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SC Court of Appeals

STATE OF SOUTH CAROLINA
IN THE COURT OF APPEALS

APPEAL FROM THE ADMINISTRATIVE LAW COURT
Ralph King Anderson, III, Administrative Law Judge

Docket No. 19-ALJ-07-0089-CC

South Carolina Coastal Conservation League, ...Appellant,

vs.

South Carolina Department of Health and Environmental Control and
Debordieu Colony Community Association, ... Respondents.

**RECORD ON APPEAL
VOLUME 2 OF 9**

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STATE OF SOUTH CAROLINA
 ADMINISTRATIVE LAW COURT
 19-ALJ-07-0089-CC
 20-ALJ-07-0161-CC

South Carolina Coastal)
 Conservation League)
)
 Petitioner,)
 v.)
)
 South Carolina Department of)
 Health and Environmental Control)
 and Debordieu Colony Community)
 Association,)
)
 Respondents.)
 -----)

HEARING

Monday, August 24, 2020

10:21 a.m. - 4:40 p.m.

Tuesday, August 25, 2020

9:02 a.m. - 5:32 p.m.

Wednesday, August 26, 2020

9:31 a.m. - 2:05 p.m.

The Hearing held before the Honorable Ralph K. "Tripp" Anderson, III, was taken at the Edgar A. Brown Building, 1205 Pendleton Street, Suite 224, Columbia, South Carolina, on the 24th, 25th and 26th days of August, 2020 before Amanda Creel Godfrey, Court Reporter and Notary Public in and for the State of South Carolina.



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EXHIBITS

(All Exhibits were marked prior to the hearing and provided to the Court. The Court's Exhibit List is incorporated herein by reference.)

STIPULATIONS

It is stipulated and agreed that this hearing is being taken pursuant to the rules of the Administrative Law Court and the South Carolina Rules of Civil Procedure.



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DAY ONE - MONDAY, AUGUST 24, 2020CALL TO ORDER:

COURT REPORTER: All rise.

THE COURT: This is a hearing in the matter of South Carolina Coastal Conservation League, Petitioner -- I thought you were with the Environmental Law Project.

MS. LENHARDT: Yes, sir. But we're representing the League.

THE COURT: Oh, okay. Versus, let's see -- South Carolina Department of Health and Environmental Control and -- now, I asked y'all about this last time, I think it should be pronounced Debordieu, but nobody says that. What -- how do you pronounce it? Debordieu?

MR. LOWELL: Debordieu.

THE COURT: Okay. We'll just ignore the R. It's French, right?

MR. LOWELL: Yes, sir.

THE COURT: Okay. Colony Community Association, Respondents. The docket numbers are 19-ALJ-07-0089-CC and 20-ALJ-07-0161-CC. Okey doke. Are there any motions or stipulations the parties wish to make before we proceed?

MS. LENHARDT: None from the Petitioners, Your

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1 Honor.

2 **MR. LOWELL:** None from Debordieu Colony, Your Honor.

3 **MS. PHELAN:** None from DHEC, Your Honor.

4 **THE COURT:** Okay. Well, then, I'll hear opening
5 statements, if you think you need to make them.

6 **OPENING STATEMENT - BY MS. LENHARDT:**

7 **MS. LENHARDT:** Thank you, Your Honor. There's a
8 rumor that we can remove our masks if we're
9 standing at the counsel table.

10 **THE COURT:** And talking, yeah.

11 **MS. LENHARDT:** Yes.

12 **THE COURT:** Yeah. That's the rule.

13 **MS. LENHARDT:** Okay.

14 **THE COURT:** Did I not send that out to y'all?

15 **MS. LENHARDT:** I -- you may have. I -- I don't
16 know.

17 **THE COURT:** All right.

18 **MS. LENHARDT:** But I'm happy to hear that.

19 **THE COURT:** I've been -- I've been getting a kick
20 out of the fact, I have a friend that's calling
21 me up and asking me what I'm doing for Supreme
22 Court, but whatever I do, they apparently will
23 follow me in coming up with it, so. I -- but
24 I think that's their theory, too, now.

25 **MS. LENHARDT:** It's make it -- surely makes it a lot



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1 easier. Your Honor, may ---

2 **THE COURT:** And the witness, when they take the
3 stand, takes their mask off.

4 **MS. LENHARDT:** Okay. That's great. Okay. Thank
5 you. May it please the Court. I am Leslie
6 Lenhardt representing the Coastal Conservation
7 League in these consolidated cases, and I'd
8 like to introduce Ms. Emily Sedzo and Merrill
9 McGregor, who are employees of the League and
10 are here today. And we have some other
11 witnesses in the courtroom that will be
12 testifying on behalf of the League.

13 Your Honor, we have -- we find ourselves
14 in a very strange procedural posture in this
15 case. There's essentially two distinct permit
16 conditions that are before you that both relate
17 to the same permit. And first -- the first
18 appeal relates to the permit that was issued
19 back in 2019 and I -- it's condition 23. And
20 that -- that permit was appealed by both the
21 League and the Baruch Foundation and, as you
22 are well aware, there was an agreement reached
23 between the DCCA, which is what I'll refer to
24 the Debordieu Colony Community Association and
25 Baruch that altered condition 23 and changed



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1 some mitigation triggers and slightly moved one
2 of the groins. And despite the League's appeal
3 still being pending, the Agency issued an
4 amendment to the permit, which we take the
5 position, they had no authority to do because
6 the Court has jurisdiction over this permit.
7 So, that forced the League to have to jump
8 through the hoops to bring that condition back
9 before you and we don't believe that that
10 condition amendment is -- is a valid amendment.
11 Now, we're not going to take issue with the
12 fact that the condition is more stringent. It
13 -- it is certainly less of a bad condition, but
14 it would set a tremendously bad precedent to
15 allow DHEC without some sort of correction to
16 allow them to -- to alter and amend permits
17 when they're under appeal. We feel like that's
18 outside their statutory authority.
19 Nevertheless, both of these conditions are
20 before you for your consideration and the --
21 quickly, the permit -- basically, the thing
22 that we are appealing is the construction of
23 the three groins towards the southern part of
24 Debordieu Beach. We believe they -- the permit
25 violates several pro -- provisions in the

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1 statute and the regulations. And the statute,
2 of course, is 48-39-290(a) and it has a very
3 bare set of conditions, prerequisites to
4 issuance of a -- of a groin permit. One is
5 that there has to be a determination there's a
6 high erosion rate. Two is that the erosion is
7 threatening existing development. And also,
8 that groins may be permitted only after
9 thorough analysis demonstrates that the groin
10 will not cause a detrimental affect on adjacent
11 or downdrift areas.

12 **THE COURT:** It has to be all of those three?

13 **MS. LENHARDT:** Indeed, yes. And there are others.
14 There's a renourishment requirement. There has
15 to be an ongoing commitment. There has to be
16 a financial commitment to pay for the
17 renourishment and also removal and restoration
18 if -- if that's necessary. But those are the
19 areas that we're going to focus on today and
20 that we feel were not met, not properly
21 considered by DHEC. The guidelines for
22 determining these things and concluding that
23 these things are present are woefully
24 inadequate. There's no -- no regulatory
25 guidance on what is a high erosion rate.

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1 There's no regulatory guidance on what is a
2 threatened structure. There's no written
3 guidance. We feel like they pulled these
4 standards and -- and how they determined these
5 standards out of the air. So, that's basically
6 what we will show you today.

7 We will present the testimony of Dr. Rob
8 Young. That will be -- we anticipate, will be
9 tomorrow. Three property owners in Debordieu
10 Colony, Nancy Altman, Dale Lacey and Francis
11 Ford. Ms. Erin Pate, who's a former north
12 coast director for the League who was
13 intimately involved with the review and the
14 commenting on this project and will explain her
15 -- she's also a resident of Debordieu Colony.
16 And so, Your Honor, at the end of the day,
17 we're going to ask that the permit be reversed
18 -- permit decision.

19 **MR. GREEN:** Thank you, Your Honor. Excuse me. Bear
20 with me just a moment, please, Your Honor.

21 **(Off the Record)**

22 **MR. GREEN:** I -- I'm going to have a few pictures to
23 show during my opening, Your Honor.

24 **THE COURT:** Well, I don't know if he's trying --
25 Willie's trying to kick the computer system

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1 back up. I don't know if y'all have seen all
2 the stuff that operates all this in the
3 computer. It's too big racks of computer
4 equipment to make all this function well
5 throughout the -- and make it where we can move
6 it to different courtrooms. So, right now,
7 they're not communicating right. So, I don't
8 know if -- the monitors will kick up or not.
9 I'll find out.

10 **MR. GREEN:** You're telling me I can't show my
11 pictures, Your Honor?

12 **THE COURT:** Well, it depends. You can show your
13 pictures.

14 **MR. GREEN:** Just nobody will be able to see them.

15 **THE COURT:** Yeah. Or you're just not going to be
16 doing it on the monitors, you know. You want
17 to go back to the old fashion way of doing
18 that.

19 **MR. GREEN:** We -- we may have to do that. Bear with
20 me a moment, Your Honor.

21 **THE COURT:** We'll see.

22 **MS. LENHARDT:** Your Honor, is this -- is it still
23 called an ELMO?

24 **THE COURT:** Yes.

25 **MS. LENHARDT:** Is that still -- it's functioning

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1 right now, correct?

2 **THE COURT:** I'll have to ask Willie.

3 **MS. LENHARDT:** Okay. All right.

4 **THE COURT:** We can try it out. That's the best way
5 to find out.

6 **MS. LENHARDT:** That's right.

7 **MR. GREEN:** Let's -- we'll just go forward and see
8 what we can do, Your Honor. Your Honor, Tracey
9 Green with Willoughby and Hoefer in Columbia
10 representing Debordieu Colony Community
11 Association. With me today from Debordieu
12 Colony is Blanche Brown, Greg Frost, Bob
13 McAllister. With me today from Willoughby and
14 Hoefer is Randy Lowell and Elizabeth Kurtz, my
15 paralegal, and Joe Owens from Charleston office
16 is also assisting me today.

17 **THE COURT:** All right. So, do you have a minor
18 insurrection going on? Because I mean, they're
19 on the other side.

20 **MR. GREEN:** Divide and conquer, I think is what we
21 decided to do.

22 **THE COURT:** Okay.

23 **OPENING STATEMENT - BY MR. GREEN:**

24 **MR. GREEN:** We are here seeking to uphold permit
25 number 2017-01795 as amended, Your Honor.



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(Off the Record)

MR. GREEN: There's a -- and you'll see this again, I'm sure, Your Honor. There is a -- this is from the downdrift impact analysis that was submitted to DHEC. It's just a map of the area of the permit. Placement of approximately 650,000 cubic yards of sand on Debordieu Beach, installations of three groins, monitoring of the impacts of the renourish sand on -- on Debordieu, Hobcaw and southern -- southward from there, and the -- of course, the new provisions in the permit that would -- were the result of the settlement with Baruch. Now, I believe the only aspect of this project that is challenged is installation of the groins. And I wanted to -- I was going to show some pictures, in fact. These aren't old style groins like were installed on beaches years ago. Sort of a big rectangular, impermeable structures that kept any sand from going down the beach. These are -- we call them low profile groins.

THE COURT: Well, can I ----

MR. GREEN: Yes, sir, Your Honor.

THE COURT: I used to surf at Fripp Island, so



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1 they're not like those.

2 **MR. GREEN:** I'm not exactly familiar with the ones
3 at Fripp Island, but, no, I believe those are
4 the older style groins, Your Honor.

5 **THE COURT:** Yeah.

6 **MR. GREEN:** The groins we're talking about ---

7 **THE COURT:** And this is ages ago ---

8 **MR. GREEN:** Yes. Yes, Your Honor. No. No, and, in
9 fact, there were some wooden old style groins
10 like that actually on ---

11 **THE COURT:** I'm not that old.

12 **MR. GREEN:** --- Hobcaw. I'm sorry, Your Honor?

13 **THE COURT:** I'm not that old.

14 **MR. GREEN:** No, there were some in the 70s that were
15 actually two old style wooden groins put on
16 Hobcaw itself. But they're the -- again,
17 they're just big structures. They jut above
18 the ground. These are the ones like, I would
19 say, at Folly now.

20 **THE COURT:** Now, that's the ones I'm thinking of.
21 Folly.

22 **MR. GREEN:** Yeah. The -- you're thinking about the
23 ones that are little bit more northern ---

24 **THE COURT:** Yeah.

25 **MR. GREEN:** --- from there. There's a groin now at



1 the southern most tip of Folly. It's a low
2 profile groin. I wanted to show you a picture
3 of that groin exactly. But it's -- I've got to
4 use the -- the system. But it follows the
5 contour of the beach. It's designed to do
6 that. It's designed to let sand overflow the
7 groin. It's designed to let sand come around
8 the groin. And, in fact, you'll hear some
9 testimony that the experience with the groin at
10 Folly is that there was a parking area and that
11 -- that was -- there's become a parking area
12 there, eroded beach; it's been restored. We
13 can show you a lot of that when we can get the
14 pictures, so. Same with Hunting Island, Your
15 Honor.

16 **THE COURT:** Well, is it -- is it an exhibit that
17 you're talking about?

18 **MR. GREEN:** It's -- it's a Demonstrative exhibit. I
19 have not submitted it yet. No, sir, Your
20 Honor.

21 **THE COURT:** So, it's not on the ---

22 **MR. GREEN:** No, sir, Your Honor.

23 **THE COURT:** Okay.

24 **MR. GREEN:** No. We agreed that -- we agreed amongst
25 us to exchange Demonstrative exhibits at closer



1 to you -- I sent these yesterday to them, but
2 obviously they're not coming into evidence.
3 So, I've not given them to the Court yet, no,
4 Your Honor.

5 **THE COURT:** Okay.

6 **MR. GREEN:** And then I have a little video to show
7 you what the groins will kind of look like in
8 that area after the -- the installation, but
9 we'll -- we'll get to that later, Your Honor.
10 So, anyway, the point of all that is, these are
11 not those older style groins. These are
12 designed -- will be designed to be -- follow
13 the beach contour, to allow sand to go over to
14 bypass so that they don't choke off Hobcaw or
15 the southern most beaches, the down coast
16 properties. That they allow sand to go
17 through, so much so that over time, it's going
18 to be necessary to renourish, which Debordieu
19 Colony is committed to. They've got financial
20 commitments. You will hear testimony during
21 this trial. There's a letter of credit that is
22 and will be in place for a million dollars.
23 There's also the Beach Renourishment Fund.
24 You've heard testimony about that in a previous
25 proceeding. But, in addition, we've committed



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1 as part of the amended permit to make those
2 funds available for renourishment, groin
3 construction, whatever may be needed as this
4 project continues over time. Second, Ms.
5 Lenhardt referred to section 48-39-290. Groins
6 are allowable on beaches with high erosion
7 rates with erosion threatening existing
8 development where the groins are in furtherance
9 of an ongoing beach renourishment effort and
10 includes a monitoring program for the life of
11 the project. We've got that here. We --
12 you'll hear testimony there's high erosion
13 rates on Debordieu South. You'll hear
14 testimony that the erosion is threatening
15 development at the south of Debordieu Beach.
16 You'll hear testimony and see evidence of the
17 monitoring program that will be in place. It
18 says the groins are permitted after a thorough
19 analysis demonstrates that the groin will not
20 cause a detrimental effect on adjacent or
21 downdrift areas. You can see in the DHEC
22 record and you will hear testimony that CS&E
23 did a thorough analysis of the impacts of the
24 down coast impacts, that there will be a
25 careful monitoring program. That there's one

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1 in place now from the prior renourishment in
2 2015. There will be an ongoing monitoring
3 program of Debordieu South and Hobcaw and down.
4 And that will be implemented for the life of
5 the program. There's a statute that requires
6 a financially binding commitment such as a
7 performance bond or letter of credit. You'll
8 hear testimony about a letter of credit and the
9 renourishment fund. You'll hear testimony the
10 OCRM fully considered the issues and exercised
11 its discretion in issuing the permit, Your
12 Honor. So, in summary, Hobcaw -- you've got a
13 permit and an amendment to the permit. Hobcaw
14 is -- the down coast adjacent beach owner is
15 comfortable with that permit, comfortable with
16 the current provisions. The League will not
17 provide any testimony regarding the real
18 analysis of the erosion rates on the beach;
19 it'll be a broad, generalized approach.
20 There's nothing specific about the groins, the
21 erosion rates we submit, Your Honor. The
22 reality is that this program will put mass
23 quantities, up to 650,000 cubic yards, of sand
24 on Debordieu Beach that will renourish that
25 area, give it a dry sand beach and provide sand



1 for Hobcaw and the down coast properties over
2 time. The sand that those -- sand that those
3 properties in the absence of this project will
4 not get because if the project isn't done,
5 there's no sand on the beach, there's no dry
6 sand beach at Debordieu, a bulkhead there or
7 seawall that is present there will be exposed.
8 It ultimately probably will fail. I think
9 you'll hear testimony from both sides that that
10 will happen. And that Hobcaw will continue to
11 erode at a high rate, Your Honor. So, we,
12 therefore, believe that when the Court hears
13 and considers the record, it will conclude that
14 the issuance of the permit to DCCA should be
15 approved. Thank you, Your Honor.

16 **OPENING STATEMENT - BY MS. PHELAN:**

17 **MS. PHELAN:** May it please the Court, Your Honor.
18 I'm Sallie Phelan, and along with Brad Churdar,
19 I represent the South Carolina Department of
20 Health and Environmental Control, the Office of
21 Ocean and Coastal Resource Management. I'm
22 here today with Mr. Matt Slagel, who was the --
23 the Permitting Project manager, along with his
24 Critical Area of Permitting Section Manager,
25 Mr. Blair Williams. As you've heard, that



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1 there's several things that the -- the
2 Department has to evaluate in determining
3 whether to issue the permit for the groins.
4 They have to determine that there's a high
5 erosion rate at the property. They have to
6 determine that the structures are threatened.
7 And they have to do -- the applicant has to
8 submit a thorough analysis of a downdrift
9 impact that will occur because of the proposed
10 project. They also have to look at
11 alternatives to issuing the groin and
12 renourishment permit. And they have to put in
13 place monitoring and mitigation. The
14 Department looked at all of these things
15 carefully. They responded to many concerns of
16 public policy -- during the public comment
17 period that were presented to them on these
18 things. But first, I'd like to talk a little
19 bit about the high erosion rate. You will hear
20 that Mr. Slagel did, in fact, look carefully at
21 whether Debordieu and the area of this project
22 had a high erosion rate. It was determined
23 based on the Department's data that there was
24 a rate of 6.6 feet per year to 10.8 feet per
25 year of erosion loss at the -- at where this

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1 project is located.

2 **THE COURT:** All right. That's considered high to --
3 you say that amount, does that equate to being
4 high?

5 **MS. PHELAN:** Mr. -- Mr. Slagel will testify that
6 that amount is high and the regulations
7 themselves set forth that the areas of
8 Debordieu Beach are highly eroded in -- in
9 certain areas.

10 As you've heard, the Debordieu Community
11 Colony Association, DCCA, has renourished the
12 property four times in the past. You'll hear
13 from the League's witnesses that they want the
14 Department to use the data collected after
15 those renourishment projects to determine
16 erosion rates instead of determining what the
17 natural erosion rate is on the property.
18 You'll hear from Mr. Slagel that -- that the
19 Department assesses the erosional rate at the
20 property without these renourishment sands
21 added because -- that DCCA is not required to
22 continue the renourishment to benefit Hobcaw
23 tract, the downdrift property. And in absence
24 of this renourishment, the area would return to
25 its natural historic rates. You will see



1 pictures and -- hopefully. You will see
2 pictures and videos that demonstrate that the
3 erosion is threatening existing development.
4 In fact, one of the League's witnesses is
5 expected to testify that there are at least
6 seven homes that are severely threatened at
7 Debordieu. A thorough analysis was submitted
8 to the Department, which the Department
9 reviewed, of the downdrift impacts by
10 Debordieu's agent, Coastal Science and
11 Engineering. That report was sent to the Army
12 Corps of Engineers to review as well and the
13 feedback came back that CSE's analysis of the
14 cause of erosion of pro- -- at the property was
15 thorough. Concerns were brought to the
16 Department's attention about the National
17 Estuarine Research Reser- -- Reserve, which is
18 located several miles down the beach from the
19 project. And the Department looked at that
20 carefully and the downdrift impacts report
21 demonstrated that the effects from the groin
22 and renourishment project would not reach that
23 far down into the beach. The Department, you
24 also will hear, considered many concerns and
25 comments from both other government agencies



1 and from non-government organization groups,
2 and they either addressed those concerns or
3 they requested DCCA to provide additional
4 information until they were satisfied. For
5 example, to address the downdrift impacts and
6 make sure that there would be adequate
7 monitoring, the Department decreased spacing of
8 the sampling from 500 feet to every 200 feet
9 within the first 2,000 feet of the southern
10 most groin to make sure that they were
11 collecting more data so that they could assess
12 whether any detrimental downdrift impact was
13 occurring from the groin project, and so that
14 they could begin mitigation if necessary.

15 As Ms. Lenhardt stated, the condition
16 amendment is more stringent than -- that
17 occurred with the amended permit. The
18 Department did not issue an amended permit on
19 its own authority. The Department had a court
20 order that -- that stated that the Department
21 was to issue the amended permit. After a
22 thorough review of -- by DHEC of the
23 information the applicant submitted, it was
24 determined that the permit should be issued to
25 DCCA as the project meets the statutory and



1 regulatory criteria for renourishment and groin
2 permit.

3 **MS. LENHARDT:** Your Honor, I would like to call Ms.
4 Erin Pate ---

5 **THE COURT:** Are you going to need to use the ELMO
6 during this -- this testimony?

7 **MS. LENHARDT:** Not for Ms. Pate's testimony.
8 Following, I would really appreciate it ...

9 **THE COURT:** Okay. I'm going to -- let's just let
10 her proceed then and then we might need to talk
11 about our computer problem and see if we can
12 get somebody else in here.

13 **MR. GREEN:** We -- Judge, we might need it on cross
14 actually.

15 **THE COURT:** Okay. Well, then, let me ---

16 **MR. GREEN:** It depends on what she says.

17 **THE COURT:** That's true in a lot of things. Let me
18 just take a quick break.

19 (Off the Record)

20 **PETITIONER'S CASE IN CHIEF:**

21 **THE COURT:** I'm just going to let you call your
22 witness, please. They're telling me that it's
23 going to be back up soon, so, we'll see.

24 **MS. LENHARDT:** Well, as I said, I don't believe I
25 need it necessarily. I call Ms. Erin Pate.



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1 **THE COURT:** Go behind the glass.

2 **MS. PATE:** May I?

3 **COURT REPORTER:** Raise your right hand. Do you
4 solemnly swear that the testimony you're about
5 to give in this matter is the truth, the whole
6 truth, and nothing but the truth, so help you
7 God?

8 **MS. PATE:** I do.

9 **COURT REPORTER:** Thank you.

10 **THE COURT:** There you go.

11 **ERIN PATE,** having been duly sworn, testifies as
12 follows:

13 **MS. PATE - DIRECT EXAMINATION BY MS. LENHARDT:**

14 Q: Ms. Pate, will you state your full name for the
15 record, please?

16 A: Erin Hardwick Pate.

17 Q: And are you a resident of Debordieu Colony?

18 A: I am.

19 Q: Okay. And up until the end of last year,
20 approximately, where were you employed?

21 A: I was employed at the Coastal Conservation
22 League.

23 Q: And what was your position there?

24 A: North Coast Office Director, which is
25 headquartered in Georgetown.



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1 Q: Would you explain for the Court the mission of
2 the Coastal Conservation League?

3 A: The mission is to protect natural landscapes,
4 abundant wildlife, clean water, and quality of
5 life in South Carolina.

6 Q: Thank you. Would you explain your duties as
7 the North Coast Director?

8 A: I monitored environmental concerns in
9 Georgetown, Horry, Williamsburg Counties and
10 the greater Pee Dee area. I worked to advocate
11 for certain environmental issues and I worked
12 with local communities involving them in -- in
13 issues that impact their -- their lives.

14 Q: And did you routinely interact with the members
15 of the League in communicating about projects?

16 A: Yes.

17 Q: Do you recall how many members approximately
18 reside in the Debordieu Colony?

19 A: Members, probably about 15.

20 Q: All right. And do you have any estimate in
21 Georgetown County?

22 A: About 700.

23 Q: Okay. Are -- are you familiar with the beach
24 that is located directly downdrift of Debordieu
25 Beach?



1 A: I am.

2 Q: And what is that beach called?

3 A: It's called Hobcaw Beach.

4 Q: And is that a -- a part or owned by the Baruch
5 Foundation?

6 A: It is.

7 Q: What is a National Estuarine Research Reserve?

8 A: That's -- we call that the NERR or Reserve.
9 It's the National Estuarine Research Reserve.
10 That is a program or initiative of the National
11 Oceanic and Atmospheric Administration or NOAA.
12 It consists of 28 protected coastal areas along
13 the east coast and west coast of our country.
14 So, there's only 28 of them. One of them is at
15 the Baruch property. Their mission really is
16 to protect and study estuaries in an effort to
17 support coastal management. And they do that
18 through scientific research and public
19 education.

20 Q: Is the -- did you say the Baruch property is
21 designated as a NERR?

22 A: They -- the -- the Reserve or NERR is actually
23 located on the Baruch property. It's about
24 18,000 acres and the Baruch Marine -- Institute
25 for Marine Science actually manages it with USC



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1 under the guise of USC, University of South
2 Carolina. So, they -- they manage that program
3 on a daily basis.

4 Q: And do you have knowledge of whether members of
5 the League recreate on Debordieu Beach in the
6 Hobcaw tract?

7 A: They do.

8 Q: Does the -- does the League have some sort of
9 relationship, partnership with the Baruch
10 Foundation?

11 A: We have a relationship. I wouldn't call it a
12 partnership necessarily. The relationship is
13 that we have often -- well, we've been in legal
14 challenges historically together. But in
15 addition to that, we've held programing on
16 their property, we have attended and
17 participated in programing that they offer,
18 even off of their property. So, we've had
19 interaction with them throughout our history.

20 Q: In your position as the North Coast Director,
21 were you responsible for monitoring and
22 commenting on the proposed groin project at
23 Debordieu Beach?

24 A: I was.

25 Q: Okay. And what were your specific duties with

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1 relation to the pendency of the application and
2 the issuance of the permit?

3 A: So, initially, it would be -- so reading and
4 understanding the permit and the proposed
5 project, conferring with my colleagues and
6 senior leadership at the Coastal Conservation
7 League, communicating our position to the
8 larger public, if you will, and our members.

9 Q: And what is your understanding of the project,
10 the -- that the permit authorizes?

11 A: So, my understanding is that it would -- it is
12 a project that would install three hard
13 structure groins on -- on the south end of
14 Debordieu Beach and would be supplemented with
15 a initial renourishment and -- and likely,
16 future renourishments.

17 Q: And did the League submit a comment letter
18 during the pendency of the permit application?

19 A: We did.

20 Q: What is -- was and is the League's position
21 with regards to this permit?

22 A: As I stated earlier with our mission, is -- is
23 part of it is protecting natural landscapes
24 and, as such, we oppose hard structures on
25 natural beaches. Not only do we think that's

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1 a bad idea for future generations, it's not
2 protecting a natural beach. But we know that
3 groins cause downdrift and erosional impact,
4 and we would have a concern with that.

5 Q: Do you know the -- how the functioning of a
6 groin causes downdrift impacts?

7 A: It catches the literal transport north to south
8 of -- of sand. They -- they work effectively
9 in catching the sand and holding the sand in
10 place. But in doing so, they starve any
11 downdrift beach of its natural ebb and flow of
12 sand.

13 Q: Now, you personally are a longstanding
14 supporter of the League, is that correct?

15 A: I am.

16 Q: And have you donated to the League?

17 A: I have.

18 Q: And have you done that with -- with frequency?

19 A: I have.

20 Q: Do you -- do you how -- about how long you have
21 been a supporter?

22 A: At least ten years, probably longer.

23 Q: And is Debordieu Colony your home and Debordieu
24 Colony your permanent residence?

25 A: It is.

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1 Q: Do you visit Debordieu Beach?

2 A: Frequently.

3 Q: And please inform the Court what kind of
4 activities that you enjoy on the beach.

5 A: So, our favorite activities would be either
6 biking or walking. Probably those two would
7 be.

8 Q: And when you bike and walk on Debordieu Beach,
9 do you use the area where the groins are
10 proposed to be located?

11 A: Yes.

12 Q: I'll ask the same question about Hobcaw. Do
13 you -- do you recreate on Hobcaw Beach?

14 A: We do. And, in fact, because -- because
15 there's a seawall that at high tide you're not
16 -- unable to sort of pass along the beach in
17 front of that, we often walk to the south end
18 and on Hobcaw. It's a pristine, natural beach.
19 It's wide and it's, you know, it's unimpeded in
20 any way. It's just beautiful.

21 Q: What are your concerns as a resident of
22 Debordieu Colony about how these structures
23 will impact your ability to do those
24 activities?

25 A: Well, groins are hard -- hard, permanent



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1 structures on the beach and I -- I think
2 walking and certainly biking down the beach
3 with those structures, it makes it impo- --
4 nearly, if not completely, impossible to -- to
5 do that. Another concern I have would be, you
6 know, just not being able to enjoy that natural
7 wide beach. It is really -- it's an amenity
8 that those -- those of us that don't live on
9 the beachfront and live in Debordieu Colony,
10 having access to that -- to Hobcaw Beach, I
11 think is -- is really a -- an asset to -- to
12 our -- so, let's say property values even.

13 Q: Have you been to the southern portion of
14 Debordieu Beach recently?

15 A: Probably about a week ago.

16 Q: Okay. And please tell the Court what your
17 observations of the beach were.

18 A: Well, and may I ask for clarification, was that
19 the south end of Debordieu Beach or ---

20 Q: Yes.

21 A: Okay.

22 Q: Sorry. Yes. Of Debordieu Beach.

23 A: Yeah. So, what I observed was that the seawall
24 now, you know, at the present moment, is
25 largely covered with sand. So, there's been a

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1 great deal of accretion this year. So, it's
2 not as exposed as it has historically been in
3 recent years. Even still though, the -- you
4 know, the beach is impassible at high tide.

5 Q: And are your personal feelings about these
6 structures in line with -- or consistent with
7 the League's position?

8 A: Yes.

9 Q: And do you share the concerns that were raised
10 by the League in their comment letters?

11 A: I do.

12 Q: And are there any -- are there any other
13 objections or concerns that the League has with
14 this project in particular that you haven't
15 already stated?

16 A: No.

17 Q: All right. I think that's all the questions I
18 have. Please answer any questions from
19 opposing counsel.

20 **MR. OWENS:** Judge, do you know if these screens are
21 working yet?

22 **MR. OWENS:** May -- may it please the Court, Judge.

23 **MS. PATE - CROSS-EXAMINATION BY MR. OWENS:**

24 Q: Ms. Pate, I'm Joe Owens. We met at your
25 deposition back in November, I believe it was.

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1 Were you deposed in this case?

2 A: Yes.

3 Q: Were you deposed as a 30(b)(6) witness in this
4 case?

5 A: I'm not sure.

6 Q: Okay.

7 **MR. OWENS:** Can you pull up ...

8 Q: While she's pulling that up, I can ask you a
9 few more questions. You testified earlier that
10 you are -- as North Coast Director, one of your
11 duties included being responsible for
12 monitoring and commenting this particular groin
13 project, is that correct?

14 A: Yes.

15 Q: During your deposition, which we are trying to
16 pull up now, did you admit that the homes
17 behind the seawall and on the south end of
18 Debordieu are severely threatened?

19 A: I did -- I did say that in a -- an informal e-
20 mail to my colleague, Emily Sedzo, and that
21 wasn't meant to be a scientific or regulatory
22 type comment. It was a -- I'm not a scientist.
23 I -- I live in Debordieu and I was commenting
24 on what I had observed personally.

25 Q: Okay.



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1 **MR. OWENS:** Can we pull up her deposition? Just
2 those two pages.

3 **(Off the record.)**

4 **MS. LENHARDT:** Your Honor, I -- just for the record,
5 I don't -- if she's admitted to making a
6 statement, I'm not certain if this is for
7 impeachment purposes or -- or what, the
8 deposition transcript.

9 **MR. OWENS:** Judge, this would -- she just referred
10 to an e-mail that she wrote as context of that
11 statement. I'd like to introduce the e-mail as
12 admission by a party deponent. And I think
13 we've got another basis for it under Rule 802,
14 as well.

15 **COURT REPORTER:** I'm sorry. A basis for what?

16 **MR. OWENS:** Basis for submitting it under Rule 802,
17 as well, that being admission in the context of
18 her capacity as the North Coast Director.

19 **THE COURT:** You said 802?

20 **MS. PHELAN:** Well, the ---

21 **THE COURT:** You mean 803?

22 **MR. OWENS:** 803. Yes, sir. Sorry, Judge.

23 **THE COURT:** Okay.

24 **MS. PHELAN:** The -- well, the e-mail is one thing,
25 but the deposition transcript, I don't



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1 understand why ---

2 **THE COURT:** Yeah. I -- I get that.

3 **MR. OWENS:** I would like to introduce a portion of
4 that transcript to establish that she was
5 testifying in regards to a specific 30(b)(6)
6 area.

7 **THE COURT:** Well, she said she didn't know if it was
8 309b)(6). You could put -- unless you want to
9 stipulate to that.

10 **MS. PHELAN:** I'll stipulate to that.

11 **THE COURT:** Okay. All right. So ---

12 **MR. OWENS:** Okay.

13 **THE COURT:** --- the 30(b)(6), that takes care of
14 that issue.

15 **MR. OWENS:** That's fine. And -- and -- if I can
16 read into the record the area in which she was
17 stipulated to testify.

18 **THE COURT:** Yeah.

19 **MR. OWENS:** Which is also -- where's the transcript?
20 That the printed transcript? Judge, I will
21 paraphrase. She was identified to testify
22 regarding any oral or written position for the
23 League with respect to beach renourishment or
24 the installations of groins on beaches in South
25 Carolina, specifically on Debordieu Beach.



1 Q: And when you were deposed, you just testified
2 that you made a statement that the homes behind
3 the south beach wall -- the homes on South
4 Debordieu Beach behind the seawall were
5 threatened, is that correct?

6 A: That is what that e-mail said. Yes.

7 Q: You also testified about that in your
8 deposition, is that correct?

9 A: Yes.

10 Q: Did you or did you not testify that the south
11 end of the wall -- the south end of the sea
12 wall is where erosion is greatest and where
13 sand is needed the most?

14 A: I -- without having that exact language in
15 front of me, it was something re- -- similar to
16 that, but, again, not from a regulatory
17 standpoint.

18 Q: What do you mean by regulatory standpoint?

19 A: So, I know there's language similar to that in
20 -- potentially statute or -- or in the
21 regulations pertaining to beachfront
22 management. That is not the language I was
23 using in this informal e-mail to a colleague.
24 It was an observation I had made as -- as a
25 resident and someone that visits the beach on



1 a regular basis.

2 Q: When you made that statement in the e-mail,
3 were you the North Coast Director?

4 A: I was.

5 Q: Were you responsible for monitoring and
6 commenting on groin projects?

7 A: On this one in particular.

8 Q: On this project ---

9 A: Yes.

10 Q: --- in particular? Okay. And when you were
11 deposed as a 30(b)(6) witness, was an area that
12 you were designated to discuss the League's
13 opinion regarding this groin project?

14 A: That was not the League's opinion expressed in
15 that e-mail.

16 Q: Okay.

17 A: That was my personal opinion.

18 Q: Okay.

19 **MR. OWENS:** At this point, can we look at some of
20 these lines in the transcript?

21 **THE COURT:** Uh-huh.

22 **MR. OWENS:** Go to that two-page section.

23 Q: You will see there, this is page 21 in your
24 deposition, line 5, "Why did you describe
25 several homes as severely threatened?" You



1 responded, "If you look at an aerial shot,
2 you'll see that there's seven or eight homes
3 that it almost looks like an additional row of
4 houses that are the most severely threatened at
5 Debordieu." Did I read that correctly?

6 A: Yes.

7 Q: Line 11, "And by severely threatened what do
8 you mean?" Your response, "I mean, that during
9 storms like Dorian a month or two ago, for
10 example, the ocean comes very close to their
11 front door." Did I read that correctly?

12 A: Yes.

13 **MR. OWENS:** Go to the next page. Go to -- go back
14 one page to the bottom.

15 Q: Okay. And this -- I believe this was referring
16 to the e-mail. In the last sentence you say,
17 "These homes are the reasons for the groins.
18 What is your understanding of why these homes
19 are the reason for the groins?" Did I read
20 that correctly?

21 A: Yes.

22 Q: You responded, "These homes are at the south
23 end of the seawall where the greatest erosion
24 is occurring and that's where the groins would
25 go and that's where the sand would be needed



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1 the most." Did I read that correctly?

2 A: Uh-huh.

3 **THE COURT:** All right. You said these homes. It
4 says those homes.

5 **MR. OWENS:** Thank you for that clarification, Judge.
6 And ---

7 **THE COURT:** Isn't it fun to get called on every
8 little word?

9 **MR. OWENS:** It is not, actually.

10 Q: Ms. Pate, when you made these statements, were
11 you testifying as a 30(b)(6) witness regarding
12 the League's opinion on the groins?

13 A: I think I was -- I was speaking more
14 personally. And the reason being, I would not
15 have observed this dynamic if I had not been
16 living in Debordieu and have access to the
17 beach. Beach access is private and if I had
18 worked for the League and not lived in
19 Debordieu, I would've had very limited access
20 to the beach.

21 Q: Do you personally believe that those homes are
22 threatened?

23 A: I do.

24 Q: And just to reiterate, you were the North Coast
25 Director when you sent the e-mail that was



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1 referenced in this deposition ---

2 A: I was.

3 Q: --- testimony? Okay. Do you know if you sent
4 that e-mail from your League internet account?

5 A: I most likely did.

6 Q: Okay. All right.

7 **MR. OWENS:** I don't believe I have any further
8 questions.

9 A: Oh, sorry. Excuse me.

10 **THE COURT:** I was going to tell you to get a little
11 more comfortable.

12 A: Maybe.

13 **MS. PATE - CROSS-EXAMINATION BY MR. CHURDAR:**

14 Q: Ms. Pate, I'm Brad Churdar with DHEC. How are
15 you doing?

16 A: I'm doing good.

17 Q: Good. Good.

18 A: Thank you.

19 Q: I just want to follow-up on a couple of things
20 with regard to your testimony that you gave
21 about the distinction between your personal
22 opinion and your 30(b)(6) opinion about the
23 severe threat caused by erosion to these homes.
24 Did you clarify that distinction in your
25 deposition? Did you -- did you say, I'm taking



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1 off my 30(b)(6) hat now, and I'm just talking
2 as a person?

3 A: No. I probably did not.

4 Q: Okay. Now, the League does not have an opinion
5 about what would or would not constitute an
6 adequate monitoring program, correct?

7 A: That is correct.

8 Q: Okay. And the League's opinion -- or I should
9 say, not opinions, but opposition to groins
10 historically has been somewhat inconsistent?

11 A: I -- I'm thinking. I -- I'm not sure I agree
12 that it's been inconsistent.

13 Q: Well, did -- did the League proceed with this
14 opposition to the groin permit issue to the
15 South Carolina Department of Parks, Recreation
16 and Tourism at Hunting Island?

17 A: It -- so we did not make it as far as going to
18 court there. We had a very robust negotiations
19 and -- and ended up settling that case without
20 going to court and PRT was willing to back down
21 from, I think it was four or maybe even five
22 groins that they were proposing to one that
23 would protect the historic and historically
24 important lighthouse that's on Huntington
25 Beach. And because of that, that park is

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1 public, a million visitors every year, we felt
2 and agreed that protecting that lighthouse was
3 important to the public.

4 Q: But -- but in the end, the League did not
5 oppose the installation of a groin at
6 Huntington Island?

7 A: That's correct.

8 Q: Okay. And that would also be correct with
9 regard to the critical area permit for a groin
10 at Folly Beach, as well. The League did not
11 oppose that groin permit either, correct?

12 A: That was -- that's correct.

13 Q: Okay. All right.

14 **MR. CHURDAR:** That's all my questions.

15 **THE COURT:** Redirect.

16 **MS. LENHARDT:** Yes, Your Honor. Briefly.

17 **MS. PATE - REDIRECT EXAMINATION BY MS. LENHARDT:**

18 Q: Ms. Pate -- I'm sorry. I forgot to take this
19 off. You sent the e-mail. Did you sent it to
20 anyone other than an internal colleague?

21 A: No.

22 Q: When you sent the e-mail, were you aware that
23 you were going to be -- be deposed in this
24 case?

25 A: I had no idea.



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1 Q: Okay. The statement, when was that made from
2 a timing perspective in relation to the
3 issuance of the permit and the appeal? Was it
4 made prior to the issu- -- issuance of the
5 appeal?

6 A: Yes.

7 Q: Was it made prior to your deposition?

8 A: Yes.

9 Q: Do you know how DHEC determines whether or not
10 a structure is threatened?

11 A: I do not.

12 Q: Okay. Were you rendering any sort of
13 regulatory opinion about whether or not the
14 structures were threatened?

15 A: No.

16 Q: Does the League have an official objection to
17 the renourishment portion of this project?

18 A: No.

19 Q: And is the purpose of a renourishment project
20 to place sand on the beach?

21 A: It is.

22 Q: And would the placement of sand on the beach
23 address any sort of problems with the proximity
24 of those houses to the ocean?

25 A: Yes.

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1 Q: That's all I've got.

2 **THE COURT:** Re-cross.

3 **MR. LOWELL:** No, Your Honor.

4 **MR. OWENS:** No, sir.

5 **THE COURT:** Ms. Pate. Oh, go ahead.

6 **MR. CHURDAR:** Just one follow-up, Your Honor. I can
7 just ---

8 **THE COURT:** You can sit -- yeah. Ask it from there.

9 **MR. CHURDAR:** Sure.

10 **MS. PATE - RECROSS-EXAMINATION BY MR. CHURDAR:**

11 Q: So, Ms. Pate, when you were talking about the
12 -- not -- not addressing this from a regulatory
13 standard, you -- you did -- you do acknowledge
14 that with these homes that you described as
15 severely threatened, that the ocean comes very
16 close to their front door, correct?

17 A: It does.

18 Q: Okay.

19 **THE COURT:** Ms. Pate, where I can understand your
20 position, you said the League is opposed to all
21 groins?

22 A: We -- we are opposed to hard structures.

23 **THE COURT:** Well, is that ---

24 A: Hard. Yeah. That would be groins. Yes.

25 **THE COURT:** So, are you opposed to all hard



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1 structures/groins even if they are lawful and
2 according to the statutes in South Carolina?

3 A: Yes.

4 **THE COURT:** Any follow-up questions on what I asked?

5 **MS. LENHARDT:** No, Your Honor.

6 **MR. LOWELL:** No, sir.

7 **MR. OWENS:** No, sir.

8 **THE COURT:** You may step down.

9 A: Thank you.

10 **MS. LENHARDT:** Your Honor, at this time, I'd like to
11 call Matt Slagel.

12 **COURT REPORTER:** I just want to make sure I heard
13 you correctly, it's S-L-A-G-E-L?

14 **MR. SLAGEL:** Correct.

15 **COURT REPORTER:** Raise your right hand. Do you
16 solemnly swear that the testimony you're about
17 to give in this matter is the truth, the whole
18 truth, and nothing but the truth, so help you
19 God?

20 **MR. SLAGEL:** Yes.

21 **COURT REPORTER:** Thank you.

22 **PETITION TO TREAT AS ADVERSE WITNESS:**

23 **MS. LENHARDT:** Your Honor, I'd like permission to
24 treat this witness as an adverse witness.

25 **THE COURT:** Anybody? Any objections?



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1 **MR. LOWELL:** No, Your Honor.

2 **THE COURT:** Ms. Phelan or Mr. Churdar?

3 **MS. PHELAN:** No, Your Honor.

4 **THE COURT:** Well, that is granted.

5 **MATT SLAGEL,** having been duly sworn, testifies as
6 follows:

7 **MR. SLAGEL - DIRECT EXAMINATION BY MS. LENHARDT:**

8 **Q:** Mr. Slagel, you're employed at ---

9 **THE COURT:** Oh.

10 **MS. LENHARDT:** Okay.

11 **THE COURT:** Before you -- how are we doing on COVID
12 right now? Is everybody comfortable?

13 **MS. LENHARDT:** I'm very comfortable, Your Honor.
14 Thank you. Myself.

15 **THE COURT:** We've got an air purifier. Is that
16 annoying anyone? As a matter a fact, we could
17 even turn it up higher.

18 **MS. LENHARDT:** Not -- it -- I don't even know it's
19 there. I'm ---

20 **THE COURT:** Yeah. That was the purpose. Willie and
21 I did a lot of research on that thing. It's
22 got twin HEPA filters and goes up to C -- 430
23 CFMs.

24 **MS. LENHARDT:** My word.

25 **THE COURT:** So.



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1 **MS. LENHARDT:** Specifications.

2 **THE COURT:** I know. But go ahead.

3 Q: Good morning, Mr. Slagel. We've met before.
4 You are employed at DHEC, correct?

5 A: Yes.

6 Q: In their Ocean -- Office of Ocean and Coastal
7 Resource Management?

8 A: Yes.

9 Q: And you've been there since when?

10 A: I first started working at OCRM in 2007. I
11 left the agency to work for North Carolina's
12 State Coastal Program for a couple years in
13 between. But I've -- my -- my record started
14 there in 2007 until current day.

15 Q: Okay. And when you -- when you left and re- --
16 when did you return?

17 A: I returned in 2000- and -- January of 2018 is
18 when I returned and started in my current
19 position.

20 Q: Okay. And that is Beachfront Project Mana- --
21 Beachfront Permit ---

22 A: Beachfront Permitting Project Manager within
23 the critical area permitting section.

24 Q: Did you hold that position before in your first
25 iteration in OCRM?

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1 A: When I started at the agency in 2007, I started
2 as a NOAA Coastal Management Fellow for two
3 years between 2007 and 2009. And then after
4 that two-year fellowship ended, I was hired on
5 as a state employee. I worked on -- in our
6 coastal services side of the program as a
7 shoreline management specialist. And then I
8 transitioned over to the permitting side of the
9 program as the Beachfront Permitting Project
10 Manager.

11 Q: So, you've been Beachfront Project Manager
12 since 2018?

13 A: That's correct.

14 Q: All right. And you were the project manager
15 for the permit that brings us here today, is
16 that right?

17 A: Yes.

18 Q: Okay. Application was submitted in 2017, is
19 that right?

20 A: That's right.

21 Q: And was that prior -- so, that was prior to you
22 being the project manager?

23 A: That's correct. So, initially, another current
24 OCRM employee named Chris Stalt (ph). He was
25 a critical area permitting project manager at

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1 the time. He is now in a different position at
2 OCRM. But he -- he received most -- most of
3 the initial application materials and you'll
4 see in the record that he also requested
5 additional information at one point. But then
6 when I came in in my current role specifically
7 looking at both minor and major beachfront
8 projects, this project was basically
9 transferred from Mr. Stalt (ph) to myself as
10 the project manager.

11 Q: Okay. Thank you. Now, I understand you have
12 a copy of the Petitioner's exhibits in front of
13 you?

14 A: I do. And let me -- let me pull that out.

15 Q: Okay. If they're in volumes, it would be the
16 first volume.

17 A: I -- I just have one binder.

18 Q: Okay. Let me direct you ---

19 **MS. LENHARDT:** And this is the best way I know how
20 to do this, Your Honor.

21 Q: Let me direct your attention to what's been
22 marked as Exhibit 41, Petitioner's Exhibit 41.
23 If you could flip through that book.

24 **(Petitioner's Exhibit Number 41 was referenced at**
25 **this time.)**



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1 **MS. LENHARDT:** And, Your Honor, we're hopeful if
2 this -- if -- if ---

3 **THE COURT:** Wait a second. I've got to address an
4 issue. All right. My rule is once one phone
5 rings and apparently, it's rang twice, but from
6 now on, y'all need to be checking your phones
7 because the next time a phone rings, it belongs
8 to the Court. Oh, but you can purchase it back
9 from us. But -- so, make sure your phones are
10 on vibrate.

11 Q: So, Mr. Slagel, do you -- do you have Exhibit
12 41 that's marked ---

13 A: Yes.

14 Q: --- in front of you? And do you recognize that
15 document?

16 A: Exhibit 41 is the -- the critical area permit
17 issued on January 24th, 2019, for the beach
18 renourishment and groins project.

19 Q: Okay. And you were responsible for approving
20 the issuance of the permit?

21 A: Yes. And my supervisor also reviewed the
22 issuance.

23 Q: Okay.

24 **MS. LENHARDT:** Your Honor, at this time I'd like to
25 offer Petitioner's 41.



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1 (Petitioner's Exhibit Number 41 was offered into
2 evidence.)

3 MS. PHELAN: No objection, Your Honor.

4 THE COURT: It's admitted.

5 (Petitioner's Exhibit Number 41 was admitted into
6 evidence.)

7 Q: What I'd like to do is ask you some questions
8 about the original permit and then we'll
9 address the amendment. During -- were there --
10 were there alternatives analyses done by the
11 applicant or their agents during this
12 application?

13 A: There were.

14 Q: And did -- did you or anyone at DHEC do an
15 independent analysis of any alternatives that
16 were available to the applicant?

17 A: We reviewed the information. It was submitted
18 initially with the -- the permit application.
19 So, one of the documents that they included was
20 a -- a 30-year plan for Debordieu Beach that
21 sort of laid the groundwork for why Debordieu
22 Colony chose to pursue the groins alternative
23 in the first place. So, we reviewed that
24 document and then we and the Corps of Engineers
25 requested on several different occasions a more



1 robust alternatives analysis, which was
2 provided.

3 Q: Okay. But, again, there was no analysis done.
4 You -- you've merely reviewed the analysis that
5 was undertaken by the applicant?

6 A: That's correct. We reviewed their analysis and
7 found that it was complete. There was no -- no
8 other alternatives that we identified
9 internally or any independent alternatives that
10 we formulated.

11 Q: Okay. Did you -- during your review of the
12 permit application, did you receive information
13 regarding any financial ability to pay for
14 either the renourishment, the removal of the
15 groins, or restoration of beach?

16 A: Yes. So, one of the requirements is a
17 financial obligation in the form of a letter of
18 credit or some other bond that is set aside
19 specifically if there are downdrift impacts,
20 that there are funds that are there to
21 mitigate. So, that was one piece. And then we
22 also received it information from Debordieu
23 Colony that they have a new beach preservation
24 fund that was established recently through a
25 bylaws amendment that was voted on in the



1 community. I believe that fund will create \$32
2 million in 17 years for beach projects
3 including groins and maintenance. And then
4 they also have a reserve fund that we received
5 financial information on.

6 Q: Okay. In terms of any of the financial
7 commitment documents, did you do any sort of
8 independent investigation into those -- the
9 validity or the reliability of those documents
10 they submitted?

11 A: We did not do any further investigation into
12 the funds themselves. We -- we believed
13 Debordieu Colony and we believed the applicant
14 that -- that their documents are accurate or
15 that the numbers they provided were accurate.

16 Q: So, you relied on -- on their representations
17 to the Department?

18 A: Yes.

19 Q: And there was also, I believe, a downdrift
20 impacts report submitted?

21 A: There was.

22 Q: And did you -- does the -- does the Department
23 have any ability to evaluate the data
24 themselves? Meaning, do they - is there
25 software available for you to do a -- an



1 evaluation of those -- the calculations and the
2 evaluation of the impacts?

3 A: We have the ability to review the erosion rate
4 calculations that were provided as part of the
5 downdrift impacts report. So, the Department
6 also calculates long-term erosion rates. So,
7 we were able to compare what the -- the
8 Department calculates with what CSE has
9 provided. I believe you're referring to -- to
10 the modeling that was within the downdrift
11 impacts report.

12 Q: That's correct.

13 A: We don't have the ability to, for instance, run
14 Delft3D, which is a highly technical data
15 intensive three-dimensional modeling program.
16 The Department doesn't have that software.
17 What I did in reviewing that document was to
18 read the text of the description of how CSE
19 calibrated and verified that modeling. And
20 then I also reviewed information from the Corps
21 of Engineers, who does have more technical
22 expertise with reviewing modeling. But to
23 answer your question, the Department does not
24 independently run models or have that
25 capability.



1 Q: Okay. So -- but your -- your evaluation was
2 reviewing their report, but you don't have any
3 ability to independently verify the modeling
4 results?

5 A: That's -- that's correct.

6 Q: Just for the record, could you explain the
7 activities authorized under this permit?

8 A: Yes. So, this permit authorizes, starting with
9 the renourishment piece, the placement of up to
10 650,000 cubic yards of beach compatible
11 material, dredged from offshore, three
12 different borrow sites. And that sand will be
13 placed along about 9,000 feet of shoreline at
14 the southern -- southern -- southern portion of
15 Debordieu Beach. And then the three groins
16 consist of sheet pile structures, low profile,
17 as was -- was previously mentioned. The
18 northern most structure is about 300 feet in
19 length. It extends from -- from the -- the
20 wooden bulkhead seaward. There would also be
21 a cap on top of that sheet pile made of either
22 concrete or some kind of composite material.
23 And at the seaward end of each structure would
24 be tow protection, meaning basically rock that
25 are placed there to protect that structure from



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1 wave action. So, three of those structures,
2 the first along the bulkhead, the second
3 structure 400 feet in length at the southern
4 terminus of the bulkhead, and then the third
5 groin would be 300 feet in length, about 25
6 feet north of the shared property line between
7 Debordieu Colony and the Baruch Foundation.

8 Q: Let me turn your attention to, it's special
9 condition 22 of the permit. It looks like it's
10 page 6 of 42 of the permit.

11 A: I see it.

12 Q: And that -- that condition contains a
13 requirement that there be mitigation conducted
14 if the erosion hits a certain point, is that
15 right?

16 A: That's right.

17 Q: What is the mitigation, what I'll call a
18 trigger, in the original permit?

19 A: In the original permit, the mitigation trigger
20 was 8.1 cubic yards per foot per year of
21 erosion. And that was a trigger that was
22 proposed in the downdrift impacts report based
23 on an analysis of historical pre-renourishment
24 era data. So, it -- it intentionally removes
25 the effects of those four beach renourishment

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1 projects that we've -- they've already
2 previously been discussed. So, that's the
3 trigger, 8.1 cubic yards per foot per year.

4 Q: Okay. The permit doesn't have a time frame for
5 when the applicant has to initiate the
6 renourishment process when we know -- we they
7 know that the 8.1 is going to be hit, is there?

8 A: The -- the permit does refer -- and I need to
9 find the special condition. And it -- it does
10 say that if downdrift impacts are documented,
11 then remedial work should begin normally within
12 three months.

13 Q: Okay.

14 A: That is a -- that is in the permit. Yes, I'm
15 sorry. It's -- it's in that same special
16 condition, number 22, and the language states,
17 when mitigation work is required, it must be
18 completed as soon as possible, normally within
19 three months.

20 Q: Okay. What about the -- the actual activity as
21 should be normally within three months
22 completed, but what about initiating the
23 process to make sure that they design, choose
24 the beach compatible sand, any -- any
25 additional approvals, there's no trigger for

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1 that, when that process needs to start?

2 A: That's correct. Not within the permit. I
3 believe it's -- it's an exhibit or one that we
4 will discuss at some point, but there was a
5 figure submitted as part of the downdrift
6 impacts analysis where CSE basically proposed
7 an approach to answer that very question. It's
8 basically an -- an asymptotic graph where the
9 erosion rate as it begins to approach that 8.1
10 cubic yards per year trigger, that two years
11 prior to that, planning for renourishment or
12 some other kind of mitigation begins. So, it's
13 something that through the -- the quarterly
14 monitoring reports that are required in year
15 one after the project and the annual reports,
16 that's a -- that's -- that's a -- and that's a
17 rate that's going to be closely monitored over
18 time, so that as that trigger is approached
19 that that planning, as you described, can
20 begin.

21 Q: All right. Now, this -- I have a document that
22 has been marked as Petitioner's Exhibit 77.
23 And that was identified subsequent to the
24 creation of these notebooks, and so you don't
25 have that.



1 (Petitioner's Exhibit Number 77 was referenced at
2 this time.)

3 **MS. LENHARDT:** So, Your Honor, I'm not certain how I
4 can get him to authenticate it.

5 A: It's -- it's in this notebook.

6 Q: It is?

7 A: Is it the -- is it the amendment?

8 Q: Yes.

9 A: It's in here.

10 Q: Oh, great. And that's been marked as -- for
11 identification as Petitioner's 77. And do you
12 -- you -- you do recognize that as the
13 amendment to the permit that was issued?

14 A: Yes, ma'am. This is the amendment that was
15 issued on April 15th, 2020.

16 Q: Okay.

17 **MS. LENHARDT:** And, Your Honor, I would offer
18 Petitioner's 77.

19 (Petitioner's Exhibit Number 77 was offered into
20 evidence.)

21 **THE COURT:** Any objection?

22 **MR. OWENS:** No.

23 **MS. PHELAN:** No objection.

24 **THE COURT:** It's admitted.

25 (Petitioner's Exhibit Number 77 was admitted into



1 **evidence.)**

2 Q: Now, you drafted this amendment and all of the
3 conditions?

4 A: This is the exact language that was taken from
5 a consent order, an order of dismissal from
6 this Court.

7 Q: Okay. What is different about the amendment
8 from the original permit?

9 A: The amendment modifies that special condition,
10 number 22, that we were just discussing and
11 specifically, it lowers that mitigation trigger
12 rate, as you described, from 8.1 cubic yards
13 per foot per year to 6.0 cubic yards per foot
14 per year. So, that's -- that's one change.
15 Another change is that in addition to that
16 volumetric trigger, it adds a -- a land loss
17 trigger above mean high water. And you see
18 that in 22(a) of the amended special condition,
19 number 22, that the groins be reconfigured so
20 that the erosion rate on the affected beach
21 does not exceed the background rate of .75
22 acres per year or 6.0 cubic yards per foot per
23 year as we described. So, it adds a -- a land
24 loss trigger in addition to that initial
25 volumetric trigger, so it's sort of just



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1 another calculation that's going to be reviewed
2 and analyzed in these monitoring reports. And
3 then, finally, in addition to those two
4 changes, it also shifted the southern most
5 groin by about 25 feet to the north away from
6 the shared property line and about 45 feet to
7 the west.

8 Q: Okay. Did ---

9 A: I'm -- I'm sorry. One -- one more thing, if I
10 may.

11 Q: Certainly.

12 A: The amendment also documented the new letter of
13 credit amount of a million dollars, as opposed
14 to the 500,000 that was submitted initially.

15 Q: Okay. Did you do -- with regard to that, did
16 you do any independent evaluation about whether
17 or not a \$1 million letter of credit would be
18 sufficient for the requirements to remediate,
19 restore?

20 A: The Department felt that the -- the initial
21 500,000 was sufficient, so we were comfortable
22 with the one million, as well, and we did no
23 further analysis.

24 Q: Why did you think it was sufficient?

25 A: CSE, the agent for Debordieu Colony, had



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1 submitted a few -- a couple of different
2 engineering estimates for what it would cost to
3 remove these groin structures. When I was
4 originally reviewing the permit, that figure
5 was about \$250,000. And that was based on
6 discussions that CSE had had with contractors
7 who had -- had installed similar type low-
8 profile groins at Folly Beach and at Hunting
9 Island. And then, more recently towards -- and
10 I can't remember the exact time frame, it was
11 maybe December of 2018 before permit issuance,
12 we received a second letter from a different
13 contractor that estimated it would cost closer
14 to, I think it was 400 and maybe 35,000
15 dollars. But again, that initial \$500,000
16 letter of credit, we felt, based on those
17 engineering estimates, was sufficient.

18 Q: And that -- but that -- that estimate was based
19 on removal of the groins?

20 A: Yes.

21 Q: Not any sort of subsequent renourishment or
22 restoration of the beach?

23 A: It was strictly based on removal of the groins;
24 that's correct.

25 Q: So, you've testified that the amendment, the



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1 special condition 22, is the only condition
2 that's different from the original permit, is
3 that right?

4 A: Yes.

5 Q: Okay. So, are your answers regarding your --
6 your analysis of the permit conditions and the
7 things we've discussed changed in any way with
8 the amendment, other than special condition 22?

9 A: Could you repeat that question, please?

10 Q: The analysis you -- you've -- you've answered
11 questions about your analysis of the original
12 permit application, right? Does your -- do
13 your answers change with regard to the
14 amendment, your analysis of the amendment,
15 other than special condition 22?

16 A: No. They don't change.

17 Q: Okay. Did you conduct any other subsequent
18 analysis about the change in the mitigation
19 trigger?

20 A: No. The Department believed that the 8.1 cubic
21 yards per foot per year trigger was -- was
22 appropriate based on the data that we reviewed
23 and based on DHEC's own data. So, by -- by
24 lowering that trigger to 6.0 from 8.1, that
25 just offers further protection to the downdrift

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1 property owner. It would -- it means that
2 mitigation, if required, would happen sooner
3 than if you had to wait for the erosion to get
4 to 8.1. So, we didn't have -- the Department
5 didn't have any -- any concerns or feel that
6 additional analysis was needed for that lower
7 rate.

8 Q: Right. And what about the shifting of the
9 groins, did you do any analysis to how that
10 impacts anything?

11 A: We did require the -- the owner of 44 Eastland
12 Way within Debordieu -- he's the -- the
13 southern most property owner within Debordieu
14 Colony. We -- we did ask for a letter of no
15 objection from that property owner because that
16 southern most groin would be shifted a little
17 bit closer to his property. So, we wanted to
18 make sure that he was aware that that was being
19 proposed, and that he did not object to that.
20 And we did receive a letter to that effect. In
21 terms of doing additional downdrift impacts
22 analysis based on the -- the tweaked placement
23 of that groin, we felt like that wasn't
24 necessary based on the thorough nature of the
25 original downdrift impacts report, and the fact



1 that it would be shifted a little bit further
2 away from the downdrift property owner and a
3 little bit further landward, such that any
4 downdrift impacts experienced by Baruch
5 Foundation, would -- would be minimized, if
6 anything, from that -- that tweaked location.

7 Q: Okay. Now, when you were evaluating the
8 permit, you considered, I assume, 48-39-290(a),
9 is that right?

10 A: Yes.

11 Q: And what is that provision -- what does that
12 provision authorize?

13 A: It considers whether groins are permissible if
14 certain site conditions are met. So, the beach
15 where -- where groins are proposed, must --
16 must have a high erosion rate. It must have
17 either -- either structures that are threatened
18 or a public park that is threatened. It also
19 requires that -- that there's the financial
20 obligation to mitigate if required. It
21 establishes extensive monitoring associated
22 with those projects. And also, it requires
23 that downdrift impacts would not be experienced
24 on the -- on the -- the downdrift side of these
25 structures.



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1 Q: Right. And it -- and it -- just -- the actual
2 language of subsection (B) of 48-39-290(a),
3 groins may be permitted only after thorough
4 analysis demonstrates that the groin will not
5 cause a detrimental effect on down -- adjacent
6 or downdrift areas. Now, you would agree with
7 me that the function of a groin is to prevent
8 sand from migrating downdrift, is that right?

9 A: The function of a groin is retain sand on the
10 updrift side.

11 Q: And if you retain sand on the updrift side, the
12 sand will not migrate to the downdrift side?

13 A: That would be correct if there is no
14 renourishment sand that's placed with the
15 project and if the -- the groins are not filled
16 to capacity.

17 Q: Renourishment sand will migrate at some point
18 way from the area of renourishment, correct?

19 A: Over time, yes. And that's why the project
20 proposes up to four times the trapping capacity
21 of these groin structures, so that that excess
22 sand can migrate initially. And then, over
23 time, yes, the sand will -- will erode.

24 Q: Okay. So, the structure, it's a shore
25 perpendicular structure, it will trap the sand,

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1 keeping the sand in front of the chosen area of
2 the groin field, right?

3 A: Once all of the renourishment sand over time,
4 you know, some years into the future, has
5 eroded away from the project site, and you're
6 left with just the three groin structures and
7 some of the sort of background sand that was
8 not placed there, then yes, the structures
9 would -- would retain sand that might otherwise
10 reach downdrift properties. And it's -- based
11 on the monitoring, again, though that at that
12 point, is when additional sand would be in that
13 planning stage to go ahead and renourish again
14 to mitigate those effects.

15 Q: The permit doesn't say that when the
16 renourishment sand is gone, that the
17 renourishment has to be re- -- reupped, does
18 it?

19 A: It says that if the historical rate of erosion
20 downdrift is exceeded, then it would have to be
21 reupped. And I believe that it's the -- the
22 applicant's perspective that that is likely to
23 occur once that renourishment sand is gone.
24 So, it's -- it is sort of and intertwined
25 concept.



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1 Q: That's what the applicant has represented to
2 the Department?

3 A: Yes.

4 Q: So, at the point at which the renourishment
5 sand has migrated south and you agree with me
6 that virtually all along the coast sand
7 migration is from north to south, is that
8 right?

9 A: Generally speaking I would agree with that
10 statement. But in proximity of inlets, that
11 dir- -- that direction can reverse.

12 Q: Okay. But what -- the beach that we're talking
13 about, Debordieu and Hobcaw, the sand's going
14 to move from north to south, is that right?

15 A: That would be -- I believe that would be the --
16 the cumulative or net littoral transport
17 direction, but there can be shifts during
18 different times of the year if you have south
19 swells for prolonged period of time pushing,
20 you know, waves and currents from south to
21 north, you can actually get a reversal of that
22 local sediment transport. But I would say the
23 -- the net, long-term direction is from north
24 to south.

25 Q: Okay. So, the point, as I was saying, the



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1 point -- the point at which -- when the
2 renourishment sand is gone, there is going to
3 be a period of time where there is a downdrift
4 impact from the location and construction of
5 the groins, correct?

6 A: I would say that's possible.

7 Q: Okay. How do you square that with the language
8 in the statute that you cannot have a
9 detrimental impact on downdrift areas?

10 A: Well, the downdrift impacts report acknowledges
11 that there will up to 7,000 cubic yards per
12 year of sand that -- that maybe would've gotten
13 to the Hobcaw tract that is now no longer
14 reaching that beach because of these
15 structures. But that analysis of the 7,000
16 cubic yards per -- per year is based on the --
17 the no structures alternative. So, that's
18 assuming that if the groins were not placed
19 there and just renourishment sand is placed
20 there, obviously that would be, you know --
21 that would -- that would allow for more sand to
22 -- to reach that shoreline. But again, it's --
23 it's not -- the Department views Debordieu
24 Colony as not necessarily being responsible for
25 -- for funding and implementing renourishment



1 projects forever. I mean, there's nothing in
2 statute or reg that says once a community
3 renourishes the beach, they must continue to do
4 so. So, I think it's important to consider
5 these alternatives in -- in that lens of what
6 -- what are we comparing these impacts to.

7 Q: So, you mean -- you mean, if the groins weren't
8 there, there wouldn't be any obligation to
9 renourish periodically going forward by
10 Debordieu?

11 A: That's right. And if the structures are there,
12 then there is an obligation.

13 Q: All right. Let's talk a little bit about the
14 high erosion rate requirement in the statute.

15 **THE COURT:** Can I ask you a quick question? So,
16 does OCRM or DHEC view that as a benefit of
17 putting groins in? Do you now create a
18 requirement for renourishment or how do y'all
19 view that?

20 A: I'm not sure we view as a -- as a benefit in --
21 in that way. We do acknowledge that under
22 certain conditions that groins can retain sand
23 on a beach for a longer period of time. And
24 the Department views that as beneficial. If
25 you -- if you extend the period of time between



1 renourishment projects, if you extend it from
2 -- the application says from six years without
3 groins to twelve years, that's less frequent
4 disturbance on the beach. It's less frequent
5 that you have bulldozers out there, you know,
6 pushing sand around. Less frequent that you're
7 dredging offshore and disturbing those
8 environments. So, by -- by stretching out the
9 length of a project, that's -- that's less
10 disturbance cumulatively over time. So, we do
11 view that as a potential benefit. But again,
12 only in conditions where the other requirements
13 for groins can be met.

14 **THE COURT:** Okay.

15 Q: So, with regard to the high erosion rate,
16 there's this requirement in the statute that
17 there has to be a high erosion rate on a beach
18 where a groin field will be constructed, is
19 that right?

20 A: Yes.

21 Q: And what does the Department consider to be a
22 high erosion rate?

23 A: We believe that any rate above about three feet
24 per year would be considered high. And that's
25 based on an analysis of our statewide network



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1 of beach monuments. So, it's about almost 500
2 survey monuments actually physically in -- in
3 the dunes where repetitive measurements over --
4 over time can be -- can be taken. So, that's
5 -- that's like a statewide comparison where
6 there are rates that are higher than that, like
7 at Hunting Island where it's some of the
8 highest erosion in the state. There's also
9 plenty of beaches where -- that are stable to
10 accretional, where their -- their long-term
11 rate is actually positive. But statewide,
12 again, we view over three feet per year to be
13 considered high.

14 Q: Okay. And that three feet per year is not
15 contained within the statute or the
16 regulations?

17 A: Correct.

18 Q: And it -- is there any written guidance for a
19 project manager to -- that states that 3.0 feet
20 per year or higher is a high erosion rate?

21 A: There's not.

22 Q: Okay. And when you say that the Department
23 bases the three feet per year on a review of
24 the 500 monuments, is that right, how does that
25 -- did -- did you undertake that review of the

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1 500 mon- -- monuments?

2 A: I -- I did look at that data recently, as I was
3 reviewing this permit application, but that's a
4 -- that's sort of a policy that other project
5 managers have used when reviewing groin permit
6 applications in the past.

7 Q: How long has the Department used the three feet
8 per year guideline?

9 A: As far as I know, since when the Coastal
10 Council was created.

11 Q: Do you know how that number came to be back in
12 -- when it was -- the Coastal Council was
13 created?

14 A: I believe it was based on prior studies of
15 erosion in South Carolina that had taken place
16 at that time. But that monument network that
17 I described basically came into existence with
18 the Coastal Council at the same time. So, the
19 Coastal Council wouldn't have had access to the
20 decades of monitoring data that -- that we have
21 now. So, I believe that was based on prior
22 studies.

23 Q: Okay. Did you determine what the mean erosion
24 rate for the state is?

25 A: No.



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1 Q: Wouldn't you think that knowing what the
2 average erosion rate would be would be
3 beneficial to determining what's high?

4 A: We felt that knowing what -- what the range is
5 is more important than what the -- the mean and
6 the average is.

7 Q: Okay. So, you just picked 3.3 feet per year
8 somewhere in the middle of the range?

9 A: Again, that was a -- that was a policy that
10 other project managers have implemented and I
11 -- I reviewed more recent beach monument data,
12 beach profile data, and determined that that's
13 -- that that was a reasonable number. And I --
14 I'd also like to state too that the high
15 erosion rate is not the only factor that we're
16 reviewing when looking at a groin application,
17 there are other considerations ---

18 Q: And ---

19 A: --- as well.

20 Q: We will ---

21 A: And I'm -- I'm sure we'll get there.

22 Q: We will get there. Thank you. But I -- I just
23 want to be clear that we -- you reviewed the
24 monuments and the erosion rates associated with
25 the monuments. Did you do that over a period

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1 of time, a historical rate or the current rate
2 of the most recent determination of an erosion
3 rate?

4 A: It was looking at -- at long-term shoreline
5 change, so not just -- not just recent data,
6 but decades.

7 Q: Okay. And -- so, you cannot testify that three
8 feet per year is where it is on the spectrum of
9 low to high?

10 A: I'm not sure I understand your question.

11 Q: Can you tell me whether -- well, you -- you
12 testified that you have not calculated the mean
13 ---

14 A: Uh-huh.

15 Q: --- is that right? So, you don't know where
16 the three feet falls in relation to the mean
17 erosion rate?

18 A: That's correct.

19 Q: Okay.

20 A: Yeah.

21 Q: One thing that I -- we have been discussing the
22 erosion rate in terms of feet per year. Is
23 that how the applicant evaluated the rates? Is
24 that the metric that was used?

25 A: The applicant looked at volumetric change



1 rates. So, the difference between how OCRM
2 calculates our long-term erosion rates for
3 purposes of setting the jurisdictional setback
4 line, we're --- we're basically -- OCRM is
5 looking at historical aerial photos over time
6 and viewing where the shoreline position, how
7 it changes at a given location over time. And
8 we calculate long-term rates of that shoreline
9 movement as if you're on an airplane looking
10 down at -- at the beach. What CSE has -- has
11 done in this analysis is look at beach profile
12 data, which would actually measure a cross-
13 section at many different locations from the --
14 from the dunes, all the way out to the ocean,
15 and see how much -- how much volume of sand is
16 in that little slice, as if you're looking
17 through the beach and looking at that number up
18 and down Debordieu shoreline. So, the
19 volumetric rate is -- is one that -- it's more
20 quantitative because you're actually looking at
21 a volume of sand, whereas calculating that
22 long-term rate of where the shoreline moves,
23 it's also quantitative, but it's more -- it's
24 less -- it's less repeatable. You can't go to
25 a monument and say, this is the rate of change



1 or the volume here, whereas looking at the
2 volume, you -- you can do that. And that's why
3 CSE has proposed that volumetric trigger as a
4 opposed to a shoreline rate trigger because
5 they -- they believe that it's more precise.

6 Q: Okay. Well, why does OCRM look at shoreline
7 change and not the volumetric?

8 A: Because it's for a different purpose. We're
9 looking at long-term change over, in some
10 cases, hundreds of years. We have -- we have
11 data dating back to the late 1800s, which we
12 include in our shoreline change analysis to see
13 kind of a big picture, how is a shoreline
14 moving over time, whereas we only have about,
15 you know, 30 years of -- of monument data
16 looking at volumes. So, in order to set the
17 setback line, we want that kind of bigger
18 picture of what's happening on a beach.

19 Q: But you testified that you used the shoreline
20 erosion rate, the shoreline change data to
21 verify or somehow corroborate the volumetric
22 change.

23 A: Right.

24 Q: How does that square up?

25 A: Sure. Yes.



1 **THE COURT:** That's what I was about to ask.

2 **A:** So, with the volumetric change, like let's look
3 at that 8.1 cubic yards per foot per year. If
4 you know basically what the cross-section of
5 that beach looks like, if you know how -- how
6 -- how high the berm or the -- the dry sand
7 beach is, if you have a good datum for that,
8 which for Debordieu is about plus 7 feet above
9 sea level in AVD -- that's the Atlantic
10 Vertical Datum. And if you know how far off
11 shore sand stops moving -- there's a certain
12 depth of closure it's called, off shore where
13 based on a given beach, the -- the sand that's
14 been transported by waves and currents, it's no
15 longer moving. It's just kind of sitting off
16 shore because those forces aren't acting on it.
17 So, if you know sort of the -- the -- the frame
18 that you're looking in, if you know that
19 elevation, if you know off shore how deep you
20 are, you can convert that vol- -- that volume
21 within that area to a shoreline change rate.
22 So, that 8.1, using those assumptions I just
23 described of plus 7 for the berm minus 15 feet
24 for that depth of closure, equates to about 10
25 feet per year of actual shoreline movement.



1 So, there are ways to convert that volumetric
2 change to a shoreline change.

3 Q: Okay.

4 **THE COURT:** You mean -- you said volumetric change
5 to a shoreline change or a shoreline change to
6 a volumetric change?

7 A: It -- you -- it can work both directions, vice
8 versa.

9 **THE COURT:** Okay.

10 A: Yes.

11 **THE COURT:** Vice versa.

12 Q: The groin field -- well, first of all tell me
13 -- tell me the monument numbers the correspond
14 to the area where this groin field is going to
15 be located?

16 A: I can tell you -- I might need a map in front
17 of me. I don't have the monuments statewide
18 kind of in my head. I can tell you that
19 monument 4120 is on the Baruch Foundation
20 property and the monument numbers increase as
21 you move south and they decrease as you head --
22 I'm sorry. The monument numbers increase as
23 you head north and they decrease as you head
24 south. So, 4120, I believe it's 41 maybe 25,
25 is at the southern end of the bulkhead. 4130,



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1 up into Debordieu Colony. And then going down
2 to Debordieu spits, I think 4100. So,
3 somewhere in that range of 4100 to 4140.

4 Q: And how many monuments from the southern most
5 groin up to the -- to the northern end of the
6 beach, how many monuments are there?

7 A: Again, I would -- I mean, I could refer to a
8 map. I believe there's maybe three or four,
9 but I don't -- I don't know specifically
10 without seeing a map with the monuments.

11 Q: All right. And so, the -- the erosion rate
12 that DHEC determines is -- is at each monument
13 and not between the monuments, is that right?

14 A: That has been correct. As -- when we -- we
15 calculated the setback line starting in 1990
16 when those lines were revised in 1999 and 2008.
17 More recently in 2017, we have started
18 calculating erosion rates every 200 feet, up
19 and down the state's beaches.

20 Q: Okay. So, when you -- the -- when you look at
21 -- when you were making your determination that
22 Debordieu had a high erosion rate, is there any
23 discreet length that must be in excess of three
24 feet per year in order to determine that the
25 erosion rate is high on Debordieu Beach?

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1 A: There's nothing defined within reg or statute
2 to that question, but if we're looking at a
3 groin project, like this one that we're
4 considering, it's going to spread over
5 thousands of feet of shoreline. So, we're
6 looking at that -- those 9,000 feet and trying
7 to determine what those rates of change are and
8 we looked again at -- at the monuments, at the
9 monument data, and we looked at the data
10 provided by CSE, and then we looked at our
11 long-term shoreline change rate, as well. And
12 it wasn't just three feet per year. I mean,
13 we're -- within Debordieu Colony the rate was
14 about six to eight feet per year long term.
15 Once you get onto the Baruch Foundation's
16 property, that increased to about eight to ten
17 feet per year. So, two or three times this --
18 this three-foot per year number we've been
19 talking about.

20 Q: But the beach to the north of the groin field
21 becomes less and less erosional as you move
22 north, right?

23 A: That's right.

24 Q: And really, the area that exceeds three feet
25 per year is less than half of the entire beach.



1 A: Of the entire island of -- of Debordieu Island?

2 **THE COURT:** Ask that -- ask that again.

3 Q: I said that the -- the -- the area where the
4 erosion rate exceeds three -- three feet per
5 year is less than half of the length of the
6 entire island, is that right?

7 A: Yes. That's right.

8 Q: Okay. Do you have Petitioner's Exhibit 75 in
9 front of you? That -- well, I'll ask you ---

10 **(Petitioner's Exhibit Number 75 was referenced at**
11 **this time.)**

12 A: Let me see. I believe I do. Yes.

13 Q: Okay. That is -- okay. And do you recognize
14 this document?

15 A: Yes.

16 Q: And ---

17 A: This is -- do you want me to describe what it
18 is?

19 Q: Please.

20 A: Okay. Each -- each time that our
21 jurisdictional baseline and setback line are
22 updated, we create what's called a -- a line
23 report. So this is the line report for the
24 most recent baseline and setback line for
25 Debordieu Beach. They were proposed in October



1 6th of 2017, and this document basically
2 summarizes how those line were -- were
3 proposed.

4 Q: Okay. And that is a document that's regularly
5 generated by the Department?

6 A: It is.

7 Q: Okay.

8 **MS. LENHARDT:** Your Honor, I'd like to offer Exhibit
9 -- Petitioner's Exhibit 75.

10 **(Petitioner's Exhibit Number 75 was offered into**
11 **evidence.)**

12 **MS. PHELAN:** No objection.

13 **MR. OWENS:** No objection.

14 **THE COURT:** It's admitted.

15 **(Petitioner's Exhibit Number 75 was admitted into**
16 **evidence.)**

17 Q: Mr. Slagel, if you will turn to page 4 and
18 there is a table that is the second table on
19 the page. This is a sort of summary of the
20 shoreline change rate in feet per year for the
21 Debordieu Beach, is that right?

22 A: Yes.

23 Q: And looks like -- one, two, three, four -- only
24 four of the areas, and I don't know what you
25 call them, but the -- the breaches or -- or



1 what are -- are greater than three feet per
2 year, is that right?

3 A: According to the calculations that created this
4 table, yes.

5 Q: Okay. Did you have -- did you create this
6 table?

7 A: I did not.

8 Q: Okay. Who did?

9 A: Other staff at OCRM within our Coastal Services
10 Section.

11 Q: Okay. Okay. Mr. Slagel, the one the fifth row
12 from the top, fifth, sixth and seventh rows,
13 can you confirm that those are the areas that
14 -- where the groins are to be located?

15 A: I'm sorry. Which rows did you say? One
16 through ...

17 Q: The -- the Eastland Way ---

18 A: One -- uh-huh.

19 Q: Ocean Green Drive and then Ocean Green and
20 Debordieu Boulevard.

21 A: Yes.

22 Q: And the shoreline change rates for those three
23 are less than four feet per year, is that
24 right?

25 A: According to this calculation. But there's a



1 reason why these rates are lower than other
2 line reports. If I may, Your Honor, may I
3 explain?

4 **THE COURT:** Yes. You might as well because I was
5 going to ask you anyway.

6 A: All right. So when the baseline and setback
7 line were first established in 1990 and then
8 again in '99, in 2008 and 2012, the Department
9 did not include any shorelines that were post
10 renourishment. In other words, we were trying
11 to filter out the effect of renourishment
12 because we're trying to figure out what that
13 long term rate of change is absent
14 renourishment. For this most recent proposed
15 -- when the setback line was proposed in
16 October of 2017, the staff that worked on this,
17 they inadvertently included a 2006 shoreline,
18 which was a month after the 2006 renourishment
19 at Debordieu, and they included a 2015, which
20 was a month or two after that project. So,
21 they included two post-nourishment shorelines,
22 which, you know, artificially bumped out where
23 the shoreline was through renourishments. So,
24 it -- it factored in those benefits, and that's
25 why the rates of change were, you know, almost



1 cut in half compared to those historical rates.
2 So, that was a mistake that the Department
3 made. And then Act 173, which established the
4 baseline and setback line from this revision
5 cycle in 2018, it basically stated that the
6 more seaward baseline between the 2008 or what
7 was proposed here in 2017, and the most seaward
8 setback line are the lines that now by law are
9 in effect. So, the Department didn't have an
10 opportunity to fix that mistake until that Act
11 was already in place and those lines had been
12 established. But that's why these rates are
13 significantly lower.

14 Q: So, you -- you did say that the -- the
15 renourishment, the most recent renourishment
16 that Debordieu did was in 2015?

17 A: Right.

18 Q: And then, these numbers were created -- this --
19 this document was created in 2017, which is
20 only two years after?

21 A: Right.

22 Q: And isn't it true that the erosion rates
23 immediately after a renourishment project are
24 higher?

25 A: Not -- not when the aerial imagery that



1 captures that photo was a month after the
2 project. The -- the sand hadn't had a chance
3 to -- to equilibrate or to erode rapidly at
4 that point. I mean, these images were taken a
5 -- a month or two after the sand was already
6 placed before that higher erosion rate was
7 documented.

8 Q: And then this state document was revised in
9 December of 2019, is that right? That's on the
10 front page.

11 A: Yes, it appears that it was.

12 Q: And -- and also in 2018.

13 A: Yes.

14 Q: But you -- you said that there was a mistake in
15 the table, why didn't -- why wasn't the mistake
16 fixed?

17 A: Because it -- so, that -- that first update,
18 the first revision was May 3rd, 2018, and you
19 see on page 6 of the line report, Addendum 1,
20 that was what the update was and that's
21 summarizing Act 173. So, the law had already
22 -- it had already come into effect. It had
23 been signed by the Governor.

24 Q: Okay. But you could've -- you could've
25 addressed the -- the table. Not -- I don't



1 mean you personally, but the Department?

2 A: Right. In theory, I suppose that the table
3 could've been updated to include the accurate
4 erosion rates. But then there would've been a
5 discrepancy between the reported erosion rates
6 and the setback line position, which likely
7 would've led to further confusion. That's my
8 understanding of why that -- that fix was not
9 made.

10 Q: I think we're all aware of the confusion of the
11 Act. Now, let me direct your attention to
12 Petitioner's 76, Exhibit 76.

13 **(Petitioner's Exhibit Number 76 was referenced at**
14 **this time.)**

15 A: I see it.

16 Q: Do you recognize this document?

17 A: Yes.

18 Q: And could you describe what the document is for
19 the Court?

20 A: Yes. This is a report that was created by
21 Chester Jackson at Georgia Southern University.
22 The title of this report is Mapping Coastal
23 Erosion Hazards Along Sheltered Coastlines in
24 South Carolina, 1849 to 2015. The Department
25 contracted with Dr. -- Dr. Jackson to -- to



1 basically to -- to look at -- as it says in the
2 title, that the sheltered coastlines or the --
3 the estuarine, the title creek shorelines in
4 the state to determine long term rates of
5 change of those shorelines, and he also
6 included oceanfront shoreline in this report.

7 Q: Okay. And is this document -- DHEC requested
8 this document be created, right?

9 A: Yes.

10 Q: And it's published on DHEC's website?

11 A: Yes.

12 Q: Okay.

13 **MS. LENHARDT:** Your Honor, at this time, I would
14 offer 70- -- Petitioner's Exhibit 76.

15 **(Petitioner's Exhibit Number 76 was offered into**
16 **evidence.)**

17 **MR. OWENS:** No objection.

18 **OBJECTION:**

19 **MS. PHELAN:** Your Honor, objection. It is hearsay.
20 I'm not sure where she's going with it, but ---

21 **THE COURT:** Well, I don't ---

22 **MS. PHELAN:** --- he hasn't testified that he
23 reviewed this in his permit review.

24 **THE COURT:** Say that again.

25 **MS. PHELAN:** He hasn't -- he hasn't testified that



1 he reviewed this anywhere in his permitting
2 review and it's -- it's hearsay.

3 **THE COURT:** Well, did you?

4 **MS. LENHARDT:** Is it -- sorry.

5 **THE COURT:** What -- what are you offering it for?
6 What purpose?

7 **MS. LENHARDT:** Well, it's -- we consider it to be an
8 exception as a public document. It was
9 requested to be created by DHEC. It is
10 published on their website and we are seeking
11 to have him address the data that is described
12 in the document.

13 **THE COURT:** So, that would be 803(8), is what you're
14 offering it for?

15 **MS. LENHARDT:** Yes. Public records and reports.

16 **THE COURT:** Okey doke. Now, I know what they're
17 offering it for. Ms. Phelan?

18 **MS. PHELAN:** Well, I would -- I would object on
19 foundation if they're going to ask him to
20 analyze what -- what this report contains.

21 **THE COURT:** Well, you would have to lay the
22 foundation under 8 -- 803(8), so I will sustain
23 the objection at this point and time.

24 **MS. LENHARDT:** Okay. Your Honor, yes, I'm not --
25 I'm not -- I'm not offering for his analysis of



1 -- of the numbers. I'm asking him to publish
2 the numbers, not the conclusions.

3 **THE COURT:** Well, 803(8) -- let me pull it up. Has
4 a -- all right. It's a report setting forth
5 the activities of the office or agency or
6 matters observed pursuant to law, provided,
7 however, investigative notes, opinions,
8 judgments, and conclusions are not admissible.
9 So, you've got -- have you established either
10 (a) or (b)? It's either activities of the
11 office or agency or matters observed pursuant
12 to a duty imposed by law. And then if I --
13 I've got to get there first, and then I would
14 have to address whether there were underlying
15 judgments or conclusions in that exhibit, it
16 would not be admissible.

17 **MS. LENHARDT:** Right. Your Honor, DHEC is charged
18 with evaluating the state of the beaches.
19 That's one of the things that they regularly
20 do. They produce ---

21 **THE COURT:** I --- I understand it, but have you got
22 that through this witness?

23 **MS. LENHARDT:** No. I'm sorry.

24 **THE COURT:** That's what I'm getting at.

25 **MS. LENHARDT:** I apologize. Yes.



1 **THE COURT:** Foundation.

2 **MS. LENHARDT:** I will certainly lay that.

3 Q: Mr. Slagel ---

4 **THE COURT:** Unless you're wanting me to take
5 judicial notice of all that.

6 **MS. LENHARDT:** No, Your Honor. Thank you.

7 Q: So, is part of the Department's responsibility
8 and statutory authority to evaluate the state
9 of the coastlines and the erosional state of
10 the coastlines?

11 A: Yes.

12 Q: Okay. And have you in your role, both prior to
13 the first time you were at OCRM and
14 subsequently, investigated and -- and evaluated
15 the erosional state of the coastline?

16 A: Yes.

17 Q: And this report was created in 2017, but as
18 you've already testified, you -- the Department
19 requested and commissioned this study, is that
20 right?

21 A: That's right.

22 Q: And have you partic- -- you personally reviewed
23 this study?

24 A: Not as -- not as I was reviewing the permit
25 application that we're here about, but



1 subsequently I'm -- I'm familiar with it. I've
2 skimmed it.

3 Q: Okay. You did not review it before -- I'm --
4 I'm not even talking about in relation to this
5 project, but just before that, have you
6 reviewed it in your -- in your duties as OCRM
7 project manager?

8 A: Only recently. I wasn't the -- the project
9 manager that worked with Georgia Southern to
10 develop this report or that was the -- the
11 contract manager at OCRM for it. That was in
12 a different section. But I'm -- I'm familiar
13 with it. I believe I can answer questions
14 about it.

15 Q: Okay.

16 **MS. LENHARDT:** Your Honor, it -- it is the activity
17 of the agency to review studies and research
18 about the state of the beaches. Matters
19 observed, duty imposed by law, that's clearly
20 a duty of the Department. And, again, there
21 are -- there are subjective opinions in the
22 document. We're not asking for them to be
23 admitted for those. There are rates that he
24 reports and that's what we would like Mr.
25 Slagel to identify.



1 **THE COURT:** Ms. Phelan?

2 **MS. PHELAN:** I continue my objection just based on
3 that if the document comes in, that there's a
4 lot more information in here that you're going
5 to have examine before saying it would come in
6 under 803.

7 **COURT REPORTER:** I didn't hear the end of that. You
8 would continue your objection based on the
9 document comes in -- that there's a lot of more
10 information.

11 **MS. PHELAN:** There's a lot more information and
12 statements in this report that we have to
13 examine to see if it -- if it's an out of court
14 statement.

15 **THE COURT:** I can't just let the document in, even
16 with -- especially given the statement you've
17 said. It's got conclusions in there that are
18 not admissible. So, how would I accomplish
19 your goal and still stay within the parameters
20 of 803(8). And I will say, it says -- all
21 right. There's records, reports, statements or
22 data compilations, setting forth the activities
23 of the office or agency. So, that's not it
24 here. Or matters observed pursuant to a duty
25 imposed by law as to which there's a duty to



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1 report, so.

2 **MS. LENHARDT:** Well, I believe -- I don't have it
3 specifically ---

4 **THE COURT:** I mean, they -- they asked for it to be
5 prepared, but I haven't heard where there was
6 a legal or there's a statute or something to
7 that effect that says this is the data that you
8 have to prepare and ---

9 **MS. LENHARDT:** Well, the statute does set forth the
10 requirement to create a beach management plan
11 and ---

12 **THE COURT:** Okay.

13 **MS. LENHARDT:** --- and I recall, I can be
14 corrected, but I recall that there is a
15 requirement to create a state of the beaches
16 report. So, this is -- this is data that the
17 Department is clearly using and publishing in
18 furtherance of the creation of that plan.

19 **THE COURT:** Okay. Ms. Phelan?

20 **MS. PHELAN:** I'm going to have oppose it just on the
21 foundation of that. I -- I don't -- this
22 document, it doesn't say anything -- anywhere
23 in here or indicate that this was created in
24 furtherance of creating the beach management
25 plan. This is not part of the beach management



1 plan that the Department has adopted pursuant
2 to its legal duties.

3 **THE COURT:** Well, that -- I mean, that's their
4 position. I need to have some law that would
5 dispute that -- the OCRM's position concerning
6 that legal requisite. Would I not? I mean,
7 I'm open to be corrected.

8 **MS. LENHARDT:** Sure. Well, I -- I can review that,
9 but can I address your -- three of these
10 questions real quickly about -- you said, how
11 -- if there's subjective things in the
12 document, how can you not -- how can you admit
13 it and not ---

14 **THE COURT:** Well, I said subjective, but what I
15 should've followed is that it says opinions,
16 that's subjective; judgments or conclusions are
17 not admissible. So, I used a phrase that's not
18 in there, but that's what I'm getting at.

19 **MS. LENHARDT:** Right.

20 **THE COURT:** And I think there's other -- there's
21 case law to that effect too.

22 **MS. LENHARDT:** Right. I would -- I would submit
23 that the mere existence of those things, the
24 conclusions, the opinions and judgments in a
25 document, does not mean it's not an exception



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1 to the hearsay rule. It's a -- it's clearly an
2 exception to allow the admissibility of a
3 public record provided that the things within,
4 the opinion, judgments and conclusions, are not
5 admissible. So, Your Honor ---

6 **THE COURT:** So, you admit it, but you don't admit it
7 for the truth of the matter asserted?

8 **MS. LENHARDT:** For the conclusions and the opinions
9 and the judgments. That's correct.

10 **THE COURT:** All right. She's -- I guess her
11 objection still is that you didn't get to the
12 foundation.

13 **MS. LENHARDT:** Right. And I -- and so, I wanted --
14 I just wanted to make sure that I addressed
15 that question, but ...

16 **THE COURT:** And I've done that before, where I've
17 admitted the document, but not for the truth of
18 the matter asserted. But when I go to write my
19 order, it's not admitted for the truth of the
20 matter asserted. So, then I'm kind of left to
21 ignore it.

22 **MS. LENHARDT:** Your Honor, I would direct your
23 attention to 48-39-320.

24 **THE COURT:** 48-39 -- Let's see if I'm there. All
25 right. I'm there.

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1 **MS. LENHARDT:** It requires a comprehensive beach
2 management plan.

3 **THE COURT:** Where -- where? I'm there, but not -- I
4 don't have it memorized.

5 **MS. LENHARDT:** Right.

6 **THE COURT:** (a). I assume (a) or is some other
7 provision?

8 **MS. LENHARDT:** 48-39-320 subsection (a).

9 **THE COURT:** Okay.

10 **MS. LENHARDT:** Department's responsibilities include
11 the creation of a long ranging comprehensive --
12 -

13 **THE COURT:** Oh, I was ---

14 **MS. LENHARDT:** --- beach management plan.

15 **THE COURT:** I'm sorry. I'm not -- I pulled up (a),
16 so I've -- I have to pull the entire statute
17 up. I'm signing in on Westlaw right now. All
18 right. 48-290, right?

19 **MS. LENHARDT:** 320, Your Honor.

20 **THE COURT:** 320. Oh. All right.

21 **MS. LENHARDT:** So, the title of that provision is
22 comprehensive beach management plan, subsection
23 (a), the Department's responsibilities include
24 the creation of a long range and comprehensive
25 beach management plan. The plan must include



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1 and it identifies the items, development of the
2 database for the state's coastal areas to
3 provide essential information necessary to make
4 informed and scientifically based decisions.

5 **THE COURT:** I -- I would agree with you on all this
6 if he testifies that this was prepared pursuant
7 to that statute, then I would agree with you.
8 So, do we want to get there?

9 Q: Well, Mr. Slagel, do you have knowledge as to
10 what the purpose of the document that I'm
11 addressing with you is?

12 A: I don't.

13 Q: Okay.

14 **MS. LENHARDT:** We will withdraw the offer that.
15 **(Petitioner's offer of Exhibit Number 76 was**
16 **withdrawn.)**

17 **THE COURT:** Okay. I got ---

18 **MS. LENHARDT:** For the time being.

19 **THE COURT:** That's what I thought.

20 **MS. LENHARDT:** Let's see what we can do.

21 **THE COURT:** I've got a -- I have a feeling we
22 weren't through with it.

23 **MS. LENHARDT:** No. We're not and we won't be.

24 **THE COURT:** Okay.

25 **MS. LENHARDT:** Okay. All right.



1 Q: Now, Mr. Slagel, you also concluded that there
2 were threatened structures that justified the
3 issuance of a permit, is that right?

4 A: Yes.

5 Q: Okay. And the definition of threatened is not
6 -- there is no definition in the statute or the
7 regulations of what constitutes a threatened
8 structure, is that right?

9 A: There's a definition for imminently threatened,
10 but not threatened.

11 Q: In the -- in the particular groin statute
12 provision and in the regulation there is no
13 definition?

14 A: Correct.

15 Q: Okay. And there are no guidelines to determine
16 when a structure is threatened?

17 A: Correct.

18 Q: Okay. You testified in your deposition that
19 the Department has used or relied on the
20 emergency order process in their evaluation of
21 what's a threatened structure; is that right?

22 A: I believe I testified that that's -- that can
23 give the Department guidance. If imminently
24 threatened is 20 feet from the erosion, then
25 threatened is possibly a number that's greater



1 than 20 feet.

2 Q: Okay. But the emergency order process is for
3 the location of sandbags and temporary
4 remedies, is that right?

5 A: Temporary remedies, short term temporary
6 remedies including sand bags, beach scraping,
7 minor renourishment, or a combination of those.

8 Q: Okay.

9 A: And they're intended to be short term until a
10 longer term option can be, you know,
11 implemented.

12 Q: Right. Okay. So, the 20 feet guideline really
13 -- really relates to something that is -- is
14 going to be temporary and not permanent, such
15 as the installation of a rock groin?

16 A: It's something that temporary to address an
17 immediate need.

18 Q: Now, how many structures in this case,
19 residential homes, need to be threatened in
20 order to conclude that a groin can be issued?

21 A: I don't believe there's a number of structures
22 that have to be threatened before a groin can
23 be considered.

24 Q: So, how -- how did you conclude that there were
25 sufficient -- threatened structures in order to



1 issue this permit?

2 A: Based on site visits and just past history at
3 OCRM. We believe that south of the bulkhead
4 there's six oceanfront houses that, depending
5 on any given day, are threatened. Depending
6 on, you know, what storm just passed, etcetera.
7 And likewise, landward of the bulkhead itself,
8 there's possibly twelve houses that we would
9 consider threatened.

10 Q: So, depending on the day, the status that you
11 consider them to be threatened can change?

12 A: It can change depending on, again, what -- what
13 the recent wave activity has been, if a beach
14 renourishment project has been implemented.
15 I'm not testifying that those houses are always
16 threatened, 365 days a year, and always have
17 been. But for the purposes of if they are
18 threatened and have shown a kind of repeated
19 history of being threatened over time, the
20 Department believed that -- that those houses
21 did meet that requirement.

22 Q: So, how long does a structure need to be
23 threatened until -- when it's okay for the
24 Department to issue a groin permit?

25 A: Again, that's -- that's not defined, but the



1 Department has discretion when considering the
2 length of time of a permitting process, the
3 appeals process. A structure that maybe it's
4 -- maybe it's 25 feet or 30 feet from erosion,
5 so it doesn't meet that imminently threatened
6 emergency order provision, but if we know that
7 over time that it has been threatened by -- by
8 past storms or when renourishment sand erodes
9 away, we can acknowledge that that house is --
10 is still threatened.

11 Q: Okay. Do you know what the state of the beach
12 is in front of those houses currently?

13 A: I have not been out there since Hurricane --
14 this is my first time pronouncing this in -- in
15 this Court, Isaias. I -- I've not been to the
16 site since the passage of that storm. I have
17 reviewed NOAA post-storm imagery taken from a
18 high altitude airplane and it appears that --
19 that the -- the dune that had been pushed up
20 along those houses south of the bulkhead is
21 largely eroded away. I can tell from the
22 imagery that the bulkhead itself was overtopped
23 by that storm and that ero- -- further erosion
24 occurred landward of the bulkhead.

25 Q: And, in fact, the -- the area to the -- within



1 the groin field includes some houses that are
2 south of the bulkhead, but the bulkhead, the
3 existing seawall/bulkhead, is in front of many
4 more structures, is that right?

5 A: I'm sorry. Could you repeat that?

6 Q: There -- there is -- there is a structure, an
7 erosion control structure, in front of a
8 significant number of houses to the north of
9 the -- the number that you said?

10 A: Yes.

11 Q: And that -- that -- that erosion control
12 structure is functioning to your knowledge?

13 A: It would probably depend how you defend -- or
14 how you -- how you define functioning. A
15 category one hurricane offshore, no landfall,
16 overtopped the wall and resulted in erosion
17 behind it. I'm not sure how -- how functional
18 necessarily it is, but it is -- it is certainly
19 intact. There are no components that are
20 missing or that no holes that have been
21 exposed. The -- the structure is -- is
22 intact. I don't -- I don't know what the
23 intended purpose of it is as defined by the
24 property owners or the Colony.

25 Q: Do you think it's anything other than erosion



1 control?

2 A: It's an erosion control structure. I mean, I'm
3 -- I imagine that the -- the intent is to limit
4 the amount of exposure to those houses that are
5 landward of it.

6 Q: And the -- the structure hasn't failed to date
7 to your knowledge, has it?

8 A: Not currently. I believe after Hurricane Hugo
9 perhaps it did, but not -- not since then.

10 Q: The structure in its current form has not
11 failed to your knowledge?

12 A: To my knowledge.

13 Q: Okay. And does the Department consider houses
14 -- okay. Were you in the courtroom when Ms.
15 Pate testified?

16 A: Yes.

17 Q: Okay. And she testified about a -- what a NERR
18 is. And you're aware of -- of what a NERR is,
19 correct?

20 A: Yes.

21 Q: Okay. And you're aware that Baruch -- the
22 Hobcaw property in the Baruch Foundation has a
23 NERR on the property?

24 A: Yes.

25 Q: Okay. How did DHEC take into consideration the



1 designation of that downdrift area as a NERR?

2 A: There were some comment letters that were
3 submitted naming that concern, that the
4 downdrift property owner contains a National
5 Estuarine Research Reserve, and that these
6 groins could result in impacts to that -- to
7 that NERR site. I remember that the National
8 Marine Fisheries Service was one agency that --
9 that submitted a comment along those lines,
10 that was concerned about -- about the NERR. In
11 particular, they were concerned about the --
12 the mouth of north inlet and how that tidal
13 flow into the inlet back into the estuary and
14 again, it's a National Estuarine Research
15 Reserve, so, they do they research within the
16 estuary on the backside of the barrier island.
17 They may do some beachfront research I'm not --
18 that I'm not aware of. But the purpose of that
19 system is to do estuarine research, so the
20 National Marine Fisheries Service was concerned
21 that the mouth of north inlet could be impacted
22 by -- by these groin structures. We, at DHEC,
23 forwarded that concern along to Coastal Science
24 and Engineering for a response. We wanted to
25 know what -- what the applicant had to say



1 about that. And their response was that based
2 on their downdrift impacts analysis, the
3 impacts would be limited to about 2,000 feet
4 south of that -- of that last third groin
5 structure. The mouth of north inlet is -- is
6 over two miles to the south. So, they felt
7 that there would be no direct impact to the
8 mouth of the inlet or to the NERR that is
9 operating in the estuary.

10 Q: Okay. So, you just reviewed the comments of
11 the -- of that agency in your evaluation of it
12 as a NERR?

13 A: We -- yes. We did not -- and we also did not
14 receive any -- any other public comments from
15 any other parts of NOAA, like that runs the --
16 the NERR system. We received a comment from
17 the Baruch Foundation itself that was concerned
18 and from National Marine Fisheries Service, and
19 I believe from -- from SCELP and -- and the
20 League.

21 **THE COURT:** From -- you said SCELP?

22 A: Yes. Representing the Coastal Conservation
23 League.

24 **THE COURT:** Oh, okay.

25 Q: That's the South Carolina Environmental Law



1 Project?

2 A: Yes.

3 Q: Okay. Now, you would agree with me that groins
4 by their very design prevent the beach from
5 accreting and eroding in its natural cycle,
6 would you not?

7 A: Groins are -- are a manmade alteration, so I --
8 I suppose that -- that it would not be a
9 natural accretion and erosion, just as beach
10 renourishment is not natural accretion.

11 Q: But I didn't ask about renourishment. The
12 groins will prevent the beach from accreting
13 and eroding in its natural cycle, correct?

14 A: Again, I mean, since it's a manmade structure,
15 I suppose that's accurate, that it would not be
16 an entirely natural process that is occurring.

17 Q: Okay. And the groins will be located on the
18 active beach and extend out into the ocean, is
19 that right?

20 A: I believe they're designed to extend out with
21 the renourishment to about the -- the low tide
22 line.

23 Q: Okay. And do you know that property -- that --
24 that beach area and going from mean high to low
25 to be public trust property?



1 A: Yes.

2 Q: Okay.

3 **MS. LENHARDT:** Your Honor, at this time, we don't
4 have any more questions.

5 **THE COURT:** I think now's a good time to take a
6 break for lunch. So, 12:44. I don't think
7 we're going to be back at 1:00. 2:00, is that
8 too quick?

9 **MS. LENHARDT:** If we can figure out how we're going
10 to get lunch. I don't know, but that'll be --
11 that should be enough time.

12 **THE COURT:** I can give you all the fast food places
13 my wife and I run around to around here. Oh,
14 well. Yeah. Is that good?

15 **MR. GREEN:** Yes, sir, Your Honor. Thank you.

16 **THE COURT:** All right. Y'all be at ease.

17 (Off the record from 12:43 p.m. until 2:04 p.m.)

18 **COURT REPORTER:** All rise.

19 **THE COURT:** Y'all can be seated. Thank you. Who's
20 up? Ms. Phelan?

21 **MS. PHELAN:** Yes. Your Honor, the parties agreed
22 prior to trial for efficiency purposes for me
23 to go ahead and do direct of Matt now if that's
24 -- with the permission of the Court.

25 **THE COURT:** Okay. Matt?



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1 **MS. PHELAN:** Mr. Slagel. He just got crossed by
2 Leslie.

3 **THE COURT:** Well, why don't you just do it all at
4 the same -- when you say direct?

5 **MS. PHELAN:** Well, that's what I'm saying.

6 **THE COURT:** Okay.

7 **MS. PHELAN:** And rather than just address what she
8 addressed on her cross ---

9 **THE COURT:** Oh.

10 **MS. PHELAN:** --- and call him back, I'm going to do
11 it all at the same time.

12 **MS. LENHARDT:** Instead of having to call him again
13 ---

14 **THE COURT:** Yeah.

15 **MS. LENHARDT:** --- in their case.

16 **MS. PHELAN:** Yes, yes.

17 **THE COURT:** Changed your mask.

18 **MS. LENHARDT:** The other one was lighter and so
19 since I don't have to talk quite as much right
20 now, I put this one on; it's more solid.

21 **THE COURT:** Okay. I was just trying to mess with
22 you. I know.

23 **MR. OWENS:** Didn't match your outfit.

24 **THE COURT:** That's true. It does match your
25 outfit.

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(Off the record.)

MR. SLAGEL - CROSS-EXAMINATION BY MS. PHELAN:

Q: Okay. Mr. Slagel, I'm going to try not to be too repetitive, but I want to make sure that we go through what you did in reviewing the permit methodically. But you don't have to repeat what you've already said on your -- on your cross, unless you feel like you do. Okay?

A: Okay.

COURT REPORTER: Could I ask that you go to ---

MS. PHELAN: The podium.

COURT REPORTER: --- the podium. Is that too much to ask?

MS. PHELAN: It's going to be difficult.

THE COURT: You can use ---

COURT REPORTER: That's okay. You can stay there. You can there. It's fine. But I'm just need you to speak up a little bit.

MS. PHELAN: To speak up.

THE COURT: Yeah.

MS. PHELAN: Okay. I'll make sure to speak up. I'm sorry.

COURT REPORTER: Thank you.

MS. PHELAN: I have so much stuff, it's hard to shift.



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1 Q: All right. Can -- can you tell me, where did
2 you graduate from school?

3 A: I received a Bachelor's of Science in
4 Environmental Science from the University of
5 Virginia. And then a Master's -- a Master's of
6 Science in Ocean Sciences from the University
7 of California at Santa Cruz.

8 Q: And what years were those, please?

9 A: The Bachelor's degree was 2004. The Master's
10 was 2006.

11 Q: Okay. What did you do? Could you tell us
12 about your work experience after that?

13 A: After graduate school, I worked in Silver
14 Spring, Maryland for one year for NOAA's Office
15 of Coast Survey updating nautical charts and
16 then I was hired at DHEC OCRM as a NOAA Coastal
17 Management Fellow in 2007 for two years. I
18 worked for several years for OCRM before
19 leaving for two years to work for North
20 Carolina's Division of Coastal Management, and
21 then I subsequently returned to South
22 Carolina's State Coastal Program as of 2018.

23 Q: Okay. Can you tell me what you do for OCRM
24 since 2018 when you returned?

25 A: Yes. I'm a beachfront permitting project

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1 manager. So, I review both minor and major
2 permitting activities that are proposed on the
3 ocean side of the OCRM setback line. And I
4 have that responsibility statewide with one
5 other staff person assisting me with some minor
6 projects in the Charleston area.

7 Q: Okay. Could you explain your role in the
8 permitting process as it pertains to groin and
9 renourishment permits?

10 A: Yes. So, as the -- the permitting project
11 manager, I would ensure that an application is
12 -- well, I would work with one of our
13 administrative staff to make sure that the
14 application is administratively complete. What
15 that means is that the application fee has been
16 paid, that all documents, at least at that
17 initial application stage are -- are supplied
18 that we know of. Of course, we can go back and
19 get more information. But once the file is
20 administratively complete, we would place the
21 proposed project on a 30-day public notice for
22 a major activity, like this is. After that 30-
23 day public comment period elapses, I would then
24 have 90 days to make a permitting decision.
25 For a project -- for -- for this particular



1 project, since we did receive significant
2 public comments, we then went back to CSE and
3 to Debordieu Colony and asked for additional
4 information, which extended that 90-day time
5 frame until we could consider the project
6 technically complete and, therefore, ready for
7 a final permitting decision. So, my role is to
8 accept all of the documentation, to review it,
9 to make sure that it is consistent with
10 applicable statutes and regulations, and then
11 make a permitting decision.

12 Q: Okay. Can you tell me about what documentation
13 do you keep when you're reviewing an
14 application for a groin and renourishment
15 permit?

16 A: Do I keep as part of the permitting file?

17 Q: Yes. Could you explain what the permitting
18 file is to us?

19 A: Yes. So, the permitting file would consist of
20 the original application materials. For this
21 application, that would be the -- the joint
22 federal and state application itself. There
23 was the downdrift impacts analysis. There was
24 a -- a 30-year plan that CSE had developed for
25 Debordieu Colony. There was various iterations



1 of an alternatives analysis. There was a
2 cultural resources survey. There was the
3 biological assessment and essential fish
4 habitat assessment and in various other
5 geotechnical type data, analyzing the sediments
6 in the borrow area to make sure they were
7 consistent with the beach. So, those are all
8 the initial application documents that would be
9 included in the permit file. As I mentioned,
10 there's a 30-day public comment period. So,
11 all public comments that were received would be
12 included in the permit file. Correspondence
13 back and forth to CSE and to Debordieu Colony
14 seeking more information on those public
15 comments would be included. E-mails back and
16 forth again with various entities throughout
17 the process. And then, for this particular
18 case, since the original permit was appealed
19 and then so was the amendment, the permitting
20 file also includes the requests for final
21 review that entities submitted. DHEC's
22 responses to those and then the additional
23 legal correspondence back and forth. So, it's
24 -- it's a large permitting file for this --
25 this permit.



1 Q: Okay. Approximately how big is the permitting
2 file in this case?

3 A: I believe the last I had checked, it was
4 somewhere on the order of 2,600 pages.

5 Q: Okay. And Exhibit 29 has been submitted to the
6 Court digitally as -- and is represented to be
7 the permitting file. Did you look at that file
8 on -- on the digital -- what was saved
9 digitally before it was submitted to the Court?

10 **(Respondent's Exhibit Number 29 was referenced at**
11 **this time.)**

12 A: I did. I -- I reviewed a PDF and that's --
13 that's, like I said, the last I looked at it.
14 It was about 2,600 pages. I believe that was
15 -- it's close to the final number. And so, I
16 did review that PDF to make sure that it was a
17 complete record of the permitting file. And I
18 compared that with the Bates stamps numbers
19 that -- that were in there, etcetera, just to
20 make sure that it was complete.

21 Q: Okay. Is this compilation of data and records
22 of the permitting file is it kept in your as --
23 as part of your duties as a permit manager?

24 A: It is. OCRM has a -- a digital permitting
25 system called E-permitting. It's a relatively



1 new software that we've been using for the last
2 two or three years. The Department used to
3 keep paper records. So, liter- -- you know,
4 like you would see back there and in the
5 corner, paper documents of the permitting file.
6 But now, all these individual documents are
7 uploaded into E-permitting and can be easily
8 exported out and managed in various ways.

9 **MS. PHELAN:** At this time, I'd like to move Exhibit
10 29 into evidence.

11 **(Respondent's Exhibit Number 29 was offered into**
12 **evidence.)**

13 **OBJECTION:**

14 **MS. LENHARDT:** Objection on the basis of hearsay.

15 **MS. PHELAN:** Your Honor, it's a -- it's a government
16 record kept in the ordinary course of business
17 and it's pursuant to his legal duties.

18 **THE COURT:** Well ---

19 **MS. PHELAN:** And it's what he reviewed in
20 determining and assessing whether this permit
21 should be issued.

22 **THE COURT:** It's along the lines of what I said
23 earlier. I'll hear what y'all have to say.

24 **MR. OWENS:** No objection.

25 **THE COURT:** Okay. Is it -- I'll allow it to come



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1 in, but not for the truth of the matter
2 asserted. So, it's only offered to -- as an
3 exhibit of that which the Department received.

4 **MS. PHELAN:** Yeah. Sure, Your Honor.

5 **THE COURT:** Is that ---

6 **MS. LENHARDT:** Did mine come in for the -- not for
7 the truth of the matter asserted?

8 **THE COURT:** Well, you didn't lay the foundation.
9 But ---

10 **MS. LENHARDT:** Well, is it -- is ---

11 **THE COURT:** This is a Department exhibit, so it --
12 it comes in to show that which they received
13 and what is their -- their Department file,
14 which I -- I let that in even -- I mean, down
15 to even a basic beer and wine permit. I let
16 the Department files in for the very purposes
17 of what I just said. But I don't let them for
18 the truth of the matter asserted in -- in
19 there. That way it doesn't harm you because it
20 shows what they received, but it -- I don't
21 utilize it to make a decision in the case
22 because there's -- they can't establish the
23 truth of the matter.

24 **MS. LENHARDT:** For the record, Your Honor, I don't
25 believe that the entire permitting file falls

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1 either under the public record or the business
2 record exception to the hearsay rule ---

3 **THE COURT:** Okay.

4 **MS. LENHARDT:** --- as a whole. And then I would
5 just ---

6 **THE COURT:** Explain that -- just explain it to me.

7 **MS. LENHARDT:** Sure. Well, first of all, as you --
8 as you had said, the record -- it needs to be
9 records, reports, statements or data
10 compilations setting forth the activities of
11 the office or agency or matters observed. The
12 file includes things prepared by Coastal
13 Science and Engineering. There's no foundation
14 that Mr. Slagel made that has -- it was
15 submitted to the agency, but it doesn't have
16 anything to do with his duties. And yes, it
17 was submitted as part of an application. There
18 are comment letters that are in the file that
19 were not part of the activities of the office.
20 Those are created by other doc- -- other
21 entities, not by the -- not by the agency. The
22 agency retains those documents. For notice
23 purposes, they received a comment letter from
24 thus and so, but, you know, I -- it doesn't --
25 it doesn't meet the definition of a public



1 record.

2 **THE COURT:** Okay. So -- so, with that said, what
3 purpose are you offering it?

4 **MS. PHELAN:** Your Honor, I'm offering to -- I'm
5 offering Exhibit 29 to show what the Department
6 reviewed, what they received as part of the
7 permit application, what comments they received
8 and considered, and also to show what
9 activities they did. There's -- there's
10 communications and correspondence in there that
11 shows that once they received a certain comment
12 or they received information, they reached back
13 out to get additional information that was then
14 responded to. So, it shows the activities of
15 what the Department was doing pursuant to their
16 public -- their public duty.

17 **THE COURT:** All right. If that's the purpose it's
18 offered for, what do you respond to that?

19 **MS. LENHARDT:** Well, for example, if they're going
20 to discuss the substance of the comments ---

21 **THE COURT:** No. I -- I wouldn't let -- when I say
22 I'm not offering it for the truth of the matter
23 asserted, what I'm saying is none of the
24 comments within there carries any weight or --
25 or probative value. They only carry the weight



1 as to the actions that the Department took
2 based on what she's telling me. And it just
3 verifies they did these steps pursuant to the
4 statute, which is required of the statute. And
5 that ---

6 **MS. LENHARDT:** Mr. Slagel can certainly testify to
7 that. I mean, he can testify to all of that.
8 But it just -- I guess all of the subjective,
9 as we discussed earlier, opinions, judgments or
10 conclusions are not admissible, even if it
11 comes in as a public record.

12 **THE COURT:** Well, again, I would not let it in for
13 that purpose. All right. I'm going to let it
14 in sub- -- based with the caveat again -- and
15 that's what I've told you earlier when I was
16 discussing it with you that once you establish
17 the foundation, I'm going to let it in, but not
18 in a -- we've got subjective opinions in there.
19 Well, I now finally see that word. But if --
20 it's not under 8. It's under -- under 6.

21 **MS. PHELAN:** Business. Yes, sir.

22 **THE COURT:** Yeah. But so it's only offered to show
23 the actions that the Department took and not
24 anything for -- regarding any subjective
25 opinions, any conclusions -- what else?



1 Judgments, at all. So, I would not antic- --
2 you should not anticipate relying upon anything
3 in the document to verify the decisions that
4 you make. Okay?

5 **MS. PHELAN:** Yes, Your Honor.

6 **THE COURT:** Oh with that, I said I'm going to offer
7 it right now. I'm going to -- I may research
8 this and look at it a little bit more. And
9 also, I may wait and see if this becomes an
10 issue.

11 **MS. PHELAN:** Yes, Your Honor.

12 **THE COURT:** And I figure that if you have -- if you
13 bring it up as an issue later on about whether
14 or not something was received, whether the
15 Department took an action or various actions as
16 required by the statute, then it would be
17 relevant. And so -- but then, he would no
18 longer be on the witness stand. So, I'm
19 letting it in subject to the dual caveats that
20 I just gave. All right.

21 **MS. PHELAN:** Yes, Your Honor.

22 **(Respondent's Exhibit Number 29 was admitted into**
23 **evidence with the Court's caveats.)**

24 **Q:** Can you talk a little bit about what factors
25 the Department considers when issuing a groin



1 and renourishment permit under the statute --
2 the applicable statutes and regulations?

3 A: Yes. As I mentioned briefly before, any beach
4 where a groin is proposed with renourishment
5 would have to have a high erosion rate with
6 existing habitable structures or public parks
7 threatened. Anyone proposing a groin project
8 would also have to post a financial commitment
9 to mitigate if downdrift impacts are observed
10 as a result of those groins. And then also,
11 they would have to monitor the project and
12 perform mitigation if downdrift impacts are
13 observed because both the statute and the
14 regulations state that a thorough downdrift
15 impacts analysis must be performed showing that
16 no direct downdrift impacts would occur.

17 Q: Okay. What about alternatives, do you consider
18 alternatives -- an alternative analysis in
19 assessing whether to issue a permit?

20 A: Yes. For groins, we would. And that
21 information was submitted in the form of a 30-
22 year plan for Debordieu Beach. And then I
23 believe it was three additional submittals by
24 Coastal Science and Engineering.

25 Q: Okay. Can you please identify -- you have your



1 notebooks up in front of you. Can you please
2 identify what 1A through G is for me?

3 **(Respondent's Exhibit Number 1A - 1G was referenced**
4 **at this time.)**

5 A: Respondent's?

6 Q: Yes.

7 A: Respondent's Exhibits.

8 Q: Respondent's Exhibits.

9 A: Exhibits 1-A through G are the documents that
10 were submitted as part of the initial
11 application by Debordieu Colony with Coastal
12 Science and Engineering as their agent.

13 Q: Okay. And can you walk us through what these
14 documents included?

15 A: Yes. Exhibit 1-A was a cover letter from
16 Coastal Science and Engineering. Basically,
17 with a bulleted list of the documents that they
18 were providing in support of this application.
19 Exhibit 1 B was the joint federal and state
20 application form that was submitted to both
21 DHEC OCRM and to the U.S. Army Corps of
22 Engineers. Exhibit 1-C was mailing labels of
23 adjacent property owners that would be directly
24 notified of the proposed activity. Exhibit 1-D
25 is the new biological assessment and essential



1 fish habitat assessment. It was developed
2 again by CSE. Exhibit 1-E is the geotechnical
3 data analysis, so that document would include
4 analysis of the proposed borrow areas and the
5 sediments that would be dredged and then placed
6 on the beach. Exhibit 1-F is the downdrift
7 impacts analysis that reviewed what the
8 potential impact of the groin structures could
9 be within the project area and on the -- the
10 Hobcaw tract and even further downdrift. And
11 Exhibit 1-G is the -- it's the 30-year plan and
12 it's titled Beach Erosion Management
13 Alternatives, 30-year Plan, Debordieu Colony,
14 South Carolina. Again, prepared by CSE.

15 Q: Okay. Can you tell us a little bit more about
16 that last document?

17 A: This last document, this -- the 30-year plan,
18 Coastal Science and Engineering was hired by
19 Debordieu Colony to review the history of beach
20 management along Debordieu Colony and identify
21 alternatives that the community could consider
22 moving forward as they looked to manage their
23 beaches over the next 30-year time frame.

24 Q: All right. Did you review all this
25 information?



1 A: Yes.

2 Q: And this is part of the permitting file?

3 A: Yes.

4 **MS. PHELAN:** So, Your Honor, I -- since the
5 permitting file is so large, I have -- I have
6 marked excerpts of the permitting file. I have
7 a number of exhibits that are excerpts from the
8 permitting file. Would you like to move each
9 of those into evidence at a time?

10 **THE COURT:** I'll make no comment.

11 **MS. PHELAN:** Okay. Okay.

12 **THE COURT:** You handle -- or try your case as you
13 wish and I hear objections and respond to
14 those.

15 **MS. PHELAN:** Okay.

16 Q: So, this is part of the permitting which you
17 maintained in your position as a project
18 manager in this case?

19 A: Yes.

20 **MS. PHELAN:** I'd like to move Exhibit 1A through G
21 into evidence.

22 **(Respondent's Exhibit Number 1A through 1G was**
23 **offered into evidence.)**

24 **OBJECTION:**

25 **MS. LENHARDT:** Yeah. This is hearsay objection,



1 Your Honor.

2 **THE COURT:** It is -- so, this is a -- a subset to
3 the exhibit you've already offered.

4 **MS. PHELAN:** Yes, Your Honor. This is the
5 application that Debordieu Colony Community
6 Association gave the Department to -- for them
7 to assess.

8 **THE COURT:** All right. And why do we need the
9 subsets now? I mean, I get that the
10 application file is very large.

11 **MS. PHELAN:** Yes.

12 **THE COURT:** But is it going to make things easier or
13 -- I know you can -- there's a rule of evidence
14 as far as summarizing voluminous exhibits, but
15 we're not really doing that at this point.
16 We're taking exhibits already in and just
17 offering subsets of it into evidence. So, why?

18 **MS. PHELAN:** Well, that what I was -- Your Honor,
19 that's why I was asking for guidance as to how
20 to handle this. It's a little bit -- I was
21 trying to break down the important documents
22 out of the permitting file. But the permitting
23 file has been entered, so I would think that I
24 would not have to move each individual exhibit
25 in.



1 **THE COURT:** Okay. Well, I sustain the objection,
2 not for hearsay, but for the -- because I've
3 already let the other document in with all the
4 caveats, and I just don't care to have to go
5 through them again.

6 **MS. PHELAN:** Okay.

7 **(Respondent's Exhibit Number 1A through 1G was**
8 **admitted into evidence with the Court's caveats.)**

9 **Q:** All right. What other information did the --
10 did Debordieu Colony Community Association give
11 you during the permitting process?

12 **A:** I think I failed to mention that the original
13 application also included drawings, project
14 drawings showing where the sand would be
15 placed, where the groins would be placed, the
16 -- the project drawings that became part of the
17 -- of the permit that was issued.
18 Additionally, with the initial submittal, we
19 also received some financial information from
20 Debordieu Colony, specifically about a new
21 bylaws amendment that they had recently -- that
22 had recently been implemented and voted on,
23 which creates over time a -- a fund for beach
24 nourishment and other beach management
25 activities including groin construction, going



1 maintenance. So, we also did receive that. I
2 believe the Department asked for additional
3 information from Debordieu Colony about the --
4 their financial commitment in the form of the
5 letter of credit that they provided. We also
6 asked for a letter from -- that they could get
7 from Georgetown County showing that the local
8 government was not opposed to the project
9 because at that point and time we had not heard
10 one way or the other from the local government.
11 And that's also a requirement within regulation
12 that we have to receive a no objection comment
13 from the local government. I believe that that
14 was the extent of the information that we --
15 that we asked specifically from Debordieu
16 Colony.

17 Q: Okay. Did -- as -- did Debordieu Colony
18 provide a supplementary report after its
19 initial application was submitted?

20 A: They did through their agent. CSE provided
21 several additional reports that they basically
22 took sort of the -- the big picture.
23 Alternatives analysis in one of those reports
24 that was submitted kind of drilled down into
25 the details of why -- of what alternatives they



1 did consider and why each of those other
2 alternatives was discarded as not being their
3 preferred alternative.

4 Q: Okay. I'd like to talk bit a little bit about
5 the comments that you received during the
6 public notice period. Could you -- could you
7 give us an overview of what comments you
8 received that you found -- or how you -- and if
9 you did respond to those comments, how you
10 responded?

11 A: Sure. We received -- if I may, I'll -- I'll
12 try to break this down between comments that
13 were received by -- by government entities, by
14 -- by non-government organizations, and -- and
15 then by individual property owners or -- or
16 interested stakeholders. So, starting with --
17 with the agencies, we received comments from
18 NOAA's National Marine Fisheries Service, from
19 South Carolina's Department of Natural
20 Resources, U.S. Fish and Wildlife Service, the
21 State Historic Preservation Office about
22 Cultural Resources. And then also a -- a
23 letter from the Corps of Engineers where an
24 individual at their Engineer Research and
25 Development Center reviewed the downdrift



1 impacts analysis and other materials to
2 determine whether the modeling that was done
3 was -- was thorough, whether it was not
4 accurately.

5 Q: Could -- could I ask you to explain a little
6 bit more about how that came about?

7 A: The -- the Army Corps of Engineers letter?

8 Q: Yes.

9 A: Yes. Tommy Fennel, he -- he works out of the
10 Army Corps' Conway Office, and his group there
11 in Conway is the federal entity also reviewing
12 this permit application and it -- it's still
13 under review at the federal level. Mr. Fennel
14 reached out to Brandon Sculley, who is a
15 professional engineer and Ph.D., I believe in
16 Mississippi with the Corps' Engineers Research
17 and Development Center. He has expertise in --
18 in modeling and he was asked by Mr. Fennel to
19 take a look at the application just to make
20 sure that the modeling again was -- was set up
21 correctly, that it was run correctly and to get
22 his take on what -- on what that downdrift
23 impacts report showed. So, Mr. Sculley sent a
24 letter back to Mr. Fennel. That letter was
25 shared with the Department. So, I also



1 reviewed that, as well.

2 Q: And what was Mr. Sculley's opinion?

3 **OBJECTION:**

4 **MS. LENHARDT:** Objection, Your Honor. That's
5 hearsay.

6 **MS. PHELAN:** Again, it's part of the documents in
7 the permitting file and ---

8 **THE COURT:** I get it, but that's a conclusion.

9 **MS. PHELAN:** It's what the information that the
10 Department reviewed.

11 **THE COURT:** Well, it's in the record. It's in the
12 Department file, right?

13 **MS. PHELAN:** Yes, Your Honor.

14 **THE COURT:** That I've already let in. Yeah. But I
15 don't -- you now want to take what's in the
16 file and based on his testimony convert that to
17 a conclusion that I can consider into making
18 the determination in this case? I -- I'm
19 asking a question.

20 **MS. PHELAN:** Yeah. I'm not presenting it for the
21 truth of the matter asserted. I'm presenting
22 it for what information that Mr. Slagel was
23 provided when he was trying to evaluate the --
24 the downdrift impact report.

25 **MS. LENHARDT:** Well, Your Honor, it -- it -- it's



1 pretty clear that the document is in, but what
2 I believe he's going to testify is to what Mr.
3 Sculley's opinion was about the -- the data,
4 and that's clearly inadmissible. So, bringing
5 it in through testimony is -- is -- is hearsay.
6 I mean, without question.

7 **THE COURT:** Well, it's hearsay without question.
8 The question is whether it's subject to an
9 exception and then in analyzing whether it's
10 subject to an exception, I have to try to
11 figure out probative value of that which you've
12 just told me. And I don't quite understand the
13 probative value. And I've got that he relied
14 upon it. When we start getting into the
15 specifics of it, that to me is moving a little
16 bit past, I received this opinion, I relied
17 upon it, so let's consider exactly what the
18 opinion was. And -- and trying to get me to
19 take it for having weight. And I -- so, at
20 this point, I just sustain the objection.

21 **MS. PHELAN:** Okay.

22 **Q:** Mr. Slagel, did the letter you reviewed from
23 Mr. Sculley engage you in any way in making a
24 determination as to whether the downdrift
25 impact report was thorough?



1 A: As I, myself, read the downdrift impact report,
2 I found it to be thorough. I'm not a
3 professional engineer, but I mean, I'd like to
4 think that I have a good amount of experience
5 and expertise in coastal processes that -- that
6 occur along South Carolina's shoreline. I read
7 myself how CSE had calibrated and -- and
8 validated their modeling efforts. So, when I
9 read Mr. Sculley's response, it -- it helped
10 affirm some of those positions that I felt I
11 had myself. But I didn't rely only on Mr.
12 Sculley's letter to make that determination.

13 Q: Continue. What other comments did you receive
14 and -- and what if anything did you do in
15 response?

16 A: Right. Sorry. I -- we were talking about some
17 of the letters received by -- by government
18 entities. So, U.S. Fish and Wildlife Service,
19 for instance, they submitted a biological
20 opinion, as they -- as they typically do for --
21 for major -- major activities in response to
22 the biological assessment that's provided by
23 the applicant. U.S. Fish and Wildlife Service
24 recommended certain times of the year that the
25 allowed activity or that the activity should be



1 allowable and they recommended between November
2 1st and, I believe it was, June 30th.

3 **OBJECTION:**

4 **MS. LENHARDT:** Your Honor, I think that's a hearsay
5 statement.

6 **THE COURT:** What specifically?

7 **MS. LENHARDT:** That their -- their recommendation --
8 their substantive recommendation.

9 **THE COURT:** Any response?

10 **MS. PHELAN:** Your Honor, this is information that --
11 that the Department reviews as part of their
12 legal obligations. They review the public
13 comment letters, and then they have to assess
14 the comments and review whether to issue the
15 permit or not.

16 **THE COURT:** I overrule that only for the purp- --
17 I'll allow it in to show that which he received
18 and -- and only for those purposes. So, go
19 ahead.

20 Q: Okay. You can continue your answer, if you
21 understood.

22 A: OCRM considers -- I mean, we -- we -- we do to
23 an extent rely on other state and federal
24 agencies for specific areas of expertise. U.S.
25 Fish and Wildlife Service ---



1 **THE COURT:** When you say you rely upon that, then --
2 where I can understand my ruling. Is that by
3 statute or by law anywhere?

4 A: Nowhere that I -- that I can think of, but when
5 it comes to threatened and endangered species,
6 I believe it's in federal law that U.S. Fish --
7 -

8 **THE COURT:** Okay.

9 A: --- and Wildlife Service is sort of the
10 authority.

11 **THE COURT:** I'm familiar with that from other cases.

12 A: Yeah.

13 **THE COURT:** But that's not an issue here, is it?

14 **MS. PHELAN:** No, Your Honor.

15 **THE COURT:** Okay. All right.

16 A: So, U.S. Fish and Wildlife Service basically is
17 the federal entity responsible for helping to
18 manage threatened and endangered species on the
19 land, and then NOAA's National Marine Fisheries
20 Services likewise has a similar role for
21 offshore in the ocean. So, for instance, with
22 -- with sea turtles, NMFS, National Marine
23 Fisheries Services, would kind of have
24 jurisdiction when the turtle is in the water
25 and then when that turtle comes ashore to nest,



1 U.S. Fish and Wildlife Service kind of takes
2 over. So, I -- what I'm trying to say is that
3 these agencies have expertise and authority,
4 and jurisdiction over threatened and endangered
5 species. So, if there's a proposed project
6 that might impact a threatened or endangered
7 species, we welcome comments from those
8 entities, so that we are fully aware their --
9 their view -- those agencies' view on the
10 activity.

11 **THE COURT:** All right.

12 Q: Do you ever implement the recommendations into
13 the permit -- into special conditions of the
14 permit to provide whatever they suggested?

15 A: Yes, we do. And, in this case, we did take
16 Fish and Wildlife's recommendation for when the
17 project should be allowed to occur, and also,
18 even though the type of dredge that can be used
19 based on the time of year. Similarly, DNR,
20 they -- they also have state level
21 responsibility for threatened and endangered
22 species. So, we took some of DNR's
23 recommendations for turtle monitoring during
24 the project for instance.

25 Q: Did you receive any comment letters from the



1 downdrift property agent?

2 A: Yes. Humiston and Moore Engineers out of
3 Florida was -- was hired by the Baruch
4 Foundation to review the permit application
5 materials and to provide public comments. I
6 can remember, amongst other things, that one
7 recommendation from Humiston and Moore was when
8 looking at the area of downdrift impacts ---

9 **OBJECTION:**

10 **MS. LENHARDT:** Your Honor, I have the same objection
11 just for the record. This is a hearsay.

12 **THE COURT:** Well, he's -- he's saying that -- it is
13 an out of court statement, but it's not offered
14 for the truth of the matter asserted. He's
15 saying they offered a recommendation and he
16 followed it. He's not saying that -- he's not
17 giving me any testimony as to the validity of
18 that. So, go ahead.

19 A: So, that engineering group was concerned that
20 if the entire 4,180 foot length of the Baruch
21 Foundation's property, the Hobcaw tract, if
22 that entire area was reviewed for downdrift
23 impacts, that if there was a smaller area
24 immediately downdrift of those groins, that
25 that effect would be diluted by averaging



1 erosion rates over such a long stretch of
2 shoreline. OCRM agreed with that concern and
3 that's why we required in Special Condition
4 Number 22 that that immediate downdrift area
5 from the southern groin to 1600 feet south,
6 that that area would be more closely monitored
7 with 200-foot spacing instead of the proposed
8 500-foot spacing. And that that 8.1 cubic
9 yards per foot per year trigger, that that
10 number would be calculated in that smaller area
11 instead of averaged out over that entire
12 shoreline.

13 **THE COURT:** And that was in the initial ---

14 A: That was in -- yes, sir. That was an initial
15 comment for the initial ---

16 **THE COURT:** Of the initial ---

17 A: The initial permit.

18 **THE COURT:** --- phase, not the -- the initial phase
19 of this project where you determined the first
20 permit, not the second?

21 A: That's correct.

22 **THE COURT:** Okay.

23 A: That's correct.

24 Q: Did you review the applicant's information they
25 submitted to you regarding the alternatives ---



1 A: Yes.

2 Q: --- of the project? Could you tell me a little
3 bit about that, please?

4 A: Yes. So, initially with the 30-year plan, the
5 alternatives that were considered ranged from
6 continuing with beach renourishment only using
7 an offshore borrow site, using the sand shoals
8 around North Inlet to actually excavate using
9 heavy equipment and then using off-road trucks
10 to truck that sand up to the project area. So,
11 instead of using an offshore sand source, use
12 the closer by source. And then they also
13 looked at the renourishment with groins in that
14 initial plan. Over time, both us and the Corps
15 requested additional information about the
16 spacing and configuration of groins. Like we
17 understood what they proposed with the three,
18 but had they considered a single groin, had
19 they considered two groins. So, they did
20 submit additional information about that and
21 they determined that a single terminal groin at
22 the shared property boundary or just north of
23 it, it would have to be so long in order to
24 maintain sand on the northern side of it where
25 the -- the erosion issues are occurring, that



1 it would actually have additional downdrift
2 impacts on the Baruch Foundation's property
3 than the three-groin alternative. And,
4 likewise, for the two-groin alternative, it was
5 considered the impacts would likely be greater
6 because they would have to be longer to keep
7 sand in place.

8 Q: During the course of your review, do you do
9 what is called a technical summary?

10 A: Yes. Yeah. So, the -- the technical summary,
11 sometimes we call it informally a decision
12 document. That is a document that -- that
13 summarizes how the permitting decision was
14 made, so there's additional notes within that
15 document. For this particular permit, I
16 included all the comment letters, so it was a
17 one -- kind of like one-stop shop where I could
18 review all the information that was submitted
19 in terms of comments. So, yes, that is a
20 document that we create that pairs with the
21 actual permit.

22 Q: Do you -- do you put any -- any technical
23 information that you're reviewing in that
24 document?

25 A: Yes.



1 Q: All right. Is that document contained within
2 the permitting file, as well?

3 A: Yes.

4 Q: What -- we talked a little bit about this on
5 your -- on your cross. What information did
6 the Department review in determining whether it
7 was a high erosion rate for purposes of issuing
8 this groin and renourishment permit?

9 A: We -- the Department reviewed the information
10 submitted by CSE in their downdrift impacts
11 report. And again, they -- they calculated
12 data or they calculated long term shoreline
13 change rates using the period 1940 to 2000,
14 which was before the 2006 and the 2015
15 renourishment projects. I also looked at
16 DHEC's own long term shoreline change rates
17 that we use when updating the setback line.
18 And then I looked at beach profile data that
19 the Department has in its possession, as well.

20 Q: What opinion, if any, did you form -- or what
21 evaluation, if any, did you perform to
22 determine whether the erosion rates that the
23 Department's data showed were consistent with
24 the erosion rate that CSE detailed in their
25 downdrift impact report?



1 A: As I discussed previously, the -- the
2 volumetric shoreline change rate that was
3 provided for reach 3, which was sort of the
4 area of the -- of the bulkhead, the existing
5 bulkhead; reach 4, which is the Hobcaw tract;
6 and reach 5, which is the Debordieu spit, I
7 looked at the numbers that were calculated
8 volumetrically, and again, using those
9 assumptions of the height of the beach and the
10 offshore profile, could make -- could make that
11 determination or that conversion into shoreline
12 change. And the shoreline change numbers that
13 the Department has relied upon for setting the
14 setback line were -- were consistent with the
15 numbers that were presented by CSE in their
16 downdrift impacts report.

17 Q: Okay. Is there any statutory or regulation
18 guidance that helps you determine what is
19 considered a high erosion rate as it pertains
20 to this groin and renourishment permit?

21 A: Not as it pertains to this -- to this groin's
22 permit, as I -- as I stated with emergency
23 orders, we are provided with a -- a 20-foot
24 threatened kind of threshold, where if a
25 habitable structure is within 20 feet of



1 erosion, then a temporary solution can be
2 employed. And again, that -- that regulation
3 states that eminently threatened is within 20
4 feet. So, threatened, for the purpose of a
5 groin, we infer must be some number possibly
6 higher than 20 feet. Additionally, I would say
7 that within regulation, within R30.21, which is
8 the state beachfront management plan, which is
9 incorporated within regulation, each beach is
10 described for public access purposes and it
11 states for -- for Debordieu Beach that portions
12 of the island are highly erosional, so the fact
13 that that's within regulation supports our
14 position that that portion of Debordieu Beach
15 is highly erosional because the next line
16 within that regulation talks about the Baruch
17 Foundation's property. So, we can infer that
18 that's not the area that -- that's referred to
19 as Debordieu. But that it must be that part of
20 Debordieu Colony.

21 Q: The League asked you some questions about the
22 3-foot per year rate. Could -- could you just
23 re- -- restate what the rate in this project,
24 if there is a rate, was in within this
25 project's ---



1 A: Yes. Within -- within Reach 3, which again, is
2 within Debordieu Colony, sort of in the
3 vicinity of the bulkhead. The rate is on the
4 order of six to eight feet per year. And then
5 as you get onto the Hobcaw tract further south,
6 that increases to about eight to ten feet per
7 year. And then south of the Hobcaw tract onto
8 Debordieu spit, the rate's even a little bit
9 higher, ten to twelve feet per year. So, you
10 have increasing erosion as you move from the
11 central part of Debordieu Island down south.

12 Q: She also talked to you a little bit about the
13 rates of erosion on the entire island. For
14 purposes of evaluating a renourishment and
15 groin permit, what area do you look at to
16 determine whether the erosion rate is high?

17 A: We would look at areas that both have a high
18 erosion rate with threatened development or
19 public parks. In other words, we would not
20 make a determination for groins based on an
21 entire island. If -- if a portion of an island
22 is accretional, it doesn't mean that there
23 might be an erosional portion that could
24 quality for -- for groins.

25 **THE COURT:** In other words, a whole island wouldn't



1 qualify, only the areas of which ---

2 A: I -- I suppose it's possible that a whole
3 island could, but in this case, it -- it does
4 not.

5 **THE COURT:** Well, I'm saying the whole island
6 wouldn't qualify if it was accretional. It
7 would only -- only the areas that were
8 erosional would be the ones that would qualify.

9 A: That's correct.

10 **THE COURT:** All right.

11 A: Yes.

12 Q: You were also shown the line report from -- the
13 proposed line report from 2018. And I believe
14 your testimony was that it was a mistake that
15 -- that the staff person had considered
16 shoreline data that included the renourishment.
17 Is that -- did I state that accurately?

18 A: It was in October 2017 proposed line revision
19 and -- and yes. The staff person included two
20 shorelines. They were immediately after beach
21 renourishment. 2006 and 2015, which should
22 have been excluded from the analysis.

23 Q: Are you a member of the jurisdictional line
24 team?

25 A: I was a member of the internal review team for



1 this past cycle. Yes.

2 Q: Okay. And do you know whether the Department
3 has a position on whether renourish- --
4 renourishment should be included in determining
5 the historical rate of erosion?

6 A: Yes. The Department's position is that
7 shoreline data that was collected immediately
8 after beach renourishment should be excluded
9 when calculating long term erosion rates.

10 Q: Could you explain to me or to the Court why the
11 Department would not want to consider erosion
12 rates including the renourishment -- the
13 benefits of renourishment when determining
14 whether a groin and renourishment project
15 should be issued?

16 A: Yes. When -- when calculating long term
17 erosion rates, the Department is trying to
18 determine what the -- the natural background
19 rate of change is, even if there might be a
20 beach that has renourished several times. And
21 if they -- if that community stopped
22 renourishing and our setback line was too far
23 oceanwards, you know, too -- too close to the
24 ocean, and they stopped renourishing, then that
25 might be an issue in terms of where development



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1 is appropriately sited. So, we -- the
2 Department tries to remove that -- that
3 artificial signal, that build-up of sand
4 because it is artificial and there's no
5 guarantee that -- that that practice will
6 continue at any given location.

7 Q: And what renourishment efforts have been made
8 at the -- the Debordieu site?

9 A: There have been four renourishment projects.
10 The first in 1990, the second in 1998, the
11 third in 2006, the fourth in 2015.

12 Q: And could you give us a -- a general
13 understanding of how much sand was put on the
14 beach?

15 A: A general understanding, the first two projects
16 in 1990 and 1998 were smaller scale projects.
17 They placed something on the order of 100,000
18 cubic yards on the beach. The 2006 and the
19 2015 were significantly larger offshore
20 dredging projects where they -- similar to this
21 one, where they dredged the sand from offshore,
22 pump it onto the shoreline and -- and spread it
23 out. Those projects placed 5 or 600,000 cubic
24 yards each.

25 Q: And when we were talking about whether a

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1 structure was threatened for purposes of
2 issuing renourishment and groin permit, you
3 have referred to the eminently threatened
4 standard of -- standard for issuing emergency
5 orders, is that correct?

6 A: Yes.

7 Q: Okay. And would -- would the Department want
8 to apply its eminent standard for the emergency
9 orders to a groin and renourishment permit?

10 A: I don't know if the Department would -- would
11 want to or -- or not want to, but for the
12 emergency orders, which again, are a -- a
13 temporary measure in response to an eminent
14 threat, those are activities that are designed
15 to be able to be implemented almost
16 immediately. For instance, getting a bulldozer
17 out to the beach to scrape the sand and build
18 the dune because there's, you know, a storm
19 just passed and there's no more protection, for
20 instance. But for a project like beach
21 renourishment with groins, which will take a
22 few years to -- to get through the permitting
23 process, potential -- potential appeals, there
24 might be a structure -- I think that's -- I
25 testified earlier, that -- that could be



1 farther than 20 feet from the erosion when that
2 application first comes in, but -- but likely
3 could need protection, you know, over the --
4 the next handful of years. So, that -- that --
5 and that's why I said that there is no clear
6 guidance for groins like there is for those
7 temporary measures.

8 Q: Okay. Could you turn to Exhibit 48 please,
9 what's been marked as Exhibit 48 for me,
10 please?

11 **(Respondent's Exhibit Number 48 was referenced at**
12 **this time.)**

13 A: Okay.

14 Q: Can you identify these documents for me?

15 A: Exhibit 48 consists of emergency orders that
16 were issued either by Georgetown County or by
17 DHEC OCRM to -- to property owners within the
18 project area on -- on Debordieu -- within
19 Debordieu Colony.

20 Q: Is this the type of information that the
21 Department reviews in -- in assessing whether
22 a prop- -- the condition of a property and
23 whether it's threatened?

24 A: We would see -- typically review site photos
25 and/or conduct site visits ourself to determine



1 if a property is eminently threatened. These
2 documents are the actual letters that were sent
3 to property owners allowing activities under an
4 emergency order.

5 Q: Are these kept in the -- in the Department's
6 records?

7 A: Yes.

8 Q: As a regular of course of business?

9 A: Yes.

10 **MS. PHELAN:** I would like move Exhibit 48 into
11 evidence, Your Honor.

12 **(Respondent's Exhibit Number 48 was offered into**
13 **evidence.)**

14 **OBJECTION:**

15 **MS. LENHARDT:** Your Honor, I object. Hearsay. They
16 are not part of the permitting file. He did
17 not rely on the orders. He conducted his own
18 investigation and they're issued not by DHEC.

19 **THE COURT:** Who were they issued by?

20 **MS. LENHARDT:** Aren't they the local government
21 issues them, I believe?

22 **THE COURT:** Okay. Ms. Phelan?

23 **MS. PHELAN:** That's fine, Your Honor. I'll move on.

24 **THE COURT:** Okay.

25 Q: You said that the Department conducted site



1 visits to determine the condition of a property
2 and whether it was threatened. Could you --
3 did you conduct a site visit in this case?

4 A: Yes. For this -- for the permit before us, the
5 renourishment and groins, I conducted two site
6 visits. One was in June of 2018 and the other
7 was in November of 2018. And the reason that
8 I went to the site on two different occasions,
9 was to document the site conditions during
10 different kind of storminess throughout the
11 year. So, June is a calmer time period during
12 the summer months when there's less storm
13 activity, smaller waves, versus November was
14 after hurricane season. It's in the fall when
15 there's typically more activity offshore. So,
16 I wanted to be able to document the site at two
17 different times.

18 Q: And what did you observe during those site
19 visits?

20 A: I observed in -- in June that there was a
21 protective dune south of the bulkhead, but in
22 front of the bulkhead itself, there was no dry
23 sand beach. I can't recall the -- at what
24 stage of the tide that I was there, but there
25 was no dry sand beach in -- in front of the



1 bulkhead. And then in -- in November, when I
2 returned, there was less beach in front of the
3 bulkhead and then also the -- the dune that --
4 that had a seaward tow to it. It had -- it was
5 complete dune in June, and it was basically cut
6 in half. It had -- had been eroded over the
7 course of those five months. And the -- the
8 southernmost property was very close to the
9 beach with almost no protection.

10 Q: How did these site visits play into your
11 determination as to whether to issue this
12 permit?

13 A: Both based on my site visits for this permit,
14 as well as just history at OCRM since 2007, I
15 was aware that -- that this area does have a
16 high erosion rate and that there are properties
17 that are threatened at times.

18 Q: We talked a little bit about the permit special
19 conditions.

20 A: Okay.

21 Q: You -- I think you mentioned already that there
22 were some special conditions for the sea
23 turtles. What other special conditions are in
24 this -- this permit?

25 A: Do you mind if I refer to the permit itself?



1 Q: Not at all. It's been -- it's been entered in
2 the Exhibit 29. It's also been entered by the
3 Petitioner, Petitioner's Exhibit 41.

4 **(Respondent's Exhibit Number 29 was referenced at**
5 **this time.)**

6 A: Are there -- are there specific questions or do
7 you want me to go through these one by -- one
8 by one? What ---

9 Q: Yeah. I want to talk about whether there's any
10 restrictions on what kind of sand can be used,
11 the quality of the sand for the beach.

12 A: Yes, certainly. For instance, Special
13 Condition Number 10 states that only clean
14 sand, free from all potential sources of
15 pollution, must be used for beach
16 renourishment. Continuing on in Special
17 Condition 11, that condition talks about that
18 sand must consist of appropriate grain sizes,
19 quality and color to be compatible for beach
20 renourishment. And that if muddy sediments or
21 excessively coarse sediments are observed while
22 sand is being placed, that the dredger offshore
23 must be notified to -- to move to a new
24 location to dredge, where there's higher
25 quality material. And also, that a qualified,



1 either professional geologist or engineer, has
2 to be actually on the beach watching the sand
3 come out of the pipes to make sure that it's
4 not too fine or too coarse.

5 Q: What about beach access? Is beach access
6 addressed in the special conditions?

7 A: It is. Specifically, number -- Special
8 Condition 15, access along the beach in the
9 vicinity of the new groins must be maintained
10 or improved. If access is impacted or
11 eliminated, temporary access around or over the
12 groins must be established immediately. Within
13 30 days of notification from the Department, a
14 plan to provide permanent access around or over
15 the groins must be submitted by the entity
16 responsible for the groin construction. This
17 permanent access plan must be implemented
18 within 90 days of the Department approval.

19 Q: Okay. I'd like to talk a little bit about the
20 monitoring requirements in the permit. How
21 does the monitoring in this permit -- and when
22 I say this permit, I'm including the amended --
23 the -- the monitoring conditions in the amended
24 permit, as well. How does it compare with the
25 monitoring that has been required in other



1 groin and renourishment permits?

2 A: It's -- the required monitoring is -- is
3 comparable in -- in most ways to the required
4 monitoring at -- at Hunting Island and at the
5 Folly Beach terminal groin in the sense that
6 ten years of monitoring data are required
7 initially. And there's the potential to
8 continue that required monitoring based on the
9 results of the first ten years. In other
10 words, if monitoring report number 9 comes in
11 and it's showing that there might be some
12 impacts that are starting to -- starting to
13 show up, we're not going to just get to year
14 ten and cut it off and say that, you know, that
15 -- that's all the required monitoring. We'll
16 -- we'll make sure that that monitoring
17 continues into the future. I would -- I would
18 argue that the monitoring required for this
19 groin is more significant and -- and meaningful
20 in the sense that we did establish a trigger
21 after which mitigation would be required. The
22 other groin permits the Department has issued
23 have simply stated that if the historical
24 erosion rate increases as a result of the
25 groins, that mitigation would be required. But



1 the permit itself for those other projects did
2 not specify a number. We felt, as well as the
3 Corps felt, that establishing that --that
4 trigger up-front was really important, so we're
5 not all sitting in a courtroom again together
6 in a few years saying, well, what is the
7 downdrift rate and -- and arguing at that
8 point. But we can have those discussions now
9 and that everyone involved will -- will know
10 what that -- what that trigger is.

11 Q: And the original permit and the amended permit
12 has a different trigger, is that correct?

13 A: Correct.

14 Q: Could you tell us about that, please?

15 A: In the initial permit, the -- the volumetric
16 erosion rate trigger on the Hobcaw tract was -
17 8.1 cubic yards per foot per year. And then in
18 the amended permit, that trigger in that -- in
19 that same area on the Hobcaw tract is now -6.0
20 cubic yards per foot per year.

21 Q: What is your understanding of what the 8.1
22 cubic yards per foot per year trigger was in
23 the original permit?

24 A: What is my understanding of what the trigger --
25 -



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1 Q: Why -- why was 8.1 cubic yards per foot per
2 year chosen as a trigger rate?

3 A: I see. Why was that selected as -- as the
4 rate? Yes.

5 Q: Uh-huh.

6 A: Again, that was -- that was proposed by CSE as
7 a result of the downdrift impacts analysis that
8 they had done. We at the Department did not
9 just accept that at face value and tuck it in
10 the permit. We actually looked at our own
11 data, as well, to make sure that -- that it was
12 a reasonable number.

13 Q: And so, the trigger in the amended permit is --
14 what did you say it was, 6?

15 A: It's 6.0 cubic yards per foot per year.

16 Q: And how does that compare with the historical
17 rate of erosion that has been determined for
18 this portion of the property?

19 A: It's a -- it's a lower trigger than the
20 historical rate of erosion. What that means is
21 that any required mitigation would have to
22 happen sooner than if we had to wait for that
23 8.1 cubic yards per foot per year threshold to
24 be crossed.

25 Q: Okay. I'd like to talk a little bit about

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1 condition number 22, which is the mitigation
2 condition in the permit. Could you tell us
3 about that?

4 A: Special condition number 22, we've -- we've
5 talked about the -- the trigger and basically
6 what it says is that if that historical rate of
7 erosion, if that threshold is crossed -- and
8 again, it is -8.1 in the original permit, 6.0
9 in the amendment permit -- that some form of
10 mitigation would be required and the condition
11 specifically states SC DHEC OCRM will require
12 either than the groins be reconfigured, so that
13 the erosion rate on the affected beach does not
14 exceed the historical/background rate, that the
15 groins be removed, and/or that the beach
16 adversely affected by the groins be restored
17 through renourishment. And, again, as -- as I
18 noted when talking about the -- the Humiston
19 and Moore recommendation about what area of the
20 shoreline do you evaluate for calculating that
21 -- that threshold. This within Special
22 Condition Number 22 is where that's spelled out
23 in the permit. That they would have to
24 calculate that running average erosion rate
25 within that immediate 1,600 foot distance south

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1 of the third groin, as well as further south of
2 that, throughout the remainder of the Hobcaw
3 tract.

4 Q: What, if any, rule can a property owner who
5 believes he's been aggrieved or -- or harmed by
6 the effects of the groin take?

7 A: Even absent the special conditions within this
8 permit, there's a separate subsection of -- of
9 the statute that states that any affected
10 downdrift property owner who feels like a groin
11 has caused a negative impact on their property
12 can petition to the Department to review that
13 situation. Basically, put the Department on
14 notice that they feel like they've been
15 impacted and they have the opportunity to
16 provide any additional information for the
17 Department to consider. The Department reviews
18 any submitted information, does our own
19 analysis, as well, and then formerly responds
20 to that downdrift property owner. So, there's
21 -- there's -- there's two mechanisms that a
22 downdrift owner could claim downdrift impacts.
23 One is specified within this permit. The other
24 is more general and within statute, as well.

25 Q: Okay. You were questioned some on the -- the



1 NERR. Is the NERR -- does the Hobcaw tract
2 include the NERR?

3 A: I do not know the exact boundaries of the NERR.
4 I know that -- that the North Inlet Winyah Bay
5 NERR operates, you know, on -- on -- on Baruch
6 Foundation's property. I don't know if -- I
7 don't know if the boundary extends to the
8 oceanfront of the actual NERR. I'm not -- I do
9 not know.

10 Q: Okay. And -- and how far is it from the -- the
11 groin project approximately?

12 A: Well, the entrance to North Inlet is about two
13 miles south and again, it's -- it's that inlet
14 where tidal waters would flow in and out from
15 the Atlantic Ocean reaching the estuarine
16 research reserve on the -- on the backside of
17 the barrier island.

18 **MS. PHELAN:** Your Honor, can we take a -- a break.
19 I have some slides I want to show.

20 **THE COURT:** That's fine.

21 **MS. PHELAN:** With the -- and I need to make sure
22 that the computers ---

23 **THE COURT:** Okay.

24 **MS. PHELAN:** And I'm also trying to make sure I'm
25 not repeating what they've already questioned.



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1 **THE COURT:** Well, I'm all in favor of that. I'll
2 take a break on that one alone. All right.
3 Take a five to ten minute break.

4 **(Off the record from 3:12 p.m. until 3:23 p.m.)**

5 **COURT REPORTER:** All rise.

6 **THE COURT:** So, the rest is going to be about two or
7 three more minutes?

8 **MS. PHELAN:** I'm getting there, Your Honor. I
9 really am. All right. I'd like to look at
10 Exhibit 31, please.

11 **COURT REPORTER:** When you say Exhibit 31, are you
12 referring to ---

13 **THE COURT:** Yeah. That's a good point.

14 **COURT REPORTER :** Which one -- your -- Respondent's
15 or Petitioner's?

16 **MS. PHELAN:** Ours, yes.

17 **COURT REPORTER:** Because you referred to a
18 Petitioner earlier.

19 **MS. PHELAN:** Respondent's Exhibit 31.

20 **COURT REPORTER:** Thank you.

21 **MS. PHELAN:** I apologize.

22 **(Respondent's Exhibit Number 31 was referenced at**
23 **this time.)**

24 **Q:** Tell me when you're ready.

25 **A:** I'm ready.



1 Q: Can you tell the Court what these documents
2 are, please?

3 A: Exhibit 31, looks like site photos from
4 landward of the Debordieu bulkhead looking
5 south.

6 Q: Okay. Do you know when these were taken?

7 A: This one right here, I do not. I -- I believe
8 my photos have date stamps. I believe it's --
9 I've got it. I believe these were taken in
10 September of 2019 when Hurricane Humberto was
11 offshore.

12 Q: Would you please scroll? Yeah. Why don't you
13 scroll through the pictures so you can -- move.
14 Matt, look at the pictures and see if you can
15 verify them.

16 A: Yes. There's -- there -- there are some more
17 photos there with my initials and a date, and
18 time stamp. So, yes. These were taken in the
19 project area, September of last year.

20 Q: Did you take these photos?

21 A: Yes.

22 Q: And when were they taken?

23 A: September 18th, 2019.

24 Q: And you said that was around Humberto?

25 A: Yes. That was around the time the Hurricane



1 Humberto, which didn't threaten South Carolina,
2 it remained hundred of miles offshore, but it
3 was a Category 1 hurricane when it was offshore
4 of South Carolina, and that happened to be when
5 these photos were taken.

6 Q: Okay.

7 **MS. PHELAN:** I'd like to move these photos into
8 evidence.

9 **(Respondent's Exhibit Number 31 was offered into**
10 **evidence.)**

11 **OBJECTION:**

12 **MS. LENHARDT:** With -- just with regard to the first
13 two that are not stamped, I think he testified
14 he did not take those. And so, I don't know
15 that -- we know that -- I don't know that he
16 can confirm where -- when they were taken. So,
17 I would object to those two. The others, I --
18 I have no objection to.

19 **THE COURT:** All right. You can't say that the first
20 one was a like representation of what he
21 observed when he did not observe said photo,
22 so.

23 Q: Is this an accurate depiction of what you
24 observed on September 18th?

25 A: Yes.



1 **THE COURT:** It's admitted. I wasn't trying to help
2 her out. I just ---

3 **(Respondent's Exhibit Number 31 was admitted into**
4 **evidence.)**

5 **MS. PHELAN:** I thought -- I just wanted to make sure
6 that he had his own.

7 **THE COURT:** Okay.

8 **MR. LOWELL:** How many pic- -- how many pictures are?

9 **MS. PHELAN:** There are 16.

10 **MR. LOWELL:** 16. All right. So, we just looked at
11 the first four of them, is that right?

12 **MS. PHELAN:** Correct.

13 **MR. LOWELL:** Okay.

14 **MS. PHELAN:** And Exhibit 32 is a series of movies,
15 little short ---

16 **THE COURT:** Series of movies?

17 **MS. PHELAN:** --- clips. They're little short clips.

18 **(Respondent's Exhibit Number 32 was referenced at**
19 **this time.)**

20 **THE COURT:** Oh, good. Something -- y'all want me to
21 just go back to the office and watch it?

22 **MS. PHELAN:** They're under a minute each and ---

23 **THE COURT:** Oh. Oh.

24 **MS. PHELAN:** I'm about to show two of them.

25 **THE COURT:** Short story movies. Okay.



1 Q: Before we -- before we handed over the digital
2 copies to the Court, did you review to see if
3 Exhibit 32 contained one, two, three, four,
4 five movies taken on September 18th, 2019?

5 A: Yes.

6 Q: And were these accurate and true pictures of
7 what you observed on that day?

8 A: Yes.

9 MS. PHELAN: I'd like to move those into ex --
10 evidence, Your Honor.

11 (Respondent's Exhibit Number 32 was offered into
12 evidence.)

13 MS. LENHARDT: No objections.

14 THE COURT: They're admitted.

15 (Respondent's Exhibit Number 32 was admitted into
16 evidence.)

17 Q: If you would turn to -- turn to Exhibit 33-A.

18 (Respondent's Exhibit Number 33 was referenced at
19 this time.)

20 A: Okay.

21 Q: 33-A through D. Can you just tell me what that
22 group of reports are?

23 A: These are the jurisdictional line reports that
24 are drafted every time we either set or update
25 the baseline and setback line. So, the May --



1 and these are all for Debordieu Beach. So, May
2 1990, April of 2000, February of 2010, and then
3 October of 2017.

4 Q: And these are all maintained by the Department?

5 A: Yes.

6 **MS. PHELAN:** I would like to move the four line
7 reports into evidence, 33-A through D,
8 Respondent's.

9 **(Respondent's Exhibit Numbers 33 A through 33 D were**
10 **offered into evidence.)**

11 **MS. LENHARDT:** No objection.

12 **THE COURT:** They're admitted.

13 **(Respondent's Exhibit Numbers 33 A through 33 D were**
14 **admitted into evidence.)**

15 Q: On Exhibit 34, was a selected Debordieu Beach
16 profile data. Prior to submitting Exhibit 34
17 to the Court, did you review to see if this
18 was, in fact, the -- the Debordieu Beach
19 profile data that the Department maintains?

20 **(Respondent's Exhibit Number 34 was introduced into**
21 **the record at this time.)**

22 A: I did review it, yes.

23 Q: And can you tell me what -- just generally what
24 that is?

25 A: It is large Excel files that contain the actual



1 numerical beach profile data and then figures
2 created from that data.

3 Q: And what does the -- the beach profile data
4 tell us?

5 A: A beach profile, it's a -- a cross-section
6 looking through the beach from -- from the
7 dunes to offshore. So, if you're looking at the
8 X axis, that would be your distance from the
9 dunes out towards the ocean. Your Y axis would
10 be elevation. So, and the graph in between
11 those axes would show what that cross-section
12 of the beach looks like.

13 Q: And could you tell us how they relate to this
14 -- to this evaluation for the groin permit?

15 A: Since we have beach profile data at specific
16 monuments that has been collected over years,
17 you can compare from year to year how that
18 cross-section of the beach has changed over
19 years.

20 MS. PHELAN: I'd like to enter Exhibit --
21 Respondent's Exhibit 34 into evidence.

22 (Respondent's Exhibit Number 34 was offered into
23 evidence.)

24 OBJECTION:

25 MS. LENHARDT: I object on the grounds of hearsay.



1 I did -- I didn't hear that there was a
2 foundation laid that he created the document or
3 did he rely on -- on it in his evaluation of
4 this application.

5 **THE COURT:** Okay.

6 Q: Mr. Slagel, can you tell us how the beach
7 profile data is -- comes about?

8 A: Yes. So, the Department has contracted with
9 different entities over the year to collect --
10 over the years to collect beach profile data.
11 Again, at our network of -- I think it's 488
12 monuments statewide. Once that data is
13 collected and processed, the Department
14 maintains that data, and then evaluates beach
15 profile change over time by looking at -- at
16 that data.

17 Q: And did you review this data at all in the
18 assessment of this groin and renourishment
19 permit?

20 A: Yes.

21 **MS. PHELAN:** I'd like to move Respondent's Exhibit
22 34 into evidence.

23 **(Respondent's Exhibit Number 34 was offered into**
24 **evidence.)**

25 **MS. LENHARDT:** Well, Your Honor, if he didn't -- he



1 didn't rely on it. He looked at erosion rates,
2 but he didn't look at this data. The data was
3 contracted to be created by some other entity.

4 **THE COURT:** He said he reviewed it. I guess you're
5 saying just reviewed it and didn't rely on it?

6 **MS. LENHARDT:** I -- I didn't understand him to say
7 that he re- -- reviewed it and reviewed -- when
8 he reviewing this application.

9 **THE COURT:** Okay. Well, then I missed it.

10 **MS. LENHARDT:** I may have. I didn't hear that.

11 Q: Did you review this data when reviewing this
12 application?

13 A: I did.

14 **THE COURT:** Okay.

15 **MS. LENHARDT:** Okay. I'll withdraw my objection.

16 **THE COURT:** Okay. It's admitted. I assume y'all
17 don't object.

18 **MR. OWENS:** No objection.

19 **(Respondent's Exhibit Number 34 was admitted into**
20 **evidence.)**

21 **MS. PHELAN:** I'm going to switch the cord real
22 quick.

23 **THE COURT:** Don't unplug my system.

24 **MS. PHELAN:** I'm trying to act like I know what I'm
25 doing over here. Can we project?



1 **COURT REPORTER:** That's not up to me. Sorry.

2 **MR. OWENS:** She's got her computer plugged in.
3 She's trying to figure out if -- if she needs
4 to do anything to get it to project on the
5 screen. It's not showing what's on her screen
6 for whatever reason. I'm just the messenger.

7 **MR. GREEN:** You're doing a fine job.

8 **THE COURT:** Right now, it's just obstreperous. It's
9 ---

10 **COURT REPORTER:** Right now, it's just a what? I'm
11 sorry.

12 **THE COURT:** Obstreperous, loud noises. Don't ask me
13 to spell it. No. Well, now -- let's just go
14 get the computer person again.

15 Q: All right. I want to quickly walk through some
16 figures with you.

17 **MS. PHELAN:** I don't know what it's -- it must have
18 touched the mic. There's no sound to these.

19 **THE COURT:** There you go.

20 **MS. PHELAN:** Ah.

21 Q: So, I'd like to quickly walk through these
22 figures with you, Mr. Slagel, and to the extent
23 possible, let's not try to beat a dead horse.
24 Okay. Just explain briefly and -- that -- to
25 what you need and you don't need to repeat what



1 we've already discussed. Okay?

2 A: Okay. This first figure is Exhibit 29 and it's
3 one of the permit drawings that was submitted
4 with the initial application showing the entire
5 project footprint. That's the blue -- the --
6 the -- the bold blue boundaries where sand will
7 be placed, and then the three proposed groins
8 are marked towards the bottom of the image as
9 one, two and three.

10 Q: All right. And if you would, the exhibits in
11 the corner will no longer be applicable for the
12 most part except for Exhibit 29, the permitting
13 file. So, if you could just identify what --
14 where possible where it's part of the
15 permitting file.

16 A: Okay.

17 Q: Which is Exhibit 29. Okay.

18 A: Okay. This is part of the permitting file.

19 Q: Okay. What is this?

20 A: It -- I mean, it looks like it's the same image
21 showing the -- the project footprint. It's one
22 of the drawings that was submitted, part of the
23 permit.

24 Q: Is this -- does this figure show the -- the
25 original position of the third groin or the



1 revised position of the third groin in the
2 amended permit?

3 A: I'm sorry. This -- this shows the -- the
4 amended position. The date of this drawing is
5 February 28th, 2020. So, yes. This would be
6 the -- the amended location of the southernmost
7 groin, slightly further north from the shared
8 property line. And this shows the same thing
9 on an aerial photo for reference, which is
10 maybe a little bit easier to -- to see. So, it
11 -- it was a small shift of that southernmost
12 groin.

13 Q: And this is also part of the permitting file?

14 A: Yes.

15 **COURT REPORTER:** This is also a part of the ---

16 **MS. PHELAN:** Permitting file.

17 **COURT REPORTER:** Thank you.

18 A: These are special conditions from the original
19 permit.

20 Q: And we've talked about a number of these. I
21 believe we discussed number 15, the access.

22 A: We did. This continues with the special
23 conditions. It shows a portion of Special
24 Condition 18 and Special Condition 19.

25 Q: What does 19 have in it, please?



1 A: Special Condition 19 basically states that if
2 the dredging occurs in the warmer months,
3 between April 1st to September 30th, when
4 there's more biological activity, then the
5 permittee would be responsible for performing
6 benthic monitoring both in the offshore borrow
7 sites and the sand placement area. So, they
8 would have to sample those sediments to see
9 what kind of benthic critters are living within
10 them and how they're impacted by the project.

11 Q: Tell me what this is, please.

12 A: This is a figure from CSE's downdrift impacts
13 analysis. The fig- -- the half on the left
14 shows what the potential downdrift impact
15 distance would be south of the third groin, if
16 those groins are modeled as high, totally
17 impermeable structures versus the right side of
18 the figure, which shows what the downdrift
19 impact distance would be with the groins mon-
20 -- or modeled as the low profile structures
21 that they are. And it shows that their
22 anticipated downdrift impact distance would be
23 about 1,500 feet to the south.

24 Q: Would this impact or play into anything you did
25 with the permit?



1 **COURT REPORTER:** I'm sorry. I can't hear you.

2 **Q:** Did this figure have any impact on -- on how
3 you issued the permit?

4 **A:** Yes. Since the downdrift impacts analysis
5 showed the area that would be most likely to be
6 impacted, we through the permit wanted to
7 ensure that the profile data that -- that is
8 collected is at a 200-foot spacing in that
9 area, the 15 -- the 1,600 feet south instead of
10 500-foot spacing. Again, so we have a more
11 robust data collection effort. And likewise,
12 for that -- the threshold trigger that we've
13 talked about at length, that this area
14 immediately downdrift within the first 2,000
15 feet, that that is where the 8.1 trigger would
16 apply, as well as the distance farther south.
17 But it would not be averaged out over 4,000
18 feet but less than half of that. This is
19 continuing in the special conditions within the
20 original permit. The table shows what types of
21 monitoring data are required over what time
22 frames. And it shows that there will be a pre-
23 project survey to capture pre-project
24 conditions, beach profiles, bathymetric surveys
25 offshore of the borrow site, beach sediment



1 samples, borrow area sediment samples and
2 aerial photos. There will be the same
3 information collected post-project, also adding
4 compaction and escarpments that are a -- a
5 concern for nesting sea turtles. There will be
6 quarterly monitoring in the first year post-
7 project and then annual monitoring in years one
8 through ten post-project. And then Special
9 Condition 22, we've -- we've discussed that at
10 length. That's the -- the bulk of the erosion
11 rate monitoring requirements.

12 **THE COURT:** Why are you monitoring the borrow area
13 post-project?

14 A: That's a requirement to see what kind of
15 sediments are filling back in to that borrow
16 area. As borrow areas offshore are identified
17 and determined to have good quality material,
18 often times municipalities or whoever, whose --
19 whose proposing a project, will want to go back
20 to that same borrow site to excavate sand again
21 for beach nourishment. So, we want to ---

22 **THE COURT:** Oh, so you're just doing a ---

23 A: --- see like what it's filling in with.

24 **THE COURT:** Future evidence?

25 A: Yes. Yes, sir.



1 **THE COURT:** Okay.

2 A: This image here is the -- it's the first page
3 of the -- the amended permit showing the
4 revised language of Special Condition Number
5 22, and also showing the documentation of the
6 increased letter of credit amount of \$1
7 million, and the -- the shift of the groin
8 location. The second page of the amendment --
9 this is a figure that I referenced earlier when
10 I -- I think I stumbled over the word asym- --
11 asymptotes. So, this figure as it approaches
12 -- I'm sorry. Let me back up. On the X axis
13 is time after the proposed project. The Y axis
14 is the annual volumetric erosion rate. And you
15 see that curve running through the center of
16 the figure, that's the -- that's the long term
17 running average erosion rate that's referenced
18 in Special Condition Number 22. And the dash
19 line labeled Hobcaw Historical Volume Erosion
20 Rate, that dash line would be 8.1 under the
21 original permit and it would bump up a little
22 bit on the figure to 6.0 under the amended
23 permit. And you see that as that curve starts
24 to approach that horizontal line, you see at
25 year end, initiate renourishment planning, and



1 then year end plus two, which is where they
2 extrapolate that curve just as to where that
3 threshold will be crossed, that's when the
4 deadline for renourishment would occur. So, it
5 just shows that the applicant is -- is
6 cognizant of the fact that as that erosion rate
7 approaches the threshold, they're going to have
8 to start planning to mitigate before that
9 threshold is crossed. I was questioned earlier
10 about monument numbers along -- along Debordieu
11 Island and I testified that monument 4120 is on
12 the Baruch Foundation's property. That's the
13 third monument up from the bottom there. The
14 monument at the far south end is monument 4100
15 and then, as I said, they increase in number as
16 you head north. So, monument 4130 here, this
17 -- this is what beach profile data looks like.
18 So, on the X axis, you have the distance down
19 the line where zero is the monument location.
20 So, that's as if -- as you head towards the
21 right of that figure or as you head along the
22 X axis. Just pretend that you're walking from
23 the back beach offshore. And then on the Y
24 axis is the elevation in feet reference to the
25 NAVD 88 data, which is the -- the North



1 Atlantic Vertical Datum. So, this shows the
2 elevation of a cross-section of the beach at
3 this known location. What you can see in this
4 figure is if you look -- I don't have a way to
5 really point here, I guess, but ---

6 **THE COURT:** Yes, you do.

7 A: How do I do that? Do I ---

8 **THE COURT:** Yeah. You can touch the screen.

9 A: Okay. So, these ---

10 **THE COURT:** There's all kind of different other
11 functions you can do with an arrow.

12 A: Okay. I'll just kind of do this, I guess. So,
13 these -- these years right here, this --
14 there's an orange line and kind of light blue
15 line. So, these -- this profile out here
16 represents the years 1989 and 1995. And then
17 back here, 2009 is this darker blue that I'm
18 sort of going over with my finger right here.
19 So, what this shows is that at monument 4130
20 between 1989 and 2009, that that shoreline has
21 moved that distance landward. And monument
22 4130 is on Baruch -- I'm sorry. Debordieu
23 Colony's property. Similarly, as we start
24 heading south a little ways, the -- the change
25 is a little bit less pronounced here. And I



1 believe that's because of the presence of the
2 bulkhead. You can see this light blue is 1999,
3 I believe. And the darker blue is 2009. You
4 can see the change there. 4120 is a monument
5 that's on Baruch Foundation's property,
6 undeveloped shoreline. You're looking at the
7 same thing here. So, this -- this orange
8 profile, and this light blue are from 1990 and
9 1995. And notice that that's about 200 feet
10 from the monument right there. 200 feet is
11 where that shoreline is at that year. And then
12 in 2009, about 19 years later, it's all the way
13 back to the monument. So, what this tells me
14 is that over the course of 19 years, the
15 shoreline moved about 200 feet. 200 divided by
16 19 is approximately ten feet per year, which,
17 again, is consistent with what the Department
18 has calculated in this area using aerial
19 photos. Those numbers are very small, but I'll
20 -- let's see. This is a table taken from the
21 1990 jurisdictional line report. So, this is
22 when the baseline and setback line were first
23 established for Debordieu. If you look at
24 monument 4120, that's the profile that we were
25 just looking at. It says -10 feet per year,



1 which, again, is -- did I just do that? Can
2 you scoot it -- well ---

3 **MS. PHELAN:** To the right? Am I going the right way
4 or not?

5 A: Sure.

6 **MS. PHELAN:** Got it.

7 A: So, this is monument 4120. If you were to
8 scroll back to the left of this table, so the
9 shoreline change rate that was used for the
10 first establishment of the setback line was ten
11 feet per year at that area where I showed you
12 the -- the beach profile. And then as you move
13 up in this table, that's as if you're moving
14 south along the Baruch Foundation down towards
15 Debordieu spit, where you see the erosion rate
16 is even higher. And then if you move down in
17 this table, that's as you're moving north along
18 Debordieu Colony, eventually to the accretional
19 part of the island. Same thing here, this is
20 from the -- the 2000 line report for the 1999
21 beach line revisions. Those same rates that
22 you just saw in that table were retained in
23 this line revision. And, likewise, in 2000 --
24 sorry, can you go back for a second? So, the
25 table at the bottom shows those same rates at



1 those same monuments. And it's also notable
2 that the Department for Debordieu has
3 historically used data from after 1935. And
4 the reason that that's important is because
5 North Inlet to the south of Debordieu Colony
6 used to be two inlets. There was a -- a north
7 -- a northern mouth and a southern mouth. The
8 inlet mouth that currently exists still today
9 is -- is the southern mouth. The northern
10 mouth closed off around 1935. And I believe
11 you'll hear testimony tomorrow from Dr. Young
12 perhaps that the rapid erosion that the island
13 has experienced as of 1935 is partially due to
14 the shoreline equilibrating after the closure
15 of that inlet. And we've already looked at
16 this table. This is from the -- the 2017 line
17 report where I testified that these numbers
18 here were in error because the Department
19 included post-renourishment shorelines in their
20 calculation of the long-term rate. This is a
21 figure from Isle of Palms in March of 2009.
22 And just what I want to point out briefly here,
23 and it's difficult to see, but this -- this
24 white house, this circular white house, I
25 measured using this pictometry imagery, which



1 is high resolution imagery that you can measure
2 both oblique photos and overhead photos from --
3 measuring from the vegetation line to the high
4 tide line was about 152 feet after the sand was
5 placed. But the sand wasn't placed at this
6 house. Right -- right up here, this taper,
7 this is the southern limit of the 2009 Isle of
8 Palms' project. But I want you -- what I want
9 you to see is then as we move forward in time
10 to the next slide is that at this same house,
11 the distance from the vegetation line to the
12 high tide line is now 292 feet after three
13 years. So, sand has spread partially from the
14 renourishment project that was placed in Wild
15 Dunes up here further to the north and that's
16 -- and is benefitting a large swath of the
17 entire Isle of Palms shoreline, even though
18 sand wasn't placed there directly. This is
19 what Wild Dunes looked like before that 2009
20 project. All these condos are lined with
21 sandbags. You can see that there's no dry sand
22 beach whatsoever and then when the beach was
23 renourished, it looked like that. And all the
24 sandbags had to be removed as a permit
25 condition of that project. But that gives you



1 an idea that beach renourishment, just from a
2 shoreline data calculation perspective, can
3 really impact that long term rate of change
4 that you're looking at, if you include a aerial
5 photo like this, and lumped in with the rest of
6 your -- of your shoreline data. This is a
7 Google Earth photo that anybody can access just
8 by going to Google Earth, from October 2014,
9 prior to the 2015 beach renourishment back-up
10 at Debordieu now. And you can see right here,
11 that's the southern terminus of the bulkhead.
12 You can kind of see a shoreline offset as you
13 move south to this point, and then it jumps
14 back a little bit and then continues. This
15 image is from March of 2015, again from Google
16 Earth during the beach renourishment project.
17 And you can see through this section of the
18 beach where the sand has already been pumped
19 onto the shoreline and has been widened. But
20 they're working right here and I -- we have a
21 closer in shot showing that project. So, you
22 can kind of make out here the dredge pipeline
23 that's going down the beach. There's a -- a
24 wide valve here spreading that sand in two
25 directions and all the bulldozers that are



1 spreading that material. And for reference
2 again, this is the southern terminus of the
3 bulkhead right here. So, at -- at this point
4 in time, in March of 2015, this part of the
5 beach had been nourished. They're working here
6 and then they haven't gotten to the Ocean Green
7 portion of the shoreline yet.

8 **OBJECTION:**

9 **MS. LENHARDT:** Your Honor, I -- this is kind of
10 stretching the bounds of relevancy here. I --
11 I don't understand why -- we're not challenging
12 the renourishment piece of the permit.

13 **THE COURT:** So, the objection is relevancy or
14 challenging the bounds of relevancy.

15 **MS. LENHARDT:** I'm objecting on the grounds of
16 relevancy.

17 **THE COURT:** Okay.

18 **MS. PHELAN:** The Department would like to -- to mark
19 the last three on the Debordieu renourishment
20 as an exhibit. I have hard copies and I have
21 a digital of this that I can give to the Court.
22 But the sort of relevance is to show what the
23 effects of beach renourishment can be on down
24 the property and especially as it relates to as
25 to whether it should be taken into account when



1 you're determining what the natural erosion
2 rate on a beach.

3 **THE COURT:** All right. It's exemplary.

4 **MS. LENHARDT:** I -- I just -- I don't -- I don't
5 know. I ---

6 **THE COURT:** If that's the correct use.

7 **MS. LENHARDT:** I don't know. I'll just withdraw the
8 objection.

9 **THE COURT:** Proceed.

10 **MS. PHELAN:** Okay. I'd like to -- I'd like to mark
11 the -- the three exhibits here 51 and move them
12 into evidence. Respondent's Exhibit 51 into
13 evidence.

14 **(Respondent's Exhibit Number 51 was offered into**
15 **evidence.)**

16 **MS. LENHARDT:** I mean, he hasn't laid a foundation
17 for Google Earth. He doesn't ---

18 **THE COURT:** Yeah. We've been there before. At
19 least, Mr. Churdar has.

20 **Q:** Mr. Slagel, can you tell us, does the
21 Department customarily or ordinarily use Google
22 Earth in evaluating the condition of shorelines
23 in South Carolina?

24 **A:** Yes. We use Google Earth frequently, probably
25 every day, to evaluate different permit



1 applications that come in. It's helpful as a
2 -- as a quick look because they have the
3 historical shore -- or the historical imagery
4 feature that allows you, depending on location,
5 to view different years of imagery.

6 **THE COURT:** When you say you're objecting to Google
7 Earth, what grounds?

8 **MS. LENHARDT:** Well, he hasn't laid the foundation.
9 He doesn't -- he looks at them, but he -- I
10 don't -- I -- he hasn't testified that he knows
11 how they're taken or how they're -- how they're
12 compiled or anything like that. They just --
13 he just goes and reviews them.

14 **THE COURT:** Or whether they're reliable.

15 **MS. LENHARDT:** Or whether they're reliable.

16 **THE COURT:** So, can -- and he can -- in other words,
17 if it's not reliable, then can that picture
18 come into evidence to verify his opinion?

19 **MS. PHELAN:** It's the ---

20 **THE COURT:** And I'm not saying it's not. I -- I
21 don't know ---

22 **MS. PHELAN:** Right.

23 **THE COURT:** --- if there's evidence to established
24 that.

25 **MS. PHELAN:** Mr. Slagel is making assessments based



1 on this type of information and what the
2 impacts of renourishment will be. And so, it
3 goes into his assessments of -- of what effect
4 a renourishment project would have on the
5 shoreline.

6 **THE COURT:** Has he testified that he relied upon
7 this in making his decision or is this an
8 example of -- I guess the better question for
9 me is are we in opinion testimony or are we in
10 testimony about how he reached his decision?
11 I'm asking you.

12 **MS. PHELAN:** I'm thinking.

13 **THE COURT:** Oh. Oh. I didn't know if you heard me.

14 **MS. PHELAN:** Your Honor, I -- I would argue is that
15 it how he reaches a decision because he -- he
16 views these types of ---

17 **THE COURT:** Well, I ---

18 **MS. PHELAN:** --- photos every day as part of his
19 job, and so he ---

20 **THE COURT:** Has he testified to that?

21 **MS. PHELAN:** He did. He just said that he looked at
22 ---

23 Q: Mr. Slagel, you want repeat your testimony
24 about how DHEC uses these Google Earth images?

25 A: I personally, at work, more than likely, open



1 Google Earth every day to look at some property
2 or another just to get a -- like I said, a --
3 a quick look at the conditions of that property
4 at whatever time the imagery was taken. I
5 believe in this case that I -- I have on the
6 ground photos of this 2015 renourishment
7 project that would show -- that perhaps could
8 be used for my testimony instead of these
9 aerial photos if that's helpful. But I -- I do
10 use Google Earth frequently. Yes.

11 Q: Were you on the ground when this renourish- --
12 this beach renourishment was happening around
13 this time?

14 A: I cannot recall if I was. I know that the
15 Department staff were on the ground as this
16 project was happening and have photos.

17 **MS. LENHARDT:** He didn't -- he did not testify that
18 he looked at this particular aerial photos in
19 coming to the conclusions for making any
20 decisions with regard to the application. All
21 he's testified to is that he looks Google
22 aerials in his job.

23 **THE COURT:** I would -- I -- you didn't take it a
24 step further, so at this point in time
25 regarding Google Earth, Lisa, I sustain the



1 objection for that particular photo. I mean,
2 if this is part of a larger group, I would ask
3 that that -- before we have -- we enter the
4 exhibit into evidence or later on that that
5 photo be excised.

6 **MS. PHELAN:** Yes, Your Honor.

7 **THE COURT:** All right.

8 **COURT REPORTER:** I'm confused. Just because I'm
9 keeping records ---

10 **THE COURT:** You're doing a good job.

11 **COURT REPORTER:** Respondent's Exhibit 51 were several
12 of the pictures. So, you're admitting Exhibit
13 51 after excising the Google Earth?

14 **THE COURT:** That's correct.

15 **COURT REPORTER:** Thank you. I just want to make
16 sure. Thank you.

17 **(Respondent's Exhibit Number 51 was admitted into**
18 **evidence.)**

19 **A:** So, this photo was taken by Department staff.
20 I don't believe that I took this photo. I may
21 have. But what this shows is the -- this is
22 during the March 2015 beach renourishment
23 project. This is the -- the Debordieu
24 bulkhead. In the background of that image
25 here, you can see that sand has been pumped



1 onto the shoreline. And you'll notice that
2 it's -- it's not only widened the beach in --
3 in the X direction, if you think about a beach
4 profile, but it's also increased the height of
5 the beach here. So, that's a -- a platform of
6 sand that has been placed on the beach that the
7 heavy equipment is spreading out and they will
8 continue to pump sand as they've done in this
9 fashion further into the foreground towards us
10 in this image. It just gives you idea that
11 beach nourishment not only widens the beach,
12 but increases the height of it, as well. All
13 right. So, this figure shows the -- the
14 monument numbers that we've already looked at
15 and I want you to think of this as three
16 different columns of information starting up
17 here. This says 1990 to 2012 reports. So,
18 that's -- that's referring to the three
19 jurisdictional line reports the Department
20 produced in 1990, 1999, and 2008, and the
21 corresponding long term shoreline change rates
22 next to those monuments. So, up here, that's
23 +1.7 feet per year. 1.7 feet per year plus 0.4
24 feet per year, you start transitioning into
25 erosion right here, minus 2 feet per year.



1 Minus 6.6 feet per year. Minus 8.8 feet per
2 year. Minus 10 feet per year. Minus 10.8 feet
3 per year. This column right here is the 2017
4 line report where that calculation again was
5 done in error with the 2006 and 2015
6 shorelines. And you see that at monument 4130
7 where the rate was calculated by a 6.6, that
8 area was calculated as stable to accretional,
9 meaning they would have the minimum setback
10 distance of 20 feet. And then moving south at
11 this monument, instead of 8.8, it was
12 calculated as 3.9 erosion. Instead of minus
13 10, minus 5.3. Instead of minus 10.8, minus 4.
14 So, you can see how including those -- those
15 renourishment shorelines really reduced the
16 erosion rate calculation there. Then, finally,
17 this last column, this is from the downdrift
18 impacts report, so, these are the volumetric
19 numbers calculated for the five different
20 reaches of the project by CSE. In Reach 1 at
21 the top, they calculated 1 -- plus 1.4 cubic
22 yards per foot per year; in Reach 2, minus .4
23 cubic yards per foot per year; in Reach 3,
24 minus 4.2 cubic yards per foot per year; in
25 Reach 4, minus 8.1 cubic yards per foot per



1 year. That number should be familiar because
2 again, that's that volumetric threshold for
3 mitigation within Reach 4 along the Hobcaw
4 tract. And then, finally, Reach 5, that minus
5 4.3 cubic yards per foot per year. So, we were
6 really looking at this area here on Debordieu
7 Colony and the Baruch Foundation to make sure
8 that the numbers calculated as part of the
9 downdrift impacts analysis were somewhat
10 similar to what the Department had also
11 calculated at these locations. This gets into
12 the alternatives analysis. This sediment
13 budget here shows ten years without the
14 project, meaning without future renourishment
15 and without groins, and what the volumetric
16 erosion rates would be in each of these
17 reaches. This right here again, 8.1 cubic
18 yards per foot per year along the Hobcaw tract.
19 And then this figure shows the sediment budget
20 ten years with the project, meaning with
21 renourishment and with groins. And that 8.1
22 cubic yards per foot per year is decreased to
23 4.8 cubic yards per foot per year. So, they're
24 -- the applicant is acknowledging that erosion
25 will continue to occur on the Hobcaw tract, but



1 not to the historical pre-renourishment rate.
2 This figure is also from the alternatives
3 analysis and what it shows is that this top
4 image here, again, is a no action alternative,
5 meaning that the project does not happen.
6 There's no -- no additional renourishment, no
7 groins are built, and what they expect that
8 shoreline response to be and that's represented
9 by this red curve here. And that shaded red
10 area is the -- the acreage of the Hobcaw tract
11 that they expect could be lost. Likewise,
12 figure 2 in the middle here, this is with the
13 project, with renourishment, with the groins,
14 which you can see two of them here. And there
15 still is erosion downdrift of that third groin,
16 but it's not as much as the no action
17 alternative. They calculated that over the
18 next 20 years, 25 acres could potentially be
19 lost with no action and 15 acres could be lost
20 with the groins and renourishment. So, loss
21 would still occur, but ten acres less loss over
22 -- over a 20-year time frame.

23 **THE COURT:** Well, what was the bottom one?

24 **A:** Sorry. The bottom one compares the two.

25 **THE COURT:** Oh, okay.



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1 A: Yeah. So, the -- the green hatch or the green
2 line here is the project- -- projected land
3 loss with the project and the red is with no
4 action. And the difference between those two
5 curves is the additional loss. This also came
6 from the alternatives information that was
7 submitted. This shows what a single terminal
8 groin structure could look like. Here's the --
9 the shared property line between Hobcaw tract
10 and -- and Debordieu Colony. And basically,
11 what they determined was in order to keep sand
12 along this entire project length, to meet their
13 project goals, that structure would have to be
14 significantly longer out into the ocean. And
15 because of that, there would be more potential
16 impacts on the southern side because of that
17 longer structure. Again, from the alternatives
18 analysis, they also looked at two structures.
19 One, at the southern terminus of the bulkhead,
20 another at the shared property line
21 approximately. And for the same reasons, they
22 did not pursue the -- the two groin option
23 because to keep sand in the project area, it
24 would result in more impact downdrift. And,
25 additionally, there's an area of the bulkhead



1 that -- that goes seaward a bit, about 1,000
2 feet north of this structure that they were
3 concerned about keeping sand in front of. So,
4 that's why they -- they want that third groin
5 further north.

6 Q: What is this, Mr. Slagel?

7 A: These are site photos that I took as part of my
8 permit review as I was considering our
9 permitting decision. This photo is from
10 November 29th of 2018 looking at the -- the
11 southern end of the bulkhead. This photo is
12 taken from slightly further south, again,
13 looking back up the beach towards the bulkhead
14 and you can see the -- that scarped dune on the
15 left-hand side that I referred to earlier.
16 This is taken from even -- even further south,
17 that property in the foreground is the
18 southernmost property within Debordieu Colony
19 before getting into the Hobcaw tract. You can
20 see the proximity of that structure to the --
21 to the scarp line of that dune. Again, now I'm
22 standing on the Hobcaw tract looking back at
23 the developed portion of Debordieu Island.
24 That -- Debordieu Colony -- that structure you
25 see towards the center of the photo is the one



1 we were just looking at. The presence of a -
2 of a bone yard beach here is an indicator to me
3 of -- of long-term erosion. Bone yard beach,
4 I mean trees that were once living that are now
5 dead and being killed off by -- by salt spray
6 and salt water. Similar picture here. This is
7 imagery flown by NOAA after Hurricane Isaias.
8 It's a little difficult to see, but this is the
9 bulkhead in Debordieu. This -- this linear
10 feature you see on the imagery here. And you
11 can kind of make out this -- these sort of tan
12 colors as you go along here. So, that's areas
13 where wave action over top of the bulkhead and
14 scoured out sediments on the landward side of
15 the wall. This shows the same thing. For
16 reference, here's the southern end of the
17 bulkhead and you can see this line where
18 erosion reached. And you can barely make out,
19 but there's a few little -- little pieces of
20 what looks like dune kind of scattered
21 throughout this section, but it's largely been
22 eroded away. And then, this is just even a
23 broader view of -- of Debordieu spit after
24 Hurricane Isaias. And you can see these areas
25 here are overwash fans. An overwash fan occurs



1 when wave action basically pushes beach sand up
2 and over parts of the upland or -- or marsh, in
3 this case, and it leaves this sort feature on
4 aerial photos. This is an image from September
5 18th, 2019. Again, when Hurricane Humberto was
6 offshore. I'm standing landward of the
7 bulkhead looking south.

8 Q: Could you tell us a little bit about Hurricane
9 Humberto, to put this in context?

10 A: I believe I mentioned previously that this was
11 a storm that remained a few hundred miles
12 offshore of South Carolina, but I believe it
13 was a Category 1 hurricane while it was
14 offshore. So, it was picking up some -- some
15 hurricane swell that was showing up here on --
16 on the island, even though the storm itself was
17 well offshore. This is taken the same day just
18 looking south of the bulkhead at the properties
19 that are -- that are further south. And you
20 can see the -- the scarp dune there and the
21 proximity of the high water line to it. The
22 structure in the immediate foreground on the
23 left is the southernmost house in Debordieu
24 Colony. And, again, you can see where the --
25 the high tide line is in relation to the -- the



1 structure. This -- this is a video from that
2 same site visit standing behind the bulkhead.

3 Q: Are there sandbags all along the -- the inside
4 of that one?

5 A: There are -- there are small sandbags that are
6 sort of scattered here and there, but there's
7 not any kind of continuous or -- yeah. There's
8 -- there's no continuous line of sandbags
9 laying vertical to the wall.

10 Q: Is this the same playing again? Okay.

11 A: This is just showing that the -- that the wall
12 is overtopped by wave action at times.

13 Q: And that house that we saw, that's the house
14 that's located at the end of the bulkhead?

15 A: Yes.

16 **MS. PHELAN:** Your Honor, after I excise the -- the
17 Google photos and I assume the NOAA photos, I'd
18 like to mark that as Exhibit 52 and move into
19 evidence.

20 **(Respondent's Exhibit Number 52 was offered into**
21 **evidence.)**

22 **THE COURT:** It's already marked, right, or not?

23 **MS. PHELAN:** It is not.

24 **THE COURT:** Okay. Some of them said 32. I saw
25 exhibit number ---



1 **MS. PHELAN:** Well, that was because -- because --
2 they objected to the entire permit and I wasn't
3 sure I could get the entire permit in, so they
4 ---

5 **THE COURT:** Oh, okay.

6 **MS. PHELAN:** --- were pre-marked with different
7 individual exhibits.

8 **THE COURT:** Oh, so now we're going to go and --
9 we're going to go with 52.

10 **MS. PHELAN:** Yes.

11 **THE COURT:** Excise the Google Earth and any
12 objection to those? Any ---

13 **MS. LENHARDT:** No, Your Honor.

14 **THE COURT:** It's admitted.

15 **(Respondent's Exhibit Number 52 was admitted into**
16 **evidence.)**

17 **MS. PHELAN:** Thank you, Your Honor.

18 **Q:** Mr. -- Mr. Slagel, we talked a little bit -- I
19 think that you mentioned the Coastal Zone
20 Management Program document. In your review of
21 this permit, were there any other provisions
22 that you looked at in the Coastal Zone
23 Management Program document? And -- and before
24 you answer that, can you tell us what the
25 Coastal Zone Management Program document is?



1 A: Yes. The Coastal Zone Management Program
2 document was drafted when the state Coastal
3 Program came into being as the Coastal Council
4 back in 1977, that time frame. When the Federal
5 Coastal Zone Management Act became law and
6 state programs had to be reviewed and found to
7 be consistent with the federal program, that's
8 when -- the program document helped South
9 Carolina's Coastal Program become an agency
10 that was able to implement the Federal Coastal
11 Zone Management Act. So, it's a -- it's a
12 guiding document. It's -- it's -- I believe
13 it's been found in -- in court to have
14 regulatory authority for our program. And to
15 answer your question, there isn't an erosion
16 control program within the program document.
17 And I think it's worth noting that that
18 document was drafted prior to the 1988
19 Beachfront Management Act. So, there's a lot
20 more specific beachfront guidance found within
21 the later Beachfront Management Act, but there
22 are broad policies within the program document
23 that are -- that are applicable. And I know
24 that for -- for groins, the program document
25 speaks about the -- the economic impacts of --



1 of groins and whether it's a good idea or a bad
2 idea, and that economics can be considered in
3 that decision. So, for -- for Debordieu
4 Colony, I believe they have -- over 30 years,
5 they would save something like \$30 million by
6 pursuing the renourishment with groins than
7 with groin -- than with renourishment alone.
8 So -- so economics is something that we can
9 look at as we -- as we review these types of
10 applications. The program document also speaks
11 to that sometimes it is -- I forget what the
12 language is, but basically sometimes it is --
13 there -- there are locations where it makes
14 sense to include groins with renourishment to
15 help keep those sediments in place. So, the
16 program document further supports our -- our
17 permitting decision, as well.

18 Q: Okay. And did you consider South Carolina
19 statute 48-39-150 that sets forth the ten
20 general considerations?

21 A: Yes. The -- the general considerations and the
22 further guidelines, we -- we review those for
23 any permitting decision whether it's a minor
24 project or a major project, just to make sure
25 that those general considerations and further



1 guidelines also are met.

2 Q: And -- and what was your -- what was your
3 determination after reviewing the ten general
4 considerations?

5 A: Was that each -- each of those was met by this
6 project.

7 Q: At any time did the League ever submit what
8 they believed the correct erosion rates at
9 Debordieu were -- were?

10 A: I don't believe the -- the League did. I
11 believe that Dr. Young in testimony stated that
12 the threshold was too high. But he did not
13 proffer what a revised threshold should be.

14 Q: And did the League submit any modeling or data
15 during the review process?

16 A: No.

17 **MS. PHELAN:** I think that's all.

18 **THE COURT:** Do we -- you okay? If y'all are fine,
19 we'll keep on moving.

20 **MS. LENHARDT:** I have just a few.

21 **THE COURT:** Well, they're up next.

22 **MS. LENHARDT:** Oh, you ---

23 **MR. OWENS:** No questions.

24 **MS. LENHARDT:** Oh, okay.

25 **THE COURT:** Oh. Well, that made it easy.



1 MS. LENHARDT: I just have a few.

2 MR. SLAGEL - REDIRECT EXAMINATION BY MS. LENHARDT:

3 Q: Mr. Slagel, I believe you referred to
4 regulation 30-21. Do you know when that
5 regulation was originally promulgated?

6 A: Without looking at the regulation, I do not.

7 Q: Would it surprise you to know that it was in
8 the '90s?

9 A: That would not surprise me.

10 Q: Okay. And you stated, I believe, that the
11 regulation said that Debordieu Beach is highly
12 erosional?

13 A: It stated that -- that portions of Debordieu
14 Island are highly erosional.

15 Q: Right. It says the island is highly erosional
16 in areas. Do you disagree with me?

17 A: Did you -- did you read that from ---

18 Q: I did.

19 A: Okay. Then I -- then I agree with you.

20 Q: Okay. And the island includes Hobcaw -- the
21 Hobcaw property beach, correct?

22 A: It does.

23 Q: Okay. And when you -- doing your review of the
24 monuments across the state, you reviewed the
25 shoreline change -- the entire scope of the



1 shoreline changes along this -- along the coast
2 in the state, correct?

3 A: Yes.

4 Q: And that included the accretional areas, is
5 that right?

6 A: Yes.

7 Q: Okay.

8 **MS. LENHARDT:** All right. I think that's all I
9 have. Thank you.

10 **THE COURT:** All right. Any follow-up -- any follow-
11 up on those questions?

12 **MS. PHELAN:** Yes.

13 **MR. SLAGEL - RECROSS-EXAMINATION BY MS. PHELAN:**

14 Q: Is this the provision that you referred to in
15 the regulation that addressed the high erosion
16 rate at Debordieu Beach?

17 A: Yes.

18 Q: Could you read that to the Court, please?

19 A: I'm sorry. Could I read what?

20 Q: Could you read that -- that section to the
21 Court, please, on Debordieu Beach?

22 A: Yes. For Debordieu Beach, and again this is
23 from regulation 30-21, the state Beachfront
24 Management Plan. It says, Debordieu is a
25 private beach community; access is controlled



1 by a security gate; the entire beach is
2 developed and public access is non-existent.
3 The island is highly erosional in areas.
4 Assessment, very little can be done to improve
5 access to Debordieu Beach because of its
6 private enclosed status.

7 Q: And what -- what is the next section down?

8 A: The next section is labeled Baruch property,
9 parentheses, Hobcaw Barony, and it states the
10 Baruch property is used for research purposes
11 and has several miles of excellent beaches.
12 The property is undeveloped with the exception
13 of several laboratories and buildings remaining
14 from a time when the Baruch family occupied the
15 property. Public access to the beach is non-
16 existent.

17 Q: And so how did you interpret the reference to
18 the high -- highly erosional in areas? Was it
19 you ---

20 A: Since this regulation had separate headings for
21 Debordieu Beach and for Baruch properties,
22 parentheses Hobcaw Barony, I interpreted the
23 island as highly erosional in areas to refer to
24 the area north of the Hobcaw tract.

25 Q: And what, if anything -- anything, did the



1 reference to entire beach being developed play
2 into your determination?

3 A: The Hobcaw tract is -- is undeveloped, as we've
4 discussed, except for a few -- a few buildings
5 associated with laboratories and other
6 buildings. So, since it references the entire
7 beach being developed, I assumed, again, that
8 that meant Debordieu Colony.

9 MS. PHELAN: No further questions.

10 MS. LENHARDT: No questions.

11 THE COURT: All right. You may step down.

12 A: Thank you, Your Honor.

13 THE COURT: All right. It's four ---

14 MS. LENHARDT: Your Honor, at this time, we call ---

15 THE COURT: It's 4:28.

16 MS. LENHARDT: We -- Ms. Altman, who we are calling
17 should not take very long.

18 THE COURT: Okay.

19 MS. PHELAN: Your Honor, I'm -- I'm doing this
20 witness, too. Can we have five so I can ---

21 THE COURT: Okay. We'll take a five minute -- five
22 minute break.

23 MS. PHELAN: Thank you, Your Honor. I appreciate
24 that.

25 MR. OWENS: Thank you, Your Honor.



1 (Off the record from 4:27 p.m. until 4:33 p.m.)

2 **MS. LENHARDT:** Okay. We're calling Ms. Nancy
3 Altman.

4 **COURT REPORTER:** Raise your right hand, please. Do
5 you solemnly swear that the testimony you're
6 about to give in this matter is the truth, the
7 whole truth, and nothing but the truth, so help
8 you God?

9 **MS. ALTMAN:** Yes. I do.

10 **COURT REPORTER:** Thanks.

11 **MS. NANCY ALTMAN,** being first duly sworn, testifies
12 as follows:

13 **MS. ALTMAN - DIRECT EXAMINATION BY MS. LENHARDT:**

14 Q: Good afternoon, Ms. Altman.

15 A: Good.

16 Q: Do you -- do you reside in Debordieu Colony?

17 A: Part-time. I have a -- a beach house in
18 Debordieu.

19 Q: And that is -- is that a -- your family
20 property?

21 A: Yeah, it's a family property.

22 Q: How long has it been in your family?

23 A: Since 1972.

24 Q: And have you spent time there -- how long over
25 the course of the years have you spent time



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1 there?

2 A: Every -- from since I was six, every summer
3 until recently now, it's probably three or four
4 months out of the year.

5 Q: Okay. And you've -- you've spent time there
6 recently within the last year?

7 A: Yeah.

8 Q: Okay. And are you a member of the Coastal
9 Conservation League?

10 A: Yes.

11 Q: And so, do -- when you are spending time at
12 your property in Debordieu Colony, do you go to
13 Debordieu Beach?

14 A: Yes.

15 Q: And how often when you're there do you visit --
16 -

17 A: When I'm there, probably daily or, you know,
18 three times a week. But if I'm there, you
19 know, I'll try to every day.

20 Q: And what kind of activities do you undertake
21 when you're at the beach?

22 A: Usually walking.

23 Q: And do you have any dogs?

24 A: Yes.

25 Q: Do you take your dogs ---



1 A: A few.

2 Q: Take your dogs ---

3 A: Yep.

4 Q: --- with you?

5 A: Yes.

6 Q: Okay. And then also do you have occasion to
7 walk along Hobcaw?

8 A: Yes. That's mainly where I like to walk just
9 because having the dogs it makes it a lot
10 easier.

11 Q: Okay. Now, you are familiar with the permit
12 that brings us here today?

13 A: Yes.

14 Q: Okay. And what kind of concerns do you have as
15 a resident of Debordieu Colony about the
16 proposal?

17 A: I feel that the structures might impede for
18 people to recreate on the beach, that's walking
19 or biking, and be able to access the beach
20 properly.

21 Q: And why is that? What part of it ---

22 A: Probably the -- the main structures of the
23 groins.

24 Q: Okay. What -- so is it -- it just -- are your
25 concerns limited to your ability to -- to walk



1 and recreate? Are there any other concerns
2 that you have about being able to use the
3 beach?

4 A: Probably, for me, my standpoint, it would just
5 be walking or riding the bike or walking on the
6 beach.

7 Q: Okay.

8 **MS. LENHARDT:** Okay. I think that's all I have.

9 A: Okay.

10 **THE COURT:** You're a woman of your word.

11 **MS. PHELAN:** I have just a few.

12 **MS. ALTMAN - CROSS-EXAMINATION BY MS. PHELAN:**

13 Q: Good afternoon, Ms. Altman.

14 A: Hi.

15 Q: I -- I believe at the time that you were
16 deposed, you said that you access the beach
17 property from a north access and would walk
18 north, which is not -- where the groin project
19 is located, is that correct?

20 A: No. I can access it from two spots. From
21 northern or I mostly go on the southern end
22 where the bulkhead ends.

23 Q: Right.

24 A: That's where I mainly access the beach.

25 Q: Right. So, on the -- so, you would -- you



1 could -- you would access the beach at the
2 northern access and at the southern access?

3 A: Yes. I have those two choices.

4 Q: And you're -- you are concerned that your
5 access would be impeded at the southern access?

6 A: Yes. That's correct.

7 Q: Are you aware with the amended permit that the
8 groin is no longer located at the southern
9 access?

10 A: I don't know actually where it had been moved.
11 I'm not aware of that location.

12 Q: Okay. And at the time of your -- your
13 deposition, you weren't aware of how high or
14 how long the groins were?

15 A: That's correct.

16 Q: And at high tide now, you can't walk near the
17 bulkhead; is that correct?

18 A: Correct.

19 **MS. PHELAN:** No further questions.

20 **MR. OWENS:** Nothing, Your Honor.

21 **MS. LENHARDT:** Nothing.

22 **THE COURT:** You may step down.

23 **CONCLUDING MATTERS:**

24 **MS. LENHARDT:** So, Your Honor, that's -- those --
25 those are all the witnesses we're prepared to



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1 present today. I would ask -- I haven't -- I
2 haven't consulted with anybody else, but I
3 would ask the Court to consider starting at --
4 earlier in the morning since ---

5 **THE COURT:** Got it.

6 **MS. LENHARDT:** --- everybody's going to -- I think
7 everybody's here, staying here.

8 **THE COURT:** Okay. I can start early.

9 **MR. OWENS:** I think that's good with us.

10 **MR. GREEN:** What time are you proposing?

11 **MS. LENHARDT:** Like 9:00.

12 **THE COURT:** I get here at 8:00 or ---

13 **MS. PHELAN:** I think 9:00.

14 **THE COURT:** --- at 7:45.

15 **MR. GREEN:** 9:00 is good with us, Your Honor.

16 **THE COURT:** Oh, are you good? Okay.

17 **MR. OWENS:** She's the most important person in the
18 room.

19 **THE COURT:** Right. Yeah. Oh, thanks a lot.

20 **MR. OWENS:** That's what my judge used to say.

21 **THE COURT:** 9:00 o'clock.

22 **MS. LENHARDT:** Yes.

23 **THE COURT:** So ---

24 **MS. LENHARDT:** That'd be wonderful.

25 **THE COURT:** Okay. At least I can do something

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1 wonderful today. All right. Well, let's --
2 see y'all tomorrow at 9:00.

3 **(Day One of the hearing adjourned at 4:40 p.m. and**
4 **reconvened at 9:02 a.m. on August 25, 2020)**

5 **DAY TWO - TUESDAY, AUGUST 25, 2020**

6 **CALL TO ORDER:**

7 **COURT REPORTER:** All rise.

8 **THE COURT:** Be seated. Thank you. All righty.

9 **MR. CUNNINGHAM:** May I, Your Honor?

10 **THE COURT:** You may.

11 **MR. CUNNINGHAM:** Thank you. Petitioner calls Dr.
12 Rob Young to the stand.

13 **THE COURT:** Doctor what?

14 **MR. CUNNINGHAM:** Rob Young.

15 **THE COURT:** Oh, Rob Young. Okay.

16 **COURT REPORTER:** Raise your right hand, please. Do
17 you solemnly swear that the testimony you're
18 about to give in this matter is the truth, the
19 whole truth, and nothing but the truth, so help
20 you God?

21 **DR. YOUNG:** Yes, ma'am. I do.

22 **COURT REPORTER:** Thank you.

23 **DR. ROBERT YOUNG,** having been duly sworn, testifies
24 as follows:

25 **DR. YOUNG - DIRECT EXAMINATION BY MR. CUNNINGHAM:**

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1 Q: Good morning, Dr. Young. How are you today?

2 A: I'm good. How are you?

3 Q: I'm all right. How are you employed?

4 A: Western Carolina University.

5 Q: And what do you do at Western Carolina
6 University?

7 A: I'm the director of the program for the study
8 of developed shorelines and professor of
9 coastal geology.

10 Q: All right. What kind of ---

11 **THE COURT:** Western Carolina is up in the mountains,
12 right?

13 A: Yes, sir.

14 **THE COURT:** Okay.

15 A: We are technically a Duke -- joint Duke
16 University, Western Carolina University Center.

17 **THE COURT:** I just think it's interesting that
18 you're up in the mountains and you're
19 specializing in the coastline.

20 A: It's -- it's nice and cool up there.

21 **THE COURT:** Yeah.

22 Q: Despite your location, do you get down to the
23 coast a lot to do your work?

24 A: Yes, sir.

25 Q: Can you give me a brief description of what



1 kind of education background you have?

2 A: I have a Bachelor's in Geology from the College
3 of William and Mary. I have a Master's degree
4 in quaternary studies, which is really the last
5 most recent geological pass from the University
6 of Maine. And I have a Ph.D. in Coastal
7 Geology from Duke.

8 Q: What was your dissertation for your Ph.D.?

9 A: Looking at how wetlands and estuaries and the
10 coast in eastern North Carolina responds to
11 rising sea level in storms.

12 Q: You mentioned that you're the director of the
13 program for the study of developed shorelines.
14 What does that -- what do your duties entail in
15 that role?

16 A: We are a center that does both science and
17 policy, so we do basic research on coastal
18 processes, storm impacts, coastal erosion,
19 coastal restoration projects, coastal
20 engineering projects. And then we communicate
21 that science to decision makers and the public
22 at all levels. So, everything from individual
23 property owners, property owners associations,
24 municipalities, state government, federal
25 government, and -- and the general public.



1 Q: Have you provided testimony to any legislative
2 bodies?

3 A: I have.

4 Q: Such as?

5 A: Here in the State of South Carolina, State of
6 North Carolina, State of Florida, federal
7 government, Congress.

8 Q: Now, you mentioned research that the program
9 for the study of developed shoreline conducts.
10 Where in the country is that research
11 conducted?

12 A: Well, we -- we are a national, international
13 level center. So, despite being unusually
14 located in the mountains in North Carolina and
15 not being on the coast, really we're -- we work
16 from California, Alaska, Hawaii, in addition to
17 the southeast. I probably work in the State of
18 South Carolina more than I work any place else.
19 It's actually a shorter drive for me down here
20 than it is to the coast of North Carolina.
21 North Carolina's a little bit of a long state.
22 But we work all over the place.

23 Q: Have you had any involvement in developing
24 coastal policies related to South Carolina
25 beachfront management?



1 A: I was appointed to serve on South Carolina's
2 Blue Ribbon Committee on Shoreline Change; I'm
3 currently a member of the Governor's Flood
4 Water Commission here in the State of South
5 Carolina.

6 Q: And did the Governor appoint you to that
7 Commission?

8 A: The Governor did, yes.

9 Q: All right. With respect to the Blue Ribbon
10 Committee for Shoreline Change, what did your
11 work on the committee entail?

12 A: Well, we on the 25th anniversary of the
13 Beachfront Management Act, the committee, which
14 is made up of largely a group of legislators
15 and municipal officials, I believe I was the
16 only scientist on that -- in that group, we
17 were charged with reevaluating the Beachfront
18 Management Act in light of the changes that
19 occurred over the last 25 years and to make
20 recommendations to the legislature for updates.

21 Q: All right. And did any of your work on that
22 committee involve groins?

23 A: We did discuss groins, yes.

24 Q: And what sort of discussions did you have on
25 the committee related to groins?



1 A: I believe that the committee's final
2 recommendation on groins was that DHEC should
3 commission a study that would sort of examine
4 where it's good to use them and where it's not
5 for the State of South Carolina. I can't
6 remember if the -- the legislature was going to
7 be charged with requesting that or not, but
8 anyway, that -- that recommendation I don't
9 believe was ever acted upon.

10 Q: Are you familiar with the South Carolina
11 Beachfront Management Act?

12 A: I am.

13 Q: Are you familiar with the policies related to
14 that Act?

15 A: Yes.

16 Q: Are you familiar with the Coastal Zone
17 Management Program?

18 A: Yes.

19 Q: And the policies in that program document?

20 A: Yes.

21 Q: All right. Have you been involved in any Army
22 Corps of Engineer evaluation of permits?

23 A: We evaluate Army Corps of Engineer projects,
24 design projects, as a matter of course. One of
25 the primary things we do at our center is when



1 there are folks, groups, property owners,
2 associations, interested parties that don't
3 have the expertise to evaluate proposed coastal
4 engineering design, we're quite frequently
5 asked to sort of do that for them and give them
6 an object- -- objective scientific evaluation
7 of that design. So, we evaluate Corps projects
8 all the time. And one of the stranger things
9 that we do is we maintain a national database
10 of beach nourishment projects. So, we track
11 every single beach nourishment project in the
12 country. The vast majority of those are Corps
13 projects. But some of them are private
14 projects like the projects that have occurred
15 in Debordieu. So, we -- we have an online
16 database that tracks all of those projects.

17 Q: Have you or your organization been involved in
18 a vulnerability assessment for national parks
19 of the United States?

20 A: The -- the primary project that we have going
21 on right now is we've been funded for the last
22 six years by the National Park Service to
23 develop the protocol that they use to assess
24 the vulnerability to storms, coastal erosion,
25 every single asset in every coastal park in



1 America. So, that's about 108 parks. And so,
2 we are scoring the vulnerability to the next
3 storm of everything from the Statue of Liberty
4 to an outhouse in Sitka, Alaska. That
5 includes Fort Sumter here in South Carolina.
6 Yes, it's been a very big project. We -- we've
7 completed about 25 parks. We're currently
8 funded to do about 20 more, and yeah.

9 Q: Do you have any professional licences?

10 A: I'm a licenced professional geologist in the
11 State of South Carolina, and also in North
12 Carolina, and Florida.

13 Q: Are you a member of any professional
14 associations?

15 A: Yeah. Uh-huh. A lot. But I'm a member of the
16 Geological Society of America, and I'm on the
17 board of the Journal of Coastal Research.

18 Q: And have you published any peer review
19 literature in coastal geology?

20 A: Yes. Extensively.

21 Q: All right. I'd like to direct your attention
22 to Exhibit 55 in the Petitioner's Exhibit book
23 right in front of you. Have you ever seen
24 Exhibit 55 before?

25 **(Petitioner's Exhibit Number 55 was introduced into**



1 **the record.)**

2 A: Yes.

3 Q: And what is that document?

4 A: It's my abbreviated CV.

5 Q: All right. Did you author that document?

6 A: Yes.

7 Q: And does it fairly and accurately portray your
8 professional and educational experience in the
9 field of coastal geology?

10 A: Yes. There might be a couple of recent
11 updates, but for -- for the most part, yes.

12 **MR. CUNNINGHAM:** All right. We'd offer Exhibit 55
13 into evidence at this time, Judge.

14 **(Petitioner's Exhibit Number 55 was offered into**
15 **evidence.)**

16 **MR. GREEN:** No objection, Your Honor.

17 **MS. PHELAN:** No objection.

18 **THE COURT:** Just where I can be clear.

19 **MR. CUNNINGHAM:** yes, Your Honor.

20 **THE COURT:** When they offer CVs into evidence, are
21 y'all going to make hearsay objections?

22 **MR. CUNNINGHAM:** No, Your Honor.

23 **THE COURT:** Because I've been -- I've done all the
24 research on that now and I just want to know
25 which was we're going to go because I'm going



1 to go one way or the other.

2 **MR. CUNNINGHAM:** No, Judge. I don't anticipate that
3 being an issue.

4 **THE COURT:** All right. Well, then it's admitted.
5 **(Petitioner's Exhibit Number 55 was admitted into**
6 **evidence.)**

7 Q: All right. Have you ever been qualified as an
8 expert witness in South Carolina before?

9 A: I have.

10 Q: All right. And do you know approximately how
11 often you've been qualified as expert witness
12 in South Carolina?

13 A: Three times, I believe.

14 Q: All right. And do you recall what areas you
15 were ---

16 **THE COURT:** How many times?

17 A: Three, sir.

18 **THE COURT:** Okay.

19 Q: Do you recall what areas you were qualified to
20 offer expert testimony in South Carolina?

21 A: Coastal geology, coastal engineering, and
22 coastal management.

23 Q: Were you ever qualified to offer opinions on
24 coastal zone management policies?

25 A: Yes.



1 Q: All right.

2 **DR. YOUNG OFFERED AS AN EXPERT WITNESS:**

3 **MR. CUNNINGHAM:** Judge, we, at this time, offer Dr.
4 Young as an expert in the fields of coastal
5 geology, coastal processes and coastal zone
6 management policies.

7 **THE COURT:** Okay. Go ahead.

8 **MR. GREEN:** We -- we -- I'm sorry. Would you repeat
9 that?

10 **MR. CUNNINGHAM:** Sure. Coastal geology, coastal
11 processes and coastal zone management policies.

12 **MR. GREEN:** Your Honor, I don't have any objection
13 to Dr. Young's qualifications and I don't have
14 any objection I think to the first two. I'm
15 not sure ---

16 **THE COURT:** Yeah.

17 **MR. GREEN:** --- how the policies will be helpful to
18 the finder of fact.

19 **THE COURT:** Had a fee- -- had a feeling you were
20 going to go there. I tell you what I'm going
21 to do. I'll qualify him in that area.

22 **MR. CUNNINGHAM:** Okay.

23 **THE COURT:** I'll hear from you, but to me he's
24 qualified.

25 **MR. CUNNINGHAM:** Thank you, Judge.



1 **THE COURT:** Now, whether that testimony is going to
2 be admitted is a completely different story.

3 **MR. CUNNINGHAM:** I understand, Your Honor.

4 **THE COURT:** So, is that ---

5 **MS. PHELAN:** Yes. I -- I agree with Mr. Green.

6 **THE COURT:** Okay.

7 **MR. GREEN:** Thank you, Your Honor.

8 **Q:** All right. Dr. Young, I'd like you from this
9 point forward, when you offer opinions only
10 offer opinions to a reasonable degree of
11 scientific certainty, is that okay?

12 **A:** Yes, sir.

13 **Q:** And will you only offer opinions that meet that
14 threshold?

15 **A:** Yes.

16 **Q:** All right. Now, are you familiar with, in
17 general, the coastal processes that are at work
18 along the South Carolina coast?

19 **A:** I am.

20 **Q:** Can you describe what those are?

21 **A:** Well, we could teach a course on that, of
22 course. So, I'll try -- I'll be brief. The
23 coast of South Carolina changes from basically
24 a mainland shoreline around the Grand Strands
25 to a barrier island shoreline as you move



1 towards the south. Tidal influence has become
2 more important as you move south. It's -- the
3 coastal setting matters. There's a lot of
4 variability. It's a beautiful place. I'd love
5 to live down here some day.

6 Q: Can you describe to me, generally, the
7 characteristics of barrier islands along the
8 South Carolina coast?

9 A: Barrier islands are any coastal island that is
10 separated from the mainland, either by marsh or
11 an open body of water. They are very dynamic
12 places, shaped by storms and tides, and, you
13 know, we have some in South Carolina that are
14 -- right now that are eroding and changing very
15 rapidly, and some that are larger and more
16 stable. But in -- you know, in general, these
17 are the front lines of defense in coastal South
18 Carolina from storms and they're very important
19 in that the barrier islands serve the function
20 of separating the open ocean energy from the
21 spartina marshes and the estuaries behind them.
22 If we didn't have those barrier islands, we
23 wouldn't have those big, beautiful marshes.

24 Q: Are you familiar with Debordieu Island?

25 A: I am.



1 Q: And can you describe for me your familiarity
2 with that, please?

3 A: Well, I have visited Debordieu a few times,
4 probably not as many times as I have other
5 places in South Carolina because the public
6 access is not easily available in Debordieu.
7 I take regular field trips with students up and
8 down the coast of South Carolina. We have
9 visited Debordieu a couple of times, especially
10 to walk out onto the spit to the south and the
11 Baruch property. We also regularly do coastal
12 flights to -- where we publish the imagery
13 online, so I've flown over Debordieu more times
14 than I've probably visited the area. And we
15 were also involved in -- to a degree, in the
16 last time that Debordieu applied for permits to
17 build groins along with the beach nourishment
18 project. My center did sort of an economic
19 evaluation of the cost versus benefits of
20 building those groins that was -- it wasn't a
21 part of any court proceeding. It was simply
22 informational that some members of the
23 community used when they were considering
24 whether or not to vote to support funding the
25 groins in the previous project.



1 Q: And by previous project, you mean the permit
2 application that was submitted earlier than the
3 permit applications we're here about today?

4 A: That's correct. Not this one.

5 Q: And are you -- do you know whether or not
6 Debordieu Island is a barrier island?

7 A: It is. Yes.

8 Q: Have you tracked the beach nourishment at
9 Debordieu Island?

10 A: The beach nourishment projects at Debordieu are
11 in our database. Yes.

12 Q: And do you recall approximately what the
13 interval is on the beach nourishment projects
14 that have occurred at Debordieu Island?

15 A: About eight years.

16 Q: Eight years. Is there a bulkhead on Debordieu
17 Island?

18 A: There is.

19 Q: Can you describe for the Court what the purpose
20 is of a groin?

21 A: The -- a groin is a short perpendicular
22 structure, not a short parallel structure. And
23 the -- you build a groin because you want to
24 reduce the amount of sediment that's flowing
25 along the shore. Every beach has sediment that



1 moves in two directions. There's some that
2 goes onshore and offshore. During storms,
3 especially, makes sand bars offshore and then
4 can come back on. And then there's some sand
5 that's moving along the shore, and the sand
6 moves along the shore if the waves are coming
7 in at any kind of an angle with the beach.
8 Just common sense. If the waves are coming in
9 like this, then they move the sand down the
10 beach in this direction. In the State of South
11 Carolina, the primary direction of transport is
12 from north to south, and that's because the
13 primary direction on average over the long-term
14 of the waves is pushing that sand from north to
15 south. You build a groin when you want to hold
16 sand in one place on the updrift side of that
17 long shore sediment transport. That's the job
18 of a groin. And the problem with constructing
19 a structure like this is that any sand that
20 you're holding on this one side was on its way
21 some place. And so, if you halt that movement
22 of sand -- and I don't think anybody's gong to
23 dispute this. This is not controversial. This
24 is in the United States Army Corps of Engineers
25 Coastal Construction Manual. But if you halt



1 that flow of sand, you're going to cause a
2 deficit of sand on the other side of the groin.
3 You can try to make the groin a little bit more
4 permeable is the word that the engineers would
5 use, so that it's not stopping 100 percent of
6 the sand. But no groin is going to be 100
7 percent permeable or you've wasted your money
8 building the groin. So, you know, we all have
9 to understand that the job of a groin is to
10 slow up long shore sediment transport, hold
11 sand on one side, and that will reduce the
12 amount of sand that is continuing to travel
13 down the coast.

14 Q: Have you reviewed the permits that are at issue
15 in this proceeding?

16 A: I have.

17 Q: All right. Do you recall whether or not the
18 groins that are proposed in those permits are
19 permeable or not?

20 A: I think -- I think that there is an effort to
21 reduce the -- the trapping capacity to a degree
22 and to make them sort of semi low profile and
23 a little bit more permeable, but -- but as I
24 said before, no groin is either 100 percent
25 permeable or extremely permeable or you've



1 wasted your money constructing the groin.

2 Q: Have you reviewed any other materials related
3 to the permits that are at issue here?

4 A: Mostly, I've relied on my professional
5 experience, but I have reviewed information
6 related to South Carolina erosion rates.
7 Shoreline change rates I should say. Yeah. I
8 think that's ---

9 Q: Have you reviewed the downdrift impacts
10 analysis that was submitted in conjunction with
11 this permit application?

12 A: Oh. I hear you. You said permit. I was
13 thinking of the whole project.

14 Q: No.

15 A: Yes. Yes. I -- I did review the downdrift
16 impacts analysis. Sorry. I misunderstood your
17 initial question.

18 Q: No. No. No problem. And did you look at the
19 supplemental alternatives analysis?

20 A: Yes.

21 Q: And I believe you just mentioned you reviewed
22 some erosion or shoreline change rate
23 information related to South Carolina, is that
24 correct?

25 A: Yes.



1 Q: Have you reviewed shoreline change rate related
2 to the shoreline at Debordieu Island?

3 A: Yes.

4 Q: All right. Let me ask you a few questions
5 about high erosion rates. In your opinion to
6 a reasonable degree of professional certainty
7 and scientific certainty, for the permits that
8 are issued that are the subject of this
9 proceeding which allow for the construction of
10 new groins on Debordieu Island, are they
11 consistent with the Beachfront Management Act's
12 requirement that new groins be only permitted
13 in beaches with high erosion rates?

14 A: No.

15 Q: And what is that basis of that opinion?

16 A: I don't believe that the section of shoreline
17 at Debordieu Colony is experiencing a high rate
18 of erosion.

19 Q: And how would you characterize erosion rates
20 for the South Carolina coast, vis-a-vis low,
21 medium, high or however you would like to
22 characterize it?

23 A: Well, South Carolina is -- is interesting and
24 unique in that there are areas of the coast
25 that are actually growing. That's not



1 happening in many places in the United States
2 of America. So, you have some barrier islands
3 like Kiawah and the center of Fripp Island and
4 even Sullivan's where there's what we would
5 call accretion, where the shoreline is growing.
6 And that's pretty unusual. We also have places
7 in South Carolina that are eroding gang
8 busters, faster than just about any place else
9 that you'll see, outside of Louisiana, which
10 has the highest rate of coastal land loss in
11 the country. And, you know, these are places
12 like Hunting Island and Pritchards Island, you
13 know, Folly, that have erosion rates that
14 approach 15, 20 feet a year. Places that
15 clearly have very high rates of erosion. And
16 then there's portions of the state that sit
17 somewhere there in the middle, you know, where
18 the sort of a moderate erosion rate or an
19 average erosion rate for the state would be
20 around six to seven feet per year.

21 Q: And are there any materials on which you base
22 your opinions with respect to the
23 characterization of erosion rates along the
24 South Carolina coast?

25 A: Well, so the -- the qualitative assessment that



1 I just gave you is based largely on my
2 experience working in almost all of these
3 communities. You know, I -- I think if you've
4 got a room full of coastal managers and coastal
5 scientists and ask them, they would certain --
6 we'd all name the same erosion hot spots. And
7 if it was out of this context, I don't think
8 anybody is going to name Debordieu as a high
9 erosion hot area of concern in the State of
10 South Carolina, outside of the context like
11 this. But I've also -- you know, I've -- when
12 we're self-determining rates of coastal erosion
13 for our national park services vulnerability
14 assessment work that we do nationwide, I always
15 look at the United States Geological Surveys,
16 National Shoreline Change Database. I examine
17 that and I have looked at DHEC's own online
18 information on their Coastal Hazard
19 Vulnerability Assessment website, which I
20 believe reflects the data from Chester
21 Jackson's shoreline change assessment for the
22 State of South Carolina that DHEC funded.

23 Q: Let's see. With respect to the Coastal Hazard
24 Vulnerability Assessment that you looked at
25 that DHEC has put out on its website, how did



1 that impact, if any, your opinion for the state
2 high erosion rate?

3 A: It certainly -- it didn't -- it confirmed my
4 basic opinion. The area of the Colony on that
5 website is shown as being moderate to low. The
6 only place on the entire area of Debordieu
7 Island that is shown as having a higher rate of
8 erosion is the very south end, the Barony
9 property. And of course, the groins aren't
10 being designed to protect that particular area.

11 Q: And you mentioned a study that Professor
12 Chester Jackson or Dr. Chester Jackson prepared
13 at the behest of DHEC. I want to direct your
14 attention to I believe it's Exhibit 76 at the
15 back of that packet.

16 A: It must be a different number ---

17 Q: No.

18 **MS. PHELAN:** It's not here.

19 Q: Is it not in there? Well, let me just hold
20 that up to you. Do you recognize this
21 document?

22 A: Yeah. That appears to be Dr. Jackson's
23 assessment of shoreline origin in the State of
24 South Carolina.

25 Q: Are you familiar with Dr. Chester Jackson?



1 A: I am. He was one of the students of a very
2 close colleague of mine, David Bush, in -- down
3 in Georgia. I've known C.J. for a long time and
4 his -- his work is being used in multiple
5 states because the approach that he's developed
6 to examining shoreline change rates is state of
7 the art. So, in North Carolina, his program
8 Amber is being used to update shoreline change
9 rates in the State of North Carolina,
10 particularly, in inlet areas where there's
11 curved shorelines. It's being used in Georgia.
12 It's being used in Florida. So, I was actually
13 happy to see that DHEC had engaged Dr. Jackson
14 to provide them with sort of a -- an objective
15 outside perspective on shoreline change in the
16 state.

17 Q: You mentioned Dr. Jackson's Amber data, is that
18 in use in South Carolina to your knowledge by
19 DHEC?

20 A: It is on their public facing website on the
21 Coastal Hazard Vulnerability Assessment GIS
22 database. So, it's very clear that DHEC wants
23 the public to utilize that information because
24 it's there and I know a lot of people that go
25 look at that website.



1 **OBJECTION:**

2 **MR. GREEN:** Objection to characterization very clear
3 of what DHEC wants.

4 **MS. PHELAN:** Same objection.

5 **MR. CUNNINGHAM:** Oh, well I believe he said it's --
6 it's available for the public. I don't think
7 that's a characterization. Beyond that, I'll
8 ---

9 **THE COURT:** I ---

10 **MR. CUNNINGHAM:** --- that's fine.

11 **THE COURT:** As I heard it, I sustain the objection
12 to strike it. Now, if you want to clear it up,
13 you're more than welcome to do that, but I --
14 I think he was seeking to the subjective
15 perspective of DHEC.

16 **MR. CUNNINGHAM:** I agree, Judge. And I will clear
17 that up.

18 **THE COURT:** Okay.

19 Q: Dr. Young, is the Amber data that DHEC has
20 incorporated on its website available for the
21 public to view?

22 A: It is available for the public to view and I
23 know many people who do view it and utilize it.

24 Q: Now, do you rely with respect to forming your
25 expert opinions in this matter on Professor



1 Jackson's work in this study entitled Mapping
2 Coastal Erosion Hazards Along Shelter and
3 Coastlines in South Carolina, 1849 to 2015?

4 A: It is in part something that I have considered
5 in drawing my conclusions, yes.

6 Q: All right. Do you find that Dr. Jackson's
7 study reliable?

8 A: Yes.

9 Q: Now, do you have opinion about what the mean
10 erosion rate is for the South Carolina coast?

11 A: Well, that particular study places the mean
12 erosion rate at just slightly over 2 meters,
13 2.2, 2.4 meters per year as the mean erosion
14 rate for the South Carolina coast. And so,
15 we're talking, Your Honor, you know, six to
16 seven feet and that includes areas of the
17 shoreline that are accreting or growing. So,
18 if you just looked at the mean erosion rate for
19 places that are actually retreating, it would
20 be even a little bit higher. So, you know, to
21 my knowledge, that is the most recent
22 assessment of the shoreline change rates that
23 would give us anything that's close to the
24 ability to answer the question, you know,
25 what's the average erosion rate for the South



1 Carolina coast.

2 **MR. GREEN:** Your Honor, I object to this line of
3 testimony. Dr. Young, who, again, is very
4 knowledge -- but Dr Young is attempting to use
5 a study that he did not prepare to support an
6 analysis that he did not render with respect to
7 what an erosion rate in South Carolina is.
8 He's -- he is certainly entitled to give
9 opinion testimony, but he is -- we submit, Your
10 Honor, he is not entitled to start opining as
11 to what an erosion rate is for Debordieu or --
12 and -- and without having done some analysis
13 with respect to that. And so, I object to this
14 line of testimony.

15 **THE COURT:** Well, you qual- -- you -- you didn't
16 object to his qualifications as an expert in
17 coastal geology. And then, the other was
18 matter ---

19 **MR. CUNNINGHAM:** Coastal processes, coastal geology
20 and ---

21 **THE COURT:** Yeah.

22 **MR. GREEN:** Coastal engineering.

23 **THE COURT:** Right.

24 **MR. GREEN:** That's right.

25 **THE COURT:** Yeah.



1 **MR. GREEN:** That's right; I didn't.

2 **THE COURT:** The policy part, I don't -- we'll see
3 about whether we'll go into that, but my
4 problem about your objection is I think he's an
5 expert, then he can rely upon learned
6 treatises. They're not going to get it in, but
7 he can rely upon them. So -- and he's relying
8 upon that treatise to come up with an opinion
9 as to the mean. Now, y'all may have a
10 different perspective on that, but I ---

11 **MR. GREEN:** And I understand what you're saying,
12 Your Honor, but I would submit that what he's
13 trying to do is to get the report in by just
14 simply repeating what it says without having
15 done any independent analysis or having done
16 that analysis frankly.

17 **THE COURT:** Well, then that go ---

18 **MR. GREEN:** And so that's why I submit he's not
19 entitled to do that.

20 **THE COURT:** Well, that goes to the weight.

21 **MR. GREEN:** Okay.

22 **THE COURT:** I would say.

23 **MR. GREEN:** Okay.

24 **THE COURT:** I'll -- and he can publish it, but he --
25 he can't indirectly get it in, so -- once we



1 get down that path, we'll see. Are you
2 participating in this or not?

3 **MS. PHELAN:** Your Honor, I share Mr. Green's
4 concerns and I -- I'm trying to see where this
5 goes. Obviously, it's a hearsay, but as an
6 expert, he can rely on it and I have questions
7 about the relevancy of this report.

8 **THE COURT:** Okay.

9 **MS. PHELAN:** It's ---

10 **THE COURT:** Well, now the relevancy I'll hear. What
11 -- what do you -- what's your question about
12 relevancy?

13 **MS. PHELAN:** Well, the report is related to shelter
14 coastlines in South Carolina and we are --
15 Debordieu is not a shelter coastline.

16 **MR. CUNNINGHAM:** I can clear that up, Judge.

17 **THE COURT:** Okay.

18 A: There's the report, Dr. Young, contain mean
19 erosion rates for the coast of South Carolina?

20 A: The -- the report contains me- -- erosion rates
21 for the estuarine shoreline and the ocean
22 shoreline. The open ocean shoreline for the
23 State of South Carolina. And, you know, that
24 information was made available -- the
25 individual information in the report was made



1 available by DHEC on their GIS website
2 including the individual segments where there
3 is shoreline change there. The -- the mean
4 average erosion rate that I quoted from the
5 report is not rocket science. It's simply
6 taking each one of those shoreline segments
7 that's available on the DHEC website and
8 averaging them. So, this is not something that
9 is -- you know, this is -- you learn this in
10 eighth grade. That's what was done in that
11 report.

12 Q: All right. Now, you've seen the permits in
13 this matter, correct? Both of them?

14 A: Yes.

15 Q: And you have an understanding about where the
16 groins are proposed to go in?

17 A: Yes.

18 Q: All right. Now, do you have opinion -- well,
19 let me ask you this. Are you familiar with the
20 downdrift impact erosion rate for Reach 3?

21 A: I can't remember what reach is which.

22 Q: Reach 3 is the project area.

23 A: Okay.

24 Q: All right. And does -4.2 cubic yards per foot
25 per year ring a bell for the erosion rate for



1 Reach 3?

2 A: I believe that's correct.

3 Q: All right. Do you have an opinion about
4 whether -4.2 cubic yards per foot per year is
5 a high erosion rate in South Carolina?

6 A: So, one of the things that's going to make this
7 a little bit confusing for the Court, of
8 course, is that you just gave me a volume
9 change, not a shoreline change rate. And so,
10 it's -- it's a little bit complicated to
11 convert that directly to the other number that
12 I just quoting, which is an actual shoreline
13 change rate. So ---

14 **THE COURT:** When you say change rate, you mean
15 percentage?

16 A: No -- so, there's two ways ---

17 **THE COURT:** Well, here, let me -- you can back up on
18 that.

19 A: Yes, sir.

20 **THE COURT:** Is the premise upon which your -- your
21 expert testimony is based from what I can
22 perceive at this point is that high erosion
23 rates are determined based on mean. Is that
24 correct? That seems to be where you're going.
25 I -- I just want to be clear.



1 A: I guess my position, Judge, would be that you
2 cannot have a perspective as to what a high
3 erosion rate would be without having an
4 understanding of what the average erosion rate
5 is in the state of South Carolina.

6 **THE COURT:** All right. So, then ---

7 A: And ---

8 **THE COURT:** Well, understanding is one thing; the
9 premise is another. So, that's what I'm trying
10 to figure out, where are we going on your --
11 your logical process in reaching what is a high
12 erosion rate?

13 A: It -- it is that -- the erosion rates for the
14 project area fall well within this average that
15 I just quoted, and would not be categorized as
16 high in the State of South Carolina.

17 **THE COURT:** So, then that takes me back to that is
18 the premise upon which your expert -- your
19 expert opinion is based.

20 **MR. CUNNINGHAM:** Your Honor, I think I can clear
21 this up with one question.

22 **THE COURT:** Okay.

23 **MR. CUNNINGHAM:** And I think he already has stated
24 earlier that his opinion is related to what --
25 how he'd characterize a high erosion in South



1 Carolina based on his own experience, his own
2 understanding ---

3 **THE COURT:** Well, that's what I'm trying to figure
4 out.

5 **MR. CUNNINGHAM:** --- various shorelines, and included
6 with all of that, also an understanding of what
7 the average is because average helps inform --
8 okay, we've got over here, these are really
9 high, over here we've got the average, and then
10 there's some low. And then -- and how I am
11 going to characterize this erosion rate, I've
12 got to understand all of these things.

13 **THE COURT:** Okay.

14 **MR. CUNNINGHAM:** And I think that's what he's
15 testified to. But I'll -- I'll clear that up
16 right now.

17 **THE COURT:** Well, having given him all this
18 information, I imagine it's going to be pretty
19 easy.

20 **MS. PHELAN:** I object to leading.

21 **MR. GREEN:** We could swear in Mr. Cunningham.

22 **THE COURT:** If ---

23 **MR. CUNNINGHAM:** I'm ready, Your Honor.

24 **THE COURT:** If speaking objections were not
25 permitted, that would be even a higher level



1 than that. But I'll let you get away with
2 that.

3 **MR. CUNNINGHAM:** Well, Your Honor, the only reason I
4 said it is because he's already testified to
5 that.

6 **THE COURT:** Yeah.

7 **MR. CUNNINGHAM:** So.

8 **Q:** Dr. Young, can you explain to the Court and
9 everyone, on what -- what the bases are of your
10 characterization of the erosion rate in South
11 Carolina as high, medium or low?

12 **A:** I think as I said earlier. I started with sort
13 of a qualitative description of how one would
14 evaluate erosion rates in the State of South
15 Carolina. Anybody who has a long experience in
16 the state, and there are clearly shorelines
17 that when you walk up to them, there are trees
18 falling over in the ocean, the forest is dying,
19 very rapid high erosion rate shorelines. And
20 you know, again, these are places like Hunting
21 Island, Pritchards Island, where the -- where
22 the University of South Carolina Beaufort's
23 marine lab has gone to sea at Pritchards
24 Island, literally. At Folly Beach, where
25 you've got Harbor Island, where there are



1 houses that are sitting in the ocean. So, you
2 know, one basis for my experience on this is
3 just this qualitative experience, 25, 30 years
4 here in the State of South Carolina. The
5 second one is to try and quantitate look at --
6 take a more quantitative approach and while I
7 have not done a statewide coastal erosion
8 assessment myself, as a professional coastal
9 geologist, what I would typically do is look at
10 variety -- a variety of professional materials
11 that I would typically rely on if I was writing
12 a scientific paper to draw the conclusions of
13 what average erosion and high and low might be
14 in the State of South Carolina. And I find the
15 report that DHEC commissioned by Dr. Jackson to
16 be that kind of material. Am- -- Amber is the
17 state of the art in determining shoreline
18 change rates right now being used in -- by
19 multiple entities in the southeast. So, I look
20 to that report and he proposes a clear average
21 erosion rate in that report. And, to me,
22 that's the middle. So, anything that is around
23 six to seven feet per year is in the moderate
24 category according to that report. And that
25 sets the bounds. So, if you have something



1 that's lower than that, and something that's
2 higher than that, you know, you have to start
3 someplace with an understanding of what you
4 would need to get to to call something an area
5 that is having either critical erosion or has
6 a high erosion rate. And I would expect that,
7 you know, that this is what you would need to
8 do to make that determination.

9 Q: Let me ask you a hypothetical. I want you to
10 assume for the purposes of this question that
11 there are two stations within the proposed
12 project area and one station shows an erosion
13 rate of 6.6 feet per year and the other station
14 shows an erosion rate of 8.8 feet per year, do
15 you have an opinion about whether or not this
16 range of erosion rates in this hypothetical
17 would qualify as a high erosion rate in the
18 State of South Carolina?

19 A: In a state that has shorelines that have
20 extremely high erosion rates that are on the
21 order of tens of feet, this -- this would be
22 moderate erosion in the State of South
23 Carolina. This is not an area that is
24 experiencing critical high erosion.

25 Q: Let me ask you a question about another aspect



1 of what we're here about today, which erosion
2 threatening existing development. Now, are you
3 familiar with the statutory requirement for a
4 new groin to require that erosion threatens an
5 existing development?

6 A: Yes.

7 Q: All right. In your professional opinion, in --
8 within the project area, is erosion threatening
9 existing development at Debordieu?

10 A: No.

11 Q: What's the basis of that opinion?

12 A: It -- you know, again, we've had a few
13 hurricanes pass by and I know some -- a little
14 bit of water has come over the bulkhead, but
15 there's -- there were no houses knocked down
16 and you can compare it to a place like Harbor
17 Island, where there's houses going to sea, and
18 the Colony has permission to rebuild their
19 bulkhead to make it even stronger. So, at the
20 -- at the moment, I do not see any properties
21 that are being eminently threatened by coastal
22 erosion. Now, you can have ---

23 **MR. GREEN:** Objection, Your Honor. He said
24 eminently threatened, but the question was
25 whether they're threatened.



1 A: I'm happy to rephrase this.

2 **THE COURT:** Rephrase.

3 Q: Yeah. I -- I just want to limit your -- I want
4 to limit your answer to whether or not
5 development is threatened.

6 A: Okay. Threatened, sorry. I'll strike the word
7 eminently. I don't see coastal erosion
8 threatening structures on Debordieu. Now, we
9 can have a -- another Hurricane Hugo can hit
10 any place on the coast at any time. So, if
11 your standard is the next big hurricane, well,
12 then every structure on every barrier island in
13 South Carolina is threatened.

14 Q: Now, do you have an opinion to a reasonable
15 degree of scientific certainty about whether or
16 not the permits that were issued and that are
17 the subject of this proceeding are consistent
18 with the Beachfront Management Act statute that
19 allows for the installation of new groins only
20 after a thorough analysis demonstrates that the
21 groin will not cause a detrimental effect on
22 adjacent or downdrift areas?

23 A: It does not meet that standard.

24 Q: Okay. And what's the basis of your opinion for
25 that?



1 A: There will be -- the groins themselves will
2 cause a downdrift impact.

3 Q: All right. And on what do you base your
4 opinion that the groins will cause a downdrift
5 impact?

6 A: Well, so, first of all, you cannot build a
7 groin in the middle of one long -- the word we
8 would use is littoral cell, L-I-T-T-O-R-A-L.
9 That's designed to hold sand in one place,
10 that's not going to deprive another place of
11 sand. So, from just simple understanding of
12 coastal processes, the whole point of building
13 a groin is to hold things up over here at -- at
14 the expense of what's going on down here. Now,
15 you know, you might argue that yeah, well,
16 we're going to dump a lot of sand on top of all
17 that in order to mitigate for this downdrift
18 impact. Be -- as we put the project in, we're
19 going to throw a whole bunch of sand out there
20 and it's going to cover all that up. Well, you
21 know, the statute doesn't say you can pre-
22 mitigate the harm that a shore perpendicular
23 structure is going to cause. It just says, you
24 have to prove that the groin will not cause a
25 downdrift impact. And so, drawing both on my



1 professional experience, but also, quite
2 frankly, looking at the downdrift impacts
3 analysis, I did not see anything in the
4 downdrift impacts analysis where it clearly
5 said these groins will have no downdrift
6 impact. What the analysis said is we're going
7 to mitigate for that by putting a bunch of sand
8 out there. So, it's -- it's almost as if for
9 some strange reason a doctor wanted to take
10 some blood from me and they started taking
11 blood out of this arm, and I start to get a
12 little worried about it, but then they said,
13 oh, don't worry, we're going to start putting
14 blood in this arm to offset it. Well, you
15 know, it's -- the idea that you can build even
16 a -- a groin that's designed to let some sand
17 go away and there's never going to be a
18 downdrift impact, if you're sitting in the
19 middle of this long beach that has sand moving
20 along it, it's just not feasible. So, you
21 know, I won't -- what I have seen in the
22 approach is that you have this pre-planned
23 mitigation to offset the harm. What I didn't
24 see is proof that there could never be harm,
25 which is how I interpret the statute.



1 Q: Did you in reviewing the downdrift impacts
2 analysis see any information to the opposite
3 that there would be an increase in erosion
4 downdrift due to the groins?

5 A: Yeah. My recollection is that the downdrift
6 impacts analysis showed an incremental decrease
7 in long shore sediment transport on the
8 downdrift side of the groins.

9 Q: And do you recall whether or not that decrease
10 was in excess of ambient conditions?

11 A: Yes. That's ---

12 Q: And by ambient, I mean background.

13 A: Right. That's what I understand decrease to
14 be.

15 Q: All right. Now, were you aware of what
16 modeling was used in the downdrift impacts
17 analysis?

18 A: They used -- in what I reviewed, they used the
19 Genesis model and Delft3D.

20 Q: All right. Now, do you have any opinions about
21 the appropriateness of using the Genesis model
22 in the Debordieu setting in order to base an
23 evaluation of downdrift impacts?

24 A: Genesis cannot be used along the Debordieu
25 shoreline for the purposes that they utilized



1 it for.

2 Q: And why is that?

3 A: The model Genesis, which was developed by the
4 Army Corps of Engineers, is specifically
5 designed to try and look at how interruptions
6 in a longshore sediment transport by structures
7 or something like that might change the
8 shoreline downdrift. I have peer reviewed
9 publications on this particular model that the
10 Corps has developed. It -- in the foundational
11 documents for the development of the model, the
12 model developers indicate that you cannot use
13 Genesis close to inlets or any place where the
14 degree of shoreline change naturally occurring
15 is complicated or uni- -- bidirectionally. So,
16 any place where there's something else
17 interesting going on, like in Debordieu, for
18 example, the shape of the island has been
19 changing a little bit because of the movement
20 of the inlet to the south. And so, there's an
21 inlet influence that's going on in part of the
22 area where the model was run. You -- you just
23 -- you can't use Genesis. It would be -- the
24 Genesis results would be unreliable in that
25 particular area.



1 Q: Now, I think you just said you have a peer
2 reviewed article, is that -- did you mean you
3 authored or you have assessable to you?

4 A: I authored -- I have authored peer reviewed
5 articles about the Genesis model that was
6 utilized in here, yes.

7 Q: Do you have an opinion about what the life of
8 the groin project as proposed in these permits
9 is?

10 A: The life of the groins themselves?

11 Q: Yes.

12 A: So, to some degree that depends on the weather,
13 of course. But, you know, it can be -- as
14 structures that are out there, can be decades.

15 Q: Do you have -- now, you've -- are you aware of
16 the alteration and the mitigation conditions in
17 the amended permit from the initial permit?

18 A: The alteration in the mitigation requirements.
19 Yes.

20 Q: All right.

21 A: To a degree.

22 Q: All right. Do you have any opinions related to
23 the efficacy of the mitigation requirements
24 that are contained in the amended permit?

25 A: You know, I -- I think that there's -- there's



1 always a difficulty with ordering any kind of
2 mitigation. So, you know -- but it's -- you
3 know, assuming that the threshold is passed
4 where there is that level of harm that's being
5 caused downdrift, it's going to be incredibly
6 difficult to -- to, in a timely fashion,
7 mobilize mitigation. You know, my -- also, my
8 recollection is that there were a number of
9 possible mitigation options, everything from
10 removing the groins to just putting some more
11 sand out there. It wasn't clear to me why you
12 have multiple options and who gets to decide
13 which of those mitigation options is
14 appropriate.

15 Q: And by who gets to decide, you mean DCCA or
16 Hobcaw, Baruch?

17 A: Correct.

18 Q: Okay. All right. Now, are you aware that the
19 financial commitment in the amended permit has
20 been increased to a million dollars?

21 A: Yes.

22 Q: All right. Do you have any opinions about the
23 sufficiency of the new million dollar financial
24 commitment?

25 A: Well, if -- if what is required down- --



1 downdrift is a significant amount of ---

2 **THE COURT:** Stop.

3 **OBJECTION:**

4 **MS. PHELAN:** Your Honor, I -- I just -- I want to
5 put on the record an objection that we asked
6 counsel if with the amendments Mr. Young had
7 changed his opinions and we were -- because we
8 wanted to reopen his deposition to get those
9 opinions. And we were informed that he had
10 not. And -- and we have a whole line of
11 questioning about his opinions on the amended
12 permit, so.

13 **MR. CUNNINGHAM:** Judge, his opinions haven't changed
14 regardless of the amendment and that's the
15 purpose of this question. It's still the same
16 opinion.

17 **THE COURT:** I'll wait to hear then.

18 **MS. PHELAN:** Thank you.

19 Q: You may continue, Doctor.

20 A: Yeah. So, the -- the amount of the bond was --
21 was moved upwards, but it hasn't changed my
22 opinion as to whether that's enough money or
23 not.

24 Q: Okay.

25 A: For cost of potential litigation. You know, if



1 you look at the cost estimates for projected
2 future beach nourishment projects that were
3 provided, you know, a -- a million dollars
4 doesn't buy a whole lot of sand if you have to
5 mobilize dredges and things like that to get it
6 out there. So, if -- it -- if that's the case,
7 then, you know, my opinion has not changed.
8 It's -- it's still -- it's still not a lot of
9 money and especially if all of that money could
10 be used up in one mitigation episode that
11 doesn't remove the groins. I mean, if there is
12 a detrimental impact from those structures, it
13 will last as long as those structures are in
14 there, which could be decades.

15 **MR. CUNNINGHAM:** One moment, Your Honor, please.

16 Q: One more question, Dr. Young. Are you familiar
17 with the policies related to the Beachfront
18 Management Act?

19 A: Yes.

20 Q: All right. And are you familiar with the
21 policy that critical areas shall be used to
22 provide a combination of uses which shall
23 ensure the maximum benefit to the people, but
24 not necessarily a combination of uses which
25 will generate measurable maximum dollar



1 benefits?

2 A: I am.

3 Q: Is it your opinion that this project complies
4 with that policy?

5 A: I -- I like that policy because the State of
6 South Carolina, more than any other state in
7 the country, has always recognized the -- the
8 holistic value of the critical area of the
9 beaches and dunes on its shoreline. And that
10 statute right there says the -- the state and
11 the legislature is going to place more value on
12 protecting that holistic value, that critical
13 area, over just pure dollars and cents. And so
14 what -- what we have here is a request to put
15 in a few groins to save a little bit of money
16 on beach nourishment. And those groins pose a
17 potential threat to the critical area
18 downdrift. And that's not the kind of thing
19 that the Beachfront Management Act was set up
20 to allow. The State of South Carolina has
21 always valued that holistic approach to
22 protecting that critical area for a wide
23 variety of reasons.

24 **OBJECTION:**

25 **MS. PHELAN:** I'm going to object, Your Honor.



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1 Foundation.

2 **THE COURT:** You did ---

3 **MS. PHELAN:** I -- he ---

4 **THE COURT:** Well, he's about through testifying now.

5 **MS. PHELAN:** I know he is. I -- I've been listening
6 to him testify what the State of South Carolina
7 ---

8 **THE COURT:** He can't speak for the State of South
9 Carolina.

10 **MS. PHELAN:** Okay. And I -- I also think that a lot
11 of his testimony has gotten purview of the
12 Court.

13 **MR. CUNNINGHAM:** Judge, I just asked an opinion
14 about whether or not the permits comply with
15 the ---

16 **THE COURT:** Yeah.

17 **MR. CUNNINGHAM:** --- policy, so.

18 **THE COURT:** I -- what I'm going to do is I will
19 treat his -- his testimony as opinion.
20 Anything where he has spoken about the State of
21 South Carolina, I would agree with you, I don't
22 know if I would strike it. I'll just say that
23 I -- I -- I sustain the objection that that
24 would be irrelevant. I'm not ---

25 **MR. CUNNINGHAM:** And I think, Judge, that only got



1 in at the end. I think ---

2 **THE COURT:** Yeah.

3 **MR. CUNNINGHAM:** --- for the most part, he talked --
4 -

5 **THE COURT:** Yeah. I know. That's what I said he --
6 -

7 **MS. PHELAN:** Thank you, Your Honor.

8 **THE COURT:** I'm sticking with the opinion.

9 **MR. CUNNINGHAM:** Thank you, Judge. No more
10 questions.

11 **THE COURT:** Who's next?

12 **MR. GREEN:** I think I am, Your Honor. Could we have
13 just a short break before I start my cross?

14 **THE COURT:** You want to think about whether you are
15 next while doing the break or you want to think
16 about your cross? Because you said I think.

17 **MR. GREEN:** I'm a slow thinker. So, I may need to
18 think about a lot of things. No, I want to
19 evaluate ---

20 **THE COURT:** We'll just take a short break.

21 **MR. GREEN:** Thank you, Your Honor.

22 (Off the record from 10:00 a.m. until 10:11 a.m.)

23 **COURT REPORTER:** All rise.

24 **THE COURT:** Y'all be seated. Thank you. Mr. Green.

25 **MR. GREEN:** Thank you, Your Honor. Bear with me



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1 just one more second.

2 **DR. YOUNG - CROSS-EXAMINATION BY MR. GREEN:**

3 Q: Good morning, Dr. Young.

4 A: Good morning, Mr. Green.

5 Q: Good to see you again. I think, Dr. Young, you
6 testified -- you testified a little bit about
7 groins and that -- well, let me ask you this,
8 the groins that we're discussing with respect
9 to the permit proposed to be installed at
10 Debordieu, those would be called low profile
11 groins, would they not?

12 A: They certainly call them low profile, yes.

13 Q: And aren't those groins designed, as you
14 understand it -- or proposed to be designed as
15 you understand it to allow sand to bypass the
16 groins?

17 A: They are designed -- ideally a low profile
18 groin is designed to allow some sand to bypass
19 the groin in certain situations, when -- when
20 they're covered. And -- but not all the sand
21 certainly. Now, I think that I testified to
22 that effect.

23 Q: Okay. And so -- but the groins -- and -- and
24 you said you were familiar with the downdrift
25 impacts analysis, correct?



1 A: Yes.

2 Q: And as part of that proposal, isn't the
3 proposal to initially install or place up to
4 650,000 cubic yards of sand on the Debordieu
5 Beach as part of the project?

6 A: Yes.

7 Q: And wouldn't that 650,000 cubic yards of sand
8 exceed the traffic capacity of those three
9 groins in the initial years at least?

10 A: I believe that to be the case. Yes.

11 Q: Okay. And -- sorry. Bear with me a moment
12 please. I apologize. You agree with me -- you
13 agree with me that the south part of Debordieu
14 Beach is erosional, do you not?

15 A: The -- when you say south, are you referring to
16 the areas south of Debordieu Colony and the
17 Barony property?

18 Q: No. I'm -- south of -- a fair question. No,
19 what I'm referring to is essentially Reach 3,
20 which your -- which your attorney was asking
21 you about. The place where the groins are
22 planned to be -- proposed to be installed.
23 Isn't that area erosional?

24 A: It -- it is an area that is experiencing
25 shoreline erosion, yes.



1 Q: And we -- we did a deposition, did we not, Dr.
2 Young?

3 A: We did.

4 Q: And you testified to ---

5 **THE COURT:** Where I ---

6 **MR. GREEN:** I'm sorry.

7 **THE COURT:** Where I can understand your question, it
8 would appear to me that most of the South
9 Carolina shoreline is erosional. So, I -- I
10 don't get the purpose of the ---

11 **MR. GREEN:** No, sir. I'm just kind of leading --
12 I'm developing ---

13 **THE COURT:** Okay.

14 **MR. GREEN:** --- a bit further, so. I'm trying to go
15 a little bit further, so.

16 Q: And you -- I believe you testified in your
17 deposition that you had no opinion on whether
18 the 4.2 cubic yards a year volumetric rate was
19 accurate?

20 A: I had not evaluated the accuracy of that rate
21 determination, yes.

22 Q: Okay. And so, you still have no opinion on
23 whether 4.2 is accurate?

24 A: No. I have -- no, I don't.

25 Q: Okay. Thank you. That's it. Okay. And 4.2



1 is a volumetric rate, correct?

2 A: It is.

3 Q: And the linear rate would be somewhat higher
4 than that, correct? Excuse me. The shoreline
5 change rate would be somewhat higher than that?

6 A: Not necessarily.

7 Q: And why do you say that?

8 A: Because a volume change rate, Your Honor, is
9 different from a shoreline change rate. A
10 shoreline change rate is simply where is that
11 interface between the water and the land.
12 Where is it? Where is it? How is it moving?
13 A volume change, you take an entire beach
14 profile out under water, out to a certain
15 depth, and you look at how much sand has been
16 removed from that entire beach profile. You
17 could have a volume change that's entirely
18 under water out here in that beach profile, and
19 this shoreline could still be in the same
20 place. So, you -- you can't directly convert
21 the volume change rate to a shoreline change
22 rate and say that it's going to definitely be
23 higher or even definitely be lower.

24 Q: So, it's your con- -- excuse me. It's your
25 testimony that you cannot convert volumetric



1 shoreline?

2 A: It's -- with -- there is no set formula.

3 Q: Okay. What would you need to know to convert
4 the volumetric shoreline?

5 A: Well, you have the profiles that you generated
6 those volumetric change from. All you need to
7 do is look at the zero point here and see which
8 way it's moving.

9 Q: Okay. But if you've got that information, then
10 you can convert the rate?

11 A: It's not -- it's not converting the volume rate
12 to a shoreline change rate. I wouldn't call it
13 a conversion. You have that data. For
14 whatever reason, they have decided to express
15 their erosion rate as a volume change rate
16 rather than as a shoreline change rate. And,
17 you know, from my perspective, most of the time
18 what folks care about is where the shoreline
19 is, not the volumetric changes that are out on
20 the profile.

21 Q: And you are familiar with the new -- the
22 provisions of the permit as amended, correct?

23 A: I believe so.

24 Q: And those provisions have a shoreline change
25 rate, do they not?



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1 A: For the -- for the Barony.

2 Q: For the Barony. Yeah. That's correct, for the
3 Barony.

4 A: Yes, sir, I believe that to be true.

5 Q: Okay. And I believe when we talked before,
6 your concern was about -- you thought that
7 there should be -- you thought there should be
8 a shoreline change rate or a shoreline change
9 rate and a volumetric change rate in the
10 permit, correct?

11 A: Yes, sir.

12 Q: And we have that now, do we not?

13 A: You do.

14 Q: Thank you. I believe you testified -- sorry,
15 too many papers to move back and forth. I
16 believe you testified -- I believe you
17 testified that you -- in your opinion,
18 properties at the south end of Debordieu Beach
19 are not threatened, is that correct?

20 A: Yes.

21 Q: And I believe you gave an example, Harbor
22 Island, where you testified that property is
23 going into the sea?

24 A: Yes.

25 Q: But property would be threatened before it



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1 falls into the sea, would it not?

2 A: Well, it -- so, in my opinion ---

3 Q: I -- can you answer my question and then if you
4 need to explain that would fine? But can you
5 answer my question which is property would be
6 threatened before it falls into the sea?

7 A: Before it falls into the sea, yes.

8 Q: Okay. And I believe in our deposition that we
9 were together on you testified that if you
10 don't renourish at Debordieu, the beach will
11 disappear, correct?

12 A: I believe I testified that because of the
13 existence of the bulkhead, if you don't
14 renourish it -- at -- at Debordieu, the beach
15 would disappear in front of the areas that have
16 a bulkhead.

17 Q: Okay. And if the beach disappears, then the
18 bulkhead will end up in the waves, correct?

19 A: Yes. That's correct.

20 Q: And then it will fail eventually, correct?

21 A: It would eventually fail. Yes.

22 Q: And I believe you testified that could happen
23 within ten years, correct?

24 A: If you don't renourish, you know, which seems
25 unlikely to me, but I guess that's plausible.



1 Yes. With the existing bulkhead.

2 Q: So, the answer to my question is yes, it could
3 fail within ten years if there's no
4 renourishment?

5 A: Yes.

6 Q: Okay. And I believe you've seen in the
7 downdrift impact analysis where Debordieu
8 Colony has said it's not going to renourish
9 that area without groins, have you not?

10 A: I don't recall that part.

11 Q: Okay. And I believe during our deposition, you
12 testified -- you agreed with me that you were
13 not suggesting that the bulkhead should be
14 removed, correct?

15 A: So, again, it's hard for me to remember the
16 exact context of the question in my deposition,
17 but I believe to my recollection what I said
18 was that that cow's left the barn. And
19 bulkhead is there. And so, you know, that
20 being the case, I understand the reality on the
21 ground that the bulkhead is there.

22 Q: Okay. And didn't -- and if we need to pull up
23 your deposition, I'm happy to do it, but didn't
24 you say that I think what that means to me then
25 is that Debordieu is going to need to do



1 everything they can for as long as they can
2 afford to, as long as it's practical to keep it
3 covered with sand?

4 A: Again, I guess there I was intuiting what I
5 would want to do if I was a Debordieu resident.
6 I wasn't saying that that was the best thing
7 for the beach. I was saying that if I was a
8 Debordieu resident, I would be motivated to
9 keep sand in front of that bulkhead. That even
10 if they don't get their groins, there's no way
11 they're not putting sand out in front of that
12 bulkhead or they will lose their beach. That's
13 what I meant.

14 Q: You agree with me that more frequent
15 renourishment leads to cumulative detrimental
16 impacts down on the beach, correct?

17 A: Of course, it depends on the scale and the size
18 of the project, but all other things being
19 equal, the more frequently that you do
20 something, the more environmental impact you
21 have. Sure.

22 Q: Okay. Thank you. And I believe you testified
23 in our deposition that you -- give me one
24 moment. I believe you testified that you could
25 see -- you could envision an impact on the



1 southernmost structures on Debordieu Beach,
2 past the bulkhead if there's a storm and no
3 renourishment within the next ten years?

4 A: If there is a storm and no renourishment, it
5 could happen in September.

6 Q: Uh-huh.

7 A: I mean, a storm, as I think I testified
8 earlier, you know, storms can take down just
9 about any structure on any barrier island in
10 South Carolina at any time.

11 Q: And that -- that impact -- that impact could be
12 enhanced if there's no renourished sand placed
13 on the beach, could it not?

14 A: To a degree, the beach nourishment provides
15 protection from smaller storms. Yes.

16 Q: Okay. And if there's no sand on the beach,
17 ultimately, I guess the shoreline is going to
18 erode back to those houses, will it not?

19 A: Yes. Eventually, it would. Sure.

20 Q: Thank you. You didn't perform any kind of
21 feasibility analysis or anything about
22 Debordieu Colony just doing renourishment
23 alone, did you?

24 A: A -- a feasibility analysis?

25 Q: Yeah. Or any type of analysis to whether six



1 years renourish -- or -- strike that. You
2 didn't do any type analysis to whether
3 renourishment alone on a more frequent scale is
4 appropriate, did you?

5 A: I don't need to. It's clearly appropriate.
6 It's done all over the United States of
7 America. They've been doing it there on
8 Debordieu multiple times over the last few
9 decades. So, it's clearly feasible. Most
10 beach nourishment projects in the country are
11 done without groins and some of them are done
12 every two, three, four years. So, clearly it's
13 feasible and nobody would need to do a
14 feasibility analysis to understand that.

15 Q: So, the answer to my question is no, you did
16 not.

17 A: Did not need to. No, sir.

18 Q: Okay. I think you -- you're -- is it fair to
19 say that you're opposed to groins in almost
20 situations?

21 A: I guess I would prefer to put it in my own
22 words and say that I'm opposed to groins in
23 situations where they're going to cause clear
24 downdrift impacts. There are proper locations
25 for groins and there have been previous groin



1 projects in the State of South Carolina that I
2 have not opposed.

3 Q: But not opposed doesn't mean you're in favor of
4 them, does it?

5 A: I mean, that's a complicated question. So, I
6 -- I typically am not in favor of, you know,
7 shoreline hardening projects in general without
8 strong justification for the need.

9 Q: When we talked before, I think you testified
10 only -- the only instance that you gave at that
11 time were terminal groins and the protection of
12 critical infrastructures; isn't that correct?

13 A: Yes.

14 Q: And you didn't identify any other situations
15 where you thought groins would be appropriate;
16 isn't that correct?

17 A: No. I -- I believe that's what I said in my
18 deposition.

19 Q: Thank you.

20 **THE COURT:** What is a terminal groin?

21 A: A terminal groin is a structure that's at the
22 end of a littoral cell. So, for example, there
23 was a new groin constructed at the end of Folly
24 Island at the county park that's at the end of
25 Folly.



1 **THE COURT:** Okay.

2 A: So, with a terminal groin, the idea is that
3 that sand was just going to go into the water
4 anyway. So, the likelihood of causing some
5 harm is much less at the terminal groin, as
6 opposed to a groin that's built right in the
7 middle of a long stretch of beach where there's
8 still something else on the other side of it.

9 **THE COURT:** Okay.

10 Q: And I believe it was your testimony that, as
11 you read the statute, that the groins proposed
12 in this project shouldn't be allowed because
13 there will be a downdrift impact -- a
14 detrimental downdrift impact, is that correct?

15 A: Yes.

16 Q: And I believe it was your testimony that you
17 can't ever build a groin without there being a
18 detrimental downdrift impact, isn't that
19 correct?

20 A: Well, you cannot build a groin without having
21 an interruption in long -- in -- some
22 interruption in longshore sediment transport
23 processes that causes a reduction in the amount
24 of sand on the other side of the groin, if that
25 groin is functioning properly. Yes.



1 Q: Okay. And so, is it your testimony that that
2 reduction in sand in the down coast property is
3 a detrimental impact ---

4 A: In ---

5 Q: --- in your opinion?

6 A: In this case, yes.

7 Q: Okay. And so, therefore, is it your testimony
8 that under the statute, you should never allow
9 a groin?

10 A: No. I think I clearly stated that there are
11 cases under the statute where groins under the
12 statute are appropriate. And that would be
13 some place like the groin at the end of Folly
14 that is a terminal groin, that isn't going to
15 have the same kind of detrimental downdrift
16 impact to the shoreline or maybe some place
17 like the groins at Hunting Island where you
18 have an unbelievably high rate of erosion and
19 what you're trying to do is keep that sand
20 there for just a little bit longer, and the
21 entire island has one property owner, which is
22 the State of South Carolina. So, the groin
23 isn't likely to have an impact on your
24 neighbor's property. So, I -- you know, I
25 wouldn't say that the statute says you can't



1 build a groin anywhere. It does say you can't
2 build a groin everywhere.

3 Q: Okay. Statute says you -- that groins can be
4 built where erosion is threatening existing
5 development, correct?

6 A: Yes.

7 Q: The two places you named were public parks,
8 weren't they?

9 A: Yes. State park and a county park.

10 Q: Yes. And so, but it's your testimony they
11 could never be built in an area then that would
12 protect existing development because there will
13 always be a down coast impact?

14 A: No, I don't believe that was my testimony.

15 Q: Okay. You testified a little bit about the
16 modeling used in the downdrift -- the -- the
17 permit application, correct?

18 A: Yes.

19 Q: And you testified that there were two models
20 used, Delft3D and Genesis, correct?

21 A: Correct.

22 Q: And you gave some testimony on Genesis,
23 correct?

24 A: Correct.

25 Q: You -- but I believe in our deposition you



1 testified you really had no opinion on Delft3D
2 as it was set forth in the DIA, the downdrift
3 impacts analysis, correct?

4 A: I would need to re-read that part of my
5 deposition.

6 Q: Okay.

7 A: I think -- I think I actually said that Delft3D
8 is -- is typically better than Genesis. And I
9 -- I believe it was more -- there was a little
10 bit more back and forth than just I have no
11 opinion.

12 Q: Well, fair enough. Didn't you say that there
13 was no reason to believe Delft3D wasn't run
14 properly?

15 A: I did say that there was no reason for me to
16 believe that C -- CSE did not run the model
17 properly.

18 Q: And I believe you testified -- you testified
19 that you did not do a detailed evaluation of
20 Delft3D, did you not?

21 A: Correct.

22 Q: Okay. And in reading the DIA, was it your
23 understanding that the modeling results were
24 not really used to analyze the projected
25 downdrift impact of the groins?



1 A: Is it my understanding that the modeling
2 results were not used to analyze the impacts of
3 the groin.

4 Q: Let me withdraw that question. That was not a
5 good question. Was the projected downdrift
6 impact of the groins based only on the modeling
7 results in Section 4 of the DIA?

8 A: In the -- the report written by the consultant
9 is what you're asking me?

10 Q: Yes.

11 A: No. I'm sure that they were considering things
12 other than the modeling results. CSE
13 particularly doesn't even do that kind of
14 modeling. So, I'm imagining that Mr. Kana is
15 going tell that he considered a lot more things
16 than that.

17 Q: Okay. You testified a little bit about the
18 financial commitment, I believe. Let me back
19 up; I'll start on the modeling. You testified
20 about Genesis. You do not use Genesis to
21 design beach nourishment projects or groin
22 projects or along those lines, do you?

23 A: I don't design projects at all. I just
24 evaluate the design of projects, hundreds of
25 them.



1 Q: And I believe you testified that you use it to
2 understand how the model works, but you don't
3 use it very often, is that correct?

4 A: I mean, because I'm not utilizing it for
5 project design that's probably true, but I --
6 I venture to guess that I'm the only person
7 sitting in this courtroom that has published
8 peer reviewed literature multiple times on how
9 the model works.

10 Q: That's not -- that's not the question that I
11 asked you. The question I asked you was did you
12 not testify that you run it to understand how
13 the model works, so we can understand how
14 projects are being designed?

15 A: Yes.

16 Q: And then I asked you how often do you use it
17 and you testified, not very often, correct?

18 A: Right. Because we don't do project design.

19 Q: Okay. I think you testified, as well, you've
20 never designed an erosion control structure,
21 correct?

22 A: No, I've never designed an erosion control
23 structure.

24 Q: And I think you also testified that you got --
25 you have no experiences with a groin removal



1 project, correct?

2 A: In -- you're referring to my deposition ---

3 Q: That's correct. Yes.

4 A: So, I guess -- not my testimony here today?

5 Q: No, sir. I apologize. That was confusing.

6 Yes. In your deposition you testified that you
7 have no experiences with a groin removal
8 project, correct?

9 A: I have not conducted a groin removal project.

10 Q: And you testified that you were not familiar
11 with when a groin has been removed, correct?

12 A: No. There have been groin removals that I'm
13 familiar with. I don't think I said that I
14 don't know of any place where a groin has ever
15 removed. It doesn't happen frequently.

16 Q: Okay. Fair enough. We had a discussion -- I
17 said are you familiar with any situation where
18 a groin has been removed. And your answer was,
19 not on this scale and not on this size,
20 correct?

21 A: I think that would be correct.

22 Q: Okay.

23 A: Yes.

24 Q: Thank you. And then I think you testified, as
25 well, that there have been smaller ones that



1 have been removed, but that you don't have any
2 perspective on what that cost was, correct?

3 A: Yeah. I -- I'm not aware of precise costs for
4 those ---

5 Q: Okay.

6 A: --- projects.

7 Q: You testified a little bit about erosion rates
8 in South Carolina, I be- -- on South Carolina
9 coasts, I believe, correct?

10 A: Yes.

11 Q: And you talked about the mean erosion rate,
12 correct?

13 A: Yes.

14 Q: And that mean erosion rate included all the
15 South Carolina coastline, correct?

16 A: The oceanfront coastline.

17 Q: Oceanfront coastline. Wouldn't that -- and
18 that calculation would include the erosion
19 rates at Hunting Island, correct?

20 A: Of course.

21 Q: And I think you testified that Hunting Island
22 has an extremely high erosion rate, correct?

23 A: There are a number of places in South Carolina
24 that have extremely high erosion rates. That's
25 ---



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1 Q: Okay. Fair enough. And those high -- those
2 places of high erosion would increase the mean
3 average for the coastline, correct?

4 A: That is exactly the definition of a mean, yes.
5 And those areas that are accreting would
6 decrease it.

7 Q: Thank you. The Corps of Engineers has
8 published a manual on, I guess -- the Corps of
9 Engineers created a manual -- hang on, let me
10 get the names, they were all on the same page.
11 They prevent -- published a coastal engineering
12 manual I think in 2002, isn't that right?

13 A: Yes.

14 Q: And that's an authoritative source in your
15 profession, correct?

16 A: It's an authoritative source in the engineering
17 profession.

18 Q: Okay. And the coastal en- -- the Corps'
19 coastal engineering manual contemplates the
20 installation of groins in certain -- certain
21 situations, right?

22 A: It contemplates the installation of groins and
23 -- and also contemplates the harm that they
24 cause.

25 Q: Okay. And doesn't that manual say -- if we

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1 need to look at, I'm more than happy to do it.
2 But it says, however, when properly designed,
3 constructed and combined with beach
4 nourishment, groins can function effectively
5 under certain conditions, particularly for
6 increasing the fill life of renourished
7 beaches.

8 A: I wouldn't disagree with that. The -- the
9 groins can increase the -- potentially increase
10 the fill life of a renourished beach.

11 Q: Okay. And it also says groins are now being
12 reevaluated as sand retention structures by now
13 asking the question, how much sand can be
14 allowed to pass while still maintaining a
15 minimum width of beach at the groin for some
16 level of shore protection. Would you disagree
17 with that?

18 A: That -- in fact, that statement is a response
19 to the recognition that groins are causing a
20 downdrift impact and so, there is a
21 reevaluation needed to minimize that impact.

22 Q: Okay. Okay. I think that's all I have on
23 that. I think in your deposition, you
24 testified -- strike that. Strike that.

25 **MR. GREEN:** The Court's indulgence a moment, Your



1 Honor, please.

2 Q: If -- just bear with me. I'm sorry.

3 **MR. GREEN:** Your Honor, I don't think I have any
4 further questions. Thank you.

5 Q: Thank you, Dr. Young.

6 A: Thank you.

7 **THE COURT:** Yes, ma'am.

8 **DR. YOUNG - CROSS-EXAMINATION BY MS. PHELAN:**

9 Q: Good afternoon, Mr. Young.

10 A: I hope it's not afternoon yet.

11 Q: I guess it's still morning. It feels like
12 afternoon.

13 A: I know time flies when we're having fun.

14 Q: Exactly.

15 **THE COURT:** Are you having fun?

16 Q: So, I wanted to talk to you a little bit about
17 your opinion regarding when a structure is
18 threatened for issuing a renourishment permit -
19 - a renourishment and groin permit. Do you
20 have an opinion as to how close the water has
21 to be to the structure before it's threatened?

22 A: And when you say the water, do you mean high
23 tide line, low tide line? You know, what's
24 your reference point is my question.

25 Q: I -- I would like for you to just give me your



1 opinion as to when you think that structure is
2 threatened by the appropriate water, and you
3 can tell me whether you think high tide or low
4 tide.

5 A: So, to some degree, that answer depends on
6 whether or not the building gets protected by
7 hard structure or not. I mean, you can have a
8 home that's sitting behind a protective
9 bulkhead that is obviously, even with the water
10 up against that bulkhead, far less threatened
11 than if that bulkhead wasn't there. Fripp
12 Island is a good example. They've got a
13 massive rock revetment and there's probably not
14 a single home on the oceanfront of Fripp Island
15 that's threatened no matter where the water is
16 because of that rock revetment. So, you know,
17 again, to -- the answer is a little bit more
18 nuance than just the position of the water with
19 respect to the house.

20 Q: Let's take -- let's take a situation without a
21 bulkhead.

22 A: Okay. So, if you -- you know, I would say that
23 for a structure to be threatened, then it would
24 need to be within ten feet of the mean high
25 tide line -- sorry. Not ten feet. I mean, ten



1 times the annual erosion rate or something like
2 that. Like ten times the annual erosion rate
3 within the distance of the mean high tide line.
4 And, again, that's all other things being equal
5 and assuming you're not going to do anything to
6 protect it, like you don't have bulkhead there.

7 Q: And what about if there's a bulkhead, but the
8 waves are -- are coming up at high tide or
9 during storms over that bulkhead?

10 A: Well, storms are a completely different
11 question, of course. So, if the -- if we're
12 talking whether it's eminently threatened by
13 erosion, that's different than if the structure
14 is threatened by storms, right? So, you know,
15 all of those structures are potentially
16 threatened by storms. So, the, you know, water
17 coming over a bulkhead or a dune during a storm
18 does not -- is not necessarily a sign that the
19 structure is threatened. In fact, the
20 legislature just recently told DHEC to -- not
21 to pay attention to storms when they're at the
22 baseline. So, you know, it's -- it seems to be
23 the erosion that matters when we're trying to
24 define something as threatening.

25 Q: All right. We'll leave the -- the storm part



1 of it out then.

2 A: Okay.

3 Q: If you have a bulkhead in front of structures,
4 and at high tide the water can come over the
5 bulkhead.

6 A: If water is coming over the bulkhead at high
7 tide without a storm, well then, yeah, that's
8 probably problematic. Then I guess I would
9 have the same standard from the edge of that
10 bulkhead that I just gave you for the other
11 answer.

12 Q: And what is the annual erosion rate at the
13 project location?

14 A: Well, there have been a number of rates that I
15 have seen, you know, so it depends on what
16 source you're asking me to quote right now
17 because I didn't do an independent erosion
18 study to calculate my own erosion rate for the
19 project area.

20 Q: Okay. So, sitting here today, you -- you do
21 not have an opinion to a reasonable degree of
22 certainty how close the water would have to be
23 to the structures to consider them threatened
24 for purposes of issuing a groin and
25 renourishment permit?



1 A: I'm sorry. Can you ask me the question again,
2 please?

3 Q: Sitting here today, you do not have an opinion
4 as to a reasonable degree of certainty how
5 close the water would need to be in front of
6 the Debordieu structures in order for it to be
7 considered threatened for purposes of issuing a
8 groin and renourishment permit?

9 A: Well, I think what I said is that even if the
10 water is against the bulkhead, which it has
11 been in the past, I don't consider those
12 structures to be threatened. And it's not
13 going to move past the bulkhead any time soon.

14 Q: So, you do not have an opinion as to how close
15 the water would need to be to the structures
16 before it would be considered threatened?

17 **OBJECTION:**

18 **MR. CUNNINGHAM:** Objection. He just answered that
19 question, Judge.

20 **THE COURT:** No, he didn't.

21 **MR. CUNNINGHAM:** Okay.

22 **THE COURT:** I -- I was going to -- I was thinking
23 about it. Excuse me. Can't hear me. I was
24 thinking about instructing him to answer the
25 question, to be honest with you.



1 A: Okay. So, I guess if the bulkhead fails when
2 -- in that scenario, then I would consider
3 those structures would be threatened if they
4 are within ten feet of that average erosion
5 rate along that shoreline, which, you know,
6 most sources are putting at anywhere from one
7 to two feet at the north end to six, seven,
8 eight feet as you get down to the south.

9 Q: Okay. Same question of the escarpment line.
10 Can -- can you tell us what that is, please?

11 A: The escarpment line?

12 Q: The escarpment line.

13 A: Escarp is an -- an erosional cut that's made on
14 the beach or it's a cut on a dune face on -- on
15 a shoreline.

16 Q: And what's it caused by?

17 A: Well, it's -- it can be caused by a number of
18 things. When you do a beach nourishment project
19 escarpments regularly form because the sand is
20 piled very, very high and it can form out near
21 the water. You can form escarp on a healthy
22 dune system, during a storm when the water
23 comes up and eats into the front part of the
24 dune. You know, there's a wide variety of
25 situations in which an escarp may form on a



1 beach.

2 Q: Do you have an opinion as to how close that
3 escarp -- the line would have to be to the --
4 the houses before they would be considered
5 threatened for purposes of issuing a groin and
6 renourishment permit?

7 A: I don't know that the escarpment would be the
8 proper reference point. That would be my
9 opinion.

10 Q: So, is it your opinion that -- that it is not
11 relevant to the determination of -- of whether
12 there was a threat?

13 A: I mean, that depends on what formed the
14 escarpment. So, I -- I mean, I need a more
15 specific ---

16 Q: Let's assume an erosion has formed an escarp.

17 A: Well, again, erosion can form an escarpment way
18 out on a beach berm not on a dune, too. So,
19 you know, it's -- escarpments can form in a
20 wide variety of tidal locations on the beach,
21 so, you know, I wouldn't say that simply
22 designating the escarpment line as a reference
23 point is appropriate.

24 Q: So, that's a no, it's not relevant to the
25 opinions as to whether the structures would be



1 threatened?

2 A: I -- it might be depending upon the kind of
3 escarpment and where the location is. But I
4 can't give you a -- just a general answer to
5 that question.

6 Q: Have you observed the escarpment line at
7 Debordieu Beach in front of the structures?

8 A: I have not.

9 Q: Okay. Now, you testified earlier that a very
10 high rate is 15 to 20 feet of erosion per year,
11 is that correct?

12 A: I don't believe that's what I testified to.

13 Q: In your direct, that's not what you said?

14 A: I believe I said that there were beaches that
15 were eroding at that rate. And that rate is
16 clearly high.

17 Q: Okay. For purposes of issuing a groin and
18 renourishment permit, is -- is it this 15 to 20
19 foot threshold that you believe needs to be met
20 before the groin permit is issued?

21 A: Not necessarily. I think my testimony would be
22 that DHEC would need to have a very clear
23 understanding of what the average erosion rate
24 for the entire State of South Carolina is, so
25 that DHEC has a clear understanding of what is



1 low, what is moderate and what is high. And
2 that -- that has not been done in this
3 particular case. And it is clear to me that
4 the erosion rates that everyone has published
5 from Debordieu fall into the -- most of the
6 mean. But I don't think that I have done the
7 analysis to create a specific cutoff for you of
8 where the boundary would be between that upper
9 mean and the high erosion rate, nor has DHEC
10 done that.

11 Q: Okay. Then -- and you said that no one is
12 going to name Debordieu Beach as having a high
13 rate of erosion, is that correct?

14 A: That is correct.

15 Q: Are you aware that the regulations themselves
16 classify portions of Debordieu Beach as high
17 erosion?

18 A: And so when you say the regulations, what are
19 you referring to?

20 Q: Regulation 30.

21 A: Can you read that to me?

22 Q: Are you -- so you're not aware of whether they
23 -- they address ---

24 A: I have some vague recollection of -- in -- some
25 legislative language with no scientific



1 background supporting it throwing out that
2 word, but that's -- I mean, that's -- I don't
3 remember the specifics.

4 Q: Thank you. Are you aware that the application
5 for this permit was submitted in November of
6 2017?

7 A: I don't recall the submission date.

8 Q: Are you aware that almost three years has
9 passed since this original permit was issued?

10 A: I guess if -- if that submission date is
11 correct, then it would be almost three years,
12 yes.

13 Q: Okay. And you're aware that groins are still
14 not on the beach, protecting the beach?

15 A: I am aware of that, yes.

16 Q: You testified that the \$1 million letter of
17 credit was insufficient given, in part, the
18 renourishment that be -- may be required, is
19 that correct?

20 A: Yes.

21 Q: Are you aware that as part of the commitment
22 information provided to the Department, that
23 there was evidence presented of bylaws of a
24 beach preservation fund?

25 A: A beach preservation fund for Debordieu Colony?



1 Q: Yes.

2 A: I -- I -- You know, I remember reading
3 something about a beach preservation fund for
4 the Colony, yes.

5 Q: So, are you aware that this beach preservation
6 fund is dedicated to generate millions of
7 dollars over the life of the project just for
8 beach preservation?

9 A: Yes. I assume that that's what they would use
10 it for, for the preservation of the Colony's
11 beach.

12 Q: Now, you've also testified that a groin -- one
13 of the few circumstances that a groin may be
14 appropriate in accordance with the statute is
15 when it's at the end of a littoral cell or what
16 you've called a -- a terminal groin, is that
17 correct?

18 A: Yes.

19 Q: But there is nothing in the language of the
20 statute or the regulations that limit groins to
21 only being -- being able to be permitted at the
22 end of a littoral cell or as a terminal groin,
23 is that correct?

24 A: That's correct. The statute simply says groins
25 can't cause any downdrift impact.



1 Q: And you are aware with groin permits that there
2 has to be concomitant renourishment, correct?

3 A: The language states that it has to be a part of
4 an ongoing beach nourishment project. Yes.

5 Q: Doesn't the fact that renourishment is required
6 with a groin permit suggest to you that some
7 downdrift impact is anticipated without that
8 renourishment?

9 A: I think the statute is very clear. The statute
10 says you have to demonstrate that the groin
11 will cause no downdrift impact, period. That's
12 what it says. And -- and you know, I think
13 that the reason ---

14 **THE COURT:** Wait a second. You're asking him to
15 tell me what the meaning of the statute is? I
16 don't think that's his purpose.

17 **MS. PHELAN:** Yes, Your Honor.

18 **THE COURT:** So, I -- I don't let any expert ---

19 **MS. PHELAN:** I felt like ---

20 **THE COURT:** --- coming in here and telling me what
21 the statute means.

22 **MS. PHELAN:** I'll move on, Your Honor.

23 Q: You stated that an average erosion rate in
24 South Carolina is six to seven feet per year?

25 A: I said that that is the rate that was



1 determined in the Chester Jackson's analysis
2 that DHEC funded and that I find that to be a
3 reasonable rate.

4 Q: And can you tell me what the purpose of the
5 Chester Jackson's report is that you've
6 referenced several times?

7 A: I can't speak for DHEC as to why you
8 commissioned the report.

9 Q: I'm not asking why DHEC commissioned it. I'm
10 asking you from your review of the report, what
11 -- what was the report trying to analyze?

12 A: Shoreline change in the State of South
13 Carolina.

14 Q: And isn't it true that the title itself says
15 mapping coastal erosion hazards along sheltered
16 coastlines in South Carolina?

17 A: Yeah. That's what the title says.

18 Q: So, is it fair to say that this assessment was
19 done to assess coastal erosion hazards?

20 A: I mean, coastal erosion is one of the hazards
21 that scientists consider when they're looking
22 at coastal vulnerability. So, coastal erosion
23 is a hazard and the report sort of objectively
24 determines rates of shoreline change for the
25 entire State of South Carolina, so, yeah.



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1 Coastal erosion is a hazard.

2 Q: And you also referenced the hazard
3 vulnerability assessment from -- on the DHEC
4 website, is that correct?

5 A: Yes.

6 Q: And that was also to assess the vulnerability
7 due to erosion, is that correct?

8 A: The stated purpose of the site, yes, is to
9 allow people to do vulnerability assessments of
10 different stretches of shoreline. That's what
11 -- that's what the stated purpose of the
12 website is.

13 Q: And do you know what -- well, you -- are you
14 aware that the hazard vulnerability assessment
15 fed in Mr. Jackson's data?

16 A: That's my understanding, yes.

17 Q: Okay. Do you know what data was used in Mr.
18 Jackson's report -- in Dr. Jackson's report?

19 A: I'm sorry. Are you asking me how he calculated
20 ---

21 Q: What data sets were used?

22 A: To determine the shoreline change rates?

23 Q: Yes.

24 A: I mean, I don't remember in specific detail,
25 but he was digitizing shorelines from



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1 topography and nautical charts and things like
2 that is my recollection.

3 Q: Do you know how many shorelines were used?

4 A: My guess is that it varied depending on where
5 he was looking because that data typically is
6 variable along the coast, but no, I don't
7 remember precisely how many he used.

8 Q: So, you don't know if he was using two sets or
9 ten sets?

10 A: I'm quite certain it wasn't two because he had
11 a couple of different time intervals in there.
12 That would make two difficult. But I don't
13 remember what the upper boundary was on the
14 data sets that he used.

15 Q: Would it surprise you that if he only used
16 three data sets?

17 A: I mean, not necessarily, if he's doing an
18 endpoint analysis.

19 Q: Okay. And tell me what an endpoint analysis
20 is, please?

21 A: That's when you are looking at, you know, 1920
22 and 2000 and you see how much the shoreline has
23 moved and you calculate an average shoreline
24 change rate year per year from those two
25 shorelines.



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1 Q: Okay. And -- in that -- can you tell me what
2 a linear regression method is?

3 A: Linear regression is when you take several data
4 points from the shoreline moving through time
5 and you fit a line to that data and the annual
6 shoreline change rate is the slope of that
7 line.

8 Q: Okay. Do you -- are you aware of which one
9 DHEC uses in determining their erosion rates
10 for purposes of each jurisdictional lines?

11 A: For the jurisdictional lines?

12 Q: Uh-huh.

13 A: I don't recall. I'm guessing it's linear
14 regression analysis.

15 Q: And the linear regression analysis includes a
16 lot more data, doesn't it?

17 A: It can. Yes.

18 Q: And it captures a lot more of the shoreline
19 change because you're not just looking at the
20 beginning point and the end point over 100
21 years.

22 A: It definitely would capture more shoreline
23 change, for sure. I mean it ---

24 Q: Do you ---

25 A: --- would capture the wiggles.

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1 Q: And Dr. Jack- -- Jackson actually recognizes
2 that this end point method is -- is limited
3 when assessing erosion on an oceanfront,
4 correct?

5 A: So, this all depends on what it is that you're
6 trying to do with it. I don't think any of
7 these complications ---

8 **THE COURT:** One second. If you could -- because
9 your counsel's more capable of following up on
10 your questions. Her question was what Dr.
11 Jackson did. So, I -- because I'd like to know
12 that answer.

13 A: I'm sorry. Can you repeat the question?

14 Q: Yes. Dr. Jack- -- Jackson recognized in a
15 study the limitation of the end point method
16 used for determining erosion rates on the
17 oceanfront, correct?

18 A: I think he recognized that there are some
19 limitations, yes.

20 **THE COURT:** All right.

21 Q: Okay. You testified when -- when the League
22 was questioning you, quote, they have done
23 renourishment projects multiple times at
24 Debordieu, is that correct?

25 A: Yes.



1 Q: Okay. You don't know whether the data that
2 were assessed for these hazard vulnerability
3 assessments and by Dr. Jackson included those
4 multiple renourishment efforts, do you?

5 A: You mean whether he tried to subtract out the
6 impact of the renourishment? Is that the
7 question?

8 Q: Well, you can answer that question first and
9 then I'll follow-up.

10 A: No, I don't believe that it filtered out the
11 beach nourishment project.

12 Q: Okay. And so, it would've included the range
13 in -- the range went through the 2000s,
14 correct, that he used?

15 A: Yes.

16 Q: So, it would have included the renourishment
17 from the 1990 project?

18 A: Actually, I think he went up to -- what did he
19 go up to? 2000 or 2010. I can't remember
20 which. Maybe -- but yes, the 1990 project
21 would've been in there.

22 Q: And the 1998 project would've been in there?

23 A: I believe so, yes.

24 Q: What about the -- the 2006 would've been in
25 there?



1 A: I'm not sure about that one.

2 Q: All right. But several of these renourishment
3 projects would have been included in the data
4 set that was used for the vulnerability
5 assessments, is that correct?

6 A: I believe so, yes.

7 Q: And it would make sense, because what they're
8 trying to determine is the vulnerability on the
9 coastline and the renourishment makes it less
10 vulnerable, correct?

11 A: I mean, what he's trying determine is the
12 shoreline erosion rate. I mean, he's not
13 trying to determine the overall vulnerability.
14 I mean, I ---

15 Q: For -- for purposes of assessing vulnerability.

16 A: Yeah. I mean, this is a little bit complicated
17 for me because the word vulnerability is
18 actually being misused here as a practitioner
19 and somebody who does vulnerability
20 assessments. So, what he is actually doing is
21 determining the shoreline erosion hazard. He's
22 not determining vulnerability. Vulnerability
23 includes all hazards and it includes a
24 sensitivity of the infrastructure to those
25 hazards. So, Chester Jackson's report is a



1 shoreline change hazard report. It's not a
2 vulnerability report. It's not a -- it's not
3 a -- his report is not a vulnerability
4 assessment.

5 Q: Okay. But you would agree with me that he was
6 not determining erosion rates for purposes of
7 whether a groin and renourishment project
8 should be ---

9 A: I'm sure that wasn't ---

10 Q: --- issued?

11 A: --- the purpose of his report.

12 Q: And Dr. Jackson also recognized limitation with
13 using only three shorelines, is that correct?

14 A: Yes.

15 Q: And you have not done any evaluation yourself
16 to try to adjust erosion rates for the last ten
17 to twelve years to remove the benefits of the
18 artificial addition of sands to Debordieu, have
19 you?

20 A: I have not.

21 **MS. PHELAN:** One minute, Your Honor. That's all the
22 questions I have.

23 **THE COURT:** Redirect?

24 **MR. CUNNINGHAM:** Thank you, Your Honor. Just very
25 few. Let's see.



DR. YOUNG - REDIRECT EXAMINATION BY MR. CUNNINGHAM:

Q: Now, you were asked about your opinions expressed in your deposition about the expected life of the bulkhead as is if there were no renourishment projects, correct?

A: Yes.

Q: All right. Has your opinion changed as far as the life expectancy of the bulkhead if the bulkhead is refurbished as is planned?

A: Of course. Yes.

Q: And how would that change your expectancy as far as ten years, the lifetime of the bulkhead?

A: I assume that if the bulkhead is refurbished as they are permitted to do, that they will make it stronger and more effective and it could have a, you know, multi-decade life span.

Q: You were asked by Mr. Green about Army Corps of Engineer manual from 2002, I believe.

A: Yes.

Q: All right. Are you familiar with the passage in that manual that states that groins are probably the most misused and improperly designed of all coastal structures?

A: I am very familiar with that passage. Yes.

Q: All right. You were asked a little bit about



1 the beach preservation fund with respect to
2 DCCA?

3 A: Yes.

4 Q: Are you aware of whether or not the permit in
5 either iteration ties the financial commitment
6 to the funds that are in -- in the beach
7 preservation fund?

8 A: I did not see any evidence that it does.

9 Q: All right. Finally, Ms. Phelan was asking you
10 about whether or not Dr. Jackson's analysis
11 included the renourishment that occurred at
12 Debordieu in the most recent years, 1990, '98
13 and '06, do you recall that?

14 A: Yes.

15 Q: Would Dr. Jackson's analysis have included
16 decades of shoreline change at Debordieu prior
17 to the renourishment, to your knowledge?

18 **OBJECTION:**

19 **MS. PHELAN:** Objection to the leading.

20 **MR. CUNNINGHAM:** I'll rephrase, Judge.

21 Q: All right. You were asked by Ms. Phelan about
22 renourishment and how that impacted, if at all,
23 Dr. Jackson's analysis? Sorry. I'm still ---

24 A: It sounded like a fairy just landed in the
25 room.



1 Q: I know. Do you recall that testimony?

2 A: Yes.

3 Q: All right. Do you recall whether or not Dr.
4 Jackson's analysis -- do you recall how far
5 back in time that analysis spanned?

6 A: I believe it started in 1880 or something like
7 that.

8 Q: Okay.

9 **MR. CUNNINGHAM:** No more questions, Judge.

10 **MR. GREEN:** Your Honor, just one question.

11 **DR. YOUNG - RECROSS-EXAMINATION BY MR. GREEN:**

12 Q: The bulk -- excuse me. Dr. Young, the bulkhead
13 can only be repaired with like kind materials,
14 isn't that right?

15 A: I believe so, yes.

16 Q: Thank you.

17 **MR. GREEN:** No further questions.

18 **THE COURT:** Ms. Phelan?

19 **MS. PHELAN:** No further questions.

20 **THE COURT:** You've been asked about the median --
21 mean erosion rate. And we're getting at the
22 fact that mean can be subject to high impacts
23 on the high and the low that affect the mean.

24 A: Yes, sir.

25 **THE COURT:** So, what I'm curious about is did you



1 look at the median erosion rate?

2 A: That's an excellent question, Your Honor. And
3 I wish the report had the median stated in it.
4 And, unfortunately, the answer to your question
5 is no, I have not done that analysis.

6 **THE COURT:** Okay. Well, how about -- you were asked
7 about the renourishment from Ms. Phelan
8 concerning the vulnerabilities. Does -- what
9 I want to know is does renourishment affect the
10 calculation of the erosion rate?

11 A: So, it -- to some degree, it depends on the
12 time frame that you're looking at. When you
13 put a beach nourishment project in, the
14 renourishment may make the erosion rate appear
15 to be extremely high because beach nourishment
16 projects tend to erode very quickly after
17 they've been placed because they're out of
18 equilibrium with the system. So, if you took
19 a short-term change rate after the placement of
20 a beach nourishment project, you might believe
21 that that project has a very high -- or that
22 the shoreline has very high erosion rate. If
23 you take a sort of a slightly larger bracket
24 around that, the beach nourishment project
25 might make the shoreline look -- rate look a



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1 little bit too low because the beach
2 nourishment project does reset the shoreline to
3 some degree. And -- so, it may give you a
4 false impression that the background erosion
5 rate is a little bit too low. If you look over
6 the longest period of time possible, then that
7 filters all of that out to some degree, so ---

8 **THE COURT:** It becomes a wash?

9 A: Sorry?

10 **THE COURT:** It becomes a wash?

11 A: Yes, sir. To a degree.

12 **THE COURT:** Okay. How about the erosion rate for
13 the State of South Carolina in general? Is the
14 State of South Carolina a high erosion rate
15 state, a low erosion rate state?

16 A: Compared to the rest of the United States or
17 the east coast?

18 **THE COURT:** Well, I wouldn't compare it to the rest
19 of the United States because I don't think
20 Kansas would have a whole lot effective there.
21 So, I'll avoid that one. But how about the east
22 coast?

23 A: Certainly, there are shorelines in the southern
24 part of the state that are eroding at a
25 significantly higher rate than most of the

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1 shorelines in North Carolina to the north. The
2 Grand Strand is relatively stable, but some of
3 the tidally influenced shorelines in the
4 southern part of the state -- if you go Harbor,
5 Hunting, Pritchards, those shorelines are -- as
6 high a shoreline change rate as any place on
7 the east coast. So -- so, South Carolina has
8 a pretty good span of erosion rates. You've
9 got some of the only barrier islands in the
10 state that are actually growing. Kiawah is
11 blessed. Fripp Island is blessed. And then
12 you've got these sections of shoreline that
13 have these dramatically high erosion rates.

14 **THE COURT:** Okay. I wanted to just make sure you're
15 testi- -- I understood your testimony. You
16 said that to be threatened a home or area has
17 to have ten times the annual erosion rate. Is
18 that what I heard? I wrote it and I really
19 wasn't sure that was correct.

20 A: I guess, I -- you know, for -- that was a good
21 starting point for me. Yes.

22 **THE COURT:** Okay. All right. Any follow-up from
23 what I've asked?

24 **MR. CUNNINGHAM:** None, Your Honor.

25 **MR. GREEN:** (Shakes head.)



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1 **THE COURT:** Ms. Phelan?

2 **MS. PHELAN:** No.

3 **THE COURT:** You may step down.

4 **MR. CUNNINGHAM:** Thank you, Dr. Young. All right.
5 Judge, we might have to get him from the next
6 room. The Petitioner would call Dale Lacy to
7 the stand now.

8 **THE COURT:** Well, if he's watching, he'll -- he'll
9 hear you.

10 **MR. CUNNINGHAM:** I hope so. I hope he's watching.

11 **THE COURT:** Do we need to take a break or are we
12 good? He heard.

13 **MR. CUNNINGHAM:** Well, we've got ---

14 **THE COURT:** But I do -- do we need to take a break
15 because I was asking separate ---

16 **MR. CUNNINGHAM:** We can take five minutes, Judge.

17 **THE COURT:** No, I'm not ask- -- do y'all -- I will
18 rephrase the question.

19 **MR. CUNNINGHAM:** Okay.

20 **THE COURT:** Do y'all want to take a break?

21 **MR. GREEN:** I'm okay either way.

22 **MR. CUNNINGHAM:** I -- I don't think this will take
23 too long, Judge.

24 **THE COURT:** Okay. You good, Amanda? Amanda, are
25 you good?



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1 **COURT REPORTER:** Yes, sir. I'm good. I'm sorry.

2 **MR. CUNNINGHAM:** Petitioner would call Dale Lacy to
3 the stand, Judge.

4 **COURT REPORTER:** State your name and spell it.

5 **MR. LACY:** Dale Lacy, L-A-C-Y.

6 **COURT REPORTER:** Raise your right hand, please. Do
7 you solemnly swear that the testimony you're
8 about to give in this matter is the truth, the
9 whole truth, and nothing but the truth, so help
10 you God?

11 **MR. LACY:** Yes.

12 **COURT REPORTER:** Thank you.

13 **THE COURT:** You can be seated.

14 **MR. LACY:** Thank you.

15 **DALE LACY,** having been duly sworn, testifies as
16 follows:

17 **MR. LACY - DIRECT EXAMINATION BY MR. CUNNINGHAM:**

18 Q: Mr. Lacy, if the mask is uncomfortable, you can
19 remove it so long as you stay over there behind
20 the glass. Okay. All right. Mr. Lacy -- I'm
21 sorry. Mr. Lacy, what do you do for a living?

22 A: I'm a general contractor.

23 Q: And what kind of clients have you had in the
24 past?

25 A: We used to do a lot of federal government work.

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1 We don't do so much anymore, but mostly very
2 wealthy people now.

3 Q: Okay. Any interesting jobs in the federal
4 government?

5 A: Yes. We actually were involved in a remodel of
6 the Oval Office. We did the International
7 Monetary Fund Headquarters. Numerous
8 courthouses, various opera houses.

9 Q: Okay. Are you married?

10 A: I am.

11 Q: And what's your wife's name?

12 A: Janice.

13 Q: And you have children?

14 A: Yes. Four daughters.

15 Q: What -- all right. Where do your wife and your
16 four daughters live?

17 A: Debordieu.

18 Q: All right. And where do you live?

19 A: I split my time between Lakewood, Florida and
20 Debordieu.

21 Q: All right. How much time do you spend in
22 Debordieu?

23 A: At least six months a year.

24 Q: All right. How long have you lived in
25 Debordieu?



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- 1 A: We've owned property there since 2002.
- 2 Q: And do you own a house there?
- 3 A: Yes.
- 4 Q: Do you own any other property there?
- 5 A: I do.
- 6 Q: Where is ---
- 7 A: Another lot in -- it's Breakwater Court,
8 Pioneer Place.
- 9 Q: Okay.
- 10 A: It's between the two.
- 11 Q: Okay. The house you own, is that near the
12 beach?
- 13 A: Relatively, yes.
- 14 Q: How close approximately?
- 15 A: Five-minute walk. Three-minute, four-minute
16 walk.
- 17 Q: All right. How about your other property, is
18 that close to the beach?
- 19 A: Very.
- 20 Q: All right. How close to the beach is the
21 other?
- 22 A: 100 paces.
- 23 Q: All right. When you're spending time at
24 Debordieu, what do you do?
- 25 A: Recreate. My wife and kids spend a tremendous

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1 amount of time on the beach.

2 Q: Do you spend any time on the beach?

3 A: Yeah. A fair -- a fair amount, yes.

4 Q: What do you do on the beach?

5 A: We go for a lot of long walks. You know, we
6 take the dogs down to walk and swim, and boogie
7 board.

8 Q: Where along the beach on Debordieu Island do
9 you take walks?

10 A: From one end to the other. I mean, we go all
11 the way to the south end to North Inlet and all
12 the way to Pawley's.

13 Q: Okay. You mentioned north south ---

14 A: The south end of Pawley's.

15 Q: All right. You mentioned North Inlet, is that
16 adjacent to the Baruch property, what's been
17 called Hobcaw tract?

18 A: Yes. It's part of it.

19 Q: All right. Now, when did you first move to
20 Debordieu? What year?

21 A: We finished our home in 2004.

22 Q: Do you -- did you move up there soon afterward?

23 A: As soon as it was finished. I mean, we were
24 there for, you know, summers and Christmas, and
25 ---



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1 Q: During your ---

2 A: My wife and kids moved up about eight years ago
3 and I split my time.

4 Q: All right. So, at first it was more of a
5 summer house and later it was more of a
6 permanent residence?

7 A: Correct.

8 Q: Now, have you been observing the beach at
9 Debordieu throughout your time living there?

10 A: Absolutely.

11 Q: All right. And have you observed any
12 renourishments at Debordieu?

13 A: Yes.

14 Q: All right. Which -- do you recall any -- when
15 -- when those renourishments occurred?

16 A: '06 and '15.

17 Q: All right. Are you a member of any
18 organizations right now?

19 A: The Coastal Conservation League.

20 Q: All right. Why'd you join the Coastal
21 Conservation League?

22 A: Because they were in -- heavily involved in
23 protecting out beach in preventing hard
24 structures.

25 Q: All right. Are you familiar with the permits



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1 that we're here about today?

2 A: I am.

3 Q: Do you have an understanding about whether or
4 not those permits would allow groins on the
5 beach at Debordieu?

6 A: Yes. I understand that it has been approved.

7 Q: And do you have -- let me -- let me ask this.
8 Prior to living at Debordieu, did you live on
9 any other beaches in your life?

10 A: We -- we didn't live on the beach, but we lived
11 in Palm Beach County and observed beaches for
12 over -- well, 40 years.

13 Q: All right. Have you ever observed any groins
14 on any beaches?

15 A: Yes.

16 Q: All right. Now, in your -- well, let me ask
17 you this. In your observation of groins on
18 beaches, what have you observed about the
19 groin?

20 A: That they -- that they haven't appeared to work
21 at all.

22 Q: What do you mean by that?

23 **OBJECTION:**

24 **MR. CHURDAR:** Your Honor, I -- I would object. I
25 believe that is, even though it was couched as



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1 a ---

2 **THE COURT:** Yeah. I ---

3 **MR. CHURDAR:** --- an observation.

4 **THE COURT:** That sounded like that went beyond
5 observation and went straight to opinion.

6 **MR. CUNNINGHAM:** Right. I -- and I'm just asking
7 what you've observed.

8 **THE COURT:** So -- I'm going to strike that ---

9 A: That's my opinion.

10 **THE COURT:** --- and let you start it over.

11 **MR. CUNNINGHAM:** Thank you, Judge.

12 **THE COURT:** Okay.

13 Q: And -- and, Mr. Lacy, just -- I'm asking what
14 you've observed, not -- you don't have to give
15 me any opinion about the affects of what you
16 observed. Okay.

17 A: Okay.

18 Q: What have you observed in your experience
19 observing groins on other beaches?

20 A: I've observed that they're mostly rock
21 structures.

22 **OBJECTION:**

23 **MR. CHURDAR:** Your Honor, I -- I would object on
24 relevance grounds. I don't know what other
25 beaches -- observations of other beaches and



1 groins have anything to do with this.

2 A: Well, Pawley's is right next door.

3 **THE COURT:** Sir ...

4 **MR. CUNNIGHAM:** Hold on. Hold on.

5 **THE COURT:** All right. Sir?

6 A: Yes.

7 **THE COURT:** From now on, when there's an objection,
8 your counsel and -- will handle the objection.
9 Not you. Okay?

10 A: My apologies.

11 **THE COURT:** No. No. That's fine. Just laying the
12 ground rules.

13 A: No problem.

14 **THE COURT:** It's always easier that way.

15 A: Certainly.

16 **MR. CUNNINGHAM:** Judge, relevancy is he's familiar
17 in general with the concept of groins and that
18 feeds into these objections to this groin
19 permit. That's all it -- all it's about.

20 **THE COURT:** As way of background. What's your
21 response?

22 **MR. CHURDAR:** I -- I don't know why background
23 knowledge of observing other groins at other
24 beaches is relevant to a layman's opinion. I
25 mean, it's -- it's kind of -- I mean, it would



1 be relevant if he were offering an expert
2 opinion.

3 **THE COURT:** Well, I didn't know if he give a
4 layman's opinion anyway. That would ---

5 **MR. CHURDAR:** Well, a -- a layman's observation of
6 other beaches is not relevant to why we're
7 here.

8 **THE COURT:** Okay.

9 **MR. CUNNINGHAM:** The difference goes to the weight
10 of the testimony, Judge. I mean, he's just
11 talking about observing groins at other beaches
12 and now they're proposing to put groins on a
13 beach he recreates at.

14 **THE COURT:** I -- I tell you what, I'm going to allow
15 him to testify. I am going to tell you that I
16 -- the -- sounds to me like the testimony is
17 not offered for the truth or the impact that
18 this particular groin would have in this area.
19 It's only offered as background affecting what
20 brings him to his attitude here.

21 **MR. CUNNINGHAM:** Thank you, Judge.

22 **THE COURT:** Is that ---

23 **MR. CUNNINGHAM:** That's fair. That's perfectly
24 fair.

25 **THE COURT:** Okay. All right.



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1 Q: All right. So, let me ask you, can just name
2 any beaches that you've seen groins on?

3 A: Yes. Pawley's Island.

4 Q: Any other?

5 A: Pardon me.

6 Q: Any other beaches?

7 A: Yeah. The beach at Palm Beach, Florida.

8 Q: All right. And what have you just observed
9 with respect to the groins at the respective
10 beaches?

11 A: They're just massive rock structures and they
12 create -- it appears to me that they create
13 various currents and ---

14 **OBJECTION:**

15 **MR. CHURDAR:** Your Honor, I believe he's getting
16 into opinions. I would object.

17 **MR. CUNNINGHAM:** I'll with ---

18 **THE COURT:** Yeah.

19 **MR. CUNNINGHAM:** I will stop ---

20 **THE COURT:** Appears to create -- yeah.

21 **MR. CUNNINGHAM:** I'll ---

22 **THE COURT:** Yeah.

23 **MR. CUNNINGHAM:** I'm happy to the strike the last
24 part.

25 **THE COURT:** Yeah. Let's just strike the last,



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1 appears to create various currents.

2 **MR. CUNNINGHAM:** All right.

3 Q: Now, you're familiar with the permit here -- or
4 the permits. There are two, right?

5 A: Yes.

6 Q: All right. Do you have any objections to the
7 permits as you understand them?

8 A: Yes.

9 Q: All right. What are those objections?

10 A: I object to the groins being constructed
11 because of the potential danger to my children.

12 **OBJECTION:**

13 **MR. CHURDAR:** Objection. I think that's an opinion
14 that is ---

15 **THE COURT:** No. That's a reason why he objects. If
16 he's offering it for the -- that it creates a
17 threat to his children, then I'll sustain that.
18 So, I'll -- again, I'm going to limit it to how
19 he answers -- answers the questions and the
20 reasons why he objects and not the -- the fact
21 that it does create that threat.

22 **MR. CHURDAR:** Very well. Thank you.

23 **MR. CUNNINGHAM:** And I think I've a question ...

24 Q: Do you have potential concerns about what the
25 groins might be in this project?



1 A: Yes.

2 Q: All right. What are those concerns?

3 A: Potential injury. Drowning.

4 Q: All right. Any others?

5 A: That's -- no. That's pretty much it, I mean.

6 Q: Okay. Now, I understand as a member of DCCA --
7 you're a member of DCCA?

8 A: Yes.

9 Q: All right. And are you alone in your concerns
10 about the groin project?

11 A: No.

12 Q: All right.

13 **MR. CUNNINGHAM:** Those are all the questions I have,
14 Judge.

15 **MR. CHURDAR:** Just a second. I don't have any
16 questions.

17 **MR. GREEN:** No questions.

18 **THE COURT:** You may step down.

19 A: All right.

20 **MR. CUNNINGHAM:** Thank you, Mr. Lacy.

21 A: Thank you.

22 **MR. CUNNINGHAM:** Petitioner would now call Mr.
23 Francis Ford to the stand. Mr. Ford, you got
24 a little tape on your leg. They -- It's a
25 crime scene in here.



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1 **MR. FORD:** Sorry, Judge.

2 **MS. PHELAN:** Your Honor, I lost some paperwork at
3 the other side.

4 **THE COURT:** Go get it.

5 **COURT REPORTER:** State your name for the record,
6 please.

7 **MR. FORD:** Francis Bell Ford, Jr.

8 **COURT REPORTER:** Raise your right hand, please. Do
9 you solemnly swear that the testimony you're
10 about to give in this matter is the truth, the
11 whole truth, and nothing but the truth, so help
12 you God?

13 **MR. FORD:** I do.

14 **COURT REPORTER:** Thank you.

15 **FRANCIS BELL FORD, JR.,** having been duly sworn,
16 testifies as follows:

17 **MR. FORD - DIRECT EXAMINATION BY MR. CUNNINGHAM:**

18 Q: Mr. Ford, take a seat please. Would you let me
19 know where you grew up?

20 A: I grew up in Georgetown, South Carolina.

21 Q: All right. Do you reside in Georgetown now?

22 A: I reside at Debordieu Colony, 285 Wallace Pate
23 Drive.

24 Q: How long have you lived there?

25 A: I've lived there since Labor Day of 1980.



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1 Q: Are you married?

2 A: Married to Lolly Pate Ford.

3 Q: And is your wife any relationship to the
4 developer of Debordieu initially?

5 A: My wife was Wallace Pate's, the original
6 developer of Debordieu's, oldest daughter.

7 Q: Now, you mentioned moving to Debordieu in 1980,
8 Labor Day. Did you ever have occasion prior to
9 that time to visit Debordieu Island?

10 A: I visited Debordieu on numerous times after
11 Wallace developed it, before I even knew my
12 wife. Actually, I go even further back than
13 that because my family, for probably three, if
14 not four, generations used to camp out on the
15 south end of Debordieu Island.

16 Q: Do you recall approximately what time period
17 that was?

18 A: '50s, '60s, '70s, early '70s.

19 Q: Now, how did you come -- you and your wife come
20 to reside at Debordieu?

21 A: Right before we got married, Wallace Pate had
22 me meet my wife to be at Debordieu at his real
23 estate office and he road us around in his jeep
24 and said, Lolly, I'm going to give you a lot in
25 here in Debordieu and what -- whatever I give



1 you, I'll give to the other four children equal
2 value. And we road around and toured and
3 looked at a house. He said, you can have that,
4 but you got to pick the mortgage up. Lolly
5 said I do not like that house. We road out --
6 as we were riding out, we road past the -- the
7 forest land on the main road and he said, I'm
8 making estate lots out here. Bunnie Peace has
9 bought two across the road and I will cut five
10 lots on the south side of the main Luvan
11 Boulevard. If you want one, I'll give the
12 other children each the other four. So, we
13 rode on out onto the Debordieu Island and we
14 road passed a second road beach lot and he
15 said, I'll give you this lot or I'll give --
16 Jeepy, if you want to pay \$50,000 more, I'll
17 give you an oceanfront lot. And I had the
18 money at the time. Anyway, we road on down and
19 road to a property I now own, still own of
20 three and a half acres down on the south end on
21 the creek. And we were parked there and it's
22 probably some of the most beautiful property in
23 Debordieu. But he said, now Lolly, this is
24 sub-dividable into five lots. I'll draw each
25 of your names out in -- in the order as to



1 which lot you can pick. And he said, now what
2 do you want to do. And my wife said, Jeepy,
3 what do you want to do and I said, I'm not even
4 in the car. Her next statements were, she
5 said, well, I know Jeepy grew up on the creek
6 at Pawley's Island and he would probably love
7 this lot. However -- however, we don't want to
8 live on the beach because I know Jeepy is
9 thinking in the back of his head, hurricanes
10 will be coming to this area and we do not want
11 to build our permanent house in harm's way.

12 Q: Let me -- let me just stop you right there.
13 Let me ask you, did you have the opportunity
14 when you first thought about moving out to
15 Debordieu to purchase an oceanfront lot?

16 A: I did.

17 Q: All right. And was there a reason you elected
18 not do to that?

19 A: Well, my family owned four properties at
20 Pawley's Island going back three or four
21 generations. And as I said, my grandfather's
22 house was on the creek, but I have aunts and
23 uncles had houses on the oceanfront at Pawley's
24 Island for probably since the late '30s, mid
25 '30s on through to today. But I'd always grown



1 up listening to my forefathers say, if you
2 can't afford to lose a house and a lot, you
3 have no business at the beach. The ocean is
4 perilous. It will take -- you can lay a bet
5 down in Las Vegas and probably be -- have
6 better odds than a house permanently on the
7 oceanfront at the beach. My deduction and
8 opinion is that if you own a house on the
9 beach, you're owning it at your own risk.

10 Q: Let me ask you, despite not living directly on
11 the beach, do you spend anytime on the beach at
12 Debordieu Island?

13 A: Well, I -- I mean, I -- believe it or not, I
14 was one of the original surfers in South
15 Carolina. So, yes. I spent time at Pawley's
16 Island in the early '60s surfing on that beach
17 and then my wife still is part owner in a
18 condominium on the oceanfront in Debordieu and
19 we go there frequently. I spent more time
20 probably when the children were younger, and
21 now, in the last five years, I got five
22 grandchildren, so I'll probably be spending a
23 lot more time on the beach than I have in the
24 interim years. But I've -- I've actually
25 fished, swim, surf on the beach at Pawley's and



1 Debordieu numerous times.

2 Q: All right. And during your time at Debordieu
3 over the past few decades, have you observed
4 the beach when you decided to recreate on it?

5 A: Well, I -- yeah. I've walked. I've walked the
6 whole beach before. I don't do that so much
7 now. And yes, observation-wise, I've watched
8 the beach since the mid '70s until today.

9 Q: Do you recall when the bulkhead went in?

10 A: Bulkhead, again, Your Honor, this is opinion.
11 When Wallace Pate developed Debordieu, there
12 was not no amount of erosion on the south end
13 of the beach where the seawall is. And my
14 opinion is when they built the Murrell's Inlet
15 jetties in the mid '70s, that that accelerated
16 erosion in the place that it's eroding now.
17 Bulkhead was put in while Wallace was still the
18 developer of Debordieu and was headed up by
19 Johnny Jackson who had the most southward house
20 at that time in Debordieu. And ---

21 Q: Does 1981 sound ---

22 A: 1981 to somewhere along in there.

23 Q: All right. Are you aware of whether or not
24 subsequent to the installation of the bulkhead,
25 houses were erected on the oceanfront to the



1 south of the bulkhead?

2 A: No. Actually, I don't believe there were any
3 houses south of the bulkhead until Wallace sold
4 Debordieu in '85 and the subsequent owners
5 opened that up for development.

6 Q: Okay.

7 A: It's called Ocean Green now, I believe.

8 Q: All right. And it's your recollection that
9 Ocean Green wasn't built until sometime in the
10 mid '80s at the earliest?

11 A: Well, yes. I mean, after '85.

12 Q: All right. And have you been involved in any
13 of the renourishment projects at Debordieu?

14 A: Well, the original renourishment took place
15 after Hurricane Hu- -- Hugo in '89. And, you
16 know, there are not a lot of people that could
17 appreciate a Category 3 hurricane. I've lived
18 through two. Hazel in '54 devastated Pawley's
19 Island. No hassle to Debordieu. Then, in '89,
20 I lived through Hugo. And Hugo basically wiped
21 out all the sand on Debordieu Beach or where
22 the beach was. And a lot of houses were lost.
23 The condos on the north end, which were
24 constructed in '71 or 2, had high dunes in
25 front of them. The ocean lapped up under the



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1 -- washed all the sand away and washed up
2 under. The beach was totally gone. I mean,
3 totally gone from north end to south end. So,
4 the then developers, North Inlet Corporation,
5 put together a committee, the DCCA Board North
6 Inlet Corporation of which they asked me to be
7 a part of, which they came up with a formula of
8 -- of percentages per property for voluntary
9 renourishment of -- I emphasize it was a
10 voluntary renourishment. We've -- we were
11 charged with asking homeowners to give money to
12 the renourishment project.

13 Q: And that was in 1990?

14 A: That's in 1990. And forgive me, I forget the
15 exact dates, but, you know, 40 years.

16 Q: Since that time, are you aware of whether or
17 not Debordieu has instituted subsequent
18 renourishment projects?

19 A: Yes. And I was on the board for probably the
20 second one. That was a community assessment
21 and that was in 2000 -- 2000 -- I can't
22 remember the date.

23 Q: Well ---

24 A: There've been two -- there've been two. 2016
25 was the last one. I was not on the board and

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1 then the middle one I cannot remember the date,
2 2009 or something like that.

3 Q: Let me -- let me ask you. First of all, you
4 said on the board. You mean the board ---

5 A: The DCCA Board.

6 Q: Okay. And do you recall whether or not
7 Debordieu is renourished about every eight
8 years since the 1990 ---

9 A: That's about -- it's been about every eight
10 years.

11 Q: All right. And since that time, have you
12 observed the seawall or bulkhead failing at
13 all?

14 A: Well, the seawall -- you know, as long as you
15 pile sand up in front of it, it's very
16 effective for that. But when the sand leaves,
17 the seawall protects the homes behind it, which
18 I have no objection to people trying to protect
19 their homes. And, you know, they paid -- those
20 homeowners paid for that seawall.

21 Q: Let me -- let me ask you this. Are you retired
22 now?

23 A: I am.

24 Q: All right. What'd you do before you retired?

25 A: I owned a General Motors dealership.



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1 Q: Was that in Georgetown?

2 A: That was in Georgetown.

3 Q: All right. How do you keep busy in your
4 retirement?

5 A: Well, I get on boards that don't pay me any
6 money. I'm on the Tidelands Health Systems
7 Board and South Carolina Maritime Museum, and
8 I don't know, there's some other smaller
9 boards.

10 Q: Are you a member of any organizations?

11 A: Beg your pardon?

12 Q: Are you a member of any organizations?

13 A: Yes. I mean, I've been a member of Ducks
14 Unlimited probably for I don't know how many
15 years. South Carolina Waterfowl Association,
16 I've not recently been -- actually, my
17 dealership was closed during the closures of
18 the 2,500 dealers. So, my ability to give out
19 the monies that I used to give out are -- are
20 limited. But South Carolina Waterfowl, I've
21 probably been a supporter since the -- first
22 came out. I supported SCELP, South Carolina
23 Environmental Law Project. My childhood
24 friend, Jimmy Chandler, started that project.
25 And then Coastal Conservation.



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1 Q: You've been a supporter of Coastal Conservation
2 League?

3 A: I have. I've -- I've supported early on and
4 I've lost some years in there and as Mr. Lacy
5 just testified in recent times because of the
6 activity on the beach, I rejoined.

7 Q: Are you currently a member of CCL?

8 A: I am.

9 Q: Now, are you familiar with the permits that are
10 at issue in this case?

11 A: I'm familiar with the permits. I have not
12 really detail gone through. I don't claim to
13 be an engineer or a -- or an oceanography
14 scientist. But I -- I've -- I'm familiar with
15 where the proposed groins would be.

16 Q: It's your understanding the proposed permits in
17 this case would allow groins to be erected on
18 Debordieu Beach?

19 A: I -- I am familiar with that.

20 Q: And have you had any familiarity in your life
21 with observing groins in general?

22 A: Well, as I said, I spent a lot of my early
23 years and into adult life on Pawley's Island,
24 and I remember actually the groins were put up
25 in -- after -- after Hazel. Which I was only

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1 four years old during Hazel. It -- it's
2 amazing how many marked memories you can have
3 with houses out in the creek and washed way.
4 But the groins were put in subsequently after
5 Hazel on Pawley's Island. And most of them,
6 they ran all the way to the fishing pier. I
7 think there was one north of the fishing pier
8 and then another one even further north on the
9 midway inlet. But, you know, we took great
10 sport. There was breaking -- broken off groin
11 on -- midways on the Pawley's Island. We
12 called it broken off groin, which had the best
13 surfing. We took great delight in surfing
14 between the pilings in our daredevil years.
15 But yes, I'm very familiar with groins and I
16 will say, the groins -- they always had signs
17 posted on them keep 50 feet away or a hundred
18 feet away, whatever, dangerous rip currents.
19 What I really objected to was walking the beach
20 and you never knew from one day to the other
21 whether the step across the groin was going to
22 be even or whether it's going to be a 5-foot
23 drop, which I guess was part of the purpose the
24 -- the sifting action of groins.

25 Q: All right. You're talking about groins on



1 Pawley's Island?

2 A: Pawley's, yes.

3 Q: Okay. Now, you -- we mentioned that this
4 permit allows for three groins on Debordieu.
5 Do you have any objections to that permit?

6 A: I do have objections.

7 Q: What are those objections?

8 A: Well, probably the most prominent objection in
9 my mind, beyond the science of it is the fact
10 that our private -- our private association is
11 putting pilings up on public property. And
12 this is -- I'm yet to see the -- the lack of
13 fiducial responsibility by the board liabbling
14 the whole community for groins for a few
15 people's houses that essentially may work, may
16 not work, may slow it down, may not slow it
17 down.

18 Q: Let me -- let me ask you, you say liabbling the
19 community, by that, do you mean creating a
20 potential liability?

21 A: Well, liabilities to me come in two different
22 areas. One is potential of someone getting
23 hurt on them. Their perception in a private
24 community like Debordieu the -- a bunch of rich
25 folks live in there. And because it is a



1 private community, those structures, we will be
2 liable for. I mean, I don't -- I look around
3 this courtroom and see a lot of lawyers. They
4 got to make a living somehow. And if somebody
5 on a jet ski should hit one and kill them or if
6 somebody crossing one, breaks a leg or somebody
7 drowns from rip currents, yeah, I -- I would
8 think the community association would be
9 liable. Now that's -- that's one class of
10 liability. The other class of liability is the
11 fact going to Dr. Young's testimony of where
12 groins are located on the beach. The groins
13 are about midways on the beach and it's a long
14 -- as you know, Debordieu Island is a pretty
15 long island. There was -- my -- my mother-in-
16 law, Lucille Vanderbilt Pate, had a lawsuit
17 against Baruch who kept challenging her on
18 where the line was. She hired Woods Hole
19 Oceanography in Maine, one of the premiere
20 oceanography scientific groups in the world, to
21 study that south end beach. We actually found
22 a -- a 18 -- I think it was 1850s map of
23 Debordieu Beach in which there was a new inlet
24 which is dated on that map. North Inlet is
25 south of there and the new inlet is noted on



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1 that map and that's a thin place on the spit of
2 Debordieu Beach where if we construct groins,
3 there's a possibility that downward drift may
4 ---

5 **OBJECTION:**

6 **MS. PHELAN:** Objection, Your Honor.

7 **THE COURT:** Yeah.

8 **MR. CUNNINGHAM:** I'll -- I'll agree to strike the
9 last ---

10 **THE COURT:** Yeah.

11 **MR. CUNNINGHAM:** --- sentence of that.

12 A: Okay.

13 Q: And I -- and Mr. Ford, I just want --- want
14 your concerns and -- and what I ---

15 A: My -- my concerns, to put it more succinctly,
16 are that downward drift is going to happen and
17 erosion on Baruch is going to happen, and by a
18 statute we're going to be liable for it as a
19 community.

20 Q: As a -- any other concerns that you haven't
21 mentioned?

22 A: Well, I've got a concern but the Court wouldn't
23 be concerned with that. I think I'm going to
24 be liable for assessments to pay for the beach
25 renourishment and the groins, and the -- any

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1 liabilities we might have.

2 Q: Is that everything?

3 A: Is that enough? I mean, I -- I can go on.

4 Q: You tell me.

5 A: If y'all got the rest of the day, I can really
6 give you a history lesson.

7 Q: No, thank you. I won't take any more of your
8 time. Thank you.

9 **MR. FORD - CROSS-EXAMINATION BY MS. PHELAN:**

10 Q: Hi, Mr. Ford. It's nice to see you again.

11 A: Good to see you. I thought you'd have had
12 enough of me the last time we met.

13 Q: I enjoy seeing you again. All right. I just
14 wanted to confirm that -- that right -- at
15 present, you rarely walk the beach, is that
16 correct?

17 A: I rarely walk the beach. I -- I will say --
18 let me give you a qualification to that
19 statement. I go down on beach walks and check
20 the progress of the sand which they say I'm
21 invested in.

22 Q: Okay.

23 A: So, that doesn't mean that I walk the beach
24 from one end to the other. That means I walk
25 out on the boardwalks and the -- our public



1 accesses and look at the beaches at different
2 points.

3 Q: Okay. And when you go out on the beach, the
4 times with your family and your grandkids, you
5 go to the northern part of Debordieu Beach?

6 A: I do.

7 Q: You don't go where the groins are proposed?

8 A: I don't -- I go down there to check, to
9 monitor. That's the only reason I go down
10 there.

11 Q: Okay. Thank you.

12 A: And at high tide, you can't walk past the
13 bulkhead anyway.

14 Q: And you like to go after the storms to see ---

15 A: Some ---

16 Q: --- how the beach is doing there?

17 A: Some times I go during the storms.

18 Q: During the storms. And I believe that you ---

19 **THE COURT:** That would be the ex-surfer in you.

20 A: That would be the crazy part.

21 Q: I believe that you went through Dorian, is that
22 correct?

23 A: I did.

24 Q: During Dorian.

25 A: I -- let me qualify. I've been through every



1 hurricane that have been in Georgetown in 70
2 years.

3 Q: Okay. Can you tell me what you observed when
4 you went and looked at what was going on during
5 Dorian at the beach?

6 A: Well, the beach -- was Dorian the last one? I
7 don't ---

8 Q: Isaias.

9 A: I don't take these names -- I mean, they're
10 going to be 20 names this year.

11 **MR. SLAGEL:** That was last year. Fall of 2019.
12 Last -- last fall.

13 Q: Fall 2019.

14 A: Okay. That would be the last one. It --
15 Dorian actually came up and came across the
16 public access on the most southward end. It
17 breached that right after I had left it.

18 Q: What do you mean by breached?

19 A: I mean it came over the dunes and into the
20 road.

21 Q: Into the road?

22 A: Into the road. Yes.

23 Q: So, past the houses?

24 A: Past the beach houses and -- oh, actually, over
25 to the second row of houses.



1 Q: Okay. So, the second row of houses ---

2 A: Uh-huh.

3 Q: --- is where the water came from that storm?

4 A: Right.

5 Q: And you observed waves crashing into the
6 bulkhead and over the bulkhead?

7 A: I did.

8 Q: And obviously the waves were crashing into the
9 houses as well, if they went to the second row.

10 A: The waves did not reach the upper -- you know,
11 the houses are 14 feet high at least, so.

12 Q: Okay.

13 A: They did not reach upper levels of the house.

14 Q: But the water washed under the houses?

15 A: The water washed under them.

16 Q: And you also observed -- you also went down
17 there and looked at the conditions during
18 Hurricane Matthew?

19 A: I did.

20 Q: Is that correct?

21 A: I did.

22 Q: Could you tell us what you observed?

23 A: Well, it -- here's the whole thing, I mean,
24 it's a lot of wind, a lot of water, and a lot
25 of waves crashing. And I would not really



1 recommend anybody going out in a hurricane and
2 looking at these things. And I -- I knew when
3 I went, I knew how high the tide was, how high
4 the wind was and where to go and where to get
5 -- when to start back to safe harbor, which
6 would be my house. So, and tide gets up. I
7 don't recommend anybody being on any island,
8 any time, during any hurricane.

9 Q: So, let's -- let's just talk about the non-
10 storm times.

11 A: Okay.

12 Q: You're aware of the past renourishment efforts
13 by ---

14 A: Say that again, please?

15 Q: You are aware of the past renourishment efforts
16 ---

17 A: Yes.

18 Q: I believe you testified to. And every -- every
19 time that Debordieu did a renourishment, there
20 was a need for that renourishment, wasn't
21 there?

22 A: I would say the need was there for the houses
23 that were built on the beach. See the problem
24 is not the beach. The problem is the houses,
25 the structures, of which everybody has a right



1 that can have money and buy one, and put one
2 up, construct one. I have no problem with
3 that. What I have problem with is them wanting
4 to liable me with it. Having said that, I
5 realize in the State of South Carolina, we've
6 got an issue where the beach is a public beach
7 from the highwater mark down and we have
8 setback lines that have come up since other
9 houses have already been built. So, from an
10 individual standpoint, I've -- I'm kind of a
11 castle kind of guy. If -- if you got that
12 house, you got the right to protect it as much
13 as possible.

14 Q: Okay. And the beach -- the beaches needed to
15 be renourished because the waves were getting
16 close to or coming under the structures,
17 correct?

18 A: On the south end. Yes.

19 Q: Okay. And -- and you would consider that the
20 structures were threatened by the waves?

21 A: During a hurricane, yes.

22 Q: What about just an -- at the end of or before
23 ---

24 A: Normal high tide ---

25 Q: --- renourishment?



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1 A: Normal high tide, the -- the bulkheads do their
2 job as far as protecting the houses.

3 Q: The houses where the bulkhead ---

4 A: The houses ---

5 Q: --- are located behind?

6 A: --- behind the bulkhead.

7 Q: Okay.

8 A: And they don't threaten the other houses on the
9 north end or the ones that were built after the
10 setback line on the south end.

11 Q: But the water was getting close to the houses?

12 A: Which time?

13 Q: Prior to renourishments.

14 A: Well, it only got as far as where the bulkhead
15 was.

16 Q: Okay. But you did testify that the -- that the
17 beach was needed to be renourished because
18 waves were getting close to or coming under the
19 structures?

20 A: That was the whole point in the beach
21 renourishment.

22 Q: Okay. Now, you talked about the Pawley's
23 Island groins.

24 A: Uh-huh.

25 Q: And you talked about -- and you're aware that



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1 groins are located up and down the South
2 Carolina coast, is that correct?

3 A: You know, I went to several. When I've spent
4 a lot of times on the Isle of Palms and Folly
5 Beach, I didn't really notice groins at those
6 beaches. Maybe they were there. Maybe --
7 maybe I was just inebriated too much to notice,
8 but ---

9 Q: Okay.

10 A: --- they -- you know, ev- -- every -- every
11 beach on our coast is a dynamic. Every island,
12 barrier island, is a dynamic and obviously
13 Folly Beach is in a lawsuit with the Corps of
14 Engineers for the destruction that the jetties
15 -- they claim the jetties did on that beach.
16 And -- and there was actually waves washing
17 under the houses when I was at the Citadel. I
18 know they've had renourishment since then.
19 That was a long time ago. But ---

20 Q: But you are aware ---

21 A: I'm -- I'm aware of the groins at Pawley's
22 Island.

23 Q: Okay. What I was trying to get at is if your
24 concerns you've -- you've voiced your concerns
25 of safety. Are they generalized to any groin



1 or is -- is there something specific to the
2 groins in Debordieu?

3 A: Well, the -- the safety concerns would be for
4 any groins. Like -- like I said, the groins at
5 -- at Pawley's had -- I'm sorry, Your Honor.
6 My -- my time has expired on my parking meter.
7 I apologize.

8 **THE COURT:** Well, that's a not call, so you keep
9 your phone.

10 A: And -- and I've got it on silent. I just ---

11 **THE COURT:** Okay.

12 A: --- had that one alarm. I thought it would be
13 after this. I apologize. There are warning
14 signs to stay away from them, so more than me
15 have concerns about the safety around groins.
16 The specific concerns I have at Debordieu is
17 they're private structures on a public beach.
18 At Pawley's, those are public structures on a
19 public beach.

20 Q: Okay. And you talked about surfing in your
21 daredevil -- devil days between the groins,
22 correct?

23 A: Well, just once -- the -- the boards had come
24 out ---

25 **THE COURT:** He said the pilings.



1 **MS. PHELAN:** The pilings.

2 A: Pilings.

3 **MS. PHELAN:** I'm sorry.

4 **THE COURT:** Which I'm familiar with.

5 **MS. PHELAN:** Between the pilings. Yeah. You are.

6 Q: Okay. And -- and with the signs posted around
7 groins, if -- if you're swimming, you're doing
8 it at your own risk, correct?

9 A: Yes. Will y'all excuse me and let me be sure
10 this alarm is off and not on pause?

11 Q: Sure.

12 A: I don't know how much parking tickets are in
13 Columbia, but they're a lot in Charleston.
14 Thank you.

15 Q: Okay. And -- I'm not sure I heard your last --
16 last answer. But you're -- you're swimming at
17 your own risk when you see the signs posted
18 around a groin?

19 A: Sure.

20 **MS. PHELAN:** No further questions, Your Honor.

21 **MR. FORD - CROSS-EXAMINATION BY MR. OWENS:**

22 Q: Mr. Ford, good to see you again, sir.

23 A: Good to see you.

24 Q: I'm Joe Owens. We met at your deposition. I
25 just have a couple of questions for you. Do



1 you know how the groins at Pawley's Island
2 compared to the groins that are permitted to be
3 built at Debordieu?

4 A: Well, the -- the original groins at Pawley's,
5 of which a lot have been -- been replaced, if
6 not all of them, were creosoted pilings and all
7 timber structure. The ones at Debordieu, as I
8 understand it, will be sheet metal with granite
9 rocks, low profile. I mean, they're two
10 different -- two different structures as I see
11 it, but they probably serve the same purpose.

12 Q: Have you ever seen a low-profile groin similar
13 to the one that's designed or permitted in this
14 case?

15 A: I have. Don't ask me where I've seen it. No.
16 I think actually at Pawley's. I think the
17 newer ones are closer to a low-profile.

18 Q: Okay. You were deposed in this case, is that
19 correct?

20 A: Uh-huh.

21 Q: Do you -- I'm going to read a section of your
22 deposition here. Do you remember being asked
23 that the two objections you have to this
24 project is that you feel like the elected board
25 is exposing you to liability for any bodily



1 harm or freak accident that may occur from the
2 groins; and number two, that this decision is
3 exposing its members to liability for possible
4 downdrift impacts? And you responded, correct.
5 And then you were asked, is there any other
6 objections that you have to this project. You
7 said, not as concerns this permit, other than
8 what I have said financially, but that doesn't
9 -- that doesn't really matter. Do you
10 remembering testifying about that during your
11 deposition?

12 A: I may have said that. I wouldn't argue with
13 you one or the other on that, but I possibly
14 did.

15 Q: Okay. You testified just earlier today that
16 you were also concerned about erosion -- the
17 potential erosion effects from these groins.
18 Did you develop that opinion since your
19 deposition?

20 A: No. I -- I think it was because the question
21 was asked the way you just put it in front of
22 me and I said, yes, were there any objections.
23 I didn't have any at the time. Now, the --
24 Jimmy Chandler was key in writing the -- the
25 Coastal Act. I know the discussions I had with



1 him 100 years ago or whenever, perpendicular
2 structures on the coast, if I remember
3 correctly, you're liable for the downward
4 drift. There would be downward drift of a
5 perpendicular structure being a groin on
6 property that does not belong to Debordieu.
7 So, I -- I've had a knowledge of that in -- and
8 if you're asking if anybody coached me on that,
9 no. Nobody coached me because it was something
10 I actually had knowledge of that existed in the
11 state statute.

12 Q: I did not mean to imply somebody coached you.
13 I just asked if you developed an additional
14 opinion since your deposition?

15 A: Well, I -- that deposi- -- that was very late
16 in that deposition. I was probably tired of
17 you by that point in time.

18 Q: You probably were. Yes, sir. Do you also
19 remember testifying in your deposition earlier
20 on that you do not use the -- you and your
21 family do no recreate in the southern area of
22 Debordieu Beach where the proposed project is
23 set to be located?

24 A: I don't remember saying that, but it would be
25 -- that would be true. And there's really two



1 reasons for that. The first basic reason is
2 the condominium is on the north end of the
3 beach and that's where we generally go; either
4 the condominium or the beach club. On the
5 south end, where the bulkheads are, there --
6 there's no real beach to rec -- recreate on.
7 I mean, it's -- it's pretty much washed away.
8 And that -- that end is gone pretty quickly.
9 It goes -- it erodes. Common sense will tell
10 you that erodes a lot quicker than anywhere
11 else on that island.

12 Q: Okay.

13 A: Now, we go to -- we go by boat to the south end
14 spit. We used to about every Sunday. I -- I've
15 become where everybody else uses my boat now
16 and so, I don't go like I used to go.

17 Q: How do your concerns about the -- about DCCA's
18 liability, how are those consistent with or not
19 consistent with the League's objection in this
20 case?

21 A: I don't -- I don't know that the League has the
22 same concerns money-wise as I've got. We've
23 got the same concerns from the standpoint of
24 the natural beach at -- at Debordieu and North
25 Inlet. I mean, essentially, my big worry is



1 that new inlet's going to open back up, which
2 would mean that me or my children and nobody
3 else could ---

4 **OBJECTION:**

5 **MR. OWENS:** Just -- I'll object to this line of
6 testimony, Your Honor. Opinion. The new
7 inlet's going to open back up.

8 **THE COURT:** Your response.

9 **MR. CUNNINGHAM:** Well, that part maybe. The rest of
10 the part he ---

11 **MR. OWENS:** That's all I was referencing.

12 **THE COURT:** Yeah. That's responsive, but I -- I'll
13 sustain that then.

14 Q: Were -- were you finished? I -- I'm ---

15 A: Yeah. No. That's pretty much a summation.

16 Q: Thanks, Mr. Ford. I don't have any more
17 questions for you.

18 **THE COURT:** Redirect?

19 **MR. CUNNINGHAM:** Nothing further. Thank you, Mr.
20 Ford. I'll let you get to get your parking
21 meter.

22 A: Who's -- who's paying my ticket? Thank you.

23 **THE COURT:** Mr. Ford, you might can relate to this.
24 My mother used to say -- because I surfed too.
25 She said -- she used to say her son was the



1 only one running toward the beach when
2 everybody else was running away from it.

3 A: I believe I can relate to that, Your Honor.

4 **MR. CUNNINGHAM:** Judge, it's 12:08 right now. I
5 don't know if it's okay to take a lunch break.

6 **THE COURT:** That's fine with me. What time we want
7 to come back? If we do it like we did
8 yesterday, we'll make it 1:30.

9 **MR. CUNNINGHAM:** That's fine with us.

10 **THE COURT:** Was that okay yesterday?

11 **MR. GREEN:** May I speak with counsel just for a
12 moment, Your Honor?

13 **THE COURT:** You may.

14 **MR. GREEN:** Thanks, Your Honor.

15 **THE COURT:** If y'all are discussing what witnesses
16 you're going to call, I'd like to be in on that
17 one.

18 **MR. CUNNINGHAM:** I think we're discussing what
19 witnesses they might need to call.

20 **THE COURT:** Oh, oh.

21 **MR. GREEN:** Can we have until 1:45, Your Honor?

22 **THE COURT:** Any objection to that?

23 **MS. LENHARDT:** Fine with us.

24 **MR. GREEN:** Thank you, Your Honor.

25 **THE COURT:** Ms. Phelan?



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1 MS. PHELAN: That's fine.

2 THE COURT: Mr. Churdar?

3 MR. CHURDAR: No objection.

4 THE COURT: All right. 1:45 it is.

5 MR. GREEN: Thank you, Your Honor.

6 (Off the record from 12:12 p.m. until 1:50 p.m.)

7 COURT REPORTER: All rise.

8 THE COURT: All right.

9 MR. CUNNINGHAM: At this phase, Your Honor,
10 Petitioner rests.

11 THE COURT: Oh, good. That's what you were asking
12 her about?

13 MR. CUNNINGHAM: Exactly.

14 THE COURT: Okay. All right.

15 RESPONDENT'S CASE IN CHIEF:

16 MR. GREEN: All right. Your Honor, Respondents
17 would call Dr. Tim Kana to the stand. Dr.
18 Kana, you can take your mask off in the place,
19 if you would prefer.

20 COURT REPORTER: And it's Tim Conner, C-O-N-N-O-R or
21 E-R?

22 DR. KANA: K-A-N-A.

23 COURT REPORTER: Oh, okay. Good. Well, there you
24 go. I was completely off. All right. So, Tim
25 Kana, K-A-N-A.



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1 **DR. KANA:** That's right.

2 **COURT REPORTER:** Raise you right hand, please. Do
3 you solemnly swear that the testimony you're
4 about to give in this matter is the truth, the
5 whole truth, and nothing but the truth, so help
6 you God?

7 **DR. KANA:** I do.

8 **COURT REPORTER:** Thank you.

9 **DR. TIM KANA,** having been duly sworn, testifies as
10 follows:

11 **DR. KANA - DIRECT EXAMINATION BY MR. GREEN:**

12 Q: Good afternoon, Dr. Kana.

13 A: Good afternoon.

14 Q: Can you state your full name for the record,
15 please?

16 A: Timothy William Kana.

17 Q: And what's your current work position?

18 A: I'm the president of Coastal Science and
19 Engineering.

20 Q: And how long have you served in that position?

21 A: Since 1984 when it was founded.

22 Q: And did you found that entity?

23 A: Yes, I did, actually.

24 Q: What's your educational background?

25 A: I've got a Bachelor's Degree from Johns Hopkins



1 University, a Master's and a Ph.D. from
2 University of South Carolina.

3 Q: And about -- approximately when did you obtain
4 your undergraduate degree?

5 A: 1971.

6 Q: And what about your Master's?

7 A: 1976.

8 Q: And did you do a thesis for your Master's?

9 A: Yes.

10 Q: And what was the subject of your thesis?

11 A: Beach erosion in South Carolina. Beach
12 processes. It was based on three papers that
13 I published.

14 Q: Okay. And did you do a thesis for your --
15 thesis for your doctorate degree?

16 A: Yes, I did.

17 Q: When did you obtain that degree?

18 A: 1979.

19 Q: And what was the subject of your thesis?

20 A: Suspended sediment and breaking waves.

21 Q: Okay. Have you published over your career and
22 -- and education, have you published any
23 studies and papers?

24 A: Yes, I have.

25 Q: How -- more than 50, more than 100, more than



1 ten?

2 A: Probably over 300.

3 Q: Okay. Let's talk a little bit about your
4 experience with the South Carolina coast. How
5 long have you studied the South Carolina coast?

6 A: I came to USC specifically to study beach
7 erosion and coastal processes. So, since 1974
8 or so.

9 Q: Okay. And have you studied the effect of tidal
10 inlets on the South Carolina coast?

11 A: Yes, I have.

12 Q: And have you published papers on those
13 subjects?

14 A: Yes, I have.

15 Q: Have you -- what other studies -- let's break
16 it down this way, have you done other academic
17 studies or papers with re- -- respect to the
18 South Carolina coast?

19 A: Yes, I have.

20 Q: And approximately how many?

21 A: Probably over 150.

22 Q: Okay. And let's talk a little bit now about
23 Debordieu Beach. Where did you -- when was
24 your first experience with coastal issue --
25 erosion issues on Debordieu Beach?



1 A: 1974.

2 Q: And what was the nature of that experience?

3 A: I was a field assistant for a Ph.D. student and
4 professor at University of South Carolina
5 working at North Inlet.

6 Q: Okay. And is that the south -- at the south
7 end of Debordieu?

8 A: Yes, it is.

9 Q: Okay. And since that time, just briefly, what
10 studies or -- or work have you done with
11 respect to erosion on Debordieu Beach, the
12 whole stretch of Debordieu Beach I should say.

13 A: Sure. With -- that led to a published paper in
14 1977. It was part of my '76 thesis. It was on
15 coastal processes during a minor storm on
16 Debordieu and short-term erosion events. And
17 then in the '80s, my firm, once I got to be a
18 consultant, was retained by the owner of
19 Debordieu Colony to do an assessment of
20 shoreline dynamics, historical shorelines and
21 so on, and develop a -- plans for -- conceptual
22 plans for restoration.

23 Q: Approximately when was that?

24 A: Between 1985 and 1990 or so.

25 Q: Okay. And then have you done other projects at



1 Debordieu Beach?

2 A: Yes.

3 Q: In that area?

4 A: Throughout the '90s, we took our studies to the
5 next level and we actually designed some
6 restoration projects where we nourished the
7 beach. In 1990, after Hugo and then also in
8 1998.

9 Q: Okay. Do you have experience with other
10 nourishment or renourishment projects in South
11 Carolina?

12 A: Yes, I do.

13 Q: Can you tell -- tell the Court what those are?

14 A: We have studied just about every developed
15 beach in South Carolina from North Myrtle Beach
16 down to Hilton Head Island. And we've done
17 feasibility studies, erosion studies, beach
18 monitoring studies, and we've done beach
19 nourishment plans for -- for North Myrtle
20 Beach, Myrtle Beach, Debordieu, Isle of Palms,
21 Folly Beach, Sullivan's Island, Edisto Beach,
22 Hunting Island. Those are the -- just the ones
23 that come to the top of my head.

24 Q: Okay. Have all those involved the installation
25 of groins?



1 A: No.

2 Q: When you're -- when -- when you're doing these
3 studies to -- first of all, explain what a
4 feasibility study is.

5 A: We look at the feasibility of doing various
6 alternatives to restore and maintain a beach.
7 So, the study usually involves an assessment of
8 the erosion and then evaluation of possible
9 sources of borrow sand, and then quantification
10 of how much sand will be needed to provide a
11 restoration that will last a certain period of
12 time.

13 Q: Okay. And as part of these projects, are you
14 required to evaluate sediment transport issues?

15 A: Yes.

16 Q: And what about -- do these projects require you
17 to evaluate the impact of waves and currents,
18 and winds, sea level changes, and the like?

19 A: Yes.

20 Q: Do these projects involve steps that will be
21 necessary to restore the beach if it becomes
22 overly eroded?

23 A: Yes.

24 Q: And does it involve evaluating the influence of
25 tidal inlets ---



1 A: Pretty much, yes.

2 Q: --- on the process?

3 A: Yes.

4 Q: And explain what coastal morphology is.

5 A: Coastal morphology involves the processes that
6 mold and shape the -- the coast, the types of
7 sediments that make up the -- the beaches as we
8 know them, processes that mold and shape dunes,
9 processes that move sand from one section of
10 the barrier island to another, and processes
11 particularly around South Carolina where the
12 tidal inlets either trap or release sand in
13 large quantities to either nourish or erode the
14 adjacent beaches.

15 Q: Okay. And these projects that you do once the
16 sand is placed on the beach, renourishment or
17 renourishment process start, do those include
18 monitoring provisions?

19 A: Yes.

20 Q: Is CS&E involved in monitoring various beaches
21 around the state?

22 A: Yes. We've been -- we started the monitoring
23 program with the individual project areas in
24 the '80s and that developed into a statewide
25 network of profiles. We were retained by the



1 State to assist them in developing the
2 statewide monitoring network in the '80s and
3 '90s, and then we have been retained for the
4 last five to eight years as the State's
5 consultant for beach monitoring that involves
6 all the beaches of -- all the developed beaches
7 in South Carolina.

8 Q: And just very briefly, what does a monitoring
9 process involve?

10 A: Well, the principle thing that we monitor is
11 this cross-section of the beach, kind of a
12 cutaway, because profiles represent the
13 littoral cross-section. When I say littoral,
14 I'm talking about L-I-T-T-O-R-A-L, littoral
15 zone. The littoral profile is the zone over
16 which waves break and move sediment in the
17 cross shore direction between the dune and the
18 low tide area, as well as move sand along
19 shore, down the beach, forming spits or moving
20 into inlets.

21 Q: Okay. And have you testified before as an
22 expert witness?

23 A: Yes, I have.

24 Q: Approximately, how many times?

25 A: Eight to ten, I would say.



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1 Q: And in what -- in this state or another states?

2 A: In South Carolina almost all of them, except at
3 least one case in New York state, which was an
4 erosion related case.

5 Q: Okay. Dr. Kana, let me show you what's marked
6 as Exhibit ---

7 **MR. GREEN:** Pull that up, please.

8 Q: Dr. Kana, do you recognize that document?

9 **(Respondent's Exhibit Number 53 was introduced into**
10 **the record at this time.)**

11 A: Yes. That's my CV.

12 Q: We have it to be as confidential on there
13 because it was given in discovery, but we'll
14 waive that confidentiality requirement for
15 this. But this is your CV, Dr. Kana?

16 A: Yes, it is.

17 **MR. GREEN:** I -- what Exhibit is this, Elizabeth?

18 **MS. KURTZ:** 53.

19 **MR. GREEN:** Your Honor, I'd move this into evidence
20 as Exhibit 53?

21 **(Respondent's Exhibit Number 53 was offered into**
22 **evidence.)**

23 **MR. CUNNINGHAM:** No objection.

24 **MR. GREEN:** Thank you.

25 **MS. PHELAN:** No objection.



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1 **THE COURT:** It's admitted.

2 **(Respondent's Exhibit Number 53 was admitted into**
3 **evidence.)**

4 **MOTION TO QUALIFY DR. KANA AS EXPERT:**

5 **MR. GREEN:** Your Honor, we'd move to qualify Dr.
6 Kana as an expert in beach erosion, coastal
7 geomorphology and processes, sediment buckets
8 and transport, beach restoration, planning
9 design and implementation, and tidal inlet
10 sediment dynamics.

11 **THE COURT:** That was a mouthful.

12 **MR. GREEN:** I read it straight off the paper.

13 **MR. CUNNINGHAM:** I believe he's qualified. No
14 objection.

15 **MR. GREEN:** Thank you.

16 **THE COURT:** Ms. Phelan?

17 **MS. PHELAN:** No objection.

18 **THE COURT:** He is so qualified.

19 **MR. GREEN:** Thank you.

20 **THE COURT:** Add one more to your list.

21 **Q:** Dr. Kana, are you familiar with DHEC permit
22 Number 2017-01795 as amended?

23 **A:** Yes, I am.

24 **Q:** And if we -- if you need me to pull it up or
25 whatever, we will, but I think we can talk



1 through these. Who was the permit issued to?

2 A: Debordieu Colony Community Association.

3 Q: Were you involved in the application for that
4 permit?

5 A: Yes. My firm prepared it.

6 Q: How did you become involved in that -- in the
7 process of applying for that permit?

8 A: We had worked with Debordieu for quite a few
9 years through the '90s and then another
10 consultant was retained for the next dozen
11 years or so. And then we were called back and
12 given the opportunity to start working with
13 them again in around 2014 or 2015 to do a long-
14 term eval- -- long-term shoreline management
15 plan for the community. And then that led to
16 this application in 2017, I believe it was.

17 Q: Okay. And as part of that -- as part of
18 applying for the permit and submitting that --
19 that joint application, did you prepare any
20 analyses regarding Debordieu Beach?

21 A: Yes, we did.

22 Q: Could you list those reports?

23 A: We had the initial plan and feasibility study.
24 Then we had preliminary engineering studies.
25 We had reports that were supplement to the



1 permit application itself, particularly a
2 report called the downdrift impacts analysis.
3 I think we did some biological monitoring or
4 biological evaluations as part of the permit
5 process. We did an analysis of alternatives for
6 the Corps of Engineers, which is required. And
7 we also did a number of annual monitoring
8 studies and post-storm studies, in fact.

9 Q: Okay. And are you currently still doing
10 monitoring studies on Debordieu Beach?

11 A: Yes.

12 Q: Okay. About how long did it take for CS&E to
13 complete the project analysis?

14 A: Probably about two and a half years or so
15 before the application was finally put in.

16 Q: Was that working solid for two and a half years
17 or there were stops and starts and the like?

18 A: I would say, pretty much solidly.

19 Q: Okay. And just approximately, what fees did
20 CS&E charge with respect to those -- those --
21 those network?

22 A: Yeah. I think since 2017, it's probably around
23 \$375,000. I'd have to look it up. I don't
24 know the exact figure.

25 Q: But that includes all the monitoring studies



1 and ---

2 A: Yes.

3 Q: --- analyses that you've done? Okay.

4 A: And I should mention, geotechnical because
5 that's quite an involved study.

6 **MR. GREEN:** Pull up Figure 1-1, please, Elizabeth.

7 Q: Dr. Kana ---

8 **MR. GREEN:** Yeah. There you go. Thank you.

9 Q: Do you recognize this document?

10 A: Yes.

11 Q: What is that document?

12 A: That's a project map, general plan map for --
13 for the permit application.

14 Q: Okay.

15 A: It shows Debordieu Island from Pawley's Inlet
16 at the top of the diagram down to North Inlet
17 at the bottom of the diagram. The project area
18 is right in the middle of the island there.
19 It's -- it's delineated by those brackets.

20 Q: Okay. And what are -- did you prepare or cause
21 this document to be prepared?

22 A: Yes.

23 Q: Was it submitted as part of the downdrift
24 impact analysis?

25 A: It may have been in that report, but it



1 certainly was on the permit application.

2 Q: And what are the proposed borrow areas, just
3 briefly?

4 A: Proposed borrow areas are areas out in the
5 ocean, about a mile and a half, two miles
6 offshore denoted by those boxes 1A, 1B, 1C, I
7 believe it is. And those are areas where we've
8 taken borings and we've tested the sediments to
9 ensure that they are similar in quality and
10 character to what's on the beach. And they
11 would be the borrow area that the dredge would
12 access and pump from there to the shore.

13 Q: Okay. And then, it says the project limits,
14 which is the beach adjacent to Debordieu Colony
15 and that's approximately 8,000 feet?

16 A: Yes.

17 Q: And how much sand is proposed to be placed on
18 the beach as part of the project?

19 A: It says 650,000 yards. It's up to 650,000
20 yards. We're not allowed to go over, but we
21 can go under if it's determined we need less.

22 Q: Okay. And then the three proposed groins,
23 explain what that is.

24 A: Yes. This site is one of the few in South
25 Carolina that has a large gradient in erosion



1 from north to south. And the groins are
2 designed to hold and retain sand that's pumped
3 onto the beach and -- so, that the sand can
4 back up along the critical eroding area of
5 Debordieu Colony. And so, they're intended to
6 slow the rate of sand loss from the project.

7 Q: Okay. And has the -- since you've prepared
8 this -- this -- or since this document was
9 prepared, has the location of the third groin
10 changed?

11 A: Yes.

12 Q: And how so?

13 A: It's been moved landward by, I believe, 50
14 feet, and northward by about 25 feet after
15 discussions with the adjacent property owner.

16 Q: Okay. And ---

17 **MR. GREEN:** Your Honor, I'd move Figure 1.1 into
18 evidence as Exhibit ---

19 **MS. KURTZ:** 54.

20 **MR. GREEN:** --- 54.

21 **(Respondent's Exhibit Number 54 was offered into**
22 **evidence.)**

23 **MR. CUNNINGHAM:** No objection. I think it might
24 already be in with the permit anyway, but
25 that's fine.



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1 **MR. GREEN:** I think -- well, I think you may be
2 right. But if I can do that, that'd be fine.
3 Thank you, Your Honor.

4 **THE COURT:** Ms. Phelan?

5 **MR. GREEN:** Any objection?

6 **MS. PHELAN:** Oh, no objection. I'm sorry.

7 **MR. GREEN:** Will you submit that, Elizabeth?

8 **MS. KURTZ:** I will.

9 **THE COURT:** It's admitted.

10 **MS. PHELAN:** I apologize.

11 **MR. GREEN:** Thank you, Your Honor.

12 **(Respondent's Exhibit Number 54 was admitted into**
13 **evidence.)**

14 **Q:** Does this proposed project, Dr. Kana, include
15 monitoring provisions?

16 **A:** Yes.

17 **Q:** Are those set forth in the original permit?

18 **A:** Yes.

19 **Q:** Okay. You talked about gradients and erosion.
20 Can you explain what that means?

21 **A:** It means the erosion rate is different from one
22 end of the island to the another. In this
23 case, it increases dramatically from north to
24 south.

25 **Q:** What is the nature in your -- as you understand

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1 it of the erosion rate up around monument or
2 marker 1 -- 4150, toward the northern part of
3 the project area?

4 A: 4150 has a -- quite a lot -- a low erosion rate
5 on the order of one to two feet per year, if
6 it's eroding. Some years, it's accreting.

7 Q: And that was my next question. Does the
8 northern part of the area accrete sometime?

9 A: Yes.

10 Q: Okay. Why, in your opinion, is the project
11 needed, Dr. Kana?

12 A: This is one of those type settings where the
13 waves tend to carry away sediment from the
14 south end of the project area more rapidly than
15 we can keep it on the -- on the beach. Some
16 places that involve a short segment of
17 shoreline, short being say one or two miles of
18 shoreline close to a tidal inlet, often time
19 have difficulty maintaining a beach nourishment
20 project because the sand is drawn off so
21 rapidly by the adjacent inlet.

22 Q: Okay.

23 A: And this fits that -- that criteria.

24 Q: What -- what benefits will the project provide
25 with respect to the beach at Debordieu Colony?



1 A: Well, you'll see on the diagram there there's
2 a seawall marked that -- it's about 4,500 feet
3 long. It was built in 1981. And it becomes
4 exposed almost all the time and waves bounce
5 off it. So, what that means, in a sense, is
6 there's no dry sand beach much of the time
7 along the south half of Debordieu Colony. And
8 when there's no dry sand beach, waves can reach
9 development much quicker. They can overtop the
10 wall. They can cause erosion behind the wall.
11 The wall can -- is subject to possible failure.
12 And then with respect to habitat, the beach
13 habitat that we typically associate with
14 beaches, dunes, dry sand beach, a place to --
15 to lay your beach blankets, is missing at the
16 south half of Debordieu Colony. So, the
17 project would restore a dry sand beach and
18 maintain it much longer and more cost
19 effectively than simply nourishing the beach
20 every few years.

21 Q: Just so we're on the same page, what is erosion
22 in this context?

23 A: Well, the way I look at erosion is it's -- it's
24 a volume loss. It's a -- it's a sand volume
25 that's lost from the littoral zone. The -- for



1 any given site, if you have less sand on the
2 beach the next year, and the next year, you
3 have erosion, whether or not the shoreline has
4 moved per se. We look at it in terms of
5 volumetrics because that's a more objective
6 measure of sand loss.

7 Q: And erosion can also include shoreline loss,
8 right?

9 A: Yes. Most studies of shoreline change and
10 erosion kind of refer to the linear movement of
11 a particular part of the beach. So, take the
12 dune line, for example; if a dune recedes
13 because of a storm, that could be referred to
14 as erosion, just considering where the dune
15 line was before and where it is now. But many
16 beaches in the state, particularly Grand
17 Strand, are pretty stable. So, they might
18 erode in a storm, but they'll rebuild after the
19 storm. The sand will come back. So, the
20 erosion that we're really concerned about in
21 these cases are sand that's permanently lost
22 from the system and not likely to come back to
23 the beach for whatever reason.

24 Q: In your opinion, does Debordieu Beach have a
25 history of erosion?



1 A: Yes, it does.

2 Q: How long, in your opinion, has that erosion
3 occurred?

4 A: I would say certainly since the 1930s when an
5 inlet that had been located much further north
6 closed off and North Inlet became the dominant
7 inlet in that -- that setting. So, for about
8 70 to 80 years.

9 Q: Okay.

10 **THE COURT:** Where is that inlet portion of this map?

11 A: The inlet now is called North Inlet. And it's
12 ---

13 **THE COURT:** It's at the bottom.

14 A: It's at the bottom. Yes, sir.

15 **THE COURT:** All right.

16 Q: Dr. Kana, you can touch the screen and kind of
17 drawn on it, if you want to. My helpers just
18 reminded me of that.

19 A: Okay. Cool.

20 Q: Because I forget these things. Okay. Has
21 Debordieu Colony engaged in other restoration
22 projects regarding this beach in the past?

23 A: Yes. They -- they have nourished the beach
24 four times since 1990.

25 Q: Okay. Did any of those prior projects involve



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1 groins as they were ultimately installed or
2 made?

3 A: No.

4 Q: Okay. When was the last renourishment project?

5 A: 2015.

6 Q: Okay. Was CSE -- CS&E involved in that
7 project?

8 A: No.

9 Q: What company was involved in that project?

10 A: Applied Technology and Management.

11 Q: And what was the expected or projected life of
12 the -- how long was the renourished sand
13 expected to stay on the beach?

14 A: The analysis that we did in 2015 in the
15 feasibility study for long range plan showed
16 from the data that projects like that would
17 only last five or six years before
18 renourishment was needed. So, as a result, the
19 -- the community was anticipating having to
20 renourish the beach every six years or so.

21 Q: Okay. And I think you testified that CS&E is
22 engaged in ongoing monitoring of Debordieu
23 Beach?

24 A: Yes.

25 Q: Based on that monitoring, what is your opinion

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1 with respect to that erosional rate? Well,
2 strike that. With an emo- -- ero- -- erosional
3 cycle, is it higher or lower or about what was
4 anticipated?

5 A: I -- I think it's pretty close to what was
6 anticipated. As of today, 2020, the last
7 monitoring that we did -- or 2019 monitoring,
8 I believe we only had about one-third of the
9 sand remaining from the 2015 and 26 project --
10 there was a project in 26 -- 2006 and another
11 project in 2015, which combined put about 1.2
12 to 1.3 million cubic yards on the beach. And
13 out of that, about 300,000 cubic yards remains
14 at Debordieu.

15 Q: After a ---

16 **COURT REPORTER:** Remains what? I'm sorry.

17 A: About 300,000 cubic yards remains in the
18 Debordieu Colony area.

19 **COURT REPORTER:** Thank you. Sorry.

20 Q: If once you place sand on the beach and the
21 erosion begins, is it a linear rate, the same
22 rate each year or is there an exponential late
23 -- rate of erosion?

24 A: It's more like an exponential rate.

25 **MR. GREEN:** Pull up Figure 2.3 please, Elizabeth.



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1 See if we can enlarge that one a little bit.

2 Q: Dr. Kana, do you recognize this document?

3 A: Yes.

4 Q: What does this document represent?

5 A: It's from a paper that Williams and Grechen
6 (ph) from Clemson University prepared around
7 1975. It shows shorelines labeled 1794, 1872,
8 and 1939, as they have delineated them. Based
9 on historical maps that they obtained, as well
10 as the underlying aerial photograph. I think
11 this was the first photograph of -- of the
12 coast taken in a vertical sense that you could
13 scale off and actually see what the coast
14 looked like way back in 1939.

15 Q: And what does the 1794 line rep- -- represent?

16 A: It represents where the shoreline was mapped
17 then, according to this -- these information,
18 but interestingly there's a -- an inlet at the
19 south end. There's a curve in that diagram.
20 Okay. I can do this?

21 Q: Yes. You can do that.

22 A: All right. This curve is a characteristic
23 shape of a -- a spit going into an inlet.
24 Here's a spit going into an inlet down at the
25 bottom. This was 1939. North Inlet is just



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1 off the photograph here, present day North
2 Inlet. But there was an inlet somewhere up
3 here apparently in 1794 according to these
4 data. So, there must have been flow going out
5 in this locality where I've marked it. And
6 then by 1872, the sand spit grew to the south,
7 something like this. That's how it was mapped.
8 So, the inlet was now discharging in this
9 general area here. And one thing I'll point
10 out; you see the light sandy area and the shape
11 of that, right at the edge of the forest line.
12 That's a morphological indicator where the
13 inlet used to -- to pass. And then by 1939,
14 the inlet jumps all the way down to here. This
15 distance between the 1872 inlet and the 1939
16 inlet is approximately one mile.

17 Q: Can you -- based on your knowledge and
18 experience of this area, can you estimate where
19 in 1794 in the -- on relation to the current
20 island, approximately where the inlet appeared
21 to have been?

22 A: Yes. This -- this would be a forested tract of
23 land in here that's now referred to as the
24 Hobcaw property. It's part of Baruch
25 Foundation owned property and part of the



1 entire plantation and -- and reserve that
2 Baruch Foundation controls for the ---

3 Q: Okay. And then -- at the line, I guess, at the
4 end of the 1872 where you testified the inlet
5 had opened or moved, where approximately is
6 that now on present day?

7 A: Well, this tree line has not changed. This is
8 more or less the same as present day tree line
9 here. So, you can see this large area of heavy
10 forest and adjacent to it, the sandy old
11 shoreline and then a spit that extends down to
12 present day North Inlet.

13 Q: Okay. And this -- you said this came from --
14 from some other work. Is this the type of work
15 that is -- that you rely on in your profession?

16 A: Yes. Actually, we -- we've analyzed this very
17 photograph for our own -- our own studies.

18 Q: Okay. And we'll talk about that in a minute.

19 **MR. GREEN:** Elizabeth, pull up Figure 2.4.

20 Q: And what does -- do you recognize this
21 document?

22 A: Yes. This -- these are sketch maps of the
23 North Inlet area between 1878 and 1973. This
24 was not done by our group. This was done by
25 some colleagues of mine at University of South



1 Carolina. It shows the historical changes in
2 a general pattern from the 1870s up to the
3 1970s.

4 Q: And is this the type of information you
5 typically rely on in -- in your work and
6 profession?

7 A: Yes.

8 Q: And how did this inform your analysis of the
9 events on -- or strike -- strike that. How did
10 this inform your analysis of the conditions on
11 Debordieu Beach and Island?

12 A: Well, it was other -- other evidence that North
13 Inlet has not been stable or had not been
14 stable in the 1800s and that a spit had formed.
15 If you look at the 1925 image, it's the third
16 panel to the right from the top, and you'll see
17 the label that says, rapid spit growth. So,
18 sometime in that period between 1925 and then
19 the next panel over, which is 1939, a spit that
20 was just the short little segment of the beach
21 coming off of the forested tract, and I'm
22 circling that forested tract of Hobcaw there,
23 that's spit grew to the south into what is now
24 North Inlet. So, there was rapid spit growth.
25 In other words, sand was coming down from north



1 to south filling in this area, building a spit,
2 and it took on this characteristic, recurve
3 shape curving right into the estuary there.

4 Q: In your opinion, does the movement of that
5 inlet over time impact the conditions on
6 Debordieu Island?

7 A: Yes.

8 Q: How so?

9 A: Inlets basically create the anchor point for
10 beaches and in a stable situation, the inlets
11 act as headlands. In an unstable situation, if
12 the inlet is migratory or it -- it's shifting
13 around, it can leave deposits of sand that
14 create problems.

15 Q: Okay. In your opinion has the inlet stopped
16 moving or is it still moving?

17 A: North Inlet since the '70s -- I can attest to
18 this personally because I've been there since
19 then -- has been positionally stable in the
20 sense that the main channel is more or less in
21 the same location. It's fairly deep. But the
22 outer part of the channel has kind of waved
23 back and forth, if you will. And that's
24 because of the sandbars or dynamics on the
25 seaward side of inlets. All of our inlets on



1 the South Carolina coast, like North Inlet, are
2 what we refer to as ebb dominant. Meaning, the
3 ebb current, that's the current that flows out
4 on the falling tide, is stronger than the flood
5 current. And so, it tends to sweep sand off
6 shore, forming a delta, a big lobe of sand in
7 there. And that becomes a very important
8 feature of the South Carolina coast because our
9 tidal deltas sometimes contain more sand on --
10 in them than the barrier islands. North inlets
11 are relatively large inlet and has a large
12 tidal delta with -- with big sand shoals.

13 Q: What does it mean when, I guess, a coastal area
14 is in equilibrium?

15 A: Beaches can be in dynamic equilibrium if the
16 net change in sand volume approaches zero.
17 They can still move. Sand can move from the
18 dune to the shallow water and back again or it
19 can slush toward one inlet and then, slush back
20 toward another inlet. And so, we refer to this
21 as dynamic equilibrium. The beach is moving,
22 but there's no net loss of sand in the littoral
23 zone. Think of -- think of a rocky headline in
24 the California coast that you can get on a
25 perch and look at a sweep of beach, and you'll



1 see a beautiful arcuate beach. But that sand
2 beach may be trapped between those headlands.
3 And the sand could be sloshing around. If the
4 waves come from the north and slosh to the
5 south. If they come from the south, they'll
6 slosh to the north. If a big storm comes,
7 it'll slosh off shore and if calm weather
8 conditions prevail, it'll come back onto the
9 beach. So, the beach is still dynamic, but
10 it's in equilibrium, neither gaining nor losing
11 sand. The problem we have here at Debordieu,
12 is it's not in equilibrium and I can diagram
13 that if you want or explain that in more
14 detail, if you wish.

15 Q: Okay. And we -- let us -- we'll get to that in
16 just a second.

17 **MR. GREEN:** Pull up Figure 2.1. I mean -- yes.
18 2.1.

19 Q: Does this pertain to what you were talking
20 about for an arcuate shape?

21 A: Yes. The -- of course, we don't have rocky
22 headlands, mountain peaks sticking up out of
23 the ocean like they do in California. But
24 here, what we have is these large tidal inlets
25 and there are sand -- sand shoals that are just



1 off shore of the inlet. And you can see the --
2 the sand shoals at the mouth of those two
3 inlets there adjacent to Caper's Island. Those
4 act as -- as the anchor points. And in
5 between, waves propagate in such a way that
6 they kind of bend in -- in a curve or linear
7 from. So, an equilibrium shoreline is one
8 that's going to develop a beautiful curve or
9 linear shape, concave out into the ocean,
10 bounded by the sand -- the sand shoals of the
11 inlet.

12 Q: Has Debordieu Beach reached equilibrium? Has
13 Debordieu Island reached equilibrium, in your
14 opinion?

15 A: No.

16 **MR. GREEN:** Pull up Figure 2.2, please.

17 Q: And why, in your opinion, has it not reached --
18 strike that. What about the conditions
19 indicate to you that it has not reached
20 equilibrium?

21 A: Well, you take -- you look at the morphology of
22 the shoreline and the first thing we look for
23 is that -- that nice curve or linear shape and
24 when we look at the historical erosion patterns
25 along Debordieu, the north half of the island



1 has that curve or linear shape we've talked
2 about. And it's in relative dynamic
3 equilibrium. It doesn't gain or lose sand --
4 very much sand over time. But the south half
5 of Debordieu, you see it's bulging out in a
6 seaward direction. That blue line is kind of
7 an exaggerated form, but at -- at one point,
8 the shoreline was more exaggerated like that.
9 Probably, in the 1700s and 1800s, when there
10 was an inlet going right through the Hobcaw
11 tract of land -- I think it's marked on there.
12 Early 1800s, that was the location of the inlet
13 as depicted on some early maps. Early 1900s,
14 we just talked about. That's where the inlet
15 was up until somewhere in the mid-30s we think.
16 So, just seeing evidence of that. So, there --
17 because there were inlets at the -- those loc-
18 -- locations 100 years ago, there must have
19 also been tidal deltas, big sandbars associated
20 with both of those inlets. So, those sandbars
21 left a platform. That was the anchor point
22 before the spit grew. In this particular case,
23 between 1939, we see the photograph, the spits
24 already grown to the south. The spits also
25 tended to rotate into the North Inlet estuary.



1 So, that's further accentuated this kind of S-
2 shape curve that you see on Debordieu. And
3 that's not an equilibrium form in this case.

4 Q: And on this document, what is the early 1800s
5 line? What does that represent?

6 A: The early 1800s was where an inlet was mapped
7 in 1792 according to that Williams and Grechen
8 (ph) study in -- in the historical maps that
9 are available.

10 Q: And then what about the early 1900s line?

11 A: The early 1900s line was where the inlet was at
12 the turn of the century.

13 Q: And the photograph that's there, does that
14 generally represent the conditions at Debordieu
15 Beach and Island as you understand them based
16 on your experience and monitoring?

17 A: Yes.

18 **MR. GREEN:** Your Honor, I'd move this into evidence
19 as Exhibit ---

20 **MS. KURTZ:** 55.

21 **MR. GREEN:** 55.

22 **(Respondent's Exhibit Number 55 was offered into**
23 **evidence.)**

24 **MR. CUNNINGHAM:** I mean, it -- it says it's
25 exaggerated, but that's fine, so long as the



1 exaggeration is noted in the document and it
2 is. So, no objection.

3 **THE COURT:** Okay.

4 **MR. GREEN:** Thank you.

5 **THE COURT:** Ms. Phelan? Ms. Phelan?

6 **MS. PHELAN:** Oh. No objections. I was ---

7 **THE COURT:** It's admitted.

8 **(Respondent's Exhibit Number 55 was admitted into**
9 **evidence.)**

10 **MS. PHELAN:** -- I was looking ahead.

11 **THE COURT:** I thought you were really concentrating
12 on this.

13 Q: Now, you -- you've talked about the underlying
14 conditions of the island as -- as the -- and
15 the causes of erosion. Are there other causes
16 of erosion that may occur with respect to this
17 area?

18 A: Yeah. There -- there's quite a few factors
19 that impact erosion from sea level rise to
20 storms, but in our experience over all these
21 years, the South Carolina coast, it's the
22 dynamics associated with tidal inlets or where
23 old tidal inlets were that tend to be the root
24 cause of shoreline change, whether positive or
25 negative. So, we always first look at what's



1 the history of the inlets in an area.

2 Q: Is there a artificial seawall or bulkhead on
3 Debordieu Beach?

4 A: Yes.

5 Q: Can you sort of describe that seawall?

6 A: It's a timber structure that extends a few feet
7 above the normal high tide line. It was
8 designed to hold the shoreline in place as it
9 existed in 1981. It's a timber structure,
10 vertical structure, supported by piles. It's
11 4,500 feet long and terminates about 1,000 feet
12 north of the last house on Debordieu Colony.
13 The end of the seawall is right where the
14 number 2 is on that -- that exhibit there.

15 Q: And does that seawall change the underlying
16 erosion rate on Debordieu Island -- Debordieu
17 Beach?

18 A: No. The underlying erosion rate is going to be
19 there whether the seawall is in place or not.
20 And that's where we look at the volume of sand.
21 The shoreline may not change in this case
22 because the seawall is holding it in place, but
23 the volume of sand in front of the seawall is
24 decreasing over time. That's -- that's the
25 erosion that's of concern here.



1 **MR. GREEN:** Pull up Table 2-6 please, Elizabeth.

2 **Q:** Do you recognize this document, Dr. Kana?

3 **A:** Yes.

4 **Q:** What is -- does this represent?

5 **A:** This is where we divide the shoreline into
6 reaches, which are segments of shoreline,
7 roughly a fifth of the shoreline in each case
8 from Pawley's Inlet -- almost Pawley's Inlet to
9 North Inlet, and we label them with their
10 locality names. Our client's property is
11 labeled Debordieu North and Debordieu South.
12 We tally up those totals and it's approximately
13 the 8,000 feet of shoreline that was referenced
14 earlier. And then Reach Number 4 is the Hobcaw
15 tract. That's the forested tract, which
16 terminated in that sandy area that represents
17 where the old inlet was in 1930s. And then
18 Debordieu spit is all that newly accreted land
19 since the late '30s. Each of those reaches has
20 a -- an average erosion rate or sand loss rate
21 determined from various -- various reports and
22 analyses. And you'll notice right away that
23 there's a distinct gradient in erosion from
24 north to south, with Reach 1 and Reach 2 being
25 negligible change or positive change. And then



1 an increased erosion rate or volume loss as you
2 go to the Hobcaw tract. The Hobcaw tract being
3 the most rapidly eroding portion of Debordieu
4 Island.

5 Q: Okay. And which reach is closest to North
6 Inlet?

7 A: Debordieu Spit.

8 Q: Okay. And did CS&E compute the long term
9 volumetric change rates that are depicted
10 there?

11 A: Yes, we did.

12 Q: And what are the 7-year post-nourishment change
13 rates?

14 A: Those are rates that were based on data that
15 ATM obtained after the 2006 nourishment
16 project, I believe. And that just shows a lower
17 rate of sand loss along the area because the
18 2006 nourishment placed 600,000 yards of sand
19 on the -- on Debordieu Beach. So, they went
20 from an eroding condition to a slightly
21 accretional condition over that 7-year period.

22 Q: And -- so, is your opinion that the volumetric
23 change rates shown there are the correct
24 erosional rates for Debordieu Island?

25 A: No. I would say that these are modified rates



1 based on the impact of nourishment in 2006 and
2 ---

3 Q: No. No. No. I -- I apologize. I'm not
4 talking about the nourishment change rates.
5 I'm talking about the long term ---

6 A: Oh.

7 Q: --- volumetric change rates.

8 A: Yes. I believe those are -- are realistic.
9 Because the conditions -- the morphological
10 conditions haven't changed significantly in the
11 last 30 years. North Inlet is still where it
12 was 30 years ago. Pawley's Inlet is still more
13 or less where it was 30 years ago. And those
14 are the anchors, the present anchors for
15 Debordieu Island.

16 Q: And the -- the volumetric -- long term
17 volumetric change rates that are shown there,
18 do those include any impact of renourishment?

19 A: To the best of my knowledge, if there's any
20 impact, it may have been the 1990 nourishment
21 quantity, which was 200,000 cubic yards placed
22 in 1990. But there -- there are several
23 analyses that have been done to estimate that
24 long term volumetric change. So, I'd have to
25 go into more detail on -- on that.



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1 Q: You mean as to what was done to estimate those
2 things?

3 A: Yes.

4 Q: Okay. Let's talk about that. What did you do
5 or what did CS&E do to calculate the long term
6 volumetric change rates?

7 A: Well, a couple of things. We had done studies
8 in the '90s and the late '80s, prior to the
9 1990 nourishment project, and also, in the
10 '90s, prior to the 1998 project, in which we
11 took the 1939 historical aerial photograph,
12 compared it against the 1990s conditions. In
13 one particular report, I think we used 1992 as
14 our reference monitoring condition, when we
15 were doing this work in the '90s. And we
16 compared it back to 1939. So, that gave us
17 about a 53-year look at the changes. And
18 typically, what we do is we start out by
19 mapping the shoreline as it is depicted on the
20 aerial photograph. We make scale adjustments
21 so that we're comparing apples to apples. And
22 we mark positions of say the veg- -- seaward
23 vegetation line every several hundred feet
24 along the shoreline, kind of connect the dots.
25 And that gives us a shoreline from 1939 say.

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1 And then in 1992, by that time, we're actually
2 measuring the cross-section of the beach. We
3 know where the vegetation line is, but we're
4 also looking at the entire cross-section volume
5 and li- -- littoral zone. Now, we do something
6 called profile displacement to get a volumetric
7 estimate. Profile displacement is where you
8 assume that the shape of the beach today is
9 similar to what the shape of the beach was back
10 in 1939. And so, we can superimpose today's
11 beach on the '39 shoreline matching it up at
12 the vegetation line. Then we do the same thing
13 with the modern shoreline. And we take the
14 difference in area between those two and we can
15 convert that to a volumetric rate. And of
16 course, in this case, we're doing a -- an
17 annualized basis, so we're kind of comparing
18 apples to apples. So, we divide by the number
19 of years in the analysis. So, clearly, the
20 longer the record is that you're analyzing, the
21 less variation you have. It kind of evens out
22 the -- the bumps as you -- as it were.

23 Q: And when you review these old photographs, how
24 do you -- how do you put them in a format that
25 you can analyze them?



1 A: Well, you have to know what the scale and
2 location are for certain key points. So, if
3 you have coordinates today at a road
4 intersection and you can find that same road or
5 landmark on the old map, then you can
6 triangulate and put the old photographs to the
7 same scale as the new -- new photographs. It's
8 -- there are various ways that you can do it.
9 It's all photogrammetric analysis.

10 Q: And does that involve digitization of the
11 photos?

12 A: Yeah. These days, we digitize the shorelines.
13 And by that, we -- we can actually mark the
14 location of the vegetation line. I kind of
15 just track it in a computer-aided design
16 program, such as AutoCAD, and depict the
17 shoreline at it shows on a particular
18 photograph. And then we can analyze any
19 photograph that can similarly be scale adjusted
20 and corrected. So, we're -- we're comparing
21 the same -- same grid. Does that make sense?

22 Q: Yes. Thank you. What -- you mentioned a prior
23 study that CS&E did. Did you look at any other
24 studies with regard to the background erosion
25 rate?



1 A: Yes.

2 Q: And what was that?

3 A: There was a study at the University of South
4 Carolina by Hubbard et al. There was a study
5 by the Corps of Engineers in 1990 by Anders et
6 al. Studies by Williams and Grechen (ph) that
7 was already mentioned from 1975. The studies
8 by Applied Technology Management. And then our
9 group at various times had done historical
10 shoreline studies.

11 Q: Okay. And what about -- you mentioned the ATM
12 study. How -- how did that weigh into your
13 calculation of the background erosion rate?

14 A: ATM's work was more quantitative than the
15 others in the sense that they had actually
16 measured profiles out into deep water. So,
17 they had a -- a quite accurate estimate of how
18 much sand had been gained or lost and they were
19 doing this in the context of designing their
20 beach nourishment plans and then monitoring the
21 performance and outcome of the 2006 nourishment
22 project. And that informed them with their
23 design for the 2015 renourishment project. And
24 we did something similar for the 1990 and 1998
25 nourishment projects. It's just that the ones



1 in the '90s were quite small scale relative to
2 the ones in the 2000s.

3 Q: Okay. And the work by ATM, what did you do to
4 evaluate its accuracy and reliability?

5 A: Well, we -- we looked at all of the -- all of
6 the shoreline studies pointed to this large
7 gradient in erosion from north to south. So,
8 that was some verification of the work that we
9 had done. It was a good check on -- on our
10 work. ATM had some volumetric estimates which
11 came out remarkably close to the volume
12 estimates that my firm in the '90s had -- had
13 come up with. So, we considered that further
14 validation of the methodologies. There are
15 always going to be some minor differences, but
16 the results were -- were quite similar.

17 Q: Is it standard in your profession to rely on
18 work performed in others -- by others in this
19 regard?

20 A: Well, I'd say the short answer is yes, but it's
21 also a matter of our responsibility as
22 professional scientists, professional
23 geologists and engineers to look at that data
24 and check it, make sure that there aren't
25 obvious problems with it. But, you know, the



1 certain -- certain data sets become pretty
2 clear data. If somebody -- if a surveyor goes
3 out and collects data on a given day and they
4 report out the -- the numbers to you, you can
5 run those numbers in your own programs and then
6 check to see what the result is and we should
7 come out with the same -- same result, if you
8 use their input data. So with -- that's --
9 that's what we do with other people's data.

10 Q: And you talked about digitizing photos and
11 using old photos. Is that a standard procedure
12 in your profession?

13 A: Yes.

14 Q: Is there another way to determine what
15 shorelines look like in early twentieth
16 century?

17 A: Well, besides aerial photographs, there --
18 Coast and Geodetic survey of old days would
19 prepare what was referred to as T-sheets.
20 Those were depictions of where the shoreline
21 was mapped back in the 1800s. But having done
22 quite a bit of this work myself, I know how
23 difficult it is to pick out a point and say
24 this is mean high water or this is the edge of
25 the beach because the beach is dynamic. So, we



1 generally don't put as much weight on the
2 linear shoreline changes as we do with -- or
3 these old T-sheets from the 1800s, as we would
4 an aerial photograph where we can actually see
5 what was on the ground back in whatever the
6 date was, 1939. And if we're confident in the
7 scale adjustments, because we have points that
8 we can cross reference, then that tells us much
9 more about what the site conditions were back
10 then because we can actually see it on the
11 photograph.

12 Q: Explain what you mean by volumetric.

13 A: Sure. Consider the beach as a profile
14 extending from the dune line out to some depth
15 of water. So, if you -- standing on the beach
16 looking up the beach, imagine cutting it away
17 and you can see a cross-section. That profile,
18 that shape, evolves in relation to the height
19 of the waves, the amount of wave energy, the
20 tide range and so on. And a volumetric
21 analysis will take that cross section and we
22 can easily compute how much area is in that
23 cross section. Think of a big triangle. Think
24 of it like a sandbox. You take that triangle
25 and go up the beach a foot into another



1 triangle. How much sand is in that one foot
2 slice of the beach between, say, the dune line
3 and some depth of water offshore. So, then we
4 can convert that to a volumetric rate or
5 equivalent volumetric rate, cubic yards per
6 foot of beach. And then depending on when we
7 take the surveys, we can annualize that so that
8 whenever we're making these comparisons, we can
9 refer to it as the volume or the unit volume
10 per year on an annualized basis. We prefer
11 this method over shoreline changes -- linear
12 shoreline changes where you're just marking
13 mean high water because we know mean high water
14 is going to move daily. The beach profile is
15 quite gentle. A volumetric measure integrates
16 all those small scale perturbations of the
17 beach. The beach one day may be steep. The
18 beach one day may be flat after a storm. So,
19 volumetric measures kind of take away all of
20 that noise and give you a pure quantity and
21 that quantity can then be related directly to
22 a quantity of sand that we need to replace a
23 sand deficit where there's erosion where the
24 beach doesn't have as much sand as you want to
25 maintain the dune line. So, that's what



1 volumetric analysis is. Think of it like a big
2 sand box.

3 Q: Thank you, Dr. Kana. Is it possible to convert
4 volumetric to shoreline loss?

5 A: Yes.

6 Q: And -- and for Debordieu Beach, how would you
7 do that?

8 A: Sure. Well, you have to know that the limit of
9 normal sand movement. We've done many
10 measurements of Debordieu Beach over many years
11 and we know that almost all the sand on a
12 yearly basis exchanges between the dune line in
13 a depth of about -15 feet below sea level. And
14 so, we know that that's the scale of the volume
15 that -- that we're dealing with. We can also
16 convert that to a linear change by simple
17 ratios. In the old days, the Corps of
18 Engineers would use a rule of thumb that said,
19 one foot of shoreline change was equivalent to
20 one cubic yard of sand in the beach profile in
21 this literal profile. That was based on work
22 at Coney Island, the first nourishment project
23 that was ever done in the U.S. So, that was a
24 one-to-one ratio. One foot of shoreline change
25 is one cubic yard of sand. Think of a column



1 of sand extending down all the way to a depth
2 of about 20 feet below sea level, the high tide
3 beach to the 20 foot depth contour. If there's
4 27 cubic yards in that column of sand, you --
5 27 cubic feet, that just happens to be one
6 cubic yard. So, that's where they came up with
7 this rule of thumb. Very simple, one foot of
8 shoreline change is equivalent to one cubic
9 yard over that one foot of beach. Here at
10 Debordieu, the sand exchange doesn't go as far
11 down, so we use a different ratio for that. It
12 -- it's about 1.3 in this -- this case. But
13 it's -- the principle is the same.

14 Q: Okay. And so, then the 4.2 volumetric rate,
15 what would that equate to on a shoreline or
16 linear rate?

17 A: 4 point -- multiply 4.2 by 1.3, I guess around
18 6, 5.8. something like that.

19 Q: Okay.

20 A: I wasn't allowed to bring a calculator.

21 Q: That's okay. Did you -- just one second.

22 **MR. GREEN:** Pull up Table 2.1. We'll come back to
23 this one. I don't remember if I gave that to
24 you or not. It should be in the downdrift
25 impact report.



1 **MS. KURTZ:** I have that.

2 **MR. GREEN:** Yeah. Just pull that. Go to Page 25.
3 Just zoom in on that a little bit if you would,
4 Elizabeth. Just out just a tad. Come back out
5 a little bit.

6 **MS. KURTZ:** Sorry.

7 **MR. GREEN:** I think you're in a different document.
8 I'm sorry, Your Honor. Bear with us, please.

9 **MS. KURTZ:** I got it.

10 **MR. GREEN:** Okay. Yeah, and zoom in just a little.
11 That's it. Thank you.

12 Q: And are you familiar with this document, Dr.
13 Kana?

14 A: Yes.

15 Q: And what does this document represent?

16 A: This is out of our downdrift impacts analysis
17 report and it shows various long-term and
18 short-term volumetric erosion rates as
19 determined by our group back in the '90s and by
20 ATM in 2008. There are four sections of the
21 table. The upper two sections, at the top is
22 short term change, which was based on analysis
23 from 1989 to 1996 actual measurements. And the
24 next section of that table is long term change
25 based on 1939 to 1992 analysis, about 53 years.



1 And the lower two sections of the table, ATM
2 did a similar analysis and their short term
3 change rates span the measurements from 2003 to
4 2006. It's an interesting time period because
5 it started five years after the 1999
6 nourishment -- 1998 nourishment that our group
7 designed. And it was conducted just before
8 they completed a 2006 nourishment, so it
9 represented conditions before that first large
10 scale dredging project. And then their long
11 term change rate spans the 1939 to 2003 time
12 frame. We both used 1939 because that was the
13 only aerial photograph available. We had to
14 use the same shoreline for that.

15 Q: And who took that photograph that you referred
16 to a number of times?

17 A: Probably the U.S. Department of Agriculture
18 Soil Conservation Service. They used to do all
19 those.

20 Q: And you test- -- you accumulated this data as
21 part of your analysis in this case?

22 A: Yes.

23 Q: And I think you testified that you had reviewed
24 and evaluated that data as part of your
25 analysis in this case?



1 A: Yes.

2 **MR. GREEN:** Your Honor, I move this table 2.1 into
3 evidence.

4 **(Respondent's Exhibit Number 56 was offered into**
5 **evidence.)**

6 **MR. CUNNINGHAM:** No objection. Or what's the
7 exhibit number?

8 **MS. KURTZ:** 56.

9 **MR. GREEN:** 56. Thank you.

10 **MS. PHELAN:** No objection.

11 **THE COURT:** It's admitted.

12 **(Respondent's Exhibit Number 56 was admitted into**
13 **evidence.)**

14 **MR. GREEN:** And then go back to Table 2.6 please,
15 Elizabeth.

16 Q: And Dr. Kana, the figures in the column for
17 long term volumetric change rate, is that was
18 CS&E calculated based on the data that we've
19 just been discussing?

20 A: Yes. Either calculated or interpellated among
21 all the different studies that had been done.
22 I -- I'd have to go back and check the details
23 on that, but the -- the numbers look ---

24 Q: Well, you testified that this was submitted as
25 part of the downdrift impacts analysis,



1 correct?

2 A: Yes. That's right.

3 Q: And you test- -- you submitted that as part of
4 what the background erosion rate is, correct?

5 A: Yes.

6 Q: Okay. And so, then is it your opinion that
7 those are accurate background erosion rates for
8 Debordieu Island?

9 A: Yes.

10 Q: And I -- I keep using the term background
11 erosion rate. What does background erosion rate
12 mean?

13 A: Background erosion rate to me represents the
14 condition -- the erosion rate that would accrue
15 based on existing morphological conditions
16 where the inlets are if you didn't do anything.
17 So, if the inlets don't move and they still
18 stay -- positionally stay in the same place,
19 the background erosion rate is reflected with
20 what the erosion would be if you don't do
21 anything.

22 Q: And so, why is it important to exclude
23 nourishment or renourishment sand from
24 calculating the background erosion rate?

25 A: Well, because they -- they modify the -- the



1 rate. If you add sand artificially, particular
2 in a case like this, you're going to change the
3 -- the erosion rate, just as this table and the
4 other table you showed before depicts. So, if
5 we're really looking for the erosion rate under
6 the no-action alternative, if you will, doing
7 nothing, then yes, the background erosion rates
8 are the key. They're a key design element,
9 too, because you're -- you're trying to design
10 a project to mitigate for this background
11 erosion. So, that's why it's an important
12 quantity to know.

13 Q: Okay.

14 **MR. GREEN:** Bear with me one moment, please.

15 Q: As part of your analysis, did you also consider
16 erosion rates promulgated by OCRM?

17 A: Yes.

18 **MR. GREEN:** Pull up Figure 2.7, please, Elizabeth.

19 Q: First of all, what does this picture or dual
20 pictures depict, Dr. Kana?

21 A: This was an aerial photograph of Debordieu
22 Island with the OCRM jurisdictional lines
23 superimposed. The red line is the so-called
24 baseline and the green line is the setback line
25 as determined by OCRM.



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1 Q: Okay. And what does it mean in the left-hand
2 picture when the lines are so close together?

3 A: Under the statute Beach Management Act, the --
4 there's a minimum separation distance between
5 the two lines of 20 feet. If it's an area that
6 is not eroding at all or is accreting, then 20
7 feet is the defect or default position of the
8 line. So, those lines track on the left-hand
9 panel there practically together there, that's
10 the 20 foot offset meaning that section of the
11 beach is not erosional or it's stable.

12 Q: Okay. And then on the right-hand photo, the
13 lines diverge, I believe.

14 A: Yes.

15 Q: And what does that mean?

16 A: The further apart they are, the higher the
17 erosion rate is and it increases systematically
18 here as you go along the south half of
19 Debordieu Island. So, the further the lines go
20 -- get apart, the higher the erosion rate and
21 you can estimate what that erosion rate is by
22 measuring the distance between the lines,
23 dividing by 40 because it's a 40-year
24 determination of shorelines and then come up
25 with an annualized rate. So, it's roughly ten

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1 feet per year in this case. So, those lines
2 are about 400 feet apart at the south end of
3 Debordieu.

4 Q: And is that the area -- well, point out on the
5 map, if you would, please, where the groins are
6 proposed to be installed?

7 A: This is the south property line right here.
8 There's the last house. And this would be
9 groin number 3. This point is the south end of
10 the timber bulkhead or the seawall, and that
11 would be groin number 2, 1,000 feet away. And
12 then up here, 1,000 feet to the north, would be
13 groin number 1.

14 Q: Okay. And did you prepare or caused to be
15 prepared these doc- -- this document?

16 A: Well, this -- this image is based on OCRM data.

17 Q: Right.

18 A: We prepared -- we superimposed the lines on an
19 aerial ---

20 Q: You compiled the information for it?

21 A: Yes. Yes.

22 **MR. GREEN:** Your Honor, I would propose to move this
23 into evidence as Exhibit ---

24 **MS. KURTZ:** 57.

25 **MR. GREEN:** --- 57.

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1 (Respondent's Exhibit Number 57 was offered into
2 evidence.)

3 MR. CUNNINGHAM: I don't know if he's laid quite the
4 foundation on the lines, but if you want to ---

5 MR. GREEN: Fair enough.

6 Q: What -- what is the date of the data that was
7 used from OCRM that was used for those lines?

8 A: I believe it was 1980 to 2010 or so. It should
9 have spanned a 40-year period.

10 Q: And then how did you convert the data that you
11 obtained from OCRM -- well, let me just ask
12 this ---

13 A: I mis-spoke. Did I say 1980 to ---

14 Q: Yes.

15 A: --- 2010. That would be 30 years. So, it
16 would be 1970 to 2010. It's -- it's the last
17 40 years.

18 Q: Okay. And is -- but that's data and
19 information that DHEC compiles?

20 A: Yes.

21 Q: Or OCRM compiles. And how did you take the
22 information from OCRM and convert it to the
23 information that's depicted on this photograph?

24 A: OCRM publishes the coordinates of the lines, so
25 we simply place the lines on it. And I -- I



1 think in this particular case, they may have
2 even provided what the CAD people call shape
3 files and they can be superimposed on a
4 photograph if you know where you are in world
5 space. I can't recall because one of my staff
6 engineers worked on that.

7 Q: And -- and is it typical to rely on -- standard
8 to rely on information like this in -- in your
9 pro- -- in the work that you do?

10 A: Yes.

11 Q: And when you say CAD file, what do you mean?

12 A: Well, a CAD file is the digit- -- digitized
13 line. It's a set of coordinates that place
14 each line geographically on a map.

15 Q: Okay. And the staff person that was working
16 for you, was he working under your general
17 supervision?

18 A: Yes. Right.

19 **MR. GREEN:** Your Honor, I'd move this evidence.

20 **(Respondent's Exhibit Number 57 was offered into**
21 **evidence.)**

22 **MR. CUNNINGHAM:** Well, I think he said somebody else
23 did it. Somebody else created the document.
24 But -- yeah. So, I just object on foundation
25 grounds, Judge.



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1 **MR. GREEN:** Your Honor, he's the project manager.
2 It's typical to rely on. He testified people
3 to do this ---

4 **THE COURT:** Well, he said it's typical to rely.

5 **MR. GREEN:** --- engineering.

6 **THE COURT:** Yeah. All right. Any objection?

7 **MS. PHELAN:** No objection from me.

8 **THE COURT:** It's admitted.

9 **(Respondent's Exhibit Number 57 was admitted into**
10 **evidence.)**

11 **MR. GREEN:** Thank you, Your Honor.

12 **THE COURT:** Show me again where the groin --
13 southernmost groin is.

14 A: This is the approximate property line.

15 **THE COURT:** Okay. Thank you.

16 Q: And what did you testify that the erosion rate
17 determined by OCRM was approximately for the
18 project area?

19 A: At the south end I recall somewhere around ten
20 feet per year was the official rate back then.

21 Q: Okay. Did you also -- did you also as part of
22 your work in this case determine, I guess, the
23 erosion rate following prior renourishment
24 projects?

25 A: Yes.

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1 Q: And what was the purpose of performing that
2 analysis?

3 A: To -- well, first to see how well the project's
4 performing because then that helps us design
5 the next project. Obviously, you want to have
6 a project last as long as possible. So, the
7 profiling that was done after the 1990 project
8 informed us for the 1998 project. And I think
9 that one of the tables that you showed earlier
10 had data from 1989 pre-nourishment to 1996
11 post-nourishment. So, that gives you a way of
12 kind of tracking how each section of the beach
13 is -- is reacting to the nourishment.

14 **MR. GREEN:** Pull up figure 2.16.

15 Q: Are you familiar with this document, Dr. Kana?

16 A: Yes.

17 Q: What is that document?

18 A: This document -- this is a graph out of the
19 downdrift impacts analysis report. This is
20 actually tracking the erosion rate each year
21 after the 2006 nourishment project. This was
22 based on data that were provided to us by
23 Applied Technology Management. We took the
24 data and reviewed it and then came up with this
25 analysis. And the way to sort of dissect this



1 -- this graph. Just concentrate on the right
2 side of the -- the left side of the screen
3 first. We're looking at the volumetric rate of
4 erosion one year after the 2006 nourishment.
5 So, in 2007.

6 Q: Can you indicate which figures you're talking
7 about please, Dr. Kana?

8 A: Yes. 2007. These figures here -- forget about
9 all the others, they are showing you what that
10 erosion rate was one year after the 2006
11 nourishment and they're doing it by reach. So,
12 we have the northern most Reach 1. Then we
13 have Debordieu North, Debordieu South, the
14 Hobcaw tract in green, Debordieu Spit in blue.
15 And then we have kind of an island-wide
16 average. That's the black dash line that --
17 that runs through it. So, in year one, the
18 survey showed that portions of the island were
19 actually accreting due to nourishment, of
20 course, and portions were eroding and the worst
21 erosion was Debordieu south. Well, that's
22 where most of the nourishment went. This is a
23 -- not unusual because whenever you place a big
24 quantity of sand and bulge out the shoreline,
25 it will tend to erode rapidly in year one. So,



1 that -19.2 at the bottom of the screen there,
2 that was a high erosion rate in the first year.
3 Then, go over one year to 2008; that's taking
4 the results of the surveys and it's now
5 dividing by two years because we've had two
6 years of change, reach by reach. And so, the
7 net erosion rate in the project area in South
8 Debordieu reduces to 14 cubic yards per foot
9 per year, and then so on. You can carry that
10 right on across. So, you see over time, within
11 the project area, the rate of erosion is
12 decreasing with -- exponentially, it's coming
13 into an equilibrium -- equilibration. If you
14 look at the green line, that's a -- that's the
15 Hobcaw tract, which was not nourished. There
16 was no sand placed on there in 2006. But if we
17 look at the erosion rate at Hobcaw in year one,
18 we see that it's actually gained sand, a
19 quantity of 2.4 cubic yards per foot over that
20 -- that one year. The represents sand that
21 spread away from Debordieu into the Hobcaw
22 property. And if we follow that green line on
23 down, see in year two, now we have two years
24 worth of data. They're continuing to gain
25 sand, so the net effect is positive. They've



1 actually continued to gain sand two years
2 after. Meanwhile, Debordieu Colony is losing
3 sand at a high rate. By year three, Hobcaw is
4 continuing to gain sand at an average of two
5 cubic yards per foot per year. Now, we're
6 averaging this over three years. Meanwhile,
7 Debordieu south, where most of the sand was
8 placed, is still losing sand at a rate of over
9 eleven cubic yards per foot per year. We've
10 also shown in this there's a band toward the
11 bottom that's labeled Hobcaw historical rates.
12 These were the pre-nourishment volumetric rates
13 that Hobcaw has experienced. So, just by way
14 of comparison, you can see the -- the results
15 are pretty favorable for Hobcaw after the 2006
16 nourishment project.

17 Q: Okay. And was this chart based on data that
18 CS&E compiled and developed as part of this
19 project?

20 A: We -- we analyzed the data, but it was
21 collected by ATM

22 Q: Okay. But you reviewed the data and evaluated
23 it?

24 A: Yes.

25 Q: And did you compile or cause to be compiled or



1 prepare this graph?

2 A: Yes.

3 **MR. GREEN:** Your Honor, I'd move this into evidence
4 as Exhibit ---

5 **MS. KURTZ:** 58.

6 **MR. GREEN:** --- 58.

7 **(Respondent's Exhibit Number 58 was offered into**
8 **evidence.)**

9 **MR. CUNNINGHAM:** No objection.

10 **MS. PHELAN:** No objection.

11 **THE COURT:** It's admitted.

12 **(Respondent's Exhibit Number 58 was admitted into**
13 **evidence.)**

14 **MR. GREEN:** Thank you. If you would, Elizabeth,
15 please --

16 Q: And let me be clear before we move on from
17 2.16. So, the lower erosion rate there ---

18 **THE COURT:** When you say lower ---

19 **MR. GREEN:** Strike that, Your Honor.

20 Q: The changes in erosion rate there versus what
21 was on Table 2.6 pertains to the placement of
22 nourished sand on the beach?

23 A: Yes.

24 Q: Thank you.

25 **MR. GREEN:** Pull up -- pull up Figure 2.23,



1 Elizabeth, please.

2 Q: And do you recognize this document, Dr. Kana?

3 A: Yes. This was also out of the downdrift
4 impacts report.

5 Q: And could you explain what this document shows?

6 A: It shows the same data, but it's superimposing
7 the results after the 2015 project. Those are
8 the dash lines. Just to see how it's tracking
9 compared to the 2006 project. So, maybe if we
10 could start again on the left. In year one,
11 after the 2015 project, south Debordieu lost
12 sand at over twice the rate of the 2006 project
13 and, of course, that diminished over time.
14 Same trend as 2006. So, we're comparing 2015
15 down here and 2006 down there; one year, two
16 years, three years, and so on after the
17 project. Meanwhile, Hobcaw, in green again,
18 remember that's 2006 there and up here is 2015.
19 Hobcaw gained even more sand after the 2015
20 project in the first year. And of course, that
21 amount gained diminished significantly by the
22 second year down to about five cubic yards per
23 foot per year accretion in Hobcaw as south
24 Debordieu was eroding at still nearly 30 cubic
25 yards per foot per year. If we had more data,



1 which we do, we just haven't presented it here,
2 but we're now up to about year five, I believe
3 these slides track exponentially with Hobcaw
4 continuing to at least be stable or somewhere
5 close to that line out there and south
6 Debordieu being somewhere up in here. So, in
7 other words, they're following the same
8 tendency as the 2006 project.

9 Q: Okay. And did you prepare or cause to be
10 prepared this document?

11 A: Yes.

12 Q: And, in your opinion, does it accurately depict
13 the data and results that were obtained from
14 your analysis?

15 A: Yes. This is -- this is based on actual
16 measurements.

17 Q: Okay.

18 **MR. GREEN:** Your Honor, I'd move into evidence
19 Exhibit ---

20 **MS. KURTZ:** 59.

21 **MR. GREEN:** --- 59.

22 **(Respondent's Exhibit Number 59 was offered into**
23 **evidence.)**

24 **MR. CUNNINGHAM:** No objection, Your Honor.

25 **MS. PHELAN:** No objection.



1 **THE COURT:** It's admitted.

2 **(Respondent's Exhibit Number 59 was admitted into**
3 **evidence.)**

4 **MR. GREEN:** Thank you. And that was which exhibit?
5 50?

6 **MS. KURTZ:** 9.

7 **MR. GREEN:** 59.

8 **Q:** In your opinion, Dr. Kana, do Exhibits 58 and
9 59 accurately depict the sand loss dynamics
10 after the 2006 and 2015 projects?

11 **A:** Yes.

12 **MR. GREEN:** Okay. Pull back up Table 2.6, please.

13 **Q:** Did the charts that we just looked at inform
14 your analysis with respect to the seven-year
15 post-nourishment change rates chart?

16 **A:** Yes. They -- they show that there's less
17 erosion on Hobcaw after Debordieu nourishes.
18 Debordieu meanwhile, because it's nourished,
19 has some net gain, but it's a much lower rate
20 than we would like.

21 **Q:** Okay.

22 **A:** It's almost an immeasurable gain there.

23 **Q:** And in your opinion, do these figures
24 reasonably act -- reflect the events -- or --
25 strike that. These -- in your opinion, do



1 these reasonably affect the analysis as to what
2 happened after the last two nourishment
3 projects and what happened -- and the
4 underlying background erosion rate?

5 A: Yes.

6 **MR. GREEN:** Your Honor, I'd move Table 2.6 into
7 evidence as Exhibit 60.

8 **(Respondent's Exhibit Number 60 was offered into**
9 **evidence.)**

10 **THE COURT:** I thought it was already in.

11 **MR. GREEN:** No. I don't think I've moved it in.

12 **THE COURT:** Okay.

13 **MR. GREEN:** But I might have.

14 **MR. CUNNINGHAM:** I don't think it's in, Judge.

15 **THE COURT:** Okay. Well, then do you object? Do you
16 object?

17 **MR. CUNNINGHAM:** No, Your Honor.

18 **THE COURT:** Okay.

19 **MS. PHELAN:** No objection.

20 **THE COURT:** All right. It's admitted.

21 **(Respondent's Exhibit Number 60 was admitted into**
22 **evidence.)**

23 Q: Dr. Kana, the 4.2 cubic yards per year rate, I
24 believe you testified that equates to roughly
25 5.8 to 6 linear rate?



1 A: Yes.

2 Q: Is that a high erosional rate, in your opinion?

3 A: In -- in this case, I would -- I would call it
4 moderate to high, but remember that's an
5 average for 4,000 linear feet of Debordieu.
6 You have to put this in context. The south end
7 of Debordieu south is eroding at a much more
8 rapid rate or losing sand at a greater rate
9 than the north end of that -- that reach.

10 Q: Okay.

11 **THE COURT:** All right. So, I can be clear, are you
12 saying that the south end of the south end is
13 losing at a higher rate than the -- than the
14 north end of the south end?

15 A: That's correct.

16 **THE COURT:** Okay.

17 A: And that ju- -- Your Honor, that ---

18 **THE COURT:** I just wanted to make sure I -- I didn't
19 lose it.

20 A: Yes, sir. And that's reflected in the -- the
21 variation in the setback line. It keeps going
22 further away from the baseline.

23 **THE COURT:** Yeah.

24 **MR. GREEN:** Hang on a second.

25 **THE COURT:** I understand it. I just wanted to make



1 sure.

2 A: Yes.

3 **MR. GREEN:** It's on page 19 of the DIA. I
4 apologize, Your Honor. I've thrown my
5 paralegal some curve balls. I didn't -- I
6 didn't tell her this one.

7 Q: Do you recognize this document, Dr. Kana?

8 A: Yes. This was done by ATM.

9 Q: And does it reflect the reaches they we're
10 talking about?

11 A: Yes. There's just some minor differences in
12 the lengths of each reach, but yes. One, two,
13 three, four. They refer to them as zones. We
14 refer to them as reaches.

15 Q: Okay. And so, reach -- so, zone 3 is the one
16 that we're talking about or reach 3 with
17 respect to Debordieu Beach?

18 A: Correct.

19 Q: And then reach 4 would be Hobcaw?

20 A: Yes.

21 Q: Thank you.

22 **MR. GREEN:** Elizabeth, pull up figure -- we
23 introduced into evidence -- I'm not tracking
24 numbers. This one. Figure 2.7.

25 Q: And this is Exhibit 57. Dr. Kana, could you



1 explain what you mean by the higher erosion at
2 the south south Debordieu part?

3 **(Respondent's Exhibit Number 57 was referenced at**
4 **this time.)**

5 A: Yes. It -- you can -- you can tell that from
6 the separation between the red line and the
7 green line. So, at the top of the right-hand
8 panel, you see the lines are pretty close
9 together. At the bottom of the right-hand
10 panel, they're three to four times further
11 apart, which means, the erosion rate that OCRM
12 is applying in this case is three to four times
13 greater at the south end of Debordieu than it
14 is the north half of that reach.

15 Q: About where is the cutoff of the south --
16 where's the south cutoff of south Debordieu
17 reach?

18 A: It -- we roughly divide the Debordieu Colony in
19 -- in half. So, half of it -- the left-hand
20 side is pretty much Debordieu north and the
21 right hand side is Debordieu south and the
22 borderline is going to be somewhere down here
23 near the bottom or up here near the top, I'd
24 have to scale it off.

25 Q: And that would be the northern part of



1 Debordieu south?

2 A: Yes. The northern part of Debordieu south is
3 right -- right there.

4 Q: And then where would the southern part of
5 Debordieu south be?

6 A: Right down there.

7 Q: Is that roughly the property line with Hobcaw?

8 A: Yes.

9 Q: Okay. Thank you.

10 A: Yeah. Sorry for the confusion.

11 Q: I think I confused it. And so you testified
12 that the 4.2 is an average over that entire
13 reach?

14 A: Yes.

15 Q: Okay. Do you understand DHEC to have any
16 standards regarding what is a high erosion
17 rate?

18 A: They may, but we generally place every site in
19 context. So, high in one setting may be
20 moderate in another setting. It really depends
21 on what -- what the regional characteristics
22 are.

23 Q: Okay. And did you provide deposition testimony
24 that a rate of two to three meters might be
25 moderate?



1 A: I -- yes. I probably did.

2 Q: What was the basis for that statement?

3 A: Well, I think in much of the South Carolina
4 coasts, we have some sites that are eroding at
5 20 feet per year and I would certainly call
6 that high. So, something in between. It was
7 a description that seemed appropriate. But
8 again, we look at the context of the setting.
9 Did you say two to -- two to six meters? Two
10 to ---

11 Q: You said two to three.

12 A: Two to three meters. That would be
13 extraordinarily high if you're in a sheltered
14 shoreline like Winyah Bay. But if you're down
15 at Hunting Island, that would've been a pretty
16 good erosion rate compared to the historical
17 changes down there, which were 20 to 25 feet
18 per year. So, again, it's -- it's a matter of
19 putting in context. I myself don't have a hard
20 and fast rule as to what is defined in terms of
21 statute as high, medium, low, whatever.
22 Perhaps OCRM does. You'll have to ask them.

23 Q: But it is your opinion that the erosion rate at
24 Debordieu south is high?

25 A: Oh, definitely.



1 Q: And what is the basis for assessing it as high?

2 A: Well, it high because of this gradient. It --
3 it accelerates from north to south along that
4 south reach and that is a high rate of sand
5 loss.

6 Q: Okay.

7 A: We just showed -- we just looked at a diagram
8 that with those curves like -- I'm sorry. I
9 can't remember which figure it was, but the
10 ones with the curves that showed after the 2006
11 nourishment, Debordieu Colony south was losing
12 19 and a half cubic yards per foot per year.
13 And after the 2015 nourishment, I think it was
14 losing -- was it 37 cubic yards per foot per
15 year in the first year. I believe that's what
16 the -- the data showed. Those are high rates
17 of loss, in my opinion.

18 **THE COURT:** Well, wouldn't that be an artificial
19 high rate of loss though?

20 A: Because of the nourishment. Yes.

21 **THE COURT:** Okay.

22 A: It's -- it's -- no question, it is biased by
23 the fact that we bulged out the shoreline
24 there.

25 **THE COURT:** So ---



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1 A: But still, it's a -- a high -- high rate of
2 loss, in my opinion.

3 **THE COURT:** Average high rate of loss or high rate
4 of -- I mean ---

5 A: It's -- it's a high rate of loss.

6 **MR. GREEN:** Pull up Figure 2.24, Elizabeth, please.

7 Q: Dr. Kana, are you right -- all right? Do you
8 need a -- is everything -- you don't need a
9 break or anything?

10 A: I'm fine. Thank you.

11 Q: Do you need any water? Okay. Do you recognize
12 this document?

13 A: Yes. I -- that was out of the downdrift
14 impacts report.

15 Q: And what does it -- what do these numbers
16 depict?

17 A: These are referred to as the long-term pre-
18 nourishment volumetric erosion rates by reach.

19 Q: Okay. And those numbers don't quite equate to
20 table 2.6, do they?

21 A: No. And some -- sometimes they -- there are
22 going to be variations depending on what depth
23 limit you've assume. I know some of our early
24 work, we only had surveys down to a depth of
25 water of ten to twelve feet. And then, later

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1 surveys, we went out into deeper water. I
2 believe ATM used different depth limits for
3 their calculations. So, surely if -- if you're
4 changing the depth of the calculation, you're
5 going to have some variation in the numbers.
6 So, I can't remember off the top of my head,
7 which one this was based on.

8 Q: And then ---

9 **MR. GREEN:** Pull up Figure 2.25, Elizabeth.

10 Q: Do you recognize this document, Dr. Kana?

11 A: Yes. That was from the same report and these
12 seven-year nourishment rates -- volume rates
13 were related to the data that ATM obtained.

14 Q: Okay. And what does that just show for each
15 reach?

16 A: It shows a reduced erosion rate on Hobcaw and
17 some accretion on South Debordieu. In other
18 words, some sand retention from the 2006
19 nourishment project, such that when you average
20 over seven years, you get a net positive gain
21 of 1.6 cubic yards per foot per year. To put
22 that in context, take Reach 3, for example, and
23 this is a seven-year analysis, so, if we take
24 the 6,000 cubic yards per year, multiply it by
25 seven, that's about 42,000 cubic yards retained



1 along Reach 3, seven years after nourishment.
2 However, I recall that upwards of 400,000 cubic
3 yards of nourishment was placed in Reach 3.
4 So, we went from 400,000 yards down to about
5 40,000 yards. So, that's how you get a net
6 change that's positive, but in actuality we
7 lost 90 percent of the nourishment volume in
8 Reach 3. Meanwhile, Hobcaw, Reach 4, instead
9 of losing sand at a rate of eight cubic yards
10 per foot per year, lost at a much lower rate of
11 about 1.7 in this -- this case or 7,000 cubic
12 yards per year. So, its erosion rate dropped
13 by a factor of about five-fold compared to the
14 historical rate. Was that clear?

15 Q: Thank you. Based on your calculation of the
16 erosion rates and your estimation of the -- of
17 -- I guess, the effective renourishment, did
18 you calculate a sediment budget for Debordieu
19 Island?

20 A: Yes. We -- we did.

21 Q: What -- what is the purpose of sediment budget?

22 A: A sediment budget is an attempt to make an
23 accounting of all the sand that's coming and
24 going in an area. And one of the principle
25 processes in this case, we have losses in the



1 longshore direction. So, we can estimate how
2 much sand is coming in at each compartment and
3 leaving at the next compartment down. So, you
4 -- with any sediment budget, you have to make
5 certain assumptions. And in this case, at the
6 top of the diagram, we're assuming that
7 Pawley's Inlet passes sand into Debordieu
8 Island at a rate of 35 cubic yards -- 35,000
9 cubic yards per year. That's an estimate. And
10 so, that feeds into the sand budget. Then we
11 take actual measurements reach by reach to give
12 us the change in the sandbox. So, the north
13 sandbox has gained 8,000 cubic yards, which
14 means, when we leave that sandbox, the 35,000
15 cubic yards that came in from Pawley's Inlet,
16 only 27,000 cubic yards goes down to
17 compartment two, Reach 2, because 8,000 yards
18 has stayed in Reach 1. And so we just
19 accumulate those quantities of reach by reach
20 until we get down to the end. So, that's --
21 that's the sediment budget formulation.

22 Q: Okay. And why is this important to your
23 analysis?

24 A: Well, it informs us for design of projects, how
25 much sand we can anticipate being lost. It's



1 -- it's a design tool. It's not intended --
2 nobody assumes that this is precise. There's
3 always uncertainties in these things. But
4 we've done a lot of sand budgets in many areas
5 of the coast, and it's a very -- we find it a
6 very useful tool because it's based on
7 empirical actual measurement data, as opposed
8 to -- to model data. Wherever possible, we
9 like to use measurements. What was actually
10 lost in each sandbox and then we track that
11 over time.

12 Q: And let me ask you this, I mean, is -- does --
13 so, does like a grain of sand coming in at the
14 top, is it easy to track it as it proceeds
15 down?

16 A: No. It's kind of -- not at all. It's a very
17 complicated process.

18 Q: Does it just flow straight -- does sand just
19 flow straight down from day to day or how does
20 that work?

21 A: No. It -- it flows to the south when waves are
22 out of the north, but in this case, it flows
23 back to the north when waves are out of the
24 south. And it turns out, waves are out of the
25 south much of the time along Debordieu Island.



1 So, the sand is kind of sloshing back and
2 forth. But -- but the net movement, and that's
3 where those cue out I refer to, that's the net
4 movement per year. That -- we come up with
5 rates that I like to say pass the straight face
6 test. We've come up with rates based on this
7 sed- -- sediment budget of upwards of 100,000
8 cubic yards per year moving south. And that's
9 consistent with many studies in the South
10 Carolina coast. If we had come up with one
11 million cubic yards moving to the south, it
12 would not pass the straight face test. And so,
13 this provides a check on -- on the results that
14 we -- we develop.

15 Q: And in your opinion, is this a reasonably
16 accurate estimate of the conditions that you
17 would anticipate on Debordieu Beach?

18 A: Yes. Because this is based on the condition --
19 the actual conditions from 2003 to 2017. So,
20 it encomp- -- it encompasses the affect of
21 dredging. And you'll see also that we've
22 incorporated in the sediment budget, something
23 called QDF. That's dredge and fill. It's kind
24 of a standard engineering nomenclature there.
25 That's an input of sediment that is added to



1 the two boxes, number 2 and number 3. So --
2 and we've annualized this. Remember, this is
3 a 14-year period. So, we take the quantity of
4 sand that's been placed on the beach divide it
5 by 14, from 14 years. And so, that gives us an
6 annualized quantity that's been placed on the
7 beach. And that's QDF in both cases, the
8 totals 80- -- 88,000 cubic yards. And if you
9 multiply that by 14, you should come up with
10 the quantity that was added in nourishment.
11 One nourishment was I believe 590,000 cubic
12 yards and the other nourishment was about
13 650,000 yards. So, about 1.2 million cubic
14 yards was added in and that's what's reflected
15 in those QDF numbers.

16 Q: It is standard in your profession to prepare
17 analyses like this as a part of a renourishment
18 or beach management project?

19 A: Yes.

20 **MR. GREEN:** Your Honor, I move this into evidence as
21 Exhibit 51.

22 **MS. KURTZ:** 61.

23 **(Respondent's Exhibit Number 61 was offered into**
24 **evidence.)**

25 **MR. GREEN:** 61. Sorry.



1 **MR. CUNNINGHAM:** No objection, Your Honor.

2 **MS. PHELAN:** No objection.

3 **THE COURT:** It's admitted.

4 **(Respondent's Exhibit Number 61 was admitted into**
5 **evidence.)**

6 Q: Dr. Kana, describe the process, just broadly,
7 of placing renourished sand onto Debordieu
8 Beach.

9 A: Sure. The -- the first two projects were done
10 by trucks and excavating pits inland and then
11 hauling the sand to the beach, dumping it and
12 spreading it by dozers. The second two
13 projects, were hydraulic fills where the sand
14 was pumped by dredge from the offshore borrow
15 areas through a big pipeline to the beach and
16 then spread by bulldozers to the contours from
17 the natural beach.

18 Q: And when were the -- those two projects, the
19 hydraulic fill projects conducted?

20 A: 2006 and 2015.

21 Q: And when were the first two projects?

22 A: 1990 and 1998.

23 Q: And how is that sand ---

24 **MR. GREEN:** Go back to Figure 1.1, Elizabeth. I
25 can't remember the Exhibit number.



1 MS. KURTZ: 54.

2 MR. GREEN: Thank you.

3 (Respondent's Exhibit Number 54 was referenced at
4 this time.)

5 Q: And so, you take the sand from those borrow
6 areas, is that right?

7 A: Yes.

8 Q: How do you get it from the borrow area to
9 Debordieu Beach?

10 A: You can pump it directly from the dredge point
11 to the beach through a continuous pipeline or
12 you can use the hopper dredge. Hopper dredge
13 sucks up the material into a big bin in the
14 vessel. The vessel then motors close to the
15 shore and then hooks up to a pipeline and pumps
16 it from there. So, if you're standing on the
17 beach and you're watching this in action, you
18 won't tell the difference. It'll still be a
19 hydraulic fill, which a sand and water slurry
20 pumped onto the beach in -- in both cases.

21 Q: And how -- just to be clear, how do you expect
22 to conduct that project in this situation?

23 A: For the proposed project?

24 Q: For the proposed project.

25 A: The proposed project would be done like the



1 2015 project.

2 Q: Dr. Kana, how do you define -- what -- strike
3 that. What is a groin?

4 A: A groin is a short perpendicular structure
5 designed to trap and retain a portion of the
6 sand that's flowing down coast.

7 **MR. GREEN:** Pull up Figure 1.2 please, Elizabeth.

8 Q: What does that picture represent, Dr. Kana?

9 A: This is a schematic showing the proposed
10 location and to scale the lengths of the groins
11 that are proposed in the application.

12 Q: And since this was made, have any changes been
13 made with respect -- or proposed with respect
14 to groin number 3?

15 A: That's correct.

16 Q: And what -- what changes?

17 A: It's been moved landward 50 feet and northward
18 25 feet in response to the erosion that's
19 occurred between when this plan was developed
20 and -- and the present conditions.

21 Q: Okay. And the underlying picture, what does
22 that depict?

23 A: The underlying photo is a fairly recent photo
24 of Debordieu Island.

25 Q: And did you prepare or cause to be prepared the



1 drawings with the proposed groins?

2 A: Yes.

3 **MR. GREEN:** Your Honor, I'd move this into evidence
4 as Exhibit 60- ---

5 **MS. KURTZ:** 2.

6 **MR. GREEN:** --- -2.

7 **(Respondent's Exhibit Number 62 was offered into**
8 **evidence.)**

9 **MR. CUNNINGHAM:** No objection.

10 **MS. PHELAN:** No objection.

11 **THE COURT:** It's admitted.

12 **(Respondent's Exhibit Number 62 was admitted into**
13 **evidence.)**

14 **MR. GREEN:** Thank you.

15 Q: Now, will these groins trap sand at Debordieu
16 Beach?

17 A: Yes. The groins are designed to trap and hold
18 a finite amount of sand and then allow excess
19 sand, if there's any excess sand in the system,
20 to move around and over each structure.

21 Q: And what is the trapping capacity of the groins
22 as projected?

23 A: These groins are real similar to ones that we
24 built in Hunting Island in 2006. We have some
25 pretty detailed measurements there. And so, we



1 can use that to get a better estimate, but
2 we've estimated that these groins here will
3 trap 50 to 75,000 cubic yards upon full
4 equilibration.

5 Q: What's full equilibration mean?

6 A: Well, full equilibration is the shoreline has
7 receded back so far that they're exposed and
8 there -- there's not as much sand passing
9 around them. They're fully functional. They've
10 trapped as much as they can -- can go.
11 Anything above that, would just kind of leak
12 out of -- out of the area.

13 Q: And will they -- will these groins -- strike
14 that. Does the project include just putting
15 these groins on the beach without any extra
16 sand?

17 A: No. It's -- integral part of this is large
18 scale nourishment that's mandated under the
19 Beach Management Act.

20 Q: And which would -- which do you -- which under
21 the proposal will occur first, will the sand be
22 placed on the beach first or the construction
23 of the groins?

24 A: Because of the severe erosion along Debordieu,
25 we are proposing recommending nourishment



1 first, building a platform, a beach platform,
2 and then building the groins on that newly
3 nourished platform. So, we have a work area
4 and that allows us to bring in land-based
5 equipment. We don't have to bring in barges
6 and -- and marine equipment. So, it reduces
7 the cost and accelerates the construction, in
8 our opinion.

9 Q: And the fact that you placed sand on and then
10 construct the groins, how does that impact the
11 downcoast property?

12 A: Well, we'd have to put in much more sand
13 initially to build up that platform to work so
14 that we can build temporary sand dykes, have a
15 work area that's protected from the waves,
16 drive the sheeting, places the armor stone, and
17 then let the entire project just equilibrate.
18 So, any excess sand that's around the groins as
19 they're constructed, will then freely go where
20 it wants to go. It'll spread downcoast. We
21 have an experience from another project like
22 this where we did the same thing. That was at
23 Folly Beach County Park, the sound end.

24 Q: Okay.

25 **MR. GREEN:** Elizabeth, pull up the picture of



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1 Hunting Island.

2 Q: Do you recognize this picture, Dr. Kana?

3 A: Yes. That's Hunting -- Hunting Island.

4 Q: And what is that object there at sort of the
5 middle of the picture?

6 A: That's the cap, concrete cap that was placed on
7 a groin that consists of sheet pile under the
8 concrete cap that extends offshore, more or
9 less following the profile of this structure,
10 and then terminates at that -- that post
11 sticking out of the water to mark the end of
12 the groin.

13 Q: Based on this photograph, can you tell where,
14 I guess, the landward side of the groin starts?

15 A: No. Because it's buried under the beach.

16 Q: Okay. Does it come back to approximately where
17 the picture is or can you tell?

18 A: In that particular case, I would estimate that
19 it's probably 150 feet landward from where that
20 picture was taken.

21 Q: Okay.

22 **MR. GREEN:** Next Hunting Island picture.

23 Q: And what does this depict, Dr. Kana?

24 A: Well, that's looking landward of a groin toward
25 the dry sand beach. It's looking long the wet



1 sand beach in a landward direction, of course.
2 That's the concrete cap. The profile of the
3 structure is designed to follow the natural
4 slope of the beach, the -- the intertidal wet
5 sand beach. And then the landward end of the
6 groin is designed to be no higher than the
7 natural dry sand beach level.

8 Q: And you may have said, what is that lighthouse
9 in the background?

10 A: That's Hunting Island lighthouse.

11 Q: Okay. And ---

12 **MR. GREEN:** Pull up the Folly.

13 Q: What does that picture depict, Dr. Kana?

14 A: That's a terminal groin at Folly Beach County
15 Park that was constructed in 2013. It begins
16 down toward the bottom of the photograph where
17 you see that little vegetative dune. I can't
18 even make ---

19 Q: Can you mark that?

20 A: I think there's a sign right there. I think
21 that's about the landward end of the groin. I
22 recall it extends 700 and some odd feet from
23 here out to a post that's in the surf. And
24 then this is the -- this would be the structure
25 along here. This photograph looks like a high



1 tide photograph to me.

2 Q: And why was -- why is the post at the end of
3 the groin?

4 A: Again, to mark the seaward limit of it and mark
5 it so the people know where it is.

6 Q: Okay. And ---

7 **MR. GREEN:** The next Folly picture please.

8 Q: And what does this picture depict, Dr. Kana?

9 A: That's looking north of Folly Beach at Folly
10 Beach County Park, which begins near that last
11 house that you see in the distance and extends
12 about 2,000 feet down to the groin. The length
13 of this groin was designed by our company and
14 it was intended to hold and retain this section
15 of beach right here.

16 Q: And you said your company was responsible for
17 installing this groin?

18 A: We designed it.

19 Q: You designed it. Who -- what -- before the
20 groin was installed, what was the nature of the
21 beach there?

22 A: Well, the -- the beach was closed. This was a
23 county park that had to be closed in late 2011,
24 I believe, because of severe storm damage and
25 washovers. Sand was completely washed out of



1 the park. They lost the parking lot. Some of
2 that sand was deposited here and the beach line
3 after the storm was down here by this dune
4 line.

5 Q: So, the shoreline before the installation of
6 that groin was where you just indicated on the
7 picture?

8 A: More or less, yes.

9 Q: And then what about the beach that's in, I
10 guess, the foreground of the picture, what was
11 it's status before the groin was installed?

12 A: This beach?

13 Q: Yeah.

14 A: Well, it was a sand spit and it was way back
15 here, as well. It had eroded as -- just as --
16 as the park had.

17 Q: And are those results consistent with or better
18 than you had projected for that project?

19 A: I would say they were pretty much as we had
20 projected. We felt -- we felt like we would
21 have a successful project given the quantities
22 of sand that we were adding to the beach at the
23 time, perhaps a little bit better than
24 expected.

25 **MR. GREEN:** Pull up the video, if you would please,



1 Elizabeth.

2 **MR. CUNNINGHAM:** Is this the video where you do
3 your opening?

4 **MR. GREEN:** This is my opening video. You just
5 want to rub that in, don't you?

6 **MR. CUNNINGHAM:** No. I just wanted to make sure
7 I've seen it.

8 **MS. KURTZ:** Sorry.

9 **MR. GREEN:** What you do that for? Go back up to the
10 other one and back at the beginning. Yeah.
11 Okay.

12 **MS. KURTZ:** Yeah. That's it.

13 Q: And Dr. Kana, what does this video depict?

14 A: This is something that our -- our group
15 prepared around the time of the permit
16 application to try to illustrate the impact of
17 the groins with respect to the beach morphology
18 and -- and the positioning of the groin. So,
19 we're -- we're doing a -- a flyover of
20 Debordieu Beach to the north.

21 Q: Okay. And then go back ---

22 A: This all obviously a computer simulation, but
23 we've superimposed these pixilated houses on
24 there are just for reference. You'll see the
25 houses are kind of chocked full of holes. It's



1 because of the pixilation of the -- the graphic
2 routine.

3 Q: And then ---

4 A: They're not damaged houses, in other words.

5 Q: Oh, I -- I'm sorry. I didn't mean to interrupt
6 you.

7 **MR. GREEN:** Go to the next video, Elizabeth.

8 Q: And what does this one depict?

9 A: Well, you quickly see a tip of the groin
10 passing by, but this is initially upon
11 completion of the project with nourishment and
12 the groins, and they're buried, this is -- this
13 is right after nourishment where we have the
14 maximum quantity of sand visible in the system
15 along Debordieu Beach. The previous one was
16 after the profile adjusts and the shoreline
17 comes into some equilibrium some years later.

18 Q: Okay. And so right after the project, you
19 don't expected the groins to be visible.?

20 A: No. Because we're -- we're talking about
21 putting in 650,000 cubic yards and I just
22 testified, I believe, the trapping capacity of
23 each groin is on the order of 50 to 75,000
24 cubic yards. So, in simple numbers, we have
25 about three times as much sand as we need to



1 satisfy the -- the trapping capacity.

2 **MR. GREEN:** Pull up ---

3 **THE COURT:** So, when you reach equilibrium, the
4 groins will be exposed?

5 A: Yes.

6 **THE COURT:** How high will they be?

7 A: Well, like, Folly Beach has been in place since
8 2013 and the -- the average exposure along that
9 groin is probably less than one foot. There
10 are some places that it might dip down. There
11 are some troughs. Same is true in Hunting
12 Island where there might be some locations
13 where it's exposed three to four feet, but then
14 most of the structure is buried under the back
15 beach, so people can walk down the beach. The
16 outer part is only exposed about two feet. And
17 this is important to us because the least --
18 the less exposure you have, the better the
19 longevity of the structure is. It's not exposed
20 to as large wave action.

21 **MR. GREEN:** Pull up Figure 1.3, Elizabeth, please.

22 Q: Do you recognize that document, Dr. Kana?

23 A: Yes. This is out of the permit application.

24 Q: And what does this document depict?

25 A: It's a -- a cutaway view of cross section of



1 each groin as proposed.

2 Q: And will all this be visible above ground?

3 A: No. Most of the structure will be buried. In
4 the top graphic there, you can see a mark
5 called MHHW and MLLW. That's mean low and mean
6 high water. So, anything below mean low water
7 is obviously going to be either underwater or
8 buried in sand. We're trying to keep as much
9 of the structure buried and invisible to the
10 casual observer as possible. Now, what this
11 doesn't show is how the beach profile will
12 equilibrate, but I'm happy to say that if the
13 seawall is extending from the -- the back end
14 of the groin there seaward, that section of
15 groin will be below the crest of the seawall
16 and it will be at an elevation that is
17 comparable to the dry sand beach. And then
18 there'll be a sloping section that will go down
19 to about the low water mark, very close to the
20 low tide mark. It will be underwater, but it's
21 very difficult to build under water and set all
22 the rock in place. But you'll notice that we
23 have the rocks extending well below the low
24 water mark. We set them in place to protect it
25 from scallop.



1 Q: And what will these groins be made of?

2 A: Either steel or a composite sort of super
3 fiberglass type product. The fiberglass
4 product is a composite that won't corrode the
5 way steel does. We've recently installed two
6 of them in Hunting Island and we're evaluating
7 how well they perform. We've also installed
8 steel groins, steel sheet pile groins at Folly
9 Beach County Park and Hunting Island, so we're
10 evaluating how they perform.

11 Q: And what does that mean, armorstone or rock
12 mattresses?

13 A: The end of the -- the seaward end of the
14 structure, we refer to as the head of the
15 structure, is the most exposed to wave action,
16 scour from longshore currents, and so on. And
17 so, to prevent the scour associated with waves
18 directly impacting a vertical structure, we put
19 a -- a mattress of small rock. It's kind of in
20 a big bag -- a geotextile bag that holds the
21 small rock together. That's placed as an under
22 layer. And then on top of that, we place
23 armorstone that is roughly two to three feet in
24 diameter and that's just positioned around the
25 end of the groin up to the crest level. And



1 it's designed to absorb and break the waves
2 before they hit the sheet pile.

3 Q: And did you prepare or cause to be prepared
4 this document?

5 A: Yes.

6 Q: And is it, I guess, standard in your profession
7 to prepare documents like this as part of a
8 project regarding groins?

9 A: Yes.

10 **MR. GREEN:** Your Honor, I move this into evidence as
11 Exhibit 60 ---

12 **MS. KURTZ:** 3.

13 **MR. GREEN:** --- -3.

14 **(Respondent's Exhibit Number 63 was offered into**
15 **evidence.)**

16 **MR. CUNNINGHAM:** No objection.

17 **MS. PHELAN:** No objection, Your Honor.

18 **THE COURT:** It's admitted.

19 **(Respondent's Exhibit Number 63 was admitted into**
20 **evidence.)**

21 **MR. GREEN:** Elizabeth, pull up Figure 1.4.

22 **THE COURT:** Whoa. Before you leave this one ...

23 **MR. GREEN:** Yes, sir.

24 **THE COURT:** Does this document, will it give me an
25 idea of how people can walk on the beach -- of



1 how the impact of individuals walking or riding
2 a bicycle on the beach would be affected?

3 A: Right. Well, as -- as I just testified and I
4 think some of the other photographs from other
5 groins have shown, we're proposing to place the
6 crest of the groin, that concrete cap portion,
7 right at the dry sand beach elevation. And as
8 long as we put it up at that elevation or a
9 little bit lower, sand will accumulate across
10 the top of it, just as it has at Folly Beach
11 and Hunting Island. So, people will be free to
12 walk down the beach over the groin in many
13 places. They won't even see the structure.
14 It'll be under -- underground. They'll only see
15 the structure in certain places where the
16 profile of the beach doesn't match the groin
17 profile. It's got waves and so on. So, in
18 those areas, you won't be able to walk directly
19 across. You'll have to hop over the structure
20 and it may be a one foot hop or a three foot
21 hop or sometimes maybe a five foot hop after a
22 storm in -- in one area. But upon
23 equilibration, the way these structures trap
24 sand, you'll be able to go along the back
25 beach. Edisto beach, for example, had groins



1 for many years and you could not drive across
2 the groins because they extended above the
3 beach level all the way up to the dune line.
4 After, Edisto Beach nourished, that's created a
5 continuous dry beach. So, you might have to
6 hop over a little bump of the old groin, but,
7 by and large, you can up and down the beach now
8 with emergency vehicles and so on and access
9 those areas.

10 **THE COURT:** All right.

11 **MR. GREEN:** Pull up Figure 1.4, Elizabeth.

12 Q: And are you familiar with this document?

13 A: Yes.

14 Q: What does this depict?

15 A: This is cross-section showing how the groin and
16 the nourishment, and the existing profile would
17 look like and this was actually based on the
18 results from the 2015 project. So, let's start
19 piecing it together. Start with the red line.
20 The red line is a cutaway of the beach before
21 anything was done in February of 2013. And so,
22 you -- from left to right, you're going across
23 a small dune. Remember, this is vertically
24 exaggerated, so that dune extends up to 15 feet
25 above sea level, then drops down and then it



1 goes vertical, which is the seawall at
2 Debordieu. And then from there, the seawall
3 has lost sand in front of it, so it no longer
4 has a dry sand beach and it has a narrow wet
5 sand beach. So, from the tow of that seawall
6 out, that's the profile prior to the project.
7 So, using that profile, now, go to the black
8 line. The black line is the profile of the
9 groin that we're proposing to put in place.
10 The dashed tan line is the quantity of sand
11 that went into that locality in 2015. Remember
12 that was without groins and that was the
13 initial sand filled place there. For this next
14 project, we're proposing to put the solid tan
15 line in place, so that we have a much wider and
16 fatter -- fatter beach to help us build the
17 groin. So, that's the comparison there. We --
18 we measure the quantity of fill in terms of
19 cubic yards per foot. What's the fill density.
20 So, in 2015, it was 100 cubic yards per foot
21 and that's how it was placed. In the proposed
22 nourishment, at that locality of groin number
23 2, that's the longest groin, we're proposing to
24 put 215 cubic yards per foot in. We need much
25 more fill so that we have this platform that we



1 can work off of by trucks.

2 **THE COURT:** And looking at this graph, where does
3 mean high water and mean low water fit in?

4 A: Yeah. On the key there, Your Honor, you see
5 MHHW.

6 **THE COURT:** Oh, yeah. I see it now.

7 A: And then MMLW.

8 **THE COURT:** Oh, okay.

9 Q: And, Dr. Kana, let me ask you, so once the
10 groins are installed, does all the sand go over
11 the top, around the tip? How will the sand --
12 how do you anticipate the sand will flow down
13 coast?

14 A: Well, at low tide, it'll go around the tip.
15 You see where the low tide mark falls in
16 relation to the groin because the rest of the
17 groin would be out of the water. But most of
18 the time, it'll be going over the structure
19 because that's where most of the -- the groin
20 is.

21 Q: And you -- Dr. Kana, did you prepare or cause
22 to be prepared this document?

23 A: Yes.

24 Q: And in your opinion, does it accurately
25 represent the -- reasonably represent the



1 projections of the anticipated function of the
2 groin?

3 A: Yes.

4 **MR. GREEN:** Your Honor, I move this into evidence as
5 Exhibit 64.

6 **(Respondent's Exhibit Number 64 was offered into**
7 **evidence.)**

8 **MR. CUNNINGHAM:** No objection.

9 **MS. PHELAN:** No objection.

10 **THE COURT:** It's admitted.

11 **(Respondent's Exhibit Number 64 was admitted into**
12 **evidence.)**

13 **MR. GREEN:** Thank you, Your Honor.

14 Q: You've touched on this before, Dr. Kana ---

15 **MR. GREEN:** Go back to Exhibit 63 very quickly,
16 please. The Figure ---

17 **MS. KURTZ:** 1.3?

18 **MR. GREEN:** Yes.

19 Q: I think you may have testified to this, but I
20 just want to be clear. How long will the
21 groins be?

22 A: I think that 300 feet for number 1, 400 feet
23 for number 2, and 300 feet for number 3, give
24 or take a few a feet. I'd have to look at the
25 application.



1 Q: How long -- and I know -- I guess this has
2 changed a little bit since the permit
3 amendment, but how far apart will the groins be
4 spaced?

5 A: About 1,000 feet.

6 Q: And I think you've testified to this, as well,
7 but CS&E and you have experience with groins of
8 this nature at other locations in ---

9 A: Yes.

10 Q: --- South Carolina? Just name those briefly.

11 A: Hunting Island, Edisto Beach, Pawley's Island,
12 Folly Beach County Park.

13 Q: Okay. And I think you've testified that you
14 estimate sort of the impact you expected from
15 the groins based on past experience and
16 empirical data?

17 A: Yes.

18 Q: Did you also do any -- or did CS&E do any
19 modeling of the impact of the proposal?

20 A: Yes.

21 Q: Who was responsible for that?

22 A: Haiqing. Dr. Haiqing Kaczkowski.

23 Q: Okay. Is it customary in your profession to
24 rely on model results performed by others?

25 A: Well, the -- yes. It's one of many tools that



1 we -- we use in the design process.

2 Q: And why did you use the modeling in this
3 project?

4 A: Modeling informs certain what if scenarios.
5 You can simulate different lengths of groins or
6 configurations. And -- and so we use -- we use
7 the model to evaluate what if questions. What
8 if we don't put the groins in; what if we put
9 the groins in, but we move them a little bit or
10 something like that.

11 Q: And did the modeling that was done in this
12 case, is that the basis of your estimate of the
13 downdrift impact of the groins?

14 A: Well, it informed out estimates, but the -- you
15 know, the modeling results actually resulted in
16 a fairly conservative or -- or low estimate of
17 impacts. And we decided to take a -- a more,
18 I guess, conservative approach to the design
19 and we relied heavily on the actual
20 measurements and sand budgets that we had
21 developed over the -- the course of the last
22 decade or so.

23 Q: And is that the sand budget that we talked
24 about a little bit earlier?

25 A: Yes.



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1 Q: And when you say conservative, do you mean a
2 higher or lower downcoast?

3 A: We took -- the conservative approach was
4 assuming a higher impact downcoast and a -- and
5 a lesser positive impact on our client's
6 property.

7 Q: Okay.

8 A: In other words, we were looking -- we were
9 trying -- we were very cognizant of trying to
10 look out for the downcoast impacts. We know
11 that we'll have positive impacts on the upcoast
12 area. So, really the question is what's the
13 downcoast impact.

14 Q: And so your empirical analysis, yielded a
15 little bit higher downcoast impact?

16 A: Yes.

17 Q: Do you ---

18 **THE COURT:** You ---

19 Q: In your opinion ---

20 **THE COURT:** When you use the word impact, I assume
21 you mean a good impact as opposed to a negative
22 impact?

23 A: Well, this project ---

24 **THE COURT:** What -- what's the -- what do you mean
25 by that?

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1 A: Well, this project -- this project is designed
2 to reduce the rate of background erosion on
3 Debordieu Island. It's -- it's designed to
4 trap and retain sand and then maintain a ---

5 **THE COURT:** You said there would be a higher impact
6 on Hobcaw.

7 A: There'd be a higher impact on Hobcaw that's
8 what we -- we anticipated in the design because
9 the design calls ---

10 **THE COURT:** And that impact would be to the positive
11 or negative of Hobcaw?

12 A: The design calls for renourishment as part of
13 the long term plan. We know that we have to
14 renourish. So, for design purposes, we've got
15 to project how much renourishment, how
16 frequently we have to nourish. So, I -- I'm
17 not sure that that answers your question
18 exactly.

19 **THE COURT:** Nope.

20 Q: Dr. Kana, what do you -- what impact are you
21 estimating or anticipating that the groins will
22 have on Hobcaw in the first five years after
23 the projects?

24 A: It'll have a positive impact because we're
25 nourishing in such excess quantity that they'll



1 receive the benefit of that sand flowing down.

2 Q: Over time, does that benefit to Hobcaw --
3 Hobcaw decline or recede?

4 A: Yes. It declines over time.

5 Q: If nothing were done, would there be an --
6 absent renourishment, the groins would create a
7 downdrift impact problem, is that right?

8 A: Absent renourishment.

9 Q: Absent further renourishment.

10 A: Sure. Yes.

11 Q: And -- but is a proposed plan of renourishment
12 -- ongoing renourishment, is that part of the
13 project proposal?

14 A: Yes.

15 Q: Okay.

16 A: We have to do that.

17 Q: And jump around a little bit maybe. How -- how
18 will you -- how will you determine and evaluate
19 whether there is being a negative impact to
20 Hobcaw?

21 A: Well, we've -- we would measure the actual
22 impact. We would track how much sand is
23 leaving the project area where we placed it and
24 how much is accumulating at Hobcaw. And we
25 would compare that against the historical



1 background erosion rates.

2 Q: What -- and to be fair, does the amended permit
3 have requirements as to when you'll have to
4 start looking to another renourishment project?

5 A: Yes. I believe several times in the first year
6 and annually thereafter for a ten-year period.

7 Q: And then what is the trigger for when you have
8 to start proceeding with another renourishment
9 project?

10 A: The trigger is, I believe, six cubic yards per
11 foot per year on the Hobcaw tract.

12 Q: And is there also a shoreline or linear rate?

13 A: Yes.

14 Q: And what is that rate?

15 A: I believe it's about 7 to 8 feet per year,
16 which equates to about three-quarters of an
17 acre per year or something like that.

18 Q: In your opinion, should Debordieu do future
19 renourishment projects without groins?

20 A: No.

21 Q: Why not?

22 A: Debordieu's got almost 30 years of experience
23 with nourishment only. It's a short segment of
24 beach. It's proven that they lose the sand
25 very rapidly after it's pumped in. And, in my



1 opinion, it's not a sustainable long term
2 solution.

3 Q: Are there negative consequences to more
4 frequent renourishments?

5 A: Well, you have environmental consequences. The
6 more often you do things, there's disruption to
7 recreational use, as well as habitat impacts.
8 Granted, they're generally short lived, but you
9 -- you don't want to do these kind of projects
10 frequently. It's -- it's very disruptive.

11 Q: If you did the project without groins and just
12 sand, would Hobcaw still be losing shoreline?

13 A: Yes.

14 Q: And why is that?

15 A: Because the background erosion rate is so high.

16 Q: What other options to groins did you evaluate?
17 You've mentioned a supplemental report with
18 alternatives. What other alternatives did you
19 look at?

20 A: Well, we -- first we looked at doing nothing
21 and doing nothing doesn't simply mean there's
22 no impacts downcoast because when you have a
23 development in place, you have a seawall in
24 place, you have development that's threatened,
25 eminently threatened as it is almost as we



1 speak. Property owners under present statutes
2 are allowed to protect their property with
3 sandbags. So, we would anticipate the property
4 at the sound end place sandbags, emergency
5 sandbags, under emergency permits and protect
6 their property that way. And I doubt seriously
7 that they would abandon. So, once we have
8 sandbags in place, then those sandbags are
9 going to act like the seawall does. And we're
10 going to have localized scour around the ends
11 of those sandbags. So, that's not a good
12 situation. That's the do-nothing alternative.
13 We considered breakwaters. Breakwaters
14 function like groins; they hold a section of
15 beach in place by breaking the wave action,
16 allowing sand to accumulate, but they're much
17 more expensive and many times more expense in
18 this case. So, we abandoned that in the
19 interest of economy. We also considered
20 different types of groin materials, quarry
21 stone for the length of it, as well as sheet
22 pile. The advantage of sheet pile is they can
23 be placed relatively quickly, and they can be
24 removed relatively quickly. It's a pretty
25 simple job to break the cap and then pull



1 sections of sheet out if you -- if you need to
2 remove the structure. Much less material to
3 work with, so. Those are -- those are the
4 principle ---

5 Q: Okay. All right.

6 A: --- alternatives we looked at.

7 Q: And I think you've touched on this before, but
8 let -- let me ask this. Does CS&E always
9 recommend groins? Well, let me ask you this.
10 What are hard solutions in a coastal context?

11 A: Well, hard erosion control structures are, like
12 seawalls, bulkheads, revetments, shore parallel
13 structures sit on the back shore to protect the
14 land from further recession. Sand retaining
15 structures, jetties, groins, breakwaters,
16 they're designed to maintain a natural beach,
17 but to hold a shoreline salient, a bulge in the
18 beach where the structure is. So, those are --
19 those are sand retention structures, the way I
20 -- we look at it.

21 Q: And does CS&E always recommend groins or hard
22 solutions in a project?

23 A: No. We -- we very infrequently recommend
24 groins.

25 Q: Does CS&E do any work with respect to Myrtle



1 Beach?

2 A: Yes. For many years we've worked there
3 monitoring the beach. We did the first
4 nourishment back in 1986 and it was a trucking
5 operation, involved almost one million cubic
6 yards done over 1986 and '87. And I remember
7 at the time, there were calls for building
8 breakwaters, building groins like Pawley's
9 Island had. A lot of people wanted to do that
10 and we recommended to the city not to construct
11 any groins because they have a low erosion rate
12 and nourishment, we felt, could keep pace with
13 the erosion in that location. And I think
14 that's been borne out because today, you can go
15 to Myrtle Beach and all the bulkheads and
16 seawalls are buried. There's a dune out front,
17 white, dry sand beach. And it's maintained
18 through nourishment and nourishment is done
19 about every twelve years or so by the Corps of
20 Engineers. So, it's been a very successful
21 project.

22 Q: Okay. And -- but Myrtle Beach does require
23 renourishment periodically?

24 A: Yes.

25 Q: How do the groins that are proposed in this



1 project relate to older style groins?

2 A: The groins that were built in the '50s and '60s
3 in South Carolina typically started near the
4 dune line higher than the groins were prepared
5 -- we're proposing here, extended seaward on a
6 gentle slope. I -- for example, Edisto, I
7 think was one on 50 and then they just stopped.
8 And they were cut off right there. But that's
9 not the shape of a natural beach. So, what
10 happened is you had these timber -- these were
11 timber structures back in the old days. So,
12 they'd be sticking way out of the water at the
13 seaward end and they were wood piles supporting
14 timber sheeting and, you know, wood
15 deteriorates; it rots in the ocean. And so, as
16 they rotted, the sheet pile became porous and
17 that would allow sand to go through. And that
18 would drop the sand level down at the end of
19 the structures, they couldn't hold as much.
20 So, then the end of the structure became
21 exposed even more than it was before as the
22 beach was eroding. So, you had these hideous
23 structures sticking out there with -- with
24 derelict piles and sheeting. Some communities
25 like Pawley's Island, came in and put rock in



1 to protect that. Folly Beach did the same
2 thing. And the fundamental problem is those
3 structures extended straight out and just were
4 cut off. So, the -- a lot of them were too
5 short to fully encompass the whole intertidal
6 profile. So, the American Society of Engineers
7 in 1994 recommended a composite profile, like
8 you see here, where you have a dry sand beach
9 section, that's the left-hand upper part of the
10 groin; the sloping wet sand beach section
11 matching the natural slope of an intertidal
12 beach, and then the outer section, that's a
13 very important part because that holds the
14 whole profile in place so it can back up
15 against that. No groin in South Carolina
16 before Hunting Island was built with that
17 section. So, we've been trying to follow the
18 recommendations of the American Society of
19 Civil Engineers for the last 20 years.
20 Finally, got to build the groins at Hunting
21 Island to this profile. And they seem to have
22 been fairly successful, reducing the reveal of
23 the structure, trapping sand, but still
24 allowing sand to go pass over and for the berms
25 to build up and cover the -- the landward end.



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1 So, that's why we -- we've gone to this type of
2 a -- a structure in recent years.

3 Q: Okay. Thank you. Will Hobcaw, in your
4 opinion, benefit from this project?

5 A: Yes.

6 Q: And why is that?

7 A: Because we're putting so much extra nourishment
8 sand on and then we also have mitigation
9 triggers in place that mandate Debordieu Colony
10 renourish once those triggers are approached.

11 **MR. GREEN:** Elizabeth, pull up figure 5.5.

12 Q: Do you recognize this document, Dr. Kana?

13 A: Yes. This is out of the beach -- out of the
14 downdrift impacts report.

15 Q: Okay. And what does this document show?

16 A: This is the -- this is a sediment budget
17 applied over 10 years without the project being
18 done.

19 Q: So, no sand, no anything?

20 A: Yeah. You can see the QDF, there's zero input
21 of nourishment sand. There's -- all the other
22 assumptions are based on actual measurements.
23 And when you get down to Hobcaw, based on the
24 historical erosion rate of roughly 8.1 cubic
25 yards per foot per year, that's the long term

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1 rate, they would be losing about 34,000 cubic
2 yards per year.

3 Q: And how much would Debordieu Beach be losing?

4 A: About 20,000 cubic yards per year.

5 Q: Not Debordieu spit, but Debordieu Beach. The
6 project area.

7 A: The entire?

8 Q: No. The -- Reach 3. I'm sorry.

9 A: Reach 3 would be losing about 17,000 cubic
10 yards per year.

11 Q: Okay.

12 A: 4.2 cubic yards per foot per year is the -- the
13 budget there.

14 Q: And do those erosion rates there equate to what
15 was in Table 2.6 ---

16 A: Yes.

17 Q: --- we discussed earlier? Okay.

18 A: Yes. Right out of that.

19 Q: And did you prepare or cause to be prepared
20 this document?

21 A: Yes.

22 Q: And is it based upon data that you compiled and
23 used as part of this project analysis?

24 A: Yes.

25 **MR. GREEN:** Your Honor, I move this into evidence as

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1 Exhibit 65.

2 (Respondent's Exhibit Number 65 was offered into
3 evidence.)

4 THE COURT: Any objections?

5 MR. CUNNINGHAM: No objection.

6 MS. PHELAN: No objection.

7 THE COURT: It's admitted.

8 (Respondent's Exhibit Number 65 was admitted into
9 evidence.)

10 MR. GREEN: And then, pull up figure 5.6, please,
11 Elizabeth. Thank you, Your Honor.

12 Q: And what does this document depict, Dr. Kana?

13 A: This shows the sediment budget with the project
14 in place. And in this case, we've shown the
15 nourishment -- the QDF numbers there are
16 portioned over a ten-year period. So, that
17 introduces about 60,000 cubic yards per year in
18 reaches two and three, which spread down the
19 coast reducing erosion in Reach 4, so instead
20 of losing 34,000 cubic yards per year, we're
21 projecting that Hobcaw would lose only 20,000
22 cubic yards per year.

23 Q: Okay. And what about the benefits to Reach 3?

24 A: Reach 3 would retain some of the sand. That's
25 where the 15,000 cubic yards per year is. So,



1 that's relating to the trapping capacity of the
2 groin and the excess sand that's been placed in
3 there. And so, the net effect for Debordieu
4 would be to keep the seawall buried under sand
5 and less exposed, maintaining a -- a dry sand
6 beach for recreation purposes.

7 Q: And did you prepare or cause to be prepared
8 this document?

9 A: Yes, I did.

10 Q: And is it standard in your profession to use
11 documents like the prepared documents like
12 this?

13 A: Yes, it is.

14 Q: And, in your opinion, does it pre- -- is it --
15 does it provide a reasonable analysis of what
16 can be expected from the impact from the
17 groins?

18 A: Yes.

19 **MR. GREEN:** Your Honor, I move this into evidence as
20 Exhibit 66.

21 **(Respondent's Exhibit Number 66 was offered into**
22 **evidence.)**

23 **MR. CUNNINGHAM:** No objection.

24 **MS. PHELAN:** No objection.

25 **THE COURT:** It's admitted.



1 (Respondent's Exhibit Number 66 was admitted into
2 evidence.)

3 MR. GREEN: Thank you. Bear with me just a moment,
4 Your Honor. Your Honor, if the Court wants to
5 take a break, this might be a decent stop. I
6 don't have much longer, but I've got a few more
7 minutes.

8 THE COURT: Okay. We'll take a five-minute break.

9 MR. GREEN: Thank you, Your Honor.

10 (Off the record from 4:35 p.m. until 4:44 p.m.)

11 COURT REPORTER: All rise.

12 THE COURT: Y'all be seated.

13 MR. GREEN: Thank you, Your Honor.

14 THE COURT: I haven't said anything.

15 MR. GREEN: Judge, thank you.

16 THE COURT: Matter of fact, I was just thinking how
17 I was going to aggravate Judge Lenski about him
18 just having his colonoscopy. And then you say
19 thank you.

20 MR. GREEN: Well, probably a colonoscopy in 2020 is
21 appropriate.

22 THE COURT: Yeah.

23 MS. PHELAN: He probably doesn't need to be
24 aggravated right now.

25 THE COURT: Oh, but that's when it's the best. Go



1 ahead.

2 **MR. GREEN:** All right. Thank you, Your Honor.

3 Q: Dr. Kana, are you ready to proceed?

4 A: Yes, sir.

5 Q: Dr. Kana, what is proposed if erosion on Hobcaw
6 starts to reach the trigger point set forth in
7 the permit?

8 A: Under the terms of the permit, DCCA will be
9 obligated to renourish the beach and to restore
10 any losses above and beyond the threshold
11 trigger.

12 Q: Okay.

13 **MR. GREEN:** Elizabeth, pull up figure 6.1, please.

14 Q: What is this document, Dr. Kana?

15 A: This is -- this is to illustrate how the
16 mitigation plan and monitoring plan will help
17 inform decisions on when nour- -- renourishment
18 is necessary. Similar to the graphs that we
19 showed earlier, I can't remember what exhibit,
20 but post-project immediately it -- Hobcaw we
21 expect it to be positive on the left-hand side
22 of the graph. And then, with time, with less
23 sand coming past the groins, we expect the
24 running average erosion rate to increase toward
25 some threshold. If this is the historical



1 volume erosion rate, which has been since
2 changed and reduced to six cubic yards per foot
3 per year, the trigger will be met earlier. But
4 the point is at some point down the road, in
5 year N, we don't know how many years that is,
6 but the monitoring will give us an indication.
7 We can see how this average rate is tracking.
8 When we get to that point, we're close to that
9 trigger threshold, probably within a couple
10 cubic yards per foot per year loss rate on the
11 Hobcaw property. That will tell us it's time
12 to plan for the next renourishment project. We
13 have advised our client that renourishment done
14 in large scale is generally more cost
15 effective, and more successful and it lasts
16 longer. You don't have to renourish as often.
17 So, we want to initiate planning well before
18 the time that we hit the trigger because it may
19 take two years to do all the studies and get
20 the permits to renourish. So, then two years
21 after that decision is made in year N, is the
22 deadline for renourishment. At that point, the
23 quantity goes back up on Hobcaw because they're
24 starting to receive the benefits of
25 nourishment. Meanwhile, Debordieu Colony



1 receives the direct benefits of nourishment
2 because that's where most of the sand will be
3 placed, knowing that it will be fed naturally
4 down to Hobcaw.

5 Q: Okay. And how will -- how will Debordieu know
6 when we're -- when we are at year N?

7 A: The monitoring data will show that. People --
8 anybody will be able to take the raw monitoring
9 data, run the numbers and determine when that's
10 an appropriate time to initiate planning.

11 Q: And does the permit contain provisions
12 regarding monitoring?

13 A: Yes.

14 Q: Would CS&E be fully prepared to implement those
15 provisions on behalf of Debordieu Colony?

16 A: Yes. If -- if we're retained for that,
17 absolutely.

18 Q: In your expert opinion, do you see any problem
19 with implementing those monitoring
20 requirements?

21 A: No. And I -- I think what we like about this
22 approach is it's -- it's straightforward.
23 Everybody who has a chance to evaluate or
24 review the monitoring data will be able to see
25 how it's tracking. And it's a fairly simple



1 straight- -- straightforward approach. It's
2 objective data. It'll be based on the
3 quantities that are actually measured to be
4 lost because we don't know how accurate our
5 predictions are. But this will tell us what it
6 is. We don't know whether N is going to be 9
7 years out or 15 years out. Obviously, we'd
8 love it to be 15 years out before we reach the
9 thresholds. That reduces the cost to the
10 community. But we'll know one -- after we have
11 year after year after year of -- of data.

12 Q: And did you prepare or cause to be prepared
13 this document?

14 A: Yes.

15 Q: And in your opinion, does it reflect sort of
16 the analytical process of determining when to
17 conduct renourishment?

18 A: Yes.

19 **MR. GREEN:** Your Honor, I'd move this into evidence
20 as Exhibit 67.

21 **(Respondent's Exhibit Number 67 was offered into**
22 **evidence.)**

23 **MR. CUNNINGHAM:** No objection.

24 **MS. PHELAN:** No objection.

25 **THE COURT:** It's admitted.



1 (Respondent's Exhibit Number 67 was admitted into
2 evidence.)

3 MR. GREEN: Thank you, Your Honor.

4 Q: Let me ask you, Dr. Kana, do you -- you've got
5 -- CS&E, you have experience with respect to
6 the installation of groins?

7 A: Yes.

8 Q: And have you ever removed any groins, like
9 completely ---

10 A: Well ---

11 Q: --- pulled the groin from the ---

12 A: As we're constructing some of the groins, sure,
13 we've had to pull up a whole section of sheet
14 pile and put it back down because the
15 contractor was getting off on the alignment and
16 sometimes the guides are not set properly.
17 It's a pretty simple procedure to do that. You
18 -- you grab the sheets, you pull them out, you
19 set -- reset your guides and then you put the
20 sheets back in.

21 Q: Okay. And did that involve one or more sheets
22 as part of that work?

23 A: I think there was maybe -- and Folly Beach,
24 when we were doing that project, we started at
25 the seaward end and I -- I seem to recall we



1 had maybe as much as 100 feet that were out of
2 alignment. And we talked to the contractor and
3 he agreed. And he just pulled the sheets up
4 and reset the first one. Because if you get
5 the first one wrong, the -- it has a cumulative
6 effect on the rest of the sheets. So,
7 everybody agreed let's pull up the sheets,
8 reset the first one and go with -- with a
9 revised layout.

10 Q: And so you ---

11 A: And we're -- we're talking about the difference
12 between a sheet going initially down like this
13 and we don't want to carry that mistake, if you
14 will, throughout the project.

15 Q: Understood. And have you ever completely
16 removed a groin from a beach?

17 A: No.

18 Q: Are you aware of any projects in South Carolina
19 that have required removing a groin from a
20 beach?

21 A: No.

22 Q: How would the process of removing the groin
23 completely from the beach differ from the
24 process of pulling the sheets up and realigning
25 them?



1 A: Well, the -- the main -- there's not really
2 much difference in terms of the -- the work
3 itself. It's the same kind of machinery that
4 grabs the -- the sheets and pulls them up. You
5 have to break the concrete cab, pull up some
6 sections, but that's pretty straight forward,
7 and then as far as removing the rock, you get
8 an excavator and you load the excavator. We're
9 talking large track hoe excavators. And you
10 just load the rock and take it to a -- off a
11 dump truck and ship it somewhere just, you
12 know, nearby, anywhere off the beach.

13 Q: What did CS- -- what cost did CS&E estimate
14 with respect to installation of the groin?

15 A: I can't remember off the top of my head for
16 Debordieu. The Hunting Island groins were
17 constructed for about \$400,000 a piece, I
18 believe. The Folly Beach County groin, which
19 was 750 feet long or so, I believe that cost
20 about \$950,000. There were some other work on
21 restoring the parking lot and -- and other
22 facilities of the park that added into it.
23 Something though on the order of less than a
24 half a million dollars per groin.

25 Q: And what is -- what does the cost of installing



1 a groin. What is it comprised of?

2 A: The materials and the labor. The machine
3 rental. The materials generally are at least
4 half of the cost because the materials have to
5 be imported. In the case of rock, there's a
6 lot of rock that goes into the ends of these
7 things, these -- these structures. The rock
8 has to be imported from Columbia or Augusta and
9 so, that's a big cost.

10 Q: And when you say imported, you're talking some
11 other location?

12 A: Right. Right.

13 Q: Not from overseas.

14 A: No.

15 Q: Okay.

16 A: Imported from a quarry way inland.

17 Q: Now, based on your ex- -- participating in the
18 project, what is your understanding that would
19 be done if the groins and materials are removed
20 from the beach?

21 A: What would be done with the materials?

22 Q: Where would they be taken?

23 A: Oh, the materials could be stockpiled somewhere
24 on Debordieu Colony property. They have
25 maintenance areas. I suspect that if they



1 bought the materials, they'll find a use for
2 them on the property somewhere else using the
3 rock for protection of -- around ponds or -- or
4 spillways or other things that can be used, so.
5 I don't think they'll bring it back to
6 Columbia.

7 Q: And so, what -- once the groins are removed
8 from the beach, what would be done with respect
9 to the linear, I guess, area that they were
10 located in? How would that be treated?

11 A: Well, it'd be cleaned up and then left natural
12 and the sand will just then spread from there.

13 Q: Okay.

14 **MR. GREEN:** Court's indulgence, Your Honor. I
15 apologize.

16 Q: Dr. Kana, I'm showing you what's been marked as
17 Respondent's Joint Exhibit 45. I know you are
18 not Mr. Steven Traynum, but does Mr. Steven
19 Traynum work for you at CS&E?

20 **(Respondent's Exhibit Number 45 was referenced at**
21 **this time.)**

22 A: Yes. He's a partner.

23 Q: Okay. And what does this letter represent?

24 A: This is a letter to Steven about the
25 approximate costs of groin removal for



1 Debordieu for the Debordieu project.

2 Q: Okay. And what -- what is the cost of removal
3 that it gives as an estimate?

4 A: It gives \$435,000 or 60 percent of construction
5 costs.

6 Q: And is that for removal of all three groins?

7 A: I believe so.

8 Q: And are you -- do you do any other work with
9 S.J. Hamill Construction Company?

10 A: Yes. They worked with us. I believe they were
11 the contractor for the Folly Beach County Park
12 project.

13 Q: Are they also doing any work on Hunting Island?

14 A: Yes. I believe they -- they did.

15 Q: Okay. And did Mr. Traynum receive this letter
16 in his capacity with CS&E?

17 A: Yes.

18 **MR. GREEN:** Your Honor, I'd submit this as
19 Respondent's Exhibit 45.

20 **(Respondent's Exhibit Number 45 was offered into**
21 **evidence.)**

22 **OBJECTION:**

23 **MR. CUNNINGHAM:** Judge, I'll object on hearsay. He
24 -- he's already gotten testimony in anyway.
25 But this is hearsay.



1 **COURT REPORTER:** I'm sorry. I didn't hear.

2 **MR. CUNNINGHAM:** I said, I'll object on hearsay
3 grounds. He's already gotten some testimony in
4 about the estimate regardless, but this is
5 clearly hearsay.

6 **MR. GREEN:** I think the estimate though is not
7 hearsay. That is just a number that has been
8 provided to CS&E as an estimate of the cost of
9 removal.

10 **THE COURT:** He's already testified to it though is -
11 - is his point.

12 **MR. GREEN:** Okay.

13 **THE COURT:** I don't -- what's your position?

14 **MS. PHELAN:** I believe that's in the permitting file
15 and it's already in.

16 **THE COURT:** Well, if it's in the permitting file,
17 then that's fine. Well, of course ---

18 **MR. CUNNINGHAM:** If it's in the permitting file then
19 it's -- as I understand, Your Honor, it's not
20 for the truth of the matter.

21 **THE COURT:** It's not for the truth the matter
22 asserted.

23 **MR. GREEN:** Right.

24 **THE COURT:** So, yeah.

25 **MR. GREEN:** Right. Okay.



1 **THE COURT:** An out of court statement, I sustain the
2 objection.

3 **MR. GREEN:** Okay.

4 **MS. PHELAN:** I'm not sure about that, Tracey.

5 **MR. GREEN:** That's okay. It's -- it didn't matter.
6 Okay. Okay.

7 **Q:** Let me just ask you this, Dr. Kana, in your
8 opinion, could the groins be removed for less
9 than 200 -- I mean, excuse me, less than
10 \$435,000?

11 **A:** In my opinion, yes.

12 **Q:** And what do you base that opinion on?

13 **A:** After watching the groins at Hunting Island and
14 Folly Beach be constructed, having a fairly
15 intimate experience watching the -- the
16 construction and some understanding of what it
17 takes to break the sheets apart and pull them
18 back out, and remove the rock, it's fairly
19 straightforward demolishing work. And to me
20 the advantage of the sheet pile is that we
21 don't have a lot of excess materials that we
22 have to deal with underground. The only part
23 underground at all is the -- the rock and
24 that's in a very limited area, which can be
25 excavated by large track hoes. We -- we've had



1 to move rock around numerous times in the
2 course of building these projects. So, you
3 know, I'm -- I'm not a contractor, but I would
4 certainly figure out a way of doing it if that
5 was the budget that was offered to me to do it.

6 Q: What, in your opinion, are the benefits of the
7 project with groins in this case?

8 A: Well, the groins will trap and retain enough
9 sand to maintain a continuous beach along
10 Debordieu. It'll -- it'll reduce the wave
11 action -- the wave impacts on developed
12 properties. So, it'll provide property
13 protection and reduce damages during storms.
14 We've already talked about the habitat
15 enhancement portion of it. It will allow sand
16 to bypass the structures and go downcoast. And
17 then, fundamentally, going back to the
18 underlying cause of -- of accelerated erosion
19 on Debordieu, remember it's focused at that
20 Hobcaw Debordieu south boundary because the
21 shoreline is out of equilibrium. It's taking
22 on this S-shape. So, by building groins at the
23 south end of Debordieu Colony, we create, in
24 effect, an anchor point, so that between the
25 groins and Pawley's Inlet, we can maintain that



1 sweeping arc of an equilibrium beach and reduce
2 the erosion rate over the length of Debordieu.

3 Q: And ---

4 A: Meanwhile on the south part -- I'm sorry. You
5 ---

6 Q: Excuse me. I apologize.

7 A: Well, this is part of it. This is key, a
8 cornerstone of the rationale for the project.
9 Between the groins and North Inlet, we now have
10 two anchor points and that shoreline can
11 develop in equilibration. There are analogous
12 places on our coast like this that we've --
13 we've used as an example to kind of inform our
14 design. Garden City at the south end about
15 half a mile north of Murrells Inlet, has a
16 similar signature of erosion and they've used
17 groins to stabilize that section of beach for
18 many years. And there's not too much of a
19 different offset across each of those
20 structures. We don't know that Debordieu will
21 perform exactly like that, but that's certainly
22 a good place to take a look at and -- and it
23 certainly weighed heavily on our design
24 decisions.

25 **THE COURT:** If each part of the groins, the south



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1 end and the north end, gives you an anchor, why
2 do you need the middle one?

3 A: Well, we could do it, say, with one long
4 structure, but then, you have the cost of the
5 longer structure going out into deeper water.
6 You have a different nourishment requirement,
7 and you can't tune the -- the structure as
8 much. So, at the structure, you would have a
9 humongous wide beach on one side. You might
10 have a wide beach on the other, but it would be
11 much wider than you really need to affect the
12 shoreline upcoast a few thousand feet. So, by
13 having three short groins, we get the same
14 benefits upcoast, with shorter structures and
15 they're less obtrusive. And then we have the
16 transition from the longest groin back to the
17 -- the Hobcaw property. And we have a gentler
18 transition, which we believe will perform much
19 better.

20 Q: And, Dr. Kana, do you -- in your opinion, do
21 these benefits apply to Debordieu and to Hobcaw
22 beaches?

23 A: Yes.

24 Q: And you've stated a number of opinions today.
25 Do you hold these opinions to a reasonable



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1 degree of professional and scientific
2 certainty?

3 A: Yes.

4 **MR. GREEN:** Bear with me just one moment, Your
5 Honor. Your Honor, I don't think we have any
6 further questions. Thank you.

7 **THE COURT:** How long -- how long you think you going
8 to be?

9 **MS. PHELAN:** I have no questions, Your Honor.

10 **THE COURT:** Well, you're short. I may start with
11 y'all tomorrow.

12 **MR. CUNNINGHAM:** That's fine. I've got some. I
13 don't have ---

14 **THE COURT:** Oh, you -- okay.

15 **MR. CUNNINGHAM:** --- an exceptional amount.

16 **THE COURT:** Oh, all right.

17 **MR. CUNNINGHAM:** So, I don't know what the Court's
18 preference is. It's 5:06. I may be 20
19 minutes.

20 **THE COURT:** Oh, I ---

21 **MR. CUNNINGHAM:** Maybe 30 minutes.

22 **THE COURT:** Have at it.

23 **MR. CUNNINGHAM:** May -- I mean, if Dr. Kana
24 remembers, it may be less than that.

25 **DR. KANA - CROSS-EXAMINATION BY MR. CUNNINGHAM:**



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1 Q: All right. Good afternoon, Dr. Kana.

2 A: Good afternoon.

3 Q: How are you doing today? It's a lovely day,
4 isn't it, to be on the witness ---

5 A: Yes. It is.

6 Q: --- box. All right. Let's see. First of all,
7 you were asked about -- let's go ahead and take
8 this. First things first. The document which
9 is -- has been marked as Exhibit 67 and it was
10 the graphic that you described with the N plus
11 two as the -- the endpoint when -- where
12 mitigation should be accomplished. And N was
13 the point to your previous -- where you should
14 begin the planning. Is that correct?

15 **(Respondent's Exhibit Number 67 was referenced at**
16 **this time.)**

17 A: Yes.

18 Q: All right. And -- and in your opinion,
19 basically in order to implement a full scale
20 type mitigation, that be two years roughly
21 would be necessary?

22 A: Yes.

23 Q: All right. And that document, the two-year
24 head start as the mitigation trigger is neared,
25 it's not in the permit, other -- either the



1 original or the amended permit, correct?

2 A: Perhaps not, but the -- if I could off- -- just
3 offer this opinion. We, and I think I can
4 speak for DCCA, understand that if the permit
5 is signed with certain conditions, certain
6 things have to be implemented. That graphic
7 there that we showed, is to illustrate how we,
8 as consultants, would advise our client, DCCA,
9 to say, look we're getting close to that
10 threshold, that trigger, but we also know that
11 we have to give the state and the federal
12 government time to review the application. So,
13 that's why we put the two-year time frame in.
14 And -- and so when the -- when that quantity --
15 let's say it gets to four cubic yards per foot
16 per year as the running erosion rate, and we
17 know six is the target, we can't go beyond six.
18 We say, okay, it's time to start doing the
19 planning and get -- get a permit application
20 in.

21 Q: I appreciate the rationale, but as it stands
22 today, that's nowhere in the permit, right?

23 A: Probably -- it may not be, but it -- the
24 downdrift -- I believe that's in the downdrift
25 impacts report.



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1 Q: And don't misunderstand. I'm talking about the
2 actual permit that requires DCCA ---

3 A: Okay.

4 Q: --- CCA to do certain things to comply with the
5 permit. Is that correct?

6 A: Yes. You're -- you're correct.

7 Q: Okay.

8 A: That's right.

9 Q: All right. You mentioned modeling. Now, you
10 have stated in a letter that CS&E does not
11 consider any modeling approach to be highly
12 accurate in the Debordieu setting, correct?

13 A: I probably said something to that effect. Yes.

14 Q: And you hold that opinion today?

15 A: Yes.

16 Q: Okay. And you have also said that for one
17 dimensional modeling, that does not adequately
18 represent the conditions along the South
19 Carolina ocean coast, which is characterized by
20 significant tidal currents, highly variable
21 wind and wave conditions, complex interactions
22 among wind, waves and currents, high tidal
23 ranges, and an irregular coastline, is that
24 correct?

25 A: That's correct.

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1 Q: All right. And ---

2 **THE COURT:** And what is one dimensional modeling?

3 A: One dimensional is where you take a shoreline,
4 you simulate what's happening at that
5 shoreline. They used -- in the old days, this
6 was what some of the first modeling that was
7 done. So, take the mean high water mark, you
8 might use that as the reference line and then
9 you try to project where that line is going to
10 go in the future under different scenarios of
11 adding nourishment, putting nourishment with
12 groins in, just putting groins in and so on.
13 It's -- it's called a one-line model because
14 you're picking a contour and just making a
15 comparison there.

16 **THE COURT:** Okay.

17 Q: And one of the models that CS&E ran and relied
18 on it its downdrift impacts report was the
19 Genesis model, is that correct?

20 A: Correct.

21 Q: And Genesis is a -- is one-line model, correct?

22 A: That's right.

23 Q: And as it stands today, would you agree with me
24 that you don't know exactly how much sand any
25 groin that would be installed at Debordieu



1 under the permits as they currently stand would
2 actually trap?

3 A: No. But we have a pretty reasonable, realistic
4 estimate of how much it'll trap because we --
5 we've built several similar structures in scale
6 and the nourishment and so on. So, that gives
7 -- that informs our estimate.

8 Q: And I understand you have an estimate, but you
9 don't actually know with any kind of precision
10 exactly how much sand will be retained ---

11 A: Nobody does. And that's why it's so important
12 to measure, measure, measure.

13 Q: And along those lines, you can't predict what
14 the wave climate will be after any groin would
15 be installed?

16 A: No.

17 Q: And you -- do you agree with me or you can
18 predict?

19 A: No, we can't predict.

20 Q: Okay. All right.

21 A: I'd be in a different line of business if I
22 could.

23 Q: Exactly. You don't know what frequency of the
24 waves will be after a groin might be installed
25 at Debordieu?



1 A: No.

2 Q: And you don't know what directions the waves
3 may take at any particular time after any groin
4 might be installed?

5 A: No. Just like anything else, we have to use a
6 stochastic approach. We have use the long term
7 statistics for waves in the area. But
8 recognizing that even the best statistics can
9 be manipulated. So, we -- that's why direct
10 measurements of how much sand we place and how
11 much sand we lose each year is, you know, a --
12 a real critical element of the -- of the review
13 process.

14 Q: You would agree with me that the Delft3D
15 modeling that CS&E ran shows that without
16 renourishment that the groins will cause an
17 increase in erosion along the Hobcaw tract in
18 excess of the background rate, ultimately?

19 A: No. Not in excess of the background rate. In
20 excess of what it would be without the
21 nourishment. So, we found that with the
22 groins, they would cause an additional 6 to
23 10,000 cubic yards per year sand losses in the
24 Hobcaw tract. But our sediment budget analysis
25 shows that we're anticipating a higher loss



1 rate from that. So, the model informs the
2 sediment budget result.

3 Q: Let me -- let me get this.

4 A: But we don't know exactly what that number's
5 going to be.

6 Q: I understand that. Are you telling me that if
7 the groins go in and there's no later
8 renourishment, that Hobcaw's erosion rate will
9 never increase above background?

10 A: No. I didn't -- no.

11 Q: Okay.

12 A: I'm sorry if -- if that's the way you
13 understood it. The erosion rate could increase
14 up to the background erosion rate or beyond it,
15 if nothing else were done.

16 Q: Exactly.

17 A: But it would take quite a few years before we
18 reach that point because of all this excess
19 sand that is going in.

20 Q: I apprec- -- and that's the excess sand that
21 would be part of an initial nourishment effort,
22 correct?

23 A: Yes. That's right.

24 Q: And we don't know exactly how long that sand
25 will last for the groins right now, do we?



1 A: No. We're projecting though that it will
2 double the longevity of sand flowing through
3 the system compared to the project without
4 groins. In other words, you nourish in about
5 twelve-year increments as opposed to six-year
6 increments.

7 Q: Let me ask you, for the volume change rates for
8 reach -- for all of the -- the project area
9 that would be Reach 3, do you agree with me
10 that there's a plus or minus ten percent
11 variation as far as precision of those?

12 A: Well, it's probably -- it's probably more of a
13 differential than plus or minus ten percent.

14 Q: Okay. And -- meaning greater than plus or
15 minus ten percent or ---

16 A: Yes. There's greater variation. And we see
17 that in the -- in the raw data because some --
18 some years you have a hurricane that goes
19 through. And so it's going to impact the
20 nourishment. Other years, you have calm
21 conditions. So, you're going to have a yearly
22 change in -- in nourish- -- in erosion rates
23 that fluctuate much more than ten -- plus or
24 minus ten percent.

25 Q: In your deposition, you testified that three to



1 eight, ten feet a year would be considered a
2 moderate, getting towards high erosion rate, is
3 that correct?

4 A: Yes.

5 Q: Okay. And you mentioned other areas where CS&E
6 has been involved in the construction of a new
7 groin including Hunting Island and Folly Beach,
8 is that correct?

9 A: Yes.

10 Q: And the erosion rate at Hunting Island in
11 certain areas where the new groins went in was
12 approximately 20 feet per year roughly?

13 A: Before nour- -- before the groins.

14 Q: Correct.

15 A: Yes.

16 Q: All right. And with respect to Folly Beach
17 where the new groin went in, I believe you
18 testified that Folly Beach in that area, you
19 know, towards the sound end, probably ten to
20 twelve feet per year. But then, when the spit
21 was stabilized in the like '90s, the erosion
22 accelerated on the spit probably well over ten
23 feet per year prior to the groin going in, is
24 that correct?

25 A: Yes.

