

Transcript of the Testimony of
LUTHER FLOYD HOLLOWAY

February 17, 2021

LOUISIANA WETLANDS, LLC, ET AL v. ENERGEN RESOURCES
CORP., ET AL



P.O. Box 1554 • Hammond • Louisiana 70404
(Toll Free) 866.870.7233 • 985.542.8685 • (Fax) 985.419.0799
office@amersonwhite.com • www.amersonwhite.com

16TH JUDICIAL DISTRICT COURT
FOR THE PARISH OF ST. MARY
STATE OF LOUISIANA

LOUISIANA WETLANDS, DOCKET NO. 130527
LLC and NEW 90, LLC

DIVISION "B"

VERSUS

ENERGEN RESOURCES
CORPORATION, ET AL

VIDEOTAPED AND VIDEOCONFERENCE DEPOSITION
OF LUTHER FLOYD HOLLOWAY, PhD, taken via Zoom, in
the above-entitled cause on the 17th of
February, 2021 commencing at 10:08 a.m.

REPORTED BY:CHÉRIE E. WHITE
CCR (LA), CSR (TX), CSR (MS), RPR
CERTIFIED COURT REPORTER

1 APPEARANCES:
2
3 ATTORNEYS REPRESENTING THE PLAINTIFF, LOUISIANA
4 WETLANDS, LLC:

5
6 JONES SWANSON HUDDALL & DASCHBACH
7 601 Poydras Street, Suite 2655
8 New Orleans, Louisiana
9 Phone: 504.523.2500 |Fax: 504.523.2508

10
11 (BY: John Arnold, Esquire)
12 E-mail: jarnold@jonesswanson.com
13 (BY: Kevin Huddell, Esquire)
14 E-mail: khuddell@jonesswanson.com

15
16 ATTORNEYS REPRESENTING THE DEFENDANT, SOUTHERN
17 NATURAL GAS:

18
19 KEAN MILLER, L.L.P.
20 400 Convention Street, Suite 700
21 Baton Rouge, Louisiana 70802
22 Phone: 225.389.3770 |Fax: 225.388.9133

23
24 (BY: Richard D. McConnell, Esquire)
25 E-mail: richard.mcconnell@keanmiller.com

1 APPEARANCES CONTINUED:
2
3 ATTORNEYS FOR THE DEFENDANT, CHEVRON U.S.A.,
4 INCORPORATED:

5
6 KING & SPALDING
7 1100 Louisiana, Suite 4100
8 Houston, Texas 77002
9 Phone: 713.276.7304

10
11 (BY: Elizabeth Taber, Esquire)
12 E-mail: etaber@kslaw.com

13
14
15 ATTORNEYS REPRESENTING THE DEFENDANT, BP AMERICA
16 PRODUCTION COMPANY:

17
18 LISKOW & LEWIS
19 822 Harding Street
20 Lafayette, Louisiana
21 Phone: 337.267.2319 |Fax: 337.267.2399

22
23 (BY: John S. Troutman, Esquire)
24 E-mail: jtroutman@liskow.com

25

1 APPEARANCES CONTINUED:
2
3 ATTORNEYS REPRESENTING THE DEFENDANT, ENERGEN
4 RESOURCES CORPORATION:

5
6 CARVER DARDEN
7 Energy Centre
8 1100 Poydras Street, Suite 3100
9 New Orleans, Louisiana 70163
10 Phone: 504.585.3821 |Fax: 504.585.3801

11 (BY: David Landry, Esquire)
12 E-mail: dlandry@carverdarden.com

13
14 ATTORNEYS REPRESENTING THE DEFENDANT, BRAMMER
15 ENGINEERING:

16
17 KEAN MILLER, LLP
18 909 Poydras Street, Suite 3600
19 New Orleans, Louisiana 70112
20 Phone: 504.620.3189 |Fax: 504.585.3051

21 (BY: Daniel B. Stanton, Esquire)
22 E-mail: dstanton@keanmiller.com

23
24 ALSO PRESENT:
25 William Myers, Videographer, Depo-Vue



Page 5

1 EXAMINATION INDEX

2

3 BY: PAGE

4

5 Mr. Arnold 8

6

7 EXHIBITS

8

9 NO. DESCRIPTION PAGE

10

11 Exhibit 15 Expert Report and Vegetation 58

12 Root Study, Appendix A,

13 Figures

14 Exhibit 16 Expert Report and Vegetation 77

15 Root Study, Appendix B,

16 Photographs

17 Exhibit 18 List of Reliance Documents 27

18 Exhibit 20 Study, Growth and Function 87

19 of the Sugar Cane Root

20 System

21

22

23

24

25

Page 6

1 STIPULATION

2

3 IT IS HEREBY STIPULATED AND AGREED by and

4 between counsel for the parties hereto that the

5 deposition of the aforementioned witness is

6 hereby being taken under the Louisiana Code of

7 Civil Procedure, Article 1421, et seq., for all

8 purposes, in accordance with law;

9 That the formalities of reading and signing

10 are specifically NOT waived;

11 That the formalities of sealing,

12 certification and filing are specifically waived;

13 That all objections, save those as to form

14 of the question and the responsiveness of the

15 answer, are hereby reserved until such time as

16 this deposition, or any part thereof, may be used

17 or sought to be used in evidence.

18

19 * * * *

20

21 CHÉRIE E. WHITE, Certified Court Reporter,

22 in and for the Parish of St. Mary, State of

23 Louisiana, officiated in administering the oath.

24

25

Page 7

1 THE VIDEOGRAPHER:

2 This is the videotaped deposition of

3 Dr. Luther Holloway. This deposition is

4 being held via video Zoom on

5 February 17th, 2021, at the time indicated

6 on the video screen, which is 10:08 a.m.

7 Would counsel please introduce

8 themselves?

9 MR. ARNOLD:

10 John Arnold on behalf of the

11 plaintiff.

12 MS. TABER:

13 Elizabeth Taber on behalf of

14 Chevron.

15 MR. LANDRY:

16 David Landry on behalf of Energen

17 Resources Corporation.

18 MR. TROUTMAN:

19 John Troutman on behalf of BP.

20 MR. MCCONNELL:

21 Richard McConnell on behalf of

22 Southern Natural Gas Company.

23 MR. STANTON:

24 Daniel Stanton on behalf of Brammer

25 Engineering.

Page 8

1 THE VIDEOGRAPHER:

2 Would the court reporter please

3 swear in the witness?

4 THE REPORTER:

5 Please raise your right hand.

6 LUTHER FLOYD HOLLOWAY, PhD,

7 after having first been duly sworn by the

8 above-mentioned court reporter, did testify as

9 follows:

10 EXAMINATION BY MR. ARNOLD:

11 Q. Good morning, Dr. Holloway. My name

12 is John Arnold. I represent the plaintiffs in

13 this matter. Can you please state your full name

14 for the record?

15 A. Luther Floyd Holloway.

16 Q. And what is your current address?

17 A. 9269 Highway 124, Harrisonburg,

18 Louisiana 71340.

19 Q. And you've given several depositions

20 before; is that right?

21 A. Many, many.

22 Q. Okay. Well, I won't belabor all

23 the -- you know, all the ground rules. I think

24 you are probably familiar with all those. That's

25 how the -- how the deposition will proceed, but

1 if at any time you need a break, please let me
 2 know. And -- and if I begin to talk over you or
 3 you talk over me, I apologize. It's just that's
 4 not my intent. It's just technology. It looks
 5 like there may be a delay in -- in dealing with
 6 documents, so we will -- we will get through this
 7 the best we can together.
 8 Can you tell me who you are here
 9 today on behalf of?
 10 A. I may not know all the players, but
 11 the attorneys that were just introduced here.
 12 I'm -- I'm working for Chevron, I know, and, of
 13 course, billing for BP, SNG. I don't know, maybe
 14 a week of people as far as I know. There's a lot
 15 of people involved in this case.
 16 Q. Okay. So as far as you know, you
 17 represent --
 18 A. There may be more. I can't remember
 19 everybody.
 20 THE VIDEOGRAPHER:
 21 His video is frozen, but his audio
 22 is coming through.
 23 THE WITNESS:
 24 Oh. Oh, and that's right. Energen,
 25 I'm sorry, yeah. Yes, Energen. I'm --

1 A. PhD, I -- I got my PhD, I did some
 2 post doctoral research at LSU. It was under the
 3 entomology department. They had an area that I
 4 worked on for -- for a semester. And from that
 5 time, I went on to the U.S. Army Corps of
 6 Engineers in New Orleans as an environmental
 7 resources specialist working on civil works
 8 projects. That included anything that the Corps
 9 of Engineers was doing in terms of construction
 10 of projects to impacts of those projects.
 11 I also worked on the Louisiana
 12 offshore oil mono buoy system for the Gulf of
 13 Mexico that included areas from the -- from
 14 western Florida to western Texas. That involved
 15 the offloading of oil tankers, the movement of
 16 the oil to facilities onshore, pipeline routings,
 17 the impacts of potential spills and other things
 18 like that in association with that -- with that
 19 project. That was the first project. I did the
 20 Central Gulf Environmental Program for that where
 21 I looked at avenues of moving the oil from the
 22 mono buoy systems environmental impacts
 23 association -- associated, as I said, and -- and
 24 other potential problems associated with --
 25 with -- with the mono buoy systems.

1 I'm sorry.
 2 BY MR. ARNOLD:
 3 Q. Okay. Can you just briefly take me
 4 back through your -- your educational history,
 5 please, sir?
 6 A. Yes. I have -- I got a bachelor's
 7 degree in water lithology, master's degree in --
 8 in fisheries biology with an emphasis in
 9 estuarine ecology; and for my PhD, I went into
 10 agriculture and I have a PhD in plant pathology.
 11 Q. And you got your BS from LSU; is
 12 that right?
 13 A. Louisiana Tech.
 14 Q. Louisiana Tech. And what year did
 15 you graduate with your BS?
 16 A. '66.
 17 Q. And your -- your master's, where did
 18 you get that degree from and what year did you
 19 graduate?
 20 A. LSU, '69.
 21 Q. And same question for your PhD?
 22 A. LSU, '71.
 23 Q. And what has -- can you -- can you
 24 walk me through your work experience, let's say,
 25 after you got your PhD in '71?

1 I also worked on numerous projects
 2 on various civil works projects with the Army
 3 Corps of Engineers in the Louisiana marsh
 4 systems, also in areas in central Louisiana where
 5 the New Orleans District extended to. This
 6 involved the -- the various impacts that would be
 7 associated with it such as development of
 8 harbors, dredge materials, stuff like that.
 9 From there, I went on -- on to the
 10 waterways experiment station where I worked there
 11 for -- for four years associated with the dredge
 12 material research project. That work involved
 13 mostly dredge material, dredge projects where
 14 we -- I did ports all around the country from New
 15 England all the way out to San Francisco Bay and
 16 over to Washington State. Did a lot of work in
 17 the Gulf area on dredge materials disposal, how
 18 you got rid of it and what you -- productive uses
 19 could be, what the impacts were, those kinds of
 20 things.
 21 And then in -- in 1975, I was
 22 detailed to the chief -- chief of engineers in --
 23 in Washington, D.C. where the -- the Federal
 24 Water Pollution Control Act environmental
 25 considerations related to permitting and other

1 activities. And then I worked going around the
 2 country as the -- as the technical representative
 3 for the -- for the U.S. Army Corps of Engineers
 4 and the Environmental Protection Agency where I
 5 was involved in presenting the program to the
 6 general public all over the United States.
 7 I also did a lot of work on
 8 agronomic aspects on development of activities,
 9 other -- other things such as development of
 10 wetlands. I also did a lot of work on the
 11 wetlands program, ran the -- the technical
 12 aspects of it. And then in 1976, let's see, '6,
 13 '76, '77 -- '77, I left the Army Corps of
 14 Engineers and went into consulting. And I also
 15 opened a spray service where I did some work with
 16 pesticide applications; indoor, outdoor, crops --
 17 not crops, but various things associated with
 18 like pecan orchards and things like that.
 19 And then I went -- well, then my --
 20 one of the biggest projects I got involved with
 21 was the central Florida phosphate region where we
 22 looked at environmental aspects of the phosphate
 23 mining operations and their impacts, and I also
 24 -- the primary concern was of the ordinary high
 25 waterlines of the -- of the rivers and so forth

1 worked on over the years?
 2 A. I'd say at least -- including
 3 Mississippi, Oklahoma, Kansas, Louisiana, between
 4 3 and 500, I imagine.
 5 Q. I'm sorry. You said between 3 and
 6 500?
 7 A. Yes.
 8 Q. How many of those have been in
 9 Louisiana?
 10 A. I don't -- I don't know. That's
 11 probably -- let's just -- somewhere in the
 12 neighborhood of, say, 75 to a 150, somewhere in
 13 that neighborhood.
 14 Q. Have you ever provided --
 15 A. I don't keep -- I don't keep count
 16 of all --
 17 Q. I'm sorry. Go ahead.
 18 A. I -- I don't keep an account of all
 19 the cases I've worked on. I've got -- I've got
 20 many of them like I could pull up, but in --
 21 in -- for example, in Oklahoma, that's during --
 22 there was sometimes I was working on a hundred at
 23 a time.
 24 Q. Right. And I -- I'm not trying to
 25 hold you to a particular number. I'm just trying

1 that came through those areas, and I worked on
 2 several of those in Florida, also the Ohio River,
 3 the Mississippi River, Ouachita River, Black
 4 River, Red River, Yazoo River, Canadian River in
 5 Oklahoma, many of those areas.
 6 And then many other jobs that were
 7 associated with the oil industry that I got
 8 involved with back in the early '80s, and I did
 9 the so-called legacy cases beginning at that time
 10 in Oklahoma and Kansas. I worked on that in that
 11 area probably about 20 something years before
 12 these things ever became, shall I say, vogue
 13 in -- in Louisiana. They weren't known as legacy
 14 cases. They were just basically known as
 15 lawsuits, things that I've -- I've worked on in
 16 Louisiana where I worked on -- I've worked on
 17 numerous oil -- oilfields all over Louisiana --
 18 all over -- all over Oklahoma, many in Texas,
 19 many in Louisiana.
 20 Also, I've done a lot of pipeline
 21 work for transmission spills and other things
 22 like that in -- in those states, including
 23 Mississippi. That's just a brief rundown of some
 24 of the things I've done.
 25 Q. How many legacy cases have you

1 to get an -- get an idea, just a ballpark number.
 2 Have you ever worked on -- have you ever provided
 3 expert witness testimony in any of those legacy
 4 cases in Louisiana for a private landowner?
 5 A. Yes. I did some work -- one of my
 6 father's old friends was Chester Floyd. I worked
 7 on some -- some stuff for him related to a farm
 8 he had in Concordia Parish. Basically, it was
 9 work for my father. As I said, it was an old
 10 friend of my father and just did some work on
 11 his -- his -- his place where they had dumped --
 12 well, actually, they had -- had run equipment
 13 across his -- his soybean fields; and actually,
 14 some sloppy practices that -- that they had of --
 15 related to some of his wooded areas that he had
 16 on his property. That's the one that comes to
 17 mind. There may be some others I've given some,
 18 you know, information on, but that's -- that's
 19 one that comes to mind in detail where I worked
 20 on that.
 21 Q. Who have been some of your other
 22 clients in those -- when you've been retained by
 23 the -- in those legacy cases in Louisiana, who
 24 have been some of your other clients?
 25 A. Name an oil company that operates in

1 Louisiana and I've probably worked for them.
 2 Q. Okay.
 3 A. Numerous, numerous ones.
 4 Q. How many cases are you currently
 5 working on?
 6 A. I -- I don't know. I'd have to go
 7 to my books and look. I'm -- I would think
 8 probably 75 maybe, something like that, including
 9 the coastal cases. They make up about 26 or 28
 10 of them, something like that.
 11 Q. What is the percent of your
 12 litigation work? I'm sorry.
 13 Let me try that again. How -- how
 14 much of your work is composed of providing expert
 15 witness testimony in litigation?
 16 A. Well, I don't just provide testimony
 17 in litigation. I -- I do a lot of work in doing
 18 reviews of oilfields, root studies, etc. in
 19 addition to that I -- that I use to present
 20 reports to my clients. Most of -- most of my
 21 work these days is in the so-called legacy field.
 22 Periodically, I'll do something for, you know,
 23 some small project for someone, but I work mostly
 24 for the oil companies.
 25 Q. So if you had to break that down to

1 wetlands, wetland delineations. As a matter of
 2 fact, I gave the first presentation to the United
 3 States on wetland delineations for the chief of
 4 engineers for the United States. So those are
 5 just some of the things, and I also -- and much
 6 of that has been in litigation.
 7 Q. Okay. Well, let me see if I can
 8 break that down a little bit. And so let me
 9 just -- just throw some -- some areas of
 10 expertise out and let me see if -- if you're
 11 qualified or you consider yourself to be an
 12 expert in these areas. Are you a soil scientist?
 13 A. No. I'm not a soil scientist, but I
 14 consider myself to be an expert in agronomic
 15 practices, so in -- in that area.
 16 Q. Are you a dendrologist?
 17 A. Wait a minute. What did you say?
 18 Q. Dendrologist?
 19 A. Oh. No. But I'm -- I do a lot of
 20 work in dendrological aspects with trees and --
 21 and so forth. I also do my own forestry work on
 22 my own -- on the hardwood -- hardwood stands I've
 23 got.
 24 Q. Yeah. Dr. Holloway, if you can
 25 repeat the last part of that answer, please?

1 a percentage, what -- what would you say?
 2 A. Oh, 90 percent.
 3 Q. Okay.
 4 A. Or more.
 5 Q. In what areas of expertise have you
 6 been qualified as an expert?
 7 A. What areas of expertise?
 8 Q. Yes, sir.
 9 A. In several -- several areas I've
 10 worked in -- most of my work involves the -- an
 11 integral relationship between plants and soils.
 12 This would be botanical and agronomic-type
 13 situations. I also do some agricultural work. I
 14 own several farms and intimately involved with my
 15 own farming operations, and many times when I'm
 16 looking at work in the oilfields, I'll look at
 17 the agricultural operations also.
 18 Also, I've worked on ordinary high
 19 waterline determinations or navigation servitude
 20 all over the -- over the country, over many, many
 21 parts of the country; also, impacts to
 22 vegetation, impacts to soils. Those are some of
 23 the -- the more -- more important things that
 24 I've worked on.
 25 I've also done a lot of work on

1 A. Can you-all hear me?
 2 THE VIDEOGRAPHER:
 3 Do you think if we asked him to dial
 4 in and then use that for his audio and
 5 then just left the video on? We may get a
 6 better audio recording and we may get a
 7 video if both are not running through the
 8 iPad.
 9 MR. ARNOLD:
 10 Bill, let's go off the record for a
 11 second, please.
 12 THE VIDEOGRAPHER:
 13 We are going off the record. The
 14 time is 10:29 a.m.
 15 (A short recess was taken.)
 16 THE VIDEOGRAPHER:
 17 We are back on the record. It is
 18 now 10:42 a.m.
 19 BY MR. ARNOLD:
 20 Q. Okay. Dr. Holloway, let -- let me
 21 back up a little bit. Something that -- that I
 22 missed earlier, who are you currently employed
 23 by?
 24 A. Nothing. I'm a -- I'm a consultant.
 25 I consult for various people. I'm -- I have

1 Holloway Environmental Services, and it's a
 2 one-man show, myself.
 3 Q. Okay. And that's been around --
 4 you've started that back in the -- after you left
 5 the Corps, correct?
 6 A. Well, yes.
 7 Q. Back in the late '70s?
 8 A. About -- I think '76 I think is when
 9 it was incorporated.
 10 Q. Okay. And we were going through
 11 some of your areas of expertise. What -- what
 12 areas -- what -- what do you hold yourself out to
 13 be? What kind of expert do you hold yourself out
 14 to be? That's --
 15 A. As I told you --
 16 Q. That's a terrible question, so let
 17 me see if I can rephrase that. In what -- in
 18 what areas of expertise do you anticipate
 19 testifying in this matter?
 20 A. Primarily, on this -- on this work
 21 I'm doing here will be in association with the
 22 basic impacts on -- of oilfields, primarily on
 23 vegetation and soils and the interactions of --
 24 of -- of the two. I also look at various things
 25 such as crops that are on the sites, agronomic

1 forestry practices and so forth associated to
 2 impacts on various things in the logging
 3 industry.
 4 Q. Are you an agronomist?
 5 A. No. But I -- I'm not -- I don't
 6 practice as an agronomist, but I'm -- I'm very --
 7 most of the -- much of the -- almost all of the
 8 work that I do is in agronomic practices
 9 associated with, as I said, impacts to the soils
 10 and impacts to the vegetation, including --
 11 including all kinds of crops.
 12 Q. Are you a hydrogeologist?
 13 A. No.
 14 Q. Are you a risk assessor?
 15 A. No.
 16 Q. Toxicologist?
 17 A. No. I've done toxicology work, but
 18 I -- I don't do it any more.
 19 Q. Are you an expert in 29-B?
 20 A. I do a lot of work associated with
 21 29-B activities primarily as it -- as it relates
 22 to the soil, salting of -- of soils, also look at
 23 the various things such as oilfield impacts to
 24 the soil.
 25 Q. Have you ever been qualified as an

1 practices that occurred on these sites, and any
 2 impacts to those crops or for naturally-occurring
 3 habitats around those areas, including bottomland
 4 hardwoods, uplands, marsh areas, marsh and
 5 estuarine systems, those kinds of things. That's
 6 the primary -- those are the primary areas that
 7 I -- that I work on in relationship to these
 8 so-called legacy cases, and that's basically what
 9 I'll be talking about today.
 10 Q. Are you a hydrogeologist?
 11 A. Now, there have been other areas
 12 that I've been qualified in, but I -- but they
 13 don't -- they are not germane to this issue.
 14 This is -- these are the things I'll be talking
 15 about.
 16 Q. Are you a hydrogeologist?
 17 A. No.
 18 Q. Are you a geologist?
 19 A. No.
 20 Q. Are you a forester, an expert in
 21 forestry?
 22 A. No, other than just managing my own
 23 forest and doing a lot of work in forestry. I've
 24 had many forest -- large forest companies that
 25 have been my clients where I've looked at

1 expert in 29-B?
 2 A. Well, I've -- I've done a lot of
 3 work in -- in 29-B, but as far as being an expert
 4 related just to 29-B, no, I wouldn't say that;
 5 but I've given tremendous amount of testimony
 6 related to 29-B criteria and 29-B impacts in
 7 those -- in those fields. That's basically what
 8 I do. I do a lot of that.
 9 Q. Are you an expert in RECAP?
 10 A. No.
 11 Q. Are you a remediation expert?
 12 A. I've done a lot of remediation in --
 13 in Oklahoma and some in Louisiana, but I'm just
 14 not -- I don't do that as a -- I -- I -- I'm
 15 associated with a lot of the -- the factors in
 16 remediation that relate to the soils and the
 17 vegetation and any kind of impacts related to
 18 those things. Also, looking at sites and how to
 19 remediate them, I've -- I've done a lot of that
 20 kind of stuff.
 21 Q. Have you ever -- have you ever been
 22 qualified as an expert at trial?
 23 A. At trial?
 24 Q. Yes, sir.
 25 A. Oh, I've been -- I've been in many,

Page 25

1 many, many trials, just various -- various areas.
 2 And take a look at my report and my résumé, and
 3 that can give you an idea of some of the stuff
 4 I've worked on.
 5 Q. Well, yes, sir. I'm just really
 6 trying to get an understanding of what -- what
 7 you are qualified to testify about, what your
 8 areas of expertise are, and what you anticipate
 9 to be -- in what areas you anticipate to be
 10 qualified as in this matter.
 11 A. I -- okay. I -- I intend to be
 12 qualified in the area of agronomic practices,
 13 plants, agricultural activities and various types
 14 of cropping regimes; also in the effective root
 15 zone of plants, including crops and other type
 16 areas such as bottomland hardwoods. I've done in
 17 excess of 30 studies on those, so I've probably
 18 done more than probably anybody that I know of in
 19 those areas; and I often am qualified for those
 20 areas when I testify in court or at a hearing.
 21 Q. Have you ever been qualified as an
 22 expert in sugar cane?
 23 MS. TABER:
 24 Objection, form.
 25 THE WITNESS:

Page 27

1 A. I don't know. I -- I -- I don't
 2 think I pulled it out this morning. Let's see.
 3 Hold on just a second. I don't have my file out
 4 of that. Let -- well, here. Good. Let me look
 5 at this. This -- okay. Go ahead.
 6 MR. ARNOLD:
 7 Okay. Yeah. If we can pull it up
 8 on the screen, Bill, if we can do it that
 9 way.
 10 THE VIDEOGRAPHER:
 11 (Complied.)
 12 THE WITNESS:
 13 I'm looking at it now. That's good.
 14 BY MR. ARNOLD:
 15 Q. Okay. Great. And so these are --
 16 MR. ARNOLD:
 17 And I'll attach this as Exhibit 18.
 18 (Exhibit 18 to be marked.)
 19 BY MR. ARNOLD:
 20 Q. These are -- there's several things
 21 in here. There's a list of your reliance
 22 materials, your field notes, some references,
 23 some field photographs and some invoices. What
 24 I'd like to do is just go to the invoices on
 25 the page Bates labeled 22. It's labeled --

Page 26

1 I'm not a sugar cane expert per se,
 2 but I know a lot about sugar cane growth
 3 and roots and -- and harvesting practices
 4 and -- and things like that. But no, I'm
 5 not -- I'm not just a direct sugar cane
 6 expert, but I know a lot about sugar cane
 7 roots; and that's what I'll be talking
 8 about in this particular case, and the
 9 growth of the plants and the impacts of --
 10 of sugar cane related to salting factors
 11 such as areas -- such as sodium buildup in
 12 the soils, electrical conductivities,
 13 profiles of the plants, how they look when
 14 they are being impacted by these factors
 15 in the soil. Yes, I -- I -- I'm -- I've
 16 had a lot of experience in that area, and
 17 I will be -- and I have been -- have, you
 18 know, done a lot of studies on them.
 19 BY MR. ARNOLD:
 20 Q. Okay. What -- what I'd like to do,
 21 if we can is turn to what I've identified as
 22 Tab 18 in the materials that we sent around this
 23 morning. And, Dr. Holloway, this is -- this is
 24 really, you know, the first page of your reliance
 25 materials. Do you have access to that document?

Page 28

1 A. Okay.
 2 Q. -- Enclosure 4, and I don't want to
 3 spend a lot of time -- time on these invoices. I
 4 just want to walk through them quickly. So it
 5 looks like we have an invoice from September of
 6 2018, November 2019, July 2020, October 2020, and
 7 November of 2020. Does that -- does that seem
 8 right to you, Dr. Holloway?
 9 A. Yes. I -- that's right. I
 10 submitted these with my reliance materials.
 11 Q. And if we add all those invoice
 12 amounts up, it comes to about \$53,000. Does that
 13 seem to be about right?
 14 A. I -- I don't know. I haven't even
 15 totaled it up, but that -- that -- that could be
 16 the ballpark figure. If that's what these total
 17 due numbers all amount to, that's -- I'll agree
 18 with you.
 19 Q. Okay. And so the last invoice we
 20 have here is from November of 2020, and I'm
 21 assuming you've done some work after that date;
 22 is that correct?
 23 A. That's true.
 24 Q. Okay. And you'll do some additional
 25 work, if you haven't already, in preparation for

1 next week's hearing; is that right?
 2 A. Yes. I'll have some billings on
 3 that. I've already done some and I'll continue
 4 to do some more up until the -- the hearing and,
 5 of course, testifying at the hearing.
 6 MR. ARNOLD:
 7 Bill, if we can go to the page Bates
 8 labeled 26. This is the October 2020
 9 invoice. If you scroll down to the
 10 bottom, it looks like a portion of that
 11 invoice has been redacted.
 12 THE VIDEOGRAPHER:
 13 (Complied.)
 14 BY MR. ARNOLD:
 15 Q. Dr. Holloway, did you do that
 16 redaction or is that something your attorneys
 17 did?
 18 A. I don't know what you're talking
 19 about, redacted.
 20 Q. That big black box there, do you see
 21 that big black box at the bottom of the page?
 22 A. Oh, that's probably -- that's
 23 probably my tax number taken out.
 24 MR. ARNOLD:
 25 Okay. Elizabeth, is that some

1 redaction that you-all did in the
 2 invoices?
 3 MS. TABER:
 4 I'm -- I'm going to look into that,
 5 John, and I will -- I will get back with
 6 you on that.
 7 MR. ARNOLD:
 8 Yeah. If you -- if you could just
 9 tell me the nature of that, that would be
 10 great.
 11 MS. TABER:
 12 Sure.
 13 MR. ARNOLD:
 14 Okay. Let's go -- let's go to the
 15 next enclosure here in this exhibit. It's
 16 Enclosure 5. It's on page Bates labeled
 17 28, and it's called Cases Worked on in the
 18 Last 5 Years, 5 Plus Years. And I'm going
 19 to -- I'd like to do this as efficiently
 20 as possible and -- and I don't want to --
 21 you know, I'd like to go through each one
 22 of these cases, but I -- you know, I don't
 23 want this to take all day.
 24 THE VIDEOGRAPHER:
 25 (Complied.)

1 BY MR. ARNOLD:
 2 Q. So what I'm really interested in,
 3 Dr. Holloway, is if you could tell me -- you have
 4 the parish identified with each one of these
 5 entries. If you could tell me the habitat type
 6 that you did there, the habitat type that was
 7 present on the property subject to the -- each
 8 one of these cases, whether or not you did a root
 9 zone study, and, if so, what you found to be the
 10 rooting depths of the plants that you did a
 11 survey on; is that -- that fair?
 12 A. No. Well, I mean, I can give you a
 13 general idea, but I can't -- I can't give you a
 14 list of the -- the species that I actually
 15 studied because, I mean, obviously, I can
 16 remember a few things, but I've slept since some
 17 of these -- some of these things were prepared.
 18 I can give you just kind of in generalities what
 19 the habitat types are and what you would expect
 20 to see there, but as far as the actual root
 21 depths and so forth, I'd have to go to the
 22 document itself.
 23 Q. Okay. Well, let's -- let's do that.
 24 A. I can give you some generalities. I
 25 can give you some generalities and we will go

1 with that right now.
 2 Q. Let's just do the best we can. That
 3 would be fine.
 4 A. Okay. That's -- that's what I'll
 5 do.
 6 Q. So let's -- if you can just start --
 7 start at the top and run -- run through them and
 8 the -- the road is yours.
 9 A. Okay. Agri-South Group, this is in
 10 Avoyelles Parish right around where Avoyelles
 11 Parish, Rapides, Catahoula Parish come together.
 12 This is -- this is an outfit that -- that had a
 13 piece of property that had been cleared in the
 14 past and had been put into the WRP program,
 15 Wetland Reserve Program, of the USDA. There was
 16 a small area out in that site where there had
 17 been some old production activities and that's --
 18 that's what the suit involved. But the entire
 19 area had been planted to hardwood vegetation, and
 20 I forget now how many thousand acres it was. But
 21 anyway, the work involved potential impacts on
 22 the vegetation that had been planted or that was
 23 growing at that site. Most of these, of course,
 24 were hardwood trees and you -- you just kind of
 25 run through, you remember something such as a

1 green ash, hackberry. Let's see --
 2 Q. Dr. Holloway, let -- let me
 3 interrupt you here for a minute, if I can. I
 4 think maybe there's -- there's a better way to --
 5 to go through these. I've counted all these
 6 cases up and it comes out to be about 42 cases.
 7 Does that sound about right to you?
 8 A. Oh, that's about right, but this is
 9 just part of them. That's not all of them.
 10 Q. Right. So this is in -- in the last
 11 five or so years, you have these 42 cases listed.
 12 Have you -- in how many of these cases did you do
 13 a rooting depth study?
 14 A. Okay. Agri-South; Mayeaux; the
 15 Bunch property, I did -- I did one there. I
 16 did -- did the soil profile and so forth on it.
 17 Catahoula Lakes Investments (sic),
 18 that involved a -- an upland-type area, mixed
 19 hardwood and so forth right along the -- the hill
 20 profile that comes down on the west side of
 21 Catahoula Lake.
 22 C.C.M.P., LLC v. Chevron Holdings
 23 (sic), I can't remember exactly what all I did on
 24 that. I think it was a -- it was a mixture of
 25 hardwoods and I don't remember if I actually

1 Cameron Parish. This was in an area where we had
 2 a mixed area of some brackish-type marsh in part
 3 of the area, pasturelands in part of the area,
 4 areas that had been pastureland that had grown up
 5 into woody-type situations. I did root studies
 6 in it.
 7 East Bayside, that was in Iberia
 8 Parish. There it was only all hardwood
 9 vegetation, the root studies for that.
 10 The Lefebvre property over in west
 11 Baton Rouge was hardwood vegetation, did a -- did
 12 a wood study there.
 13 Allain, this was over in the
 14 Atchafalaya Basin, did a root study on it. The
 15 Labarre property, which is the old salt dome
 16 cave-in there in Assumption Parish, I worked on
 17 it in several ways, I guess you could say areas,
 18 looking at the vegetation impacts on the
 19 vegetation at the site. I also -- I guess you
 20 could say I kind of put on my -- actually put on
 21 my fisheries hat and did some -- looked at the
 22 fisheries associated to -- in that cave-in area
 23 with a particular emphasis on -- on large mouth
 24 bass, which were just -- the place was just
 25 wrapped up with them.

1 wrote -- wrote a report on it, but I know I
 2 looked at the vegetation.
 3 Clyde Tucker did not involve a root
 4 investigation, but I looked at a lot of pits and
 5 worked on pit closure there.
 6 Clyde Reese was down in Vermilion
 7 Parish. I did a -- I did a -- this is an area
 8 that had grown up, and since you wanting to know
 9 the -- the habitat type there, it was oilfield
 10 succession in that site, and I did several shrub
 11 types and some trees for that particular one, the
 12 old hardwood.
 13 Tillman, I didn't do a study there,
 14 a root study. That's in Concordia Parish over
 15 there between Lake St. John and the main line of
 16 the Mississippi River levee along the
 17 Mississippi. Much of that work involved
 18 bottomland hardwood areas mixed with agriculture
 19 areas that had either been planted to like water
 20 wheat, things like that in that general area.
 21 But much of this area for Dr. Tillman had been
 22 put into -- it was either CRP or WRP, a program,
 23 and that was to grow hardwood vegetation and
 24 that's what -- that was part of it.
 25 David Curry, that was over in

1 I also did some areas out in Bayou
 2 Corne where we looked at the areas out there
 3 associated with the -- the fisheries -- the
 4 fisheries habitat, so to speak, and also the
 5 fisheries in that area with various ways of -- of
 6 capturing those, looking at them, looking at the
 7 health of them and so forth.
 8 Harold J. Guidry. Okay. Yeah.
 9 That was the old Anse La Butte Field right
 10 outside of Breaux Bridge. I did a root study
 11 there in that one, looking at -- primarily at --
 12 that was -- in that particular case, it was
 13 oilfield succession. The oilfield succession was
 14 primarily Chinese tallow trees or chicken trees,
 15 as they are called in -- in south Louisiana. I
 16 looked at the depths of the roots and so forth of
 17 that particular area.
 18 The Heloise was an area down in
 19 Lafourche Parish. I'm trying to think of the
 20 actual town it's close to. It was on the east
 21 side of Bayou Lafourche. This was pastureland,
 22 hardwood timber, and it had some agriculture over
 23 on the east side of that area; and I did a root
 24 study related to the hardwood timber and the
 25 pasture areas, vegetation in the pasture areas.

1 MR. ARNOLD:
 2 Next page, please, Bill.
 3 THE VIDEOGRAPHER:
 4 (Complied.)
 5 THE WITNESS:
 6 Okay. Hero Lands, that's in
 7 Plaquemines Parish. That was just a
 8 recent case that I worked on. I did a
 9 study there in an old oilfield area. Much
 10 of the -- much of the area was oilfield
 11 succession back from the time that when it
 12 was used as cattle pasture with some
 13 limited agronomic practices in the
 14 northeast -- northwest corner of that
 15 site. I did a root study on -- on both
 16 bottomland hardwood species and herbaceous
 17 species on that -- in that case.
 18 The Devillier case was in St. Landry
 19 Parish. I did a study there of the
 20 rooting depths of hardwood vegetation in
 21 that area and also studied the root depths
 22 of sugar cane at that particular site,
 23 because there was a large field of sugar
 24 cane at -- at that site.
 25 The Guilbeau site was bottomland

1 hardwood. That was over in Avoyelles
 2 Parish right outside of the town of
 3 Bunkie. I did some -- some work on that,
 4 but I never did write a report on it.
 5 The Dupont case in Iberia Parish,
 6 which is next, I did a root study and
 7 bottomland hardwoods in that portion of
 8 that area that was -- involved properties
 9 in -- in an old oilfield.
 10 The Dupont, et al, v. Mobil, that
 11 was in -- also in Iberville Parish on the
 12 north end of Bayou Blue. That was in
 13 primarily a very wet-type area with old
 14 cypress trees and also some bottomland
 15 hardwood sites. I did a root study in
 16 that one.
 17 The Justin Dale Tureau, I looked
 18 at -- at those areas there and that were
 19 involved. There was some fish ponds
 20 involved in that. I looked at those. I
 21 also looked at the vegetation that was
 22 growing there, but I did not do a root
 23 study there.
 24 The Marchive case was in Avoyelles
 25 Parish right outside of the -- the town of

1 Bunkie. That -- that case involved two
 2 types of habitats: One was -- one was a
 3 crawfish pond. I looked at the crawfish
 4 pond, I looked at the crawfish operation,
 5 also the -- the techniques that they were
 6 using at that particular site, potentially
 7 impacts to the crawfish pond. Also,
 8 bottomland hardwoods, I looked at the
 9 bottomland hardwoods and the impacts,
 10 potential impact for that site. I also
 11 looked at agronomic practices on the site
 12 primarily with soybeans. I looked at the
 13 condition of the crops, also for any kind
 14 of indicia related to oilfield activities,
 15 including petroleum hydrocarbons and
 16 primarily emphasized salting factors such
 17 as aspects of sodium and electrical
 18 conductivity aspect.
 19 Louisiana Te Products Pipeline, that
 20 involved a spill. Let's see. That was
 21 a -- an old friend of mine used to be a
 22 judge there. Darn. Red River Parish.
 23 Yeah, Red River Parish. That involved a
 24 gasoline leak in a pipeline in an
 25 agriculture area, and I looked at the

1 impacts of the -- of the spill on
 2 agricultural activities in -- in that --
 3 at that -- surrounding that site. Those
 4 related to, of course, how much damage it
 5 did to the crops and etc.
 6 BY MR. ARNOLD:
 7 Q. Did you do a root zone study --
 8 A. Louisiana Wetlands --
 9 Q. -- in that case?
 10 A. What?
 11 Q. Did you do a root zone study in that
 12 case?
 13 A. No. No, I did not. I did not.
 14 Q. And I'm sorry to interrupt, but I
 15 think you missed one up -- right above that, the
 16 Louisiana Farm and Livestock Company?
 17 THE WITNESS:
 18 Pull it back down. Let me see.
 19 THE VIDEOGRAPHER:
 20 (Complied.)
 21 THE WITNESS:
 22 Yeah. I missed --
 23 BY MR. ARNOLD:
 24 Q. Did you cover that one?
 25 A. Yeah, I missed it. Yeah. Louisiana

1 Farm and Livestock, that was in Calcasieu Parish.
 2 It was over by the -- the ship channel and it
 3 involved two types of habitats in that area. And
 4 one I had worked on in I believe 1975 when I was
 5 working for the Army Corps of Engineers, I was
 6 look -- I looked at ways of de-watering a large
 7 dredge material area there, and what I was trying
 8 to do there was to de-water that site to use it
 9 either for -- for agronomic practices or --
 10 and -- and then one of the main things too was to
 11 get the water off because it was serving as
 12 excellent mosquito breeding habitat. I looked at
 13 that area, but most of my work involved two
 14 habitats: One was a marsh sort of brackish-type
 15 marsh system that I worked on, and also hardwood
 16 timber in the surrounding area. I did root
 17 studies in both those -- those community types
 18 for that particular area. And, of course,
 19 Louisiana Wetlands you know about.
 20 The Shaffer case, that was in
 21 Terrebonne Parish. It was over by Little
 22 Caillou, I believe, and that involved an area
 23 that had basically grown up to wooded timber and
 24 mostly hardwoods. I did some work on that. I
 25 also looked at some of the herbaceous vegetation

1 St. Martin Parish; and in that particular
 2 case, that was a -- that was a sugar cane
 3 case and they had some sugar cane growing
 4 on -- on part of it; and also, part of it
 5 was growing in soybeans and I looked at
 6 the impacts on those areas and also did
 7 some root studies. I also looked at some
 8 areas that had been some -- where there
 9 had been some detection facilities and
 10 also looked at the -- the plant
 11 distribution in those areas that had
 12 occurred since the abandonment of the --
 13 of the operations.
 14 The Monique Guterrez, that was in
 15 Acadia Parish north of Scott, Louisiana.
 16 This involved mostly a cattle operation
 17 where they -- it was an old oilfield
 18 there. I did a root study in that area
 19 looking primarily at forage crops for --
 20 for cattle, looked at the impacts on the
 21 sites, looked at soil profiles, looked at
 22 soil types and the different depths of the
 23 roots for that site.
 24 New 90, LLC, you are familiar with
 25 that. You have already deposed me on

1 that had succeeded back into those areas, did a
 2 root zone study on that.
 3 Martha Zoe Moore was over in
 4 Richland Parish. This involved a saltwater
 5 spill; and in that particular case, I -- I did a
 6 root study in -- in pastureland and some areas
 7 that had been -- I believe they put it in CRP,
 8 and -- and then part of it was just woodlands in
 9 that area and also some, as I said, some wet
 10 areas. And I -- I studied various herbaceous
 11 and, well, woody plants in that area, the root
 12 zones of those areas.
 13 The Primeaux case, one of the
 14 Primeaux cases, I had several of them, I think.
 15 All of these Primeaux cases were they involved
 16 hardwood timber and some marsh-type situations
 17 that had developed on some of them, and these
 18 were all root zone studies that I conducted.
 19 MR. ARNOLD:
 20 Next page, please.
 21 THE VIDEOGRAPHER:
 22 (Complied.)
 23 THE WITNESS:
 24 Are those through? Okay. This
 25 Matthew Willis, this was over in

1 that. You know basically what I did
 2 there.
 3 BY MR. ARNOLD:
 4 Q. You did a root zone -- root zone
 5 study in that case, correct?
 6 A. Yes. Yes, yes. You -- I -- I think
 7 you are the fellow who deposed me on that.
 8 Q. Yes, sir, I was.
 9 A. I remember you, yes, and -- and I
 10 can go through that. I can -- basically, what I
 11 did is I looked at the root zones in that area.
 12 This had -- this involved the property that's
 13 just across the Bayou Teche from the Louisiana
 14 Wetlands property and there was a difference
 15 there. That area -- much of that area that I
 16 looked at in that particular case involved
 17 Chevron's -- one of their AOIs that they had for
 18 it; and it involved the sugar cane depths, the
 19 root depths in that particular area. This was
 20 down in the -- basically part of the old bed of
 21 the Mississippi River distributary, which --
 22 which Bayou Teche was, which was later occupied
 23 by the Red River, and that's why you have many
 24 different soil types in these areas, by the way.
 25 And when the Red River came back in, it was what

1 you call an underfit stream.
 2 An underfit stream is like when you
 3 have a very large stream that is -- has been
 4 abandoned by movement of the -- of the stream
 5 itself through meander processes or whatever, and
 6 then the -- the -- the Red River came back in and
 7 occupied that site, that -- that area and it's a
 8 smaller stream, so it's called an underfit
 9 stream. And then you have your depositional
 10 gradients that occurred in that area.
 11 Much of the area that I looked at,
 12 the sugar cane that I looked at there was in
 13 the -- off the old natural levee of the
 14 Mississippi down in the area that had been
 15 occupied by the Red River. And also, that --
 16 that's where the sugar cane was growing. I also
 17 looked at the sugar cane, profiled the sugar cane
 18 for impacts. I also worked closely with, let's
 19 just call them, the Pisani group in developing a
 20 remediation for that site, and that's ongoing at
 21 this time.
 22 Russell Adam versus Cash Oil down in
 23 Vermilion Parish, that was a -- a rice field that
 24 I worked on and it had to do with some closure of
 25 the -- closure of the -- closure of the

1 were -- these were all bottomland hardwoods.
 2 They had -- they actually had -- oh, yeah, it was
 3 flooded at that time and it was very difficult to
 4 accomplish, but we were able to get -- do a study
 5 at that particular site; and -- and mostly these
 6 were bottomland hardwoods species such as
 7 cypress, probably hackberry, green ash, such --
 8 such types species. It was -- it was a
 9 bottomland hardwood area.
 10 The Tomlinson Realty Company, I did
 11 a review of that site and it was -- it was all
 12 bottomland hardwood with some edge areas that had
 13 to do with -- I think it was old -- old soybean
 14 fields and I think they -- they were in a state
 15 of succession or part of it, but not very much of
 16 it. Most of it was bottomland hardwood. I did
 17 not produce a report on that one.
 18 Two O'Clock Bayou, that's an area in
 19 St. Landry Parish right along the Atchafalaya
 20 River. That involved mostly bottomland
 21 hardwoods. There were several ownerships in that
 22 particular area, and I looked at the impacts of
 23 the oilfield activities on the bottomland
 24 hardwoods, conducted a root study in that site,
 25 and part of that site had sugar cane growing on

1 operations in that site and the impacts on the
 2 rice. I looked at the rice flooding operations,
 3 I looked at the levelling, the elevations of
 4 the -- of the -- the berms and so forth, various
 5 things associated with the impacts for that site.
 6 I did not conduct -- I looked at the root zone.
 7 I'm not actually sure I produced a report on it.
 8 Ritchie Grocer Company, again, this
 9 was -- this was outside the -- just right out --
 10 out from Bunkie, Louisiana in Avoyelles Parish.
 11 I conducted a root zone study there. The habitat
 12 at that particular area was woodlands, bottomland
 13 hardwoods. I produced a report on that.
 14 Spanish Lake restoration, that's in
 15 Spanish Lake just south of Baton Rouge. And in
 16 that particular case, I was looking at some WRP
 17 areas that had been planted. I was also looking
 18 at natural areas there, including bottomland
 19 hardwoods and freshwater marshes that had
 20 developed in some of those areas. I did root
 21 studies on that, a root study on that.
 22 The next one, State of Louisiana,
 23 Iberville Parish School Board. This was over in
 24 the Atchafalaya Basin. Oh, yes, just west of --
 25 of Plaquemines. I did -- this was a -- these

1 it, and I also looked at the -- the depths of
 2 the -- the rooting depths of the -- of the sugar
 3 cane at that site.
 4 Let me get a swallow of water here.
 5 This is taking a little bit of time.
 6 Q. Almost done.
 7 A. Okay. Let's go to Velma Hebert over
 8 in Vermilion Parish. This was an abandoned farm
 9 along Bayou Queue de Tortue. That means tail of
 10 turtle. And they -- that area there was -- was
 11 an area that had not -- they had not been able to
 12 farm it because back when the profiles had
 13 developed through that area through various
 14 activities such as channelization and so forth,
 15 and it was mostly in a state of plant various --
 16 various stages of plant invasion in those sites.
 17 I think they had been using it mostly for cattle,
 18 to run cattle on for -- for a while. It had
 19 been -- rice had been grown on it. They had a
 20 flume ditch in areas where they had -- they had
 21 gotten water, but it had been sometime. And
 22 also, there was a bottomland hardwood area mixed
 23 in with the -- the cypress, and I did a -- a root
 24 zone study of both the abandoned pasture area
 25 plants and hardwood vegetation there at that

1 site.
 2 The Atkins case was up in -- in
 3 Richland Parish just -- just -- just north of --
 4 oh, gosh, my sister owns land right by it, but I
 5 can't remember. I'll think of it. Anyway --
 6 anyway, this -- this involved -- it was an old
 7 oilfield. It was mostly just hardwood vegetation
 8 in that area with some areas that had -- where
 9 plants were moving in, woody plants were moving
 10 into herbaceous areas; and I did a root study on
 11 that particular area too.
 12 Q. What about the Steve Crooks versus
 13 Louisiana Pacific? I think you skipped that one.
 14 Did you do a root zone study in that case? It's
 15 about five up from the bottom.
 16 A. No. Which one now?
 17 Q. The Steve H. Crooks versus Louisiana
 18 Pacific.
 19 A. Oh, yeah. Steve Crooks, yeah.
 20 That -- that -- that was an area over where
 21 the -- no. I think I've already mentioned that
 22 one, but anyway, I'll go over it again. That
 23 was -- that was where the hills -- well, let's
 24 call it the hill country of Louisiana comes right
 25 down to the bed of Catahoula Lake and there's a

1 A. Well, somewhere in that
 2 neighborhood. And I've also done a lot of work
 3 on my own property. I have several farms in this
 4 area and I do a lot of work on rooting -- the
 5 rooting depths and also looked at those areas for
 6 fragipan formations, stuff like that, so -- but I
 7 don't write reports on them. I just go out and
 8 take pictures and do data and look at soil
 9 profiles, but I would say probably maybe in the
 10 neighborhood of 35, 40.
 11 Q. Okay. And of those 35 or 40, it
 12 looks like you've had a handful where you did a
 13 root zone study of sugar cane, like maybe two or
 14 three different cases; is that about right?
 15 A. No. More than that. Let's see.
 16 Devillier, Two O'Clock Bayou, the Creadeur. The
 17 Creadeur case was not in -- listed in there,
 18 C-R-E-A-D-E-U-R case in Acadia Parish. I did
 19 work on crops there, including sugar cane and --
 20 and soybeans. That was not -- that was not
 21 listed, or if it was listed, we skipped over it.
 22 Let's see. Where is some other areas? Of
 23 course -- of course, New 90 and, of course,
 24 Louisiana Wetlands. I'm missing one or two, but
 25 in general, those are some of the ones.

1 small piece of property there that I worked on
 2 that -- that he owned. And I looked at the
 3 vegetation and so forth, but I don't think I -- I
 4 completed a -- an investigation on it. The
 5 Catahoula Lake Investment property case was one
 6 that I had that I did in the same -- it was
 7 positioned in the same way, and that's -- I did
 8 a -- I did a root study on it, but not
 9 Steve Crooks; but I -- I did -- I did review the
 10 operations, and that involved both pine -- pine
 11 tree forests that had just -- basically, it had
 12 just grown up. It was not a -- not a managed
 13 forest, but -- and also some hardwood in that
 14 area for that site.
 15 Q. So out of these 40 plus cases, it
 16 looks like you've done work in about 20 or so
 17 different parishes across the state; does that
 18 sound about right?
 19 A. Probably so. I don't -- I don't
 20 know. Whatever it amounts to.
 21 Q. Okay. So in the vast majority of
 22 these, let's say in about 30 -- approximately
 23 35 cases of the cases you have listed here, you
 24 did a root zone study. Would that be about
 25 right?

1 Q. Okay.
 2 A. And I've looked at a lot of -- I've
 3 looked at a lot of other areas. One of my -- my
 4 best friends owns a lot of land in Avoyelles
 5 Parish and around that area, and I've -- I've
 6 looked at the -- the root zone issue in -- in
 7 many locations. These are primarily on Arkansas,
 8 not Arkansas, Red River soils from the -- the
 9 abandoned Red River areas, just to kind of give
 10 me an idea of -- of what the root -- root depths
 11 are. And I've also looked at many other sites
 12 where I'd just go out and take a quick look at
 13 the sugar cane roots in nearby areas. You know,
 14 that -- that's all part of it.
 15 Q. So of the -- of the 35 to 40 cases
 16 that we have identified here in which you did a
 17 root zone study, have you -- in any of those
 18 studies, have you ever found rooting depths that
 19 extend below 24 inches?
 20 A. No.
 21 Q. And that would include also the
 22 sugar cane root studies that you did, none of
 23 those -- none of the roots that you evaluated in
 24 those instances extended below 24 inches --
 25 A. Wait. Wait a minute.

1 Q. -- correct?
 2 A. Whoa, whoa, whoa, back up. Root
 3 studies on sugar cane, have you seen any below
 4 24 inches, no, not -- not -- hold on -- any of
 5 those particular areas. You might see a crack
 6 where you'll get something going down, you know,
 7 16, 18 inches, but that -- that makes a very
 8 small percentage of the -- of the root population
 9 below that area. In general, you're going to see
 10 for sugar cane roots in -- in Louisiana, all of
 11 those areas most of the roots are between 8 and
 12 12 inches with occasionally you'll see some
 13 stringers down to 15 inches, and if you don't
 14 have a fragipan at those sites, you might go to
 15 15 inches with an effective root zone; but most
 16 of the roots occur within the 8- to 12-inch depth
 17 in Louisiana.
 18 All -- all of my investigations
 19 usually involve looking at depths down to
 20 24 inches and then extending on down to 5 feet or
 21 6 -- 55, 60 inches and no roots extend in those
 22 depths, to those depths.
 23 Q. Is that specific to --
 24 A. Not any -- not any, zero.
 25 Q. And that's -- is that specific to

1 remediation was still going.
 2 Q. Yes, sir. And so my question to you
 3 is, have you done any work on that case after it
 4 was settled?
 5 A. Yes.
 6 Q. Can you tell me what you've done
 7 since that case was settled?
 8 A. I -- I've looked at the -- at the
 9 areas two or three times. We -- we have looked
 10 at some of the -- some of the things associated
 11 with a remediation plan that I've worked with
 12 Dave Angle and some of the other folks on. We
 13 put that together. We have come up with a plan,
 14 taking some -- some more additional soil readings
 15 in that -- in that area, and hopefully we are
 16 going to get this accomplished pretty soon.
 17 Q. Do you know if that remediation plan
 18 that you are working with Dave Angle on, if
 19 that's been submitted to DNR for approval?
 20 A. Yes.
 21 Q. It has been submitted?
 22 A. Yes.
 23 Q. Do you know if it's been approved?
 24 A. Yeah. I think it has been approved,
 25 yes. You'll need to talk to Dave Angle about

1 sugar cane or is that -- is that -- can the same
 2 be said for the other root zone studies that
 3 you've done in -- in other habitat types?
 4 MS. TABER:
 5 Object to the form.
 6 THE WITNESS:
 7 Well, I was -- I was just sticking
 8 to sugar cane because that's what --
 9 that's basically what we looked at here.
 10 But no, I have -- I've seen some areas
 11 with -- in pine plantations where the tap
 12 roots do extend down to about 30 inches or
 13 so for an effective root zone. But most
 14 of the hardwoods are going to be in the
 15 range of, you know, anywhere from 8 to 15,
 16 18 inches with -- with -- with the vast
 17 majority being within -- most of the root
 18 zones around bottomland hardwoods occur
 19 within the top 10 inches of soil.
 20 BY MR. ARNOLD:
 21 Q. Okay. We briefly mentioned the
 22 New 90 case earlier, and you -- and you said that
 23 that case was still ongoing. Have you -- are you
 24 aware that that case settled?
 25 A. Oh, yes. I said -- I said that the

1 that. He's handling more of those -- those
 2 things. I'm more along the line of just taking
 3 my stuff.
 4 Q. Do you know if there's been any
 5 remediation work done on the property itself?
 6 A. I don't -- I don't -- I don't know
 7 of any other than what we -- we have got planned.
 8 That area of the Grigsby, part -- part of that,
 9 that's up on the natural levee area. I don't
 10 think there's been anything done on it. I have
 11 seen cane growing on it, but I don't -- I don't
 12 know. I haven't seen any activity out there.
 13 Q. And when you say you haven't seen
 14 any activity, that -- that's for the entire site?
 15 A. You are talking about remediation
 16 activities?
 17 Q. Yes, sir.
 18 A. No. I have not seen any -- I have
 19 not seen any remediation activities on the site,
 20 except we are -- we are, you know, planning
 21 and -- and we are doing things like, you know,
 22 taking samples, looking at things, and kind of
 23 just coming up with a design and -- and that kind
 24 of thing, but now that's for Chevron's portion.
 25 I did not get involved with the -- the Grigsby

1 part of it. And that would have been back to the
 2 east up on the natural levee of the old
 3 Mississippi.
 4 MR. ARNOLD:
 5 Okay. Do you want to take a break
 6 or you want to keep going? I'm fine
 7 either way.
 8 THE WITNESS:
 9 It's sleeting like all get out, so I
 10 think, unless you-all need to, let's go.
 11 MR. ARNOLD:
 12 Okay.
 13 THE WITNESS:
 14 Keep going.
 15 BY MR. ARNOLD:
 16 Q. Okay. Did you conduct a site visit?
 17 Or let me ask you a different question.
 18 What -- what were you asked to do in
 19 this case?
 20 A. I was asked to look at the area and
 21 see if there were any impact -- impacted areas,
 22 look and see how the cane was growing, look at
 23 the -- the bottomland hardwoods and looking at
 24 areas of old oilfield activities in those sites,
 25 again, looking at the condition of the

1 take a second. While that's -- while that's
 2 happening, let me -- let me plug in some more
 3 power to my --
 4 MR. ARNOLD:
 5 I think we lost his video.
 6 THE WITNESS:
 7 Okay. Can everyone still hear me?
 8 MR. ARNOLD:
 9 Yes, sir. I think we may have lost
 10 your video, though.
 11 THE WITNESS:
 12 Well, hold on just a minute. It
 13 says join through the browser, so maybe I
 14 can get it on through the browser. Hang
 15 on. Nope. I lost -- I lost that -- that
 16 sleet has -- I've lost -- I've lost the
 17 connection. Mr. Arnold, I haven't told
 18 you, I told everybody else, that
 19 periodically, I'll have to go out and take
 20 some antifreeze and -- and wash that ice
 21 off, so we may have to take a little
 22 break.
 23 MR. ARNOLD:
 24 Well, why don't we do that? Why
 25 don't we take a break, see -- see what you

1 vegetation. Also, asked -- I was asked to do a
 2 root -- root investigation that involved both the
 3 sugar cane property, sugar cane fields, and also
 4 the bottomland hardwoods to the southeast --
 5 southwest, I'm sorry, on the property.
 6 MR. ARNOLD:
 7 What I'd like to do, Bill, if we can
 8 pull up Tab 15, which I'll mark as
 9 Exhibit 15.
 10 (Exhibit 15 to be marked.)
 11 THE VIDEOGRAPHER:
 12 (Complied.)
 13 BY MR. ARNOLD:
 14 Q. This is Appendix A to your report,
 15 which is a series of figures; is that right?
 16 MR. ARNOLD:
 17 If we can go to the next page --
 18 next page, Bill, and actually I really
 19 want to go to Figure A, dash, 7.
 20 THE VIDEOGRAPHER:
 21 (Complied.)
 22 BY MR. ARNOLD:
 23 Q. Okay. Can you see that,
 24 Dr. Holloway?
 25 A. It says it's connecting, so it will

1 can do to -- to get that back on and see
 2 if we can get you reconnected?
 3 THE WITNESS:
 4 All right. Sounds good.
 5 THE VIDEOGRAPHER:
 6 We are going off the record.
 7 It's -- it's 10 -- it's 11:42.
 8 (A short recess was taken.)
 9 THE VIDEOGRAPHER:
 10 We are back on the record. It's
 11 11:54 a.m.
 12 BY MR. ARNOLD:
 13 Q. Okay. Dr. Holloway, I think before
 14 we left you were describing what you were asked
 15 to do in this case, and -- and what I want to do
 16 next, if I can direct your attention to this
 17 Exhibit 15, which are the appendices or Appendix
 18 A to your report, which are a series of figures,
 19 and direct your attention to Figure A-7 entitled
 20 Root Study Observation Locations. Can you see
 21 that figure before you?
 22 A. Yes. I see it.
 23 Q. Okay. If you could, you -- you
 24 conducted a number of different site visits,
 25 correct?

1 A. Yes.

2 Q. Okay. If you could walk me through

3 those individual site visits, when you took those

4 site visits, and what you did on those individual

5 site visits, and then maybe we can get into the

6 particulars of where that happened with this

7 figure?

8 A. Well, this -- this one here is

9 related, I guess, primarily to the root study

10 observation locations. I don't know -- I

11 could -- in my report, I think I can tell you how

12 many times I've been at the site. I can't tell

13 you exactly what all I looked at each time, but I

14 can give you something in -- in a generality, in

15 a general way for that sake. Hang on here a

16 minute.

17 Okay. On the August 30, 2018 site

18 visit, we visited the sugar cane fields; and --

19 and primarily we were interested in looking at

20 the oilfield E&P activities that went on in the

21 sugar cane fields, as I recall, may have looked

22 at these areas back -- back down to the southwest

23 a little bit.

24 Let's see. October the 1st, 2019, I

25 looked at -- I did another general review of the

1 Q. Okay. The root zone studies that

2 you did designated by these numbers here on

3 Figure A-7, those were conducted at locations

4 outside the areas of alleged impact caused by oil

5 and gas activities; is that right?

6 A. That's correct. You don't -- you

7 don't do an investigation in an area that's been

8 impacted by activities. So, for example, if you

9 had salting of the roots and so forth, you want

10 to -- to find a good -- find good healthy stands

11 that would be representative of those sites, and

12 then you tailor your remediation to trying to

13 grow those particular types of plants, whether

14 they be crops or hardwoods or whatever.

15 You don't go into an area where

16 that's been heavily impacted and the roots are

17 rotted out from some kind of an impact. That's

18 counterproductive for what you are doing and it's

19 certainly unscientific. So what I try to do is

20 find good, healthy stands to -- to review so I'll

21 know what a typical proper remediation would --

22 would support in the future.

23 Q. Okay. If we could, let's talk about

24 your sugar cane root zone studies and we will get

25 to the -- to the tree root study locations.

1 site walking, you know, out into the field,

2 looking at the -- at the impacted areas,

3 potential impacted -- potential impact to sugar

4 cane. I also visited several locations down at

5 the southwest corner of the site at old oilfield

6 locations or pit locations and things like that.

7 And then I came back on January

8 the -- I mean, I'm sorry -- June the 1st through

9 June the 5th of last year, and that's when I

10 conducted this investigation on the -- the -- for

11 the root study. And these numbers on this figure

12 represent -- S represents sugar cane, and these

13 are different locations across the field: S1,

14 S2, S3, S4, where I actually did the -- the

15 soil -- looked at the soil profile from the --

16 the, you know, soils perspective of different

17 soil types on the property, different communities

18 of the sugar cane on the property, and then did

19 the profiles, and then did the root observations

20 during that timeframe of -- of June 1 through 5.

21 I also went down to the southwest

22 corner and looked at several trees, four

23 different species down there, that represented

24 the general tree types that occurred in that

25 area, and also did the -- did root study on them.

1 MR. ARNOLD:

2 Bill, can you leave that up, if you

3 can. We will get to the tree root studies

4 later, but right now I'd really just like

5 to focus on the sugar cane -- sugar cane

6 surveys.

7 THE VIDEOGRAPHER:

8 (Complied.)

9 BY MR. ARNOLD:

10 Q. Can you explain for me what your

11 methodology was for evaluating the -- the rooting

12 depths at your sugar cane sites?

13 A. Yes. At each of those locations, I

14 go in and I -- I do a profile. I look at the

15 vegetation of the sugar cane that was growing

16 there. I looked at -- look for any impacts that

17 might be related to oilfield E&P activities,

18 including salting factors, petroleum hydrocarbon

19 impacts, and in some cases you may have some

20 other material that might -- might be impacting

21 the plants.

22 So you profile that plant and you

23 look and see if it's a healthy plant. Is it --

24 does it have any kind of die back symptoms, does

25 it have any kind of problems with the stems not

1 developing properly, the leaves not developing
 2 property -- properly, things like that. Then
 3 you -- if you are satisfied with that -- if I'm
 4 satisfied that that's a good, healthy stand, then
 5 I will dig down taking a sharp shooter and dig
 6 down the profile just adjacent to the -- the --
 7 the sugar cane itself in the row so that I can
 8 get a proper view of the roots and how they --
 9 how they come out from the plant looking both at
 10 larger roots, striker roots that may be coming
 11 down, small rootlets that would be considered to
 12 be more associated with the uptake of water and
 13 nutrients, and then look at -- and then look at
 14 that profile and then -- and then observe the
 15 roots and see if they are healthy. And from
 16 there, I take a tape and then do a profile and
 17 then describe those roots as I go down, whether
 18 they be very abundant, abundant, common. And
 19 that common means that they will basically be
 20 distributed across the whole soil profile that I
 21 dig down to.

22 And I also then look at areas where
 23 we have a sparse distribution, which would
 24 probably be less than 3 percent, 3 -- 3 percent
 25 or less; and then the very sparse, which would be

1 took a -- a core, a soil core. I bored down and
 2 then I laid the core out and laid the soil out on
 3 plastic or sometimes I'll do it on a -- a sheet
 4 of plywood or something. And then I take
 5 photographs of the entire profile, and I also
 6 take photographs of the core depths from
 7 24 inches down to 60 inches to make sure that I'm
 8 covering any potential root system that you
 9 might -- you might incur at deeper depths.

10 As I recall, Mr. Miller -- and I
 11 don't know if it was Prejean in this case.
 12 Miller and Prejean, I think they mentioned that
 13 something about that sugar cane roots could go
 14 very deep at that time. Hold on just a minute.
 15 Let me -- if I can refer to it. I don't want to
 16 get it wrong here.

17 I have in front of me the expert
 18 report and the restoration plan for the
 19 landowner, Louisiana Wetlands LLC, Franklin
 20 Field. This was authored by Gregory Miller and I
 21 think it was Wayne Prejean. Actually, I got
 22 the -- my page out of -- anyway, on page 9 of
 23 this report, he refers to a study that was
 24 conducted by Jean-Louis Chopard, International
 25 Symposium Research and Application in Vienna,

1 just very, very minimal number of -- of roots
 2 where they are -- where there may be a plunk of
 3 roots here or a tiny rootlet here and there; and
 4 then down to none. Those are the
 5 characteristics, the classifications that's
 6 typical -- typically done in -- in an effective
 7 root zone study of this type.

8 Then I make a -- make these
 9 observations, I photograph these areas, I do what
 10 we call -- I check the soil and make sure that
 11 they are -- that you're able to see the
 12 distribution of the roots; then I record the data
 13 on a data sheet related to the location of that
 14 -- that stand of cane and then the -- of course,
 15 the coordinates and -- and then sometimes I'll
 16 make other notes, like maybe a herbicide might
 17 have been sprayed nearby or something like that.
 18 But usually, I stick to pretty much the -- the
 19 plants themselves and the root -- and the root
 20 profile and then my descriptions.

21 From there, I record the data. And
 22 in this particular case, I went down 0 to
 23 24 inches with a very detailed profile, and from
 24 there to 24 inches down to -- in most cases maybe
 25 down to 60 inches, sometimes 55 or so, and then

1 Austria where he looked at the sugar cane root
 2 depth. Now, this is referenced in his report.
 3 Spatial to the distribution and death of sugar
 4 cane root system in a deep soil -- in a deep
 5 soil, and this was on Reunion Island in the
 6 middle of the Indian Ocean, as I recall. And he
 7 says that although the root zone of sugar cane is
 8 reported to extend as deep as 6 meters or
 9 18 feet, the root zone of -- zone of cane was
 10 conservatively assumed to range from 4 to 10 feet
 11 BLS, below land surface.

12 So using his -- his information, I
 13 wanted to go out and see how deep the roots were
 14 at the site. So basically what I did was try to
 15 profile that depth, that root -- of the roots
 16 under there, under those -- under the vegetation,
 17 under the -- under the sugar cane and see if it
 18 conformed to his 4- to 10-foot depth. And
 19 that's -- that's when I -- I -- I tailored my --
 20 my research the way I did in looking at the -- at
 21 the soil profile and roots at depths. So from
 22 then, I -- I -- as I said, I -- I formulated my
 23 database for these four different locations that
 24 are on different soil types and also different
 25 locations on the property itself.

1 Q. And so you -- you dug a pit down to
 2 approximately 24 inches at each one of these
 3 sites, correct?
 4 A. That's correct.
 5 Q. And then you -- you took an auger
 6 and you extracted a soil core from 24 to
 7 60 inches, approximately 60 inches -- it may vary
 8 from site to site -- below the bottom of the --
 9 of that pit; is that right?
 10 A. That's correct.
 11 Q. Okay. Well, why didn't you extend
 12 the profile or the pit down further than
 13 24 inches?
 14 A. I -- I've done this on many
 15 occasions. The -- as I -- as I told you, I found
 16 nothing to extend down to 24 inches; but to give
 17 Mr. Miller the benefit of the doubt, I -- I went
 18 down to 5 feet just so I could make sure that --
 19 that I -- that I had all of the roots population
 20 that was under those -- under the -- that came at
 21 those sites. I felt that this was a reasonable
 22 depth; and when you run out of roots, obviously,
 23 hey, you don't just keep digging a channel
 24 because they are not coming back up from the
 25 other side of the earth. So I -- I think it was

1 report, you'll see where I actually took
 2 the auger and augered down in the bottom
 3 of the pit and went on down to -- to
 4 approximately 60 inches at that same
 5 location. When you run out of roots,
 6 there's no reason to be digging down. If
 7 you run out of roots, let's say, at --
 8 let's say, in this particular case, about
 9 10 inches or so or 12 entirely and then
 10 you don't see any more roots, obviously
 11 they are not going to be growing up from
 12 below. And so you then can go ahead and
 13 dig on down with an auger and get the
 14 additional areas, then break up the soil
 15 and look for the root. That's basically
 16 what I did.
 17 So I'm just giving the man the
 18 benefit of the doubt and I'm going the
 19 extra mile, which I could have gone
 20 24 inches and been perfectly satisfied
 21 with it, but I wanted to make sure that
 22 there was nothing down there, and there
 23 was nothing from about 10 or 12 inches on
 24 down to 60 inches.
 25 BY MR. ARNOLD:

1 a very appropriate depth that I -- that I made,
 2 and when I -- when you run out of root, you run
 3 out of root, what you see is what you get; and so
 4 that's basically why I -- I conducted this
 5 research.
 6 Q. Yes, sir. I -- I understand. I'm
 7 not necessarily talking about the depth that you
 8 went to. I -- I guess I'm -- I'm -- my question
 9 is more related to that you really kind of used
 10 two different methodologies for the same site:
 11 One, you dug a pit; one, you did a -- did a core
 12 sample. And I guess my question is really is why
 13 did you use those two different methodologies?
 14 Why didn't you stick with one or the other?
 15 A. You know --
 16 MS. TABER:
 17 Object to the form.
 18 THE WITNESS:
 19 No, no, no. You didn't -- you
 20 didn't understand what I -- I said. I
 21 said that I dug the pit down and then did
 22 a root profile along that -- the pit --
 23 the root profile beneath the -- the -- the
 24 sugar cane at that particular location.
 25 At that same location, if you look at my

1 Q. So the auger sample, would it be
 2 fair to say that it was really just kind of a way
 3 to confirm there were no other roots below the --
 4 the pit profile that you made?
 5 A. That's correct.
 6 Q. Okay. Okay. So you dug these --
 7 these pits, and help me understand what the
 8 location of these pits are that you dug. So we
 9 have -- we are in a sugar cane field, right, and
 10 we have individual rows and then we have -- what
 11 do you call the area between the rows; is that a
 12 trough, or what do you call that area between the
 13 rows?
 14 A. They call it the middles.
 15 Q. The middles. Okay. How wide are
 16 the rows?
 17 A. The rows, actually what -- when the
 18 hip goes up, the -- the whole -- the whole row
 19 itself starting from middle to middle, I'm not
 20 sure exactly what -- what the distance was on
 21 these particular ones. In some cases, farmers
 22 will -- will use different widths. You are
 23 looking at, you know, 3 feet, something like that
 24 across, and then it slopes up to the top, and
 25 usually it's about a foot that they -- they hip

1 up. They take a big set of hipers and hip it --
 2 hip it up, and then they will run two rows of
 3 cane and plant down on either side near the top,
 4 and then your shoulders will be the areas where
 5 they knife in their fertilizers, etc., for the
 6 site. It's a typical sugar cane operation.
 7 Q. Okay. Well, let me just make sure I
 8 understand. So from -- from one edge of the row
 9 to the other edge of the row is approximately 3
 10 feet; is that right?
 11 A. From about middle to middle. It's
 12 somewhere -- somewhere in that neighborhood.
 13 Q. Well, so the terminology you are
 14 using is confusing me and that's just because
 15 I -- I just -- I'm unfamiliar. But when you say
 16 "from middle to middle," what -- what do you
 17 mean?
 18 A. Well, the middle of the -- the
 19 middle of the rows. What you do is you -- you
 20 have -- you have your sugar cane -- sugar cane,
 21 what you do is you take a set of hipers and you
 22 hip it up and you hip the -- the row up itself,
 23 make a very large -- a high row, probably, let's
 24 just say, about 12 inches high usually. And then
 25 you -- then you come on those shoulders right at

1 planted, the plant cane, and it -- it actually
 2 gets the area from the surface of the ground past
 3 the cane down in -- into the ground right up by
 4 where they planted the cane. That's where you
 5 want to get your location so you can make sure
 6 that you are getting all of the roots going
 7 either up to the side or down in that profile.
 8 Q. Let me ask you this way: How far is
 9 the edge of the pit from the center of the -- the
 10 sugar cane plants that you are evaluating?
 11 MS. TABER:
 12 Objection, form.
 13 THE WITNESS:
 14 I -- I -- I -- it -- it's as close
 15 as I can get it to where I'm comfortable
 16 with the -- the -- that I'm getting all --
 17 a reading of all of the roots that are
 18 coming off that plant cane that's been
 19 laid down on the -- on the -- near the
 20 tops of the rows.
 21 BY MR. ARNOLD:
 22 Q. Okay. Well, if you can, I'd like to
 23 get just an approximation. I mean, is it
 24 different at each site or is it the same at each
 25 site? I just want to get an understanding of --

1 the edge of those shoulders and then you put down
 2 a row of cane on either side; and then if you --
 3 other agronomic practices is the knifing in
 4 materials. That will be on the outside of those
 5 materials or the middles, and then your roots
 6 will grow out and grow underneath the -- the
 7 canes and -- and then grow out into the middle.
 8 And that's -- that's typically the way that sugar
 9 cane grows.
 10 So in this -- in this study, what
 11 I'm trying to do is I'm trying to make sure that
 12 I get up right against the root itself, show the
 13 roots that are coming up above -- see, these
 14 are -- these -- the plant cane is buried and then
 15 it will put out roots upside to the side and
 16 down, and so I want to make sure that I get
 17 that -- that total root profile as I'm going
 18 down. And that -- that's just basically a base
 19 of the soil where I'm looking at the soil and I'm
 20 looking at the -- at the roots at the same time.
 21 Q. Okay. Did you dig your pits in the
 22 individual rows or in the middles?
 23 A. No. I -- I told you I -- I -- I
 24 dugged the -- the pits. The pit profile that I
 25 looked at is right by the cane that has been

1 of how far from those individual plants that you
 2 are evaluating is is the edge of the pit that you
 3 dug.
 4 A. Just -- just right -- right -- just
 5 right at the -- at the plant just getting -- you
 6 have to get a little bit away from the thing
 7 itself so you can make sure you can see those
 8 roots that are coming off the cane itself, the
 9 plant cane. You know, you may -- you may be an
 10 inch or two away from it. That's all. And then
 11 you dig down and -- and you got to make sure that
 12 you have enough space that you can get down in
 13 there to do your observations. It's very close.
 14 I mean you're very close to the cane. That's the
 15 only way you can see the cane. I -- I -- I don't
 16 know how to explain it any -- any better.
 17 MR. ARNOLD:
 18 Bill, let's pull up Exhibit 16.
 19 THE VIDEOGRAPHER:
 20 (Complied.)
 21 MR. ARNOLD:
 22 Dr. Holloway, this is Appendix B to
 23 your report containing photographs.
 24 THE WITNESS:
 25 Okay.

1 MR. ARNOLD:
 2 And, Bill, let's go to -- maybe the
 3 best one to look at is on page B, dash,
 4 15. And I'll -- I'll mark this as
 5 Exhibit 16, this Appendix B.
 6 (Exhibit 16 to be marked.)
 7 THE WITNESS:
 8 You're -- you're -- B-15. B-15 in
 9 the report shows -- because you are on
 10 B-8. Go to B-15. This will be photo
 11 B-29, stand of sugar cane at S4, and photo
 12 B-30 will be an observation at the bottom
 13 of the pit. I think that's what you are
 14 wanting to look at.
 15 MR. ARNOLD:
 16 Yes, sir, it is.
 17 THE VIDEOGRAPHER:
 18 Am I there?
 19 MR. ARNOLD:
 20 No. Go up one page.
 21 THE WITNESS:
 22 No. You got to go one more up. Go
 23 up one more.
 24 THE VIDEOGRAPHER:
 25 (Complied.)

1 of that photo B-30, you'll see how -- how the pit
 2 is positioned.
 3 Q. Yeah.
 4 MR. ARNOLD:
 5 Let's look at that one, Bill, if you
 6 could scroll down?
 7 THE VIDEOGRAPHER:
 8 (Complied.)
 9 BY MR. ARNOLD:
 10 Q. Can you tell me about that one,
 11 Dr. Holloway, what we are looking at there?
 12 A. All right. This is the pit. In
 13 that particular case, the top part of the -- the
 14 photograph is right up by the -- the plant cane
 15 where the plant cane has -- has been laid down
 16 and then this, the bottom part of the pit I've
 17 shown on the -- on this thing, it extends out
 18 into the middle. So you -- what I'm looking at
 19 and making my observations on would be the top
 20 part of this photograph and that's what you'll
 21 see in the next photographs that show the -- the
 22 distribution of the roots along that -- that
 23 profile. But this is just to show how I did
 24 that; and then in the center of it, you'll see
 25 where I -- I dug down and took the -- the auger

1 THE WITNESS:
 2 There you go.
 3 BY MR. ARNOLD:
 4 Q. Okay. So let's look at that top
 5 photograph, if we can. It's photo B-29, stand of
 6 sugar cane at S4. Okay.
 7 A. Okay.
 8 Q. Tell -- tell me what -- what --
 9 well, so that photograph, it's shooting down the
 10 middle, right, between the rows?
 11 A. That's right. That's the middle
 12 that you are seeing between the two stands of
 13 cane on either side. And then that's a typical
 14 way that the -- the cane is planted.
 15 Q. Okay. And so when you -- when you
 16 dig your pit, is it confined to the middle or
 17 does it creep up next to the plant onto the row?
 18 A. I told you that I get right up by
 19 where the cane has been planted up on the row --
 20 Q. Okay.
 21 A. -- and slice right down to where I
 22 can get the view of the roots from the top to the
 23 bottom and then those -- those that are extending
 24 out to the side. And we will see that in -- in
 25 the pit. I'll show you if you go to the bottom

1 and went on down to greater depths to make sure
 2 that there were no roots any further down.
 3 Q. And so when you are -- when you are
 4 digging these pits and you are -- you are
 5 evaluating the profile at each one of these
 6 sites, is the profile on the edge of the pit
 7 facing the plant?
 8 A. Yes.
 9 Q. Okay.
 10 A. Yes. You -- you want to -- you want
 11 to position your pit to where it's actually
 12 looking at the row beside it and the -- and
 13 the -- then -- and then the root -- the root
 14 growth from top to bottom. In other words, on
 15 the left-hand side and in the right-hand side,
 16 this is more out toward the middle part. And
 17 then on the top part, we are going -- we are
 18 facing the cane itself and then that's the
 19 profile that we are looking at for the roots.
 20 Q. Would you agree that the most
 21 effective way to determine what the rooting depth
 22 of these sugar cane plants is would be to dig up
 23 the entire plant and its entire root system?
 24 A. Not at all.
 25 MS. TABER:

1 Object to the form.
 2 THE WITNESS:
 3 Not at all. No. All you would be
 4 doing is just get a mass of roots and
 5 stuff. I've tried some of that. That
 6 doesn't work. You got to get out there
 7 and -- and do your proper profile and this
 8 is -- this is tedious work. You -- you
 9 have to produce a -- a soil profile that
 10 matches where the roots are and you have
 11 to be very careful that you -- you're able
 12 to get the roots.
 13 If you take a -- say, for example, a
 14 small trackhoe or something and dig down
 15 and dig over into the areas, you -- you're
 16 just -- you just get a mass of material.
 17 You can -- I have dug down in some areas,
 18 like in pastures where you would want to
 19 get a profile and then come in and then
 20 take the -- the profile itself to make
 21 sure that you can see the -- the roots,
 22 but in sugar cane I always dig down. And
 23 not only that, if I were to bring a big
 24 trackhoe or something out there, it would
 25 be -- I'd tear up the cane and have to pay

1 Q. Right. So really my question wasn't
 2 whether or not it would work. My question is
 3 that that is something you could have done if you
 4 wanted to, correct, at this site?
 5 MS. TABER:
 6 Objection, form.
 7 THE WITNESS:
 8 Yeah. You would want to --
 9 MR. TROUTMAN:
 10 Object to form.
 11 THE WITNESS:
 12 To be honest with you, it would be
 13 stupid to do it that way and unscientific.
 14 So no, this is the way you go about this.
 15 THE VIDEOGRAPHER:
 16 Excuse me, Mr. Holloway. Could you
 17 tilt your camera down a little bit? All
 18 I'm getting is your eyes, so if we could
 19 get a little bit lower.
 20 MR. LANDRY:
 21 David Landry. Can we have an
 22 agreement that any objection by one
 23 defendant applies to all defendants?
 24 MR. ARNOLD:
 25 That would be great. Thank you.

1 for it. But -- but no, I do all this in
 2 cane -- in the sugar cane with primarily,
 3 you know, shovels and -- and things like
 4 that.
 5 BY MR. ARNOLD:
 6 Q. But that's something you could have
 7 done in this case, right, if you wanted to go out
 8 and dig up the entire plant to evaluate the root
 9 system --
 10 A. Yeah. That --
 11 Q. -- that's something you would have
 12 done here?
 13 A. Well -- well, it won't work
 14 because -- no, it won't work. You dig it up and
 15 you got just a mass of roots and stuff. You
 16 don't know where they came from. You want to do
 17 this in situ and this is in situ. This is
 18 basically how you go about this. And it's --
 19 it's in the literature everywhere. I mean, it's
 20 -- people do this all the time. It's just --
 21 it's -- it's the easiest way of doing it. Well,
 22 I mean, it's maybe not the easiest way of doing
 23 it, but it's -- it's certainly the most effective
 24 and scientific way to do it to find out the
 25 actual root profile itself.

1 MR. LANDRY:
 2 Okay.
 3 THE VIDEOGRAPHER:
 4 Much better. Thank you.
 5 THE WITNESS:
 6 Thank you.
 7 BY MR. ARNOLD:
 8 Q. Okay. Dr. Holloway, I don't mean to
 9 persist, but I -- I just want to get a clear
 10 understanding on the record here. You -- that
 11 digging up the entire plant to -- to evaluate the
 12 root system is a method that -- that you have
 13 done in the past, right, and that's something
 14 that you could have done here, but you decided
 15 not to do; is that right?
 16 MS. TABER:
 17 Objection, form.
 18 THE WITNESS:
 19 Well, I've done roots -- I've done
 20 root studies where I looked at root
 21 biomass, weighing them and so forth.
 22 That -- that can be done by digging up the
 23 entire plant or as much of it as you can
 24 get and separating it. That's not --
 25 that's not the way to do this kind of a

1 study. This is -- this is a technique
 2 where we are wanting to know how deep the
 3 roots go, which direction they go, and how
 4 deep they go through the profile, and what
 5 the distribution of them is and across
 6 that profile. That's the objective of
 7 this study and that gives you the best way
 8 of viewing of the roots under sugar cane.
 9 And it's a -- it's nondestructive-type
 10 thing too. If you -- you're actually
 11 looking at the plant that's growing there,
 12 you are leaving it intact, and you are --
 13 you are following specific roots that are
 14 coming from those -- those plants that are
 15 growing above that site.

16 BY MR. ARNOLD:

17 Q. Is there anything that prevented you
 18 from going out here and -- and excavating the
 19 plant to evaluate its root system?

20 MS. TABER:

21 Objection, form.

22 THE WITNESS:

23 Well, it -- it -- it really
 24 doesn't -- it's a -- it's a poor -- it
 25 would be an extremely poor application to

1 is of a sugar cane plant?
 2 A. Sure. I know the root -- I know how
 3 the roots are -- are formed off the canes. I
 4 know -- I know the -- the striker roots. You
 5 have feeder roots and then you have striker roots
 6 that go into other areas going -- going on down.
 7 I look at those and look at the entire profile,
 8 and I'll -- I'll show you some if we get to some,
 9 show you how the roots are distributed on the
 10 sugar cane.

11 MR. ARNOLD:

12 Bill, if we can, let's pull up
 13 Tab 20. I'll mark this as Exhibit 20.
 14 (Exhibit 20 to be marked.)

15 THE VIDEOGRAPHER:

16 (Complied.)

17 MS. TABER:

18 And, hey, John, what -- is this a
 19 study that you've got here it looks like?

20 MR. ARNOLD:

21 Yes.

22 MS. TABER:

23 And -- and the only thing I'll say
 24 about this is if -- Luther, I'd like for
 25 him to have the opportunity to review more

1 try to find out the root depth using that
 2 manner, because once you dig it up and
 3 you've got a mass of roots and you got --
 4 you got the -- the tops and all this kind
 5 of stuff, no. That -- you -- you wouldn't
 6 know what you are doing. This is -- that
 7 would be totally unscientific and -- and I
 8 would be -- I would come under extreme
 9 criticism for -- for trying to do that
 10 kind of study for this type of a crop.

11 BY MR. ARNOLD:

12 Q. Dr. Holloway, I --

13 A. It can't be done. Whoa, whoa, just
 14 hold -- let me -- let me finish. It can be done
 15 if you wanted to know the entire root
 16 distribution of the -- I mean, the amount of
 17 roots. And if I were doing a biomass study, yes,
 18 I'd dig it up and wash all the material off the
 19 roots the best I could and see a biomass study.
 20 I've done several of those. But no, that doesn't
 21 apply to this particular thing for what we are
 22 wanting to achieve, and that is to look at the
 23 root distribution under these -- under these
 24 sugar cane plants.

25 Q. Do you know what the root morphology

1 of it than whatever it is that you might
 2 want to show him specifically. So he will
 3 either need to have the ability to have
 4 Bill scroll through it for him or we give
 5 him a minute to pull this one out so he
 6 can look at it on his own.

7 MR. ARNOLD:

8 Yeah. As much time as he needs to
 9 look at it, yeah. I mean, he -- he can
 10 do -- he can read as much or as little of
 11 that as he wants.

12 MS. TABER:

13 Good.

14 THE VIDEOGRAPHER:

15 I -- I can send it to him right now
 16 in the -- in the chat and he will be able
 17 to open it up if he doesn't have it.

18 MS. TABER:

19 Oh, that would be a great idea,
 20 yeah. Yeah. Thank you.

21 THE VIDEOGRAPHER:

22 Okay.

23 MR. ARNOLD:

24 So I think, Dr. Holloway, I think
 25 what's going to happen is Bill's going to



1 send you a version of this study for you
 2 to open so that you can -- you can look at
 3 it freely.
 4 THE WITNESS:
 5 Will I have to go out -- go out and
 6 download it?
 7 MR. ARNOLD:
 8 No.
 9 THE VIDEOGRAPHER:
 10 I don't think so.
 11 MS. TABER:
 12 No, no.
 13 THE VIDEOGRAPHER:
 14 That was 20, right?
 15 MR. ARNOLD:
 16 Yes.
 17 THE VIDEOGRAPHER:
 18 Okay. All right. It should be
 19 there.
 20 BY MR. ARNOLD:
 21 Q. So, Dr. Holloway, if you could -- if
 22 you can access that and let me know if you have
 23 it open?
 24 A. Okay. I got it.
 25 Q. Let me know when you are ready to

1 discuss it.
 2 A. I got it. I bet these -- let me --
 3 let's go back here. All I have to do is have the
 4 abstract here, and you tell me what you want to
 5 know and I can -- I can -- well, just what is the
 6 gist of -- of your -- your -- you obviously have
 7 some questions about this. I know what -- I know
 8 what these studies are doing, these budgets and
 9 all this kind of stuff. What -- what is it you
 10 want to -- you want to get from me on this issue
 11 here?
 12 MR. ARNOLD:
 13 Okay. Well, let's back out a little
 14 bit, Bill, so we can see a little bit more
 15 of this paper.
 16 THE VIDEOGRAPHER:
 17 (Complied.)
 18 BY MR. ARNOLD:
 19 Q. All right. This is a paper entitled
 20 Growth and Function of the Sugar Cane Root System
 21 authored by Smith, Inman-Bamber and Thorburn.
 22 Have you seen this study before?
 23 A. I think I have, but it's -- it's
 24 been sometime.
 25 Q. Okay. This was published in a

1 journal called Field Crops Research in 2005.
 2 A. I'm -- I'm familiar with it.
 3 Q. Okay. Okay. Great. So I was
 4 asking you about some of the root morphology.
 5 MR. ARNOLD:
 6 And, Bill, if we can scroll down to
 7 I believe it's the third page of this
 8 document. It's page 171.
 9 THE VIDEOGRAPHER:
 10 (Complied.)
 11 BY MR. ARNOLD:
 12 Q. Okay. And what I really want to do
 13 is focus your attention on this Figure 2. It's
 14 called "A root system on an established sugar
 15 cane school showing three functional types of
 16 roots: The superficial, buttress and rope
 17 roots." Do you see that?
 18 A. Uh-huh (affirmatively), yes.
 19 Q. Okay.
 20 A. Uh-huh (affirmatively). You'll --
 21 you'll see -- you'll see those on -- on some of
 22 these profiles that I've got there.
 23 Q. Okay. So that -- that pretty much
 24 corresponds with what your understanding of what
 25 the -- what the root morphology is of a sugar

1 cane plant; is that right?
 2 A. In -- in generalities, but there are
 3 many more nuisances that you look at from
 4 striking -- striker-type roots that develop,
 5 where they go, and that sort of thing. But no,
 6 this is just fairly simplistic-type layout here
 7 you got.
 8 Q. Okay. But in general that -- that's
 9 what you would -- you would agree that that
 10 corresponds with or that is the root -- general
 11 root morphology of a sugar cane plant, right?
 12 A. Yes. In -- in general --
 13 Q. All right.
 14 A. -- depending on the soil type, of
 15 course. There are -- there are variations,
 16 depending on soil type, where it's growing, and
 17 water tables, and there are -- there are so many
 18 variables that come in; but that's just a
 19 generalized view of it and that's fine.
 20 MR. ARNOLD:
 21 Okay. And if we scroll down a
 22 little bit, Bill, there's a paragraph on
 23 the left-hand side there that begins
 24 with -- begins with Evans, 1935.
 25 THE VIDEOGRAPHER:

1 (Complied.)
 2 THE WITNESS:
 3 Uh-huh (affirmatively).
 4 BY MR. ARNOLD:
 5 Q. And the -- the authors here say that
 6 Evans observed in Mauritius that shoot roots
 7 differentiated into three functional types as the
 8 sugar cane plant developed. The first roots to
 9 emerge from the base of the young shoot were
 10 thickened with little branching and grew outwards
 11 and downwards into the sub-soil to a depth of
 12 approximately 1-1/2 meters thus forming 'buttress
 13 roots' adapted to anchorage of the plant." Do
 14 you see that?
 15 A. That's right. That's right.
 16 Q. And then, "Roots emerging from
 17 higher nodes were thinner and highly branched,
 18 extending laterally to form a dense network of
 19 'superficial roots' responsible for uptake of
 20 water and nutrients from surface soil layers."
 21 Is that right?
 22 A. Yeah. In general, we call those
 23 feeder roots.
 24 Q. Okay.
 25 A. Yeah.

1 BY MR. ARNOLD:
 2 Q. Okay. And do you have any reason to
 3 disagree with those findings?
 4 A. I don't know. This study was in
 5 Mauritius, so it may have been in a volcanic
 6 soil; and obviously with volcanic soils, you can
 7 have large open areas and -- and get roots going
 8 down very deep. That's very similar to what
 9 Miller was -- was -- was alluding to in his
 10 report. So no, I don't have any problems with
 11 that in somewhere on the other side of the
 12 universe.
 13 Q. Okay.
 14 A. Or the Earth should I say.
 15 Q. Right.
 16 MR. ARNOLD:
 17 Let's go to page 172, please, Bill.
 18 THE VIDEOGRAPHER:
 19 (Complied.)
 20 BY MR. ARNOLD:
 21 Q. Okay. On the right-hand side,
 22 there's a paragraph that starts with "The maximum
 23 depth"?
 24 A. Yeah, I see it.
 25 Q. It says, "The maximum depth of sugar

1 Q. And then "The third class of roots
 2 were 'rope roots,' formed from agglomerations of
 3 vertical roots. These have been observed to
 4 penetrate to depths exceeding 6 meters providing
 5 access to deep reserves of soil water"; is that
 6 right?
 7 A. That's what -- that's what he found
 8 here, yeah.
 9 Q. Okay. And then it says, "This
 10 pattern of root development was repeated for each
 11 tiller to create the commonly depicted root
 12 system architecture for established sugar cane
 13 stools shown in Figure 2," right?
 14 A. That's what he's saying, yeah.
 15 Q. So at least according to this, these
 16 authors and this paper, they found that the --
 17 the -- the roots of a sugar cane plant,
 18 particularly the -- the rope -- what they call
 19 the rope roots, extended beyond 6 meters; is that
 20 right?
 21 MS. TABER:
 22 Objection, form.
 23 THE WITNESS:
 24 In this -- in this particular case,
 25 yes.

1 cane roots, however, has not been widely
 2 observed. The maximum depth of root sampling is
 3 typically restricted to 1.5 or 2 meters with
 4 small amounts of sugar cane roots routinely" --
 5 "routinely found at such depths." Do you -- do
 6 you have any reason to disagree with that
 7 finding?
 8 MS. TABER:
 9 Objection, form.
 10 THE WITNESS:
 11 I don't -- I don't -- first of all,
 12 I don't -- I don't know -- I don't know
 13 where they did their investigation or --
 14 or whatever.
 15 Let me -- let me just stop you right
 16 there. What -- what I try to do and what
 17 I'm looking at is I'm looking at -- at
 18 sugar cane that's growing in south
 19 Louisiana, central -- well, almost to
 20 central Louisiana. About the cutoff --
 21 the cutoff is around Bunkie, Louisiana, a
 22 little north of Bunkie where they grow
 23 sugar cane. I'm looking at those areas.
 24 I'm not looking at something that's out in
 25 the middle of the Indian Ocean or some

1 other area such as Hawaii where they
 2 are -- they are taking DH bulldozers and
 3 breaking up lava-type soils or
 4 lava-derived-type soils. This is in south
 5 Louisiana where they grow sugar cane here,
 6 and I'm tailoring my work for that
 7 particular area looking for the roots that
 8 are there. How they -- they -- where --
 9 how deep they grow in other areas is not
 10 germane to the issue here. We want to do
 11 an on-site review of the roots that are
 12 typical of this area. And any -- any
 13 sugar cane -- any man growing sugar cane
 14 down there will tell you that the depths
 15 of the roots of sugar cane in south
 16 Louisiana typically go about anywhere from
 17 6 to 12 inches and maybe -- some maybe
 18 15 inches or so. That's people farming
 19 thousands of acres.
 20 So I'm -- I'm looking at what's
 21 happening in Louisiana. I'm not looking
 22 at these other places, and I know you've
 23 got these root studies here. And -- and
 24 obviously, they did see some greater
 25 depths, but they -- they don't mean a

1 feet; and -- and almost all the -- all the
 2 areas, they are going to be within
 3 12 inches of the surface.
 4 MR. ARNOLD:
 5 Bill, can we go back to --
 6 THE WITNESS:
 7 You may have some that -- well,
 8 okay. Let me finish there. You may have
 9 some that might get in some little cracks
 10 or something that you can see that maybe a
 11 few of them will go down. These -- these
 12 investigations you have here don't mean
 13 anything in south Louisiana.
 14 MR. ARNOLD:
 15 Bill, could you go to Figure 2 for
 16 me, please?
 17 THE VIDEOGRAPHER:
 18 (Complied.)
 19 MR. ARNOLD:
 20 Can you Zoom in on that for me?
 21 THE VIDEOGRAPHER:
 22 (Complied.)
 23 BY MR. ARNOLD:
 24 Q. Okay. So when you dig in your --
 25 your pit profiles, that was -- it was adjacent to

1 thing. They don't have the same
 2 hydrologies, the same soil type, they are
 3 not inside Louisiana. It's -- it's not
 4 really germane to the issue we have here.
 5 We want to do an onsite investigation
 6 that's typical of what grows in south
 7 Louisiana, and that's what I did.
 8 BY MR. ARNOLD:
 9 Q. Okay. So you would -- you would
 10 agree with me that depending on the different
 11 factors you have involved, whether it's the
 12 different soil type or soil moisture -- soil
 13 moisture or any other different factors that may
 14 be at play, you would agree that sugar cane does
 15 in some instances have the capability to extend
 16 its roots down to a couple meters deep?
 17 MS. TABER:
 18 Objection, form.
 19 THE WITNESS:
 20 A couple meters or maybe even more
 21 if you're -- if you're looking at that --
 22 at volcanic soils. That's not the case in
 23 south Louisiana. You are not going to
 24 find anything -- any -- any sugar cane
 25 roots in any of those areas there below 2

1 and -- and close to the plant, but it didn't go
 2 under -- directly underneath the plant; is that
 3 correct?
 4 A. No. But I've dug -- I've dug
 5 underneath them. What -- what this does is I get
 6 right beside where they did the -- the -- that
 7 they laid the plant cane and then sliced down to
 8 see, if you look at this -- at this where it says
 9 superficial roots and then you -- then you see
 10 the -- the cane's coming up, you -- from the set,
 11 you -- you're getting -- you're getting a view of
 12 that profile and that gives you the -- the --
 13 those -- the -- the roots don't have -- in this
 14 particular case, they are showing them kind of
 15 coming laterally. In many cases when they --
 16 when they -- it depends on how deep you plant
 17 them. You are going to have them going up, you
 18 are going to have them going down, you are going
 19 to have them going to the side, and basically
 20 what you see is what you get. So you're getting
 21 -- anything that goes down, you're getting all of
 22 it.
 23 Q. And what would you --
 24 A. It goes right down beneath that
 25 plant.

1 Q. And do you think that you would
 2 encounter roots extending directly beneath the
 3 plant if you were to dig your pit or your profile
 4 directly beneath the plant?
 5 A. Oh, I've dug them -- I've dug them
 6 every which a way; side to the side, under them,
 7 over them, whatever; so I -- I know where the
 8 roots go.
 9 Q. So --
 10 A. Yes. I've done that and then
 11 I've -- this -- this is the best way that you can
 12 have of doing a profile to see the depth of the
 13 roots.
 14 Q. All right. And -- and just to
 15 confirm, you didn't dig directly below the sugar
 16 cane plants in this case, correct?
 17 A. Oh, in some cases, I'll -- I'll dig
 18 over and -- and take a trowel and -- and look at
 19 those areas, yeah. I -- I'll -- but -- but --
 20 but in -- in a cursory pass because I know what's
 21 growing there and I know where it's going. So
 22 no, I -- like I said, I've done that. I've
 23 turned those -- those roots every which way but
 24 loose.
 25 Q. So, but -- but we don't -- we don't

1 know that in this case, right? We are just
 2 trusting your experience and in rendering that
 3 opinion as to where the roots are on this
 4 particular property go that -- that are directly
 5 underneath the plants for this case, right?
 6 A. This just shows --
 7 MS. TABER:
 8 Objection, form.
 9 THE WITNESS:
 10 This shows the best profile that you
 11 can get for sugar cane roots and I
 12 actually look at those particular areas
 13 like that. But I -- I -- I would say
 14 this, one of the -- one of the situations
 15 we are talking about a root study that
 16 I've done -- and I've done numerous ones.
 17 Obviously, if you wanted to, the
 18 plaintiffs' experts could have gone out
 19 and looked at this operation and then
 20 have -- have conducted their own
 21 investigation and could have produced a
 22 report that I would think would have
 23 produced the exact outcome that I found.
 24 So no, it's -- this is -- and this
 25 is a situation where one side's not doing

1 anything and making allegations,
 2 accusations, assertions, using areas that
 3 don't mean anything to south Louisiana.
 4 I did a -- a detailed investigation
 5 onsite specific -- specific to the healthy
 6 sugar cane that's growing on the Louisiana
 7 Wetlands property, and what you see is
 8 what you get.
 9 BY MR. ARNOLD:
 10 Q. What's the growing season for sugar
 11 cane?
 12 A. Oh, typically, you'll see cane in --
 13 in south Louisiana growing from maybe, you know,
 14 March until late in the year, depending on, you
 15 know, conditions, how much water it's getting and
 16 so forth, how much rain you've had. So you
 17 are -- you are getting from, say -- say, March to
 18 sometimes you'll get -- get some -- some cane
 19 will be growing on up into October.
 20 Q. And you did your field studies in
 21 June; is that right?
 22 A. Yes. But, you know, this -- this --
 23 this is -- as I remember, this is two-year-old
 24 plant cane rather and so you -- you have a good
 25 developed root system there. It's not like you

1 just planted them last -- you know, well, I mean,
 2 in the fall of the year, of course, and then it
 3 started growing in the early spring and -- and --
 4 and then you went to -- in June. No. This is --
 5 this is a -- this is a mature stand.
 6 Q. Does a -- does a --
 7 A. A stand or two.
 8 Q. Does a second-year cane use the same
 9 roots as -- as was developed in the first year?
 10 A. Oh, yes. They are -- they are --
 11 these roots stay, they stay there and they
 12 actually will put out more. But you're going to
 13 get a good mature root stand usually within one
 14 year that's going to be pretty much indicative of
 15 what you are going to get over the next two
 16 years.
 17 As you asked me in the New 90
 18 deposition about the sugar cane, obviously they
 19 will plant it, get the plant cane, the next year
 20 you'll get a cutting, the next year you getting
 21 cutting and next, and then you'll have to -- as
 22 your -- as your production falls off, then
 23 you'll -- you'll either let it lay fallow or
 24 plant it to soybeans or -- or then come back and
 25 plant it the following year. So no, you are

1 going to -- you've got a good mature -- we were
 2 dealing with a very good mature stand. I don't
 3 go out and bury it like in young plant cane in --
 4 in, say, April and conduct an investigation. I
 5 want a mature stand and one that's been there a
 6 while and that's what - that's what we got.
 7 Q. Well, and -- and so you agree with
 8 me, as you testified in the New 90 case, that the
 9 cane growing in June and will continue to grow
 10 likewise will continue to grow and develop roots;
 11 is that right?
 12 MS. TABER:
 13 Objection, form.
 14 THE WITNESS:
 15 You'll have -- you'll have the
 16 development roots, you'll have more
 17 striker roots coming out the next year and
 18 things like that; but generally speaking,
 19 I mean -- I mean, it's axiomatic. It's
 20 going to go to a certain depth and that
 21 depth is going to be pretty much what you
 22 see out there in the first year. But if
 23 you want to go back and like it's a
 24 second-year cane like this, we -- you --
 25 you have obviously got your root system

1 already mature and developed, and
 2 that's -- and that's where it's going.
 3 There are -- there are many factors
 4 involved in the movement of the root
 5 system of cane as it goes down through the
 6 soil profile, and that can be -- that will
 7 be the soil type that's there, the
 8 moisture regime that's there, and -- and
 9 in Louisiana you get plenty of moisture.
 10 You will have your periods when -- when
 11 you'll have somewhat droughty periods; but
 12 in general your -- your -- your cane is --
 13 is -- the root system is going to go to a
 14 certain depth in that particular soil
 15 type, and that's -- that's what we -- we
 16 looked at here. The different soil type
 17 showed no variation in the -- in the
 18 effective root zones. This is mature
 19 cane.
 20 This is a -- this is a study that
 21 is -- has been conducted onsite, as I've
 22 said, and is indicative of what was
 23 growing on the Louisiana Wetlands. And
 24 you could have gone to the next -- gone to
 25 the next field over on Mr. John Doe's

1 place and looked at it, and if he had
 2 two-year cane, you would -- you would see
 3 the same thing, but you may see some
 4 variation. There are -- there are some
 5 areas that you could have a little
 6 variation. But as you notice from the
 7 data here, all these different soil types
 8 didn't make any difference, the moisture
 9 regimes didn't make any difference, you
 10 had -- you had all these effective root
 11 zones ending and -- and almost all of the
 12 roots ending and -- and they weren't going
 13 in any deeper because I found none at
 14 deeper depths except, as I said, maybe a
 15 crack or two you found a few in it, but
 16 that was de minimus compared to the
 17 overall amount of roots on the cane in
 18 that -- in that field.
 19 BY MR. ARNOLD:
 20 Q. And you would agree with me that the
 21 rooting depth is a constant, that it -- it
 22 increases as the -- as the plant grows, right?
 23 A. No. No. I said once you -- once
 24 you get the -- the -- the roots growing under
 25 cane, generally speaking, I've looked at it for

1 plant cane to four -- even four-year-old cane.
 2 You -- it gets to a certain depth and that's --
 3 that's as far as it goes. There are other --
 4 there are certain things in the soil. In many
 5 cases, you may have a -- a fragipan at that
 6 particular location or the -- let's -- let's just
 7 put it this way: The -- the plant is limited in
 8 its ability to push down in certain areas. That
 9 can be inhibited by a high water table, that can
 10 be inhibited by a fragipan, that can be inhibited
 11 by just a natural pan that's developed.
 12 In most cases, since you have to do
 13 sugar cane harvesting under wet conditions like
 14 we had -- really had this year, you will get --
 15 you'll get a -- basically a fragipan that will
 16 develop there and it won't go any deeper; and
 17 that's what I found out here out on the LA
 18 Wetlands site.
 19 Q. What are you relying on to say that
 20 the root system or the -- or the sugar cane are
 21 in their second year?
 22 A. Well, that's what I was under -- as
 23 I understood and I -- I -- I don't remember
 24 exactly, but that was my understanding, it was a
 25 second-year -- second-year cane that we were

1 looking at.
 2 Q. I mean, is it a -- is it a
 3 determination that you made by looking at the
 4 cane or somebody told you that --
 5 A. No. I think --
 6 Q. -- or where did that information
 7 come from?
 8 A. I think I asked someone to ask the
 9 farmer.
 10 Q. Okay. So that's not an assumption
 11 on your part. That information came from
 12 somewhere?
 13 A. Yeah. That -- I -- I usually want
 14 to know if there's -- I can pretty well look at
 15 it and tell, but -- whoa, we just lost power.
 16 MS. TABER:
 17 Uh-oh.
 18 THE WITNESS:
 19 I think the -- the lines are all --
 20 are really heavy with -- with ice right
 21 now. And I think it's probably -- that's
 22 probably what happened.
 23 MR. ARNOLD:
 24 Okay. Well, let's go off the
 25 record, Bill.

1 THE VIDEOGRAPHER:
 2 Going off the record. It is
 3 12:56 p.m.
 4 (A short recess was taken.)
 5 THE VIDEOGRAPHER:
 6 We are back on the record. It is
 7 1:04 p.m.
 8 MR. ARNOLD:
 9 All right. Dr. Holloway, it's my
 10 understanding that you've lost power and
 11 that you can't -- can't see, view or
 12 review any of the exhibits that we may use
 13 as part of this deposition. And so I
 14 think what we have decided to do is to
 15 wait until you get power or wait until you
 16 can travel to somewhere that does have
 17 power or do an in-person deposition to
 18 continue this -- to continue the
 19 proceedings of today. So I'll just --
 20 just ask the other counsel on this -- on
 21 this deposition to confirm that's their
 22 understanding and then we can just
 23 proceed -- proceed accordingly.
 24 THE WITNESS:
 25 That's fine.

1 MS. TABER:
 2 This is Elizabeth.
 3 THE WITNESS:
 4 That's fine. I don't -- I don't
 5 have any problems. If -- if -- you know,
 6 if it's safe, we can -- we can do
 7 in-person at -- in Baton Rouge or
 8 whatever, but I don't -- I don't need to
 9 get on this road. Nobody -- there is --
 10 there is -- this is -- this area up here
 11 is totally shut down, so --
 12 MS. TABER:
 13 And, hey, John, that's right. This
 14 is Elizabeth Taber. That's right, and
 15 like we discussed, you know, we are going
 16 to see what happens and what develops with
 17 Dr. Holloway's power situation at his home
 18 and with the roads and -- and plan to get
 19 this done in the next few days, including
 20 if -- if folks are available on the
 21 weekend.
 22 MR. ARNOLD:
 23 Okay. All right. Well, then we
 24 will just wait to hear from you,
 25 Elizabeth, on -- on when we can proceed.

1 MS. TABER:
 2 Okay.
 3 MR. ARNOLD:
 4 Thanks, everybody.
 5 MS. TABER:
 6 Thank you.
 7 THE VIDEOGRAPHER:
 8 This concludes the deposition of
 9 Dr. Holloway for today. It will be
 10 continued to a future date. It is now
 11 1:06 p.m. We are going off the record.
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Page 113

CORRECTION SHEET

PAGE	LINE DESCRIPTION
1	
2	
3	
4	
5	
6	
7	
8	
9	
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11	
12	
13	
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20	WITNESS: LUTHER FLOYD HOLLOWAY
21	TAKEN ON: FEBRUARY 17, 2021
22	BY: CHERIE' E. WHITE, CCR (LA NO. 96002)
23	CSR (TX NO 10720)
24	CSR (MS NO. 1514)
25	RPR (NATIONAL NO. 839452)

Page 114

WITNESS CERTIFICATE

I, LUTHER FLOYD HOLLOWAY, do hereby certify that the foregoing testimony was given by me, and the transcription of said testimony, with corrections and/or changes, if any, is true and correct as given by me on the aforementioned date.

DATE SIGNED _____ (Witness' Signature)

Signed with corrections as noted.

Signed with no corrections as noted.

DATE TAKEN: February 17, 2021

Page 115

REPORTER'S PAGE

I, CHERIE' E. WHITE, Certified Court Reporter, in and for the State of Louisiana, the officer, as defined in Rule 28 of the Federal Rules of Civil Procedure and/or Article 1434(B) of the Louisiana Code of Civil Procedure, before whom this sworn testimony was taken, do hereby state on the record;

That due to the interaction in the spontaneous discourse of this proceeding, dashes (--) have been used to indicate pauses, changes in thought, and/or talkovers; that same is the proper method for the court reporter's transcription of a proceeding, and that dashes (--) do not indicate that words or phrases have been left out of this transcript; also, that any words and/or names which could not be verified through reference material have been denoted with the phrase "(spelled phonetically)."

CHERIE' E. WHITE, CCR (LA NO. 96002)
 CSR (TX NO 10720)
 CSR (MS NO. 1514)
 RPR (NATIONAL NO. 839452)

Page 116

REPORTER'S CERTIFICATE

This certification is valid only for a transcript accompanied by my original signature and original seal on this page.

I, CHERIE' E. WHITE, Certified Court Reporter, in and for the State of Louisiana, do hereby certify that Luther Floyd Holloway, to whom the oath was administered, after having been duly sworn by me upon authority of R.S. 37:2554, did testify as hereinbefore set forth in the foregoing 116 pages; that this testimony was reported by me in the stenotype reporting method, was prepared and transcribed by me or under my personal direction and supervision, and is a true and correct transcript to the best of my ability and understanding; that I am not related to counsel or the parties herein, nor am I otherwise interested in the outcome of this matter.

CHERIE' E. WHITE, CCR (LA NO. 96002)
 CSR (TX NO. 10720)
 CSR (MS NO. 1514)
 RPR (NATIONAL NO. 839452)



A	47:23	39:25	APPEAR...	45:7,10,11	97:9 98:25	111:22	29:16
A-7 60:19	48:14	agronomic	2:1 3:1 4:1	45:14	99:2	112:3	audio 9:21
63:3	56:16,19	13:8 19:14	appendices	46:12 47:9	101:19	Article 6:7	20:4,6
a.m 1:18 7:6	57:24	21:25 23:8	60:17	47:18,22	102:12	115:5	auger 69:5
20:14,18	61:20 63:5	25:12	Appendix	48:10,11	103:2	ash 33:1	71:2,13
60:11	63:8 64:17	37:13	5:12,15	48:13,22	107:5	47:7	72:1 79:25
abandoned	activity	39:11 41:9	58:14	48:24 49:8	108:8	asked 20:3	augered
45:4 48:8	56:12,14	74:3	60:17	49:11,20	Arkansas	57:18,20	71:2
48:24 52:9	actual 31:20	agronomic...	76:22 77:5	50:14 51:4	52:7,8	58:1,1	August
abandonm...	36:20	18:12	application	52:5 53:9	Army 11:5	60:14	61:17
43:12	82:25	agronomist	67:25	55:15 56:8	12:2 13:3	104:17	Austria 68:1
ability 88:3	Adam 45:22	23:4,6	85:25	56:9 57:20	13:13 41:5	109:8	authored
108:8	adapted	ahead 15:17	applications	62:25 63:7	Arnold 2:11	asking 91:4	67:20
116:16	93:13	27:5 71:12	13:16	63:15	5:5 7:9,10	aspect 39:18	90:21
able 47:4	add 28:11	al 1:12 38:10	applies	72:11,12	8:10,12	aspects 13:8	authority
48:11	addition	Allain 35:13	83:23	75:2 97:1	10:2 20:9	13:12,22	116:10
66:11	17:19	allegations	apply 86:21	97:7,12	20:19	19:20	authors 93:5
81:11	additional	103:1	appropriate	111:10	26:19 27:6	39:17	94:16
88:16	28:24	alleged 63:4	70:1	areas 11:13	27:14,16	assertions	available
above-enti...	55:14	alluding	approval	12:4 14:1	27:19 29:6	103:2	111:20
1:17	71:14	95:9	55:19	14:5 16:15	29:14,24	assessor	avenues
above-men...	address 8:16	AMERICA	approved	18:5,7,9	30:7,13	23:14	11:21
8:8	adjacent	3:15	55:23,24	19:9,12	31:1 37:1	associated	Avoyelles
abstract	65:6 99:25	amount 24:5	approxima...	21:11,12	40:6,23	11:23,24	32:10,10
90:4	administer...	28:17	50:22 69:2	21:18 22:3	42:19 44:3	12:7,11	38:1,24
abundant	116:9	86:16	69:7 71:4	22:4,6,11	54:20 57:4	13:17 14:7	46:10 52:4
65:18,18	administer...	107:17	73:9 93:12	25:1,8,9	57:11,15	23:1,9,20	aware 54:24
Acadia	6:23	amounts	approxima...	25:16,19	58:6,13,16	24:15	axiomatic
43:15	affirmativ...	28:12	75:23	25:20	58:22 59:4	35:22 36:3	105:19
51:18	91:18,20	50:20 96:4	April 105:4	26:11	59:8,17,23	46:5 55:10	
access 26:25	93:3	anchorage	architecture	34:18,19	60:12 64:1	65:12	B
89:22 94:5	aforementi...	93:13	94:12	35:4,17	64:9 71:25	association	B 1:8 4:21
accompani...	6:5 114:8	and/or 114:7	area 11:3	36:1,2,25	75:21	11:18,23	5:7,15
116:4	Agency 13:4	115:5,12	12:17	36:25	76:17,21	21:21	76:22 77:3
accomplish	agglomera...	115:17	14:11	38:18 42:1	77:1,15,19	assumed	77:5
47:4	94:2	Angle 55:12	19:15	42:6,10,12	78:3 79:4	68:10	B-15 77:8,8
accomplis...	agree 28:17	55:18,25	25:12	43:6,8,11	79:9 82:5	assuming	77:10
55:16	80:20 92:9	Anse 36:9	26:16	44:24	83:24 84:7	28:21	B-29 77:11
account	98:10,14	answer 6:15	32:16,19	46:17,18	85:16	assumption	78:5
15:18	105:7	19:25	33:18 34:7	46:20	86:11	35:16	B-30 77:12
accusations	107:20	anticipate	34:20,21	47:12	87:11,20	109:10	79:1
103:2	AGREED	21:18 25:8	35:1,2,3,3	48:20 49:8	88:7,23	Atchafalaya	B-8 77:10
achieve	6:3	25:9	35:22 36:5	49:10 51:5	89:7,15,20	35:14	bachelor's
86:22	agreement	antifreeze	36:17,18	51:22 52:3	90:12,18	46:24	10:6
acres 32:20	83:22	59:20	36:23 37:9	52:9,13	91:5,11	47:19	back 10:4
97:19	Agri-South	anybody	37:10,21	53:5,11	92:20 93:4	Atkins 49:2	14:8 20:17
Act 12:24	32:9 33:14	25:18	38:8,13	54:10 55:9	95:1,16,20	attach 27:17	20:21 21:4
activities	agricultural	anyway	39:25 41:3	57:21,24	98:8 99:4	attention	21:7 30:5
13:1,8	18:13,17	32:21 49:5	41:7,13,16	61:22 62:2	99:14,19	60:16,19	37:11
23:21	25:13 40:2	49:6,22	41:18,22	63:4 65:22	99:23	91:13	40:18 42:1
25:13	agriculture	67:22	42:9,11	66:9 71:14	103:9	attorneys	44:25 45:6
32:17	10:10	AOIs 44:17	43:18	73:4 81:15	107:19	2:3,16 3:3	48:12 53:2
39:14 40:2	34:18	apologize	44:11,15	81:17 87:6	109:23	3:15 4:3	57:1 60:1
	36:22	9:3	44:15,19	95:7 96:23	110:8	4:14 9:11	60:10

61:22,22	41:22 42:7	Board 46:23	BS 10:11,15	45:17,17	106:19	50:23	69:23
62:7 64:24	91:7	books 17:7	budgets 90:8	47:25 48:3	107:2,17	51:14	channeliza...
69:24 90:3	beneath	bored 67:1	buildup	51:13,19	107:25	52:15	48:14
90:13 99:5	70:23	botanical	26:11	52:13,22	108:1,1,13	64:19	characteri...
104:24	100:24	18:12	bulldozers	53:3,10	108:20,25	66:24	66:5
105:23	101:2,4	bottom	97:2	54:1,8	109:4	72:21	chat 88:16
110:6	benefit	29:10,21	Bunch 33:15	56:11	cane's	100:15	check 66:10
ballpark	69:17	49:15 69:8	Bunkie 38:3	57:22 58:3	100:10	101:17	CHERIE'
16:1 28:16	71:18	71:2 77:12	39:1 46:10	58:3 61:18	canes 74:7	108:5,12	113:22
base 74:18	berms 46:4	78:23,25	96:21,22	61:21 62:4	87:3	Cash 45:22	115:2,22
93:9	best 9:7 32:2	79:16	buoy 11:12	62:12,18	capability	Catahoula	116:6,22
basic 21:22	52:4 77:3	80:14	11:22,25	63:24 64:5	98:15	32:11	CHÉRIE
basically	85:7 86:19	bottomland	buried 74:14	64:12,15	capturing	33:17,21	6:21
14:14 16:8	101:11	22:3 25:16	bury 105:3	65:7 66:14	36:6	49:25 50:5	Chester 16:6
22:8 24:7	102:10	34:18	Butte 36:9	67:13 68:1	careful	cattle 37:12	Chevron 3:3
41:23 44:1	116:16	37:16,25	buttress	68:4,7,9	81:11	43:16,20	7:14 9:12
44:10,20	bet 90:2	38:7,14	91:16	68:17	CARVER	48:17,18	33:22
50:11 54:9	better 20:6	39:8,9	93:12	69:20	4:6	cause 1:17	Chevron's
65:19	33:4 76:16	46:12,18	BY:CHÉR...	70:24 72:9	case 9:15	caused 63:4	44:17
68:14 70:4	84:4	47:1,6,9	1:21	73:3,6,20	26:8 36:12	cave-in	56:24
71:15	beyond	47:12,16	<hr/>		37:8,17,18	35:16,22	chicken
74:18	94:19	47:20,23	C		38:5,24	CCR 1:22	36:14
82:18	big 29:20,21	48:22	C-R-E-A-...	75:1,3,4	39:1 40:9	113:22	chief 12:22
100:19	73:1 81:23	54:18	51:18	75:10,18	40:12	115:22	12:22 19:3
108:15	biggest	57:23 58:4	C.C.M.P	76:8,9,14	41:20 42:5	116:22	Chinese
Basin 35:14	13:20	box 29:20,21	33:22	76:15	42:13 43:2	center 75:9	36:14
46:24	Bill 20:10	BP 3:15 7:19	Caillou	77:11 78:6	43:3 44:5	79:24	Chopard
bass 35:24	27:8 29:7	9:13	41:22	78:13,14	44:16	central	67:24
Bates 27:25	37:2 58:7	brackish-t...	Calcasieu	78:19	46:16 49:2	11:20 12:4	civil 6:7 11:7
29:7 30:16	58:18 64:2	35:2 41:14	41:1	79:14,15	49:14 50:5	13:21	12:2 115:5
Baton 2:21	76:18 77:2	Brammer	call 45:1,19	80:18,22	51:17,18	96:19,20	115:6
35:11	79:5 87:12	4:14 7:24	49:24	81:22,25	54:22,23	Centre 4:7	class 94:1
46:15	88:4 90:14	branched	66:10	82:2,2	54:24 55:3	certain	classificati...
111:7	91:6 92:22	93:17	72:11,12	85:8 86:24	55:7 57:19	105:20	66:5
Bay 12:15	95:17 99:5	branching	72:14	87:1,10	60:15	106:14	clear 84:9
Bayou 36:1	99:15	93:10	93:22	90:20	66:22	108:2,4,8	cleared
36:21	109:25	break 9:1	94:18	91:15 92:1	67:11 71:8	certainly	32:13
38:12	Bill's 88:25	17:25 19:8	called 30:17	92:11 93:8	79:13 82:7	63:19	clients 16:22
44:13,22	billing 9:13	57:5 59:22	36:15 45:8	94:12,17	94:24	82:23	16:24
47:18 48:9	billings 29:2	59:25	91:1,14	96:1,4,18	98:22	CERTIFL...	17:20
51:16	biology 10:8	71:14	camera	96:23 97:5	100:14	114:1	22:25
Bayside 35:7	biomass	breaking	83:17	97:13,13	101:16	116:1	close 36:20
bed 44:20	84:21	97:3	Cameron	97:15	102:1,5	certification	75:14
49:25	86:17,19	Breaux	35:1	98:14,24	105:8	6:12 116:3	76:13,14
beginning	bit 19:8	36:10	Canadian	100:7	cases 14:9,14	Certified	100:1
14:9	20:21 48:5	breeding	14:4	101:16	14:25	1:23 6:21	closely 45:18
begins 92:23	61:23 76:6	41:12	cane 5:19	102:11	15:19 16:4	115:2	closure 34:5
92:24	83:17,19	Bridge 36:10	25:22 26:1	103:6,11	16:23 17:4	116:6	45:24,25
behalf 7:10	90:14,14	brief 14:23	26:2,5,6	103:12,18	17:9 22:8	certify 114:4	45:25
7:13,16,19	92:22	briefly 10:3	26:10	103:24	30:17,22	116:8	Clyde 34:3,6
7:21,24	black 14:3	54:21	37:22,24	104:8,18	31:8 33:6	changes	coastal 17:9
9:9	29:20,21	bring 81:23	43:2,3	104:19	33:6,11,12	114:7	Code 6:6
belabor 8:22	BLS 68:11	browser	44:18	105:3,9,24	42:14,15	115:11	115:6
believe 41:4	Blue 38:12	59:13,14	45:12,16	106:5,12	50:15,23	channel 41:2	come 32:11

55:13 65:9	90:17	65:11	corresponds	25:15	7:16 34:25	100:16	5:9 113:3
73:25	91:10 93:1	constant	91:24	39:13 40:5	83:21	depicted	descriptions
81:19 86:8	95:19	107:21	92:10	43:19	day 30:23	94:11	66:20
92:18	99:18,22	construction	counsel 6:4	51:19	days 17:21	Depo-Vue	design 56:23
104:24	composed	11:9	7:7 110:20	63:14 91:1	111:19	4:25	designated
109:7	17:14	consult	116:18	CRP 34:22	de 48:9	deposed	63:2
comes 16:16	concern	20:25	count 15:15	42:7	107:16	43:25 44:7	detail 16:19
16:19	13:24	consultant	counted 33:5	CSR 1:22,22	de-water	deposition	detailed
28:12 33:6	concludes	20:24	counterpr...	113:23,24	41:8	1:15 6:5	12:22
33:20	112:8	consulting	63:18	115:23,24	de-watering	6:16 7:2,3	66:23
49:24	Concordia	13:14	country	116:23,24	41:6	8:25	103:4
comfortable	16:8 34:14	containing	12:14 13:2	current 8:16	dealing 9:5	104:18	detection
75:15	condition	76:23	18:20,21	currently	105:2	110:13,17	43:9
coming 9:22	39:13	continue	49:24	17:4 20:22	death 68:3	110:21	determina...
56:23	57:25	29:3 105:9	couple 98:16	Curry 34:25	decided	112:8	109:3
65:10	conditions	105:10	98:20	curacy	84:14	depositional	determina...
69:24	103:15	110:18,18	course 9:13	101:20	110:14	45:9	18:19
74:13	108:13	continued	29:5 32:23	cutoff 96:20	deep 67:14	depositions	determine
75:18 76:8	conduct 46:6	3:1 4:1	40:4 41:18	96:21	68:4,4,8	8:19	80:21
85:14	57:16	112:10	51:23,23	cutting	68:13 85:2	depth 33:13	develop 92:4
100:10,15	105:4	Control	51:23	104:20,21	85:4 94:5	53:16 68:2	105:10
105:17	conducted	12:24	66:14	cypress	95:8 97:9	68:15,18	108:16
commencing	42:18	Convention	92:15	38:14 47:7	98:16	69:22 70:1	developed
1:18	46:11	2:20	104:2	48:23	100:16	70:7 80:21	42:17
common	47:24	coordinates	court 1:1,23		deeper 67:9	86:1 93:11	46:20
65:18,19	60:24	66:15	6:21 8:2,8	D	107:13,14	95:23,25	48:13 93:8
commonly	62:10 63:3	core 67:1,1,2	25:20	D 2:24 5:1	108:16	96:2	103:25
94:11	67:24 70:4	67:6 69:6	115:2,13	D.C 12:23	defendant	101:12	104:9
communities	102:20	70:11	116:6	Dale 38:17	2:16 3:3	105:20,21	106:1
62:17	106:21	Corne 36:2	cover 40:24	damage 40:4	3:15 4:3	106:14	108:11
community	conductivi...	corner 37:14	covering	Daniel 4:21	4:14 83:23	107:21	developing
41:17	26:12	62:5,22	67:8	7:24	defendants	108:2	45:19 65:1
companies	conductivity	Corporation	crack 53:5	DARDEN	83:23	depths 31:10	65:1
17:24	39:18	1:12 4:4	107:15	4:6	defined	31:21	development
22:24	confined	7:17	cracks 99:9	Darn 39:22	115:4	36:16	12:7 13:8
company	78:16	Corps 11:5,8	crawfish	DASCHB...	degree 10:7	37:20,21	13:9 94:10
3:16 7:22	confirm 72:3	12:3 13:3	39:3,3,4,7	2:6	10:7,18	43:22	105:16
16:25	101:15	13:13 21:5	Createur	dash 58:19	delay 9:5	44:18,19	develops
40:16 46:8	110:21	41:5	51:16,17	77:3	delineations	48:1,2	111:16
47:10	conformed	correct 21:5	create 94:11	dashes	19:1,3	51:5 52:10	Devillier
compared	68:18	28:22 44:5	creep 78:17	115:10,14	dendrologi...	52:18	37:18
107:16	confusing	53:1 60:25	criteria 24:6	data 51:8	19:20	53:19,22	51:16
completed	73:14	63:6 69:3	criticism	66:12,13	dendrologist	53:22	DH 97:2
50:4	connecting	69:4,10	86:9	66:21	19:16,18	64:12 67:6	dial 20:3
Complied	58:25	72:5 83:4	Crooks	107:7	denoted	67:9 68:21	die 64:24
27:11	connection	100:3	49:12,17	database	115:18	80:1 94:4	difference
29:13	59:17	101:16	49:19 50:9	68:23	dense 93:18	96:5 97:14	44:14
30:25 37:4	conservati...	114:8	crop 86:10	date 28:21	department	97:25	107:8,9
40:20	68:10	116:16	cropping	112:10	11:3	107:14	different
42:22	consider	CORREC...	25:14	114:9,14	depending	describe	43:22
58:12,21	19:11,14	113:1	crops 13:16	114:25	92:14,16	65:17	44:24
64:8 76:20	considerat...	corrections	13:17	Dave 55:12	98:10	describing	50:17
77:25 79:8	12:25	114:7,18	21:25 22:2	55:18,25	103:14	60:14	51:14
87:16	considered	114:20	23:11	David 4:11	depends	DESCRIP...	57:17



60:24	44:21	79:11 84:8	ecology 10:9	engineers	6:17	25:8	108:3
62:13,16	distributed	86:12	edge 47:12	11:6,9	exact 102:23	experts	farm 16:7
62:17,23	65:20 87:9	88:24	73:8,9	12:3,22	exactly	102:18	40:16 41:1
68:23,24	distribution	89:21	74:1 75:9	13:3,14	33:23	explain	48:8,12
68:24	43:11	110:9	76:2 80:6	19:4 41:5	61:13	64:10	farmer
70:10,13	65:23	111:17	educational	England	72:20	76:16	109:9
72:22	66:12 68:3	112:9	10:4	12:15	108:24	extend 52:19	farmers
75:24	79:22 85:5	dredge 12:8	effective	entire 32:18	EXAMIN...	53:21	72:21
98:10,12	86:16,23	12:11,13	25:14	56:14 67:5	8:10	54:12 68:8	farming
98:13	District 1:1	12:13,17	53:15	80:23,23	example	69:11,16	18:15
106:16	12:5	41:7	54:13 66:6	82:8 84:11	15:21 63:8	98:15	97:18
107:7	ditch 48:20	droughty	80:21	84:23	81:13	extended	farms 18:14
differentia...	DIVISION	106:11	82:23	86:15 87:7	excavating	12:5 52:24	51:3
93:7	1:8	dstanton@...	106:18	entirely 71:9	85:18	94:19	father 16:9
difficult 47:3	dlandry@...	4:22	107:10	entitled	exceeding	extending	16:10
dig 65:5,5,21	4:12	due 28:17	efficiently	60:19	94:4	53:20	father's 16:6
71:13	DNR 55:19	115:9	30:19	90:19	excellent	78:23	Fax 2:9,22
74:21	DOCKET	dug 69:1	either 34:19	entomology	41:12	93:18	3:21 4:10
76:11	1:6	70:11,21	34:22 41:9	11:3	excess 25:17	101:2	4:20
78:16	doctoral	72:6,8	57:7 73:3	entries 31:5	Excuse	extends	February
80:22	11:2	76:3 79:25	74:2 75:7	environme...	83:16	79:17	1:18 7:5
81:14,15	document	81:17	78:13 88:3	11:6,20,22	exhibit 5:11	extra 71:19	113:21
81:22 82:8	26:25	100:4,4	104:23	12:24 13:4	5:14,17,18	extracted	114:25
82:14 86:2	31:22 91:8	101:5,5	electrical	13:22 21:1	27:17,18	69:6	Federal
86:18	documents	duly 8:7	26:12	equipment	30:15 58:9	extreme 86:8	12:23
99:24	5:17 9:6	116:10	39:17	16:12	58:10	extremely	115:4
101:3,15	Doe's 106:25	dumped	elevations	Esquire 2:11	60:17	85:25	feeder 87:5
101:17	doing 11:9	16:11	46:3	2:13,24	76:18 77:5	eyes 83:18	93:23
digged 74:24	17:17	Dupont 38:5	Elizabeth	3:11,23	77:6 87:13	<hr/>	feet 53:20
digging	21:21	38:10	3:11 7:13	4:11,21	87:14	F	68:9,10
69:23 71:6	22:23	<hr/>	29:25	established	exhibits	facilities	69:18
80:4 84:11	56:21	E	111:2,14	91:14	110:12	11:16 43:9	72:23
84:22	63:18 81:4	E 1:21 5:1,1	111:25	94:12	expect 31:19	facing 80:7	73:10 99:1
direct 26:5	82:21,22	5:7 6:21	emerge 93:9	estuarine	experience	80:18	fellow 44:7
60:16,19	86:6,17	113:22	emerging	10:9 22:5	10:24	fact 19:2	felt 69:21
direction	90:8	115:2,22	93:16	et 1:12 6:7	26:16	factors	fertilizers
85:3	101:12	116:6,22	emphasis	38:10	102:2	24:15	73:5
116:15	102:25	E-mail 2:12	10:8 35:23	etaber@ks...	experiment	26:10,14	field 17:21
directly	dome 35:15	2:14,25	emphasized	3:12	12:10	39:16	27:22,23
100:2	doubt 69:17	3:12,24	39:16	evaluate	expert 5:11	64:18	36:9 37:23
101:2,4,15	71:18	4:12,22	employed	82:8 84:11	5:14 16:3	98:11,13	45:23 62:1
102:4	download	E&P 61:20	20:22	85:19	17:14 18:6	106:3	62:13
disagree	89:6	64:17	enclosure	evaluated	19:12,14	fair 31:11	67:20 72:9
95:3 96:6	downwards	earlier 20:22	28:2 30:15	52:23	21:13	72:2	91:1
discourse	93:11	54:22	30:16	evaluating	22:20	fairly 92:6	103:20
115:10	Dr 7:3 8:11	early 14:8	encounter	64:11	23:19 24:1	fall 104:2	106:25
discuss 90:1	19:24	104:3	101:2	75:10 76:2	24:3,9,11	fallow	107:18
discussed	20:20	earth 69:25	Energen	80:5	24:22	104:23	fields 16:13
111:15	26:23 28:8	95:14	1:11 4:3	Evans 92:24	25:22 26:1	falls 104:22	24:7 47:14
disposal	29:15 31:3	easiest 82:21	7:16 9:24	93:6	26:6 67:17	familiar 8:24	58:3 61:18
12:17	33:2 34:21	82:22	9:25	everybody	expertise	43:24 91:2	61:21
distance	58:24	east 35:7	Energy 4:7	9:19 59:18	18:5,7	far 9:14,16	figure 28:16
72:20	60:13	36:20,23	Engineering	112:4	19:10	24:3 31:20	58:19
distributary	76:22	57:2	4:15 7:25	evidence	21:11,18	75:8 76:1	60:19,21

61:7 62:11	follows 8:9	107:13,15	generalized	85:3,4	gosh 49:4	grows 74:9	34:12,18
63:3 91:13	foot 72:25	108:17	92:19	87:6 89:5	gotten 48:21	98:6	34:23 35:8
94:13	forage 43:19	four 12:11	generally	89:5 90:3	gradients	107:22	35:11
99:15	foregoing	62:22	105:18	92:5 95:17	45:10	growth 5:18	36:22,24
figures 5:13	114:5	68:23	107:25	97:16 99:5	graduate	26:2,9	37:16,20
58:15	116:12	108:1	geologist	99:11,15	10:15,19	80:14	38:1,15
60:18	forest 22:23	four-year---	22:18	100:1	great 27:15	90:20	41:15
file 27:3	22:24,24	108:1	germane	101:8	30:10	guess 35:17	42:16 47:9
filing 6:12	50:13	fragipan	22:13	102:4	83:25	35:19 61:9	47:12,16
find 63:10	forester	51:6 53:14	97:10 98:4	105:3,20	88:19 91:3	70:8,12	48:22,25
63:10,20	22:20	108:5,10	getting 75:6	105:23	greater 80:1	Guidry 36:8	49:7 50:13
82:24 86:1	forestry	108:15	75:16 76:5	106:13	97:24	Guilbeau	hardwoods
98:24	19:21	Francisco	83:18	108:16	green 33:1	37:25	22:4 25:16
finding 96:7	22:21,23	12:15	100:11,11	109:24	47:7	Guterrez	33:25 38:7
findings 95:3	23:1	Franklin	100:20,21	goes 72:18	Gregory	43:14	39:8,9
fine 32:3	forests 50:11	67:19	103:15,17	100:21,24	67:20	Gulf 11:12	41:24
57:6 92:19	forest 32:20	freely 89:3	104:20	106:5	grew 93:10	11:20	46:13,19
110:25	form 6:13	freshwater	gist 90:6	108:3	Grigsby 56:8	12:17	47:1,6,21
111:4	25:24 54:5	46:19	give 25:3	going 13:1	56:25	<hr/>	47:24
finish 86:14	70:17	friend 16:10	31:12,13	20:13	Grocer 46:8	H	54:14,18
99:8	75:12 81:1	39:21	31:18,24	21:10 30:4	ground 8:23	H 5:7 49:17	57:23 58:4
first 8:7	83:6,10	friends 16:6	31:25 52:9	30:18 53:6	75:2,3	habitat 31:5	63:14
11:19 19:2	84:17	52:4	61:14	53:9 54:14	group 32:9	31:6,19	Harold 36:8
26:24 93:8	85:21	front 67:17	69:16 88:4	55:1,16	45:19	34:9 36:4	Harrisonb...
96:11	93:18	frozen 9:21	given 8:19	57:6,14	grow 34:23	41:12	8:17
104:9	94:22 96:9	full 8:13	16:17 24:5	60:6 71:11	63:13 74:6	46:11 54:3	harvesting
105:22	98:18	Function	114:5,8	71:18	74:6,7	habitats	26:3
fish 38:19	102:8	5:18 90:20	gives 85:7	74:17 75:6	96:22 97:5	22:3 39:2	108:13
fisheries	105:13	functional	100:12	80:17	97:9 105:9	41:3,14	hat 35:21
10:8 35:21	formalities	91:15 93:7	giving 71:17	85:18 87:6	105:10	hackberry	Hawaii 97:1
35:22 36:3	6:9,11	further	go 15:17	87:6 88:25	growing	33:1 47:7	health 36:7
36:4,5	formations	69:12 80:2	17:6 20:10	88:25 95:7	32:23	hand 8:5	healthy
five 33:11	51:6	future 63:22	27:5,24	98:23 99:2	38:22 43:3	handful	63:10,20
49:15	formed 87:3	112:10	29:7 30:14	100:17,17	43:5 45:16	51:12	64:23 65:4
flooded 47:3	94:2	<hr/>	30:14,21	100:18,18	47:25	handling	65:15
flooding	forming	G	31:21,25	100:18,19	56:11	56:1	103:5
46:2	93:12	gas 2:17 7:22	33:5 44:10	101:21	57:22	Hang 59:14	hear 20:1
Florida	formulated	63:5	48:7 49:22	104:12,14	64:15	61:15	59:7
11:14	68:22	gasoline	51:7 52:12	104:15	71:11	happen	111:24
13:21 14:2	forth 13:25	39:24	53:14	105:1,20	85:11,15	88:25	hearing
Floyd 1:16	19:21 23:1	general 13:6	57:10	105:21	92:16	happened	25:20 29:1
8:6,15	31:21	31:13	58:17,19	106:2,13	96:18	61:6	29:4,5
16:6	33:16,19	34:20	59:19	107:12	97:13	109:22	heavily
113:20	36:7,16	51:25 53:9	63:15	110:2	101:21	happening	63:16
114:4	46:4 48:14	61:15,25	64:14	111:15	103:6,10	59:2 97:21	heavy
116:8	50:3 63:9	62:24 92:8	65:17	112:11	103:13,19	happens	109:20
flume 48:20	84:21	92:10,12	67:13	good 8:11	104:3	111:16	Hebert 48:7
focus 64:5	103:16	93:22	68:13	27:4,13	105:9	harbors 12:8	held 7:4
91:13	116:11	106:12	71:12 77:2	60:4 63:10	106:23	Harding	Heloise
folks 55:12	found 31:9	generalities	77:10,20	63:10,20	107:24	3:19	36:18
111:20	52:18	31:18,24	77:22,22	65:4 88:13	grown 34:8	hardwood	help 72:7
following	69:15 94:7	31:25 92:2	78:2,25	103:24	35:4 41:23	19:22,22	herbaceous
85:13	94:16 96:5	generality	82:7,18	104:13	48:19	32:19,24	37:16
104:25	102:23	61:14	83:14 85:3	105:1,2	50:12	33:19	41:25

42:10	114:4	18:21,22	Indian 68:6	34:4 50:4	jarnold@j...	22:5 23:11	113:22
49:10	116:8	21:22 22:2	96:25	58:2 62:10	2:12	KING 3:6	115:22
herbicide	Holloway's	23:2,9,10	indicate	63:7 96:13	Jean-Louis	knife 73:5	116:22
66:16	111:17	23:23 24:6	115:11,15	98:5	67:24	knifing 74:3	Labarre
hereinbefore	home 111:17	24:17 26:9	indicated 7:5	102:21	jobs 14:6	know 8:23	35:15
116:11	honest 83:12	32:21	indicative	103:4	John 2:11	9:2,10,12	labeled
hereto 6:4	hopefully	35:18 39:7	104:14	105:4	3:23 7:10	9:13,14,16	27:25,25
Hero 37:6	55:15	39:9 40:1	106:22	investigati...	7:19 8:12	15:10	29:8 30:16
hey 69:23	Houston 3:8	43:6,20	indicia 39:14	53:18	30:5 34:15	16:18 17:6	Lafayette
87:18	Huddell 2:6	45:18 46:1	individual	99:12	87:18	17:22	3:20
111:13	2:13	46:5 47:22	61:3,4	Investment	106:25	25:18 26:2	Lafourche
high 13:24	hundred	64:16,19	72:10	50:5	111:13	26:6,18,24	36:19,21
18:18	15:22	important	74:22 76:1	Investments	join 59:13	27:1 28:14	laid 67:2,2
73:23,24	hydrocarb...	18:23	indoor 13:16	33:17	JONES 2:6	29:18	75:19
108:9	64:18	in-person	industry	invoice 28:5	journal 91:1	30:21,22	79:15
higher 93:17	hydrocarb...	110:17	information	28:11,19	jttroutman...	34:1,8	100:7
highly 93:17	39:15	111:7	16:18	29:9,11	3:24	41:19 44:1	Lake 33:21
Highway	hydrogeol...	inch 76:10	68:12	invoices	judge 39:22	50:20	34:15
8:17	22:10,16	inches 52:19	109:6,11	27:23,24	JUDICIAL	52:13 53:6	46:14,15
hill 33:19	23:12	52:24 53:4	108:9,10	28:3 30:2	1:1	54:15	49:25 50:5
49:24	hydrologies	53:7,12,13	108:9,10	involve 34:3	July 28:6	55:17,23	Lakes 33:17
hills 49:23	98:2	53:15,20	108:10	53:19	June 62:8,9	56:4,6,12	land 49:4
hip 72:18,25	I	53:21	Inman-Ba...	involved	62:20	56:20,21	52:4 68:11
73:1,2,22	Iberia 35:7	54:12,16	90:21	9:15 11:14	103:21	61:10 62:1	landowner
73:22	38:5	54:19	inside 98:3	12:6,12	104:4	62:16	16:4 67:19
hippers 73:1	Iberville	66:23,24	instances	13:5,20	105:9	63:21	Landry 4:11
73:21	38:11	66:25 67:7	52:24	14:8 18:14	Justin 38:17	67:11	7:15,16
history 10:4	46:23	67:7 69:2	98:15	32:18,21	K	70:15	37:18
hold 15:25	ice 59:20	69:7,7,13	intact 85:12	33:18	Kansas	72:23 76:9	47:19
21:12,13	109:20	69:16 71:4	integral	34:17 38:8	14:10 15:3	76:16 82:3	83:20,21
27:3 53:4	idea 16:1	71:9,20,23	18:11	38:19,20	KEAN 2:19	82:16 85:2	84:1
59:12	25:3 31:13	73:24	intend 25:11	39:1,20,23	4:17	86:6,15,25	Lands 37:6
67:14	52:10	97:17,18	intent 9:4	41:3,13,22	keep 15:15	87:2,2,4,4	large 22:24
86:14	88:19	99:3	interaction	42:4,15	15:15,18	89:22,25	35:23
Holdings	identified	include	115:9	43:16	57:6,14	90:5,7,7	37:23 41:6
33:22	26:21 31:4	52:21	interactions	44:12,16	69:23	95:4 96:12	45:3 73:23
Holloway	52:16	included	21:23	44:18	Kevin 2:13	96:12	95:7
1:16 7:3	imagine 15:4	11:8,13	interested	47:20 49:6	khuddell@...	97:22	larger 65:10
8:6,11,15	impact 39:10	14:22 15:2	31:2 61:19	50:10	2:14	101:7,20	late 21:7
19:24	57:21 62:3	17:8 22:3	116:19	56:25 58:2	kind 21:13	101:21	103:14
20:20 21:1	63:4,17	23:10,11	Internatio...	98:11	24:17,20	102:1	laterally
26:23 28:8	impacted	25:15	67:24	106:4	31:18	103:13,15	93:18
29:15 31:3	26:14	39:15	interrupt	involves	32:24	103:22	100:15
33:2 58:24	57:21 62:2	46:18	33:3 40:14	18:10	35:20	104:1	lava-deriv...
60:13	62:3 63:8	51:19	intimately	iPad 20:8	39:13 52:9	109:14	97:4
76:22	63:16	64:18	18:14	Island 68:5	56:22,23	111:5,15	lava-type
79:11	impacting	111:19	introduce	issue 22:13	63:17	known 14:13	97:3
83:16 84:8	64:20	incorporat...	7:7	52:6 90:10	64:24,25	14:14	law 6:8
86:12	impacts	3:4 21:9	introduced	97:10 98:4	70:9 72:2	L	lawsuits
88:24	11:10,17	increases	9:11	J	84:25 86:4	L 6:1	14:15
89:21	11:22 12:6	107:22	invasion	January	86:10 90:9	L.L.P 2:19	lay 104:23
110:9	12:19	incur 67:9	48:16	62:7	100:14	La 1:22 36:9	layers 93:20
112:9	13:23		investigati...		kinds 12:19	108:17	layout 92:6
113:20							leak 39:24

leave 64:2	LISKOW	51:8 52:12	36:6,11	14:19 15:3	103:14,17	Mayeaux	Miller 2:19
leaves 65:1	3:18	57:20,22	43:19	15:9 16:4	Marchive	33:14	4:17 67:10
leaving	list 5:17	57:22	46:16,17	16:23 17:1	38:24	McConnell	67:12,20
85:12	27:21	64:14,16	53:19	24:13	mark 58:8	2:24 7:20	69:17 95:9
Lefebvre	31:14	64:23	56:22	36:15	77:4 87:13	7:21	mind 16:17
35:10	listed 33:11	65:13,13	57:23,25	39:19 40:8	marked	mean 31:12	16:19
left 13:13	50:23	65:22	61:19 62:2	40:16,25	27:18	31:15 62:8	mine 39:21
20:5 21:4	51:17,21	70:25	65:9 68:20	41:19	58:10 77:6	73:17	minimal
60:14	51:21	71:15 77:3	72:23	43:15	87:14	75:23	66:1
115:16	literature	77:14 78:4	74:19,20	44:13	marsh 12:3	76:14	minimum
left-hand	82:19	79:5 86:22	79:11,18	46:10,22	22:4,4	82:19,22	107:16
80:15	lithology	87:7,7	80:12,19	49:13,17	35:2 41:14	84:8 86:16	mining
92:23	10:7	88:6,9	85:11	49:24	41:15	88:9 97:25	13:23
legacy 14:9	litigation	89:2 92:3	96:17,17	51:24	marsh-type	99:12	minute
14:13,25	17:12,15	100:8	96:23,24	53:10,17	42:16	103:3	19:17 33:3
16:3,23	17:17 19:6	101:18	97:7,20,21	67:19	marshes	104:1	52:25
17:21 22:8	little 19:8	102:12	98:21	96:19,20	46:19	105:19,19	59:12
let's 10:24	20:21	109:14	109:1,3	96:21 97:5	Martha 42:3	109:2	61:16
13:12	41:21 48:5	looked 11:21	looks 9:4	97:16,21	Martin 43:1	meander	67:14 88:5
15:11	59:21	13:22	28:5 29:10	98:3,7,23	Mary 1:2	45:5	missed 20:22
20:10 27:2	61:23 76:6	22:25 34:2	50:16	99:13	6:22	means 48:9	40:15,22
30:14,14	83:17,19	34:4 35:21	51:12	103:3,6,13	mass 81:4,16	65:19	40:25
31:23,23	88:10	36:2,16	87:19	106:9,23	82:15 86:3	mentioned	missing
32:2,6	90:13,14	38:17,20	loose 101:24	115:3,6	master's	49:21	51:24
33:1 39:20	92:22	38:21 39:3	lost 59:5,9	116:7	10:7,17	54:21	Mississippi
45:18 48:7	93:10	39:4,8,11	59:15,15	lower 83:19	matches	67:12	14:3,23
49:23	96:22 99:9	39:12,25	59:16,16	LSU 10:11	81:10	meters 68:8	15:3 34:16
50:22	107:5	41:6,12,25	109:15	10:20,22	material	93:12 94:4	34:17
51:15,22	Livestock	43:5,7,10	110:10	11:2	12:12,13	94:19 96:3	44:21
57:10	40:16 41:1	43:20,21	lot 9:14	Luther 1:16	41:7 64:20	98:16,20	45:14 57:3
61:24	LLC 1:7,7	43:21	12:16 13:7	7:3 8:6,15	81:16	method	mixed 33:18
63:23 71:7	2:4 33:22	44:11,16	13:10	87:24	86:18	84:12	34:18 35:2
71:8 73:23	43:24	45:11,12	14:20	113:20	115:18	115:13	48:22
76:18 77:2	67:19	45:17 46:2	17:17	114:4	materials	116:13	mixture
78:4 79:5	LLP 4:17	46:3,6	18:25	116:8	12:8,17	methodolo...	33:24
87:12 90:3	location	47:22 48:1	19:19		26:22,25	70:10,13	Mobil 38:10
90:13	66:13	50:2 51:5	22:23	M	27:22	methodolo...	moisture
95:17	70:24,25	52:2,3,6	23:20 24:2	M 5:1	28:10 74:4	64:11	98:12,13
108:6,6	71:5 72:8	52:11 54:9	24:8,12,15	main 34:15	74:5	Mexico	106:8,9
109:24	75:5 108:6	55:8,9	24:19 26:2	41:10	matter 8:13	11:13	107:8
levee 34:16	locations	61:13,21	26:6,16,18	majority	19:1 21:19	middle 68:6	Monique
45:13 56:9	52:7 60:20	61:25	28:3 34:4	50:21	25:10	72:19,19	43:14
57:2	61:10 62:4	62:15,22	51:2,4	54:17	116:19	73:11,11	mono 11:12
levelling	62:6,6,13	64:16 68:1	52:2,3,4	making	Matthew	73:16,16	11:22,25
46:3	63:3,25	74:25	Louisiana	79:19	42:25	73:18,19	Moore 42:3
LEWIS 3:18	64:13	84:20	1:3,6 2:3,8	103:1	mature	74:7 78:10	morning
likewise	68:23,25	102:19	2:21 3:7	man 71:17	104:5,13	78:11,16	8:11 26:23
105:10	logging 23:2	106:16	3:20 4:9	97:13	105:1,2,5	79:18	27:2
limited	look 17:7	107:1,25	4:19 6:6	managed	106:1,18	80:16	morphology
37:13	18:16	looking	6:23 8:18	50:12	Mauritius	96:25	86:25 91:4
108:7	21:24	18:16	10:13,14	managing	93:6 95:5	middles	91:25
line 34:15	23:22 25:2	24:18	11:11 12:3	22:22	maximum	72:14,15	92:11
56:2 113:3	26:13 27:4	27:13	12:4 14:13	manner 86:2	95:22,25	74:5,22	mosquito
lines 109:19	30:4 41:6	35:18 36:6	14:16,17	March	96:2	mile 71:19	41:12



mouth 35:23	54:22	94:22 96:9	11:12	60:13,23	11:16	52:4	43:4,4
movement	104:17	98:18	oh 9:24,24	61:2,17	onsite 98:5		44:20
11:15 45:4	105:8	102:8	18:2 19:19	63:1,23	103:5	<u>P</u>	47:15,25
106:4	nodes 93:17	105:13	24:25	69:11 72:6	106:21	P 6:1	52:14 56:8
moving	nondestru...	objections	29:22 33:8	72:6,15	open 88:17	p.m 110:3,7	56:8 57:1
11:21 49:9	85:9	6:13	46:24 47:2	73:7 74:21	89:2,23	112:11	79:13,16
49:9	Nope 59:15	objective	49:4,19	75:22	95:7	Pacific 49:13	79:20
Myers 4:25	north 38:12	85:6	54:25	76:25 78:4	opened	49:18	80:16,17
	43:15 49:3	observation	88:19	78:6,7,15	13:15	page 5:3,9	109:11
<u>N</u>	96:22	60:20	101:5,17	78:20 80:9	operates	26:24	110:13
N 5:1,1,1 6:1	northeast	61:10	103:12	84:2,8	16:25	27:25 29:7	particular
name 8:11	37:14	77:12	104:10	88:22	operation	29:21	15:25 26:8
8:13 16:25	northwest	observations	Ohio 14:2	89:18,24	39:4 43:16	30:16 37:2	34:11
names	37:14	62:19 66:9	oil 11:12,15	90:13,25	73:6	42:20	35:23
115:17	noted 114:18	76:13	11:16,21	91:3,3,12	102:19	58:17,18	36:12,17
NATIONAL	114:20	79:19	14:7,17	91:19,23	operations	67:22,22	37:22 39:6
113:25	notes 27:22	observe	16:25	92:8,21	13:23	77:3,20	41:18 42:5
115:25	66:16	65:14	17:24	93:24 94:9	18:15,17	91:7,8	43:1 44:16
116:25	notice 107:6	observed	45:22 63:4	95:2,13,21	43:13 46:1	95:17	44:19
natural 2:17	November	93:6 94:3	oilfield	98:9 99:8	46:2 50:10	113:3	46:12,16
7:22 45:13	28:6,7,20	96:2	23:23 34:9	99:24	opinion	115:1	47:5,22
46:18 56:9	nuisances	obviously	36:13,13	109:10,24	102:3	116:5	49:11 53:5
57:2	92:3	31:15	37:9,10	111:23	opportunity	pages 116:12	63:13
108:11	number	69:22	38:9 39:14	112:2	87:25	pan 108:11	66:22
naturally-...	15:25 16:1	71:10 90:6	43:17	Oklahoma	orchards	paper 90:15	70:24 71:8
22:2	29:23	95:6 97:24	47:23 49:7	14:5,10,18	13:18	90:19	72:21
nature 30:9	60:24 66:1	102:17	57:24	15:3,21	ordinary	94:16	79:13
navigation	numbers	104:18	61:20 62:5	24:13	13:24	paragraph	86:21
18:19	28:17	105:25	64:17	old 16:6,9	18:18	92:22	94:24 97:7
near 73:3	62:11 63:2	occasionally	oilfields	32:17	original	95:22	100:14
75:19	numerous	53:12	14:17	34:12	116:4,5	parish 1:2	102:4,12
nearby	12:1 14:17	occasions	17:18	35:15 36:9	Orleans 2:8	6:22 16:8	106:14
52:13	17:3,3	69:15	18:16	37:9 38:9	4:9,19	31:4 32:10	108:6
66:17	102:16	occupied	21:22	38:13	11:6 12:5	32:11,11	particularly
necessarily	nutrients	44:22 45:7	okay 8:22	39:21	Ouachita	34:7,14	94:18
70:7	65:13	45:15	9:16 10:3	43:17	14:3	35:1,8,16	particulars
need 9:1	93:20	occur 53:16	17:2 18:3	44:20	outcome	36:19 37:7	61:6
55:25		54:18	19:7 20:20	45:13	102:23	37:19 38:2	parties 6:4
57:10 88:3	<u>O</u>	occurred	21:3,10	47:13,13	116:19	38:5,11,25	116:18
111:8	O 5:1 6:1	22:1 43:12	25:11	49:6 57:2	outdoor	39:22,23	parts 18:21
needs 88:8	O'Clock	45:10	26:20 27:5	57:24 62:5	13:16	41:1,21	pass 101:20
neighborh...	47:18	62:24	27:7,15	on-site 97:11	outfit 32:12	42:4 43:1	pasture
15:12,13	51:16	Ocean 68:6	28:1,19,24	once 86:2	outside	43:15	36:25,25
51:2,10	oath 6:23	96:25	29:25	107:23,23	36:10 38:2	45:23	37:12
73:12	116:9	October	30:14	one-man	38:25 46:9	46:10,23	48:24
network	Object 54:5	28:6 29:8	31:23 32:4	21:2	63:4 74:4	47:19 48:8	pastureland
93:18	70:17 81:1	61:24	32:9 33:14	ones 17:3	outwards	49:3 51:18	35:4 36:21
never 38:4	83:10	103:19	36:8 37:6	51:25	93:10	52:5	42:6
New 1:7 2:8	objection	officer 115:4	42:24 48:7	72:21	overall	parishes	pasturelan...
4:9,19	25:24	officiated	50:21	102:16	107:17	50:17	35:3
11:6 12:5	75:12 83:6	6:23	51:11 52:1	ongoing	owned 50:2	part 6:16	pastures
12:14	83:22	offloading	54:21 57:5	45:20	ownerships	19:25 33:9	81:18
43:24	84:17	11:15	57:12,16	54:23	47:21	34:24 35:2	pathology
51:23	85:21	offshore	58:23 59:7	onshore	owns 49:4	35:3 42:8	10:10



pattern 94:10	photographs 5:16 27:23	43:10 48:15,16	please 7:7 8:2,5,13	23:1,8 25:12 26:3	11:24 64:25	26:13 43:21	87:12 88:5 pulled 27:2
pauses 115:11	67:5,6 76:23	64:22,23 65:9 73:3	9:1 10:5 19:25	37:13 39:11 41:9	95:10 111:5	48:12 51:9 62:19	purposes 6:8 push 108:8
pay 81:25	79:21	74:14 75:1	20:11 37:2	74:3	Procedure 6:7 115:5	91:22 99:25	put 32:14 34:22
pecan 13:18	phrase 115:19	75:18 76:5 76:9 78:17	42:20 95:17	Prejean 67:11,12	115:6	program 11:20 13:5	35:20,20 42:7 55:13
penetrate 94:4	phrases 115:15	79:14,15 80:7,23	99:16	67:21	proceed 8:25 110:23,23	13:11 32:14,15	104:12 108:7
people 9:14 9:15 20:25	pictures 51:8	82:8 84:11	plenty 106:9	preparation 28:25	111:25	project 11:19,19	Q
82:20	piece 32:13	84:23	plug 59:2	prepared 31:17	proceeding 115:10,14	12:12 17:23	qualified 18:6 19:11
97:18	50:1	85:11,19	plunk 66:2	116:14	proceedings 110:19	12:12 17:23	22:12 23:25
percent 17:11 18:2	pine 50:10	87:1 92:1	plus 30:18 50:15	present 4:24 17:19 31:7	processes 45:5	projects 11:8,10,10	24:22 25:7 25:10,12
65:24,24	50:10 54:11	92:11 93:8 93:13	plywood 67:4	presentation 19:2	produce 47:17 81:9	12:1,2,13 13:20	25:19,21 question
percentage 18:1 53:8	pipeline 11:16	94:17 100:1,2,7	Pollution 12:24	presenting 13:5	produced 46:7,13	13:20 63:21 65:8	6:14 10:21 21:16 55:2
perfectly 71:20	14:20 39:19,24	100:16,25 101:3,4	pond 39:3,4 39:7	13:5	102:21,23 115:13	properly 65:1,2	57:17 70:8 70:12 83:1
periodically 17:22	Pisani 45:19	103:24 104:19,19	ponds 38:19	pretty 55:16 66:18	production 3:16 32:17	properties 38:8	83:2 questions
59:19	pit 34:5 62:6 69:1,9,12	104:24,25 105:3	poor 85:24 85:25	91:23 104:14	104:22	81:7 115:13	90:7 Queue 48:9
periods 106:10,11	70:11,21 70:22 71:3	107:22 108:1,7	population 53:8 69:19	105:21 109:14	productive 12:18	property 16:16 31:7	quick 52:12 quickly 28:4
permitting 12:25	72:4 74:24 75:9 76:2	plantations 54:11	portion 29:10 38:7 56:24	prevented 85:17	Products 39:19	32:13 33:15	quickly 28:4
persist 84:9	77:13	planted 32:19,22	ports 12:14	primarily 21:20,22	profile 33:16 33:20	35:10,15 44:12,14	R
personal 116:15	78:16,25 79:1,12,16	34:19 46:17 75:1	position 80:11	23:21 36:11,14	62:15 64:14,22	50:1,5 51:3 56:5	R.S 116:10 rain 103:16
perspective 62:16	80:6,11 99:25	75:4 78:14 78:19	positioned 50:7 79:2	38:13 39:12,16	65:6,14,16 65:20	58:3,5 62:17,18	raise 8:5 ran 13:11
pesticide 13:16	101:3 101:3	104:1	possible 30:20	43:19 52:7 61:9,19	66:20,23 67:5 68:15	65:2 68:25 102:4	range 54:15 68:10
petroleum 39:15	pits 34:4 72:7,8	plants 18:11 25:13,15	post 11:2	82:2 61:9,19	68:21 69:12	103:7 103:7	Rapides 32:11
64:18	74:21,24 80:4	26:9,13 31:10	potential 11:17,24	primary 13:24 22:6	70:22,23 72:4 74:17	Protection 13:4	read 88:10 reading 6:9
PhD 1:16 8:6	place 16:11 35:24	42:11 48:25 49:9	11:17,24 32:21	22:6	74:24 75:7 79:23 80:5	80:6,19 81:7,9,19	readings 55:14
10:9,10,21	107:1	49:9 63:13 64:21	39:10 62:3 62:3 67:8	Primeaux 42:13,14	80:6,19 81:20	81:20 82:25 85:4	ready 89:25 really 25:5
10:25 11:1	places 97:22	66:19 75:10 76:1	potentially 39:6	42:15	82:25 85:4 85:6 87:7	100:12 101:3,12	26:24 31:2 58:18 64:4
11:1	plaintiff 2:3 7:11	80:22 85:14	power 59:3 109:15	private 16:4 8:24 14:11	87:7 87:7 100:12	102:10 106:6	70:9,12 72:2 83:1
Phone 2:9,22	8:12	86:24 101:16	power 59:3 109:15	15:11 17:1 17:8 25:17	102:10 106:6	profiled 45:17	85:23 91:12 98:4
3:9,21	plaintiffs 8:12	102:5 102:5	power 59:3 109:15	25:18 29:22,23	profiling 47:7 50:19	profiles 45:17	
4:10,20	plaintiffs' 102:18	Plaquemines 37:7 46:25	power 59:3 109:15	47:7 50:19 51:9 65:24	problems 73:23		
phonetically 115:19	plaintiffs' 102:18	37:7 46:25 37:7 46:25	power 59:3 109:15	51:9 65:24 73:23			
phosphate 13:21,22	plan 55:11 55:13,17	plastic 67:3	power 59:3 109:15	109:21,22			
photo 77:10	67:18 111:18	play 98:14	power 59:3 109:15				
77:11 78:5	planned 56:7	players 9:10	power 59:3 109:15				
79:1	planning 56:20		power 59:3 109:15				
photograph 66:9 78:5	plant 10:10		power 59:3 109:15				
78:9 79:14			power 59:3 109:15				
79:20			power 59:3 109:15				

108:14	26:10	reporter	50:9 61:25	102:1,5	62:11,19	66:1,3,12	73:9,22,23
109:20	36:24	1:23 6:21	63:20	103:21	62:25 63:1	67:13	74:2 78:17
Realty 47:10	39:14 40:4	8:2,4,8	87:25	105:11	63:24,25	68:13,15	78:19
reason 71:6	61:9 64:17	115:3	97:11	107:22	64:3 66:7	68:21	80:12
95:2 96:6	66:13 70:9	116:7	110:12	109:20	66:19,19	69:19,22	rows 72:10
reasonable	116:17	reporter's	reviews	110:9	67:8 68:1	71:5,7,10	72:11,13
69:21	relates 23:21	115:1,13	17:18	111:13,14	68:4,7,9	72:3 74:5	72:16,17
recall 61:21	relationship	116:1	rice 45:23	111:23	68:15 70:2	74:13,15	73:2,19
67:10 68:6	18:11 22:7	reporting	46:2,2	right-hand	70:3,22,23	74:20 75:6	74:22
RECAP 24:9	reliance 5:17	116:13	48:19	80:15	71:15	75:17 76:8	75:20
recess 20:15	26:24	reports	Richard	95:21	74:12,17	78:22	78:10
60:8 110:4	27:21	17:20 51:7	2:24 7:21	risk 23:14	80:13,13	79:22 80:2	RPR 1:22
reconnected	28:10	represent	richard.m...	Ritchie 46:8	80:23 82:8	80:19 81:4	113:25
60:2	relying	8:12 9:17	2:25	River 14:2,3	82:25	81:10,12	115:25
record 8:14	108:19	62:12	Richland	14:3,4,4,4	84:12,20	81:21	116:25
20:10,13	remediate	representa...	42:4 49:3	14:4 34:16	84:20	82:15	Rule 115:4
20:17 60:6	24:19	13:2 63:11	rid 12:18	39:22,23	85:19 86:1	84:19 85:3	rules 8:23
60:10	remediation	represented	right 8:5,20	44:21,23	86:15,23	85:8,13	115:5
66:12,21	24:11,12	62:23	9:24 10:12	44:25 45:6	86:25 87:2	86:3,17,19	run 16:12
84:10	24:16	REPRES...	15:24 28:8	45:15	90:20 91:4	87:3,4,5,5	32:7,7,25
109:25	45:20 55:1	2:3,16	28:9,13	47:20 52:8	91:14,25	87:9 91:16	48:18
110:2,6	55:11,17	3:15 4:3	29:1 32:1	52:9	92:10,11	91:17 92:4	69:22 70:2
112:11	56:5,15,19	4:14	32:10 33:7	rivers 13:25	94:10,11	93:6,8,16	70:2 71:5
115:8	63:12,21	represents	33:8,10,19	road 32:8	96:2 97:23	93:23 94:1	71:7 73:2
recording	remember	62:12	36:9 38:2	111:9	102:15	94:3,17,19	rundown
20:6	9:18 31:16	research	38:25	roads 111:18	103:25	95:7 96:1	14:23
Red 14:4	32:25	11:2 12:12	40:15 46:9	root 5:12,15	104:13	96:4 97:7	running 20:7
39:22,23	33:23,25	67:25	47:19 49:4	5:19 17:18	105:25	97:11,15	Russell
44:23,25	44:9 49:5	68:20 70:5	49:24	25:14 31:8	106:4,13	98:16,25	45:22
45:6,15	103:23	91:1	50:18,25	31:20 34:3	106:18	100:9,13	
52:8,9	108:23	Reserve	51:14	34:14 35:5	107:10	101:2,8,13	S
redacted	rendering	32:15	58:15 60:4	35:9,14	108:20	101:23	S 3:23 5:7
29:11,19	102:2	reserved	63:5 64:4	36:10,23	rooting	102:3,11	6:1 62:12
redaction	repeat 19:25	6:15	69:9 72:9	37:15,21	31:10	104:9,11	S1 62:13
29:16 30:1	repeated	reserves	73:10,25	38:6,15,22	33:13	105:10,16	S2 62:14
Reese 34:6	94:10	94:5	74:12,25	40:7,11	37:20 48:2	105:17	S3 62:14
refer 67:15	rephrase	resources	75:3 76:4	41:16 42:2	51:4,5	107:12,17	S4 62:14
reference	21:17	1:11 4:4	76:4,5	42:6,11,18	52:18	107:24	77:11 78:6
115:18	report 5:11	7:17 11:7	78:10,11	43:7,18	64:11	roots' 93:13	safe 111:6
referenced	5:14 25:2	responsible	78:18,21	44:4,4,11	80:21	93:19	sake 61:15
68:2	34:1 38:4	93:19	79:12,14	44:19 46:6	107:21	roots,' 94:2	salt 35:15
references	46:7,13	responsive...	82:7 83:1	46:11,20	rootlet 66:3	rope 91:16	salting 23:22
27:22	47:17	6:14	84:13,15	46:21	rootlets	94:2,18,19	26:10
refers 67:23	58:14	restoration	88:15	47:24	65:11	rotted 63:17	39:16 63:9
regime 106:8	60:18	46:14	89:14,18	48:23	roots 26:3,7	Rouge 2:21	64:18
regimes	61:11	67:18	90:19 92:1	49:10,14	36:16	35:11	saltwater
25:14	67:18,23	restricted	92:11,13	50:8,24	43:23	46:15	42:4
107:9	68:2 71:1	96:3	93:15,15	51:13 52:6	52:13,23	111:7	sample
region 13:21	76:23 77:9	résumé 25:2	93:21 94:6	52:10,10	53:10,11	routinely	70:12 72:1
relate 24:16	95:10	retained	94:13,20	52:17,22	53:16,21	96:4,5	samples
related	102:22	16:22	95:15	53:2,8,15	54:12 63:9	routings	56:22
12:25 16:7	reported	Reunion	96:15	54:2,13,17	63:16 65:8	11:16	sampling
16:15 24:4	1:21 68:8	68:5	100:6,24	58:2,2	65:10,10	row 65:7	96:2
24:6,17	116:13	review 47:11	101:14	60:20 61:9	65:15,17	72:18 73:8	San 12:15

42:2,6	58:3,3	40:3 41:16	112:1,5	39:5	18:23 19:5	three 51:14	town 36:20
43:18 44:5	61:18,21	survey 31:11	table 108:9	technology	21:24 22:5	55:9 91:15	38:2,25
46:11,21	62:3,12,18	surveys 64:6	tables 92:17	9:4	22:14 23:2	93:7	Toxicologist
47:4,24	63:24 64:5	swallow 48:4	tail 48:9	tedious 81:8	23:23	throw 19:9	23:16
48:24	64:5,12,15	SWANSON	tailor 63:12	tell 9:8 30:9	24:18 26:4	tiller 94:11	toxicology
49:10,14	65:7 67:13	2:6	tailored	31:3,5	27:20	Tillman	23:17
50:8,24	68:1,3,7	swear 8:3	68:19	55:6 61:11	31:16,17	34:13,21	trackhoe
51:13	68:17	sworn 8:7	tailoring	61:12 78:8	34:20	tilt 83:17	81:14,24
52:17	70:24 72:9	115:7	97:6	78:8 79:10	41:10 46:5	timber 36:22	transcribed
60:20 61:9	73:6,20,20	116:10	take 10:3	90:4 97:14	55:10 56:2	36:24	116:14
62:11,25	74:8 75:10	Symposium	25:2 30:23	109:15	56:21,22	41:16,23	transcript
63:25 66:7	77:11 78:6	67:25	51:8 52:12	terminology	62:6 65:2	42:16	115:16
67:23	80:22	symptoms	57:5 59:1	73:13	82:3	time 6:15 7:5	116:4,16
74:10 85:1	81:22 82:2	64:24	59:19,21	terms 11:9	105:18	9:1 11:5	transcripti...
85:7 86:10	85:8 86:24	system 5:20	59:25	Terrebonne	108:4	14:9 15:23	114:6
86:17,19	87:1,10	11:12	65:16 67:4	41:21	think 8:23	20:14 28:3	115:14
87:19 89:1	90:20	41:15 67:8	67:6 73:1	terrible	17:7 20:3	28:3 37:11	transmission
90:22 95:4	91:14,25	68:4 80:23	73:21	21:16	21:8,8	45:21 47:3	14:21
102:15	92:11 93:8	82:9 84:12	81:13,20	testified	27:2 33:4	48:5 61:13	travel
106:20	94:12,17	85:19	101:18	105:8	33:24	67:14	110:16
stuff 12:8	95:25 96:4	90:20	taken 1:16	testify 8:8	36:19	74:20	tree 50:11
16:7 24:20	96:18,23	91:14	6:6 20:15	25:7,20	40:15	82:20 88:8	62:24
25:3 51:6	97:5,13,13	94:12	29:23 60:8	116:11	42:14 44:6	timeframe	63:25 64:3
56:3 81:5	97:15	103:25	110:4	testifying	47:13,14	62:20	trees 19:20
82:15 86:5	98:14,24	105:25	113:21	21:19 29:5	48:17 49:5	times 18:15	32:24
90:9	101:15	106:5,13	114:25	testimony	49:13,21	55:9 61:12	34:11
stupid 83:13	102:11	108:20	115:7	16:3 17:15	50:3 55:24	tiny 66:3	36:14,14
sub-soil	103:6,10	systems	talk 9:2,3	17:16 24:5	56:10	today 9:9	38:14
93:11	104:18	11:22,25	55:25	63:23	57:10 59:5	22:9	62:22
subject 31:7	108:13,20	12:4 22:5	63:23	talking 22:9	59:9 60:13	110:19	tremendous
submitted	suit 32:18		talks 22:9	116:12	61:11	112:9	24:5
28:10	Suite 2:7,20		22:14 26:7	Texas 3:8	67:12,21	told 21:15	trial 24:22
55:19,21	3:7 4:8,18	T	29:18	11:14	69:25	59:17,18	24:23
succeeded	superficial	Tab 26:22	56:15 70:7	14:18	77:13	69:15	trials 25:1
42:1	91:16	58:8 87:13	102:15	Thank 83:25	88:24,24	74:23	tried 81:5
succession	93:19	Taber 3:11	talkovers	84:4,6	89:10	78:18	trough 72:12
34:10	100:9	7:12,13	115:12	88:20	90:23	109:4	Troutman
36:13,13	supervision	25:23 30:3	tallow 36:14	112:6	101:1	Tomlinson	3:23 7:18
37:11	116:15	30:11 54:4	tankers	Thanks	102:22	47:10	7:19 83:9
47:15	support	70:16	11:15	112:4	109:5,8,19	top 32:7	trowel
sugar 5:19	63:22	75:11	tap 54:11	thereof 6:16	109:21	54:19	101:18
25:22 26:1	sure 30:12	80:25 83:5	tape 65:16	thickened	110:14	72:24 73:3	true 28:23
26:2,5,6	46:7 66:10	84:16	tax 29:23	93:10	thinner	78:4,22	114:7
26:10	67:7 69:18	85:20	Te 39:19	thing 56:24	93:17	79:13,19	116:15
37:22,23	71:21	87:17,22	tear 81:25	76:6 79:17	third 91:7	80:14,17	trusting
43:2,3	72:20 73:7	88:12,18	Tech 10:13	85:10	94:1	tops 75:20	102:2
44:18	74:11,16	89:11	10:14	86:21	Thorburn	86:4	try 17:13
45:12,16	75:5 76:7	94:21 96:8	Teche 44:13	87:23 92:5	90:21	Tortue 48:9	63:19
45:17,17	76:11 80:1	98:17	44:22	98:1 107:3	thought	total 28:16	68:14 86:1
47:25 48:2	81:21 87:2	102:7	technical	things 11:17	115:12	74:17	96:16
51:13,19	surface	105:12	13:2,11	12:20 13:9	thousand	totaled	trying 15:24
52:13,22	68:11 75:2	109:16	technique	13:17,18	32:20	28:15	15:25 25:6
53:3,10	93:20 99:3	111:1,12	85:1	14:12,15	thousands	totally 86:7	36:19 41:7
54:1,8	surrounding	111:14	techniques	14:21,24	97:19	111:11	63:12

74:11,11	96:3 97:16	usually	48:8	98:22	18:19	wetlands 1:6	wood 35:12
86:9	103:12	53:19	version 89:1	_____	waterlines	2:4 13:10	wooded
Tucker 34:3	_____	66:18	versus 1:9	W	13:25	13:11 19:1	16:15
Tureau	U	72:25	45:22	wait 19:17	waterways	40:8 41:19	41:23
38:17	U 6:1	73:24	49:12,17	52:25,25	12:10	44:14	woodlands
turn 26:21	U.S 11:5	104:13	vertical 94:3	110:15,15	way 12:15	51:24	42:8 46:12
turned	13:3	109:13	video 7:4,6	111:24	27:9 33:4	67:19	woody 42:11
101:23	U.S.A 3:3	_____	9:21 20:5	waived 6:10	44:24 50:7	103:7	49:9
turtle 48:10	Uh-huh	V	20:7 59:5	6:12	57:7 61:15	106:23	woody-type
two 21:24	91:18,20	v 33:22	59:10	walk 10:24	68:20 72:2	108:18	35:5
39:1 41:3	93:3	38:10	VIDEOC...	28:4 61:2	74:8 75:8	wheat 34:20	words 80:14
41:13	Uh-oh	valid 116:3	1:15	walking 62:1	76:15	WHITE	115:15,17
47:18	109:17	variables	Videograp...	want 28:2,4	78:14	1:21 6:21	work 10:24
51:13,16	underfit	92:18	4:25 7:1	30:20,23	80:21	113:22	12:12,16
51:24 55:9	45:1,2,8	variation	8:1 9:20	57:5,6	82:21,22	115:2,22	13:7,10,15
70:10,13	underneath	106:17	20:2,12,16	58:19	82:24	116:6,22	14:21 16:5
73:2 76:10	74:6 100:2	107:4,6	27:10	60:15 63:9	83:13,14	whoa 53:2,2	16:9,10
78:12	100:5	variations	29:12	67:15	84:25 85:7	53:2 86:13	17:12,14
104:7,15	102:5	92:15	30:24 37:3	74:16 75:5	101:6,11	86:13	17:17,21
107:15	understand	various 12:2	40:19	75:25	101:23	109:15	17:23
two-year	70:6,20	12:6 13:17	42:21	80:10,10	108:7	wide 72:15	18:10,13
107:2	72:7 73:8	20:25	58:11,20	81:18	Wayne	widely 96:1	18:16,25
two-year-o...	understan...	21:24 23:2	60:5,9	82:16 83:8	67:21	widths 72:22	19:20,21
103:23	25:6 75:25	23:23 25:1	64:7 76:19	84:9 88:2	ways 35:17	William 4:25	21:20 22:7
TX 1:22	84:10	25:1,13	77:17,24	90:4,10,10	36:5 41:6	Willis 42:25	22:23 23:8
113:23	91:24	36:5 42:10	79:7 83:15	91:12	week 9:14	witness 6:5	23:17,20
115:23	108:24	46:4 48:13	84:3 87:15	97:10 98:5	week's 29:1	8:3 9:23	24:3 28:21
116:23	110:10,22	48:15,16	88:14,21	105:5,23	weekend	16:3 17:15	28:25
type 25:15	116:17	vary 69:7	89:9,13,17	109:13	111:21	25:25	32:21
31:5,6	understood	vast 50:21	90:16 91:9	wanted	weighing	27:12 37:5	34:17 38:3
34:9 66:7	108:23	54:16	92:25	68:13	84:21	40:17,21	41:13,24
86:10	unfamiliar	vegetation	95:18	71:21 82:7	went 10:9	42:23 54:6	50:16 51:2
92:14,16	73:15	5:11,14	99:17,21	83:4 86:15	11:5 12:9	57:8,13	51:4,19
98:2,12	United 13:6	18:22	110:1,5	102:17	13:14,19	59:6,11	55:3 56:5
106:7,15	19:2,4	21:23	112:7	wanting	61:20	60:3 70:18	81:6,8
106:16	universe	23:10	videotaped	34:8 77:14	62:21	75:13	82:13,14
types 25:13	95:12	24:17	1:15 7:2	85:2 86:22	66:22	76:24 77:7	83:2 97:6
31:19	unscientific	32:19,22	Vienna	wants 88:11	69:17 70:8	77:21 78:1	worked 11:4
34:11 39:2	63:19	34:2,23	67:25	wash 59:20	71:3 80:1	81:2 83:7	11:11 12:1
41:3,17	83:13 86:7	35:9,11,18	view 65:8	86:18	104:4	83:11 84:5	12:10 13:1
43:22	upland-type	35:19	78:22	Washington	weren't	84:18	14:1,10,15
44:24 47:8	33:18	36:25	92:19	12:16,23	14:13	85:22 89:4	14:16,16
54:3 62:17	uplands 22:4	37:20	100:11	wasn't 83:1	107:12	93:2 94:23	15:1,19
62:24	upside 74:15	38:21	110:11	water 10:7	west 33:20	96:10	16:2,6,19
63:13	uptake 65:12	41:25	viewing 85:8	12:24	35:10	98:19 99:6	17:1 18:10
68:24	93:19	48:25 49:7	visit 57:16	34:19	46:24	102:9	18:18,24
91:15 93:7	USDA 32:15	50:3 58:1	61:18	41:11 48:4	western	105:14	25:4 30:17
107:7	use 17:19	64:15	visited 61:18	48:21	11:14,14	109:18	34:5 35:16
typical 63:21	20:4 41:8	68:16	62:4	65:12	wet 42:9	110:24	37:8 41:4
66:6 73:6	70:13	Velma 48:7	visits 60:24	92:17	108:13	111:3	41:15
78:13	72:22	verified	61:3,4,5	93:20 94:5	wet-type	113:20	45:18,24
97:12 98:6	104:8	115:17	vogue 14:12	103:15	38:13	114:1	50:1 55:11
typically	110:12	Vermilion	volcanic	108:9	wetland 19:1	Witness'	working
66:6 74:8	uses 12:18	34:6 45:23	95:5,6	waterline	19:3 32:15	114:14	9:12 11:7

15:22 17:5	<u>Z</u>	71:9,23	2018 28:6	4- 68:18	713.276.73...
41:5 55:18	zero 53:24	73:24	61:17	40 50:15	3:9
works 11:7	Zoe 42:3	97:17 99:3	2019 28:6	51:10,11	71340 8:18
12:2	zone 25:15	12-inch	61:24	52:15	75 15:12
wouldn't	31:9 40:7	53:16	2020 28:6,6	400 2:20	17:8
24:4 86:5	40:11 42:2	12:56 110:3	28:7,20	4100 3:7	76 13:13
wrapped	42:18 44:4	124 8:17	29:8	42 33:6,11	21:8
35:25	44:4 46:6	130527 1:6	2021 1:18		77 5:14
write 38:4	46:11	1421 6:7	7:5 113:21	<u>5</u>	13:13,13
51:7	48:24	1434(B)	114:25	5 30:16,18	77002 3:8
wrong 67:16	49:14	115:5	22 27:25	30:18	
wrote 34:1,1	50:24	15 5:11	225.388.91...	53:20	<u>8</u>
WRP 32:14	51:13 52:6	53:13,15	2:22	62:20	8 5:5 53:11
34:22	52:17	54:15 58:8	225.389.37...	69:18	54:15
46:16	53:15 54:2	58:9,10	2:22	500 15:4,6	8- 53:16
	54:13 63:1	60:17 77:4	24 52:19,24	504.523.25...	80s 14:8
<u>X</u>	63:24 66:7	97:18	53:4,20	2:9	822 3:19
X 5:1,1,7	68:7,9,9	150 15:12	66:23,24	504.523.25...	839452
	zones 42:12	1514 113:24	67:7 69:2	2:9	113:25
<u>Y</u>	44:11	115:24	69:6,13,16	504.585.30...	115:25
Yazoo 14:4	54:18	116:24	71:20	4:20	116:25
yeah 9:25	106:18	16 5:14 53:7	26 17:9 29:8	504.585.38...	87 5:18
19:24 27:7	107:11	76:18 77:5	2655 2:7	4:10	
30:8 36:8	Zoom 1:16	77:6	27 5:17	504.585.38...	<u>9</u>
39:23	7:4 99:20	16TH 1:1	28 17:9	4:10	9 67:22
40:22,25		17 113:21	30:17	504.620.31...	90 1:7 18:2
40:25 47:2	<u>0</u>	114:25	115:4	4:20	43:24
49:19,19	0 66:22	171 91:8	29-B 23:19	53,000 28:12	51:23
55:24 79:3		172 95:17	23:21 24:1	55 53:21	54:22
82:10 83:8	<u>1</u>	17th 1:17 7:5	24:3,4,6,6	66:25	104:17
88:8,9,20	1 62:20	18 5:17		58 5:11	105:8
88:20	1-1/2 93:12	26:22	<u>3</u>	5th 62:9	909 4:18
93:22,25	1.5 96:3	27:17,18	3 15:4,5		9269 8:17
94:8,14	1:04 110:7	53:7 54:16	65:24,24	<u>6</u>	96002
95:24	1:06 112:11	68:9	65:24	6 13:12	113:22
101:19	10 54:19	1935 92:24	72:23 73:9	53:21 68:8	115:22
109:13	60:7 68:10	1975 12:21	30 25:17	94:4,19	116:22
year 10:14	71:9,23	41:4	50:22	97:17	
10:18 62:9	10-foot	1976 13:12	54:12	60 53:21	
103:14	68:18	1st 61:24	61:17	66:25 67:7	
104:2,9,14	10:08 1:18	62:8	3100 4:8	69:7,7	
104:19,20	7:6		337.267.23...	71:4,24	
104:25	10:29 20:14	<u>2</u>	3:21	601 2:7	
105:17,22	10:42 20:18	2 91:13	337.267.23...	66 10:16	
108:14,21	10720	94:13 96:3	3:21	69 10:20	
years 12:11	113:23	98:25	35 50:23		
14:11 15:1	115:23	99:15	51:10,11	<u>7</u>	
30:18,18	116:23	20 5:18	52:15	7 58:19	
33:11	11:42 60:7	14:11	3600 4:18	700 2:20	
104:16	11:54 60:11	50:16	37:2554	70112 4:19	
you-all 20:1	1100 3:7 4:8	87:13,13	116:10	70163 4:9	
30:1 57:10	116 116:12	87:14		70802 2:21	
young 93:9	12 53:12	89:14	<u>4</u>	70s 21:7	
105:3		2005 91:1	4 28:2 68:10	71 10:22,25	

