent over the existing amount of edge in the
7 study area".

8 I assume you derived the "64 miles" figure
9 by doubling the length of the new right-of-way?

10 A. (Barnum) Correct.

11 Q. And that's a linear measurement?

12 A. (Barnum) Correct.

13 Q. So, in Section 9.4.2 of your Report, you state
14 that "increasing the amount of edge in the
15 Project was also measured qualitatively". Did
16 you account for the area of changed forest
17 habitat caused by the edge effect by doing a
18 quantitative analysis?

19 A. (Barnum) I did not.

20 Q. Why not?

21 A. (Barnum) Estimating what the magnitude of the
22 impact will be is a qualitative exercise.
23 Because there is so much variation in the
24 existing habitat, and we are talking about a

[WITNESS PANEL: Barnum~Carbonneau~Magee~Tinus~Varney]

1 wide variety of species, and their responses
2 will also vary greatly, --

3 Q. It's a big -- it's a lot of land, 300 feet each
4 side of 64 miles?

5 A. (Barnum) Right. So, anyways, I didn't feel
6 that doing a quantitative exercise provided --
7 I didn't feel like I had the information to do
8 a quantitative exercise. And, so, I relied on
9 a qualitative assessment. And, in that case, I
10 was simply looking at edge, not thinking about
11 the edge effect and how it extended into the
12 forest.

13 Q. Well, just as a rough approximation, couldn't
14 you at least have taken 64 miles and 300 feet
15 and come up with an acreage?

16 A. (Barnum) I could have.

17 Q. But you chose not to do that, even though you
18 admit that that area is going to be changed as
19 a habitat?

20 A. (Barnum) Well, that's correct. And, I mean,
21 you know, so, you need to think about you're
22 changing that much area, but compared to what?
23 And the issue, when you're looking at these
24 sorts of landscape scale effects, is "what is

[WITNESS PANEL: Barnum~Carbonneau~Magee~Tinus~Varney]

1 your area of comparison?" And, because it's --
2 it's a qualitative decision to decide where
3 you're going to compare. Again, I didn't feel
4 that it added a whole lot more information to
5 carry out that exercise.

6 Q. So, does your report discuss the effects of
7 losing this amount of interior forest habitat
8 by this amount? I mean, the cleared
9 right-of-way and the edge effects on both sides
10 of the right-of-way?

11 A. (Barnum) No. I looked at the amount of land
12 that would be cleared directly.

13 Q. Only in the right-of-way?

14 A. (Barnum) That is correct.

15 Q. So, there's nothing in your report that tells
16 us what happens to the birds who were living in
17 the edge, what is now -- what is now forested
18 area will become the edge?

19 A. (Barnum) That's correct.

20 Q. So, regarding your third mechanism, the
21 "creation of habitat fragments", you did
22 conduct an analysis of changes in the size of
23 forest blocks due to the construction of the
24 new right-of-way, is that correct?

[WITNESS PANEL: Barnum~Carbonneau~Magee~Tinus~Varney]

1 A. (Barnum) That's correct.

2 Q. And, as the basis for that analysis, you used a
3 1999 paper by Rosenberg and others, is that
4 correct?

5 A. (Barnum) Correct.

6 Q. All right. I'm going to show you what we've
7 marked as "NGO 126".

8 MR. PLOUFF: And, Mr. Chairman, these
9 will be added to the NGO exhibit list, and
10 they're from the Application.

11 Get my trusty aide here. Can you get
12 this up?

13 BY MR. PLOUFF:

14 Q. Can you read that highlighted portion, Dr.
15 Barnum?

16 A. (Barnum) "Rosenberg et al. determined that in
17 northern New England, scarlet tanagers" --

18 CHAIRMAN HONIGBERG: Slow down. Slow
19 down.

20 WITNESS BARNUM: I'm sorry. I'm
21 Sorry. I will start again.

22 **BY THE WITNESS:**

23 A. (Barnum) "Rosenberg et al. determined that in
24 Northern New England, scarlet tanagers are

[WITNESS PANEL: Barnum~Carbonneau~Magee~Tinus~Varney]

1 likely to breed in virtually any forest block
2 41 acres or larger within landscape blocks
3 (defined as an area 2,500 acres in size) that
4 are more than 70 percent forested."

5 BY MR. PLOUFF:

6 Q. So, using Rosenberg, you used the scarlet
7 tanager as a proxy for all interior bird --
8 interior forest bird species?

9 A. (Barnum) That's correct.

10 Q. Are there other birds that rely on interior
11 forest habitat?

12 A. (Barnum) There are. There are a great number
13 of birds. And, in fact, in Dave Publicover's
14 submitted testimony, he suggested that the wood
15 thrush would have been a more appropriate
16 species to use as a proxy. With that in mind,
17 I thought a little bit about what species are
18 present in the North Country. Scarlet tanagers
19 are present. And wood thrush are present, but
20 in relatively low numbers. The species that's
21 an interior forest breeder that's present in
22 high numbers is the hermit thrush. And, so, I
23 actually repeated my analysis using all three
24 of these species, as a way to represent forest

[WITNESS PANEL: Barnum~Carbonneau~Magee~Tinus~Varney]

1 birds.

2 One of the reasons that I chose scarlet
3 tanagers to begin with is because Rosenberg et
4 al., in their paper, do discuss that many other
5 forest birds are present when scarlet tanagers
6 are present. They don't present the same kind
7 of data for the two thrush species. And, so,
8 based on that, the scarlet tanager seemed like
9 a good proxy, because they had information
10 about how it associated with other forest
11 species. But --

12 Q. But this other work that you did is not in your
13 report?

14 A. (Barnum) It's not in this Report.

15 Q. Okay. Thank you. So, would you agree that the
16 study area that we're talking about, this 32
17 miles between Pittsburg and Dummer, is
18 significantly more than 70 percent forested?

19 A. (Barnum) I do agree. Eighty-six (86) percent
20 is forested at the moment.

21 Q. I'm sorry?

22 A. (Barnum) Yes. It's more than 86 percent
23 forested.

24 Q. Okay. Now I'm going to show you what we've

[WITNESS PANEL: Barnum~Carbonneau~Magee~Tinus~Varney]

1 marked as "NGO Exhibit 106", which is also
2 from -- which is also from that Rosenberg 1999
3 paper, and ask you to read the highlighted
4 portion? This is from Page 20.

5 A. (Barnum) All right. "In the Northern Forest
6 region, tanagers are predicted to occur in
7 virtually any size forest patch within
8 landscape blocks that are more than 70 percent
9 forested; that is, the birds do not show area
10 sensitivity in extensively forested
11 landscapes."

12 Q. So, given that the new corridor will go through
13 a landscape that is much more than 70 percent
14 forested, doesn't that mean that your analysis
15 is not capable of detecting any effect of the
16 new corridor on habitat used by the scarlet
17 tanager and associated species? I'm struggling
18 to understand why you even bothered to go --
19 why you bothered to use that Rosenberg
20 paradigm, if you knew what the answer was?

21 A. (Barnum) Yes. And that's why I repeated it
22 using the two thrush species.

23 Q. But, if the forest is more than 80 percent
24 forested, and Rosenberg says "if it's more than

[WITNESS PANEL: Barnum~Carbonneau~Magee~Tinus~Varney]

1 70 percent, the birds are okay", wasn't the
2 result a forgone conclusion?

3 A. (Barnum) I was looking at it from the point of
4 view that the tanager was a representative for
5 other species, whereas Rosenberg didn't present
6 that same information for the thrushes.

7 Q. But, if you had done the thrushes, what would
8 the result -- what was the result?

9 A. (Barnum) So, with the tanager, if you assume
10 there is some area sensitivity prior to the
11 right-of-way being cut, 98 percent of the
12 habitat is suitable for them. That is, the
13 blocks are large enough for them. After the
14 right-of-way is added to the landscape, then
15 that -- there is no change, you are correct.

16 If you look at the two thrushes, for the
17 scarlet -- excuse me -- for the hermit thrush,
18 98 percent of the habitat, of the landscape, is
19 suitable for them, the blocks are large enough.
20 You add the right-of-way to the landscape, and
21 that drops down to 97 percent.

22 For the wood thrush, prior to adding the
23 right-of-way, the landscape, 96 percent of the
24 landscape has sufficiently large forest blocks

[WITNESS PANEL: Barnum~Carbonneau~Magee~Tinus~Varney]

1 for the wood thrush. Once you add the
2 right-of-way to the landscape, then that drops
3 down to 95 percent.

4 So, there is a small change for these two
5 more sensitive species. But it is on the order
6 of a single percent. So, it's a very small
7 change.

8 Q. So, going back to your three things that affect
9 the habitat, they're -- by the effects that
10 have been brought into the habitat by virtue of
11 this Project, the habitat conversion, you did
12 not quantify the extent of the permanent
13 clearing of the forest for the new
14 right-of-way?

15 A. (Barnum) The extent of permanent clearing was
16 on the order of 450 acres.

17 Q. But you didn't quantify that in your Report,
18 you just did a qualitative analysis?

19 A. (Barnum) I didn't quantify the extent of the
20 edge effect reaching --

21 *[Court reporter interruption.]*

22 **BY THE WITNESS:**

23 A. (Barnum) I didn't -- I quantified the amount of
24 clearing that would occur due to the

[WITNESS PANEL: Barnum~Carbonneau~Magee~Tinus~Varney]

1 construction of the Project. But I did not
2 quantify the amount of edge effect that would
3 affect the remaining forest.

4 BY MR. PLOUFF:

5 Q. And we've agreed that the edge effect can
6 extend out 300 feet either side?

7 A. (Barnum) Yes.

8 Q. And the right-of-way is only 125 feet -- 120
9 feet wide. So, the edge effects, in terms of
10 quantity, is much, much, much more than the
11 effect of the clearing on -- by the
12 right-of-way?

13 A. (Barnum) Yes. In terms of absolute quantity,
14 it would be much larger.

15 Q. Yes.

16 A. (Barnum) But the magnitude of the impact would
17 be much smaller. We are not removing the
18 habitat. We're affecting the quality of the
19 habitat, and that effect will be greatest at
20 the edge, and then it will subside as you move
21 away. And quantifying exactly what that curve
22 will be would be very difficult. You'd need to
23 know the exact composition of forest. You'd
24 need to know something about the terrain,

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[WITNESS PANEL: Barnum~Carbonneau~Magee~Tinus~Varney]

1 because that would have a great effect on how
2 the wind would move into the area. You would
3 need a large amount of data to make a
4 quantitative assessment of that, and therefore
5 it simply left a qualitative assessment, which
6 really amounted to simply a statement of "yes,
7 that effect exists", but not trying to make any
8 analysis of what exactly the magnitude of that
9 effect would be.

10 Q. You don't dispute the fact that the habitat of
11 the area subject to the edge effect will be
12 changed?

13 A. (Barnum) It will be changed. But
14 forest-nesting birds use areas near edges all
15 the time. It doesn't make it a completely
16 unsuitable habitat for them.

17 Q. In Section 9.4.5 of your Report, you say, and
18 I'm quoting here: "The amount of forest
19 habitat converted by the right-of-way is minor,
20 however, as compared to the total amount of
21 forest habitat available in the study area and
22 northern Coos County as a whole."

23 You also state "The increase in total edge
24 is small, in relative terms."

[WITNESS PANEL: Barnum~Carbonneau~Magee~Tinus~Varney]

1 Well, we have 300 feet either side of the
2 right-of-way, and we have the acreage within
3 the right-of-way itself, and you basically say
4 that that's going to have a minimal impact.

5 Is it, coming to the bottom line here,
6 Dr. Barnum, is it really your position that,
7 because this is such a large forested area in
8 northern New Hampshire, that there is so much
9 of this habitat available that you could build
10 a highway through there and it wouldn't affect
11 the ecological issues that you studied?

12 A. (Barnum) A highway would have very different
13 ecological impacts as compared to a power line
14 right-of-way. I would not compare those two
15 projects and say they're the same.

16 Q. Well, what if the highway were less than
17 120 feet wide?

18 A. (Barnum) It would still have different
19 ecological impacts, due to pavement, the cars,
20 a whole host of other things. They're not
21 comparable projects.

22 Q. But as to the interior forest bird habitat?

23 A. (Barnum) Potentially, yes.

24 Q. Potentially. So, the bottom line here is that,

[WITNESS PANEL: Barnum~Carbonneau~Magee~Tinus~Varney]

1 because this is a large forested area in
2 northern New Hampshire, not to worry about the
3 birds because there's so much of this habitat
4 available?

5 A. (Barnum) To some degree, yes. That is the
6 position I'm taking.

7 Q. Isn't -- and this is not a technical question.
8 Isn't that what makes northern New Hampshire so
9 special? That there's so much of this habitat?

10 A. (Barnum) So much of this habitat that's
11 constantly subject to clearing for forestry
12 activities.

13 Q. And I understand the forestry argument.

14 MR. PLOUFF: That's all I have for
15 Dr. Barnum. The next part will be going to
16 this confidential material.

17 CHAIRMAN HONIGBERG: How long --

18 MR. PLOUFF: Thank you, Dr. Barnum.

19 CHAIRMAN HONIGBERG: How much do you
20 think you have for that segment?

21 MR. PLOUFF: Probably 30 to 40
22 minutes.

23 CHAIRMAN HONIGBERG: Is it
24 confidential because of filings or is it

[WITNESS PANEL: Barnum~Carbonneau~Magee~Tinus~Varney]

1 confidential in the same way that what Attorney
2 Connor was asking about?

3 MR. PLOUFF: It's confidential
4 location --

5 DR. PUBLICOVER: Natural Heritage
6 location --

7 *[Court reporter interruption.]*

8 MR. PLOUFF: It's the Natural
9 Heritage location data. It's similar to what
10 you just went through with the --

11 CHAIRMAN HONIGBERG: So, we're going
12 to have to clear everybody out.

13 All right. That's what we're going
14 to do till the lunch break then. So, again,
15 everybody who does not have the necessary
16 agreement in place and the right to remain is
17 going to have to leave. I'm anticipating that
18 we'll do this till the lunch break. And then
19 the session this afternoon will begin sometime
20 around probably 1:45.

21 MR. IACOPINO: And, Mr. Chairman, the
22 statute that applies is RSA 217-A, Section 9,
23 with respect to the plants, and RSA 212-A, with
24 respect to endangered species.

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[WITNESS PANEL: Barnum~Carbonneau~Magee~Tinus~Varney]

1 CHAIRMAN HONIGBERG: And what exactly
2 do those statutes say that's relevant here?

3 MR. IACOPINO: Require the state to
4 protect the location from the ability of
5 individuals to possess, transport, steal, sell,
6 either plants or endangered wildlife, which are
7 scheduled by the two agencies, Fish & Game and
8 by NHB.

9 CHAIRMAN HONIGBERG: Fair enough.

10 (End of public session.)

11 **Page 125 through Page 149**

12 contain information deemed to be
13 **CONFIDENTIAL and PROPRIETARY** and
14 is therefore provided under
15 separate cover so designated in
16 the transcript identified as
17 **DAY 17 Morning Session ONLY -**
18 **CONFIDENTIAL & PROPRIETARY.)**

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[WITNESS PANEL: Barnum~Carbonneau~Magee~Tinus~Varney]

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**[PAGES 125 THRU 149 FILED UNDER SEPARATE COVER AS
CONFIDENTIAL & PROPRIETARY]**

(**NOTE:** At the conclusion of the
above noted **CONFIDENTIAL**
SESSION, the lunch recess was
taken at 12:33 p.m., and the **Day**
17 Afternoon Session ONLY
resumes with the public session
under separate cover so
designated.)

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C E R T I F I C A T E

I, **Steven. E. Patnaude**, a Licensed Shorthand Court Reporter, do hereby certify that the foregoing is a true and accurate transcript of my stenographic notes of these proceedings taken at the place and on the date hereinbefore set forth, to the best of my skill and ability under the conditions present at the time.

I further certify that I am neither attorney or counsel for, nor related to or employed by any of the parties to the action; and further, that I am not a relative or employee of any attorney or counsel employed in this case, nor am I financially interested in this action.

Steven E. Patnaude, LCR
Licensed Court Reporter
N.H. LCR No. 52
(RSA 310-A:173)