EXHIBIT I

IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF OHIO
EASTERN DIVISION

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CERAMFAB, INC., CERAMSOURCE, INC., YONGGONG, LLC, and WYG REFRACTORIES, LLC,

Plaintiffs,

vs. Case No. 4:23-cv-02206-BYP

NORFOLK SOUTHERN CORPORATION and NORFOLK SOUTHERN RAILWAY COMPANY,

Defendants.

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Deposition of
STEPHEN E. PETTY, P.E., C.I.H., C.S.P.
June 23, 2026
9:12 a.m.
Taken at:
Embassy Suites
5100 Upper Metro Place
Dublin, OH

Rebecca Williams, RPR

Job No. CS8284158

APPEARANCES:

On behalf of the Plaintiffs:
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ALSO PRESENT:
Robert Miller, Videographer

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THE VIDEOGRAPHER: We're on the record. Today is June 23rd, 2026. This is the video recorded deposition of Stephen Petty, taken in the case of Ceramfab, Incorporated, et al. versus Norfolk Southern Corporation, et al.

This case is pending in the United States District Court for The Northern District of Ohio, Case No. is 4:23-CV-2206.

Today we're located at 5100 Upper Metro Place in Dublin, Ohio. I'm Robert Miller, the videographer, and our court reporter today is Rebecca Williams.

At this time, would counsel identify themselves.

MR. RHEINHEIMER: Chris Rheinheimer for the Defendants.

MS. BELLINA: Samantha Bellina for the Defendants.

MR. CONLIN: Jon Conlin for Plaintiffs.

MR. CORY: Jamie Cory for Plaintiffs.

THE VIDEOGRAPHER: You may swear the witness.

STEPHEN E. PETTY, P.E., C.I.H., C.S.P.,

of lawful age, called for examination, as provided by the Ohio Rules of Civil Procedure, being by me first duly sworn, as hereinafter certified, deposed and said as follows:

EXAMINATION OF

STEPHEN E. PETTY, P.E., C.I.H., C.S.P.

BY MR. RHEINHEIMER:

Q. Good morning, Mr. Petty. My name is Chris Rheinheimer. I'm an attorney from the law firm Mayer Brown, and I represent Norfolk Southern Corporation and Norfolk Southern Railway Company in this case.

Is it okay with you if we refer to Norfolk Southern collectively as Norfolk Southern or NS?

A. Sure.

Q. Can you state and spell your name for the record?

A. Sure. First name is Stephen, S-T-E-P-H-E-N, last name is Petty, P-E-T-T-Y.

Q. What is your business address?

A. 1701 East Atlantic Boulevard, Suite 5, Pompano Beach, Florida 33060.

Q. And is there any reason you can't provide full and accurate testimony today?

A. I don't believe so, no.

Q. Do you understand that the oath that you just gave is the same as if you were testifying in court?

A. I do.

Q. And have you ever been deposed as an expert witness before?

A. Yes.

Q. Have you ever been deposed not in an expert witness capacity, so as a fact witness?

A. I don't know the answer to that. Perhaps. I've been in -- what are they -- negotiated settlements or -- where I've been asked to testify in front of a judge. I don't know if that's what you're asking or not.

Q. I meant more as in deposition where you're not serving as an expert. You're not providing expert opinions. You were a percipient witness of a car crash or whatever?

A. No, I don't believe so.

Q. How many times have you been deposed as an expert witness?

A. I'm not certain, but it's in -- it would be listed in my Appendix C, I think in my

report. I would say somewhere between 120 and 130 times, perhaps.

Q. And is Appendix C the -- all the way up to date, or is there anything you would need to add from the last month or two?

A. I think -- because Appendix C is only disclosed cases, I think it's current.

Q. Okay. And have you testified as an expert witness at trial?

A. Yes.

Q. About how many times?

A. Between 20 and 25 times, I believe. They're listed again in Appendix C, so whatever they are, they are.

Q. And is Appendix C up to date in terms of trial testimony?

A. Yes.

Q. Okay. Stepping back to the depositions, what percentage of your expert testimony at depositions has been on behalf of the Defendants versus the Plaintiffs?

A. Well, since about -- I would say the vast majority is for Plaintiffs. It didn't start that way because I was an expert for the insurance industry. We did -- my corporation

did 10,000 projects on disputed claims, so I was always on the Defense until about 2005 or so, and then Plaintiffs' experts -- or Plaintiffs' firms discovered me in some Legionella cases, and I started doing Plaintiff's work.

When I -- I was trying to retire in 2015, with the exception of a handful of just really complex insurance claims involving litigation, I pretty much worked for Plaintiff's firms.

Q. And how would you describe your area of expertise with respect to the testimony that you give as an expert?

MR. CONLIN: Objection to form.

A. Well, if I had to summarize it in a sentence, which would be hard to do, but I would say that I'm typically an exposure warnings and standard of care expert, with some occasional work as a general causation expert.

Q. And what does general causation mean to you?

MR. CONLIN: Objection to form.

A. General causation -- there's two kinds of causation experts, at least from my

perspective. Specific causation with respect to -- now I'm talking about with respect to personal injury, as opposed to environmental, but in terms of personal injury, I would say that specific causation requires a medical degree, which I don't have, so I'm precluded from being a specific causation expert.

General causation is, for example, would be for me to be able to opine that benzene causes leukemia in general, but I couldn't say that benzene caused this individual's leukemia.

So that's the distinction, is that I can opine on the causation related to a specific contaminant or biologic and the diseases or disease it caused, but not opine with respect to an individual.

Q. And with respect to your testimony at trial, you said you've done it about 20, 25 times. What percentage of those 20 to 25 times testifying at trial has been on behalf of Plaintiffs versus Defendants?

A. I'm not certain, but I think almost all of them, if not all of them, are probably -- the trial testimony is probably the

Plaintiffs.

Q. And out of any of the cases where you've testified at deposition or trial, if you had to pick one that was most similar to this case, what would it be?

MR. CONLIN: Objection to form.

A. Well, I would have to think about that. In terms of my role in this case, this is more like what I did for years, in terms of environmental work, as opposed to testifying in trial. This is really, in my view, an environmental case, at least at this point. It's not a personal injury case.

So I would have to go back and -- I'm not sure -- there's elements of it that look a lot like the C8 trials, but those were personal injury cases, as opposed to environmental cases, although they did involve environmental contamination, but it's really --

It reminds me a lot of my days in the '90s of -- there's a group called BUSTR, Bureau Of Underground Storage Tank Regulators, in Ohio, and they regulate USTs. And I was selected in the '90s to basically update their methodologies to risk-based methodologies based

on ASTM 1739.

And then I was selected to train the regulators and then help write the manual and then write the code, online codes.

So it was all related to how do we streamline environmental contamination of USD sites with respect to risk assessment.

And a lot of what I had to do here had to do with knowing BUSTR and knowing contamination and how it flows, and knowing the mechanisms by which contaminants can reach the surface or individuals.

So a lot of it has to do with my background with BUSTR, I think, more than outside of litigation, really.

Q. And what was BUSTR again? It was an acronym?

A. Yeah; it's a strange acronym, I know. In all the states, the Ohio -- federal Ohio delegated USTs to the states, and in most states, it went to the State EPA, but in Ohio, it didn't. It got -- it got delegated to the Department of Commerce, which created an entity called Bureau of Underground Storage Tank Regulators, BUSTR.

And I was -- in the period where there was a huge amount of UST replacement from the late '90s to the early 2000s, people had to remove or update all of their tanks, and there was a lot of releases and a lot of environmental work.

And as a consequence of that, there was -- it was where risk assessment really began to take hold in these entities.

And before that, you sort of had these weird lookup tables as to what the level of contamination was. It wasn't really as science based, I'll say, and with the advent of ASTM 1739, which is the risk assessment standard, I think it's E 1739, there was a movement amongst the states to have a more rigorous process by which to rule in or rule out whether a site was contaminated or not.

And I was involved in implementing that and in training the regulators on risk assessment. I gave six full-day seminars to the regulators, including one on how you can cheat on risk assessment.

In other words, what parameters are most effective in terms of either increasing or

decreasing risk.
Q. And was your work with -- relating to BUSTR addressing a specific contaminant or set of contaminants?
A. No, not specifically, but mostly they were BTEX on the volatile side and then PAHs. The one that drives risk assessment is benzo(a)pyrene.
THE REPORTER: I'm sorry; say that again.
A. Benzo(a)pyrene. Really benzene and benzo(a)pyrene in risk assessment almost always drive the risks.
Q. And you said BTEX on the volatile side. What is BTEX?
A. Benzene, Toluene, Ethyl benzene, and Xylenes.
Q. And why are those chemicals or compounds grouped together?
A. Why? I guess, traditionally, they're found in gasoline, because we were looking at gasoline or diesel USTs, underground storage tanks.
At the same time, I was actually implementing -- I was actually doing design

work and -- like the Ohio State University airport, I designed and installed all their underground storage tanks, so I was actually -- actually working on other alternatives to USTs.
But all the UST work I did for BUSTR was done basically gratis. I did all that for free.
Q. And you distinguished that work from BUSTR from the work that you did in the depositions and trials. I believe you said the depositions and trials related to personal injury; is that right?
MR. CONLIN: Objection to form.
A. In general. The -- you were asking which ones -- which trials were most related to this case, and I'm trying to think how do I distinguish between trials where I was involved in personal injury situations versus pure environmental.
And almost all the trials that I've ultimately been involved in have been personal injury, but you can't escape the fact that in most of those trials, it was related to the release of contaminants to the environment.
Q. Is that same answer -- would you

give the same answer for depositions, or have the depositions been different than your trial testimony?
MR. CONLIN: Objection to form.
A. I would -- it would -- I would have to look at all the depositions to give you -- I mean, unfortunately, I've been in over a hundred, probably 120 depositions, and I would be hard pressed to give you an exact answer to that question.
Q. Is there a deposition or trial testimony that you can think of, sitting here today, that would qualify as -- how you characterize it -- pure environmental and not personal injury?
MR. CONLIN: Objection to form.
A. Well, I think you just asked that question. It's just a different way you're asking it again, and the answer would be the same.
Q. The same being that, sitting here today, you can't think of one specifically, but you've had a lot of depositions?
MR. CONLIN: Objection to form.
A. Well, no. I mean, if you want me

to sit here and go through Appendix C and go through them all, I can try to answer that question, but I just think my answer is I think most of them have been related to -- I'm just trying to think back -- personal injury, but they've all -- almost all involved some form of environmental contamination.
I'm just trying to think back on -- I think the -- I'm just trying to think back on all the depositions and see if there were any based purely on environmental. I just don't know without going through the whole list.
Q. Have you ever -- and now I'm stepping out of just testimony and just saying at large, have you ever worked on a CERCLA removal action?
A. I don't know about CERCLA, but Terminal C at the airport here at Port Columbus, I was responsible for all of the environmental strategy and risk and remediation. I don't think it was CERCLA, but it was a massive project.
I'm trying to think if I've actually done CERCLA. I'm not sure that I have.

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I know that I was involved in the formation of the National Priorities List, so that dates me, 1979.

Q. You mentioned Terminal C at the airport. That's the Columbus airport?

A. Delta, Delta terminal.

Q. And about when was that project?

A. I want to say probably right around 2000.

Q. And is there -- oh, I'm sorry.

A. Fascinating stories about that project.

Q. It involved building a new terminal; is that right?

A. Yeah, they were building a new terminal over a highly-contaminated area. It was an old -- it was actually an old gas and service station. The contamination was so bad that when we put sheet piling in and tried to weld it, it caught the ground wire on fire.

Q. Do you remember what the contaminants of concern were for the Terminal C project?

A. Primarily gasoline.

Q. Anything other than gasoline,

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recognizing this is 26 years ago, but anything that you recall sitting here today?

A. Well, the ones that drove the risk were gas -- well, benzene, so that would have been gas, as opposed to diesel, not that there's some trace of amounts of benzene in diesel, but there's many, many times higher levels of benzene in gas than in diesel.

MR. CONLIN: Chris, the realtime link just came in.

MR. RHEINHEIMER: Why don't we take a couple minutes off the record.

THE VIDEOGRAPHER: We're off the record.

(Recess is taken.)

THE VIDEOGRAPHER: We're on the record.

Q. Okay. Have you ever been retained by EPA or a state environmental agency to perform sampling following chemical release?

MR. CONLIN: Objection to form.

A. Not directly. It would be indirectly.

Q. What do you mean by indirectly?

A. I would be working for a company

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that was responsible for sampling releases, so I would be the consultant that would be doing sampling.

Q. And in what time period were you a consultant who did that type of sampling?

A. Probably in the '90s and early 2000s, primarily. I did a lot of sampling in borings back then. That was the UST era.

Q. And you said that was the UST era. Was that work primarily relating to USTs?

A. Primarily, yes.

Q. But not exclusively?

A. I would have to think back on that. Probably not exclusively, but primarily.

Q. And have you ever worked on a matter that relates to a train derailment before?

A. A train derailment? I don't believe so. I worked on a lot of railroad cases, but not a train derailment.

Q. When you say railroad cases, what in general is the nature of the railroad cases you've worked on?

A. Well, my initial work on the railroads was outside of litigation. I was

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funding millions of dollars worth of work on converting railroad locomotives to natural gas in the '90s.

Primarily the work was done at Southwest Research Institute on behalf of many utilities, Southern Cal Gas, Columbia, Union Gas. Consolidated Gas were the big players, and we were -- I was coordinating most of that.

And like I would ride up LNG locomotives up in Minnesota --

THE REPORTER: I would ride on what?

A. LNG locomotives up in Minnesota. So I had a lot of background on emissions from locomotives because we were comparing our work to work from diesel locomotives and trying to convince the railroads that that was the way to go.

And, in fact, AAR, I think, has summaries of a lot of the work we did back then. And then after that --

Q. Wait. Before you move on, what time period was the natural gas locomotives work?

A. '90s, 1990s.

Q. Thank you.
A. And then since then, I've been involved in -- I would have to look at the list -- maybe a dozen railroad cases. They were all personal injury cases, primarily looking at exposure to diesel exhaust, diesel fuel, benzene and benzene compounds, and then evaluating primarily Norfolk Southern and CSX's databases on monitoring of workers.
Q. Are those personal injury cases all railroad workers related?
A. Yes. Yeah, trackmen, engineers, people like that.
Q. When were you retained to serve as an expert in this matter?
A. It's -- pardon me. I believe it's on the agreement, retention agreement. It's the last appendix in the first report, April 6 report. I think it was in January of this year. I think that's right.
Q. And who retained you?
A. Cory Watson Law Firm.
Q. What is your hourly rate for this engagement?
A. $625 an hour, and then I have a

rate for depositions and trial, which is a running clock, fixed price, if you will.
Q. What do you mean by a running clock, fixed price?
A. What I mean is for deposition and trial testimony, my clock starts when I first show up and ends when I leave, regardless of breaks, and it's -- I believe for this case, it's $3,000 for four hours and $5,000 for eight hours, and then at eight hours, it starts over again.
This is a holdover from a deposition I had in San Francisco years ago, where I started the deposition at 9:00. At 11:00, the attorney said, I've got to go to the courthouse. I sat there til 6:00. He deposed me another hour, and he says, well, you can bill me for three hours. I said that's not going to happen again.
Q. Were you retained by any other companies or individuals or law firms with respect to East Palestine related matters?
A. Sure. Originally, yeah, I was retained as the exposure expert, I guess, by Simmons, Hanly, Conroy.

MR. CONLIN: I'm going to object to the extent that you were a nondisclosed expert by another law firm. I would instruct you not to discuss that.
THE WITNESS: Oh, okay. Yeah, I wasn't disclosed in that case.
MR. CONLIN: Other than what's publicly been -- already been available in court documents.
Q. What you -- you collected data from East Palestine prior to January of 2026, right?
A. Correct. What do you mean by collected?
Q. Well, let me ask: You have data listed in your report under Petty Data, and was that data that you personally collected or that was collected on your behalf?
MR. CONLIN: Objection to form.
A. I don't think -- I wouldn't put the question that way. I certainly collected some data myself, and I was responsible for analyzing data taken by others.
Q. Okay. Of the data that you collected yourself, was that prior to January

of 2026?
A. It was. It was.
Q. Okay. It was in 2023; is that right?
A. Very good, yeah.
Q. And you considered and relied on that data in forming your opinions that are set forth in your report that we're talking about here today, right?
A. In part, yes.
Q. And you say in part because you also considered data collected by others?
A. By three other groups, yes.
Q. Who are those three other groups?
A. The -- I would describe those as -- our data as Dataset 1, Dataset 2, Dataset 3, and Dataset 4.
Dataset 1 was the Plaintiff data collected by people other than Petty. Dataset 2 is data collected by Petty. Dataset 3 was data collected by a group called GEL, G-E-L, and Dataset 4 was collected by a gentleman by the name of Scott Smith.
Q. Okay. And when you say for Dataset 1, Plaintiffs' data collected by people other

than Petty, what Plaintiffs are you referring to?

A. The class Plaintiffs. The -- I'm talking about the Plaintiffs represented -- the individuals represented by the class, by the Plaintiffs.

In other words, there were multiple sets of law firms involved in -- on the Plaintiffs' side, involved in that original case, and they also retained their own sampling experts. I don't know if they're experts, but samplers, and so I had access to all of that data, plus my own data, plus the other two datasets.

Q. And do you know about how much in total you've billed for your work on this case to Cory Watson?

A. I don't, but you could add the numbers up there. I don't do the accounting. I'm not trying to be snotty or anything like that, but my office people -- I fill out the timecard. They do the billing on a monthly basis.

Q. Okay. So prior to the deposition, your counsel provided me with a couple of

invoices, which we will mark so that we have them in the record later, but those invoices are the sum total of your billings to the Cory Watson firm; is that right?

A. So far, yes.

MR. RHEINHEIMER: We're going to mark this as Petty Exhibit 1.

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(Thereupon, Deposition Petty Exhibit 1, Notice, was marked for purposes of identification.)

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Q. So take a second and look through what we've marked as Petty Exhibit 1, which is a notice of the videotaped deposition of Stephen Petty, and my question is going to be -- excuse me -- is this document familiar to you?

A. Yes.

Q. And you recognize that this is the notice by which you are here to testify today?

A. Correct.

Q. And there was a request that the deponent -- we're looking on Page 2, top line -- the deponent is requested to bring with him

any file and reliance materials not previously produced in this case.

Do you see that?

A. I do.

Q. Did you bring any file or reliance materials that you hadn't previously produced?

A. I don't believe so.

Q. And I see you have a couple of binders in front of you. Oh, I'm sorry --

MR. CONLIN: With the exception of the invoices.

MR. RHEINHEIMER: Okay. Fair enough.

A. Counsel is correct, yeah, I did bring invoices, which I hadn't provided earlier.

Q. Okay. And I see you have a couple of binders in front of you?

A. Yes.

Q. Can you tell me what those are?

A. One is the April 6th report that I prepared. I've got a handful of typos that I would like to get on the record at some point, and then similarly, the May 29th rebuttal report that I prepared for this as well. Same

thing, I've got four typos or something.

Q. Are any of those typos substantive in your view?

A. I think one would be.

Q. Can we -- can you identify that one -- well, I haven't marked that for the record. Let's mark -- is it in the opening report or the rebuttal?

A. I would have to look. I would say it would be in the rebuttal report, which is the May 29th report.

Q. Okay. So just because it's going to make me go loopy if we go out of order, I'm going to mark -- we're going to mark your opening report as Petty Exhibit 2.

A. Okay.

Q. And your rebuttal report as Petty Exhibit 3, and then I would like you to tell me where in Petty Exhibit 3 you have a substantive typo correction.

(Discussion held off record.)

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(Thereupon, Deposition Petty Exhibit 2, Report, was marked for purposes of identification.)

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(Thereupon, Deposition Petty Exhibit 3, Rebuttal Report, was marked for purposes of identification.)
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Q. And, Mr. Petty, I'm perfectly happy if you want to use your much more conveniently formatted binders, rather than the rubber banded stack for Exhibit 2 or Exhibit 3. I just -- at a break, we'll flip through those binders and make sure that we agree that it's the same and no changes and whatever, and that -- and you can as well, but I'm happy for you to use whichever one is more convenient for you.

So take a look at the reports. We'll come back to both of these many times, but the initial question is what is the substantive typo edit that you had in Exhibit 3?

A. Are we going to cover all of them at the same time or just the one?

Q. Whatever is substantive. We can come back to the non-substantive ones later.

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A. Okay. There's only one that I can think of, and it's on Page 5 of the -- Exhibit 3. So on the -- there's three columns in these tables, and on the title -- the very bottom row, it's titled Page 1, Section 3.1.1., on the third column with my comments, on the last paragraph, after the word -- or designation 7-24, instead of the word "shows," it should say, "doesn't show."

Q. Okay.

A. I think that's it.

Q. All right. So let's go to your opening report, which we've marked as Exhibit 2. And if we look at Page 6 to 7.

A. I'm there.

Q. And this section sets forth your scope of work; is that right? If we look at Section 2.0?

A. I'm there, on 7 -- Page 7, you're on?

Q. Yeah. I'm on the bottom of Page 6 and the top of Page 7.

A. I'm there.

Q. Section 2.1, Scope of Work. Do you see that?

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A. I am there, yes.

Q. Okay. And the scope of work includes four elements; is that right?

A. Correct.

Q. And how did you determine that these four elements would be your scope of work?

A. I think they were done in collaboration with counsel on what they were asking me to do and with my input. I think that's how it came about.

Q. And when you say with your input, what do you mean by that?

MR. CONLIN: Objection; form.

A. I had strong feelings about wanting to collect all available information with respect to sampling, and as part of my scope of work, I wanted to be able to do a very detailed rigorous QA/QC of all of that data and then do analysis of that data and plots, and -- including Scott Smith's data, and counsel agreed with that scope of work, for example.

Q. And why was it important to you to do an analysis of all available data?

A. I was of the opinion that I never

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got the opportunity to present the data I had and the analysis I had initially that showed, in some areas, massive contamination of soils and subsurface waters.

And I wanted the opportunity to rigorously go through that data and other data, which I did not have, and present that for the world to see what the contamination actually was, and I just felt very strongly that -- that that information needs to be out there for the public to review and agree or disagree with.

And -- but I wanted to go through it in a very rigorous manner, in terms of ensuring we had Level 4 reports, which are the highest QA/QC reports from the labs.

And then also have a third party do what I call curing, which is to look at any and all flaws with the data and interact with the lab to see if they can be resolved or not, as well as clear flags, DNI flags, so that I was left with just JU or no flags, so I could then use the data to do calculations on benzo(a)pyrene equivalent or TEQ and then plot that information.

So I was adamant about having a

thorough vetting of those four datasets before I did any analysis, and counsel was willing to do that.

Q. And were you able to review all of the site data in coming to your opinions?

A. To my knowledge, I was. I was -- well, when you say all the site data, with respect to anybody that took the data, or with respect to the four datasets I'm referring to? I guess I've got to be careful in answering that question.

Q. I was asking with respect to anybody who you knew of who collected data at the site.

A. Well, I don't know all the people on the Norfolk Southern side. In fact, that's one of my big issues, is that we don't even know who those people are in the cases. They didn't list the samplers.

You know, as you know in reading my report, I'm very critical of the data collection process of Arcadis and Norfolk Southern, but when I answer that question, I'm referring to data that Plaintiffs took or -- Plaintiffs took or Scott Smith's data. In

other words, the non-defense related data.

And I just -- I wanted to see if I could get access to all of it and then do very rigorous QA/QCs, and then do analysis of calculations and plots of that data, and then just let it show whatever it shows.

And then beyond that, there was two additional samples taken between the initial report and the final report, one at Ceramfab and one at WYG, to sample the soils for both PAHs and dioxins to see what remains three years later.

I was critical in my report of having, you know, the Defense have the same opportunity and sample the air, which I think was ridiculous because you're not going to find anything in the air three years later, really.

The chemicals of concern that you're most likely going to find are the low-volatile compounds that are in the soils or the surface waters or shallow groundwaters.

So to answer your question, the data that I looked at beyond what we've just described would be the two samples that were taken in between the April report and the

rebuttal report.

Other than that, all the original data that I was aware of and I verified with Scott Smith, he's provided all his data and the others, GEL, et cetera, that were in my Exhibit 81, which is very well organized by -- that's all the raw data files, Dataset 1, 2, 3, 4.

And, initially, I don't think that dataset has changed with respect to the available data. What's happened is that it's been enhanced by -- in some cases, we only had Level 2 reports, because the process of generating Level 4 reports is extremely time consuming and -- as well as doing what I call the curing.

And so between the two reports, what you'll find is, I believe Exhibit 81 has not only the original data, which you folks or anybody else can do the same thing I did, which was create a Level 4 report and create -- and review all the data through a curing lab, independent third party.

So what I did in the rebuttal report, on Exhibit 81, you'll find that -- I think in all -- I believe in every case, we

have a Level 4 report. I could be wrong, but I'm pretty sure that's the case. I spent many hours trying to ensure that was the case.

Q. And did your analysis -- or did you perform an analysis of any of the data collected by EPA or EPA's contractors?

MR. CONLIN: Objection to form.

A. Indirectly, I looked at -- I guess the answer is yes. I could just say yes, and then there's areas throughout my reports where I comment on that, yes.

Q. Where you comment on the way the samples were collected or where you include EPA's data in your analysis of the site?

MR. CONLIN: Objection to form.

A. Both, I think. If you read the report, both.

Q. Okay. And did you include any analysis of the data collected by Norfolk Southern's contractors at the site in your report?

A. Well, certainly with respect to the delineation report, I did. In fact, I was critical of the fact they didn't calculate the TEQs and I did that for them. But, yes, I

spent a lot -- that's a very big report, and I spent a lot of time on that report.

In fact, one of your experts indicated that I hadn't reviewed the report, which I thought was curious, given that I spent perhaps 50 percent of my initial report reviewing that data.

Q. And is it your belief that your report includes an analysis of all the data collected by EPA and its contractors at the site?

MR. CONLIN: Objection to form.

A. I have no possible way of answering an all question. In every deposition I've ever been in, I just don't have a way of knowing what all means.

Q. You know that EPA has published their data online for anyone to see, right?

MR. CONLIN: Objection to form.

A. It got published -- I guess that's a tough question. Yes, some of it got delayed published. Some of it was published online, like the air -- I cited some of that, right, in my Appendix B, cites, I think as of March of 2023, the totality of the EPA data that was

published, because I was most interested in what they were seeing in the air, because you see that right away.

And then later on, you're not going to see much in the air in general, so -- other than if you're indoors. But, yeah, I was following that data.

Q. What about post-March 2023, did you include any analysis of EPA or its contractors data post-March 2023?

MR. CONLIN: Objection to form.

A. That's such a broad question. In part, yes. To the extent it's in the report, I did.

Q. And if it's not in your report, you didn't, right?

MR. CONLIN: Objection to form.

A. Well, I can't say that because whether I looked at the data and didn't write anything about it is different than whether I considered it. I mean, if I considered it, it doesn't mean necessarily that I didn't look at the data as opposed to writing about it in the report itself.

Q. But all the data that you

considered is identified in your report or the appendices, right?

MR. CONLIN: Objection to form.

A. Again, I'm not sure how to answer that question. The EPA data has been continuously -- it was continuously updated for a long time. Whether I've referenced all of that data in the report or not, I don't know, but I've certainly looked at it with time.

Q. Okay. And what about the data collected by Norfolk Southern's contractors? Did you consider all of that data in preparing your report?

MR. CONLIN: Objection to form. Asked and answered.

A. Yeah, I'm not sure how to answer that question. The -- it's almost an impossibility for an expert to say for certain that they've looked at all -- as soon as you use that adjective, I think anybody that tries to answer that question and says they have is speculating a bit, because I don't know for sure that all of the data has been published or that all of the data is available to me. I just don't know.

To the extent that I had data I could evaluate, I did look at it, especially with respect to the delineation report.

Q. And you identified all of the data from Norfolk Southern's contractors that you considered in your report with the appendices or the materials relied on; is that correct?

MR. CONLIN: Objection to form.

A. I mean, yes and no. For instance, I cited reference to the Ohio, Pennsylvania work that references data, so I guess directly or indirectly, I've tried to do that, but whether it's all the data or not, I don't know how I would answer that question. I don't know how anybody would. It's the word "all" that's the problem.

Q. Well, you used all with respect to Scott Smith's data, right?

A. I did.

Q. So it's not always a problem?

MR. CONLIN: Objection; form, misstates previous testimony.

A. Well, I mean, that's -- I would disagree with your statement. I'll just leave it at that.

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Q. Is there any data relating to the site in East Palestine that you've considered that isn't identified or discussed or listed somewhere in your report or its appendices?
MR. CONLIN: Objection; form.
A. I've answered that question. I mean, do you just want me to keep answering the same question over and over again?
Q. I want you to answer my question.
A. Again?
MR. CONLIN: Objection; form, asked and answered.
A. Are you asking me to answer the question again?
Q. I'm asking you to answer my question. Your counsel has objected. The court reporter has noted it. Please answer the question.
A. I mean, the transcript will clearly show -- I mean, if we want to go back and -- we can go back --
Q. I don't want to. I want you to answer the question. That's it.
MR. CONLIN: Objection; form, asked and answered, and now badgering the witness.

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A. Yeah, we'll get along a lot better if you act professionally. I've been doing this a long time, more than you've probably been born.
Q. Answer the question. You can feel and your counsel can feel that it's asked and answered. You still have to answer the question.
MR. CONLIN: It's the last time I'm going to let you ask the question before I instruct him not to answer because you're badgering him.
You can answer if you can, Steve.
A. The answer is that I can't possibly know what all of the data are, and I answered the question by saying there's data that I've looked at on the EPA side that I have not necessarily written about in the report itself. So I've tried to answer that question now at least twice.
Q. So your testimony here today is that you considered data relating to the East Palestine area that you did not identify in your report or its appendices?
MR. CONLIN: Objection; form,

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misstates previous testimony.
A. I think I have identified that the EPA had a website where they were producing data. What I produced in the report was data as of a certain date, but I've certainly looked at the data since then. That's the nuance.
Q. You just didn't identify it in your report?
MR. CONLIN: Objection; form.
A. I don't think that that's the case. I've identified that database. It's just a question of did I identify it multiple times, multiple dates.
Q. Okay. Let's turn to Page 7 of Exhibit 2. In Section 2.2, you list your overall opinions. Do you see that?
A. I do.
Q. And you have seven opinions; is that right?
A. In terms of summary opinions, yes.
Q. Okay. Can you read your first opinion for the record?
A. Sure. A significant number of hazardous chemicals were released from the February 3rd, 2023, Norfolk Southern train

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derailment event in East Palestine, and the subsequent decision to blow up, quote, vent and burn, contents in five derailed vinyl chloride tank cars on February 6th, 2023.
Q. Okay. And what are the basis for this opinion? Can we refer to this as Opinion 1?
A. Sure.
Q. What are the bases for your Opinion 1?
A. Well, it's outlined in the next part of my report.
Q. Okay. But can you, sitting here today, just tell us the bases for that opinion?
MR. CONLIN: Objection to form.
A. The basis of the opinion is information related to the tank car contents and the derailed train, as well as an understanding of the combustion characteristics of combusting PVC, as well as vinyl chloride, from a chemical engineering standpoint.
Q. And were you instructed to make any assumptions with respect to this Opinion No. 1?
MR. CONLIN: Objection; form.
A. No; I'm never -- I don't work that

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way. I don't work for people that tell me what to write.
Q. And what documents did you rely on in reaching Opinion No. 1?
MR. CONLIN: Objection to form.
A. Well, they're outlined in the report. Do you want to go through that one by one, I guess?
Q. I was more thinking -- or more asking about this particular opinion.
A. Right.
Q. Which documents that form the basis of this opinion?
MR. CONLIN: Objection to form.
Q. If there's specific pages in your report that you want to refer to, that's fine, too.
A. I think it's Section 4.1, beginning on Page 10.
Q. Okay.
A. Extending through Page 21.
Q. Ending --
A. And that also does not include a significant discussion on, I'll call it, differential diagnosis of the source of benzene

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found in proximity to the Ceramfab building and then ruling out other sources, like USTs.
So there's a whole section in my report related to the issue of benzene, because there's considerable work in Defendant's reports regarding benzene and pointing to empty chairs.
And -- so I dedicated a whole section to all the work that I did, including, not only reviewing the BUSTR database for USTs, but actually contacting them in writing, because some of the sites were not on site, so I actually wrote them and got reports.
And then I summarized all that work and showed that the UST of most interest was -- one, there was no reported release of benzene; two, there was no indication of MTBE around the sites of interest; and, three, that the USTs were embedded in clay, which is not known for being a geology that allows for transport of materials.
Q. And that opinion regarding the delineation report, that's another one of your overall opinions that you describe, correct?
MR. CONLIN: Object to form.

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A. Which opinion are you referring to now? 7 -- sorry; I think you jumped around on me.
Q. Yeah, it's No. 4.
A. No. 4. Yeah, I mean, the -- you cannot possibly do delineations with a single sample at one of the two sites. I mean, if you want to know north, south, east and west, just simply four directions, what the concentrations are, then you have to sample at least in four directions, and then probably out a ways to find a point where it's clean, quote, unquote. So the -- there's clearly no delineation.
The argument that -- the argument is so spurious that while we delineated on three sides of the Ceramfab building, so -- and remediated, so that means that the Ceramfab property is delineated. Well, that's crazy stuff. It's nonscientific.
We've only taken one sample, which was a composite from one side, and there was no remediation of the surface soils, subsurface soils, groundwater, et cetera. So the statement that the sites were fully delineated is complete rubbish.

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Q. Okay. So turning back to your first opinion, you've identified -- it's pages -- is it ten through 21?
A. Yes.
Q. And that identifies all of the documents that you relied on in forming the opinion regarding the hazardous chemicals released from the train derailment, right?
MR. CONLIN: Objection to form, misstates previous testimony.
A. No.
Q. Okay. What other documents?
A. I just got done discussing the whole benzene issue at length.
Q. Understood. You have a separate opinion --
A. No, it's not a separate opinion. That's defining one of the substances that I think was released, which was benzene from the two benzene railcars.
Q. Why do you think that benzene was released from the two benzene railcars?
A. By doing a differential diagnosis and concluding, it's the only option left.
Q. Do you have any direct evidence

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that benzene was released from the two railcars as part of the derailment?

MR. CONLIN: Objection to form.

A. I have the soil sampling and water sampling at the point where those railcars were and nowhere else.

Q. What do you mean by at the point where those railcars were and nowhere else?

A. Well, if you look at the plots of the benzene that we found from our sampling and you look and you plot those, you find that most of them are located right near, almost all of them, in fact. I can go -- let me go to an actual plot to illustrate that.

I'm on Exhibit 3, just for the court reporter. Maybe I led you wrong.

Where I'm at is actually on Exhibit 2, I guess, would be the original report, starting on Page 62, and it extends -- that table extends --

Q. And this is Table 7-3?

A. Correct.

Q. Okay.

A. And I'm just reading down the benzene -- under the VOCs, there's a number of

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constituents listed.

The first one is benzene, and where we had reported results -- and we didn't find it everywhere, but where we found it was at or near the derailment location or the stockpiles of soil taken from the derailment. And you'll see the values that are listed there, in terms of micrograms per milligram or micrograms per liter, depending on whether it was soil or waters.

Q. Do you have an estimate of how much benzene was released as part of the derailment?

A. I haven't done the calculation. I cite the work that -- there's one reference in my report that cites the fact that although the tanks were not full, not containing, or not transporting benzene, per se, that they -- it didn't mean that they were necessarily empty.

In other words, there was residual benzene in them, and that's because you can't get it all out.

But the real basis for my ultimate opinion is the differential diagnosis and then the spacial look at where we found benzene on the site, coupled, like I said, with the

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differential diagnosis, I looked at MTBE. I looked at the benzene content of the, quote, unquote, products inside the Ceramfab building.

I looked at the difference between levels of benzene in the soil versus the air. All of those things point to -- and then I looked at the groundwater flow, which is to the west/southwest under the -- towards or under the building, the Ceramfab building, from the derailment site.

And when you do that complete analysis, you conclude that that -- complete the differential analysis, you conclude that the most likely -- more likely than not, with a reasonable degree of scientific certainty, was from the derailment of the benzene cars.

Q. And did you see any notations in the file about whether or not the benzene cars had a release?

MR. CONLIN: Objection to form.

Q. Or a leak?

MR. CONLIN: Same objection.

A. I've seen statements that they -- I've seen statements from the experts that they didn't leak, but I have not seen supporting --

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to suggest that, and I have not seen the same differential analysis I performed.

In fact, I'm super critical of doing things like suggesting that hydraulic oil and motor oils and things like that contain benzene. I mean, I've got 10,000 MSDSs on the benzene -- I've got 10,000 files on benzene itself, and I've been involved in like 200 benzene or benzene-related cases. I've never seen a document suggesting there's benzene in those products.

And what's really troubling is that the minimum requirement really in my mind for your experts would have been to at least read the labels for the contents and/or get the SDSs or MSDSs for those products and see if there was any benzene in them, for example.

That wasn't done, and we know that because they -- they claimed in their depositions that it might have been done, but if they had it, they would have given it to Norfolk Southern attorneys.

And the attorneys have written counsel and indicated that they never received any such information. It calls into question

whether it even exists.
Q. Have you seen any information from the NTSB regarding its conclusion as to whether or not there were releases from the benzene cars?
A. I don't specifically recall that one way or the other.
Q. Would that be relevant to your analysis?
A. Yes and no. I mean, everything is relevant, but you still go through the differential diagnosis, and so it's sort of a yes or no answer. You never want to exclude any information in doing your analysis, but I don't know that anybody has done as rigorous of a differential diagnosis of all of these scenarios.
USTs, which was claimed, products inside the building, the statement that benzene in the building wasn't from the subsurface, even though the subsurface concentrations are up to 26 times higher than the inside air.
The direction of the groundwater, the contamination of where we were actually finding benzene in the soils or waters, when

you do that complete analysis, the logical conclusion is the conclusion I arrived at.
Q. And did you do any analysis of whether the other BTEX compounds were colocated with the benzene found near around Ceramfab?
A. I did with respect to MTBE, which would be -- you would expect that MTBE, Methyl tert-Butyl Ether -- I did my senior thesis on it in 1978, so that tells you how old I am.
So it was generated beginning in 1980, '80s or so, and then pulled because it was found to -- at least for the USTs, it was found to be very soluble in groundwater, and so it was a very early indicator of a leak from a UST.
So that's a signature compound in Methyl tert-Butyl Ether that you look for to show indications that you have a UST leak.
So as a surrogate, MTBE is an excellent surrogate.
Q. And did you do the analysis of the other BTEX compounds and whether they're colocated with the benzene?
MR. CONLIN: Objection; asked and answered.

A. Did I -- well, I certainly reported on those results, yes, but the one that I'm paying the most attention to is MTBE.
And, of course, the problem with the USTs was that there's no indication that they wrote BUSTR and asked for the files, which I did, and then read the files, which I did, and analyzed the files, which I did, and showed that the UST of most concern is buried in yellow clay.
And the results from the sample analysis of that UST all showed detection limit values.
THE REPORTER: Showed what?
A. Detection limit values.
Q. And did you do an analysis of benzene at the WYG building?
A. Did I do an analysis? I did an analysis of whatever we had in the same way. We had much less information than at Ceramfab.
Q. Do you recall any benzene detections at the WYG property?
A. I don't recall that we did. I think most of the benzene is associated with the Ceramfab facility. In fact, it all may be.

Q. I asked earlier whether you had done an analysis of the amount of benzene released from the derailment, and I believe your answer was no, you did not do that analysis.
Did you do an analysis of the volume of release for any chemicals or chemical classes with respect to the derailment?
MR. CONLIN: Objection; form.
A. Volume of releases? Well, I've reported on the volumes of releases like for vinyl chloride. They've been reported publicly, and I've reported on those. So, yeah, just some I did and some I did not.
Q. You identified some volumes of releases that NTSB, for example, identified with respect to the derailment, but you didn't do any of your own calculations, the volume of PAH, or dioxins, or other chemicals released?
MR. CONLIN: Objection to form.
A. The volume? Well, I think your predicate is false. I mean, I certainly looked at the -- one of the very first things I did was look at manifest, because I was trying to figure out what to sample for. When I first

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got there, nobody -- Norfolk Southern didn't walk up to me and say, Steve, sample for these chemical compounds. It was up to me.

The Plaintiffs' attorneys asked me what are we sampling for, so I was trying to figure that out. I knew from the early manifest information released what the tank cars were that released, what was in them, and what their volumes were.

So -- and then I made a request on -- I got there on the 20th, and I think I made the request of counsel at that time, I want to sample for dioxins, and they gave me approval to do so.

And I was critiqued in the press by EPA initially for sampling for dioxins, and I said, well, read Times Beach, Missouri, 1980s.

I said I hope we don't find it, but it's toxic at such a low level, and it's a product of burning chlorinated hydrocarbons. We've got to look for it. I hope we don't find it, but if we find it, it's a problem.

Q. Now, let's talk about dioxins. Did you do an analysis of the amount, volume, or mass of dioxins released during the derailment

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or vent and burn?

MR. CONLIN: Objection to form.

A. It's kind of a yes or a no. I think in the report, I actually did some of the chemistry, right.

Q. If you can point me to it, I'll take a look.

A. I think it's on Page 21, but let me make sure. I'm wrong. It's on Page 20. So I was looking for -- if you take the molecule of vinyl chloride, this is Figure 5.1, and this is when I was trying to figure out early on what comes when you combust, in other words, mix it with air or oxygen, what products do you get.

The first -- the biggest thing you get is HCL, which forms hydrochloric acid with the vents in the air. You get co2, if you get good combustion, CO, if you get poor combustion. We had very poor combustion.

You get some Phosgene, 40 parts per million, and then you get dioxins and furans at parts per billion, parts per trillion.

So given the total volume of vinyl chloride and PVC, we had two pellet cars of PVC, one of which burned, I believe, and one

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can then calculate -- I didn't do that calculation, but certainly one can take the concentration times the total volume and figure out what portion of that was likely dioxins.

I was more interested in the concentrations of substances -- by the time I got there, and I wasn't the only one that felt that way. Gillette from EPA felt that way. The odds after three rain events and two and a half weeks passing of me finding stuff in the air was going to be very low.

So it was -- it was -- and I had been involved in other situations like this. I was involved in the release of Tarco oils in the Parkersburg, West Virginia case, and ultimately into the Ohio River.

And the -- what typically happens is the EPA tells the polluter to sample ASAP, and they run around and they sampled PIDs, which is -- they're the first ones in -- in order -- PID is photoionization detectors, are a crude -- relatively crude instruments for what we're talking about here, measuring in parts per million, typically.

And they don't measure a specific

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hydrocarbon. They measure total hydrocarbons, which doesn't tell you anything, really. You want to know the individual constituents.

In other words, if I have a hundred parts per million of total hydrocarbons, but one part per million is benzene, I have a problem.

So what you should be sampling is using either an FID with specific sensors -- in fact, I was asked -- you know, even though it wasn't my job to tell them what to do, I gave recommendations in the rebuttal report as to instrumentation one could use in realtime to figure out what's going on.

But my conclusion was that -- and I write that in my report, that I was most likely to find any residual contamination in the surface soil, surface waters, and shallow groundwaters, and those would be constituents that were, in general, either VOCs that bound, or SVOCs and dioxins that are not -- relatively not volatile.

Q. Okay. And did you do an analysis of the mass or volume or amount of PAHs that were released as part of the derailment or vent

and burn?
MR. CONLIN: Objection to form.
A. Mass of -- well, first of all, I mean, it's -- you would have to first define all the PAHs and know all their concentrations in an incomplete combustion scenario, because PAH is formed basically from combustion. If you read the definition of polyaromatic hydrocarbons, they're generally formed from combust- -- incomplete combustion.
You would have to know all the volumes to start with and then the relative combustion chemistry to do that.
That wasn't my scope of work. My scope of work was to say, okay, regardless of how that happened and how efficient or inefficient those combustion reactions were, what was left behind, and are those most likely related to the -- either the release initially of contaminants, like two ethylhexyl acrylate, or butyl acetate, or the combustion products, and the one that seemed to me to be of most concern, because it's a prominent parts per trillion, is dioxin furans, so that's where I focused.

I focused on -- as I said before, I said publicly -- I was in two townhalls in February, one in Pennsylvania, one in Ohio, and people asked me, well, what is the constituent that troubles you the most? And I said dioxin furans, primarily, because it's toxic.
It's the toxic ingredient in Agent Orange, and I said it -- it is the constituent that, at very low levels, is a problem, and we hope we don't find it, but if you combust chlorinated hydrocarbons, the chemistry says that you can form some of it, especially when you have poor combustion characteristics.
And they asked me what do you mean by poor combustion? I said, well, this dates me, but in the old days, if you saw black smoke coming out of your car exhaust, that meant that you had too much fuel and not enough air. The air/fuel ratio was bad, so you needed either less fuel or more air.
So any time you see soot or black smoke, in general, that means you have incomplete combustion.
And the reason I know that is I wrote one of the Seminole papers on combustion

of crude oil and water in 1982, and I was responsible for doing work for the U.S. Coast Guard and the Department of Energy, doing the largest burns of crude oil ever done to that point. And they were done here in Columbus, as well, in Oklahoma. And so I knew what to look for --
Q. I think you've answered the question.
MR. CONLIN: You can complete -- you can complete your answer.
A. So the answer is what I was looking for was I don't know that anybody knows the exact efficiency of the combustion chemistry, and that's what you have to know.
Because you had a very -- what I'm trying to lead to is you had -- to do those calculations, and believe me, I can do that, you would have to know very precisely how effective that combustion process was. I don't know that anybody did that measurement in order to do the numbers you're calculating -- you're asking for.
On the other hand, one can look for the consequences of that incomplete combustion,

with respect to dioxins, and see whether or not they are present and the degree to which they are present.
MR. RHEINHEIMER: Okay. The court reporter would like a break, so let's take a break.
THE VIDEOGRAPHER: We're off the record.
(Recess is taken.)
THE VIDEOGRAPHER: We're on the record.
Q. Okay. Let's move on to your second overall opinion, if you look back at Page 7 of Exhibit 2.
A. I'm there.
Q. Can you read the second opinion for the record?
A. Sure. The Arcadis -- sorry --
The Norfolk Southern/Arcadis sampling plans were inherently flawed and not designed to determine actual contaminants at the time of the release and at locations where they were likely deposited.
Q. Okay. Were you instructed to make any assumptions with respect to forming this

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opinion?
A. No.
Q. And what are the basis for this opinion?
A. I guess the primary basis would be my Chapter 6, which begins on Page 26 and continues on to Page 45.
Q. And that's Chapter 6 of your report?
A. Correct. And then, of course, I've added to that in my rebuttal report, and really that's contained within Tables 2.1, which begin on Page 4 of Exhibit 3, to -- really continues on to Page 41 through Table 2.3.
Q. Okay. And are the documents that you relied on in forming that opinion also identified in Chapter 6 of Exhibit 2 and Pages 4 -- or 41 of Exhibit 3?
A. I think it's more than -- this table is 41- -- to 43 and Pages 4 through -- I forget the last page number. Whatever it was. I just want to check something.
There would be elements of that also in the criticisms of the Arcadis' delineation report, which is Chapter 7 of my

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report that -- Exhibit 2, which begins on Page 45 and ends on Page 1- -- 105.
So that would also be -- and then also I would be criticizing the screening levels that Arcadis used when I compare them with EPA and Norfolk Southern's streaming levels in Section 8.
And then I also -- I may have missed something, but I think that's basically the materials that would cover supporting my second opinion on Page 7.
Q. And when you say NS/Arcadis sampling plans, you're referring to the Arcadis sampling plans. And Arcadis was retained by Norfolk Southern, or is there a separate Norfolk Southern plan that you're talking about?
A. My understanding is Norfolk Southern retained Arcadis on their behalf.
Q. Were there any specific sampling plans that you considered to be inherently flawed, or was it all of them?
MR. CONLIN: Objection to form.
A. Well, there were elements in -- we would have to go through the individual

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descriptions for me to fully answer that question, but just to give you some topical points, I guess, to try to answer your question, I assume we're going to get into it in more depth.
I'm very critical of what I think is probably a lack of chain of custody. There are three scenarios that I think I can summarize. Their sampling plans obviously requires them to do a chain of custody, but they didn't.
They -- in one case, they put samples in plastic bags that doesn't show up on the chain of custody. In the other case, they don't indicate the sampler at all, which is a break in the chain of custody.
And in the third case, the sampler is identified, but it's not the first -- he or she is not the first person in the chain of custody.
I'm super critical of the sampling plan with respect to where they sampled, in terms of primary sampling to the southeast of the derailment and where they sampled for background. And I've been critical of that for

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a long time.
In fact, I -- we'll probably get to that, too. I wrote a declaration for Government Accountability criticizing the plan.
And one of the responses from your -- not you personally, but your experts was that, well, we -- the EPA released a wind direction map and the -- the sampling plans considered that.
And I'm like, well, we have an issue with respect to timing. The initial sampling plans were -- by Arcadis were initially on or around early March. Then they were updated in April.
The initial sampling reports were on March 19th. The initial wind pattern results were published by EPA or their contractor on May 31st, which was after the fact.
And then more importantly, if you look at where they actually sampled, they continued to basically follow the early work, which is predominantly sampled to the southeast, and continued to call out background, being basically an arc from the

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west to the northeast, which is where a large portion of the plume actually went.

And so the background was not actually background. And to my -- my position is that was never corrected, and we know it because we can look at what they claim was background, dioxins of 51, and we know that the Ohio EPA around Columbus had values between 1.2 and two, and we had values of -- in the low 2s.

And then you can look at one of my exhibits, where all the EPA lists backgrounds. They're all in the -- around two or so in general.

And even -- I believe -- I think it was Love or one of the experts cited Gullett's work in the Gulf of Mexico and burning crude oil from the crude oil spill and said that the values -- he reported the values that were like in the 2s for dioxin.

And I said, well, of course, they were in the 2s because crude oil doesn't have chlorine, and so you burn a hydrocarbon without chlorine, you're not going to get dioxin, so it's lack of background.

So when they were using values of

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51, I was like, well, that's clearly a result of actually sampling where the plume went.

And I was just stunned that little ole me, with two people, could figure that out by April of 2023, and it wasn't until late May that the EPA apparently had some modeling, but nobody at Arcadis or Norfolk Southern could figure that out.

And all I had to do was talk to people where I was sampling. People to the west would say no, that plume came over us. I'm like, really?

So after two weeks, I went home and I looked up the hour-by-hour data for Pittsburgh and for Youngstown, which are the closest stations with hour-by-hour data, and they were pretty similar.

By noon, the winds went west -- came from the north -- they came from the northwest, and they stopped, and it was almost calm. And then they sort of -- if they came from any direction -- so about half the time, they were calm from, say, 1:00 through the burn period on the 6th, to somewhat coming from the southeast, towards the southwest. So that

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meant the plume would be either just sort of stagnant, or it would move slightly to the west, northwest, northeast.

And it was just stunning to me that this wasn't recognized. I made this statement in my declaration, I've made this statement in townhall meetings, and yet Norfolk and their contractors continued to place the most emphasis to the southeast.

And, of course, my biggest criticism was they should have -- if I were the incident commander, I would have never done the ignition period because I evacuated in the wrong direction.

And so the plan is -- is inherently flawed and continued to be flawed as it was updated, because the predominant area of emphasis for sampling was in the wrong direction, and the background samples were in the wrong direction in general, and that was never corrected.

And the overwhelming summary of data, as you will see in my reports, all confirms this, and -- and so the plans never got corrected in that dimension with respect to

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winds.

I've already commented that I think I looked at five different plans with respect to cleaning tools, and it depends on the compound they're looking at, but except for PFAS, I think they all say we can use tap water. And I'm like, no, we don't use tap water to clean tools, because we don't know what's in the tap water.

I mean, especially when you're trying to measure dioxins in parts per trillion, which is like a million times less than a part per million, and I said, no, it's got to be distilled water.

So I was like why would you -- and the only way to do that would be to know what's in the tap water and subtract that out.

And then, of course, I'm super critical of the plans where they use plastic bags to first put the samples in plastic and then put it in glass jars. There's a chain of custody issue there, but there's a spoilization issue with the samples as well, as I cite in the literature. And the EPA, even -- I mean, Gullett or somebody says, no, you don't put

them in plastic.
And I commented that may be a holdover from UST work for VOCs, because that's the only time I would have used plastic, but for semi-volatiles and for dioxins, you clearly don't want to take the chance of contaminating the samples.
Now, the plans, it's not -- some of the plans indicate that they can use plastic, and some are a little more silent on it, and some of them are conflicted, as I point out.
So I know it's been a long answer, but there's pages and pages where I comment on those plans and some of the details in those plans. And by and large, I find them to be defective.
Q. And one of the things you say in your summary of your opinion is that plans were not designed to determine actual contaminants at the time of their release?
A. Sure.
Q. What does that mean?
A. That means if for air sampling, using PIDs, the only way you're going to really measure significant quantities in the outdoor

air from like an uncontrolled burn, like occurred, or even from the burning of various constituents from the third on, is you've got to sample right away. I mean, like within days.
Because by the time I got there -- I remember looking it up. There had been three days of rain by the time I started sampling on February 21st, and you're going to wash out a lot of that material, or it's going to dissipate and be diluted.
So, first of all, you've got to measure right away, but, secondly, you've got to measure with instrumentation that will measure those contaminants of concern, the actual contaminants, and at a level which would be parts per trillion -- parts per billion to parts per trillion.
And when you're using a PID that's not chemical specific and doesn't measure to, at best, maybe a hundred parts per billion, it's really a parts per million device, you can't possibly measure anything of significance.
Q. Your next -- if we go back to Page

7, the third overall opinion, can you read that for the record?
A. Sure. The Norfolk Southern Arcadis sampling plans were inherently flawed and not designed to determine --
Q. Sorry; the next one.
A. Oh, I'm sorry. I misspoke.
Actual remediation methods were also inherently flawed and likely to lead to ongoing exposures.
Q. Were you instructed to make any assumptions with respect to this opinion?
A. No; it's an opinion I had being on site.
Q. And what are the bases for this opinion?
A. It's in the report, but one of the bases is the best way to -- what I was talking about here was, first of all, where Norfolk Southern removed the debris, the -- the rails, the ties, and the ballast, and then put it all back within two days, but they left the contaminated soil below. So when they came back in April, they first then removed everything from the north tracks, the tracks,

the rails, the ballast, and the soil, down to the clay layer, which was like ten feet below the confining clay layer.
And my comment right away was, let's imagine that the summary of this is like this long table and you've got a bathtub, basically, because it's confined at the bottom by the clay. Nobody disagrees with that.
And then on the sides, obviously, you could have, you know, stuff coming in from the sides, but the point was that you still had all the contaminated soil on -- under the south tracks. So when you just remediated the north tracks, whatever local water and leachate was present from the contamination under those south tracks was going to recontaminate the clean soil you put back down.
And I knew that because I noticed that the sampling that was being done on the west end of the north tracks when I was there was there, was they were digging little gopher holes down in the clay and sampling, you know, six inches into the clay, and I'm like, well, they're not going to find anything there. It's clay.

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But I said, but there's a bunch of surface water ponded over there in the corner, so I'm going to sample that, see what's in it. It was contaminated as hell.

So I said so they're going to put clean materials onto that contaminated -- and so that was the basis, and I actually took a sample of that water and reported it in these reports.

Q. And did you see any post-removal -- post-soil removal testing from Arcadis in the track area? Did you review any of this?

A. Post-soil or the clay?

Q. Either one.

A. What I noticed was most of the material that was removed was stockpiled, and so there were stockpile samples of the removed material, but the sampling I observed, and there was a lot of people sampling.

I mean, I'll bet -- I don't know if it was EPA and Arcadis or who all was in the pit, but it had to be 10 to 20 people, and they were sampling -- they were sampling the banks on the north side.

That's fine, but they were also

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sampling -- I've got pictures of -- I call them gopher holes, where they were sampling down into the clay, and I provided those photographs, but they were associated with my Sample 70.

But I'm like, well, that's designed not to find anything because the clay is the confining layer. Even Love says it's the confining layer. I agree. And the boring log shows that it's a confining layer. It's clay. It goes for a long ways.

So whatever waters, we'll call them surface waters, or shallow groundwaters, or perch water -- there's various terms -- those waters are -- if you've got this long bathtub and it's like a quarter of a mile long, and you clean up half of it and you leave -- you allow then any new material you put down to be recontaminated by either the water sitting on the clay or leeching towards the clay, plus any of the unremediated material.

I mean, the right way to do it -- and I know why it wasn't done; because you would have to shut down both tracks, and that would be economically expensive.

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The right way to do is it to remediate the entire trench at once. It wasn't done that way.

Q. Did you see any data from sampling of the fill material that eventually went in below the tracks after the removal process was done?

A. I don't know that I've seen the fill material, but it would take time to recontaminate that, and the question is where are they sampling.

You know, one of the interesting things was when they were doing the remediation, I literally had an Arcadis person tell me -- because I went down into the pit on the north end -- he said, "He's not going to find anything there. It's clay."

And then he saw me find a little lens of soil, brown soil above the gray clay, and he goes, "Oh, crap."

So I've been doing this for 30 years, and it's unusual to have -- I mean, I'm expensive, right, a little bit. It's unusual to have a senior research scientist, somebody who's been around for almost 50 years, doing

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sampling. I mean, the people shadowing me from Arcadis were very young, and they kept asking me, what are you doing? What are you sampling for?

And so the answer to your question is not if you sampled the -- all the soil material. And one of the big problems that I -- one of the criticisms I have is the composting of samples.

We can talk about the zero to six inches at some point, I hope, but the question is if you really wanted to know if you had recontamination, go down and sample, do a shallow well and sample the water sitting on the clay below the new soil. That will tell you whether you're getting recontamination or not.

Q. Okay.

A. And I never saw any evidence of that occurring.

Q. And your opinion that the actual remediation methods were inherently flawed, is that about anything other than the remediation under the tracks?

A. Well, I guess, yeah, that's a

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broader question. Now, I have other opinions about that. Early on when I was there, the trucks that were hauling away the -- there were several concerns I had.

First of all, I saw some of the initial sampling results from Indiana, where some of the soils were being taken to a landfill, and there was one or two dioxin samples, I think.

And my concern was that that was a composite, because when you excavate a lot of soil from an area, inherently, a lot of that soil is likely not to be contaminated, so what you're doing is diluting the surface layer, because as Gullett and others said, this stuff is insoluble, and even with rain, you're not going to see it leech down very far.

I was okay with them doing a little bit of sampling from one to six inches or whatever, but I thought they would do it in layers, right, so you could see the profile as to how far down it went.

But what they did is when they sampled the six inches, they just did a big composite, so you can't get any information

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about how -- how much contamination, depending on the contaminants, existed at different levels.

And the same issue -- so you get a dissolution effect, and, you know, it could be a factor of ten or more.

And so the big criticism I had was, initially, they were rolling this stuff out through trucks that were not covered. There was mud and dust everywhere in town. I mean, the roads were covered with mud. I mean, your vehicle -- I had to run my vehicle through I don't know how many car washes, because you would run on the roads and there was stuff everywhere.

And later on, the EPA forced, or recommended -- I don't know if forced is the right word -- that they have car washes, rinses, and that they cover the trucks.

And then -- so in terms of the remediation process, the fact that they -- how they were sampling those vehicles -- I went back one time and tried to check how many samples were actually taken for the hundreds of yards, maybe thousands of yards of soil

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removed. It's a precious few, and so I was always critical of that because you had a delusion effect.

And I was also critical of the fact that a lot of this material was either being deposited in the community through mud and then would dry out at times and there was dust.

And if you were there, you saw it, and I just -- early on, there was such a rush to get all that material moved that -- and then we had leakage from one of the water storage tanks.

I show pictures of that, where it's running across the ground and you see machines, so there -- and then there were pumps that were pumping stuff that were leaking.

And the EPA was writing Norfolk Southern all the time about some issues they were finding, and I recited some of those. So that whole remediation process was a bit sloppy in my opinion.

Q. Okay. Let's go to the next summary opinion on Page 7.

A. We're at No. 4, sir -- counsel?

Q. Yes. And we've talked about this a

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little, but let's read this one for the record.

A. Sure. Norfolk Southern or NS/Arcadis' delineation report blaming others for contamination at or near the Plaintiffs' properties is flawed and essentially pure speculation.

Q. And we talked a little about this in terms of benzene, right?

A. Sure.

Q. Are there any other chemicals that you have in mind with respect to this opinion?

A. Yeah, the PAHs and dioxins. They continuously blame coal, and I'm just stunned. They show an old photograph from the early 1900s and say, see, there was coal around this area, so that means there was coal that was the source of contamination.

And I'm like -- when Arcadis and their experts are writing this, and I'm like, did you look at your boring logs down to 75 feet?

I mean, I used to do boring logs. I used to write the geology of the boring logs, and I'm like I don't see coal on any of your boring logs.

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And then you see summaries of the remediation plan for the railroad, and I threw a couple of those in there, and they don't show any coal. And I'm like how can you -- how -- this is completely unscientific to have all this data showing no coal and then blame coal. I mean, I'm just stunned that all the PAHs are from coal, and I'm like, where is the coal?

And then on the PFASs, whoever wrote that section was either incompetent or not -- didn't have the right background.

I mean, I've had the benefit of being the expert on all four major PFAS forever chemical cases, plus four C8 cases, which is one of the PFASs.

So I put in a section for one of my reports on the chemistry that they're saying, well, because the only PFAS compound we found was PFOA, it couldn't have come from the fire extinguishing products because it only has PFOA.

Well, first of all, they don't understand the chemistry of PFASs, which is very complex, and depending on whether DuPont or 3M produced it, they can either be long

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chained or linear molecules were branched. The degree of branching depends on who produced it, so that's a chemical methodology well established to determine where it came from.

But also, the PFOA in firefighting foams, the AFFF, are either from contamination or degradation products, and there's many, many others.

And what's curious is that their own sampling data, as limited as it was, there were many times where they said we're taking samples, and then they dig through the report, dig through the report at five locations. They took samples at five locations and get one analytical report.

But even there, because I'm certainly an expert in PFAS, I was the expert for the South Carolina PFAS case, in terms of exposure warnings and standard of care; so I really understood the chemistry, and I'm like, well, look at your own analytical, you're showing -- in one case, they show a PFOS, which is a PFAS, and no PFOA, and I'm like you haven't -- first of all, you don't understand the chemistry, and, secondly, you haven't done

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any signature analysis to know whether it comes from that or not.

And then we have footnotes I find that say we used 40 gallons of PFOA foam, so it was used there.

So I look at all of that, and I'm like, this is nonsense. It's scientific nonsense. There's -- the lack of degree of rigors is stunning with respect to PFOS -- PFOA and PFAs.

Now, maybe it's because I've been an expert in four of these massive cases and I'm a chemical engineer by training, undergraduate and graduate, that this is all common sense to me, but you can look at what they've said, what the analytical shows, as limited as it is, and then you can look at the actual chemistry, which I've shared in one of my reports with you all. And the conclusion that it's not from firefighting foams is completely unsupported.

Q. Okay. You've identified benzene, PAHs, dioxin, PFAS. Are there any other chemicals discussed in the delineation report that you think the analysis is flawed?

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MR. CONLIN: Objection to the form.

A. Well, I think the other key SVOCs and VOCs, the vinyl chloride, the two ethylhexyl acrylate, the two -- or the endotoxi acetate, or -- the sampling clearly shows -- and then the glycols.

My -- what I did was sort of unusual. I added the -- when you send your samples to the lab, you can say do the standard VOC analysis, panel of analysis, do the standard SVOCs.

What I did, which was different is I said, well, I want to add to those lists, things like vinyl chloride, two ethylhexyl acrylate, and butyl acetate, et cetera, and I want to do the glycols, polyethylene and ethylene glycol.

And so when you look at the plots, especially in the delineation report where I had the Level 4 reports and I plotted the data, you see -- spacially, you see that data just sits right where the derailment is.

Q. Any other compounds that are discussed in the delineation report that you think are -- the discussion is flawed?

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MR. CONLIN: Objection to form.
A. I'm trying to see if I've covered everything. If we include the VOCs, SVOCs, glycols and dioxin furans, then that would cover the sets of chemicals that I commented on as being flawed. It's a very broad question you asked, so that's why it's hard to answer exactly.
Q. Okay. And were you instructed to make any assumptions in forming this opinion?
A. No; that's not -- I don't think you've deposed me before, but that's not my style. I'm not -- I would not work for somebody if they told me -- I would immediately quit if somebody told me I had to give an opinion I didn't agree with.
Q. But to be fair, that's not the question. Just asking whether you were instructed to make assumptions?
A. The answer is no.
Q. Let's go to -- back to Page 7, to the next overall opinion, and if you could read it for the record. It's number five, a Review of Data.
A. Yes. Thank you. A review of data

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collected at and around the Plaintiff's property shows substantial contamination of the facility's surface soil and surface waters at or near the Plaintiff's properties.
Q. And is it correct that the basis for this opinion is, in part, four sets of data that we talked about earlier?
A. That's correct, in part.
Q. Anything else that helps form the basis of this opinion?
MR. CONLIN: Objection; form, asked and answered.
A. Well, I mean, I go at length through the delineation report. I go to the actual dioxin results they presented. I go through the PFAS results they presented, and in my mind, they show significant contamination.
I'm critical of them for not doing the TEQ calculations, but I did them for them, even though they're Level 2 reports and -- just to try to see what they were.
So I was critical because I'm like, well, how do you know if it exceeded whatever criteria you're going to use if we didn't calculate the TEQ in dioxins?

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I mean, if you say everything is great, and I'm like, well, what's the threshold that means it's great or not great? I need to know.
Q. Anything else, other than the four sets of data, and then the delineation report, and the data included in there?
MR. CONLIN: Objection to form; asked and answered.
A. Well, we have, towards the very end in the rebuttal report, for example, we were given -- through counsel, I was given a report that took ten samples of benzene in the air at Ceramfab, and nine of the ten showed the presence of benzene, and the tenth, they said didn't show it, but then you read the chain of custody, and it said, well, the sample was invalid because the equipment failed.
Well, it wasn't -- it really was nine out of nine, because the tenth sample is not a real sample, right. The equipment didn't work.
So we find benzene in nine out of nine samples above background, significantly above background levels, and -- so there's that

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information.
There's a series of comments about the fact that they follow protocols approved by the EPA, et cetera, et cetera, by Love, and I forgot the other gentleman's name, and I systematically refute those in Exhibit 3, so that information would be relied on as well.
MR. CONLIN: For the record, that ten samples he references were ones that Norfolk Southern took in -- March 30th, whenever they came out.
MR. RHEINHEIMER: Haley & Aldrich.
MR. CONLIN: Right.
THE WITNESS: Yes.
MR. CONLIN: The results of those samples.
A. They showed on the sample report that we received between the time I wrote the April 6th report and the time I wrote the May 29th report, so I cited that work.
Q. And did you compare any of the benzene reports from the Haley & Aldrich testing to any industrial, residential, or whatever standards?
MR. CONLIN: Objection to form.

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A. Did I compare to -- I know most of them by heart. I mean, the problem is that the standards, like OSHA standard 8RT PEL is one part per million, and ACGI has just changed theirs from .5 to .02, so it's a factor of 50 less than OSHA.

And I've testified over and over, again, from an industrial hygiene standpoint, two things. One, read the preambles to ACGIH TLVs or the OSHA PELs. They all say these are not safe levels.

The other point I make over and over again is we have a trade magazine called Synergists in industrial hygiene, and the number one request from industrial hygienists -- and I've got, I don't know how many copies of articles, over the last ten years, has been please update the PELs.

And OSHA even says on the PELs -- I've got a statement from them that says consider using other values, the California values, the German values, European values, because we haven't been able to get these updated.

And to give you a point of

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reference that dates me, the OSHA PEL was set ultimately as a result of litigation from 1977 to 1987 on the benzene standard and resulted in a compromised value of one PPM for the PEL and .5 for the action level. And that's 40 years ago, and the data it relied on is older than that.

To give you an idea of -- just to make it pragmatic, the level that was set by industry in about 1945 was around a hundred parts per million for benzene in the air.

By 1950s, it dropped to around ten, and then by 1970s and '80s, we dropped to one. So in that period of 40 years, we went from a hundred to one, and from the next 40 years, we've gone from one to one.

Now, ACIGH has gone from basically one, or .5, to .02, so it's -- right now, that level is 50 times lower, but the thing to remember constantly is Drinker's statement in 1945, there is no safe level. There is no safe level for benzene in the air.

So my experience, again, that being old, is, to my knowledge, and looking at the PELs over the last 40 years, I can only think

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of one that's ever gone up. They've always gone down when they get a chance to be revisited.

But the problem with the PELs is because of -- I talked to the assistant Secretary of Labor one time about this. I said why are you dropping these values, and they said it's always a political compromise, and there are economic drivers for setting the OSHA standards, and there are -- there's a lot of politics associated with it.

But I'm here to tell you that from an industrial hygiene standpoint, me and OSHA would always like to see those updated, and more importantly, OSHA tells us go look at other people's values because ours are old. They're antique. They're 40 years old or older.

Q. Okay.

A. So, yes, I know those like the back of my hand. I use them all the time, but they're not levels that we drive. I mean, if I'm your industrial hygienist and I'm going into your home or your workplace, I'm not going to live with those levels. That's something

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I'm going to protect you from. I'm going to try to do as much I can to eliminate them, especially benzene, which is one of the few known human carcinogens.

Q. Anything else? So you've identified the four datasets, the delineation report, the Haley & Aldrich report. Anything else that is data collected at or around the Plaintiffs' properties that shows substantial contamination?

MR. CONLIN: Objection; form.

A. Well, there's several reports that I've cited in here. There's the report that took almost a year to issue, which was an EPA report on, I want to say it's the Phase 1 sampling report, so that would be another report that I've cited in my work, and I would have to go through the report to give you every last citation, but to the extent that I've tried to cite things that I relied on outside of just my general knowledge, I've tried to indicate those in the report itself.

Q. Okay.

A. I -- just by way of reference, if it's generally available, I list it as a

reference. If it's more difficult to obtain, then I list it as an exhibit.

And so you'll find that wherever I cite something from an exhibit, I'll give you the exhibit number or the page number so you can go back and check to see if you agree or disagree.

Q. Okay. And let's go to the next summary opinion on Page 7, which is the second to last one.

A. The one that starts with based?

Q. That's correct. Can you read that one for the record?

A. Yes. Based on the sampling data reviewed and the contaminants released from the Norfolk Southern derailment and vent and burn activities, Plaintiffs' properties were contaminated.

Q. And is it fair that that summary -- that that opinion is kind of built on the opinions we've already talked about so far?

MR. CONLIN: Objection to form.

A. In part.

Q. Okay. And what's the new part from that -- this second-to-last overall opinion?

MR. CONLIN: Objection to form.

A. Well, the new part is the ongoing effort to cure and QA/QC, all the datasets to Level 4 reports, and then do -- have Lab Corp. out of California cure and then clear flags and do QA/QC reports on the data.

I was not willing to do any calculations or have any calculations of plots done until we've gone through that rigorous process, which was extremely time-consuming, because I wanted to make sure that the data I was working with were approved at least at two levels before I did any calculations or any plots, and that process is ongoing.

It's not to say that you didn't have the original Level 2 reports, all the data, because the Level 2 reports and Level 4 reports have the data, but you have all of the data I've been relying on since April 6.

The difference is that we are in an ongoing process, even to this day, to continue to -- not for Level 4 reports. I think we have all Level 4 reports by the May 29th issue. I'm pretty sure of that, but we're still going through with Laboratory Data, Inc. to cure and

to clear flags on, I would say, maybe a third of Scott Smith's data.

So two-thirds of his data have -- are in -- all the first three datasets are in the rebuttal report, and two-thirds -- I would say about two-thirds of Scott Smith's data are calculated and plotted in the rebuttal report.

Anybody can go back and take the raw data and do what we're doing. It just takes time, so there's nothing new about the data. It's just are we through the process that I'm insisting on in order to do the calculations and the plot.

Q. What's the difference between a Level 4 report and a Level 2 report?

A. Well, that's a huge question. In the simplest sense, it's probably going from a report that's a hundred pages to a thousand pages, but some of the details would be that the laboratory has to issue all of its underlying QA/QC information regarding the instrumentation that they used to do the analytical, including calibrations.

And the other thing is that it does allow us ultimately to use actual values

between the MDL and the RL, and that's helpful.

And you'll see that when you see the Level 4 and then the Laboratory Data Corp. -- I'll call them the cured EDD files. Those are like exhibits.

So Exhibit 81 is all the raw data files, and my Exhibits 161 through 164, are the EDD and QA/QC files from Laboratory Data, Inc.

I know that's -- I mean, there's probably a lot more involved in that than I've articulated, but, by and large, it's a much more robust QA/QC effort on the part of the lab. It takes a lot of time for them to do it. They've got to report all the equipment they used, the calibrations they used, the sources of the ultimate calibrations. It's a very rigorous process.

Q. And you said -- you referred to the MDL and an RL. What are those?

A. Reporting limit and minimum detection limit.

Q. And what's the difference between a minimum detection limit and a reporting limit?

A. That's an interesting question, and I've had it explained many times. I come from

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the old days -- when I first started doing analytical chemistry in 1979, at GCNS, at the national lab in the Toniworks [sic]. We only had an MDL. It was can the instrument see it or not.

And in the last -- I've been told in the last ten years, some of the labs have come up with this concept of RL, which is like a super duper -- my view; this is lay terms, as opposed to technical terms. It's like a super duper, highly-statistic reporting.

In fact, we're like 95 percent -- we're 95 percent sure it's there. I could be off on the number, but it's what I call a super duper reporting limit, as opposed to an MDL, which is we're not sure it's there or not.

And when you go through the -- when you go through the curing process, the question is if you have -- if you have values that could fall in three pits. Either it's below the MDL. What do you do with it if it's below the MDL? The convention has been for decades to use 50 percent of that.

Now, I was super conservative in my analysis. I used 50 percent and zero percent,

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which is about as conservative as you can be. I said anything that's below the MDL I would say has zero contribution to the TEQ or the BEP equivalent -- BaP, I should say.

And if the values -- the value could also be between the RL and the MDL. What do you do with that? And then the value could be above the RL, which is unflagged, right, unless there's some other reason to flag it. So it doesn't have any flags -- you just use the value.

So the question is if the value is between the RL and the MDL, what value do you use? And if you're at the R- -- if you're at the Level 2 level, what -- what EPA and Arcadis has done is used the reporting limit value, but if you go through this QA/QC process, if it's in between the levels, you can actually use the actual value. That's the bottom line of what happens.

Q. Okay. And you mentioned a couple of times the process of curing the data and clearing flags. What company was doing that? I think you mentioned --

A. Well, you have there in that list

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of 13, it's Laboratory Data, I want to say, Inc., but you have their label there on the 13 invoices.

Q. Okay. And what is the process -- well, let me ask this: Is curing the data different from clearing flags?

A. Oh, a hundred percent.

Q. Okay. So what is the process of curing the data?

A. Curing the data is where they will look at -- at all of the QA/QC provided in Level 4 report, they'll look at any comments -- what happens to you when you sample is the lab on the intake, in this case, Arcadis, except for the GEL data, will give you feedback if you messed up, right? Like samples are too warm, or you didn't fill the container all the way full on a VOC sample, or -- and they will give you feedback.

And so they'll look -- and then there are a host of other issues related to the lab itself, and this organization goes through all of that material and determines -- writes a QA/QC report to see whether or not any of those things are sufficient ultimately to say the

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data are not able to be used.

So it's -- do I know exactly what they do? No, that's why I hired them, but it's -- it's a super time-consuming, complicated process, because each one of these samples has a thousand-page report or more that somebody has got to go through.

And so it's -- that's why we're still undergoing it on some of Scott Smith's work to this day, in terms of getting data that I could calculate in the plot. Not that we don't have the data, the raw data. It's just I'm not going to use that raw data until it's cured and the flags are cleared. I'm not going to do those calculations twice. I'm going to make sure that I'm assured the data is good data.

Q. And then what is clearing flags?

A. Clearing flags is, if you look at any sample result, whether it be Arcadis or ourselves, myself or others, there will be a series of flags. J flags, U flags, UJ flags, B flags, I flags, and they're basically asterisks after the sample results that draw you to the bottom of the page or to an index saying,

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here's some additional information regarding that sample.

Now, a U flag means it's below the MDL. The J flag means it's between the RL and the MDL. The B flag means there's been some material found in the surrogate, I think, of compliance. Anyway, there's a whole series of flags.

And what I wanted them to do was -- and you can run a series of calculations to clear the flags, with the exception really of U and J flags.

Now, some samples won't have any flags, so it doesn't matter, but I wanted to know if I have a sample with a B flag or an I flag, how do I handle that result.

In other words, if it's also got a U or a J, can I treat it as a U or J, or do I have to do something else?

Well, there are methodologies that can be used to account for those other flags and leave you with just no flag, a U flag, or a J flag, or sometimes they'll give you a UJ flag, which is the same as a U flag, meaning that you've got to treat it as below the

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detection limit.

Because what I'm doing in the BaP equivalent, or the TEQ equivalent, is I'm taking those individual results and then I'm multiplying them by factors to then come up with cumulative numbers. And I want to make sure that the numbers that I start with are the numbers that I can rely on, so that's why I go through the process I go through, very rigorous process.

Q. And Laboratory Data, Inc. is the entity that does the curing of the data and the curing of the flags?

A. Right. Not unlike -- I think Montrose did Arcadis' Level 2 clearing, which is a whole different animal, because it's a Level 2 clearing, as opposed to Level 4.

Q. And when you say Plaintiffs' properties were contaminated, you're referring to both the Ceramfab and the WYG properties?

A. Correct.

Q. Okay. Let's look at the next and last one -- the last of your overall opinions in Section 2.2. If you could read that for the record?

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A. Yes. The contamination found on the Plaintiffs' properties was a direct and proximate result of Norfolk Southern's derailment and vent and burn activities.

Q. And is it fair to read this final opinion as a summation of all the work you did for the other opinions?

A. Well, it includes those, but I'm drawing a final conclusion that, more likely than not, the contamination is from either the release or the burning and the subsequent products that were released. The materials we find on site are from that, and I -- we have talked about some of it, like the whole benzene issue, as to why I've come to that opinion with regard to benzene.

But, also, if you just look at all the plots that I've provided, both in the original and in the rebuttal reports, and you look at the spacial plotting of the data, and then you combine it with Paul Rosenthal's work on modeling, you can see that the -- you know, not every sample shows exceedances, and you wouldn't expect that.

But when you look at where the

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exceedances are, in terms of geographic location, and when you look at the levels, higher levels being obviously closer to the source than you would expect, you conclude, based on the modeling, based on the sampling, and then based on all my analysis, that it's more likely than not that the contamination came from the derailment and its subsequent burn activities. That's my conclusion.

Q. And what do you mean there by exceedances?

A. Exceedances of the -- for instance, on the dioxins, I'm using the cancer screening level and then the noncancer screening level, 4.8 and 5 -- 51, I think.

And then on the BEP equivalent, I do a calculation, I think it's like 110. I forget the units exactly, but I can look it up for you. I derive that value. It's in -- actually, it's from the EPA, but I derive that value as well, just to show where it comes from.

Q. Were you instructed to make any -- excuse me -- any assumptions with respect to this opinion?

A. No.
Q. More broadly, I'm not limiting you to just this opinion that we talked about -- just went over, but are you opining that any of the contamination that you contend is from the Norfolk Southern derailment or vent and burn has created a human health risk at the Ceramfab property?
MR. CONLIN: Objection; form.
A. I have not made those calculations yet, so I don't -- I would -- they certainly -- this is an environmental contamination level, so that's why I was describing here Phase 1, Phase 2, Phase 3, because if you have exceedances of screening levels, it pushes you to Phase 2 and Phase 3, which is costly.
It's also the reason I would like to see the data released because I think the academics will start to look at synergistic toxicity, et cetera, and they'll have a very good clean dataset, set of data, and then we'll let the world decide whether it's an issue with respect to individuals or not.
But they certainly have a basis for being concerned, but this is not a personal

injury case, per se, so I -- I haven't done that analysis to say, look, you've got X amount of exposure, cumulative exposure to the equivalent, or dioxins, or whatever. You know, I do those analysis, but I haven't done them for this case.
Q. And I asked that question specifically about Ceramfab. Same answer for WYG property?
A. It would be the same answer.
Q. Okay. Let's take a look at Page 10.
A. We're making progress.
Q. Slowly but surely.
A. I'm there.
Q. Okay. The last sentence before Section 4.0, you write: I reserve the right to update my opinions based on additional information reviewed or received, e.g., depositions for review.
Do you see that?
A. I do.
Q. And I know that you have written a rebuttal report, right?
A. Correct.

Q. And we're going to talk about that, but have you -- other than your rebuttal report, have you updated your opinions based on any additional information you've reviewed?
A. No, not so far.
THE REPORTER: I'm sorry, no, not what?
A. Not so far. I mean, I get it. If I do, then you'll want to talk to me again.
Q. That's correct.
A. But I know that's where you're going.
Q. As of today, you have not?
A. No.
Q. Okay. Let's turn to Page 18.
A. All right.
Q. And it's the first paragraph before the indented paragraph, starting with, "Later." Do you see that?
A. Yes.
Q. And in that paragraph, you write: Later, the NTSB, consistent with my opinions in February of 2023 as a chemical engineer conclusively determined the burns were not necessary and instead was based on faulty and

incomplete recommendations provided by NS.
Do you see that?
A. Yes.
Q. And when you're talking about the burn there, you're referring to the vent and burn?
A. The decision to detonate the tanks and throw flares in and burn the vinyl chloride residual, yes.
Q. Okay. And are you offering an opinion in this case as to whether the vent and burn was necessary and appropriate?
A. I think, in general, I would defer -- we have other experts that are doing that. The reason that that's -- this is here is because I did a whole lot of process safety management work and risk management work.
In fact, the so called most credible events where -- I call them the kill zones, where how far out -- I've done them for Nestle. It's 12 miles up in Cleveland.
And so I was intimately aware of process safety management, and there was concerns early on about it being a bloody condition, which is blowing liquid evaporation

explosion, and I'm intimately familiar with that as a chemical engineer, and almost all those cases that I'm aware of are related to propane.

Particularly, there was a classic case in Henderson, Nevada. The fact that these tanks -- that these cars were heated and they were venting for three days, bloodies usually happen very fast, within hours.

But, anyway, I had some very early opinions about that, and they were stated publicly, and so I -- I would stand by that if asked, but I don't intend to be the expert in this case for those opinions or have people that have been dedicated to those causes, but I certainly have the background to comment on it, but that's not my focus in these reports.

Q. You also referred to the NTSB making a conclusive determination.

Do you see that?

A. Yes.

Q. Who is the -- what is the NTSB?

A. I don't know what -- it stands for National Transportation Safety Board, so I mean, as part of this work -- I mean, with the

settlement in April of '23, my work was shut down.

MR. CONLIN: '24.

A. '24, I'm sorry. And I was never disclosed and my work wasn't completed, but I continue to follow and accumulate literature, just out of -- I mean, I read like eight to ten technical papers a night, so that tells you I'm kind of nerdy, I guess.

But -- so I was certainly following what was being put out there, but I would -- again, I'm not going to be the expert in this area, but I was following the documents that they were producing and the basis for some of the comments they made and it -- for a whole host of reasons, not the least of which was that the wind changed direction.

And I thought that -- if I'm an incident commander and the wind changes direction, if I'm evacuating everybody in this direction and also the wind comes from this direction, I'm like, well, wait a second, I better put a timeout on this, and -- before I have a detonation.

And so I was critical for a whole

host of reasons. A lot of it would have to do with my background in chemical engineering and doing process safety management outside of litigation for a long time.

And so -- but, again, I'm not going to serve as the expert here. I'm not going to rely on the conclusions themselves of the underlying documents, and it's just consistent with my opinion from early on, based on my background.

But, again, I do not intend, unless for some reason across, you guys are going to ask me about this, and I may or may not choose to respond to it, but I'm not retained here as the expert on whether or not the detonation was appropriate or not.

Q. Let's turn to Page 276 of Exhibit 2.

A. 276?

Q. Yes.

A. I'm there.

Q. If we look at the second paragraph under the section closing, it says: All opinions provided in this report are made to a reasonable degree of scientific certainty.

Do you see that?

A. I do.

Q. What does that mean in your mind?

MR. CONLIN: Objection to form.

A. Well, you can read my textbook. I have a section on what various levels of probability and possibility, I define, which is consistent with legal standards, I believe, that there's zero probability that it will occur, then it's not going to happen.

If it's probable, then the percentage is -- or if it's possible, the percentage is above zero. If it's probable, it's greater than 50 percent, and I define the term likely in my textbook is greater than 75 percent, like a super probability, in Chapter 1 of my textbooks.

So my view is that it's more likely than not or greater than 50 percent means it's not random. Too many years of statistics in graduate school.

Q. So when you write reasonable degree of scientific certainty, that is, in your mind, more likely than not, greater than 50 percent?

A. Correct.

Q. Let's look at Appendix A, which is Page 290, and it's titled List of Exhibits.
A. I'm there.
Q. And there are 179 listed in the -- Exhibit N in your opening report and you have a few more listed in your rebuttal, right?
A. Correct.
Q. And did you review the entirety of all the exhibits or portions of them?
A. I'm pretty certain I read them all. In fact, many of these early ones I wrote, so --
Q. We can set aside the ones you wrote. Those I trust that you have --
A. But, yeah, usually I'll read them twice. I read them once just to see what's there, and then I'll read them twice just to do what I call extractions, which is to pull information out of them and put them in a report. So I always typically read an exhibit twice.
Q. And did you obtain -- or how -- strike that.
Did you obtain any of the documents through counsel?

A. Very few, but I know one I did, which is the one we just talked about, which is the recent benzene sampling report. I think it's in the rebuttal report as the last exhibit, but I could be wrong. That's the one I remember getting from counsel.
In this particular case -- no, I'm wrong on that date. The --
MR. CONLIN: Also, for the record, we did provide the transcripts that are cited in there. I don't know whether these are depositions or trials and stuff --
A. There weren't a lot of things I received from counsel, but there were transcripts, and that one report on sampling for benzene, I certainly received from counsel.
Q. What about the datasets? Did any of the datasets come from counsel?
A. Well, my dataset, Dataset 2, came from me. Dataset 1 ultimately came from Laboratory Data. They were providing Level 4 reports, and I was responsible for the curing and the clearing of flags, and then doing the calculations.
So those ultimately came from,

interestingly enough, Data Laboratory, Inc.
The GEL samples, I think there was some interaction with counsel when I wanted Level 4 reports, to go back to them and say, hey, go back to your lab and get Level 4 reports, but, ultimately, that data came from GEL.
Now, whether it was sent to me directly or in -- I had communications directly with GEL, the GEL folks, but what portion of it came from counsel and what portion came from them directly, I couldn't tell you.
The Smith data, all of that came directly to me. Many, many hours of ensuring that I had all of his data, and that I had it -- he was responsible for getting Level 4 reports and having him get that done.
Q. So you've had -- strike that.
Have you had communications with Mr. Smith about the data or the site?
A. Oh, yes.
MR. CONLIN: Objection; form.
A. Not about the site but about the data.
Q. Okay. Were those discussions oral,

in writing, or both?
A. Both.
Q. And was counsel present for all of the oral discussions?
A. No.
Q. And was counsel copied on all of the written communications?
A. No.
MR. CONLIN: I think we might have been.
THE WITNESS: On all of them?
MR. CONLIN: Your question earlier about all --
THE WITNESS: I don't -- yeah, you were copied on some, but I don't believe all. I had lots of conversations with Mr. Smith.
MR. CONLIN: Talking about during the retention period --
A. No. I can assuredly tell you that you were not copied on all of them. I can say that for the record.
Q. Okay. Why don't we go off the record for just a second.
THE VIDEOGRAPHER: We're off the record.

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(Recess is taken.)
THE VIDEOGRAPHER: We're on the record.
Q. Okay. Did you have any substantive discussions about the case or your deposition during the break?
A. No.
Q. Can you take a look at what we've marked as Exhibit 3, which is your rebuttal report?
A. Sure. I'm there.
Q. Perfect. Excuse me. Are there any new opinions in your rebuttal report that were not in your opening report?
MR. CONLIN: Objection; form.
Q. And just to clarify, I'm not asking if you expanded on or explained or gave more detail to your opening report or opinions, just whether there were wholly new ones.
MR. CONLIN: Same objection.
A. I'm trying to figure out how best to answer this. I think there are -- the rebuttal report contains a lot of additional sub-opinions that probably do fall under the seven general opinions in the initial report.

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Q. Okay.
A. The other thing that would be new would be that I would have -- I should correct that because I would have new opinions related to the actual contamination on site because this is the first report where I report the Plaintiffs' sampling on the two Plaintiffs' sites, so I would have confirmation that those site were contaminated.
And then I've also been able to essentially double the amount of data that -- from Scott Smith -- there was about a third of Scott Smith's data. We produced it all as Level 2 reports and some Level 4, along with the raw EDD files.
But in the first April report, I would say that maybe a third of that data, nearest to the sites mostly, was both converted to level -- we got the Level 4 reports done and we were able to go through the curing QA/QC process with LDC.
And then those, along with the other three datasets, from our total amount of data were we did the calculations on those and the plots.

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So what happened in the supplemental report is, by that time, we had all the Level 4 reports for all of his data, which was provided under Exhibit 81, as well as now I had probably another third or two-thirds of the total data that he had both in Level 4 reports, as well as QA/QC, and then run through the calculations and the plotting.
So the opinions would be augmented by the fact that we had additional data on site, as well as additional data around the site to -- so that's why I called it sort of sub-opinions, except for the fact that the contamination data -- we now had actual 2026 data for soil contamination with respect to PAHs and dioxin furans on both sites.
Q. And when you said you had double the amount of data from Smith, was it the same amount of data but double the Level 4 reports, or is there a --
A. Yeah.
Q. Or are you saying there's double data?
MR. CONLIN: Objection; form.
A. Yeah, I can understand why there

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might be some confusion in my answer. I think the best way to describe it is the process again that I went through was to take from all the datasets, generally, Level 2 reports.
Except for the initial dataset, I had Level 4 reports because I did that back in 2023, '24. So the process was to work with the labs and the individuals and get all Level 4 reports for the other three datasets, including my own.
And the only -- by the time I issued the April 6th report, we probably had about probably -- I'm grabbing a number -- maybe two-thirds of Smith's data was now -- we always had all of his data provided, but it wasn't all in Level 4, the process that I talked about, converting everything to Level 4 for the QA/QC aspect, because that's what LDC wants before they start -- they can do it the other way, but they said it's really not -- we would have to do it twice if we had Level 2 and then Level 4. I said, well, we don't want to do it that way.
So by April 6th, I had probably two-thirds -- everything was Level 4, except

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for Scott Smith's work. About a third of it was not. Don't quote me on the number, but it was like about that, and only about a third of it had gone through the LDC curing/QA/QC process for -- for instance, clearing flags.

So only about a third of his data and all the rest of the data were involved in calculations and plots in the April report.

By the time the rebuttal report came along, instead of two-thirds of his data being only Level 4 reports, to my knowledge, all of it was now Level 4 reports.

And moreover, we got another third of it, so about two-thirds of it now got through the LDC process, so we could do the calculations and the plotting now with two-thirds of his data, not a third.

And we're continuing to cure -- now we're -- the last little bit is to cure the last third with LDC, and we're continuing to do that.

It doesn't change the base data at all. It just changes my ability to ensure that I have done a full QA/QC curing process before I do calculations. So I hope that explains it

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a little bit.

Q. Yeah. So back -- on the LDC process, that's the flag -- on the flag removal portion --

A. Sure.

Q. -- is there a way in the data to see where the flags had been removed?

A. Sure.

Q. And is there a way to see why they had been removed?

A. Sure. I believe so. You would have the raw EDD files from the labs, and then you would have the QA/QC, I'll call them the LDC EDD files, and if you compared those to each other, you could see the differences.

Q. Okay. So you would be able to see the raw data had a flag, the LDC files don't have a flag? You could compare and see that?

A. In general, that's not the way it was. In general, you had -- for data that had flags, you would have four or five flags and now with the LDC data, it only has one or two.

Generally, the flags that got cleared, as I said earlier, were the B and the I flags, but if it had -- what I was after was

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can you get the data to a point where I have no flags, a U flag, or a J flag, because -- then I can manipulate, not in a negative way, but I can then do calculations.

I can do -- on the J flag, I use the value; no flag, I use the value; and on the U flag, I just use 50 percent of the value or zero percent of the value.

And I did the calculations both ways because I was interested in knowing if I don't use the conventional 50 percent values, how does it impact the results.

I started doing that back in 2024, and it turns out there are some examples where it does affect it, but I could give you sheet after sheet in here where there's basically no difference, because it turns out that the contribution from the constituents, the chemicals that are U flagged end up being small contributors to the overall TEQ, very small. Not always, but in general.

Q. And then -- so where you compared those two EDD files and you see flags have been removed, how do you tell how the flags -- like on what basis the flags were removed?

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A. They'll have -- they have a comment section that will say what they did for that data point or for that individual constituent.

Say, for example, for a given sample, so they'll have comments and then they write a PDF QA/QC file. That's also provided.

So the output from L- -- LDCI -- I don't want to say core -- but I think it's Laboratory Data, Inc., Corporation, is that I end up receiving two files back.

One is a -- I'll call it a finalized EDD file, or we call it an LDC EDD file, as opposed to the raw EDD file from the lab, which is just an Excel spreadsheet, basically, or spreadsheets.

And then we also get from the lab a PDF file that's a QA/QC report for all the issues, if there are any, with respect to what they got from the lab, how they resolved them or didn't resolve them, as well as other explanations of the things they found and either corrected or worked with the lab or whatever.

So those QA/QC reports are -- so, again, we get -- now, sometimes they aggregate

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data, so you may have a QA/QC report that accounts for several samples.
Q. Okay. Are there any opinions that you considered but did not include in either your opening or rebuttal report?
MR. CONLIN: Objection; form.
A. Considered but did not include? I would have to think about that. And the reason I say that is because I had two eras. I had an era where I was undisclosed and I had a different scope of work, and then I've got this era. I can't think of any. The scope of work pretty much dictated where I would form opinions.
I mean, I think the only area that I talked about a little bit was the whole issue of whether the burn was necessary or not, but I'm not -- the problem with that is I've been open about that, but I'm not here to be that expert, even though I do have opinions about it, unless you ask me on cross, and for some reason I answer, I don't expect in direct to be asked opinions about whether the burn was necessary or not. There are other experts who would opine on that.

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Q. Okay. Let's mark Tab 4.
- - - - -
(Thereupon, Deposition Petty Exhibit 4, Declaration, was marked for purposes of identification.)
- - - - -
Q. So we've marked as Exhibit 3 [sic] a declaration of Stephen Petty. Take a second, take a look, and my first question is just do you recognize this document? Sorry, Exhibit 4. Sorry.
A. It looks like there's multiple things here right? It looks like there's -- there's some exhibits attached to it, like my bio. I just want to make sure I'm accurate as to what this represents.
Q. Yeah, please.
A. It looks to me like there's many documents attached to this. Like Exhibit 4 is -- it's not page numbered, but it's some wind speed stuff from me, and then the next Exhibit 5 is a document from Luster. I just want to make sure I'm representing what it is you're asking me about.
Q. So --

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A. And there's a NOAA hypersplit model, I guess towards the end. Anyway, when you say Exhibit Petty 4, I just want to know what it is we're referencing.
Q. Take a look at Page -- it's Page 8.
A. Okay.
Q. It's not numbered, but Page 7 is.
A. Okay. I'm there.
Q. Okay. It's the declaration of Stephen Petty index of exhibits?
A. Okay.
Q. Exhibits 1 through 7?
A. Okay.
Q. And are those the exhibits that you're referencing that are attached to the back?
A. They are.
Q. I think the only thing that's not there is the declaration of Scott Smith, which we pulled out separately.
A. Yeah, and the -- the NOAA hypersplit model is there, I guess. Okay. Go ahead and start asking questions.
Q. Is this a declaration that you prepared in --

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A. The first seven pages certainly are the declaration.
Q. And are the exhibits attached to it exhibits that you compiled as part of your declaration?
A. I believe that the first four were ones that I compiled in the last -- obviously, I didn't do Scott Smith's declaration, and I don't recall providing either Exhibit 5 or 6 as part of this declaration.
Q. Okay.
A. It may have been provided -- I think Government Accountability did it. I would have to cross-check and see if I reference those in my declarations. That's what I'm looking for. I only see it referencing through Exhibit 4 in my actual written declaration.
Q. That's all I see as well, and my question was going to be did you compile Exhibits 5, 6 and 7, or were those added by someone else?
A. Those would have been added by somebody else.
Q. Okay.

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A. I mean, I have, for example, Exhibit 5. It's my report as an exhibit, but I think my declaration shows pretty clearly that I was referencing the first four exhibits.
Q. I agree. And then if we turn to Page 7, you've got a signature line for Stephen Petty. Do you confirm that that's your signature?
A. Correct.
Q. And you signed this on September 21st, 2024?
A. Correct.
Q. What is the purpose of this declaration?
MR. CONLIN: Objection to form.
A. Well, there were -- I think the purpose -- I define it here on Page 2, so I'll refer to that. I think -- I think the Paragraphs 7, 8 or 9 -- I mean, I can't write it any better than that.
Q. Okay. And were you retained by any law firm or party to prepare this declaration?
A. There was no money that exchanged if that's what you're asking. I wasn't paid. I was -- I signed a witness protection order,

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I think, with Government Accountability, where they would defend me or something if litigation came up, but, no, there was never any -- I mean, I volunteered to write this and do it on my own.
Q. So you're not a retained expert by the Government Accountability office?
A. I don't think so. The only agreement that I have with them is a representation agreement, I guess that's the better way of putting it.
Q. But if you're sued for the work that you're doing, they'll agree to defend you? Is that what you're referring to?
A. I guess any litigation that would occur as a result of my working with them, they would defend me and I guess -- I'm not sure about all of that, but, yeah, that was -- that was the only agreement.
I never -- I mean, I'm -- I'm called upon from them all the time to add to that, but I mean, it's -- they'll be publishing something and they'll ask my comments or something, but -- almost as a reviewer, more than anything else.

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Q. And what was your -- strike that.
In Paragraph 9, you reference toxicologist Dr. Arch Chip Carson. Do you see that?
A. I do.
Q. And you say he was hired by Plaintiffs' attorneys. Which Plaintiffs?
A. The class. I mean, I don't know who he had a contract with, but he was representing the class, the Plaintiffs' class, is my understanding. I just saw his video that was online, like on YouTube.
Q. And in his video, he said something to the effect of that class members can expect no long-term health impact due to the derailment?
MR. CONLIN: Objection; form.
A. Correct. Well, that was some it -- that was some of what he said.
Q. Sure. I'm not saying that's everything he said.
A. I just wanted to clarify that before -- yeah. In my opinion, he -- my view was because I was still a consulting expert on the earlier work, that my work was just coming

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to a close, literally, and -- but it wasn't disclosed because the settlement occurred, and my concern -- it was the first time I've ever really -- on the Plaintiffs' side I've gone against my own side, if you will.
I said -- when Carson -- I've actually talked to him, and I said did you see my data, and he said, I've seen all the data, and I'm like, okay.
And I just -- it's been my opinion for some time that there is significant -- not everywhere, but there is significant contamination of the site.
And a lot of the work, as I've said before, that was done by Norfolk and the EPA is not reflecting true wind directions that occurred during the -- especially the detonation of the vinyl chloride tanks, and that there is a complete bastardization of background and foreground sampling results.
And I had always wanted to get that information out, but I was on a knife edge because I was under confidentiality with the Plaintiffs, so I couldn't say anything and I didn't. I didn't say anything about what I

knew with respect to my own work.
Q. And Dr. Carson had seen -- or told you that he had seen all the data?
MR. CONLIN: Objection to form.
A. He claimed -- I believe he said that. I'm just -- but more importantly, what he was saying publicly concerned me, because I'm the guy in toxic tort. This isn't a toxic tort case, in my opinion, other than people have a right to be worried about the contamination.
I'm the one that does the exposure assessments. I've done hundreds of them, and I knew it hadn't been done yet. We had just finished, at least with one dataset, figuring out the extent of, and levels of, and locations of contaminations and contaminants. And the next step is to do a cumulative exposure assessment, and that hadn't been done.
And so my view was to make a statement about future harms to people was premature. It was premature. It could be that it's true there were no harms, or it could be that there were, but the truth of the matter is nobody knew yet. That was my opinion.

Q. And did Dr. Carson explain to you why he disagreed?
A. No. I never heard why -- I never heard why he disagreed. I was actually sitting in on a call with another toxicologist. I forgot who it was, so I was just kind of listening.
Q. And towards the bottom of Page 2, you have a heading: Too early to declare no long-term health impact.
Do you see that?
A. Where are you at? I'm sorry.
Q. It's a heading on Page 2, towards the bottom.
A. Page 2, towards the bottom, above Scott Smith? Oh, yeah. Yeah. I see the title, correct.
That's always been my opinion, is that I -- I've never seen a -- I've seen people compare values to screening levels and things like that, but I've never seen a cumulative exposure assessment by any party. I'm not saying it doesn't exist, but I've never seen it, and that's what I do for a living.
Q. Did you perform a cumulative

exposure assessment for this case?
A. No, because I wasn't -- this wasn't a toxic -- this wasn't a personal injury case.
Now, the people certainly have the right to be concerned, in my opinion, about that potential, but I have not done -- nor is this case about personal injury, as far as I know.
Could I do it? Of course, but I have not been asked to do that.
Q. And would you say it is still too early to declare no long-term health impacts?
MR. CONLIN: Object to the form.
A. I believe -- I have yet to see a cumulative exposure assessment. There are lots of antidotal comments about people having health effects, but I come from the litigation world where if I were going to form a general causation opinion, I would want to do an exposure assessment before I formed an opinion on that. That's just the way I work.
Q. And if we look at Page 3, Paragraph 12, you write: As far as the comments on personal injury by Dr. Carson are concerned, his assurances are in my opinion premature and

unsupported by any cited cumulative exposure analysis.
Is that the point that you just made --
A. I guess I preempted -- my answer preempts the next question. I think the answer is yes.
Q. And can you just briefly explain what a cumulative exposure assessment is?
A. First of all, you have to determine the chemical of concern, or chemicals, and then what you're looking at is people can be exposed three ways, either by ingestion, eating or drinking; inhalation, breathing it; or dermal, through the skin.
There's a fourth pathway, injection, but that doesn't really apply to environmental cases typically or even toxic tort.
And so what one does is -- and my expertise, I guess national expertise, is on dermal, and I wrote a paper with Mark Nicus in 2011. It's kind of the pre-eminent paper on benzene dermal exposure.
The -- but what you would do is,

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given the chemical of concern, then you use levels of exposure, either through eating, or breathing dust, or ingestion, with the contaminant of concern, you look at breathing that. You look at getting it on your skin, and then you integrate that -- I guess that's the best word -- you integrate that with time to develop cumulative exposure of that individual over time.

And then an epidemiologist will look at that number and say, yeah, that's causal, or, no, it's not. That's how it plays out in my experience, where a bunch of people debate about it.

Q. Do you think there's enough data out there that one could perform a cumulative exposure assessment based on existing data?

MR. CONLIN: Objection to form.

A. Well, the simple answer is more is always better, but it's my opinion that based on what I now know about the four datasets and how well they've been cured and then analyzed, calculated, plotted, I believe -- that's why I've been very much encouraging everyone to release our data to the world, release my

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reports, release the data behind them, and let people pick at it, good or bad.

Because I think what's going to happen is you're going to have some university types, based on my experience. It's not just the cumulative exposure, but there's an issue of synergistic toxicity, and that's a complicated topic. It kind of goes like this.

If the toxicity of two substances can be multiplicative rather than additive, and the classic example given in toxicology is cigarette smoking and asbestos.

And I don't know the exact factors, but let's assume that one has a factor of four increased risk and the other one has a factor of five. I don't know what the real numbers are off the top of my head.

One might say, well, the cumulative factor would be four, plus five or nine. And it turns out that for cigarette smoking and asbestos, the synergistic toxicology is four times five or 20, not nine, in that example.

And so the question on the table is, is there synergistic toxicity associated with dioxins and PAHs and any of the other

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substances?

And when you asked me the question is this -- the information there, I think it is, but I think there's also going to take some time for people to assimilate the data and look at the issues, particularly like synergistic toxicity, and then do the analysis. That's the one part I think is missing, and that's why I would like to see the data out there.

There's nothing proprietary about our data, other than it's paid for by Plaintiffs' attorneys, but I would like to see the information released and let the world beat it up, good or bad, and let's see what people say about it.

I think the other factor to be added is when you look at the total surface soil, sediments, data with time, groundwater, surface water, we probably have almost as much data as anyone else, because there's very few -- you can go to Luster's report, there's very little actual dioxin testing by Norfolk Southern and Arcadis.

There's lots of total sampling, like air sampling, 20/40,000 sampling points,

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but there's less than a thousand, I think, of surface soils and surface waters.

So we have a significant dataset in context with what's been taken by the other side. I'm perfectly fine with having that dataset up there and our dataset up there and let people go at it.

Q. In Paragraph 23, on Page 4, you say that EPA -- what the EPA appears to have done is combine or commingle two categories of data into a single category, which misleads the reader by obfuscating known additional information.

A. Correct.

Q. Can you unpack that and explain what you're saying there?

A. It is complicated. What -- what the EPA reported -- remember I talked earlier about that there's two detection limit values now, the reporting limit and the MDL, typically, and that's always -- if you get the raw data reports from Arcadis, you always see those two values for a given analyte and a given sample.

And EPA only reported the reporting

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limit, and I'm like, well, that's really strange. Where's the MDL? And it turned out we had parallel data from Tetra Tech, I think. Same samples, same results, except for there was MDLs listed.

I felt that was very misleading because the reporting limit is always -- as much as an order of magnitude higher sometimes than the MDL, and it gives the impression that the data are all below a detection limit, but the RL is sort of, in my view, kind of a super detection limit, but it's -- it's almost guaranteed it's there at that level, whereas the MDL, we can't see it.

And I come from 40 years of analytical chemistry, and I either -- the instrumentation sees it or doesn't see it, and that's what the MDL is.

So when the EPA didn't report the MDL, it gave the impression that all the results were below the detection limit, and as I said before, those values below the RL and the MDL are the interesting values because are they actually the values that are reporting or -- if you just assumed --

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If you took the EPA data by itself and said, well, that's a detection limit, then your natural inclination is to either say, well, it could be zero, or it could be anything up to that value and then convention is to use half the value, right, like class and others. All the risk assessment documents back in the day always used points -- half the detection limit value counts. So I just felt why did you report the data like it comes straight out of the lab?

In other words, let it come out of the lab, and we knew that there was something funny about it because we had the same samples from Tetra Tech, somehow or another, so we could see how it was reported originally, and then we could see how it was reported by the EPA.

And I just thought why are you squishing the data between the -- in other words, they're saying it's below the RL or it's above the RL. Well, that's not how the data gets reported.

The data gets reported -- it's either below the MDL, it's between the MDL and the RL, or it's above the RL. But just reporting it as either above or below the RL was, in fact, compressing the information. I thought that was misleading.

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Q. Did you ask anyone at the EPA why it was reported that way?

A. No; I wouldn't even have known who to ask.

Q. Did you see anything online explaining why EPA chose to report the data that way?

A. I don't know the answer to that.

Q. Have you ever been retained by the lawyers from Cory Watson firm prior to this case?

A. I think the answer is no, but they were part of the Plaintiffs' class for the C8. I didn't work for Cory Watson directly. I worked for Levin Pap of Pensacola, but they were -- so I was reporting directly to them, and a little bit to Douglas, out in New York City.

Q. You say the Plaintiffs' class for CA. What is that?

A. C8.

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Q. C8?

MR. CONLIN: For the record, he's referencing the C8 NDL, the Southern District of Ohio, in which we were -- on the NDL for the Plaintiffs.

A. C8 is an acronym that stands really for PFOA, which is the -- one of the PFASs, and it was released for years by DuPont -- works and partners for West Virginia, and contaminated the Ohio River Valley.

And I was retained -- ultimately, I was in four trials, 12 dozen of those stand in federal court in Columbus here, but Cory Watson was one of the lead Plaintiffs' firms, but I didn't work -- I didn't work directly for them, if that makes any sense.

My interface and my billings went to Levin Pap, even though, obviously, they were sharing the costs with the entire Plaintiffs' class.

So when you ask that question, I can say I guess, technically, I might have worked for them, but I didn't know -- I didn't really know it at the time.

Q. Fair enough. Do you know who Mindy

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Bish is?
A. I know the name.
Q. Who is Mindy Bish?
A. She's somebody that Scott Smith interfaces with. That's all I know.
Q. Have you ever spoken with Ms. Bish?
A. I have.
Q. When was that?
A. I don't know. A couple, three weeks maybe. Three or four weeks ago.
Q. And what did you speak about with Ms. Bish?
A. She wanted to retain me and I --
MR. CONLIN: I'm going to instruct you not to answer any communications you had with other counsel.
THE WITNESS: Oh, okay.
Q. But you testified earlier that you were not retained by Ms. Bish's firm as part of the intervener's motion; is that right?
MR. CONLIN: Objection; form.
Q. With respect to the declaration that you submitted --
A. Yeah.
Q. -- as Exhibit 4, you said that you

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were not retained. Did you subsequently become retained?
A. No. That work was all pro bono for Government Accountability.
Q. Okay. And have you become retained by Ms. Bish's firm for any reason as an expert? Just a yes or a no?
A. Can I answer that question?
MR. CONLIN: If you haven't, you can say no. If you have --
A. I have not been retained by her firm.
Q. Okay. So you said you spoke with Ms. Bish three or four weeks ago?
A. Yes.
Q. About what?
MR. CONLIN: Objection. I'm going to instruct the witness not to answer privileged communications he had with counsel, even if it was in a pre-retention consulting role or a potential retention role.
Q. Did you speak with Ms. Bish about a potential retention?
MR. CONLIN: Again, I'm going to instruct the witness not to discuss any

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communications you had with any lawyer.
A. Okay. Well, I guess I'm not going to answer the question.
MR. RHEINHEIMER: Well, as a yes or no, can he answer --
MR. CONLIN: I mean, he already -- he probably already answered more than he needs to. We can discuss this off the record. I'm not going to step on somebody else -- any attorney work product issues here. Right. I think he's been very open with you so far. He's not retained, right, and --
THE WITNESS: So I haven't been disclosed.
MR. CONLIN: So to the extent that any other communications he had with counsel, I think that's out of bounds, any lawyer.
MR. RHEINHEIMER: Whether for the purposes of retention or not?
MR. CONLIN: I'll stick with my objection. It's a slippery slope.
MR. RHEINHEIMER: Such is life.
MR. CONLIN: It is. Such is life. We can certainly call up a bunch of lawyers and have them enter an appearance for the purpose

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of objecting if they want to. I just don't think -- I think it's a red herring.
MR. RHEINHEIMER: I mean, I was limiting my question to the predicate of whether there was an issue, which I don't think we've established.
MR. CONLIN: Yeah, but I mean, I think -- I let him answer that he wasn't retained, and you asked him questions about his declaration for the GA -- I think that covers all that.
MR. RHEINHEIMER: We'll see.
MR. CONLIN: And it's certainly discussed out of the scope of his work in this case in any capacity.
MR. RHEINHEIMER: That, I would disagree with, but that doesn't become relevant unless I can ask the questions.
Q. Okay. If we turn back to your declaration, which is Exhibit 4, did you exchange drafts of a nonfinal declaration with anyone?
A. I'm sure that I did with Government Accountability. That would be it.
Q. And who is Government

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Accountability, just in general, your understanding?
A. They're -- I don't know if I know fully what their role is. They tend to represent whistleblowers. They're centered out of Washington D.C., but they have offices all over the country. I never considered myself a whistleblower, actually. I just considered myself a commenter.
I wasn't whistleblowing anything. I wasn't disclosing anything that I held privately with Plaintiffs' attorneys, so I was just commenting on publicly available information, as well as I had a chance to look at Scott Smith's data, so I was commenting on it.
So I -- you know, they tend to represent whistleblowers and protect them and then get their information out into the public, is my understanding. I was just there to comment on the things that I wrote on those three paragraphs that we were going to comment on. In no way was I going to breach my confidentiality with Plaintiffs' attorneys.
Q. And by that, you mean you didn't

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discuss your data in this declaration?
A. My data or any data that I was reviewing as part of work product of my undisclosed work. I obviously knew a lot, but that, I had to be careful to comment on.
Q. All right. Let's turn back to your opening report we've marked as Tab 2 -- as Exhibit 2. Excuse me.
A. I'm there.
Q. And if you look at Page 360.
A. I am there.
Q. And this is your CV and case list, correct?
A. Correct.
Q. And we talked earlier about how it was up to date as to deposition and trial testimony, so my question now will be limited to the CV itself and whether there are any updates, relevant updates to your CV since you submitted this in April.
A. I've always been challenged in writing a CV. I've always thought they were obnoxious in just being super long, and I've been involved in 10,000 projects, so it's like -- but I would say the only significant thing

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I've done in the last month is I was asked pro bono to prepare testimony before the Ohio House and Senate on data centers, and I did so.
Q. And did that testimony relate to the opinions that you've given in this case?
A. No.
Q. And if we go back to Page 5 of your report, Exhibit 2.
A. We're going backwards, Counselor.
MR. CONLIN: I'm sorry, what page did you say?
MR. RHEINHEIMER: Five.
A. I am there.
Q. Okay. And that is Section 1.0, and it lists out your qualifications, right? Page 5 and 6.
A. It's a summary of them, yes.
Q. Okay. Good clarification. A summary of your qualifications. And you intended that to be -- to include all of the key parts of your training and background as applied to your work on this case, right?
MR. CONLIN: Objection to form.
A. No, I don't know that that's the case. I mean, I've worked on the space

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shuttle. I've worked on nerve agents. I've designed combustion facilities for nerve agents that were implemented and used. I've got nine patents on HVAC heat pumps.
Whether or not that background is relevant or not -- like, for instance, you asked earlier about CERCLA and all that, and I was trying to think back of all of the Battelle stuff that I did, beginning with National Priorities List in '79, and there's got to be somewhere, because I was -- I was one of the chiefs -- I was the senior research scientist on the -- on the nuclear waste repository site in Hereford, Texas.
So I've been involved in a lot of -- I did design work on nerve agents. I have a nerve agent handbook to this day. I worked on the space shuttle, solid rocket boosters for -- that's when I first learned how to do -- process safety management and failure of effects analysis after Challenger.
And, you know, it sounds like you're a big shot, I guess, in these projects, but you're one of hundreds of engineers and scientists that work on these projects, so you

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don't always know the totality of the project and who all is involved, but I've worked on dozens, if not hundreds, of projects like that over 50 years.

And there's no way to summarize all that, and I would think it would be obnoxious to do. So what I just tried to do here was to give a very topical overview of my background with respect to forensics, with respect to the fact that I'm a professional engineer in six states.

I'm a health and safety expert, as a CIH, I'm an OSHA expert, as a CSP. I have my asbestos certificate in Ohio, so I'm allowed to sample for asbestos.

And then I've been -- I've been involved in expert witness cases that cover the waterfront on terms of chemicals and biologics, as well as the classic slips, trips, falls, HVAC, building envelope, amputations.

I've done a case where a guy was sitting at the bottom of a tower and they were building, and a piece of angle iron ID fell down and chopped his arm off, so little stuff like that.

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But I was just trying to give a flavor for that, and then there's generally a misunderstanding about who a CIH is, so I wanted to show the definitions of it.

And then on Page 6, I always put in that the reason that I went after it -- because I was an engineer by training and I didn't come from the health and safety field originally, so, getting into the health and safety field was a bit of a challenge because it covered rubrics or dimensions that I wasn't necessarily spent my first 20 years doing.

And I list those 18 areas, which include toxicology and epidemiology, et cetera, analytical chemistry. As by training, experience, and examination, I'm certainly an expert, because I've been cleared by examination. And, of course, to take the exams, I had to have so many years of experience documented and training in order to take those exams.

So I always put them in there because, especially the rubrics on CIH, because I'll have people say, well, you're not an expert in epidemiology or toxicology, and I'll say, oh, yeah, I am. Absolutely, I am. And 40 percent of the CIH exam is toxicology.

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So -- and that's what was a little bit odd to me when one of Norfolk Southern's experts said, well, he has no expertise in toxicology and epidemiology, and I was like did you read Page 6 of my report? Come on already.

Q. Do you hold a degree in toxicology?

A. No, of course not. I would have listed it if I did.

Q. Do you hold a degree in epidemiology?

A. No; that doesn't mean I'm not an expert in both.

Q. Are you board certified as a toxicologist by the American Board of Toxicology?

A. No. That doesn't mean I'm not an expert in toxicology.

Q. Are you a member of the Society of Toxicology?

A. I am not.

Q. Have you published any original research in toxicology in a peer-reviewed journal?

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A. I believe so.

Q. And which -- what is that?

A. It was work that I did on -- well, it's in my publications, but I published a paper with Nicus and others on -- I want to say it was vinyl chloride as a -- let me check for the exact paper. Let me get this right, the timeframe -- bear with me.

I published a paper with Nicus and two others on the toxicity and the epidemiology of -- and the exposure of workers to -- especially hairdressers and barbers to vinyl chloride as a propellant in hairsprays, primarily in the -- that occurred primarily in the '70s, so we --

There's a very unique disease associated with that exposure called Angiosarcoma of the liver, and most people really weren't familiar with where that would come from.

And then I had a lot of the meeting minutes from the industry, and so they were the ones that said, hey, we've got to be watching the hairdressers and the barbers because they're the ones getting hammered with the

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vinyl chloride as a refrigerant.
And, of course, they increased the price that people used fluorocarbons -- so that was -- that paper cited a lot there.
My textbook has two sections that include toxicology, indoor environmental quality, and then the section on mold and bacteria include Legionella.
And then I wrote a paper not long ago -- well, I guess it would be now -- on visible dust and asbestos and what it suggests regarding asbestos exposures. Those are some examples.
Q. Okay. And what about original research in epidemiology that's been published and peer-reviewed in the epidemiology journal, other than those two you just mentioned also --
A. Well, the work on -- that was -- the work on vinyl chloride as a propellant is certainly epidemiologically in the context, because it was looking at exposures and disease. So that would certainly be epidemiological, to have that aspect of it as well.
Q. Have you ever taken the diplomat of

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the American Board of Toxicology examination?
A. I have not.
Q. Do you know what the eligibility requirements are?
A. I don't. I've never studied for it. I know what the eligibility requirements for the CIH, and I know what they are in PEs, and I know what they are on CSP and asbestos.
Q. In your rebuttal report at Page 29 to 30 --
A. I am there.
Q. -- you have a response to the last row on Page 29 and the first row on Page 30. It's your response to Dr. Findley's statement. Do you see that?
A. Yes.
Q. And you say -- and you say this in your report, too. You're a trained and certified expert in both toxicology and epidemiology, right?
A. According to the Board of Industrial Hygiene and American Board of Industrial Hygiene.
Q. But what certifications do you hold in toxicology?

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A. CIH.
Q. Anything else?
A. I don't believe so. This statement covered a lot of topics, because it said I wasn't -- disease causation. Well, I don't think they read my resume that I was in a Daubert hearing in West Virginia -- federal court in West Virginia, being a general causation expert, and the motion to say that I wasn't was denied in Federal Court; so I've testified as a causation expert many times.
Q. But you're not -- your role here is not as a causation expert, right?
MR. CONLIN: Objection; form, misstates previous testimony.
A. Well, I -- not with respect to personal injury, but with respect to environmental contamination, I certainly am a causation expert. That's why I've got to be careful with how you ask that question.
Q. And what certification do you hold in epidemiology?
A. The CIH. Part of the exam is epidemiological questions, and it also is based on so much experience in that area and

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education. I took coursework in that area.
Q. Coursework where?
A. Ohio State University.
Q. Undergraduate or graduate or both?
A. I don't know. It was part of -- it was a quarter course. I taught mostly to regulators. I was one of the few personal people prior to the private industry people to go to it. It was taught in the late 1990s on getting people ready for risk assessment being used in the environmental world.
So part of that was a whole section on epidemiology, as well as toxicology. I think it was jointly taught by the University of Cincinnati as well.
Q. Okay. Now, you've mentioned a couple of times, I think, that one of the issues that you have with the Arcadis work was the use of plastic bags in some of their sampling; is that right?
MR. CONLIN: Objection to form.
A. I'm not sure about the some. It looks like that was the protocol for the soil sampling.
Q. Okay. For all of the soil sampling

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at the site?
A. Well, I mean, that's -- you can read my report about there's conflicting language -- we can go to the specific language, but there's conflicting language. It says put them in plastic in one sentence, and in the same paragraph, it says: Use the supply containers, in the other paragraph.
So there's -- there's conflicting language within the protocols, and I point that out.
Q. And is that a -- is the use of plastic bags a problem for all constituents being sampled for, or are there certain constituents for which the use of a plastic bag is particularly problematic?
MR. CONLIN: Objection to form.
A. Well, I mean, I cite literature, and the EPA also puts literature out that say that certainly plastic bags are not acceptable as a storage medium for dioxins, for example.
So my view in general is that based on my experience, glass is always used for SVOCs and dioxins.
Plastic bags are used in UST work

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for VOCs, and the reason is -- if you want me to explain, the reason is that when you do -- when you drill a well for either soil boring or for -- ultimately, for a water well, groundwater well, that usually you take -- you split samples every two feet, you get the boring log out. You log it -- what the geology is, and then you take a sample of that and you put it in a plastic bag every two feet, and you put -- and seal it.
And you put all of those bags in front of your -- on your windshield or somewhere, especially in the Northern climate because it's cold. And then at the very end of the process, you take a PID. You open the bags and you take PID readings, and the values in general, the values of the two highest. Say if you had 20 feet and you had ten samples, the values with the two highest PID readings, you submit for BTEX analysis.
That's done in UST work for volatile organic compounds, but it's not done for semi-volatiles or dioxins, mainly because of -- the real concern you have is contamination, either absorption or desorption

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of the plastic material and plastocyanin is impacting the results.
Because dioxins, you're trying to measure down at parts per trillion, and if you have anything that's much higher than that, you'll overwhelm the instrumentation, so you can't get the detection limits you would like. So -- that's probably more than you wanted to know.
Q. Did you see any -- in the file, any field change requests or requests for approval of the use of plastic bags or sampling that EPA reviewed?
MR. CONLIN: Objection to form.
A. I don't recall seeing any, that EPA granted that, and like I said, the other problem with the plastic bags, aside from that, was the chain of custody issue, which we've talked about.
But more importantly, I thought the reason to sample from zero to six inches was to do -- kind of like asbestos where you do layers, and I thought the idea was, well, we'll do zero to one inch, one to two inch, two to three, et cetera, and see on a few samples --

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see if this material -- how far down it's penetrated.
But that's not what was done. What was done is they just took composites, so they sampled zero to six inches, threw it in the bag, stir it up, and put it in.
Well, I cite some literature and others cite some literature saying that, most likely, this is in the first couple of centimeters, first inch or so, since 2.54 centimeters is an inch, and you wouldn't expect, because of the insolubility, for it to move much.
So you have the real effect of diluting your values from the service. All of the materials is zero to one inch, and you sample zero to six inches, you've got a glitching factor of six. That's a big deal.
So I wouldn't have had a problem, as I say in my report, of sampling some samples zero to six, just to see what the degree of penetration of the soil was on spot checking, but even there, they didn't do that, and they just took a big graph composite.
So there are multiple issues with

the plastic bags in my opinion. I've tried to summarize them as best as I can.

Q. Okay. You also identified an issue that you saw with respect to chain of custody forms?

A. Multiple issues.

Q. One of the issues is where you identified an example of a chain of custody form that wasn't signed?

A. No. There was -- I believe I cited one where the sampler was not listed.

Q. Where the sampler was not listed?

A. Right.

Q. What is the import of that in your mind?

MR. CONLIN: Objection to form.

A. The import is that the idea between a chain of custody is that you have full knowledge and access to the people that handled the sample the entire time it was handled.

So in a soil sample you have somebody who extracts it from the ground and puts it in a container. That's the first person that should be on the list.

Then you have somebody that might

-- like in my case, it was straightforward. Then I handed it off to FedEX, so I had them sign off on it.

When the lab gets it from FedEx, they sign off because they got it. So that the sample -- the entire -- and it's signed, dated and time signed -- stamped, so you know -- the ideal case is you know ideally where that sample was from the time it was taken out of the ground if it's a soil sample, to the time it shows up at the lab.

The problem when you don't know who the sampler is, is multifold. First of all, you don't know for certain where that sample was from the time, and for how long it was somewhere, and what was done with it from the time it came out of the ground, to the time the first person signs off on it.

And, more importantly, if they're not listed, you have no ability to go back and ask them questions about what they did, and where it was, and how it was handled.

Now, there were two other issues with regards to the chain of custody. I've already talked about the plastic bag. We don't

have any indication in the chain of custody of that interval. So it comes out of the ground, goes into the plastic bag. That's one chain of custody.

And then it goes out of the plastic bag into a jar. That's the second chain of custody event.

The real problem with that is that the lab looks at that chain of custody when it comes in and they will report back to you -- pardon my French -- if you screwed up, and so it's a way to get feedback in the process.

But if they never see the plastic bag in the chain of custody, they have no ability to tell the sampler, hey, don't do that. So it's not just that you don't have a complete chain of custody, but you've killed the feedback mechanism with the lab.

And then the third case is where the sampler is listed, but they're not the first person on the chain of custody below the signature date, sign -- where it's signed, dated and time.

So, again, you don't know -- you know who the sampler is this time, but you

don't know when they took the sample and when they released it, and where it was in between.

And so in almost all cases, you have incomplete chain of custodies. To me, that's fatal.

Q. So when there's a break in the chain of custody or an incomplete chain of custody, the data can't be used?

MR. CONLIN: Objection to form.

A. I mean, some other people are going to make that decision, other than me. I think as a professional, having sampled for over 40 years, that an incomplete chain of custody, if the roles were reversed, you would have serious concerns about the validity of my data, and legitimately so, because you don't know for sure who had it when, and where, and what happened to it in between and --

Now, whether it gets thrown out or not, I think is a legal question, not a technical question.

Q. As a technical matter for -- in your view, should you use data that's been collected with the chain of custody that is broken or incomplete?

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A. My opinion would be you should not.
Q. Okay. If you look at Page 42.
A. We're on Exhibit 3 again?
Q. Yes.
A. Thank you. 42. Okay. I'm there.
Q. This is a discussion of the additional testing that Scott Smith did at the WYG and Ceramfab properties, right?
A. Correct.
Q. And he analyzed for PAHs and dioxins and furans?
A. Correct.
Q. And then you have tables and figures relating to that testing, right?
A. And GPS coordinates, yes.
Q. And so that was -- that was one sample on each of the properties?
A. Technically, two samples because you're sampling -- one set of samples is for dioxins and one is for PAHs.
Q. Were those samples taken from the same place?
A. Yes.
Q. And I think we can see that location maybe on the picture on Page 45. Is

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that a good picture of the location?
A. Correct. That's -- I hope it's right. That's what the GPS coordinates say.
Now, that's just for the TEQ -- there's a similar plot on the next page for TEQs for dioxins.
Q. Same location for both, but just representing the results for dioxins versus PAHs, right?
A. They're probably taken just adjacent to each other, yeah.
Q. Do you know how Mr. Smith selected the location on the site to take these samples?
A. Not specifically. All I know is he was instructed to take them on site within the constraints of the property boundaries.
Q. And was the Ceramfab sample taken outside of Ceramfab? Sorry, outside of the building footprint?
A. You mean like wasn't taken under the slab or something?
Q. Was it taken outside versus inside or under the slab?
A. Yeah. It was taken outside -- outdoors.

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Q. And if we look at the picture on Page 45, it looks like it's the southwest corner of the property next to a street. Is that --
A. I would say it's south central, actually.
Q. Okay.
A. But I'm not trying to quibble with you.
Q. No, you're right. You're right on that one.
Okay. And then on the WYG property, which is the one to the left in the picture, right?
A. Yes.
Q. The sample was taken southerly?
A. Southwest quadrant.
Q. Yeah, adjacent to the street again?
MR. CONLIN: Objection to form.
A. I don't know if it was adjacent to the street, but it was taken on the property. I mean, I wouldn't know how to describe adjacent to the street. I don't think there was any intent to take it where it would be associated with impacts from the street itself.

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I mean, we were cognizant of that issue. We had -- obviously, we had the experience of the reports from the delineation report where they talk about taking samples on the street or away from the street.
Q. And what are -- you say you're cognizant -- well, strike that.
You said you didn't intend to take it where it would be associated with impact from the street itself. What do you mean by impact from the street itself?
A. If you have an asphalt street and you -- if you sample asphalt, there's PAHs in asphalt, so you don't want to sample where you have asphalt residual. I know that, having done it in the past. You can get really good, high results if you do that.
Q. And then are there PAH or dioxins released in automobile exhaust?
MR. CONLIN: Objection to form.
A. I guess it has a -- PAH -- I guess it has kind of a yes and a no answer. I think technically, yes, but typically, those concentrations are -- I don't know about dioxins. Did you say dioxins and PAHs or just

dioxins?
Q. Or, either one.
A. Oh, or. I have to be careful how I answer that.
MR. CONLIN: Same objection.
A. There's certainly some PAHs, because PAH is associated with combustion. There's certainly PAHs associated with exhaust products. I'm not aware of dioxins coming from vehicle exhaust. Theoretically, but I'm not familiar with that, mainly, because remember -- and the reason I say that is -- this is the chemical engineer coming out of me.
The hydrocarbons that are burned in an engine are gasoline or diesel, and they're not chlorinated hydrocarbons, so you wouldn't expect that you would have a chlorinated byproduct like a dioxin exhausted.
And, in fact, Gullett's work cited in the Gulf of Mexico illustrates that, cited by your experts, or expert.
And so on the dioxins, I would say no, probably not. The PAH side, potentially, but the levels would be relatively low, unless you had really, really bad performing engines,

but the performance of engines anymore is -- I mean, there's so much work being done on -- and I worked on it for years, on lowering engine emissions.
So it's a theoretical thing that, yeah, there's going to be the potential for something to be released, but I don't think it's going to wag the dog, as we say.
Q. What are some common sources of PAHs in the environment?
MR. CONLIN: Objection; form.
A. Well, PAHs are, by definition, ringed hydrocarbons, if that makes any sense, multi-ringed hydrocarbons that are attached. So -- I don't mean to be demeaning or anything like that, but the simplest ring compound is benzene, right, C686.
And then if you take two benzene rings and combine them, you have -- multi-ring or two-ring PAH.
So any thing of multi-rings, benzene rings -- they don't always have to be benzene rings, but those are, by definition, PAHs, and they are in general associated with combustion of hydrocarbons.

So -- and, more importantly, associated with incomplete combustion of hydrocarbons. And what do I mean by that?
In an ideal combustion process, you take fuel, carbon hydrogen source, you mix it with oxygen, and you produce water and C02, and so the carbon is converted to carbon dioxide.
What happens in the real world is, to some degree, some of that carbon is incompletely combusted. You get some CO, carbon monoxide, and if some of the hydrocarbons are sooted, you can produce multi-ringed PAH output.
But it's really associated primarily with poor, incomplete combustion of non-chlorinated hydrocarbons.
Q. And what are some of the common sources of dioxins and furans in the environment?
MR. CONLIN: Objection; form.
A. The -- well, the classic one is the -- when Monsanto made Agent Orange for the Vietnam war. They knew dioxin was in it, but they -- since it was just going to be displaced over the jungle, they didn't really purify it

to the degree they could have, so it ended up with a relatively high dioxin count, which is one of the deadliest compounds on the earth.
But as part of that process they had -- and I don't know how it came about, but there was waste oils that -- out of the process, that were a waste stream. They didn't know what to do with it, so they gave it to a community in southwest Missouri to add to -- they gave it to a contractor who used it to mix with -- or to spread on dirt roads to keep the dust out, and as a result, super contaminated those areas. Times Beach, Missouri is the classic case. So one of the sources is from the production of Agent Orange, historically.
The other major production, the classic is combustion of PVC, polyvinyl chloride. And what polyvinyl chloride is, is a hydrocarbon where some of the hydrogens are replaced by chlorine.
And so in order to have a dioxin, you have to have chlorine in the molecule to be combusted, so -- and then vinyl chloride is another example, as I've shown in my report, and the chemistry of it where it's a

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hydrocarbon with a chlorine substitution for the hydrogens.

So whenever you burn a chlorinated hydrocarbon, you have the potential to create some dioxin, and that was the point I made about the Gullett papers being cited.

The one that was cited on just using hydrocarbons, where they got personally no dioxins, but he has another paper that I cite where he's looking in the Gulf area where they were burning chlorine and hydrocarbons, and they got very high dioxin levels relatively. And then he has two patents on how to get rid of or strip out dioxins from materials.

So I was interested in Gullett, and he's supposedly EPA's dioxin expert. I wanted to know more about him, and so we did a little bit of homework on him.

But the bottom line is that if you have a chlorinated hydrocarbon and it's burned and it's burned in an inefficient, incomplete way -- and always, you know, I was -- I was Googled by somebody who didn't even know who I was when I was sampling, and they stuck a mic

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in my phone and -- they didn't know who I was. They thought I was president of EES, but I had sold it to somebody else, so he got like 300 calls, and I was like thank God --

And they asked me about what do you think of the controlled burn, and I said what do you mean controlled? It was uncontrolled by definition, and then they -- it got -- I don't know what the word is these days, but anyway, it went out to four million people.

And then I said, of course it's uncontrolled. Do you see all the soot? By definition, soot is incomplete combustion. It's not C02 and water.

So anybody that -- and, of course, I had worked for some of the best combustion experts in the world at Battelle at the beginning of 1982, because I wrote that preeminent paper on combustion, crude oil, and water, and as I said earlier, it was the largest burns of crude oil in the world at that time on oils from all over the world and -- crude oils from all over the world.

And so I understood the combustion of hydrocarbons when I was a very young -- I

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guess I would have been called a researcher or a scientist -- I didn't have a very big title in those days. I was a newbie when I was 22 or 23.

But my very first big project was combustion of crude oil and water, and we did that for two and a half years.

So I understand the combustion chemistry, and the key is you've got to have -- you know, if you don't have the right air fuel mixture, you're going to get incomplete combustion, and that means you're going to form things like dioxin, CO, soot, things like that.

MR. RHEINHEIMER: We can take a break.

THE VIDEOGRAPHER: We're off the record.

(Recess is taken.)

THE VIDEOGRAPHER: We're on the record.

Q. Okay. Now, let's go to Page 25 of Exhibit 2, which is your opening report.

A. I'm there.

Q. And there are a couple of figures, Figure 5-5 and 5-6.

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A. Yes.

Q. And they refer to NS Q& As?

A. Yes.

Q. Where did these come from?

A. I believe they came from Norfolk Southern. There was a school there or a church and a school, and they had a room in a basement, and they had a lot of brochures and handouts, so I just grabbed them from there.

Q. And do you remember about when you grabbed these?

A. It would have been in February of '23, late February. I didn't get there until the 20th.

Q. And then if we go to the next page, Page 26, Figure 5-8, where did that come from?

A. Same location. I was -- that literature came -- the PID literature came from individual homeowners, and this came from literature that was available locally to the public. You can see at the bottom of 5-A, that said in February of '23. Confirms my earlier answer.

Q. And these figures are all screenshots from your phone, the portions of

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the brochures?
A. No. I actually had the brochures and I took pictures of them, and then I cropped them and then I photo enhanced them by adding the boxes and things like that.
Q. Okay. And then Figure 5-8 looks a little different. Is it the same process, or is that from a different source?
A. The best I can recall, it's the same process. It's been a while. All that was done over three years ago.
Q. Okay. Okay. Let's turn to Page 185 of Exhibit 2.
A. I am there.
Q. And it lists the four datasets that you had access to for purposes of your report, right? Excuse me.
A. Well, no. I had access to EPA datasets, and Norfolk Southern datasets, and I had the Ohio Pennsylvania dataset, but as far as the data that the Plaintiff -- I'll call them the Plaintiffs' datasets, I guess -- well, that's not even correct because Scott's wasn't necessarily Plaintiff. However I described them earlier, the four datasets I used for the

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purposes of this work.
Q. Okay.
A. I guess they're described at the top of that page again.
Q. So Dataset No. 1, I believe you said it was the data from other Plaintiffs' experts from the class case; is that right?
A. Correct.
MR. CONLIN: Objection; form.
A. Well, it was from -- I don't know if they were experts, but they were other samplers from other attorneys who were part of the Plaintiffs' class.
Q. And those samples were collected July, August, and September of 2023?
A. Correct.
Q. And what background materials did you have access to, like work plans, chain of custodies, that type of thing.
MR. CONLIN: Objection to form.
A. I had the -- I had the chain of custody, because I had the Level 4 reports. I think I answered this question before. I had the Level 4 reports from Laboratory Data, Inc., and then I had the GPS coordinates that were

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taken. Then -- I can't even know how much I should say about that dataset because it was never disclosed. I guess it doesn't matter.
The intent of that dataset initially was to tune the Plaintiffs' air modeling. We had a certain air model, and we were taking data out on a matrix to try to see how well the soot reflected actual deposits of dioxins and PAHs, so that was -- that was my job, was to take that dataset and convert it, get it QA'd/QC'd, get it calculated, and then get it to the modelers, but that all got shut down before it ever got finished.
Q. But then you did eventually go back and finish the Level 4 reports?
A. No. Dataset 1 was always -- Dataset 1 was, in essence, completed by me in April of 2024. It just wasn't handed off to the modelers because of the settlement, and so I don't know all the details, but Plaintiffs' counsel made a deal with the class to obtain that information and my work product so that it could be part of this analysis.
Q. And is it accurate to say that all of the information, the document -- the

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documented information about the sampling for Dataset 1 is included in those lengthy Level 4 reports?
A. I'm not sure how to answer that question. We have the Level 4 reports. We have the GPS coordinates. We have them -- obviously, QA/QC to the Level 4, and then we had the Laboratory Data Corp., interfaced with Eurofins, to clear any issues, and then clear flags and then issue a QA/QC report.
It took about three months, is my recollection, January through March of '24.
Q. Okay. All right. The second dataset is referred to as Petty February through April 2023; is that right?
A. Correct.
Q. And that is data that you or your staff collected?
A. I personally collected.
Q. You personally collected. Okay.
A. I mean, I had people with me. Don't get me wrong. They would hand me a label or hand me a jar.
Q. And that data was collected between February and April of 2023?

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A. I think I said through April, right, not to.
Q. Through. Did I say to?
A. I thought you said to.
Q. I meant through.
A. I don't know. I could be wrong in what I heard.
I was there for two rounds of sampling. I was there from February 20th into March. Probably by the end of the first week of March, I left, and then I was back in early April for the removal of the north tracks and sampling in and around the tracks and in the excavation zones.
THE REPORTER: In the what?
A. Excavation zones. I probably don't talk too well.
Q. And was that eventually reported in Level 4 reports?
A. In the what?
Q. In the Level 4 reports.
A. Initially, it was Level 2 reports, so as part of this work, I went back and got -- I think with one exception, I have all Level 4 reports. There was half of a VOC report that

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didn't get to Level 4, but it wasn't really used for the calculations or the -- because it wasn't SVOCs or dioxins.
So all the dioxin SVOC data is -- was originally Level 2, and then was -- as part of this work, Eurofins was requested to convert or to generate Level 4 reports for Dataset 2 by myself.
Q. And the documentary evidence that goes along with the reports, the chain of custody work plans, all that would be included in the Level 4 report; is that right?
A. I don't know if that's true, but certainly -- I mean, it's a compound question, but chain of custodies always are. I mean, that's -- when I start doing an analysis of other people's work, I want to see a chain of custody. That's probably clear by this point.
I described kind of my process for what I sampled and why early in the report. It was an effort to determine the chemicals of concern, including dioxins, which I was criticized for early on, and then interfacing with the lab -- in fact, when I interfaced with Eurofins, I was interfacing with five different

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labs to ensure that I had five different locations of Eurofins, to ensure I had the right methodologies for sample analysis, that I had the right samples, container sizes, the right sample media, the right number of containers, and the right preservation, and then where to send the samples.
So that was all done, you know, in the first week or two of when I was on site. And then -- it was earlier than that. It was done within four or five days.
And then that was the process I followed. I would take the samples. I -- as I indicated before, I added to the list from what would normally be standard methods, and that's where I spent a lot of time interfacing with the lab. Can you do this? Can you measure two Ethylhexyl Acrylate measurements, and they had to go look.
And I just wanted to see where that listing is, because I go through quite a process. I happened to be in Columbus that Wednesday before doing my coin club meeting, and they said, do you want to go to East Palestine? I said, not really; it's February.

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But by Sunday, I was there.
The -- I wanted to show -- yeah, so if you go to Page 21, if you'll bear with me.
Q. This is your opening report?
A. Yes, please. The soil samples and media, like, for instance, for VOC, see Table 5.1, the very entry -- the first row, for VOCs, I requested the standard analysis, but then I also asked for four -- five different analytes, Acrolein, Butyl Acrylates, Ethylhexyl Acrylate, Isobutylene, Phosgene, because those aren't in the standard VOC protocol.
And they advised me at the time -- that's why the feedback is important -- to use these Terracore kits, rather than just straight jars, and the reason they told me is that your sampling wouldn't necessarily withstand litigation in Pennsylvania.
So I said fine, I'll use Terracore. And that's why Terracore was picked, because if there was any litigation in Pennsylvania, they would have -- supposedly, they would only honor samples taken with Terracore.
So then on the next page, you'll see for -- oh, and then I've actually cut you

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short. There were actually six analytes. I added vinyl chloride to the VOCs.

And then with SVOCs, I used four-ounce glass jars, and I also added Ethylene Glycol Monobutyl Ether to the standard SVOC analysis.

And then I decided to do gly- -- and I'm then indicating the method -- the EPA method number to the far right column.

And then -- and this is all for soils. And then I used four-ounce jars again for glycols. These are soil samples of glycols, and then four-ounce jars for dioxin furans.

And then below that, you'll see the methodology, and the analytes, and the media, and the methods for water sampling, and this was all a result of interfacing with Eurofins.

And then it turned out I was fortunate in that a major Eurofins media storage center is located about five miles from here, Busch Boulevard. So I loaded my car up with 23 coolers of media and headed off to East Palestine.

So -- but on the water side, it's a

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little different. You need three 40 mili-vials with HCL preservatives for VOCs, and then I added six, like I did before for the soils.

For SVOCS, I have to use two amperage Rs, and I added Ethylene Glycol Monobutyl Ether as an analyte.

For the glycols, they wanted three 40 mili-vials, no preservatives; and then for dioxin furans, they want two-liter amber jars completely filled, so two, two-liter jars.

The lab was prescribing to me -- what I told them what I wanted to analyze for, they were prescribing to me the media to be used, the method to be used, and how many samples to collect.

Q. And how did you determine where to take your examples for this Dataset 2?

MR. CONLIN: Objection to form.

A. It was a combination of wanting to sample in all directions, and then the second part of the sampling was somewhat prescribed to me because it was on the railroad site. I was one of the few non- -- it was as a result of an agreement with Plaintiffs' counsel when I can get on site and how much time I would have.

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And so -- and then I was neared by Arcadis people, as well as Norfolk Southern's attorneys. And so it was kind of prescribed by how far along they had done excavations and where the stockpiles were, and I was just trying to get as broad a summary of the different locations, stockpiles, areas around the burn that hadn't been excavated.

And then towards the very end, they started doing removal of the north tracks, and so I was -- like I've talked about before, I sampled the water sitting on top of the clay layer, and then I sampled the residual soil sitting on the clay layer, for example.

So that was really a result of a limited amount of time I could be on the location because they had an active railroad.

And then taking a look around to see what were the different -- based on experience, what were different areas that I thought would be indicative of what level or contamination might be, and then trying to do that efficiently and effectively because I had limited time, like a matter of hours.

Q. And you said you came to the site

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twice to take the samples. Did you do the sampling in all directions on the first visit and the sampling on the railroad areas in the second visit, or was it some of both each time?

MR. CONLIN: Objection; form.

A. Yeah, I know what you're asking. The first time was just all around. The second time, I think I spent one day. I've got it in the reports that are attached as exhibits.

The second time I think there was one or two days where I continued to sample around, and then there was -- I want to say there were two days I was allowed on the derailment site, Norfolk Southern property. I could be off on that, but it's something like that.

Q. Okay. And then we go to Dataset No. 3, which you called the GEL 2023 sampling data. GEL is a lab; is that right?

A. Yeah, I believe that's true, right. They -- this was, again, Plaintiff sampling that was sent to GEL lab, rather than Arcadis -- or rather to Eurofins; pardon me. And they were samples primarily around the two Plaintiffs' sites, as I recall, or near or

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close to them.
And my role was taking the Level 2 data and working with GEL to get Level 4 reports generated, and then, of course, moving them on to the QA/QC lab.
Q. You say around the two Plaintiffs' sites. What sites are those?
A. WYG and Ceramfab. I think if you look at the plots of that data, because I plotted the data by individual dataset, right, so you can look and see, but they were at or near those sites.
Q. And you didn't do the sampling for this data, right?
A. Correct.
Q. Who did, if you know?
A. It's on the chain of custody, so I don't recall off the top of my head, but it's on the chain of custody sample.
Q. Do you recall when in 2023 the samples were taken?
A. I might be able to look it up. Bear with me for a second. I'm pretty sure that I indicated that. Bear with me.
What I was looking at was on Page

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245, but I don't see the dates, but they're on the chain of custody. I know that for a fact, because I remember looking at them.
Q. Okay.
A. But some of the data, I did put the dates on. Some of them, I didn't. I would refer you back to the chain of custodies in the original.
If you look on Exhibit 81, Dataset 3, any of the samples for the chain of custody will give -- the sample results themselves will give the data sample --
Q. And do you know how the sampler chose the specific locations for the samples?
A. Sort of yes and no. The yes part of it is that the goal was to take samples in and near the two Plaintiffs' properties, because I believe they knew they were opt outs. Specifically why they picked that coordinate, I wouldn't know.
I mean, you can see on Page 245, you can see that this -- this sample addresses her like the first seven samples were at the Ceramfab property address.
And then there's one at the WYG

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location as well. And then the others are on Pleasant, Main Street, Market Street, right around those sites.
Q. And the data was already in Level 4 reports when you started working on the matter in 2026, or part of your job was updating it to Level 4?
A. My job was to update it to Level 4, to do the whole process that I did on all the data, except for Dataset 1, which was already Level 4, and had been cured and QA/QCd, just not ever disclosed.
Q. Okay. And was it in Level 2 reports prior to your work on it?
A. Yes. I worked directly and indirectly with the lab to get that done.
Q. And then there's Dataset 4, which is Scott Smith, 2023 through 2025, sampling data, right?
A. Correct. The page you're on again, just so I can get back to it?
MR. CONLIN: 185.
A. 185?
MR. RHEINHEIMER: Thank you.
A. I'm back there. Thank you.

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Q. Okay. And then in addition to the data identified here, Mr. Smith also took two additional samples after your opening -- or I'm sorry, four additional samples after your opening report, before your rebuttal, right?
A. I don't think that's correct.
Q. Okay.
A. As I indicated here on Page 185, we had all of Scott's data as of April 6, 2026. What we didn't have is we didn't have it all on Level 4 format, nor necessarily QA/QC.
So as I indicated on Page 185, what we did have for purposes of my calculations -- in other words, it went through my process, which was the QA/Q- -- Level 4 reporting and the QA/QC/flag removal, et cetera.
That whole process, I'll call it a QA/QC process for Scott's data was completed at 35 locations. He had somewhere between 110 and 120, was my recollection. We had all the data points in Level 2 reports or some in Level 4, 35 of them, on April 6th.
We were still working through my process to go from Level 2 to data that I felt I could use or potentially use.

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And so what transpired -- again, I don't mean to be repetitive -- with the rebuttal report is -- we can go check, but by that point, we had taken additional two samples each for dioxins, and four PAHs, one each on the WYG and Ceramfab site, for soils.

We had that analyzed. We had it Level 4 reported, and we had it QA/QC'd, and then I had the calculation completed and the data plotted as part of the rebuttal report, and we looked at that already.

The other thing that happened was that another third -- all the data that I believe -- all the data by March -- no, May 29th -- these dates are wrong.

May 29th, for Scott Smith, the Dataset 4, we had Level 4 reports, but what we didn't have is -- it takes some time to take those Level 4 reports and go through the process at third-party QA/QC.

So we had about another third of the data -- so we had a third initially, in terms of all fully run through my process, fully calculated, fully -- and then some plotting in the April 6th report.

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By the May 29th report, I have two-thirds of that fully QA/QC, all of it with Level 4, but not all fully QA/QC, and then we were able to use that for plots, and also incorporate that into tuning, if you will, Paul's models, because the data that I was generating was going to be used to tune his models, if that makes sense.

And so we still have about a third of Scott's data that is being run through the QA/QC process with LDC, but in terms of having the data available, it's been there forever. It just hasn't gone through my process.

Q. And that's what I really meant, that all the Scott Smith data was available as of the writing of your initial report, except for those four samples he took at Ceramfab and WYG after your report?

A. That is correct.

MR. CONLIN: Chris, just so the record is clear, I think those four samples were taken before the April 6 report, but they hadn't got -- the results hadn't --

THE WITNESS: Oh, that's a good point.

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MR. CONLIN: They were taken roughly around the same time you guys took yours.

THE WITNESS: Because I think that was in March.

MR. CONLIN: Yeah, March -- March, early April, yeah -- or end of February, March --

THE WITNESS: Counselor, I should correct the record. I mean, the samples were taken, but I didn't have them through my process for that point.

MR. CONLIN: I think you produced your ten samples sometime in mid-May.

MR. RHEINHEIMER: Okay.

Q. And it's your understanding that you have all of Scott Smith's data that he collected from East Palestine? Very large.

A. Yes, I had furnace filters and stuff I didn't even use, but yes, that's my understanding, and I've confirmed that with him as late as last week. I said do I have all your data? Yes.

Q. Okay. And do you know how Mr. Smith chose the locations for his samples?

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A. Yes and no. I know some of the reasons why he selected what he did. He had -- some locations were selected because he got requests from the community where the properties -- the people wanted their properties sampled because they hadn't been sampled by Plaintiffs, or Defendants, or the EPA, and they just wanted to know.

He also sampled multiple properties. A lot of them were near -- he sampled multiple properties, multiple times, which I think was unique. I didn't do that. I don't know anybody who did that.

So sampled -- over the years, sampled the same location to see if it's changed with time, and that's why I wanted to see his data, to see what it said.

And then he also sampled a lot around -- in and around Sulphur Creek, sediments, as well as the two banks. I don't know anyone else who sampled the two banks, so I was curious to see what that said.

So a lot of his sampling was primarily for residents that were close to the incident, but hadn't had their property

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sampled. That's my understanding.
And then, secondly, a lot of sampling with time at those residences and also sampling the creek, but not just the sediments in the water, but the banks.
And then, of course, the last was a request from us to sample the Ceramfab and WYG soils for dioxins and furans. That specific request came from us.
Q. And do you have any -- one thing I've seen, and it's referenced in your declaration, is that Mr. Smith has a number of patents relating to environmental sampling.
Do you know if any of those patents apply to the work that he did in East Palestine?
MR. CONLIN: Objection to form.
A. Well, I think -- I don't know if the right word is -- the predicate to your question is incorrect, but maybe I can -- if you'll bear with me, I'll correct the question and you can agree or disagree to let me answer that question. He doesn't have a number --
MR. CONLIN: I usually instruct my witnesses not to give the other side questions.

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THE WITNESS: Oh, okay.
Q. Well, don't --
MR. CONLIN: But you can answer however you want --
A. Well, because I know what his patents -- I mean, I've reviewed some of his patent work, and I have nine patents, and I was responsible for IG for Columbia Gas so I know this area well.
His patents don't -- are not with respect to sampling. They are with respect to cleaning up contaminated waters for both contaminants -- chemical contaminants, as well as biological contaminants. And it's basically a media, filtration media, that also had -- can be loaded up with things to help facilitate collection of contaminants.
Could they be used up there? I guess, but I've never seen any indication that he's asked anybody or suggested that his materials be used there.
In other words, I've never seen him be involved in -- at that location for purposes of trying to sell his products.
Q. And there's information and

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documents -- documentation related to Mr. Smith's sampling contained in the Level 4 reports, right?
A. Sure.
Q. Is there any other documentation that you're aware of relating to Mr. Smith's sampling that's not in the Level 4 reports?
MR. CONLIN: Objection; form.
A. Well, there would be based on the questions I've asked him.
Q. What do you mean by that?
A. So I said did you ever use tap water? He said no, I always used distilled water, or he used at some point -- somebody from EPA recommended he use isopropyl alcohol and then distilled water.
I asked him if he had complete chain of custodies. He said absolutely. I can guarantee you that the samples never left my hands until they got to the FedEx or the Postal Service.
What else did I ask him? I asked him about the -- where he sent the samples, which was Eurofins, which I eventually knew. I could tell from the chain of custodies the

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feedback he was getting from the labs, which anybody can see.
And then he was using the same EPA methods for SVOCs, VOCs and dioxins furans, that all of us were using.
Q. You said you could see from the COCs that he was getting feedback from the labs. What feedback was that?
A. I think there -- I would have to go back. I think there's -- of all the samples that we've cured from Scott, only one was not able to be used. And it wasn't -- it wasn't anything Scott did. It was actually something the lab screwed up. They held the sample beyond the evaluation time by mistake.
So, technically, the analysis were post -- the samples were held too long. It wasn't his fault, but it did cause us not to be able to use that dataset, and that was discovered by the QA/QC lab, but it also -- there was a commentary in the chain of custody about that as well.
Q. And you went through a few different questions you had asked Mr. Smith about COCs and the like. Is there any written

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documentation from Mr. Smith that you have relating to his sampling plans, COCs, anything like that?

MR. CONLIN: Objection; form.

A. Well, if I did, no longer. I mean, I have a corporate policy of 30 days, I delete all e-mails; so I don't retain any of that correspondence, so I'm really not able to answer that question.

Q. Okay. But nothing you can think of in your report, in terms of work plans, or whatever, other than what's in those Level 4 reports for Mr. Smith's data?

MR. CONLIN: Objection; form.

A. Work plans? I mean, I went through the whole process that he used for selecting sites. I went through the analytical methods he used. I actually visited him in Boston to look at the stuff, to ensure that things looked reasonable.

The -- we made the specific request for the sampling on WYG and Ceramfab, so we dictated the sampling plan there.

The sampling plan was unique in two dimensions in my -- as I've said before,

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testified to before. One, he had sampling data from the same location over the years. To my knowledge, nobody else has that. And, secondly -- with the soils and the waters.

And then, secondly, he sampled the banks, as well as the sediments, which I thought was unique.

So he was sharing with me -- over the years, when I wasn't involved in litigation, he would call me and ask me questions the whole time. He said, well, you're the GOAT. I said not really.

So I was giving him feedback from 2024 to 2026. And if he had questions about analytical or sampling or what to do, I would give him my free advice.

Q. And would those conversations be over the phone? By e-mail? Both?

A. Both.

Q. And any of the e-mails pre-30 days ago would be -- were consistent with your policy, they would be deleted?

A. They would, unless I missed one, but, no, that's been the policy since at least 2015.

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Q. Do you know if Mr. Smith collected all of his own samples or if he had anyone helping him?

MR. CONLIN: Objection to form.

A. My understanding in several conversations with him, he collected all his own samples. I think -- I forget how many times he visited East Palestine, but I know it was over 26, the last time I talked to him.

So he did that all on his own volition. He doesn't have anybody to support him that I'm aware of, with respect to sampling, I mean.

Q. All right. Let's do the next exhibit, Tab 6.

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(Thereupon, Deposition Petty Exhibit 5, Smith Declaration, was marked for purposes of identification.)

- - - - -

Q. I'll give you a chance to look through what we've marked as Exhibit 5 and ask if you recognize this document?

A. I think so. I think it's Scott Smith's declaration for Government

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Accountability. I mean, that was from Scott Smith, or at least Exhibit A is. Maybe I'm wrong here. I don't -- the first -- I have not ever seen the first -- they're not marked. Well, they are on top, Pages 2 through -- 2 through 5.

I'm not sure I've ever seen these pages. I know I've seen the declaration because it came at the same time as mine.

Q. Okay. So the second declaration in there as Exhibit A, that one looks familiar, but the first one, the first few pages does not?

A. Correct.

Q. Did you review a draft of Mr. Smith's declaration that's been marked as Exhibit A to this document?

A. I may have.

Q. Do you recall providing any proposed edits or comments?

A. If I reviewed it, I'm sure I provided comments, not to Scott, but to counsel for Government Accountability.

Q. But those have been provided by e-mail?

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MR. CONLIN: To the extent that you had any communications with counsel in another matter, I'm instructing you not to respond.
THE WITNESS: Okay.
MR. CONLIN: Until they have the opportunity to assert whatever privilege may exist.
A. Yeah; my interactions were with Government Accountability.
Q. And you were never retained by Government Accountability in any capacity, right?
MR. CONLIN: Same objection.
A. I don't have an answer to that. I was basically a free consultant under legal protection from them. As a layperson, that's the best way I can describe it.
MR. CONLIN: Based on that representation, I'm going to instruct you not to answer any more questions about communications you had with counsel for GAP until -- or if and until they have the opportunity to assert a privilege for their own communications.
Q. And are you going to follow that

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instruction?
A. I am.
MR. CONLIN: Again, Chris, not trying to jam you up. I'm just not going to blend into someone else's attorney work product. The last thing I need is a lawyer to yell at me.
Q. All right. Let's look at Page 2. And I know this is -- this is part of the declaration, so I'm not -- I'm asking you to consider this as someone who hasn't read it before.
A. That's easy to do because I haven't.
Q. If you look at Page 2, Paragraph 5.
A. Okay. All right. Go ahead.
Q. Recent soil samples collected in August of 2025 continue to show dioxin furans and PAHs that far exceed background control samples.
Do you -- having had the opportunity to review and analyze Mr. Smith's data, do you agree with his statement in Paragraph 5?
MR. CONLIN: Objection to form.

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A. I would have no way of answering that without taking the time to try to understand what it means in the context with what I did.
Q. In that paragraph, Mr. Smith refers to the impacted zone. Do you see that?
A. Yes.
Q. Have you used that phrase, or has he used that phrase in conversation with you before?
A. I don't recall one way or the other. I don't recall it being used, but he could have. I don't know.
Q. Let's go to Paragraph 7. At the bottom of Page 2, top of Page 3.
A. Okay.
Q. And he refers to a third of it. Do you see that?
A. Yes, I do.
Q. And it appears he's defining the third of that as the remediation of the most contaminated soil and other impacted areas after April 18 of 2023.
MR. CONLIN: Objection; form.
Q. Right?

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A. The words are what they are. I think -- I think he's referring to the removal of the fat -- the process of removing contaminated soils, everything from creating stockpiles with heavy equipment, to putting the stockpiles in vehicles and having them transported off site.
I think -- that's my understanding in talking to him of what he meant by that.
Q. And that was -- you previewed my next question.
Have you had discussions with Mr. Smith about his concept of a third event?
MR. CONLIN: Objection; form, asked and answered.
A. I guess, in part, I think it's his belief that the -- as mine as well, that there had to be some spreading of the contamination associated with the activities, especially early on before we did -- before EPA directed the remediation contractors to run their trucks through car washes to get the mud and dirt off the tires and the sides, and then also to put membranes over the top of the truck so it didn't blow out.

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And then also to street wash the streets. I'm not saying there wasn't some after that, but early on, it was -- it was a mess. I was there. It was a mess.

Q. And do you, having analyzed the four sets of data, did -- in your opinion, do you see evidence in the data that there was a third event or spreading of contaminants during the remediation process?

MR. CONLIN: Objection to form.

A. I see it differently than the way you phrased the question. I see the fact that we see -- with some limited data, we see the values reported increasing with time, and so then the question is, well, what could cause that? And that's certainly one explanation.

Q. For Mr. Smith --

A. I just wanted to add -- I apologize for interrupting you.

Q. Go ahead.

A. I just wanted to add that that data specifically is referenced in Page 272 of my report, that we were talking about the increases with time, April 6 report, Exhibit 2. Sorry to interrupt. Go ahead.

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Q. No; very helpful.

For Mr. Smith's samples, the sampling that he did on individuals' homes, right. So we've talked about a couple of different kinds that he did, for the sampling that Mr. Smith did at individual's homes. Do you know how he determined where on the property to take the sampling?

MR. CONLIN: Objection to form.

A. In general, he would take the samples in the direction of the derailment. Now, you'll be able to see that in the plots. We've been very transparent about that, because I was adamant on GPS coordinates for each of those samples.

So we had the addresses for each of those homes. We have the GPS coordinates, so it's -- I mean, there's not one universal answer, but that answer could be easily determined -- not easily determined. It could be determined by simply taking the GPS coordinates for each of those addresses and seeing exactly where it was on site.

But in general, my understanding is he took those samples in directions either in

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the creek, or the banks in the creek, or towards the -- where the derailment occurred.

Obviously, he wasn't going to take them in -- on asphalt or on the pads, concrete pads, or things like that, so -- but he was taking them where there was soil available, but my understanding in conversations was, not in all cases, but in general, was towards the derailment, but in open areas.

Q. And are you able to determine from his data the depth of soil that he collected for his samples or soil samples?

A. It was always shallow.

Q. And what does shallow mean in terms of centimeters or inches?

A. It depends on if you define it EPA's way or my way, but EAP defines it as two centimeters, which is .79 inches, and I just say less than -- an inch or less.

Q. And what did Mr. Smith use for his --

A. An inch or less. That's what I understand from talking to him. I did ask him that question.

Q. And that was going to my follow-up.

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Do you understand that from the documentation in the file or from discussions with Mr. Smith?

A. Multiple discussions with Mr. Smith.

Q. And you mentioned before that Mr. Smith did some sampling of the same locations over time. Do you know how he determined which locations to sample over time?

A. Well, I'm aware of only two locations where that happened. It's on Page 272 of my report, the first report. And the samples are on Brushville Supply, Taggart Street, which is very close to the derailment and very close to the Ceramfab facility, actually. And then on Rebecca Street.

Now, why he specifically selected those, I'm not exactly sure, but it does turn out that both locations are in relatively close proximity to the two Plaintiffs' facilities, as I indicate on Page 272.

Q. Let's turn to Page 186 of Exhibit 2.

A. 186, I'm there.

Q. And this is the intro to your discussion on potency equivalency factors or

PEFs, right?
A. Yes.
Q. And can you describe what the PEF is and what you're trying to analyze by using it?
MR. CONLIN: Objection to form.
A. Well, I think the short answer to that is to read the ATSDR 2022 paper that establishes this methodology that I cite in the back of my references at the bottom of the Table 9-3.
In lay terms, because benzo(a)pyrene is -- based on my experience, when you're looking at sites on the PAH side, benzo(a)pyrene is the one that tends to trigger exceedances and risk assessment.
What ATSDR was attempting to do is say, well, it's not the only PAH that can be a problem, so how can we develop a methodology where we look at some of the other PAHs that are -- and compare their relative toxicity to benzo(a)pyrene and then develop composite, if you will, for these other listed PAHs to arrive at a cumulative score that's equivalent to the total -- equivalent to the -- all of it being

just benzo(a)pyrene.
And what's interesting about this is it's actually quite limited because there's a lot of PAHs and this only covers 15, but nevertheless, it's a methodology.
And you'll see a lot of the factors are actually zero, so -- in fact, Table 9-3, if you had those -- have a concentration of those and you're doing this calculation, you get no contribution from those substances.
There's only a handful of substances when you look at this that actually do any contribution at all. It's like less than like 80 percent.
But the idea is to basically -- since benzo(a)pyrene is the one of most concern, is to say, well, when you're looking at a site, it's kind of like TEQ in a way. When we're looking at a site, not for dioxins, but for PAHs, and typically, benzo(a)pyrene is the substance of -- it's always been the substance of most concern where I've done risk assessments for PAHs.
Can we equate other PAHs to that relative toxicity and then come up with a

composite score that reflects all the PAHs that -- I want to say all the PAHs. All the PAHs that they considered in this particular methodology.
Q. Okay. And the tables on Page 187 are the PEF factors for various PAHs; is that right?
A. They are, but -- yes, but they really come -- just to make sure that I was complete, I scanned in the PEF table from ATSDR, so I'm hopeful that the numbers are the same.
Q. And if it's -- if there's a PAH that's not listed in the paper, it's assigned a zero value, or I guess the way you say it conservatively assumes to be zero?
A. You are correct. We'll turn him into an engineer yet.
THE REPORTER: I'm sorry?
A. I said we'll turn him into an engineer yet. He probably doesn't want to be that.
Q. And are the PEF factors based on cancer or non-cancer end points or something else entirely?

MR. CONLIN: Objection to form.
A. Well, the basis is, at the bottom of the table on Page 181 -- 188 -- I mean, they talk about it, right. They say PEFs are based on the ratio of OEHHA's oral cancer slope factor for BaP 1.7, and the OEHHA's cancer potency factors for each of PAHs.
So it's based on the cancer slope factors of different materials, the ratio does.
Q. And then you have an example calculation for one sample on Page 189; is that correct?
A. Correct. Correct.
Q. And if we look over to the third-to-last column, that's where you apply the PEF factors for the various PAHs, right?
A. Correct. And then for the U factors, I'm using either half the value or zero. So if there's a zero for the factor, it doesn't really matter, right?
Q. Right.
A. And so you can see the math. It's pretty straightforward. But my view was I wanted to look at 50 percent of zero, thinking zero has got to be the most conservative value

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in the world. Like if you use -- 50 percent is typically what one would use in environmental work, but, nevertheless, I wanted to know -- I was just curious intellectually as to what impact that had, so I went ahead, since I was doing the analysis, anyway, I just presented it. That way, if you say I should have used zero, I could say fine, there's the zero value.

Q. Now, on Page 190, you compare the levels with the US EPA residential soil and regional screening levels for BaP; is that right?

A. What I was doing was trying to -- there's literature that suggests what the cancer target risk levels should be, and I simply wanted to go through the exercise to drive it, and so I showed the table where the values are that I used in the narration, which is .11 milligram for kilogram or 110 microgram per kilogram.

By the way, there's a typo on that page, since we're looking for typos. I am.

Q. What's the typo?

A. So where it says under carcinogenic target risk in the middle of the page, you'll

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see it's a one half, 300. It should be one over 2,300. Do you see that?

Q. Yes.

A. Somehow I didn't catch that. And it kind of makes sense if you look at the values up above.

Q. And did you end up using these residential risk-based screening levels in the PEF analysis or it's just a comparison for information sake?

A. That's a complicated answer and question. The answer is, from an environmental standpoint, I spent a lot of time on the coming up pages, talking about PRGs and why they're used and how they're derived and what they mean.

And on Page 192, I gave it -- I wrote -- this is my little description of what it means. And in environmental work, typically, if it's a bank transaction or you're going to buy a property, commercial property, you do a Phase 1 to see if there's anything -- it's kind of a drive-by/look-see to see if there's anything that looks like it could be a problem environmentally.

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And if you see anything that may be a problem, Phase 2 is where you actually go on site and you either take samples and analyze or you drill wells, drill soil samples, and take samples, do Sanborn math evaluations, et cetera, so that's a Phase 2. Phase 3 is typically remediation.

So what I was looking at early on was does -- if, in fact, you have exceedances of screening levels, that then under the EPA protocols requires you to do Phase 2 and maybe Phase 3 work, which is going to incur costs, which inherently devalues a property, because either it's done or it's not done, and somebody is not going to pay as much for the property.

Or it can be -- you know, there's the -- what's called VAP. Have you heard of VAP, voluntary action program, where you basically put a deed restriction on the property and say this property can no longer be used for residential or residential commercial? It always has to be industrial.

So there's all sorts of dynamics that can play out, but the reason I was looking at these screening levels was are we going to

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hit a point on any of these locations or samples where it pushes us into Phase 2 and Phase 3, because that's going to incur costs.

Q. Phase 2 and Phase 3 meaning the more full site investigation and then remediation?

A. Correct.

Q. Okay. Why don't we take a break.

THE VIDEOGRAPHER: We're off the record.

(Recess is taken.)

THE VIDEOGRAPHER: We're on the record.

Q. Okay. In your PEF analysis, did you take into account which PAHs were potentially released from the derailment and vent and burn?

THE REPORTER: Or released from what?

MR. RHEINHEIMER: The derailment and vent and burn.

A. That was the intent, yes.

Q. It was what? I'm sorry?

A. That was the intent, yes.

Q. Did you -- were there any PAHs that

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you located in the sampling that you thought may have been from something other than the derailment and vent and burn?

MR. CONLIN: Objection to form.

A. Well, I did background sampling, so -- and I did a statistical analysis on my dataset, both for PAHs and dioxins. I did a statistical analysis of variance, which showed clear statistical significance beyond background.

So that's how I handled that issue, was doing an analysis of variance.

Q. Looked at the data and the statistics, compared the --

A. Background.

Q. -- background, rather than looking at each element of the PEF calculation and determining whether certain PAHs weren't released or were released?

MR. CONLIN: Objection to form.

A. I'm not aware of -- I'm not aware of that being done, and I'm not sure how that would be done. You would have many more questions for me if I tried to assign which one was from where.

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The reality is the way it's done is you look at, in this case, the total BaP equivalent and say does that -- is that excessive regardless -- and I'm not denying there's some background level. In fact, that's why I want to find a background level, to see how the levels compare to what we measured.

And you should note that if you look at the plots, that not every dataset shows exceedances.

What I'm looking for is where are the exceedances -- to what extent they are, and in what direction. I'm trying to determine how many people might have been impacted. I knew originally that was my goal.

Q. And then you did calculate a background PEF, right?

A. Multiple background PEFs, yes.

Q. What do you mean by multiple background PEFs? I think Page 214 is where I noted the discussion, if that helps.

A. Let's see if I misspoke. Yeah, on 213, you'll see that I have -- yes, on Page 214, Table 9-11, you'll see the background samples were LK-1 through LK-16, so there were

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16 background samples.

And I did the BaP equivalent calcs, assuming DLs were zero or DLs were 50 percent for all 16. And then I did start running statistics on those, which is on 214.

So total number of -- when you ask what do you mean multiple, well, there's 16.

Q. Multiple background samples, but did you calculate a background PEF, or are you looking at all 16 samples as separate background PEFs?

MR. CONLIN: Objection to form.

A. I looked at Plot 9-12 that's on Page 215. So I looked at two samples roughly a hundred miles out to the southwest, and then I looked at the other ten -- 14 samples were just northeast of Columbus.

The thought process being that, based on what I felt were the least likely direction for the plume to have gone, would have been winds for out of the northeast, to the west, southwest.

And so I looked at samples in relatively close -- a hundred miles out, I did samples, a couple hundred miles out, all in

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Ohio.

And so you can see in that plot that I've -- there is variability in the results for those values, but they're significantly less when I run statistics than what we were finding in and around the derailment.

Now, the plot on Page 215 is using the non-detects to zero and the plots on 216 are assuming the non-detects are half the detection on the bottom.

And then I go through a sophisticated statistical analysis on 217 called ANOVA, and it's really asking the question of the means between the background and the non-background samples. Are they different from each other statistically, and if so, to what degree.

Traditionally, if the P value is less than .05, meaning 95 percentile, then that means that the hypothesis test that they're the same as rejected, meaning they're not the same.

So I did that analysis with the 16. You can see here on Page 217, I did that analysis both -- with the zero -- using DL zero

and using DL 50 percent. I did the analysis of variance for both cases, and in both cases, they were statistically significant. Seriously significant, in that the background levels were different than the values in and around the derailment.

Q. How do you -- or what factors do you consider when selecting background locations?

A. I just covered that to some degree, right?

So I was -- I want to get away from the site, I want to be -- on benzo(a)pyrene, I don't want to sample like pavement or things that have known PAHs in them.

So we went to forested areas and sampled in forested areas. If you actually pull those locations, you'll see there are forested areas, and ran a number of samples, both near and far, to kind of see if there was much of a difference. There was a little bit, not a lot.

So what you want to do for background is to sample an area as much as you can determine does not have PAHs present, but

in this case, also, it would be in the direction that is most likely away from where the plume went.

And in my opinion, the -- and I think it's been validated in all of Rosenthal's work, as well as my initial wind analysis, as well as Schuhmann's, as well as the EPA's, that the -- the plume didn't really appear to go to the southwest.

So that was the basis for doing it, is to try to find areas that are unlikely to have PAHs in them, contaminated with PAHs. You don't go to an industrial site and measure background, and then also go in a direction that's least likely to be where the plume went.

Q. So you've been referencing two locations, but on Page 214, I'm trying to reconcile this. It says: 16 background samples were taken approximately 81 miles to the west, southwest of Ceramfab's facility in the Lower Killbock Creek wildlife area.

And my understanding is that there are 16 background samples?

A. Correct, and I may have misspoke. The -- what you've got is a -- you are correct,

they were all taken that 82 miles or so to the southwest. There was not two areas, so I was incorrect in my initial answer.

Q. And then you said you tried to find areas -- this is for background. You tried to find areas that are likely -- that aren't likely to have PAHs in them. You don't go into an industrial area and measure background, and then you also go in a direction that's least likely to be affected by the event?

A. Correct.

Q. So you wouldn't agree that the most appropriate background for an industrial location is another industrial location that doesn't have exposure to the event at issue?

MR. CONLIN: Objection to form.

A. I don't consider Ceramfab, with respect to PAHs, to be an industrial facility.

Q. Is it a forested wildlife area?

MR. CONLIN: Objection to form.

A. It's not a forested -- it's -- what you're looking for is what is the background level likely to be for a location where there aren't -- there aren't PAHs expecting to be present.

Q. So you're comparing Ceramfab and WYG industrial facilities to the PAH levels of a forested wildlife area?

MR. CONLIN: Objection to form.

A. No; I'm -- those analysis are for -- there are only two samples taken on Ceramfab. The rest of them were taken in the community.

Q. So you're comparing the community of East Palestine with the PAH levels of a forested wildlife area?

A. I am. I mean, it beats comparing them to samples taken under the plume, which is what you folks did.

Q. I didn't take any samples.

A. Well, the folks you represent. I'm sorry; I'll take you out sometime --

Q. I do have one --

A. I'm sorry; I didn't mean to suggest that you took them. You know what I was referring to?

Q. I do. And for your ANOVA calculations, you said those are on Page 217?

A. For benzo(a)pyrene equivalent.

Q. For the PEF values?

A. Correct. And then I have separate ANOVA calculations for dioxins.
Q. And the two variables that go into the ANOVA calculation are the average PEF calculations from the non-background set and the average PEF calculation from the background set; is that right? Or am I missing something?
A. And a number of observations for each.
Q. And those variables go into the ANOVA calculation, which has a whole host of things that spit out an answer with those variables?
A. It's complicated because you're -- but, yes, ultimately, that's true. It was something I learned in graduate school.
THE REPORTER: I'm sorry?
A. It was something I learned in graduate school, to compare means. And the thing that's interesting about that is that's all of the samples in the community, some of which we know are less or relatively low.
So I'm not taking a subset of the East Palestine samples. That's the totality of the samples that we had from Dataset 2.

Q. Did you -- that was -- so all of the ANOVA calculations, the non-background samples were from Dataset 2?
A. Correct.
Q. Did you run the calculations with the samples from either -- for any of the other datasets?
A. I have not done that yet, but I just wanted you to know that it wasn't that I carved out a subset of the samples in or around East Palestine. I used the totality of the Dataset 2 values --
Q. And it would have been scientifically improper to use a pre-selected subset of the East Palestine samples instead of the full dataset, right?
MR. CONLIN: Objection to form.
A. Not necessarily. I wouldn't agree with that. You could theoretically subtract out the samples that weren't in the area of the plume. I didn't do that. It was more complicated to try to do that, but it would be scientifically rigorous to say, look, I'm not going to include the areas where there was no indication the plume occurred.

Q. Fair. And if the average -- but using your Table 9-12, the ANOVA calculations for --
A. For DL equals zero, yeah.
Q. Uh-huh. If the non- -- the average PEF and the non-background samples came down, how would that affect the P value?
MR. CONLIN: Objection to form.
A. If they came down?
Q. Or lower. The average non-background PEF was less than 1,153.
MR. CONLIN: Same objection.
A. Well, my view was I was already conservative in including values outside of the plume, but, obviously, if you -- the closer you move the two values to each other, then the P value is increased, but we're not close to .95.
Q. What is the F statistic?
A. It's called degrees of freedom.
Q. And what does that mean?
A. I would have to look it up to give you an answer to that question. I'm pretty sure it's the degrees of freedom --
THE REPORTER: I'm pretty sure it's what?

A. The degrees of freedom, but I would have to look it up to give you a hard answer. I don't know off the top of my head. I don't remember.
Q. And then if we look at Table 9-13, which is the ANOVA calculations for PEFs using 50 percent of the DLs?
A. Yes.
Q. Do you have a table with the results there, right?
A. Correct.
Q. And the P value comes in under .05?
A. Correct.
Q. Much closer to .05 than the DL 70, right?
MR. CONLIN: Objection to form.
A. I mean, it's clearly greater than the P value, with the assumption of DL equals zero, but I remind you that the convention is to use 50 percent. That's why I was so surprised that one of your experts criticized me for using the 50th percentile, and I said did you read my report? I used both 50th and zero.
And I said, not only that, the 50th

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is -- I gave three citations that's conventional, but I did it -- I did it just simply to say what -- in the best case scenario, which is the DL zero, you know, in terms of reducing the number for the PEF, the cumulative PEF, what it would predict.

Q. And you also performed a similar analysis of the dioxin data, right?

A. Correct.

Q. What datasets did you use to analyze the dioxin data?

A. Let me get to that. I have that on Pages -- Page 239, I believe, the same sample numbers, but different analytes were taken at the same location as the PAHs.

Q. And this would be from your Dataset No. 2?

A. Correct. And, frankly, I thought they were high.

Q. What does that mean, "they were high"?

A. Because I had the EPA data from Columbus taken not far away that was between one and two. The mean was 1.2, so I wondered whether or not there was still some impact from

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the plume in that direction.

Q. For the background samples?

A. For the background, yes. But then I also had data from Exhibit 185, where EPA compares background at a whole host of places, as well as we have the Gullett paper that -- the data from burning hydrocarbon without chlorine, which was 2.2.

So all that data was falling in the one to two range for background. One to three, we'll say. That's why I don't believe for a minute that the background level is 51 in East Palestine.

Q. And then you -- in order to analyze dioxins and furans, you calculated a TEQ, right?

A. Yes.

Q. What is a TEQ?

A. It's a total equivalent quantity, and it's not unlike -- let's see where I gave the basis for that. I think that's where we're headed. It's on 202.

So the methodology I used actually was I used the EPA 2010 factors, which was what was in the Arcadis plan. The only problem was

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they made a couple of errors, but the errors would have made the results bigger, so I went ahead and just used the EPA 2010 values.

And what you do is for dioxins and furans -- and I've got the whole derivation beginning on -- I actually go through the derivation of how you calculate these factors and end up on Page 9-7 -- Table 9-7.

But you basically assign a value of one for 2378 TCDD, as well as 12378 PECEE, and then the other dioxins and furans are a fraction of that.

And so you multiply the concentration and the right units, times that factor for that particular analyte, and you do that for all the analytes where you have factors, and you add those all up to derive what they call a TEQ.

And so then I just did an illustration of doing it on one sample on Pages 208 -- or 206 and 207, and I did it again for -- I kind of actually did it for the Arcadis TEF basis. I did it for the Norfolk Southern TEF basis, based on 2010, World Health Organization -- EPA, 2010; World Health

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Organization, 2005.

And then I also looked at World Health Organization, 2022. I was curious about that because these factors have changed with time, and I was curious to see, because it turns out Arcadis, if you request it, will give you the TEQ, and I was curious whether or not -- I didn't present it here, other than this, but I was curious whether or not that would result in lower TEQs or increased TEQs.

And using the EPA 2010 through 2005 factors, results -- results and results -- sounds bad -- results in TEQs, that when I screened them were less than what Eurofins was reporting.

So I would have actually had higher values if I had used the Eurofins values, because they're using the 2022, I believe, factors.

Q. And then the background samples are from the same location as the background samples for PAHs; is that right?

A. Correct. That is correct.

Q. And then you run the same ANOVA analysis using -- comparing East Palestine

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samples form your Dataset 2 with the background samples, right?
A. Correct. For both DL is equal to zero and DL is equal to two percent of -- where the values were at detection limits, I used either zero for that value or 50 percent of that value, so I ran the analysis twice.
Q. And then if we go to Section 9.9, I think it is.
A. Help me with the page.
MR. CONLIN: 257.
A. 9.2 is 272 -- oh, is that what --
Q. Let me double-check.
MR. CONLIN: Let him figure out what he's looking for.
Q. Yeah, 272, Page 272. You got it. We have TEQ Trends Over Time, right?
A. Correct.
Q. And this is using this Scott Smith data or using your Dataset No. 2?
A. Scott Smith data. I did not take multiple samples at the same location over time.
Q. Other than these two locations, other than the samples collected at these two

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locations, did you calculate TEQ values for any other Scott Smith data?
MR. CONLIN: Objection to form.
A. I calculated TEQs for all of Scott Smith's data that was run through the entirety of the process. That -- the number of samples where I did that doubled between the April 6th report and the May 29th report.
So by the May 29th report, I have about -- around 80 of Scott Smith's samples incorporated, whereas, in the April 6th, it's around 35.
Q. But you didn't use those Scott Smith data for the comparison to background; is that right?
A. I did run -- I've never run a composite with all the datasets or other individual datasets against my background values, no.
Q. Have you run the ANOVA analysis between Scott Smith's data and Dataset No. 2?
A. I have not done that analysis. One thing that I would like to do and may do with time is to plot all four dataset sets on one figure for both TEQs and for dioxins and color

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code them by dataset so that I can get a feel for how they compare.
I think Scott Smith's data has taken more out -- well, I took -- my first half was out in the community, but I took a lot of samples and I have stockpiles in and around the railroad, so I would expect mine to be somewhat higher. I don't know that for a fact because I haven't done the analysis, but it wouldn't surprise me.
But at some point, I may take additional plots, just to see, to answer questions like that, but it wouldn't be doing anything new. It would just be taking the existing table data and making different plots.
Q. And what was the rationale for using only Dataset 2 in the ANOVA calculations for PAHs and dioxins?
A. Well, the simplest rationale is because I was associated with the data that I took at least around the site, and it was also associated with some initial analysis we did in 2024.
So I guess that's the basis for it. Those analysis, those -- those particular

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calculations could be run on any of these datasets or the composites.
THE REPORTER: I'm sorry?
A. They could be run on any of these datasets individually or the composite. It's just a matter of how many pages of calculations do you want to run.
I was using it as an illustration. It's just like how many figures would I plot? I mean, I could plot hundreds of figures. I'm just trying to illustrate things with figures, but I've always produced the dataset in table format so that anybody and everybody can take that data and analyze it in any way that they want to.
The key was getting it into the form that I felt comfortable doing the calculations, to make sure it was QA/QC, to the highest level, and validated by a third party.
Q. Would you agree with the statement that East Palestine is one of the most extensively evaluated and tested disaster sites in recent history?
MR. CONLIN: Objection to form.
A. I don't know if I have an opinion

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on that one way or the other. That's such a general statement. I have no way to make that comparison because I haven't done an evaluation of other sites. I mean, Love Canal was heavily evaluated. Three Mile Island. I mean, all these things I worked on in the past.

I just -- I don't have any way to answer a generic question like that. I mean, somebody may have said that, and maybe they're right, and maybe they're wrong, but I don't have any way to independently validate that one way or the other.

Q. Are you aware that there continues to be environmental monitoring and sampling at the site over three years after the derailment?

MR. CONLIN: Objection to form.

A. I think there's some air monitoring going on. I'm not aware of significant soil, and sediment, and surface water monitoring going on.

Q. Earlier today, you testified about some limitations in the amount of monitoring for dioxins for your sampling for dioxins, for example.

In your opinion, were there any

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chemical compounds that you believe should have been sampled for, but that were not?

MR. CONLIN: Objection to form. Move to strike.

A. I think the essence of your question is are there compounds that should have been monitored that were not. Is that the question?

Q. That's the question.

MR. CONLIN: Same objection.

A. It has a yes and a no component. The no component is I think, at times, there were all of the constituents that I've identified -- that I've identified, I think at some point in time were monitored.

The question is how thoroughly were they monitored, both spacially, and with time. We've lost the opportunity to do that in the air because that would have had to happen right away. And that's not just my opinion, that's the opinion of the EPA, and it's also based on my experience of doing other sites.

But with respect to dioxins, I think you showed it earlier. It was applied in -- one of those things that had Luster's plot

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of -- I think it's Luster, but -- yeah, it was Luster's plot of how many dioxin samples were taken with time. It was in one of these exhibits you already produced. I recognize the figure, and it's my Exhibit 191. It's in my report.

But it plots the number of dioxin samples per day collected by Norfolk Southern, and at no time over a period of -- from March through into mid-April of '23, were the number of dioxin samples collected exceeding 21 or 23.

It depends on soil versus subsoil, and you'll see that, by and large, except for the first few days, the sam- -- the number of samples collected were always less than five, like two to three.

Q. What's the last date on that chart?

A. 4-7-23.

Q. Were any dioxin samples collected by Norfolk Southern contractors after 4-7-2023?

A. There may have been, but remember, a lot of that -- well, I'm sure there were some. My point is that if you're out -- I mean, we were taking that many samples and we're -- we're not EPA. We're not Norfolk

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Southern.

And if you're trying to determine extent of contamination by doing a grid matrix and saying, okay, every thousand feet we're going to take a sample to see what's going on, you've got to do a lot more than two to five a day.

So I mean, I won't get into the whole sampling plan, which was primarily to the southeast. Saying the background was from the west to the northeast, which is crazy, but -- based on wind direction, actual wind direction, and actual now modeling and actual now data that we have.

But my point is simply that that's just a precious few samples, and we can add on to it whatever we want to add on to it beyond that date, but it's not very many.

And as I said earlier, you could look at my Appendix B, and while there was -- up to that point, wherever I cut it off, there was something like 20,000 samples, but way less than a few hundred were associated with soil, surface soils and surface waters. It was almost all air samples.

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We took air samples here in March. Norfolk Southern or the contractor did at both sites. We took soil samples. The likelihood of finding something in the air three years later is -- outdoors, is really small.

We still found it indoors, samples of benzene, that is, but why Arcadis, Norfolk Southern, or whoever, didn't want to sample the soils is beyond me.

Then you would have some data to refute us or confirm, one of the two. You almost assuredly know you're not going to find it in the air.

Q. And why is that?

A. Because you've had years that have passed. This stuff is not volatile. Do you know what the boiling point of dioxins are? 450 to 800 degrees Fahrenheit. I mean --

Q. And the dioxins in 2026 that were tested for were outside, right?

A. No; they were in the soil. It was bound.

Q. Outside, right? Outside the buildings?

A. Yes. That's where you're going to

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find stuff because it's not going to evaporate. It's bound. It's going to be in the close subsurface, top -- two centimeters.

Q. Not inside the structures?

MR. CONLIN: Objection to form.

A. It could be. I don't know the answer to that question. I didn't sample inside the structures, but we did sample on the soils to see if -- I mean, that's what we've been doing all along, is sampling the soils, so why would we deviate from that?

Q. You saw the deposition testimony from some of the workers that they got sick upon return to work, right?

A. I don't know if I've seen that deposition testimony or not.

Q. Okay.

A. I know there are complaints, but I don't know that I've seen the deposition testimony -- that particular deposition testimony.

Q. Did you review the full dataset from Arcadis' Phase 1 ag com res sampler?

A. It's like a 20,000-page report? Is that the one you're talking about? It was

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issued -- not that long ago?

Q. It was lengthy, yes.

A. It's -- yeah, I did review it.

Q. Did you incorporate that data into your analysis?

A. I did in the sense that I read the report and I referenced it. I mean, that -- my job was to -- my primary scope of work was to take the four datasets that was taken by the Plaintiff, QA/QC them, and see what they suggested, and then also to critique the delineation report where there was data presented, and I did critique it.

Q. So I think in your report, you criticized the IMAAC, I-M-A-A-C, plume modeling?

A. I did not.

Q. Okay. What did you say about the IMAAC plume modeling?

A. Let's go to my rebuttal report, because I think that's the best way to respond to this question.

So I'm on Page 30 of Exhibit 3, the bottom complete row.

Q. Okay.

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A. Page 101 to 102, Issue No. 3 in response. Response to Issue No. 3: As discussed in my reports, these assertions are not supported by the comprehensive atmospheric dispersion and deposition modeling conducted by IMAAC.

And it's in response to, he says to my statement that the claim the wind direction was not considered before the vent and burn, resulting in inaccurate background sampling location.

So my response is over on the third column, as I say in the second paragraph, a review of the actual timing of events is important to show that this modeling occurred after the sampling occurred, and, therefore, could not have been source materials for the reliability of the MS Arcadis plan in advance. See Section 6.1 of my report, Exhibit 180.

3-6-2023, Arcadis sampling plan, Figure 6-1 of my report; 4-18-2023, Arcadis revised sampling plan, Figure 6-5 of my report; 5-19-2023, Arcadis sampling results report, Figure 6-7; 5-31-2023, IMAAC wind model monitor -- modeling report issued first time.

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So my point was simply Norfolk Southern made the response that the IMAAC wind -- it wasn't criticizing the IMAAC wind modeling report. It was suggesting that I was criticizing the fact that the response that they didn't consider the wind direction in their sampling program was reflected by the fact that the IMAAC results were after they had actually issued reports on their sampling.

And then when you look at actual figures in my report where the sampling occurred, the actual sampling, not only in the plans, but where it actually happened, there's no indication, I mean, considering -- considering a report after the fact is different than considering a report before the fact, and actually changing your plan, and, therein, lies my criticisms.

Q. And are you aware of any earlier versions of the IMAAC modeling report provided to Arcadis?

A. I am not. I'm only aware of a later one, a year later, a year or so later. I think in my original report, I cite the two dates where that report issued.

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Q. And the two weatherizations that you relied on for your wind direction?

A. Preliminary efforts in April --

Q. In Youngstown, Ohio, and in Pittsburgh, Pennsylvania, right?

A. Right.

Q. Did you have any modeling of the winds in East Palestine or have -- I'm sorry.

Do you have any data on the wind conditions in East Palestine?

A. I was not able to find a weather station in that timeframe that had had hour-by-hour data recorded.

The other thing that you have to do is you have to be able -- I would have to go back and look. I think it's the Iowa State University has a really neat program where they tied in all the historic wind data, or weather data in general, and you can create what they call Rose patterns, R-O-S-E, which is direction and strength with time for a given date or set of dates.

So it's a source I've used in forensics for years, and I simply wanted in reflecting -- this was -- I knew modeling was

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going on, but not available yet from our side back in 2020, late '23, early '24, but this is in April of '24 -- '23, actually, March -- late March of '23, and it might have -- no, I'll correct myself again.

I came home on March 4th of 2023, and I actually came home the weekend before and I ran those analyses, because I had been told by a number of individuals where I was sampling out west, no, the plume came over us. And I was concerned because I wanted to sample more to the southeast, right.

Everybody was saying that's where the plume is. That's where the evacuation is. And when people started telling me where I was sampling in other directions, "No, that came over us. I saw it," I'm like, oh, I need to go check some things out.

I can run these quick Rose models, and I'm like holy mackerel, the wind totally changed from the morning of the 6th to calm by noon to --

So almost 50 percent of the time, from basically 1:00 til 9:00 p.m., was calm, and then the rest of the time, it was out of

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direction from the southeast or southwest, mostly south.

So I'm like wait a second. I've got to think twice about wanting to sample almost always in the southeast. I've got to be looking to the north, and I've got to be looking to the west, and I've got to be looking to the northwest and northeast.

Now, there was much more sophisticated work that went on later, both by the EPA, by our folks, and now by Paul Rosenthal -- Rosenthal, and that will be for another discussion. I've seen his report. It's based on our data, in part, and of actual -- it's been tuned by the data -- the sets that we have, and it pretty much confirms some of my preliminary information from a -- well, actually, it was late February of 2023, that the direction of the winds, particularly during the burn, which is where the dioxins -- well, there would be some formed from the PVC as well, but the assumption that all the materials deposited to the southeast predominantly, and that background would be to the other directions, west through -- and to the

northeast, is just flawed.

And it's clear when you look at all the available background data that I could put my arms around for what the TEQs would be, that there's no way in the world that a background of 51 should exist.

And it's explained simply by saying, well, if you sample under the plume -- and, in fact, not you personally, but the Norfolk Southern experts admitted that they sampled all around, had equal distance, and I'm like -- for background, and I'm like, well, why would you do equal distance, first of all? And why would you sample all around the site for background? You wouldn't want to sample for background under the plume.

And I've shown plots where you can see where the background samples are from Arcadis. And if you overlay that with my plots and then also with the plots from EPA, as well as we had the -- there was a benefit of a plot by Schuhmann who was indirectly working on the modeling for the Plaintiffs at the time, and he presented it in a 2024 -- I don't know if it was an affidavit or declaration, but it's a

snapshot of that model, and it, too -- it's in my report -- shows the wind direction.

There's a little bit to the south, but are predominantly going to the north, the north, which is right over the top of a lot of the background samples.

So, you know, I've been a critic publicly and professionally about the whole sampling programs being done in such a way that it corrupts the definitions of background and foreground, and I think I'm right.

And I think the modeling that we've now done is very attuned to a bunch more data, is going to show that.

Q. Have you reviewed the EPA plume reconstruction map?

A. I believe so. If it's part of that report, I did. I mean, if I did, it would be in my list of exhibits.

Q. And you disagree with the findings of the EPA with respect to the deposition from the plume?

MR. CONLIN: Objection to form.

A. I'm not sure I agree or disagree. I think the -- I disagree with Arcadis'

definition of where the plume went. I don't necessarily disagree with the -- the EPA model, you've got to be a little bit careful because you've got to look at the timeframe. They have a broader timeframe. You've got to look at the days and hours of the model because it matters.

In other words, there's a certain interval where the plume went when they did the detonation of the burn, and there's also some time from February 3rd to February 6th, so it just depends on the time interval you use for that modeling will impact the results.

Q. Okay. Let's look at --

A. I'm sorry. I want to just -- I was searching for it to finish my answer.

On Page 29 of Exhibit 2, which is the April 6th report. I present the -- it's a snapshot of the Richard Schuhmann -- it was during a hearing in front of the judge for settlement, I believe.

He was a consultant to the Plaintiffs, and he presents a snapshot of that model in his declaration. I was surprised because most of the stuff was not to be produced, and so I put it in the reports since

it was in a document that was publicly made available.

Now, he's using a timeframe from February 3rd at 9:00 p.m. to February 7th at midnight. And his plume shows predominant directions to the north and to the east, with some -- some deposition to the south, but then there's -- if you look at the shades of green, then it's all over the place to some degree as well.

But the problem you have is if you're doing all your sampling thinking the plume is -- it's not to even worry about the evacuation of the people, but if you're assuming it's all to the southeast, that doesn't reflect well on this modeling, or in my modeling, or the EPA's modeling, or now Rosenthal's modeling.

So I think the cumulative evidence will show pretty quickly that I was right in February of '23.

Q. Let's look at Exhibit 2, Page 11, and Table 4.1.

A. Are we on Exhibit 2? I'm sorry.

Q. Yes.

A. And Page 11?
Q. The table starts on Page 10 --
A. Yes.
Q. -- and goes over to Page 11.
A. I'm there.
Q. Okay. And if we look to the last two railcars on the list, Railcar 59 and 60. Do you see that?
A. I do.
Q. And they're the benzene residue cars, right?
A. Correct.
Q. And the car damage summary product loss section is the last column?
A. Correct.
Q. For the benzene residue Car No. 59, what does the last column say?
A. No leak. Fire damage only, and then no leak, fire damage only.
Q. And that's for the benzene residue Car No. 60?
A. That's for this documentation at that point in time. I would argue that the differential diagnosis and -- that I did is much more complete than this table and would

contradict this finding. I don't think they had the benefit at that point in time of the analysis I completed.
Q. But they did have the benefit of seeing the railcar?
MR. CONLIN: Objection to form.
A. Well, I saw the railcar. I saw it in a railroad yard, you know, four days afterwards, and I didn't see any leaks then, but, I mean, who knows? It was 30, 40 miles from the site.
So that's my point, is we were given access to the two benzene cars, but at the Pennsylvania rail yard, but it was like late February of 2023. It was three weeks after the incident.
Q. Did anyone else see the railcars at the site?
A. I don't -- I don't have -- from this document, you don't have first-hand testimony as to what -- how that -- how that definition was made. And just because the person at the moment that they looked at it didn't see a leak doesn't mean there was a leak -- there wasn't a leak at some point in time.

And I'm just saying the differential diagnosis, combined with the plotting of actual benzene levels in the ground, suggests otherwise.
Q. Okay. We've talked --
MR. RHEINHEIMER: What time is it?
MR. CONLIN: About a quarter -- six after.
MR. RHEINHEIMER: Why don't we take a break. It's been almost an hour.
THE VIDEOGRAPHER: We're off the record.
(Recess is taken.)
THE VIDEOGRAPHER: We're on the record.
Q. Okay. If we turn to Page 36 of Exhibit 2, your opening report. Looking at Section 6.2.
A. I'm there.
Q. Under the Norfolk Southern and Arcadis soil sampling program that you've included as Exhibit 36, they would take two samples at a site, right? One from zero to one inches and one from zero to six inches; is that right?

A. Well, there's conflicting statements. That's the only issue. That's why I was trying to go to the original document with their decision tree to try to figure that out.
I don't disagree that those words are there. I'm just saying -- and then they also said on Page 5 -- I'm not disagreeing that those words are there, but they also say at the beginning of the bottom of this page: Soil samples to be collected in the following intervals from a single shallow boring, surface soil, superficial scrape or visually impacted the materials, zero to one inch, and inches if impacted materials are not observed.
Subsurface soil below impacted materials to six inches or one inch to six inches if there is no ash, not ash.
So they were using ash as a surrogate to do shallow sampling, and then if there wasn't ash present, they were taking a composite, is the way I read it.
Q. Okay. You don't read it as taking either a superficial scrape of visually impacted materials or zero to one inches if

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impacted materials are not observed, and also separately taking a subsurface soil sample of below the visually impacted materials to six inches or one to six inches if there is no ash?

MR. CONLIN: Objection to form.

A. The statement is -- the statement that confuses one is the underlined, italicized statement: If there is not ash. And that's why I tried to go to the decision tree that they have in this sampling plan to try to figure that out.

And if you walk through that, it says: Define/describe inspection area, city block, field, parcel, et cetera.

Look for visual evidence of ash and document observations on the inspection form. So the first criteria is look for visual evidence of ash, correct?

Then it says -- then there's three decisions to be made, no ash observed. Collect samples zero to one and zero to six at 20 percent of the impact area.

So in that scenario, they are collecting, it appears to me, a zero to one-inch sample, and a one to six-inch sample.

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I don't understand why they're doing the one to six-inch sample. I've never understood that, other than I would have done, as I've said before, in testifying here, I would have done -- sort of like you do in asbestos for layers, I would have done zero to one, one to two, two to three, just to kind of see if there's a profile.

Because as the EPA says and others stated, it's unlikely to be below two centimeters --

Q. Why is it unlikely to be below two centimeters?

MR. CONLIN: Objection; asked and answered.

A. Because, first of all, it's insoluble. It doesn't dissolve into water. And, secondly, it takes time to try to wash -- even with rainfall events, if it's not going to dissolve into the rain, then it has to be physically pushed into lower levels.

Q. So the top approximately one inch of soil would be where you find dioxins deposited from the derailment and vent and burn, right?

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A. I would think that would be the most likely.

Q. And then if you looked at the soil between one and six inches, you would see what tends to be deposits there over time not impacted by the derailment or vent and burn, right?

MR. CONLIN: Objection to form.

A. I don't know because I didn't do the profiling.

Q. What do you mean profiling?

A. I've just described it over and over again, where you -- what they're doing is they're making a big mix from one to six inches, right? So what if the stuff is right at the top of the six inches.

Q. But you said it's all in the top inch?

A. Well, yeah, but you're sampling it to one -- zero to one inch, and then one inch to six inches, so what if you're right at that interface.

So my point is simply this: Why didn't they sample -- if they wanted to know -- if your argument is true, that the zero to one

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inch is where it deposits and it doesn't deposit below, then run a profile zero to one inch to see what the level is.

Run one to two inches, two to three inches, three to four inches, and five to six inches. That's how you determine whether there's a profile likely from surface deposition. That's not what they did.

They just took a big glob from one to six inches and how much of that -- we won't even get into the plastic bags and all the rest of it, but how good were they at making that demarkation from zero to one inch and then one to six inches.

Q. And if the one to six-inch dioxin levels were similar or the same as the zero to one-inch dioxin levels, what would you interpret that to mean?

A. I don't know. I haven't done that analysis. It would depend on where the samples are. If you took them right next to a road, then I would be concerned it came from the road.

So it would just depend on the sample and knowing more details about the

sample itself. Knowing more about the chain of custody.

Q. On Page 38, there's an e-mail from Brian Gullett at EPA you've copied onto your report. Do you see that?

A. I do, yes.

Q. Did you review any response to Mr. Gullett from others at EPA or Norfolk Southern?

A. Well, it comes from an e-mail. That's in my Exhibit 185, so it comes from an e-mail chain, I mean, so I guess the answer is yes. I mean, it's in a sequence of e-mails.

Q. In those responses, did you see the explanation for why Arcadis was proposing to sample zero to one inches and one to six inches below surface?

A. I didn't see it in that series of e-mails.

Q. Did you see it in any other response to Mr. Gullett's position regarding the surface sampling?

MR. CONLIN: Objection to form.

A. I can only look at what I have access to, but I didn't see it in any materials that I have access to, not that I recall. I've

got this whole sequence of e-mails through -- you know, in Exhibit 185. So you see the back and forth. It's mainly between EPA people themselves.

Q. And then if we go down to the sentence starting with also, you say: Also the use of visibile ash is an indicator of surface deposition seems flawed, as other contaminants other than visible ash likely were deposited during the burn event.

Do you see that?

A. Yes.

Q. What other contaminants other than visible ash --

A. The PAHs, the dioxins and furans, any of the combustion products.

Q. And would those be associated with ash in an incomplete combustion environment?

A. Well, that's the challenge. I would argue that I know of no literature that suggests the presence of ash is correlated to the presence of dioxin, nor for BaP, benzo(a)pyrene.

So if you're going to base your -- that's why I say the plan is flawed. If you're

going to base your plan on ash as the surrogate for all these other substances that are toxic, then you better be able to show some literature that says there is a correlation between those two. Otherwise, it's speculation.

Q. And did they also sample soil at locations where ash was not seen?

A. Well, certainly, they did, but using ash as an indicator of surface deposition by itself is flawed for the reasons I just stated, because I don't have literature that says ash -- ash from this particular type of event is correlated to the presence of dioxins or furans, or PAHs for that matter, other things that would deposit.

That's all I'm saying here, is where's the literature that says that's a surrogate. I don't find it in the reports. It's not my job to make that argument. It's their argument -- it's their job to make the argument that ash is a surrogate prototype, if you're going to be doing a good scientific sampling plan.

Q. Before I forget, let's mark these invoices -- if it's okay, I'm going to mark all

of the invoices as one exhibit.

MR. CONLIN: The ones from him are his direct invoices. The other ones from the lab are the ones he forwarded to us. You could put it in as one, but --

MR. RHEINHEIMER: That's fine. So we'll mark this as Exhibit 6 from EES Group, and the invoices from LDC as Exhibit 7.

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(Thereupon, Deposition Petty Exhibit 6, Invoices, was marked for purposes of identification.)

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(Thereupon, Deposition Petty Exhibit 7, Invoices, was marked for purposes of identification.)

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A. I could have paid them and then asked for reimbursement --

Q. Just to close the loop on the exhibits -- or on the invoices, we've marked the invoices as Exhibits 6 and 7. Can you just confirm that, up until now, these are all of the invoices you've submitted to counsel for

payment?
A. I don't do this work in my company, so all I can tell you is that I know that the invoicing occurs monthly. I know that because I had 21 projects until the end of -- from October to end of January, I think the fact that my first invoice is in February seems to be right, and, obviously, I continued to work on this through May, so it seems like they're right?
MR. RHEINHEIMER: And I would just ask counsel if there's -- if you discover there's one missing, let us know.
MR. CONLIN: And we'll supplement it as we get closer to trial.
A. This was done by my accountant, so I'm assuming that they -- they do this for all the legal cases. They prepare these, so I have no reason to believe it's not accurate.
Q. Okay.
MR. RHEINHEIMER: Why don't we go off the record.
THE VIDEOGRAPHER: We're off the record.
(Recess is taken.)

THE VIDEOGRAPHER: We're on the record.
Q. Mr. Petty, thank you for your time. I have no further questions.
A. Thank you, sir.
MR. CONLIN: No questions for us, pending the -- as we spoke off the record, we're going to provide a -- some errata sheets and correct some of the non-substantive typos that you identified.
And the only other thing for the record is after going through the deposition, Plaintiffs don't see anything that would warrant this deposition remaining confidential. That's it. Thanks.
THE VIDEOGRAPHER: We're off the record.
THE REPORTER: And I understand you need a rough and the final in five days?
MR. RHEINHEIMER: Yes.
THE REPORTER: And the same order for you?
MR. CONLIN: Yes, we have a standing order for expedited.
(Signature not waived.)

Thereupon, the deposition concluded at approximately 5:35 p.m.

AFFIDAVIT/ERRATA SHEET

STATE OF OHIO:
SS:
COUNTY OF FRANKLIN:

I, STEPHEN E. PETTY, P.E., C.I.H., C.S.P., do hereby certify that I have read the foregoing transcript of my deposition given on June 23, 2026, and wish to make the following additions, corrections, amendments, or deletions:

PAGE NO. LINE NO. CHANGE AND REASON FOR CHANGE:

In all other respects, the transcript is true and correct.

_____
STEPHEN E. PETTY, P.E., C.I.H., C.S.P.
Subscribed and sworn to before me this___ day of _____, 2026.

_____
NOTARY PUBLIC, STATE OF OHIO
My Commission Expires:

Job No. CS8284158

CERTIFICATE

THE STATE OF OHIO:
SS:
COUNTY OF FRANKLIN:

I, Rebecca Williams, a Professional Reporter and Notary Public in and for the State of Ohio, do hereby certify that before the taking of his said deposition, the said STEPHEN E. PETTY, P.E., C.I.H., C.S.P., was first duly sworn by me to tell the truth, the whole truth, and nothing but the truth;

That said deposition was taken in all respects pursuant to the stipulations of counsel heretofore set forth; that the foregoing is the deposition given at the said time and place by the said STEPHEN E. PETTY, P.E., C.I.H., C.S.P.;

That I am not an attorney for or relative of either party and have no interest whatsoever in the event of this litigation.

IN WITNESS WHEREOF, I have hereunto set my hand and official seal of office at Columbus, Ohio, this 30th day of June, 2026.

Rebecca L. Williams

Notary Public, State of Ohio

My Commission Expires: June 7, 2027.

Jon Conlin, Esq.
jconlin@CoryWatson.com

June 30, 2026

RE: Ceramfab, Inc., et al. v. Norfolk Southern Corporation, et
6/23/2026, Stephen E Petty, P.E., C.I.H., C.S.P. (#8284158)

The above-referenced transcript is available for review.

Within the applicable timeframe, the witness should read the testimony to verify its accuracy. If there are any changes, the witness should note those with the reason, on the attached Errata Sheet.

The witness should sign the Acknowledgment of Deponent and Errata and return to the deposing attorney. Copies should be sent to all counsel, and to Veritext at (Erratas-CS@veritext.com).

Return completed errata within 30 days from receipt of testimony.

If the witness fails to do so within the time allotted, the transcript may be used as if signed.

Yours,
Veritext Legal Solutions

Job No. CS8284158

Ceramfab, Inc., et al. v. Norfolk Southern Corporation, et al.
Stephen E Petty, P.E., C.I.H., C.S.P. (#8284158)

ERRATA SHEET

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Stephen E Petty, P.E., C.I.H., C.S.P. Date
Job No. CS8284158

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Federal Rules of Civil Procedure

Rule 30

(e) Review By the Witness; Changes.

(1) Review; Statement of Changes. On request by the deponent or a party before the deposition is completed, the deponent must be allowed 30 days after being notified by the officer that the transcript or recording is available in which:

(A) to review the transcript or recording; and

(B) if there are changes in form or substance, to sign a statement listing the changes and the reasons for making them.

(2) Changes Indicated in the Officer's Certificate. The officer must note in the certificate prescribed by Rule 30(f)(1) whether a review was requested and, if so, must attach any changes the deponent makes during the 30-day period.

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VERITEXT LEGAL SOLUTIONS

COMPANY CERTIFICATE AND DISCLOSURE STATEMENT

Veritext Legal Solutions represents that the foregoing transcript is a true, correct and complete transcript of the colloquies, questions and answers as submitted by the court reporter. Veritext Legal Solutions further represents that the attached exhibits, if any, are true, correct and complete documents as submitted by the court reporter and/or attorneys in relation to this deposition and that the documents were processed in accordance with our litigation support and production standards.

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