STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION COMMISSION

CASE NO. 15617

IN THE MATTER OF APPLICATION OF C.K. DISPOSAL, LLC, FOR PERMIT TO CONSTRUCT AND OPERATE A COMMERCIAL SURFACE WASTE MANAGEMENT FACILITY, PERMIT NO. NM1-16

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BEFORE: DAVID CATANACH, CHAIRMAN
PATRICK PADILLA, COMMISSIONER
DR. ROBERT BALCH, COMMISSION

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I N D E X

I N D E X (Continued)

CHAIRMAN CATANACH: Good morning. This is Day 3 of the case, C.K. Disposal, LLC. Before we get started on the case this morning I asked the Commissioners if they had a chance to review the CASA Order or CASA Draft or if they have any changes to that.

COMMISSIONER BALCH: I had a chance to review the order. I don't have any additional changes.

COMMISSIONER PADILLA: I also reviewed the order.

COMMISSIONER BALCH: I will move.

COMMISSIONER PADILLA: I will second that motion.

CHAIRMAN CATANACH: All in favor of adopting the order in CASA Case Number 15437.

COMMISSIONER PADILLA: Aye.

COMMISSIONER BALCH: Aye.

CHAIRMAN CATANACH: Aye. The Number R1419A.

(Motion to Adopt CASA Order 15437 approved.)

CHAIRMAN CATANACH: All right. So at this time if we don't have any other business, I will turn it over to Mr. Bohnhoff.

MR. WOODWARD: Mr. Chairman, I know -- and Commissioners, thank you for being here this morning. I know the last thing you want is to hear from the lawyers. We have got limited time today and I don't want to burn a bunch of time, but I think because limited time, we need to have a very serious discussion today about today's schedule.

Mr. McGuffey has gone back and made calculations about time utilized and where we are going into our last day of the hearing. And by our calculations LES is only 20 minutes behind us going into the last day. And when you look at their witness list, of their five remaining witnesses they plan to put on today, two of them are very clearly outside the scope of this agency. They are air permitting experts that are going to address the regulations of the New Mexico Environment Department. One of them is the individuals being subpoenaed from the New Mexico Environment Department. I just don't think we need to be using our time today to hear from a lawyer regarding the regulations of the New Mexico Environment Department.

And the second one is Mr. Clayton Orwig whose testimony and his report are based solely on

the determination of the Ambient Air Quality standards as they are regulated by the New Mexico Environment Department. So I would move, respectfully, to strike these two witnesses from the schedule today. I think the other three witnesses are questionable. They are also dealing with air issues but we can address those as they are brought up, but I would like to move this morning that we strike those two witnesses.

CHAIRMAN CATANACH: Mr. Bohnhoff, would you like to respond.

MR. BOHNHOFF: Yes, please.

Mr. Chairman, I have advised the Environment Department that I would not be calling Ms. Liz Bisbey. She is not a lawyer, but she is the minor source manager for the Air Quality Bureau. I made that decision based on the ruling that you made on Wednesday that we would not be permitted to address the permitting. So she is not going to be testifying.

Mr. Orwig will be testifying as to both volatile organic compounds and as to hydrogen sulfide emissions. He would, if the Commission would permit us to do so, address the questions of permitting from the New Mexico Environment

Department regarding VOCs, but he is also going to testify as to the likely emissions and the environmental impact of both hydrogen sulfide and VOC emissions.

Regardless of the Commission's decision about whether we would be permitted to present evidence as to the second prong of the 19.15.36.12A1 factors that the Commission is to consider in making a decision to grant this permit to C.K., Mr. Orwig's testimony is relevant to the third prong as well, whether or not the facility can be operated without endangering public health, safety, and the environment. So for that reason I think it is entirely relevant. I intend to get through our four witnesses today. I question seriously the proposition that we are only 20 minutes behind; that is, we have spent only 20 minutes on our presentation less than the presentation that C.K. has made over the one and two-thirds day. The Commission will recall that C.K.'s case lasted until I believe 3:00 yesterday afternoon, far beyond the one and a half days and they were presenting their case, yes, I had some cross-examination but I don't believe my cross-examination was anywhere near the time that C.K. spent on its direct examinations.

For all of those reasons I would ask that this motion be denied and I be permitted to proceed.

CHAIRMAN CATANACH: Mr. Bohnhoff, do you have any time estimate on your four witnesses on direct?

MR. BOHNHOFF: If we can get started, sometime in the afternoon I will finish.

CHAIRMAN CATANACH: That is not very clear.

MR. BOHNHOFF: Well, you know, let's say 3:00 in the afternoon.

CHAIRMAN CATANACH: Personally I would like to hear Mr. Orwig's testimony. I think it is relevant as to public safety. I don't want to get into the regulations of the Environment Department as we discussed previously.

MR. BOHNHOFF: I don't intend to get into regulations. I do intend to get into both safety and environmental concerns because those are factors that are part of the regulation.

CHAIRMAN CATANACH: Mr. Woodward, did you plan on putting any rebuttal witnesses on?

MR. WOODWARD: Yes, sir. Currently we have one rebuttal witness. We think we will need 15 minutes. I will say that the numbers speak for

themselves and we calculated yesterday and I have copies if you-all would like to see them.

Yesterday based on the calculations that we did, the -- LES took approximately 40 minutes longer on their presentation and cross-examination of our witnesses than we did of cross-examination of their witnesses. You know, there is time also allotted to Mr. Brooks and the Commissioners asking questions, so to say that we took to 3:00 is disingenuous. We went and calculated the time utilized for presentation of our case.

CHAIRMAN CATANACH: Mr. Brooks, do you want to weigh in on this?

MR. BROOKS: I believe that Mr. Bohnhoff is correct to the extent that if you look at the statutes and the rules, the Commission can consider air quality issues. I don't think the Commission can make a determination or should attempt to make a determination as to whether or not the Environment Department would issue an air quality permit.

CHAIRMAN CATANACH: Well, thank you, Mr. Brooks. Let's proceed. We will go ahead and proceed with your four witnesses.

MR. BOHNHOFF: Thank you.

CHAIRMAN CATANACH: If there are any

issues while they are testifying, we will address those at that time.

MR. WOODWARD: Thank you, Mr. Chairman.

MR. BOHNHOFF: Before I present the next witness and because of the likelihood of an appeal, I want to make sure the record is clear and briefly summarize as an Offer of Proof prove the opinions Mr. Bohannan would have testified regarding traffic safety but for the Commission's ruling yesterday afternoon.

MR. WOODWARD: Mr. Chairman, I am going to object to that, Mr. Bohannan's report and resume are in the notebook that has been provided. It is in the record. I don't think it is appropriate for Mr. Bohnhoff to testify for this record to say what the witness would have testified to.

CHAIRMAN CATANACH: What are you asking Mr. Bohnhoff?

MR. BOHNHOFF: I want to take 45 seconds to put into the record a brief summary of the opinions that he would testify to. The opinions that he would testify to go beyond the report and that is the purpose of making a showing.

MR. WOODWARD: I think that was the basis of the ruling was that those opinions would not be

coming into the record. He has got him identified and what he is going to testify to in this prehearing statement, that should be adequate to protect any appeal that he wants to take on this matter.

MR. BOHNHOFF: Respectfully, that is not correct. What I had to say in the prehearing statement was the subject area of its expertise. I wasn't required to state the opinions themselves. His opinions go to both safety as well as access permitting by the Department of Transportation. And the opinion was focused on the permitting issues. The Commission have made the ruling that it did. I am going to also focus on safety concerns. I think I am entitled, if the Commission is not going to allow the witness to testify on those issues, as a matter of fairness just to make the record and preserve the error, if there is any. I am entitled to state what opinions he would testify to. This is going to be succinct. I am not going on at length.

MR. BROOKS: Mr. Chairman, I have serious doubts about whether the Commission has any jurisdiction with regard to traffic safety issues, however, at the same time, I believe -- I come to this from my 12 years experience on the District

Court bench and I really believe that it would be appropriate to allow Mr. Bohnhoff some leeway in making his Bill in a manner that he feels is most appropriate.

CHAIRMAN CATANACH: Go ahead, Mr. Bohnhoff, we will allow you.

MR. BOHNHOFF: Thank you.

Mr. Bohannan would testify that as a matter of generally accepted engineering practice as well as compliance with DOT requirements, a driveway access for C.K.'s facility would be one, unsafe, and, two, not likely to be permitted by the Transportation Department. That would be the case whether the driveway was situated along the east edge of Sections 5 and 32 as designed and as testified to by C.K.'s engineer or in a position, in an alignment that would be opposite LES' east driveway; that is, at the location of the existing dirt road that runs to the south, Highway 176.

That is my offer of proof.

CHAIRMAN CATANACH: Thank you, sir.

MR. BOHNHOFF: LES will now present Clayton Orwig.

THE WITNESS: Clayton Orwig, C-L-A-Y-T-O-N, O-R-W-I-G.

(Whereupon, the witness was previously sworn.)

CLAYTON ORWIG,

after having been first duly sworn under oath, was questioned and testified as follows:

DIRECT EXAMINATION

BY MR. BOHNHOFF:

Q. Mr. Orwig, how old are you?

A. I am 46 years old.

Q. Where do you live?

A. I live in Atlanta, Georgia.

Q. How are you employed?

A. I am a Senior Air Specialist for Haley & Aldrich.

Q. What is Haley & Aldrich?

A. We are an environmental engineering and consulting firm.

Q. Just tell me about Haley Aldrich briefly. Where is it located, how big is it?

A. It's been around a little over 50 years based out of Boston. We have about 26 offices across the country, around 700 employees.

Q. Summarize for us your formal education since your graduation from high school.

A. I went to Georgia Tech and got a

Bachelor's in civil engineering, and then I got a Master's in civil environmental engineering at Georgia Tech right afterwards.

Q. What were the years when you got your Bachelor's and Master's?

A. '92 and '93.

Q. During graduate school did you focus on any particular subject or area?

A. My graduate work was based on -- focused on geohydrology and groundwater modeling.

Q. Since you received your Master's degree in the early '90s, for whom have you worked?

A. Immediately leaving Georgia Tech I went to a small consulting firm in Atlanta and then that firm was bought by a medium-sized firm, RMT in 2000, and then I've worked for Haley & Aldrich for the last four and a half years. So I have been in consulting the entire -- my entire professional career.

Q. So '93 to 2017, that is roughly 23, 24 years. Describe for me the work that you have done at these these firms over that period of time.

A. Working in the consulting firms we have supported industry. Really with -- my focus has been in compliance issues, heavy emphasis on air

permitting. Coming in from geohydrology and groundwater modeling as a young engineer, we had some complex air permitting projects and since I was the young guy who understood computers, I got thrown into air dispersion modeling and that really kind of took my career into the air world.

Q. Have you engaged in air emissions inventorying and calculating?

A. Yes, routinely.

Q. And during this 23, 24-year period have you also regularly conducted air dispersion modeling?

A. Yes, yes. Starting my career in that has continued to be a part of my practice.

Q. Have you focused on any one industry?

A. No. That is one of the things that keeps work interesting, I think, is that on the air side it is very diverse. I have worked for mining, I've worked for pulp and paper, I have worked in the metals industry. You know, when new facilities get built they need an air permit and it is all industry that needs that, so it is very diverse. It would be easier to list the areas I haven't worked in.

Q. Have you focused on any one contaminant in your emissions inventory and calculating and

modeling work?

A. No. The regulated air pollutants are pretty much the same. It is the same suite of compounds that are looked at, so no, not a particular focus.

Q. Is the process or technique of, again, inventorying, calculating or modeling one air contaminant significantly different than modeling another or inventorying or calculating?

A. No. No, most of the models treat the compounds the same, you know, looking at different pollutants, so it is not treated that differently. VOCs might be the exceptions in that they generally are not modeled as a VOC as a group, it would be individual constituents.

Q. How many air modeling projects have you worked on during the course of your career?

A. Well, I will group them into two different buckets. The more complex larger ones I -- ten, 12, large multisource, 200, source facilities, and then 50, 60 at least of the smaller more simple models.

Q. Okay. Can you give me an example of two or three modeling projects that you have worked on?

A. Sure.

One of my first projects was a large

facility, about a million square feet under roof. They were going through an expansion that needed to be permitted, and during the review it was discovered there had been a previous expansion ten years prior. So there was an retroactive aspect and a future aspect that had to be handled and resolved. And that was mostly particulates and condensable particulates modeling and then products of combustion from boilers.

There is another project I worked on where there was an air standard violation that centered around the facility so the State was requiring to be -- EPA was requiring the State to revise their SEP which was basically revise their rules to address the poor air around this area and it was a lead smelting operation, and so we help our client prepare documents on behalf of the State.

Then recently I have been involved in a permitting of a large new foundry, so 200 source brand-new facility in a green space, you know, previous undeveloped space.

Q. Do you hold any -- any professional certifications or licenses?

A. I am a professional engineer in the State of Georgia.

Q. Are you a member of any professional organizations?

A. I am in the Air and Waste Management Association and a former president of the -- of one of the State chapters in the Air and Waste Management. And that is really about it.

Q. I want to make sure we are clear on one point. You have mentioned your permitting experience. As part of working on a permitting project, do you end up having to inventory and then also calculate the level of air emissions or contaminants?

A. Yes. And not just for permitting, but yes, I regularly conduct or create emissions inventories and estimate emissions for facilities.

Q. Turn, if you would, in the big black notebook to Exhibit Q. This is LES' Exhibit Q.

Can you identify Exhibit Q as a copy of your resume?

A. Yes, it is my resume.

Q. Is this current?

A. Yes.

Q. And does Exhibit Q accurately represent your professional experience and education and training?

A. Yes, it does.

MR. BOHNHOFF: Mr. Chairman, I would move the admission of Exhibit Q.

CHAIRMAN CATANACH: Is there any objection?

MR. WOODWARD: No, no objections.

CHAIRMAN CATANACH: Exhibit Q will be admitted.

(LES Exhibit Q admitted.)

Q (By Mr. Bohnhoff) Were you engaged by LES to provide expert opinion testimony in connection with this administrative proceeding involving C.K. Disposal's application for an oilfield waste disposal -- disposal facility?

A. Yes, I was.

Q. What was your assignment?

A. To review the application and render any opinions, really, from an air perspective on the application.

Q. I want to start with hydrogen sulfide. What conclusions have you reached regarding hydrogen sulfide emissions from the C.K. facility?

A. I reviewed the subsequent submittal after the application with the modeling report and my key observation was that it didn't really follow normal

modeling procedures as looking at fence line concentrations. I am familiar with those screen model, but when I looked at that, that raised a flag for me, so I dug into it a little more and that was -- I noticed that, you know, it was very one directional, one dimensional ignoring all the other fence lines.

Q. If we could, just now I would like you to summarize your opinions and then we could go into the details and the basis for the opinions, but first let's just identify your conclusions.

A. Okay. That it was an outdated model, there were flaws in it, and that that indicated concentrations higher than the New Mexico standard.

Q. Okay. So let's talk about the modeling. You mentioned some concern about the model itself. What -- give me the basis for your criticisms of the model that was used.

A. As far as the choice of the model?

Q. Yes.

A. Okay. In around 2011 EPA issued a letter after they revised their model that -- they issued new models. After they issued the new models they recommended to -- that their preferred model was AERSCREEN and AERMOD and not so much Screen 3 and

ISC. So the current preferred screening model is AERSCREEN.

Q. What is the deficiencies or the shortcomings of AERSCREEN versus Screen 3, or -- I'm sorry, of Screen 3 versus AERSCREEN or the other model that you mentioned?

A. They are both screening models but it was a significant upgrade. You know, going from the old model to a new. It would be difficult for me to summarize those little changes.

Q. Let me ask you this: Does AERSCREEN better account for local terrain and meteorological conditions than Screen 3?

A. It does a better job, yes.

MR. WOODWARD: I would like to point out that that was a leading question, but I am going to let it go, but I did want the record to reflect that that was Mr. Bohnhoff testifying rather than the witness.

MR. BOHNHOFF: We have certainly established the ground rules over the past couple of days on that.

Q (By Mr. Bohnhoff) Let me ask you this: Do you believe that C.K.'s model that they came up with for hydrogen sulfide emissions at their facility is

in any way flawed?

A. Yes.

Q. Talk to us about the flaws.

A. The key flaw is focusing on just one source at the facility when it is clear from the plan and clear from the testimony that there are multiple sources of hydrogen sulfide. And modeling protocol is to have all the sources, but you can do a screen model. But once you do a screen model and there is an issue and even that screen model should have an emissions level that would account for all the multiple sources, then you need to do a more detailed model. So my review of this AERSCREEN is that it underestimates hydrogen sulfide emissions from this facility.

Q. Why do you say that?

A. There are multiple sources of hydrogen sulfide at this facility. Only one of them is included in its analysis, and that is the load-out. The other ones would be the hydrosulfide that is left in the tanker, any hydrogen sulfide that comes out of the air stripper, the hydrogen sulfide that is, you know, coming out of the evaporation ponds where they have the monitoring, and the stabilization pond.

Q. During the load-out process, emptying the tanker trucks into the initial tank, will there be hydrogen sulfide emissions during that process?

A. Yes.

Q. We had some discussion yesterday about whether there would be hydrogen sulfide emissions from the oil/water recovery tanks. Do you have an opinion based on your review of the application as to whether or not there would be emissions from those tanks?

A. There is a general lack of detail in this whole process. But the idea of a -- tanks that don't ever emit hydrogen sulfide is hard for me to get my mind around. It doesn't make sense to me. If it is circulating and then it is not, it has to go somewhere. It is not a tank that is -- there has to be ventilation from the tank. So I believe that there has to be hydrogen sulfide from those tanks or from the processes following that tank if they are all closed.

Q. To the extent any hydrogen sulfide is being released from the produced water during that oil/water separation process, is it reasonable to assume that over the 30 or more year life of this facility that the hydrogen sulfide would just stay

in the tank indefinitely?

A. No.

Q. Mr. Stiggins testified yesterday that there would never be, or at least it would be extremely unlikely that there would ever be hydrogen sulfide emissions from the evaporation ponds. Do you agree with that?

A. I disagree with that.

Q. Why?

A. Well, we have monitors surrounding these evaporation ponds. I understand that if they're operated at a pH level that the emissions may be low, but there will be emissions from those ponds certainly at times. You know, hydrogen sulfide concentration measures, it is a short term standard, so it doesn't take long for it to matter.

So I do think that there are emissions of hydrogen sul- -- there will be and we heard testimony yesterday indicating high concentrations at times coming from similar lagoons.

Q. Are you referring to Mr. Carrillo's testimony?

A. Yes.

Q. Do you have an opinion as to whether the assumptions that C.K. made in its modeling amount to

a worst-case scenario?

A. No. As I was describing earlier, the fact that they only have emissions coming from one source significantly underestimates the potential, what I would consider worst-case scenario. Worst-case scenario for a short-term standard like this, a half-hour standard, you need to consider emissions from multiple sources that I just described all at once. It is not accurate to think that there is only going to be emissions from one source at one time.

There is accumulation affect of having all these multiple sources at once and the model accounts for that. And a more complex model does, the screening model cannot.

Q. Did C.K. in its Screen 3 modeling exercise account for hydrogen sulfide already present as a result of existing sources?

A. No. That would be another aspect of the model is to not only account for all of the sources that are being proposed in this application but to include any neighboring sources in the area, like a background.

MR. WOODWARD: Mr. Chairman, I do hope that you recognize that they are nibbling all around

the edges here, but they are talking about air permitting at the NMED.

MR. BOHNHOFF: May I continue?

CHAIRMAN CATANACH: Yes.

Q (By Mr. Bohnhoff) Mr. Orwig, do you have an opinion as to whether or not -- well, I believe you mentioned this. I address your opinion about whether C.K.'s modeling itself predicts compliance with the governing Ambient Air Quality standard?

A. So when I looked at their model, the data is in there because it is a straight line Gaussian screen. And the distances that they used were to the north, but if you looked to the nearest fence line or any of the other fence lines you could draw a conclusion by looking at the data that was created and the model that was submitted and that was the discussion yesterday about the 100-meter -- there was a calculation for the concentration at 100 meters from the source. One hundred meters from where that source is, is beyond the southern fence line and that concentration is calculated to be about 300 ppb, which is about three times the New Mexico air standard. It is not just a New Mexico air standard, it is the Permian Basin air standard for hydrogen sulfide. So what I did --

Q. Let me interrupt you here just so we are clear on the record. Are you referring to the .1 part per million Ambient Air Quality standard that was referred to yesterday?

A. Yes, yes. And this result was about .3 at the 100-meter mark. So like I said, that is beyond the fence line. So what I did is I took the air model and put it -- reran the screen model using Screen 3 and I put the nearest fence line distance, which is about 60 meters. I put in the same model input and put it into AERSCREEN 3. It is 61 meters, so the nearest fence line where ambient air is. Those results predicted around .5 and .6 ppm. So that's the model also that I am saying is flawed that is the one source, that is not multiple sources. I feel this model demonstrates, you know, high exceedance of the standard.

Q. Within your profession what does ambient air mean?

A. It is the air beyond the fence line of the property when you are looking at this. It is not even the property line, it is the fence line that you have control over. So beyond that where you have no control is considered ambient air.

Q. Do you look to -- which fence line do you

look to?

A. All fence lines. I can read the -- I mean, there is a pretty clear definition what ambient air is that I could read if it is helpful. It is a State federal description of what ambient air is.

Q. In the context of the C.K. facility, in order to determine compliance with the Ambient Air Quality standard, would you look to the south fence line?

A. I would look at all fence lines.

Q. There was some discussion yesterday about the fact that at the south or south of the south fence line of the proposed C.K. facility there is currently no development. Does that make a difference in terms of assessing compliance with the Ambient Air Quality standard?

A. No. No, because like I was describing, it has everything to do with control. It is like I advise clients that are building a brand-new facility to buy as big a piece of land as you can, put the fence out as far away as you can and put your facility as close to the middle as you can because modeling challenges for any substantial facility are a challenge. And to have significant

emitting sources near a fence line are just, you know, significant flaws and challenges. And I think become unpermittable.

Q. Within your profession do you have to take into account the possibility of future development of land that currently is undeveloped?

A. You assume that if you don't have control of that land, you don't own it, then anything can happen to it. Anything could be built there, it could be a house, it could be a school. Within the -- yeah, you just assume anything can occur. There is no -- unless there are restrictions, you can buy the property or you can -- even you can lease it, but even if you lease it you have to have, you know, control of it. So, it is not even just possessing it.

Q. The .1 part per million New Mexico Air Quality standard for the Permian Basin, is there a time frame for that?

A. It does a half-hour standard. So it is a concentration averaged over 30 minutes, which is a very short-term standard.

Q. The modeling that C.K. did, was there a time frame for that modeling?

A. So none of the models that are used -- but

the smallest increment time that all the approved models use is one hour. So, you can't get to a half hour. So the guidance is to use the one-hour model and apply it.

MR. WOODWARD: Objection. He is definitely talking about permitting at NMED now and unable to get to compliance with NMED standards.

MR. BOHNHOFF: We are talking about health standards.

MR. WOODWARD: We are talking about Ambient Air Quality standards that are adopted by the New Mexico Environment Department. That is what this whole testimony has been about.

MR. BOHNHOFF: We are also talking about health-based standards that are relevant to the question of health and -- public health and safety.

MR. WOODWARD: We are getting into an air permitting debate here.

MR. BOHNHOFF: No, we are not. I am not addressing permitting.

COMMISSIONER PADILLA: Who is regulatory body that covers that in New Mexico?

MR. BOHNHOFF: We would have to get into a discussion as to whether or not the Environment Department would regulate hydrogen sulfide levels at

all. All I am talking about now, Mr. Commissioners, is a standard that has been promulgated on the basis of health, health issues, health considerations. I am addressing whether or not the emissions at the C.K. facility would exceed that health base standard.

I am going to address this further with the next witness. Mr. Jay Peters, whose career is in health risk assessment and he is going to address this further. But for the time being, Mr. Orwig is going to be talking about the extent to which the permitting -- I'm sorry, the modeling predicts a certain level of emissions. And part of what he needs to address is the fact that the modeling, models a one-hour average as opposed to this half-hour average that is the Ambient Air Quality standard. What I want to get from him is the explanation of what impact, what ramifications that has for the modeling number.

COMMISSIONER BALCH: So the problem that I have is that what we are talking about right now are emissions that would occur only if NMED gives them a permit, not our permit, it is NMED's permit that would allow those emissions to occur. So NMED, if they evaluate it, however they evaluate it, however

they expect it to be evaluated, they will come up with a number of emissions of H2S and they will say it is allowable or this is not allowable. If it is not allowable, they will make them mitigate it in some way.

MR. BOHNHOFF: Dr. Balch, respectfully, there is no testimony yet and apparently the Commission doesn't want to hear testimony as to whether or not the NMED would, in fact, regulate and limit hydrogen sulfide emissions.

COMMISSIONER BALCH: The practice is that they regulate all separation or gas facilities and oilfield operations in New Mexico.

MR. BOHNHOFF: Respectfully, I think there is -- there would be a question, if we got into it, as to whether or not the Environment Department would place any limits on hydrogen sulfide emissions.

COMMISSIONER BALCH: So wouldn't there be a hearing or a chance for you to have a hearing with the Environment Department on their permit, that would be more appropriate to discuss this?

MR. BOHNHOFF: No. Because if the Environment Department does not regulate hydrogen sulfide emissions at this facility and instead to

whatever extent that they might otherwise regulate emissions, they are not regulating hydrogen sulfide, then these emissions are going to occur and we are entitled to address in the context of this permitting proceeding.

MR. WOODWARD: With all due respect, may I respond?

MR. BOHNHOFF: May I finish, please. We should be permitted to address the hydrogen sulfide emissions and their public health and safety consequences in this proceeding.

COMMISSIONER BALCH: I think that that is true and that is why we allowed Mr. Orwig to testify. The problem is I am basically hearing the -- it is basically coming down from the air permit that will come from NMED and we have no purview over that, so it is hard for us to make a judgment that would be useful the way you are getting him to testify right now. I would really like to hear more about what is the hazard of X amount of H2S in the atmosphere long-term for people at URENCO. That would be useful information.

MR. BOHNHOFF: And Mr. Peters will get to that. If I can just finish this last point about the significance of the half-hour average versus the

one-hour average in modeling I have completed my discussion about hydrogen sulfide.

MR. WOODWARD: May I now respond?

CHAIRMAN CATANACH: Go ahead.

MR. WOODWARD: This clearly is testimony all about air permit hearing. This witness is an air modeling expert. He is testifying about air modeling. He is not a health expert. He is not here -- he is telling you that the Ambient Air Quality standard is a health-based standard and so he is trying to tie it all back into that. And you heard yesterday that this was not an air modeling exercise done by C.K. Disposal to get an air permit. This was to determine whether there was any impact to the LES facility, and that is the only reason that model was issued for.

So, there is nothing in the regulations of the OCD that talk about modeling air to determine whether there is compliance with the Ambient Air Quality standards. That is done in a different agency. So we are heading down a slippery slope here based upon some nebulous safety discussion. But we are not in an air permit hearing and all the evidence that just came in is really irrelevant to your considerations.

CHAIRMAN CATANACH: Well, if the witness has done some calculations via a model, a different model that is refuting your air -- your model evidence, I would like to hear that, I think that is relevant. But I would, again, like to stay away from the permitting issues with the ED.

MR. WOODWARD: I haven't heard that. I have heard that we maybe exceed the ambient air quality to the south, but I haven't heard any modeling, sophisticated modeling that shows that we are somehow harming LES. And I guess that is what we are waiting to hear. There is a lot of build-up to that.

CHAIRMAN CATANACH: Do we have that evidence, Mr. Bohnhoff?

MR. BOHNHOFF: These emissions are going to emit to the south on occasion as well based upon the fact that the wind sometimes blows from the north. To the extent that happens, there will be emissions of .5, .6 parts per million at the south fence line. And LES isn't limited under 19.15.36.12A1 to addressing emissions that would be going onto its property. It is entitled to address the extent to which these emissions will create public health and safety endangerment generally.

CHAIRMAN CATANACH: Again, do you have modeling evidence that you're going to propose?

MR. BOHNHOFF: What Mr. Orwig has testified is he ran his own model, his own modeling exercise. He used the Screen 3 even though he believes that underestimates the likely emissions, but even using their own model he has calculated that the emissions, the concentration at the south fence line would be .5 or .6 parts per million.

MR. WOODWARD: We will stipulate to that and move on.

MR. BOHNHOFF: And now I want to complete as the last point to be made as to hydrogen sulfide that that .5 or .6 would be higher in terms of an estimate than if you were to try to come up with an average that is based on a half-hour estimate.

CHAIRMAN CATANACH: So I think you have already made that point with your testimony.

MR. BOHNHOFF: Mr. Catanach, I think now we are spending five minutes talking about a point that could have been made in 15 seconds. But I don't think the witness has yet said the impact of a one-hour average versus a half-hour average and that is all I want to connect up with him, just so it is in the record.

CHAIRMAN CATANACH: All right. Make your last point.

Q. (By Mr. Bohnhoff) Mr. Orwig, if you are going to try to come up with a half-hour average -- well, if what you measured is a one-hour average concentration, will that likely underestimate or overestimate what the concentration would be with a half-hour average?

A. The modeled concentrations that the model produces which are one-hour averages underestimates what a half-hour concentration would be.

Q. Let's talk about VOCs now, Mr. Orwig. Would you summarize for me what your conclusions were regarding VOC emissions by the proposed C.K. facility?

A. When I first started my analysis in trying to get my hands around this facility from an air perspective, I wanted to -- well, there is not many details in here on air emissions and VOC emissions, but there was enough production information in there for -- I was trying to get an idea is this bigger than a breadbox or smaller than a school bus, what are we talking about here. So I took production levels of 12,000 barrels a day and I went and did a literary research to get an idea of what typical VOC

concentrations I could find in produced water knowing that as I understood -- well, a huge portion of the waste coming from the oilfields is the produced water and that this facility, as I heard yesterday, large percentage of the waste going in is the produced water, so I didn't try to calculate VOC emissions from all the other sources. I focused on the produced water, 12,000 barrels a day, and then I found some average or some concentrations of VOCs and detects and produced water elsewhere in the country and it gave me an idea, and then I found a paper that had samples taken in the Permian Basin. It is a USGS and University of New Mexico paper that was produced early, about a year ago.

Q. Let me stop you there. I will ask you to turn to Exhibit BB. That's B as in boy.

A. Yes.

Q. Is this the paper that you are referring to?

A. No. I must be in the wrong book.

Yes, it is.

Q. And what is this document?

A. It is a -- do you want me to read the title? It is a technical paper --

MR. WOODWARD: Mr. Chairman, we are now

stepping off into a whole other realm of discussion of VOCs and air emissions of VOCs from an oil and gas facility. And my concern here is that the OCD doesn't even have staff to determine. You don't regulate the emissions of VOCs. This is all done through the NMED.

It is just another backdoor attempt to get into the licensing issues of another agency.

MR. BOHNHOFF: I am not getting into licensing, Mr. Commissioners, what I am getting into is public health and safety and damage to the environment. And that is part of your regulation, it is part of the showing that C.K. has to make if they are going to get a permit under your regulations.

MR. WOODWARD: That goes exactly against what you guys ruled yesterday morning.

COMMISSIONER PADILLA: I think from our point of view what we are trying to do is establish that the safety aspects as they pertain to the components of the permit are what we are trying to look at.

Something like VOC obviously relates to safety. We don't have any authority to control VOC emissions.

MR. BOHNHOFF: Respectfully, Mr. Padilla, you do by saying you are not going to grant this permit because it is going to endanger public health and safety.

COMMISSIONER BALCH: But the ability for us to analyze the data to make that determination is really out of our purview, it is the NMED to make that kind of decision.

COMMISSIONER PADILLA: I would expect that there would be a series of administrative hearings, like we mentioned yesterday, with the DOT for the traffic safety issue which is obviously in their sandbox and not ours. We don't have a license to cover every single aspect of the facility under Rule 36. I don't think that our interpretation of public health and safety can jurisdictionally be as broad as what you are, you know, your interpretation is.

MR. BOHNHOFF: Mr. Padilla, under the statute, the oil conservation statute this Commission has broad authority to regulate the disposal of oil and gas production, drilling and production waste, including addressing public health, and environmental issues.

What we have is a case of concurrent

jurisdiction. The Environment Department may be able to regulate and may regulate some of these constituents. But this Commission has jurisdiction as well by that statute, in fact, it has got a mandate by this statute to consider and regulate emissions coming from these facilities. You have embodied that mandate in your regulation. You have adopted a regulation that says you won't issue a permit for this kind of a facility unless it is -- a determination is made by you that you won't endanger -- that this facility won't endanger fresh water, public health, safety and the environment. The showing that can be made, the purview, the jurisdiction, the showing that is to be made is supposed to be made by C.K. as part of its burden of proof before it gets the permit.

What we are presenting is evidence that not only have they failed to make any showing to meet their burden of proof, but, in fact, there will, in fact, be these emissions and these are emissions that Mr. Peters is going to tie up as the next witness, is going to testify about how they do have public health ramifications.

CHAIRMAN CATANACH: I guess the problem I see is ultimately if C.K. has to get a permit from

ED we don't know what that permit is going to say. ED may require them to mitigate emissions from this facility so as to -- so the end result is to make it safe to the public. We have no control over what ED is going to do with that permit or what they are going to require.

COMMISSIONER PADILLA: In the same way we can't know what -- I guess I am uniquely positioned to see into the Land Office, but I don't know if they are going to get a right-of-way or if they have a right-of-way, if DOT would approve any driveway anywhere for C.K. I think we are looking at a different interpretation of the jurisdiction.

MR. BOHNHOFF: And that may be, and you may make that ruling and ultimately I think a higher authority will pass on that question. But what I would respectfully submit is the way you have drafted your regulation, which I think needs to be followed, is you have said the showing of compliance with all other applicable rules and statutes has to be made in advance of granting this permit, and a showing of no endangerment has to be made in advance of granting that permit. And if this -- if that is the case, and if it is going to be through permitting from the Environment Department that the

demonstration of no endangerment is going to be made, in other words, it is on the basis of restrictions that the Environment Department imposes that is going to make the difference on endangerment to the environment, then C.K. has to get those permits first before they come to the OCD.

COMMISSIONER BALCH: So they are never going to get a permit in this case because some of these permits you cannot do at the same time.

MR. BOHNHOFF: Respectfully, Dr. Balch, I don't think that is the case. Mr. Bohannan certainly would have been able to testify that he was shocked that C.K. hadn't yet gone to get an access permit from the Transportation Department. And if -- if the environment --

MR. WOODWARD: I would like the record to reflect that that was Mr. Bohnhoff's description of what Mr. Bohannan was going to testify to.

MR. BOHNHOFF: Of course, it is. It is an Offer of Proof.

MR. WOODWARD: At some point I would like to respond.

CHAIRMAN CATANACH: You know, I believe we already addressed this issue in our previous discussions that we don't believe that that is the

case, that permits are required before we issue an order in this case that additional permits.

MR. BOHNHOFF: To get on with it, I think I have made my position clear. If the Commission is going to rule that Mr. Orwig cannot testify about the likely VOC emissions from this facility, then the Commission can so rule. I will make an Offer of Proof and summarizing what Mr. Orwig's testimony would be regarding VOCs and we will go on to the next witness.

COMMISSIONER BALCH: What I was interested in most with Mr. Orwig was and is, the difference between his model and the model that was presented by the Applicant's case.

MR. BOHNHOFF: As to hydrogen sulfide.

COMMISSIONER BALCH: Then we can make a determination if that is significant for your next witness when he is testifying about what is the public health hazard, which is the thing that I am concerned about.

MR. BOHNHOFF: Dr. Balch, the model goes only to hydrogen sulfide not to VOCs.

What Mr. Orwig would testify about is his effort to estimate based upon the available information that he has, given the fact that C.K.

didn't provide any information about the VOCs in its application, he would give his testimony about what his estimate would be as to VOC emissions.

COMMISSIONER BALCH: I would come back to the same place where we have been along and that is that VOCs are regulated by NMED.

MR. BOHNHOFF: I have made my position clear, I think, on that point. I think the question is whether Mr. Orwig will be permitted to testify as to his estimate on VOCs emission.

CHAIRMAN CATANACH: Mr. Brooks, do you have an opinion on this?

MR. BROOKS: Well, I probably should look at the exact language of the Rule, I do believe that the statute, not the Rule, gives the Oil Conservation Division jurisdiction over the affect of waste disposal on the environment, which is -- would necessarily include jurisdiction, not necessarily mandate, but permission, authority to consider air quality issues because I think no one really debates that air quality is associated with the environment. That somewhat differs from what I think about traffic safety.

I am not persuaded at all that traffic safety comes under the rubric of the environment,

although I have not done exhaustive research on that.

Now, if you read the Rule literally, I -- well, let me further say that the Rule says -- the regulatory language says public health safety or the environment. And the statute does not use the word "safety." It says public health or the environment. Whether traffic safety comes within public health or whether it comes within the environment or neither of the above, I have not done enough research to know if there is any answer or whether there is, there is no answer or whether the answer is yes or no.

As to the question of air quality, I think clearly that comes within the language of the environment. We then go to the Rule. And this is granting of a permit. "That the surface waste management facility or modification can be constructed, operated -- and operated in compliance with applicable statutes and rules and without endangering fresh water, public health, safety or the environment."

Well, clearly we have -- we have said that -- two things. We have -- the Commission has to determine that it can be constructed and operated

within compliance with applicable statutes and rules. Now, I would argue the other day that that should be -- mean our statutes and rules, to the extent that they are applicable, because otherwise we would be conferring on ourselves the authority to make the decisions that the law commits to another agency to make. And therefore I think we should not construe that as requiring us to determine whether or not it can be applicable.

It can be operated in accordance with the Clean Air Act, federal or State Clean Air Act which are necessarily the same standards because the way they are written, but then we go to the second part "and can be operated without endangering fresh water, public health, safety or the environment."

So, I believe that we do have under that statute, we have input a requirement on applicants that they demonstrate that their facility can be operated without endangering fresh water, public health, safety or the environment. So I think evidence bearing on whether that can be done is relevant to this proceeding, and I think it would be somewhat of an insult to the Environment Department to suggest that some of their standards and procedures may not be relevant to us making that

determination.

Of course, another regulatory option that is open to the Commission is to put conditions on a permit and we could make a condition that -- or the Commission could impose a condition that the facility not begin operation until it has the requisite permit, if the Environment Department determines that that permit is applicable and that their requirement is applicable and their permit is needed. That is one approach that the Commission could take. And, again, the evidence that may be presented that would be relevant to whether that should or should not be done would be relevant evidence that could be considered in this proceeding.

CHAIRMAN CATANACH: Again, I think the issue takes care of itself. If we issue a permit for this facility, they subsequently go to ED and ED finds that the issues are not in compliance with public health and safety, they can deny the Applicant whatever permit they need from ED. And at that point, I don't think that our permit -- it doesn't matter whether we approve it or not. If they cannot comply with ED's permit then they can't operate.

MR. BROOKS: Yeah. And we still have to determine or unless we are convinced that ED's permit exhausts the deal which we may be. But we still have to determine whether this facility -- under this Rule, we have said that in order to issue a permit we must determine that this facility can be operated without damage to public health or the environment.

MR. WOODWARD: Mr. Chairman, might I respond, please?

One of the things that is very important to understand when going forward in a regulatory process is there has to be certainty in the permitting process. Somebody is going to put up hundreds of thousands, potentially millions of dollars to pursue a permit application and get authorization for a much needed facility, has to know what is expected of them going into the permitting process. So they look at the Rules and they look at the details that are required to be submitted in a permit application. You have to check all of the boxes to get that permit application. If you open it up based on this general interpretation of protection of public health, safety, and then say that in order to get an

OCD permit we have to also include all of the air modeling and all of the air quality controls and everything that is going into effect to comply with the NMED regulations, OCD is going to have to staff up and get a bunch of air emission experts and get people that understand the permitting at NMED. It just becomes a slippery slope and you will never get a permit. You will never get one of these facilities built.

So you have adopted Chapter 36 with some very stringent criteria that have to be complied with to show to the Commission that you are complying with the requirements of the OCD to get a permit.

Now, there are other authorizations that need to be obtained out there. And it is perfectly acceptable to put a permit provision in there. There already are a couple in there saying you need to get all necessary authorizations before you turn one shovel of dirt out there to start constructing this facility.

CHAIRMAN CATANACH: I guess I would agree with Mr. Woodward. We don't -- in the Rule 36 there are no specifications as to what the air quality limits are coming off of these facilities, the VOCs

or otherwise. I don't think that we have nothing to go by as far as we are not the air emissions experts in this agency, it is Environment Department. I think that is the proper place for them to make that determination.

MR. BOHNHOFF: Mr. Catanach, could I respond briefly to the statements of Mr. Brooks and Mr. Woodward?

CHAIRMAN CATANACH: Yes.

MR. BOHNHOFF: Respectfully, what could be done and what I would argue must be done given the language of the regulation that Mr. Brooks read is the permits that are required in order to prove the ability to operate without endangering the public health safety and the environment can be made a predicate to granting the permit. I would submit that that -- it is a question of what has to happen first, to whatever extent this Commission and this Division may think they don't have the necessary staff to address a particular health safety or environment issue, the Division can refer the question to the other agency and ask the agency to determine, first, address that issue first and then report back to the Division about that topic.

I would submit that that, in fact, and it

is a case that comes readily to mind, to my client, because that is how the NRC operates. You have to go to a number of different federal agencies and get permits from them before you go to the NRC and get the license to operate a nuclear enrichment facility. That is the paradigm that this agency could require. There is nothing magic about going and getting your OCD permit first and then, only then do you go to the Environment Department or you go to the Transportation Department. And under your regulations rules that is how you determine that they can in fact comply with applicable statutes and regulations. That is how you determine, again, to the extent that other agency is going to be addressing the issue, that is how you determine whether there is also a showing made of no endangerment to the public health, safety and the environment. You get that initial determination from the other agency before this permit can be granted.

Respectfully, this idea of conditioning; one, you grant the permit on the condition that they do something in the future. That is getting things ass backwards because you are granting the permit without the showing being made that there is no

endangerment.

I would submit also that this approach of conditioning the permit deprives the public of any opportunity to have any input into that issue, which is something that they should be entitled to under the OCD's rules.

My understanding, for example, of the Highway Department's access permitting is there is no public hearing involved in getting an access permit from the Transportation Department. So the public, if you condition this permit on a -- getting the access permit from the Transportation Department and you say that is how we are going to deal with safety, traffic safety, that takes away from the public, including my client, an ability to have any kind of input and comment on to that question.

And there is due process ramifications for that. So, this condition concept as opposed to requiring that the other permits be obtained first, I would suggest is not the appropriate way to go.

MR. BROOKS: Mr. Chairman, I would suggest as a matter of getting this proceeding moving, one way to approach it would be to accept the evidence that is relevant to the issue of whether or not this facility will be injurious to public health or the

environment and then the Commission can determine what evidence is relevant and how persuasive it is when you deliberate and the Court will presume that you -- the Court reviewing it will presume that you considered only the proper admissible evidence and that you disregarded inadmissible evidence, unless it finds that it was to be sufficient to amount to defeat substantial evidence of the entire record of the evidence that you disregard is so persuasive to them that they find that you could not have found there was substantial evidence on the entire record, that would be different, but that doesn't happen very often.

MR. WOODWARD: Mr. Chairman, I promise to be very brief.

CHAIRMAN CATANACH: Go ahead.

MR. WOODWARD: I am glad Mr. Bohnhoff brought up due process. I think it's very important to recognize the Applicants have due process involved here also. And there has to be some reliance on the Rules as they exist when that application is filed. That was a very fine description of how you could do it, but I think we need to focus on what the statute and the regulations require of an Applicant to get a permit

from the OCD.

Thank you.

CHAIRMAN CATANACH: Thank you, gentleman. I think that we are going to allow this testimony to proceed. Again, I don't know if we can make the determination later on as to the relevance and how we are going to deal with this evidence. I have some opinions on that, but for the meantime let's go ahead and proceed.

Q. (By Mr. Bohnhoff) Mr. Orwig, turning back to Exhibit BB, what does this article tell you about VOC constituents in produced oil or produced water from the Permian Basin?

A. This paper includes examples of produced water in the Permian Basin and as I was saying, I was trying to get an idea of how this facility with the emissions would be and whether it was bigger than a breadbox or smaller than a school bus, and I took their production level of 12,000 barrels a day and I used the concentrations listed on this paper, which include organics, and then it also lists out benzene, toluylene, xylene and ethylbenzene BTEX.

Q. Is there a particular page in this article that you are referring to?

A. Yes. The analytical results, they are

Numbered Page 129 and Table 2 is on the next page, 130, of Exhibit BB.

Q. Go ahead.

A. I didn't want to exaggerate or overestimate the emissions, so one of these samples was a lot higher than the others, so I threw -- threw out that sample and averaged the remaining seven. And doing that calculation, 12,000 barrels a day, these level of organics, they're processing around 100 times a year of organic compounds and about nine tons of benzene and 20 tons of ethylbenzene. And knowing that the stated application is to remove these organics, I don't know what the efficiency is, there is a lot -- as the doctor indicated yesterday, there is a lack of detail in what the expectations would be. So I didn't assume an efficiency, I didn't -- I did not know what the end product and what would be allowed to remain in it when they said it would be, but just looking at those quantities knowing that it is stated to be removing, those are significant quantities of organics in benzene and ethylbenzene.

To check my calculations I also looked at an application for a very similar facility named Halfway. They have a production level listed in

their NOI at 223 barrels a day. They calculated their emissions and their calculated emissions were 16 tons a year VOC and 2.4 tons of HAPs.

Now, 12,000 barrels a day versus 223, that is a factor of 50. That makes me think I may have underestimated the emissions from this facility so we are talking significant numbers of organics.

Q. Well, if you extrapolate the VOC levels at this Halfway facility at 223 barrels a day and you extrapolate from that to 12,000 barrels a day, what VOC levels do you get and what benzene levels do you get?

A. You get 800 tons a year of VOC and you get 27 and a half tons of benzene and 125 tons of total HAPs.

Q. And HAPs is?

A. HAPs is hazardous air pollutants and that is a grouping of -- but it is mainly BTEX.

Q. In your world, in your profession, 800 tons of VOCs, is that a significant amount?

A. That is extremely large. It is much bigger than a school bus. And those -- I -- that would -- usually would need an air pollution control device and there is not one included in the application or anticipated.

Q. Twenty-seven and a half tons of benzene, is that a big number in your field?

A. Yes, 10 tons of -- is a big number; 27 and a half -- and especially for benzene because the toxicity of benzene is particularly hazardous and my modeling experience, that is often a difficult constituent to show is not harmful to the public. So I feel like I took two reasonable approaches to come up with an estimate of emissions based on what little detailed information is in there, but that is the bulk picture. I did not do any refine modeling. There is not enough information that I would feel comfortable trying to estimate emissions from these different sources because it is not included in the application. But looking at these bulk numbers that is, I did some scaling compared to what their hydrogen sulfide emissions would be what these kinds of -- what like benzene would model out to be if you know, comparing tons, scaling basically from tons to tons.

Q. Let me focus on that. You gave us tons per year figures, the 800 and the 27.5 for benzene. Can you convert that based upon modeling that C.K. did with fence line concentrations for hydrogen sulfide, based on that information were you able to

calculated fence line concentrations for benzene?

A. So I did not go any further with the Halfway numbers, that was just to show that they could be significantly larger. I went back to the samples that were in the Permian Basin and the production level of 12,000 barrels a day that -- I mentioned the VOC -- I mentioned that before the benzene at 9 tons a year.

The hydrogen sulfide emissions based on the modeled numbers in the application is about a half a ton a year. So, if you scale -- so that is a difference of about 16. If -- the modeling I did do, like I said, I didn't do the refined model. I redid the screening model and I took the 500 to 600 ppb value of the hydrogen sulfide and if you multiply that up by a factor of 16 which this is very linear and that is the way the model works, you're looking at a concentrations of 8 ppm predicted at the south and about --

Q. Did you say eight?

A. 8 ppm, yes.

Q. Okay.

A. And 160 ppb at the north, the north fence line.

Q. I want to make sure we are clear about

this second resource. You referred to it as an application from Halfway. Exactly what is the document?

A. It is a filing to the agency that -- the facility looking at the application, the facility was built in 1991 and then apparently when it was taken over by R360 they reviewed their -- they discovered that they needed to get an air permit based on their operations, so at that point they reached out to the agency and submitted an application in 2012.

Q. Is this an NOI, notice of intent filing?

A. It is, because it was -- the 16 tons is over the ten ton permitting threshold.

Q. And as far as agency, is this the Environment Department, the State?

A. Yes.

Q. Lastly, you used the -- as an assumption at 12,000-barrel per day production value at C.K. Did you attempt to translate 12,000 barrels per day into a trucks-per-day figure?

A. I did, assuming 130 barrels a truck that would be 93 trucks a day.

Q. Yesterday Mr. Carrillo testified that the Sundance facility gets 200 or more trucks per day.

C.K.'s engineers have testified earlier in this proceeding that C.K. would not be limiting the number of trucks it would accept per day and that they would expect C.K.'s traffic to be comparable to that of Sundance. If you were to assume 200 trucks per day as opposed to what you assumed at 12,000 barrels per day, what affect would that have on the VOC emissions that you have estimated?

A. Effectively double it.

Q. Look at Exhibit R in the black notebook --

A. Yes.

Q. -- can you identify that?

A. Yes. This is my report.

MR. BOHNHOFF: Mr. Chairman, I would anticipate that the Commission's ruling on the admissibility of this document would be the same as its ruling on Mr. Bohannan, but for the record I would move the admission of Mr. Orwig's report, Exhibit R.

MR. WOODWARD: C.K. objects.

CHAIRMAN CATANACH: This is -- can you explain what this report is.

MR. BOHNHOFF: It goes through the same analysis that was presented by Mr. Orwig in his oral testimony with the exception of the additional

information that he had from a second source because that was available at the time this had to be provided. And it -- in addition, it addresses permitting questions, as the title indicates.

CHAIRMAN CATANACH: Some of this material he has already testified to.

MR. BOHNHOFF: Yes. And this summarizes it and it is succinct and I think would be helpful to the Commission in its ruling to the extent it is going to consider Mr. Orwig's opinion.

CHAIRMAN CATANACH: Is it easy to break out the permitting section of this exhibit?

MR. BOHNHOFF: There isn't a separate section on permitting and a separate section on estimating the emissions, no. The discussion is together. I certainly think the Commission, as I advocated yesterday, I think the Commission could admit this report subject to the determination that any discussion of permitting would not be considered and, in fact, would be excluded from the admission.

COMMISSIONER PADILLA: When you say permitting, you are talking specifically about air quality?

MR. BOHNHOFF: Air quality and operation permit, yes, sir.

CHAIRMAN CATANACH: I guess my opinion would be we have to be consistent with what we did yesterday and not allow this exhibit to come in.

COMMISSIONER BALCH: I would concur for the sake of consistency.

COMMISSIONER PADILLA: The same.

MR. BOHNHOFF: I pass the witness.

MR. WOODWARD: May we have a five-minute break?

CHAIRMAN CATANACH: Let's do ten minutes, actually.

(A recess was taken.)

CHAIRMAN CATANACH: Okay. We will call the hearing back to order at this time. Before we proceed with any cross-examination, we would like to give the opportunity for Representative Gallegos, who is with us today to make a statement before he has to get back to the round house. So, Mr. Gallegos.

REPRESENTATIVE GALLEGOS: Thank you, Mr. Chairman. Representative David Gallegos from District 61, which is Lea County.

I want to thank you-all for coming to Eunice. I appreciate you guys taking the effort to at least have a hearing for our community. I want

to thank Bryce Karger for indulging us. I know it wasn't in the plans, not requirement, so first off I want to start by thanking you-all.

It opened a Pandora's box and I was talking to Mr. Karger earlier. I just like to talk to you about location, location, location, because first off, a large part of it is I think it is real unfair to Mr. Karger to have to jump through three different sets of hoops, air quality and Highway Department also.

I understood the testimony earlier that it is -- that is just the process. I would have rather had it all in one package so we could hear all the issues and determine what is right for, not only the State of New Mexico, but also for the community of Eunice. I was telling Mr. Karger that is my biggest concern. I've talked to URENCO, I have talked to C.K. Big boys you can work through the logistics of what is relative and what is real.

My constituents, I live in Eunice, and after we had our meeting in Eunice I keep getting comments on what is it going to do to us? We talked about the Highway Department and 176, what it is doing to us, what our thoughts are. He has to deal with that, with the State, I understand that

totally, our view in Eunice or my view is going on Carlsbad Highway they're always having traffic issues there because of the debris. I don't understand, and we had a real good discussion on what is the difference on Sundance coming off of 18 and then coming off of 176. I don't know what the difference is, but it works. The access off of Highway 18 has not had issues that I know of. We are anticipating the issues on 176. I know all of his trucks will be on their property after they turn, so that may resolve some of my conflict, but right now what we are worried about is the highway, the air quality whether you are talking about their equipment, but my concern, there again, or my constituents or some of the employees that work there, if there are hazards in the air I ask you guys to at least consider what that is going to do. I am not knowledgeable in what part per millions are. I worked for the Gas Company of New Mexico, we are always out in the field, we always had monitors, H2Ss issued, but I am not that technical piece where your witness here is, but I just ask you-all to keep that open in mind.

We have Director Catanach and I have had discussion that going forward in the future I know

we are working off of a previous rule, but going into the future that I would like to have the discussion about a ten-mile buffer around the community, because, I think going back to location, location, location, if this were ten miles out further from Eunice there would be no reason for conversation from the constituents. We are looking at the safety aspects. We value what C.K. is trying to do. It is an oil and gas community. The State depends on it, but currently right now I would have to stand in opposition because of the amount of calls and concerns that I have got and my family has and the people of Eunice have.

Not discussing the URENCO piece, like I said, that is two corporations looking at what is best for them. But I really think there is a safety piece to this that I would ask you guys to consider because what we do to that community from the day going forward, that is an entryway from Texas, it is so close to my community and we just wanted to ask you-all just to consider all parts and pieces of this because it is going to be a forever thing. I don't know what their lifespan on the project is, but even after they are gone there will still be residuals on that site. I really like the idea

where they are coming in using base course to cap at night. I think that takes some of my fear away but it doesn't reduce it all, I know the technology difference is different from C.K. to R360 and I appreciate them looking at that because that mess there I know I don't want in my State or my County. But it is a factor, it is there, we have to live through it. But I would just ask that you guys would consider everything because as we go forward we don't want to have the same type of issue this close to our community as R360 is between Carlsbad and Hobbs.

I do thank you for your time. We do have to go back to work. I told Director Catanach that I think you're done with legislators everyone else has committees and other obligations today so with respect to Bryce, for me and my constituents, we are going to have to go ahead and have to stand in opposition and I thank you for your time.

CHAIRMAN CATANACH: Thank you, Representative Gallegos. Thank you for coming in and attending.

At this time we will resume. I believe it was Mr. Woodward, do you want to cross-examine this witness.

MR. WOODWARD: Yes, sir.

CROSS-EXAMINATION

BY MR. WOODWARD:

Q. Good morning, Mr. Orwig.

A. Good morning.

Q. Are you a licensed engineer in New Mexico?

A. No, sir.

Q. Have you done any oil and gas projects?

A. Not -- I would not say so, no.

Q. Have you ever worked on any landfill projects?

A. I have worked on a few landfill projects.

Q. Where was that?

A. Georgia.

Q. Were you doing air permitting for --

A. It wasn't permitting, it was looking at impact from an old landfill.

Q. From an old landfill?

Have you done any permitting work for a landfill?

A. No, sir.

Q. So we can agree that the model that C.K. Disposal ran and reported in their H2S modeling report is a screening model?

A. Yes.

Q. And it is a one-directional, one-dimensional model?

A. It calculates emissions or it estimates concentrations at distances along the line, yes.

Q. Now you said -- I guess my question is if you were going to go get an air permit for a facility, would you rely just on a screening model to go prove up your air emissions to get an air permit?

A. Air permits are much more complex than that and you would not be able to get a permit just on a model.

Q. You would use a much more refined model that would have a whole bunch or a lot of different inputs and factors and other issues that would go in to consideration to show what the off-site impacts would be?

MR. BOHNHOFF: Mr. Catanach, if Mr. Woodward wants to open the door talking about permitting, I want to go into that on redirect.

MR. WOODWARD: I think that door was opened on the direct. What I am attempting to establish is that there was not an air model in this application to get an air permit.

CHAIRMAN CATANACH: Go ahead.

THE WITNESS: Can I answer the question?
Q (By Mr. Woodward) Yes, please.
A. You can get an air permit without a model. You can get an air permit with a screening model. If you get -- if you run a screening model and it does not pass, then, yes, you would run a more complex air dispersion model.
Q. Thank you.
You indicated that EPA had recommended AERSCREEN or AERMOD instead of Screen 3?
A. Yes.
Q. Have they prohibited the use of Screen 3?
A. No. They stated it as its preference. AERSCREENs are preferred.
Q. So Screen 3 is still acceptable?
A. It is still out there.
Q. Still used?
A. It is still used.
Q. You indicated that AERSCREEN is -- I believe your word was significant upgrade, but you said it was difficult to explain. So what is your basis for saying that it is a significant upgrade?
A. It had to do with -- my characterization of that is based on the documents that were published describing the changes, walking folks

through the -- from Model A to Model B.

Q. Did you review the regulations of the OCD?

A. Yes, in part.

Q. Which regulations did you review?

A. I was looking -- I am thinking the New Mexico Code I was focused on the air rules in the New Mexico Code which was both Part 19 and then also Part 17.

Q. Are those OCD regulations?

A. They were mostly the air permitting regulations was my focus.

Q. From another agency?

A. Yes.

Q. So you're not here testifying on whether the C.K. Disposal application has satisfied the regulations of the OCD?

MR. BOHNHOFF: I am going to object to the extent that calls for a legal conclusion.

MR. WOODWARD: He made several statements about whether we satisfied ambient air quality so...

CHAIRMAN CATANACH: Can you restate your question?

Q (By Mr. Woodward) Do you have an opinion as to whether this application, C.K. Disposal application, satisfies the requirements of the OCD?

MR. BOHNHOFF: The same objection.
MR. BROOKS: That is a little bit different question. The first one was a leading question, but this is cross-examination. If he doesn't have an opinion, you know, if he is not going to testify to that, that doesn't give a legal opinion at all. If he has an opinion, then the articulation of that opinion might well be a legal conclusion.
MR. BROOKS: Go ahead and answer the question.
A. Can you restate your question?
MR. WOODWARD: This would be the third one. Can we get it read back, please?
(Whereupon, the requested portion was read aloud.)
A. No, I am not.
Q. (By Mr. Woodward) Do you know if the OCD regulates VOC emissions?
A. I think I know that they do not regulate air emissions.
Q. Thank you.
You made a comment that the C.K. Disposal ponds would be similar to the Sundance ponds. Can you tell me what the similarities are?

A. In a broad sense they are evaporation ponds that had processed water.

Q. Were you here yesterday for Mr. Carrillo's testimony?

A. Yes.

Q. Did you hear him testify that the water going into their ponds is untreated?

A. Yes.

Q. And do you understand that the water going to the proposed C.K. Disposal ponds is treated?

A. The level of that treatment is actually not clear to me based on this application.

Q. But do you agree that it is proposed to be treated before it goes to the ponds?

A. That it can be, I think it can be directed.

Q. Please answer the question.

A. I thought I was.

MR. BOHNHOFF: Objection. He is interrupting the witness' answer.

Q. (By Mr. Woodward) I asked a yes or no question.

Do you agree with me that the water proposed to go to the C.K. disposal ponds is treated?

A. Yes, that it can be. My understanding of the process that it can go to evaporation or go to the stripper.

Q. Thank you.

Did you hear the testimony of Mr. Ybarra about the processing?

A. Yes.

Q. Did you hear that the plan is to remove 99.8 percent of the oil from the water?

A. Yes, sir. And actually that 1 percent --

Q. Thank you.

MR. BOHNHOFF: Mr. Catanach, I think the witness, to the extent that the question can't be answered yes or no, the witness is entitled to answer and then explain his answer.

MR. WOODWARD: If you want to get an answer you can do it on redirect. I got my question answered.

Thank you, Mr. Bohnhoff.

CHAIRMAN CATANACH: Do you have any redirect, Mr. Bohnhoff?

MR. BOHNHOFF: I expect, I will, yes.

Q. (By Mr. Woodward) Have you done any analysis of the type of facility that you described at Halfway?

A. Have I done any -- I reviewed their application.
Q. Their application for what?
A. For an air permit, operating permit.
Q. And do you understand whether the Halfway facility is a Part 36 OCD permit or a Legacy facility?
A. No, sir.
Q. Do you agree with me that in a Screen 3 model that downwind concentrations are directly proportional to emission rate?
A. Yes.
Q. Do you agree with the emission rate that was utilized in the model -- Screen 3 model run by C.K. Disposal?
A. No.
Q. Do you agree the C.K. model assume all H2S that is dumped into the load-out pit is assumed to escape?
A. Yes.
Q. So where do you think, then, the additional H2S will come from if it is all escaping from the load-out pit?
A. Well, I understand that there are H2S sources elsewhere besides the load-out.

Q. But for the purpose of the Screen 3 model it only estimates from one source, right?
A. The Screen 3 needs to -- if you are estimating emissions from that entire facility --
Q. I didn't ask that question. No, I did not ask that question. I asked the Screen 3 model when it makes its estimates, it is from one source?
A. One point, yes.
Q. One point. And you have to establish an emission rate from that one point?
A. Yes.
Q. So if C.K. estimated that all of the H2S from that load-out point is escaping, how could the emission rate be any higher?
A. Because there are other sources.
Q. I am talking about for the Screen 3 model.
A. We are talking about emission rate. You asked me about the emission rate, correct?
Q. I am talking about the emission rate in the model.
A. You modeled one source, you did not model one facility.
Q. You're not answering my question.
A. All right.
Q. We are talking about the emission rate

utilized in the model.
A. Your model.
Q. In the Screen 3 model.
A. That you have.
Q. That was utilized for the C.K. Disposal facility.
A. Yes.
Q. And the estimate was that all of the H2S that was in that tank truck that was in the solution --
A. Uh-huh.
Q. -- escaped --
A. Uh-huh.
Q. -- from that load-out point?
A. Uh-huh.
Q. So how could there be any higher emission rate put into that model?
A. I can explain. I would like to answer that.
Q. Okay.
A. It is going to have multiple answers because I feel like there is a disjoint here in understanding how the screen model works and how you model emissions from a facility.
Q. I am not asking about how you model

emissions from a facility.

A. Yes, you are.

Q. I am asking about that model, that run.

MR. BOHNHOFF: Mr. Catanach, he asked an open ended question and started to put how. The witness is trying to answer that question and now he is being badgered and not being permitted to answer the question.

MR. WOODWARD: I will withdraw the question.

Q (By Mr. Woodward) The estimates of the H2S concentrations in the Screen 3 model run by -- for C.K. Disposal, what were the concentrations found at the north fence line of C.K.?

A. With your -- the model run that you ran?

Q. Yes.

A. I would need to look that up.

Q. I believe it is Exhibit U in the Applicant's small binder. It would be a white --

A. The north boundary, the C.K. property boundary, the three receptor heights it is 13.42, 13.26 and 9.03.

Q. And what measurement is that in?

A. PPB.

Q. And you understand that the purpose of

this model that was run was to assume worst case?
A. I understand that that was the intent.
Q. Are you a toxicologist?
A. No, sir.
Q. So when you testified to safety and impacts on health, you're solely relying on Ambient Air Quality standards established by the State?
A. Yes, sir.
MR. WOODWARD: No further questions.
CHAIRMAN CATANACH: Redirect, Mr. Bohnhoff?

REDIRECT EXAMINATION

BY MR. BOHNHOFF:
Q. Mr. Orwig, if the testimony by Mr. Ybarra was that C.K. proposed to remove 99 percent of the oil from the water that goes into its evaporation ponds as opposed to the 99.8 percent figure that Mr. Woodward mentioned, would you stand corrected?
A. I'm sorry, I don't understand the question.
Q. Well, he asked you if C.K. would be removing 99.8 percent of the oil from the water. If Mr. Ybarra's testimony was 99 percent, would you stand corrected?
A. I understand 99 percent, yes.

Q. And do you understand that to the extent that the path of moving the water is to move it into the evaporation ponds, based on the description that Mr. Ybarra gave, do you understand that other constituents in the water beyond crude oil would remain in the water going into the evaporation ponds?

A. Yes.

Q. Did you understand the model that C.K. ran, does it assume release of hydrogen sulfide from eight tucks?

A. Yes, at the load-out, yes.

Q. And does it take into account the continuing releases of hydrogen sulfide from trucks that have been previously unloaded and the water is at other points in the process?

A. No, it doesn't account for any hydrogen sulfide that is left in the tanker truck that's released at the site or any releases at any of the other sources or locations at the facility.

MR. BOHNHOFF: That's all I have.

CHAIRMAN CATANACH: I just have a couple of questions, Mr. Orwig.

EXAMINATION

BY CHAIRMAN CATANACH:

Q. On your VOC calculations, the 12,000 barrels per day waste that you are assuming that is coming into the facility, what is that waste composed of?

A. It is processed water, produced water. It is all produced water.

Q. It is all produced water. Is it your belief that that is all they are going to process at this facility?

A. No. I limited my analysis on the major production that it was receiving, as I understood from the application.

Q. So the 12,000 barrels a day, that would be a mixed waste that they are accepting. Is that correct? I mean, there would be various sources of that waste?

A. Oh, yes.

Q. So we don't know -- we don't know -- you don't know how much of that waste has organics in it. Some of those are going to be drill cuttings that may not have any organics in it. Is that your understanding?

A. The way I understood the application is

that the water processing plant was designed to run at 12,000 barrels a day. So, that is -- I assume those running produced water to remove organics so, I did not try to count.

Q. But your assumption is all the waste coming in is going to have organics associated with it?

A. Yes. My calculations assume that, the concentrations based on that paper.

Q. But we don't know what the ratio of waste that might be coming in that doesn't have any organics. We don't know what that might be. There is various types of waste that are going to come into this facility.

A. My emission calculations are based on processing 12,000 barrels day of produced water.

COMMISSIONER BALCH: I can follow up on that.

EXAMINATION

BY COMMISSIONER BALCH:

Q. Mr. Carrillo testified yesterday that his facility, Sundance, right north of the URENCO plant could not take produced water on a sustained basis.

A. Right.

Q. In fact, most cases the wastewater would be more chiefly disposed by pumping it down a well than taking it to a specialized waste treatment facility. So what we are looking at here is frac flowback water will be -- attempt residues will be drained mud pits, things like that. They are not going to be all oil produced water, it could be water from a variety of sources and from 28 different stacked formations inside the Permian Basin. I found that this is probably an absolute worst-case scenario and then based on Mr. Carrillo's testimony it would not be possible to take that amount of water and process it. Produced water.

A. Well, my analysis is based on that because that is what the application is stated for and then air -- when you look at air emissions you look at worst-case scenario because they could, and so unless there is restrictions on what they can and can't take, you know, and I didn't do a -- I don't

feel like I did a worst case. I didn't take high concentrations, I didn't -- which is what you would do in an air permitting analysis, you know, you put maximum -- what is your worst case waste run it 84, 87, 16 and that is not what I did. I was just trying to get an idea of the magnitude of average operations.

Q. The risk is built up of two components, the likelihood of an event happening and the severity of an event if it does happen. So an asteroid hitting Eunice would be a 100 percent severe event; likelihood very, very small. So you have to be a little bit careful when you are a regulator that you try and understand the likeliness of a scenario occurring. This scenario you could not process 12,000 barrels of produced water through this facility. It is not what it is designed to do. So even in that case, I think it's a flawed worst-case scenario.

A. Looking at hydrogen sulfide you would think that -- you are looking at a half-hour standard and a lot of the toxics, so could they run a half hour of that, that would be the test.

Q. I am only a geophysicist I may be not up on the math of the model that you're talking about

here, the half hour versus one hour. I do have a pencil in question here of trying to understand why a half-hour model would consistently underestimate compared to a one-hour model.

A. What I stated and I don't know if you said what I said back correctly, but a one-hour model run would underestimate what a half-hour result would be.

Q. The other way around, yes. I am trying to understand the statistical basis behind that. If you have a truck every ten minutes, in a half hour you have three trucks, in an hour you have six tucks. If they have exactly the same fluids in them you should have exactly the same result.

A. Let's see how can I explain this. A shorter time period your -- your peaks -- I think, you know, it is a peak and you can have higher peaks for shorter periods of time, so the longer your time average goes out, your average is going to come down.

Q. The longer the time period, the more representative it is going to be of the median value, but I am not sure why it would consistently over or underestimate, it should be misestimated, not consistently over or under, at least of my weak

understanding of statistics.

A. I could point to some New Mexico -- the New Mexico Modeling Guidelines addresses this and it says that sentence pretty specifically, so I can find that.

Q. That is not your conclusion it is a conclusion from --

A. It is actually -- it is basic, I mean, in my mind. So it is shorter peaks are going to be higher, you know, the average -- as the averaging period of time expands, the value is going to go lower. So if -- so an hour is going to have a smaller value than -- you know, so eight-hour period is going to be lower than a four-hour period, right so, and a two-hour period would be even higher, right?

Q. I know what you're saying. I am always wresting with statistics.

COMMISSIONER BALCH: All right. That's all I have.

EXAMINATION

BY COMMISSIONER PADILLA:

Q. Just to follow-up on something Dr. Balch said. I know we are talking about produced water versus frac fluid, drill cuttings, anything like

that. Do any of your analysis, if you look at VOC loads and, say, drill cuttings or frac fluids or any of the other waste types that might go to this facility or strictly produced water?

A. I looked strictly at produced water.

Q. Okay. Good enough. I didn't know if I missed something there. I have just a couple of questions about AERSCREEN versus Screen 3. Are they still -- is AERSCREEN still, for lack of a better term, a gatekeeper tool that would then lead you to further analysis --

A. Yes.

Q. -- similar to Screen 3 how it was described yesterday?

A. Yes.

Q. It is still that first fundamental step in giving you the yes/no qualifier as to whether you have to do subsequent study?

A. Yes.

Q. I wanted to talk about this -- this single source versus the entire -- the entire facility question. So, I can understand how the entire facility question would expand the distance that some of the hydrogen sulfide affects would be seen from the fence lines and things like that, but I am

having a hard time wrapping my head around the fact that if we assume, for just the model sake, that at that single point you take 100 percent of possible H2S for the model, put it aside, send your product that way, how is there more H2S that could be generated or could be emitted when you have -- for the sake of the model, I mean, obviously this isn't how it works in reality, but for the sake of the model we have set aside 100 percent of the H2S at that source point.

COMMISSIONER BALCH: Coming into the site.

A. So -- so that is essentially eight truckloads, right? So that is saying that the entire capacity of the entire facility is only eight truckloads and that is not the case. You're going to have -- let's just say we have six sources and you would -- and like I said before you have a maximum emission, let's just say the 80 percent of of the maximum emissions and you characterize what the hourly emissions would be for each of those sources.

Now if you are doing a screening model you would add the emissions of all of those together and basically show the whole plant into one point and you need the hourly emissions from the whole

facility coming out of one point is what a screen is. A more complex model would actually, what are the hourly emissions from this source and that source. Is it an area source, is it a volume source and it would add it together. So a screen simplifies it by taking all of these multiple sources and shoves it into one imaginary plant-wide emission.

Q. (By Commissioner Padilla) If you have already removed that 100 percent, how do you get downstream hydrogen sulfide in the process?

A. There are -- so my description didn't resonate with you, then.

Q. I see how you're describing the ongoing operations.

A. That is what you are trying to model is the emissions from the entire facility, so, let me flip it around.

COMMISSIONER BALCH: This is a mass balance to me and to Patrick, we are looking at this as a mass balance. H2S into the facility, H2S out of the facility. And, yes, I know it is a point source and you might have four or five different loading stations so we would be somewhat distributed around that area. There may be a separator facility

right next to it and that might be a source of some of that escape into the atmosphere, but nutshell mass balance, 100 percent of the H2S that comes in is dealt with in one way or another, or it goes out for atmosphere conditions.

Q. (By Commissioner Padilla) For purposes of the model, put that asterisk there.

A. I would argue in that any given half hour you can crank up and things would be going and blowing different than having everything, including dumping a bunch at the front and having everything released as you're putting in. So if you are dumping eight trucks in this hour, are you telling me you are not going to run the plant the rest of the time when there is hydrogen sulfide there? That doesn't make sense to me.

Q. I think then we are talking about starting points or coming into the process midstream to take your sample versus operations having started and now your eight trucks pull up, you're talking empty facility. So how does that get taken into account in the model? Are you assuming that the facility is already fully in operation when those eight trucks show up?

A. Sure.

COMMISSIONER BALCH: That is a steady state model where eight trucks are always showing up at the same interval.

A. You are looking at hourly emissions, that's what you put in there, so the emission rates you need to put in for these multiple sources are, on any given hour what is the maximum any one of those could emit hydrogen sulfide, okay. Unless -- now the flip side is if they wanted to take a permit condition that says all of H2S is always released always at the front, but that doesn't seem realistic or practicable.

Q. (By Commissioner Padilla) Yeah, we are going to have differences in what the model says and what happens in reality, so, okay. I think I have used up most of my time on that one.

You have looked at this fairly -- you have looked at this facility, you have seen obviously you are well-versed in air quality requirements. Do you see any way that a facility like this would not require a separate air quality permit from whatever other agency may govern that?

A. They should.

Q. Based on Halfway's permit, which is based on a far lower operational threshold, I can't see

how it wouldn't. Is there any way that you can see from what you know and what you have studied how that happens?

A. Well, like Halfway they didn't get one from '91 to 2012, so, yes, it can happen, they should.

COMMISSIONER BALCH: But at some point you have to demonstrate via screening model or something else that either you are below some threshold or you're above it. Below it they might decide they don't require a permit but they may require that you do, or they will require mitigation to achieve that permit.

THE WITNESS: I would expect some simple calculation and/or statement that they expect to get this permit or another. There is just no analysis in here at all for anybody to judge anything.

Q. (By Commissioner Padilla) I think that from my point of view that is kind of by design because this permit does not require that. And that is what I am trying to get at based on what you see here, is there an external requirement for subsequent a permit from --

A. Yes.

Q. -- those guys down the street?

A. Yes.

COMMISSIONER PADILLA: Okay. Thank you.

CHAIRMAN CATANACH: Just one.

FURTHER EXAMINATION

BY CHAIRMAN CATANACH:

Q. Mr. Orwig, why did you guys choose not to run your own model?

A. I did run my own model with the screening model, but why I did not run a more complex model, there wasn't enough detail or emission. I felt like I would was over -- it would be too much of a stretch.

Q. But you ran an AERSCREEN?

A. I reran their model. I didn't --

Q. You reran their model.

A. The same input, which as I stated, I think is under -- it is not including the other sources that we just described. I didn't try to estimate what I think the other sources would be or what the ultimate hourly emission rate would be from the entire facility. But just running their own model does not show compliance with the air rules that are in that specific area.

Q. With the same inputs?

A. Yes. And as we demonstrated yesterday,

the model that is actually in the application at 100 meters, which is beyond the property, that calculates to be over and I just reran it to the fence line instead of the 100 meters is all I did.

CHAIRMAN CATANACH: Any further questions?

MR. BOHNHOFF: If I could have redirect to follow-up on the Commission's questions.

FURTHER REDIRECT EXAMINATION

BY MR. BOHNHOFF:

Q. Mr. Orwig, if the goal is to model maximum emissions, and I will ask you to assume that you take eight trucks unloading simultaneously and assume that they released 100 percent of their hydrogen sulfide during the unloading process.

Would you have to consider the fact that at the same time as the eight trucks are unloading based on previous trucks unloading, there is going to be continued further emissions of hydrogen sulfide from the oil/water separator, a dryer, a stripper and at the evaporation pond?

A. Yes. I believe all of those are likely sources of hydrogen sulfide that should be accounted for in the model in addition to the dumping location.

Q. As long as you don't account for those

additional sources, even if you assume with the eight trucks unloading they only release some 50 percent or 25 percent of the hydrogen sulfide that is in the tank, in the liquid, can you say one way or the other whether the cumulative hydrogen sulfide emissions at that point in time are going to be higher or lower than the assumed emissions with the eight trucks unloading releasing 100 percent but you don't consider any other emission points?

A. I believe that if you model the multiple sources and the accumulated affect of not only the multiple sources on site but any off-site locations that are also contributing to a background concentration, the model results would be higher than those in the application and those that I ran.

Q. Did -- in its application, did you note that whether C.K. stated one way or the other whether it would or wouldn't take produced water?

A. It stated that they would.

Q. Does C.K. tell us in its application how much of this 12,000-barrel per day assume figure is going to be produced water as opposed to something else?

A. No.

Q. If even only 25 percent of that

12,000-barrel per day figure is produced water would you still end up with a quantity of VOCs and benzene that is, call it big in your field.

A. You said 20 percent?

Q. 25 percent.

A. Yes.

MR. BOHNHOFF: That's all I have. Thank you.

CHAIRMAN CATANACH: Anything further?

MR. WOODWARD: Yes, sir, I have a few more follow-up questions, please.

RECROSS EXAMINATION

BY MR. WOODWARD:

Q. You testified that you agree that the air stream and Screen 3 models are gatekeepers?

A. Yes.

Q. So they are utilized to estimate maximum concentrations?

A. They are conservative by nature.

Q. So the goal is to use conservative assumptions when you calculate the inputs go into a screening?

A. Which is what I was trying to describe.

Q. Thank you.

Now on the refined air dispersion

modeling, are you actually trying to calculate maximum concentrations or are you more trying to calculate realistic situation?

A. Maximum.

Q. But aren't you using inputs that are more in line with what you expect to see at the facility?

A. When I did the screening or...

Q. When you do air dispersion modeling, don't you take into account any controls that you are going to put inside to control the potential air contaminant?

A. You estimate the emissions from the facility as you apply, however that is that you apply for it, whether it includes controls or not and this does not include controls.

Q. Let's just take an example. If you were going to use air dispersion modeling for H2S at the load-out point --

A. Uh-huh.

Q. -- would it be reasonable to assume that a hundred percent of the H2S is going to escape from the fluid at the load-out point?

A. That is conservative, obviously.

Q. Very conservative, isn't it?

A. It is conservative, but what I heard

yesterday is it is realistic.

Q. Really?

A. I heard that that was the...

Q. You would think 100 percent --

A. That would be conservative, 100 percent would be conservative.

Q. And that is just an example. There are other examples. Did you make any attempt to quantify the number of H2S that will come off those ponds?

A. No, sir.

Q. Did you take into account that there is any operational procedures to control H2S in the ponds?

A. I did not model the ponds, I reran your model.

Q. Do you understand the nature of H2S?

A. Yes.

Q. Do you understand it is an acidic gas that can be resolved in fluids?

A. Yes.

Q. Do you agree with me, just basic chemistry, that if you take the pH up around eight that it should control the amount of H2S that will escape from the ponds?

A. I agree it will control a lot of it, not all of it.
Q. A lot of it, though.
MR. WOODWARD: I have no further questions.
CHAIRMAN CATANACH: This witness may be excused.
MR. BOHNHOFF: We call Mr. John Peters.
THE WITNESS: John Peters. J-O-H-N, P-E-T-E-R-S. I go by Jay.
(Whereupon, the witness was previously sworn.)

JOHN PETERS,
after having been first duly sworn under oath, was questioned and testified as follows:

DIRECT EXAMINATION

BY MR. BOHNHOFF:
Q. Mr. Peters, how old are you?
A. Forty-seven.
Q. Where do you live?
A. East Kingston, New Hampshire.
Q. How are you employed?
A. I am employed by Haley & Aldrich, Incorporated.
Q. Is that the same company that employs

Mr. Orwig?

A. Yes, it is.

Q. What position do you hold?

A. I am a Senior Associate Human Health Risk Assessor and I manage and run the risk assessment practice at Haley & Aldrich.

Q. Describe for us your formal education since graduating from high school and give us years.

A. Sure.

So, in 1993 I graduated from Northeastern University with a Bachelor's of Science degree in toxicology.

And then in 1998 I graduated from Tufts University with a Master's of Science degree in environmental engineering with a concentration in environmental health.

Q. Your Bachelor's degree is in toxicology. What is toxicology?

A. Toxicology is really the study of how exposure to a chemical agent can interface with physiological systems in our body and cause an adverse health effect. It is very similar to pharmacy, only pharmacy we are looking at chemicals as drugs and we are seeing how a physiological interaction can cause a therapeutic effect.

Q. Since -- well, I suppose we need to go back to '93 when you got your BS. Would you summarize your employers since graduating from college.

A. Sure.

So actually prior to graduation from college I began to work for ABB Environmental Services as a risk assessor in 1992, and I worked for that company for several years, which eventually became Harding Lawson and Associates, which became Harding ESE, which eventually became MACTEC. And in 2010 I left that company, MACTEC, and joined Haley & Aldrich.

Q. What field did you work in, is it generally referred to as Human Health Risk Assessment?

A. It is.

Q. And what does a Human Health Risk Assessor do?

A. So a Human Health Risk Assessor looks at, examines and evaluates how a person can be exposed to an environmental contaminant, what the health effects of that exposure are and what the health risks associated with that exposure are.

Q. So we have health effect and health risks.

Just so we are clear what is the difference between the effects and the risks?

A. So an effect is a measurable or observable adverse impact on a biological system.

And a health risk is really a policy decision about how much of that adverse health effect we tolerate as a society and as a matter of policy. And, the standard of practice that we are talking about, the general public is no observable adverse health effects. That is the bar that is set for tolerating health risk.

Q. Describe for me your level of experience doing Human Health Risk Assessment.

A. So I performed hundreds of risk assessments under the regulatory purviews of U.S. EPA Superfund, U.S. EPA Resource Conservation Recovery Act, as well as more than 20 state programs, voluntary clean-up programs, State Superfunds, State RCRA, as well as performing radiological risk and dose assessments under the Nuclear Regulatory Commission's framework.

Q. Have you been doing this for the entire roughly 24, 25 years?

A. Yes, Day One, yep.

Q. In the course of doing these risk

assessments have you addressed different contaminants or just a few?

A. Yes. I have addressed volatile organic compounds including BTEX, I have addressed hydrogen sulfide, metals, pesticides, PCBs, petroleum and radionuclides.

Q. Just so we can get a sense of what you do, can you give me two or three examples of assessments that involve air contaminants?

A. Sure.

Some recent examples include work we are doing on a copper smelter in Arizona. The smelter is operating, so we are actually evaluating health risks associated with exposure to chemicals that are being emitted from the smelter into the air.

Doing work on a facility that has an industrial digester and has hydrogen sulfide emissions. And also doing work on a commercial facility that uses volatile organic chemicals at a wood treatment process. We are evaluating exposures there to both the workers and people located near the facility.

Q. In the field of Human Health Risk Assessment, are there any professional certifications or licensure regimes?

A. There are not.
Q. Are you a member of any professional organizations?
A. Yes. I am a member of American Nuclear Society, and I have been the past president or chair, I should say, of the decommissioning in Environmental Services Division.
Q. Turn, if you would, to Exhibit S in the big black notebook.
Can you identify that as a copy of your current resume?
A. Yes, I can.
Q. Does it accurately reflect your background and qualifications in the field of Human Health Risk Assessment?
A. Yes, it does.
MR. BOHNHOFF: I move the admission of Exhibit S.
MR. WOODWARD: No objections.
CHAIRMAN CATANACH: Exhibit S will be admitted.
(Exhibit S admitted.)
Q. (By Mr. Bohnhoff) Mr. Peters, were you engaged by LES to provide expert opinion testimony in connection with this administrative proceeding

involving C.K.'s application or permit to build and operate an oilfield waste disposal facility?

A. Yes, I was.

Q. What was your assignment?

A. My assignment was to evaluate whether the hydrogen sulfide management plan proposed in the application would be protective of public health.

Q. I will get into the details and the bases in a bit, but for purposes of my next question, would you summarize the opinions or conclusions that you have formed?

A. Sure.

So my opinion is that the hydrogen sulfide management level of 10 ppm that is proposed in the area of the facility and as a fence line monitoring trigger threshold is not protective of public health and would, in fact, endanger public health. That level is also associated with odors that would be extremely obnoxious.

Q. Following up on Mr. Orwig's testimony of his calculation of fence line concentrations for benzene, have you compared those fence line concentrations that Mr. Orwig came up with?

MR. WOODWARD: Mr. Chairman, I would like to just reiterate my objection. I have a standing

objection to any discussions about VOCs and VOC standards and fence line. I do not believe it is relevant to this proceeding.

MR. BOHNHOFF: I hadn't finished my question, but my question to Mr. Peters was had he compared Mr. Orwig's calculations of benzene concentrations at the fence line with human health-based parameters that are accepted within your profession.

A. Yes, I have.

CHAIRMAN CATANACH: Your objection is so noted, Mr. Woodward. Let's continue.

MR. WOODWARD: Thank you.

Q. (By Mr. Bohnhoff) What is hydrogen sulfide?

A. So hydrogen sulfide is a colorless poisonous gas that smells like rotten eggs.

Q. What are the health or safety risks of hydrogen sulfide?

A. So it depends on the level of exposure, but at the high end at a thousand ppm, say a couple of breaths can actually kill you instantly. At lower levels 300 ppm, for example, a short exposure of a few minutes can render you unconscious, and exposure much beyond that can kill you. And in

people that have been rendered unconscious through hydrogen sulfide exposures, which is called knockdown in the industry that deals with hydrogen sulfide, there has actually been studies done that have shown that those people have suffered permanent neurological impairments.

Lower -- and to that end, you know, the Occupational Safety and Health Administration, or OSHA, defines 100 ppm is the level that is immediately dangerous to life and health for good reason?

At lower levels 20 ppm, a short-term exposure can cause fatigue, dizziness, loss of memory, tearing, headaches, that sort of thing, and at prolonged exposures to, say, two to five ppm, the same kinds of systems can occur.

In communities where hydrogen sulfide is prevalent, there have been epidemiological studies done and those have demonstrated that at levels in 20 part per billion range, there is a greater prevalence of effects associated to the respiratory system; wheezing, shortness of breath, coughing, irritation, worsening of asthmatic symptoms and so forth. And toxicological studies have demonstrated that at levels below that, below 20 part per

billion, there is damage to the nasal mucosa and loss of olfactory nerves.

Q. What categories of human health-based parameters have been developed by government agencies or other organizations to establish benchmarks, let's call it, for the effects of hydrogen sulfide?

A. There is really two main categories. There are occupational standards, which are intended to be applied in workplace settings, generally that are governed by OSHA, for example, where workers are informed of workplace hazards, right to know sort of things. They are specifically trained in how to deal with the chemicals, how to recognize symptoms of exposure, that sort of thing?

And then there are standards or thresholds that have been published for the general public. And these values are derived to be protective for sensitive populations; infants, kids, elderly, people with compromised immune systems, or other health affects, and -- and those are applied to the general public.

Q. So we have different parameters for occupational versus general public. Are there -- are there different parameters depending upon the

length of the exposure?

A. Yes. Within each of those categories, occupational and nonoccupational or general public, there are values that have been derived for acute exposures and chronic exposures.

And acute exposures refer to short-term exposures on the orders of minutes to maybe up to an hour. They are episodic in nature. They are short-term episodic. A lot of times they can occur multiple times in a day as long as you don't have continuous exposure at those levels.

Chronic levels are derived to be protective for continuous exposure, many hours a day to continuously throughout the day, day after day after day, year after year.

Q. I would like you to go through a review for us, first of all, in the occupational setting the acute or chronic parameters or benchmarks that you have identified.

A. Sure.

Q. And let me ask, you have you prepared a chart?

A. I have.

Q. I will ask you to look at that blown-up chart that is behind the court reporter and ask if

you can identify that?

A. Can I get it?

Q. Yes, please.

I will ask you first of all, just identify this chart.

A. This chart shows threshold levels, threshold exposure levels for hydrogen sulfide in air.

CHAIRMAN CATANACH: Mr. Bohnhoff, is this an exhibit?

MR. BOHNHOFF: It is an exhibit to Mr. Peters' report, yes.

CHAIRMAN CATANACH: Where can we find it?

MR. BOHNHOFF: Turn to Exhibit T.

Q. (By Mr. Bohnhoff) Why don't you turn to Exhibit T in the notebook, Mr. Peters.

A. It is located as Exhibit 1 in this report.

Q. Is Exhibit T a copy of the report that you prepared in this matter?

A. Yes, it is.

MR. BOHNHOFF: At this time, Mr. Chairman, just to expedite and avoid the necessity of having to separately label the chart, I would move the admission of Exhibit T.

CHAIRMAN CATANACH: Any objection?

MR. WOODWARD: No, sir.

CHAIRMAN CATANACH: Exhibit T will be admitted.

(Exhibit T admitted.)

Q. (By Mr. Bohnhoff) All right. Refer to the report or if it is easier to refer to the blown-up chart, please do so, but walk us through this chart and tell us what it shows.

A. Sure.

So each bar on this chart represents a separate exposure threshold for hydrogen sulfide. I am going to talk about these in a minute.

The vertical lines across the chart represent hydrogen sulfide concentrations in air, and I will point out that this is a logarithmic scale. Each of these lines represents a concentration ten times higher than the line below it.

You will notice that there is -- there is bars that are crosshatched and there are bars that are solid. The crosshatch bars represent occupational threshold levels, and the solid bars represent nonoccupational or public health threshold levels.

With the exceptions of orange bars over

here, which I will talk about in a second?

The chart is further broken out into three sections. The first section represents values that are based on acute exposures or protective or acute exposures. The next section represents values that are protective for chronic exposures, and the final is just odor threshold levels that I have put in there for perspective.

Q. So walk us through each of the thresholds that you have identified.

A. Sure.

So the first bar is the OSHA ceiling exposure limit of 20 parts per million. This also corresponds to the CKD evacuation limit as proposed in the permit application. The next bar is the -- is the occupational NIOSH REL, and that value is 10 ppm, as you can see?

The next is the American Conference of Governmental Industrial Hygienists short-term exposure level, short-term which is five parts per million.

And then other acute values include the Agency for Toxic Substances and Disease Registry Acute Minimal Risk level, which is 70 parts per billion.

And then moving on to chronic exposures. There is the OSHA PEL of 10 ppm. There is the ACGIH threshold limit value of one ppm. There is a nonoccupational public health level published by EPA called a regional screening level of 0.006 ppm.

I have also included in this chart as a matter of point of comparison the two New Mexico Air Standards; one being the .1 standard for the Permian Basin and the other being the .01 standard which applies to the rest of the State.

Q. Let me ask you about the ten part per million OSHA figure, which I think would be the left most green stripe bar?

A. (Witness indicating.)

Q. And then you look at the bar to the right of that the label is occupational ACGIH TLV.

A. Yep.

Q. What do those letters stand for?

A. ACGIH is American Conference of Government Industrial Hygienists and TLV stands for Threshold Limit Value.

Q. These are both chronic thresholds. Is there a time difference between these two?

A. No. They're actually both based on eight-hour workdays, but as you can see there is a

ten times difference in the threshold concentration.

In other words, OSHA is saying that 10 ppm is a safe level for workers and ACGIH is saying that one ppm is a safe level for workers.

Q. Why the difference?

A. Well, the OSHA numbers were actually derived back when they were promulgated in 1971 and they are based on toxicity studies that, what, over four decades old now. More contemporary values are based on more recent toxicological data. In fact, this EPA value here is based on a study that was performed in the year 2000.

Q. Just -- you pointed to the EPA value but the record or the transcript is not going to be clear. What are you pointing to and what is the number?

A. The value of .006.

Q. And is that the far right solid green bar?

A. Yes, it is.

Q. Is 100 parts per million an accepted threshold value even in an occupational setting?

A. No.

Q. Now, I want to address your opinion, which I think you summarized, the response concentrations that were proposed for the C.K. facility were not

protective of public health. Which threshold parameter would be -- parameter or category of parameters would be applicable within the C.K. fence line?

A. So, the occupational standards would be applicable within the fence line because the people in the fence line are -- would be employees of the facility, they would be protected under OSHA protection standards, and those are the values that would apply.

Q. And then which parameters would be applicable outside the fence line?

A. Nonoccupational threshold values would be applicable outside the fence line.

Q. Within the human health based -- I'm sorry Human Health Risk Assessment profession, which fence line of the facility do you look at when you are considering air contaminant values?

A. So, it really depends on where the property is under the control of the entity that is creating the contamination in the air. When property is under your control you can set the exposure to match whatever you deem appropriate for that property. But when you are not on property owned by you, i.e., when the contamination is on

someone else's property, you don't have control over that land use. So the standard that -- the standard of the industry and what is required by EPA, as well as any State I have ever worked in, is to assume that that land could be used for anything and that exposures could be virtually anything, it could be a house, it could be a school, it could be industrial property.

Q. Now what is C.K. proposing to do with respect to managing hydrogen sulfide as you understand it?

A. They are proposing a fence line monitoring trigger of ten parts per million hydrogen sulfide.

Q. I will ask you just to assume these, the following numbers, that C.K.'s 2016 modeling study estimates hydrogen sulfide concentrations at between nine and 13 parts per billion at the north fence line. And I will ask you to assume that the same model would generate hydrogen sulfide concentrations between .5 and .6 parts per million at the south fence line.

In your opinion do C.K.'s proposals for managing hydrogen sulfide adequately protect worker health and safety within the fence line?

A. Yes, if they use the OSHA standard.

Q. And that standard would be?
A. Ten parts per million.
Q. In your opinion, would -- does C.K.'s proposals for managing hydrogen sulfide adequately protect general public health and safety?
A. Outside the fence line?
Q. Correct.
A. No.
Q. And why do you say that?
A. Because the -- never mind the trigger for hydrogen sulfide wouldn't even go off until 10 ppm had been reached at the fence line, so clearly you would have a higher level much -- kind of a level on that order magnitude outside the fence line, but their modeling shows the levels you just indicated. And the threshold level for the general public that is applicable to outside the fence line is the EPA regional screening level of .006 ppm. That is the chronic level, health base level that is appropriate for this kind assessment.
Q. If hydrogen sulfide concentrations could be between nine and 13 parts per billion at the north fence line and as the gas continues floating to the north and a wind is coming out of the south, could be five parts per billion at the first LES

building, in your opinion would LES employees and other persons visiting the LES facility be exposed to a human health risk?

A. If the level is five parts per billion.

Q. At the building.

A. At the building.

Q. And south of that in the parking lot and so forth where employees could be also, would they be exposed to a human health risk?

A. No. If the level is five parts per billion as indicated in that modeling exercise, then that level would be below the EPA RSL of 0.006 parts per billion.

Q. Are you saying if it is above six parts per billion as opposed to five parts per billion that is where the risk starts?

A. That is where -- it is a bright line.

Q. So we are talking about a difference of one part per billion?

A. Per billion.

Q. And to the extent people in the parking lot that is south of the building are exposed to six parts per billion or higher, would that be a human health risk?

A. Yes, it would.

Q. You were present for the testimony of Mr. Orwig earlier this morning and he testified that benzene concentrations at C.K.'s north and south fence lines, he estimated those concentrations at 80 parts per billion and four parts per million respectively. How does that compare to human health-based thresholds or parameters for benzene?

A. So, in a value derived similar to the .006 par per billion hydrogen sulfide value we have been talking about EPA's threshold --

MR. WOODWARD: Mr. Chairman, I would like to reurge my objection to discussions of the impacts of VOCs, I believe being outside of the regulatory purview of this agency.

CHAIRMAN CATANACH: Noted. But we have already started going down this road, so let's just finish it off.

Q. (By Mr. Bohnhoff) Go ahead, Mr. Peters.

A. So EPA essentially establishes a threshold or a range of levels for benzene, the lowest being 0.5 parts per billion. The uppermost limit would be 40 parts per billion.

Q. Would that be a worker threshold or a general public threshold?

A. It is a general public threshold.

Q. So 41 parts per billion compared to that 80 parts per billion at the fence line figure, are there any human health-based thresholds for benzene that are applicable to workers?

A. Yes. There are OSHA standards that are applicable to workers.

Q. What are those figures for benzene?

A. I don't have that number off the top of my head. I believe it is one part per million, though.

Q. One part per million compared to the four parts per million that Mr. Orwig estimated for the south fence line?

A. Yes.

MR. BOHNHOFF: I pass the witness.

CHAIRMAN CATANACH: Mr. Brooks, do you have anything?

MR. BROOKS: Yeah, I did want to ask a couple of questions about hydrogen sulfide.

CROSS-EXAMINATION

BY MR. BROOKS:

Q. You are aware, are you not, that the OCD has its own regulations regarding hydrogen sulfide?

A. I am aware they have some regulations regarding hydrogen sulfide.

Q. Those regulations are not regulations as

to how much emission can occur, they are regulations as to what you have to do to protect the public if more than a certain amount exists in your facility. You're a aware of that?

A. I am aware of it.

Q. Okay. Now, you testified that hydrogen sulfide is associated with disagreeable odors. Is that correct?

A. Yes, that is correct, sir.

Q. Okay. Now, I was told a long time ago, because I grew up down around not far from Lea County over in Texas side, but I was told when I was a child that if you could smell it there wasn't enough of it to be dangerous. Is that an accurate statement?

A. That is not an accurate statement.

Q. What level does the -- does it cease to be -- does the smell cease to be perceptible to a human?

A. It is below one part -- well, see there is a range with hydrogen sulfide. The lower limit is less than a part per billion. The upper limit is illustrated on this chart right here is actually over ten parts per billion upwards of 50 parts per billion. As you become exposed to hydrogen sulfide

you begin to lose sensitivity to its smell because it is essentially damaging the olfactory nerves in your nose, so you begin to lose the sensitivity so you can be exposed to more and more and more of it without even smelling it.

Q. Then you lose sensitivity to everything. Okay. Well, you said .6 and .006 parts per million, which is point -- which is six parts per billion, correct?

A. That is correct, yes.

Q. And you said that was -- and I didn't understand whether you said a break line or a bright line?

A. A bright line.

Q. It is a bright line under certain regulations, right?

A. It is a bright line using the procedures of risk assessment in the industry for evaluating public health risks.

Q. But it wouldn't be fair to say that if it was 6.001 parts per billion you're in trouble --

A. It's expressed in --

Q. -- and with .00599 you are okay?

A. It is expressed as one significant figure.

Q. Okay. So it is not -- it is a statistical

line, not necessarily a rigid line -- not necessarily a physical fact in the world, you know?

A. I guess, I don't follow what you mean by physical fact in the world.

Q. Well, if you have a statistic, if something is progressive there is not much difference in a small amount in reality, but statistically you can say at this point the exposure level is so -- you have to draw a line somewhere to say this is so small a risk that we don't -- we are not going to use it for regulatory purposes. But that is not necessarily inconsistent with the risk being something that increases on some kind of line whether it be straight line or what?

A. So that is true when we talk about cancer health effects, the risk of getting cancer.

Q. Yes.

A. This health effect doesn't deal with cancer. This health effect deals with damage to the nasal mucosa and olfactory nerves. And that value is based on what is called a hazard index equal to one. It is established that you cannot have health risks that are above a hazard index of one.

Q. Well, I am not sure I understand exactly what that means, but I gather you're saying that it

is in a sense a bright line?

A. It is a bright line.

MR. BROOKS: Thank you.

CHAIRMAN CATANACH: Mr. Woodward?

MR. WOODWARD: Yes, sir. Thank you.

(A recess was taken.)

CHAIRMAN CATANACH: So the plan is we are going to try and break for lunch at noon so if we possibly can get through this witness by then it would be great. So we will hope.

MR. WOODWARD: Message received.

CROSS-EXAMINATION

BY MR. WOODWARD:

Q. Good morning, Mr. Peters.

A. Hi.

Q. How are you today?

A. I am well, thank you.

Q. Good.

Have you been to Eunice, New Mexico?

A. I have not.

Q. Do you know what the ambient H2S levels are at Eunice?

A. I do not.

Q. So you wouldn't know what the source of the concentrations of H2S in the air at Eunice?

A. I can surmise they are from the general oil and gas industry activity there.

Q. As a toxicologist you rely on the engineers to provide you the numbers to determine whether they fall within acceptable safety ranges?

A. I would not say that is to be true all the time.

Q. Do you do modeling?

A. I do not do air modeling.

Q. So in talking about air modeling you rely on the engineer that does the air model to provide you the number to determine whether it falls within acceptable safety range?

A. Yes.

Q. So I think we established that five parts per billion at the LES building from the C.K. Disposal facility would not violate any of these safety standards you have on the board?

A. That is correct.

Q. Now, do you -- when you're talking about the ten part per million threshold for the H2S management level you say it is not protective of public health, are you passing judgment on the H2S management plan or how are you saying it is not protective of public health? I didn't quite

understand that.

A. So, if the plan proposes to not take actions until hydrogen sulfide reaches ten parts per million at the fence line, then clearly concentrations outside of the fence line are going to be well above these chronic levels that have been shown on this figure here.

Q. But the threshold level is not assuming that H2S is leaving the fence line at greater than ten parts per million all the time?

A. Well, it doesn't say that, actually, it just says the threshold for doing something is ten parts per million and there is no discussion of what -- there was no modeling provided in the application. But we know that the proposal is that there is monitors at the fence line and nothing, no mitigative response actions will occur unless that level gets above 10 ppm.

Q. But that is a -- you agree with me that that is a threshold alarm alerting the facility to take action?

A. Yes.

Q. So it is not authorizing the facility to continue operating and just ignore the H2S release and allow it to keep going on to the neighbors?

A. Not once it is above 10 ppm, but it could be -- according to that plan it could exist at nine or 9.5 or 9.9 ppm continuously and the alarms wouldn't go off.

Q. However, they also are monitoring all incoming loads at the truck and measuring those for 10 ppm?

A. That is correct.

Q. And there is a plan to take action to reduce the amount of H2S in each truck if it is at 10 ppm or greater?

A. That is correct.

Q. And then there is also monitoring at the evaporation ponds?

A. Yes.

Q. So if the model is showing that the offsite impacts at the LES building are at five parts per billion, under the worst-case assumption, then that is protective of human health?

A. At that location.

Q. What is ACGIH TLV?

A. American Conference of Government Industrial Hygienists, Threshold Limit Value.

Q. Is the American Conference -- would you say that again?

A. Government Industrial Hygienists.
Q. Are they a regulatory body?
A. No.
Q. Is this level that you show with the green hashed bar up to, I think it is one part per million, is that a governmental standard in any way?
A. No, it is not.
Q. So the standard in the United States is still the OSHA standard?
A. So, for workplaces that are regulated by OSHA that is the standard, however, because the OSHA standards are so old and generally recognized to be outdated, industry best practices are to use lower values such as the ACGIH value.
Q. But in the United States the standard that a company is going to get fined over is the one that is listed by OSHA?
A. That's correct, yes, that is right.
Q. Did you in any way make any determination regarding the proposed H2S management plan complying with the rules of the OCD?
A. Yes, in the sense that I evaluated whether that management plan would be protective of public health as stipulated as a requirement of OCD regulation.

Q. As I understand your assertion that it is not protective of public health, it is that calculated concentration at the south fence line at .5 to .6 parts per million?

A. I'm sorry, can you rephrase that question.

Q. I am trying to understand what you're assertion is, is that it is not protective of the human health. I am trying to understand which number it is you are using saying that the management plan is not protective of human health?

A. Because the management plan indicates that hydrogen sulfide can exist continuously at the facility at levels slightly under ten parts per million and at the fence line at that level. And that is not protective of public health outside the fence line.

Q. I am trying to understand how it could exist continuously if there is a management plan in place to treat trucks that come in, to keep ponds at a proper pH to assure that there is no generation of H2S in those ponds, actually is neutralized. So how do you come to the assumption that it exists continuously at 10 ppm?

A. So the trucks will only be treated if the level in the trucks is above 20 ppm. So if you get

a truck coming in at 9 ppm, it is not going to be treated. That is going to be released into the air.

Q. So you are assuming that every truck comes in is going to be right at 9.99 parts per million and is going to go into the ponds and continue to be at that level?

A. No. I am saying the management plan allows for that.

Q. But the modeling doesn't show that it is going to be at levels offsite that is harmful to human health?

A. Actually the model shows that at levels in the south fence line would be well above levels that are protective of public health.

Q. But you're not passing any judgment as to whether this model is -- represents a real case scenario versus a worst-case scenario?

A. I am not.

Q. I noticed you didn't include any reference to Part 11 of the OCD regulations as a regulatory threshold on your chart. Was there a reason for that?

A. Because what we are talking about here is the management plan.

Q. But aren't we talking about getting a

permit from the OCD?

A. We are talking about getting a permit and that permit is contingent, is my understanding, of the showing that -- that the proposal is protective of public health.

Q. We have had a lot of conversations about that.

Do you know what the OCD regulatory threshold concentration is?

A. I believe it was discussed yesterday. It is 100 parts per million, I believe.

Q. So you disagree with the standards adopted by the OCD where they state that 100 parts per million correlates to a potentially hazardous volume of gas?

A. I think 100 parts per million definitely correlates to a hazardous volume of gas.

Q. Do you disagree with their requirements that no further actions required if you are below 100 parts per million?

A. Yes.

Q. And you agree that the threshold action established by C.K. Disposal is well below the regulatory threshold established by OCD?

A. I recognize that.

Q. You agree that the C.K. Disposal H2S management plan complies with the OSHA standards?
A. It does.
Q. So when you say in your report that the use of 10 ppm is inconsistent with exposure standards set by government agencies, that is not correct, is it?
A. Well, it is actually, because other government agencies clearly are stipulating lower values. And on the OSHA website where it says 10 ppm is our standard, there is actually a column listing all the health effects that can occur to concentrations under 10 ppm.
Q. Before our occupational standards and at the chronic, that is assuming an eight-hour exposure to 10 ppm, correct?
A. I'm sorry which?
Q. On your chart you list occupational OSHA standard chronic at 10 ppm?
A. Yes. And that is an eight-hour value, as you suggested.
Q. So if C.K. Disposal maintained the levels at their facility below 10 ppm, they would be well within -- or they would been within the chronic occupational exposure limit?

A. Yes.
Q. Now, you say in your report that the H2S management level of 10 ppm is significantly above the New Mexico Ambient Air Standard. But management level does not correlate to ambient air standards, does it?
A. Well, again, if the management plan is allowing per concentrations on hydrogen sulfide to exist up to 10 ppm, then it appears to me that would be in violation of an air standard.
Q. Let's clarify that last statement just a bit. A monitor that goes off at 10 ppm doesn't necessarily mean that the management plan is allowing 10 ppm to escape. Don't you have to take the management plan as a whole and all efforts to reduce H2S on site?
A. So, again, the management plan indicates that if levels are above 10 ppm, either when the stuff is delivered or at the fence line, action will be taken.
Q. So you're assuming, then, that it is going to be operating at 10 ppm?
A. That is what the management plan allows for.
Q. So you are ignoring any other operations

that are taking place pursuant to the management plan?

A. Well, again, I am focused on the aspect of the management plan which specifies what the allowable air concentrations will be according to the management plan.

Q. You also talk about the Ambient Air Quality standard for the rest of New Mexico outside of the Permian Basin. Why do you think they have a different Ambient Air Quality standard in the Permian Basin?

A. I don't know.

Q. Do you think it is because it is a very active oil and gas production area?

A. I don't know. I don't know what they -- why they set their standards the way they did.

Q. So you are not familiar with the region we are talking about where this facility is proposed?

A. I am familiar with the region, but I am not privy to the background of how New Mexico derived their air standards.

Q. That is fair.

So you agree that the New Mexico Ambient Air Standard of .01 is not enforceable in this portion of Lea County, New Mexico, where the

facility is proposed to be located?

A. I agree.

Q. Have you made any quantification of other H2S sources at the C.K. facility other than at the load-out of the trucks?

A. I haven't made any quantifications. I have relied on the -- when we are talking about projected concentrations, I have relied on the engineering estimates.

Q. So any statements you have made in your report about the modeling are not your analysis?

A. That is correct.

Q. I am interested in your orange bars on the right part of your graph there because odor to me seems very open-ended. It seems like a bad smell to one person could necessarily not be a bad smell to another person. Do you agree with that?

A. I agree with that.

Q. I grew up in Odessa and whenever we would smell the refinery just not far from our neighborhood somebody would say, well, it smells like money, that is employment for Odessa. So, what is offensive, what you say here in terms of H2S, is not necessarily offensive to those citizens living and working in the oil patch in Lea County, right?

A. Perhaps not.

MR. WOODWARD: I have no further questions.

CHAIRMAN CATANACH: Commissioners?

EXAMINATION

BY COMMISSIONER BALCH:

Q. I am just really curious, as Mr. Brooks observed. You were here yesterday for Mr. Carrillo's testimony about the Sundance facility?

A. Yes.

Q. Would you want to work there when they were talking about levels of 60 --

A. No, no, I would not.

Q. -- for sustained periods of time?

A. Right. No, I would not.

Q. They don't even know what is going on at the fence line because it is too dangerous to send somebody there to measure it.

What about the Permian Basin of 100 ppb, would you want to move your family to Eunice? I think you mentioned there were chronic exposure levels at 20.

A. Right. So I believe that level is set at a value that is above levels that have been

demonstrated to cause chronic health effects.

COMMISSIONER BALCH: Okay. I was just curious. Thank you.

COMMISSIONER PADILLA: I think actually I don't have any questions. I had one similar to Dr. Balch's but that took care of it. Thank you.

CHAIRMAN CATANACH: I have no questions.

MR. BOHNHOFF: I have a brief followup here.

REDIRECT EXAMINATION

BY MR. BOHNHOFF:

Q. You discussed with Mr. Brooks the fact that the six part per billion threshold is a bright line?

A. Yes.

Q. But that is only one side of the comparison, correct? And I am confusing you so let me explain what I meant by that. As a Human Health Risk Assessor, do you have any concerns with a modeled result that is only one part per million away from that bright line?

A. Yes. So when we look at health risks we are looking at what the bright line or the acceptable level is for the no adverse health effects, and we are comparing that to an exposure or

in this case an air concentration. So the other side of the equation you are referring to is the air concentration side. And so particularly when we are using modeling, and we have results that are very close to the health base standard, it is prudent to examine the modeling in more detail and figure out whether that modeling should be refined to produce more confidence in the answer of whether or not the model concentrations are actually above the health standard.

MR. BOHNHOFF: That's all I have.

MR. WOODWARD: No further questions.

CHAIRMAN CATANACH: Okay. This witness may be excused.

Let's take a lunch break and we will reconvene at 1:00.

(A recess was taken.)

CHAIRMAN CATANACH: So at this time we will call the hearing back to order. I believe, Mr. Bohnhoff, you still have a couple more witnesses?

MR. BOHNHOFF: Yes, sir.

LES calls mat Matt McGovern.

THE WITNESS: Matthew S. McGovern. M-A-T-T-H-E-W, last name McGovern, M-C-G-O-V-E-R-N.

(Whereupon, the witness was previously sworn.)

MATTHEW McGOVERN,

after having been first duly sworn under oath, was questioned and testified as follows:

DIRECT EXAMINATION

BY MR. BOHNHOFF:

Q. Good afternoon, Dr. McGovern. How old are you?

A. Forty-seven.

Q. Where do you live?

A. Andrews, Texas.

Q. And how are you currently employed?

A. I am the Chemistry Services Manager for URENCO-USA.

Q. Summarize for us your formal education since high school and give us the years.

A. After high school I was in the Navy, the United States Navy. I did training for Navy nuclear propulsion, mechanical operator, also was trained as an analytical chemistry technician in the Navy. I would have been in 1988, '89 time frame. I was in the Navy from 1989 until 1997.

When I got out I got my Bachelor's degree in chemistry from the University of

Wisconsin-Parkside in Kenosha, Wisconsin. And then I went to the University of Illinois at Urbana-Champaign and got a Ph.D. in chemistry.

Q. When did you get the Bachelor's degree?

A. 2000 for the Bachelor's degree, the Ph.D. in chemistry was 2004.

Q. Your undergraduate, did -- well let me ask you. Did your undergraduate or grad -- and/or graduate studies focus on inorganic chemistry or organic chemistry?

A. Mostly I would say it was inorganic chemistry. I worked in the field of analytical chemistry, but what I mostly studied were electrochemical reactions and, you know, things such as corrosion and fuel cells.

Q. So we have the term defined, what is analytical chemistry?

A. Analytical chemistry is a subfield of chemistry where people mostly focus on running the different types of instruments to get answers for the, you know, such as the concentrations, so that you can better evaluate a chemical system.

Q. Does analytical chemistry involve any study of chemical corrosion processes?

A. Yes. My specialty, my subfield of

analytical chemistry that I worked in was a field called electrochemistry and surface science.

Electrochemistry is the study of oxidation, reduction reactions and the influence of different chemicals on those reactions, which is what mostly makes up corrosion.

Q. Did you engage in any post-doctorial research?

A. Yes. I was engaged by a company called Geo-Centers, Incorporated. I worked at the Naval Research Laboratory Center for Corrosion Sciences and Engineering in Washington, D.C., where we studied different aspects of corrosion that were affecting the U.S. Navy warships.

Q. Now, describe for me your work experience, I guess, beyond the postdoc work that you did and your Navy work.

A. Okay. I went from the postdoc to a placed called Bettis Atomic Power Laboratory. I was in the reactor coolant division where I studied different type of corrosion things that were involved with the nuclear reactor cores.

From there I went to Beaver Valley Power Station in Shippingport, Pennsylvania, where I was chemistry operation supervisor. I was responsible

for the -- managing the laboratory analysts on -- in the power station. We did things such as managing, taking samples for corrosion and also we were responsible for taking all the samples for our environmental permit.

From there I went to Excel Energy. I was the nuclear fleet chemistry and environmental compliance manager for Xcel Energy up in Minneapolis, Minnesota, mostly their Minnesota plants are where their nuclear field is?

And then from there I came down in 2012 to be the chemistry services manager at URENCO-USA.

Q. You may have touched on it, but I want to ask the question. During your ten years with First Energy, Xcel and URENCO, have you had responsibilities for air and water environmental compliance?

A. Right. So, at First Energy I was responsible for taking the samples and ensuring that our samples were within our environmental permits for our various environmental permits.

At Xcel I was the interface between the nuclear department and the rest of Xcel for their environmental permits for the two nuclear power plants that we had up there and so I was spending a

lot of time with them on their air permits, their water permits, their -- a lot of -- very much with their groundwater?

And then when I came down here, we were initially responsible in my department for monitoring our stack emissions coming off of our plant, which is our air emissions coming from our plant, but we took overall environmental sampling responsibilities and environmental reporting responsibilities.

Q. At least since you started your tenure at URENCO have you gained any familiarity with the transport of air contaminants?

A. Yes. So I have looked at the modeling that we have for our material, so if it were to be coming out of our stacks or if we were to have a release from one of our cylinders that we store our material in, I have evaluated that. One of my jobs in my emergency response organization is I am responsible for doing the -- what we have is a preprogram modeling system that is specific to radio chemical applications called Rascal. So we will put in the input similar to the screening models and stuff they have on that as a screen whenever we are doing.

Q. Dr. McGovern, are you a member of any professional organizations?

A. I am a member of ASTM International, and I am also a member of the National Groundwater Association.

Q. When you say ASTM, what is that initials for?

A. It was for the American Society of Testing and Methods. It is a society that basically we maintain a lot of different methods of analysis, so records so that people can use them in their industry to do some of the analysis that you use. A lot of them I am in D19, which is water, chemistry and there is a lot of the ones that are the environmental water-type analyses, we have a method for in ASTM.

Q. Turn, if you would, to Exhibit Y in the black notebook.

A. Okay.

Q. This is LES Exhibit Y. Can you identify that as a copy of your resume?

A. Yes, that is my resume.

Q. Is this up to date?

A. Yes, it is.

Q. Is it an accurate reflection of your

training and work experience?

A. Yes, sir. Yes, it is.

MR. BOHNHOFF: I move the admission of Exhibit Y.

CHAIRMAN CATANACH: Any objections?

MR. WOODWARD: No objections.

CHAIRMAN CATANACH: Exhibit Y will be admitted.

(Exhibit Y admitted.)

Q. (By Mr. Bohnhoff) Were you asked by your employer, LES, to provide a report and expert testimony in connection with this administrative proceeding involving C.K. Disposal?

A. Yes. I was asked to evaluate, they gave me the permit application and then they gave me a -- the modeling that we have been discussing or has been being discussed here. And they asked me to evaluate it to see if I felt it would have any effect on our operations at the plant.

Q. Summarize, if you would, and then we will discuss them in detail, but why don't you summarize the opinions that you have formed having reviewed the application.

A. Okay. So, I came up with basically what I had three concerns, three opinions.

One was I was concerned that potential for H2S and sulphur dioxide increases in concentrations at the site as a result may impact our corrosion rates on some of our electronic equipment.

I also was concerned that there would be chlorides potentially released from the evaporation ponds that would be able to be carried to our site and increase the corrosion and the corrosion rates basically on the vehicles in the parking lots and the infrastructure around the parking lots?

And then third I was concerned that that same, any chlorides that would be carried over by the wind from their evaporation ponds would be deposited into my storm water detention pond at the front of my site and possibly cause me to have exceedances of my groundwater permit -- sorry, discharge permit.

Q. And you stated that those were your three concerns. As you completed your analysis, were your concerns borne out?

A. I'm sorry?

Q. You identified in your answer just now that you had concerns about those three areas. Once you did your work, were the concerns demonstrated? Did you conclude that, in fact, these aren't just

concerns but they are things that you expected to happen?

A. Yeah. These are -- so I expect those to happen based on the numbers that I saw, based on the description of the operation, that I saw, I expected there -- I would expect to see some increases in corrosion in our equipment and in some of our infrastructure. And also I would expect I will probably see increases in our chloride concentrations potentially in exceedance in my storm water pump.

Q. All right. Let's talk about these one at a time. Let's start with your opinion regarding hydrogen sulfide in -- well, corrosion of electronic components. The testimony so far in these proceedings is that the prevailing wind direction at the LES plant is from the south. Is that your understanding?

A. Yes, I would say it is mostly from the south.

Q. Well, what do you know based upon your review of the application and then your attendance at the hearing the past few days about potential emissions of hydrogen sulfide at the C.K. facility that is proposed that would be blown by wind onto

and into the LES facility?

A. So, whenever I read the modeling it basically said there was going to be five part per billion level at our buildings. And, whenever I looked at some other issues that we have had in the past dealing with corrosion on electronics, that was within the level of concern, the concentration of concern that we would possibly see some more corrosion. That was one of the levels that was identified as being a corrosive environment for those type of components.

Q. Let me just make sure and clarify. Has LES experienced any problems with corrosion of electronic components?

A. We have had failures of a piece of equipment called the uninterruptible power supplies. These are essentially electronic components that have a large battery so that if something happens on the grid, on the electricity grid, it causes us to have a momentary loss in power, they automatically pick up power from the battery and so that we don't have a big gap in power. With a lot of your electronic and your suffocated equipment if you have a drop in power and then it even comes back on, you know, milliseconds later, your equipment will shut

off. And it won't operate possibly, so we have these UPS throughout our site supporting our processes and we have seen failures on them where we have had some corrosion and this caused the UPSs to essentially blow up, the electronics to blow up.

Q. I will direct your attention to four exhibits in that black notebook, Exhibits F, G, H, and I. Would you identify these exhibits for us tell us what they are.

A. So Exhibit F.

Q. F, G, H, and I, go through them one at a time.

A. So F, this is a report from Eaton. This is the manufacturer of the UPS power supplies that I was just talking about, and this is a report from -- well, it was from February 18, 2011. So, they had -- we had several events in between September and December of 2010 on these components where we have had the failures. If you will look through it, on Page 2 you can see the -- basically the burnt electronic power boards on there and you can see the scorching on the heat seat assembly.

And then, if you turn to the next page these are pictures, these are scanning electron microscope pictures of -- well, these actually look

like they are visual microscope images of the actual electronic components themselves, the copper components themselves where they found contamination on them.

And then, the next page has some closer things and you can see those little star-shaped black on that bottom picture, for instance. What those are showing is what we call dendrites, so it is where copper has kind of leached out into that -- you see the two pieces of copper, you see that part in the middle. That gap is to separate the voltages between those two pieces of copper and this is showing them where the copper has started growing in between the two. And essentially their conclusion from this paper was that the -- that growth of that copper in between those two components led to a short circuit between those two components which caused it to essentially got a lot of heat and then it really just causes it to blow -- what we would call below it up.

Q. So walk us through Exhibits G and H and then I.

A. Okay. G is -- looks like it is another analysis. This is the follow-up report for that one. And basically on this one this is where they

have gone through and they have taken a look at their evaluation of the parts and they have determined that this is due to the dendrite formation from a sulphuric gas. And dendrite growth is -- essentially it is where a tooth comes out from the copper. That's those things that I had shown the picture of that. Those would have been due to sulphuric gas contamination at the components.

Q. Go ahead and continue with Exhibit H.

A. H is another -- is another failure report of a different failure event. This one happened in 2015 and on this one you can also see again the scorching and also you can see the dendrite growth on the second picture right there. And then on Page 3 of 4 you can see more of the dendrite growth. What it is, is there is a high potential between those two copper plates, so, again, we had a shorting event in those.

Q. Exhibit I?

A. So, Exhibit I, a part of the conclusion on those three reports was that the dendrite growth was due to sul- -- gaseous, you know, sulphuric gas and I, as a report, we had commissioned from the Purafil Environmental Corporation. So they -- basically they put coupons, pieces of metal in our rooms and

then they evaluated those metal for their type of corrosion. And on this one right here, you're seeing that we have a moderate level of corrosion on these components. The main thing on this one right here, whenever I am looking at it, is this is describing a time where there is a -- not much humidity in the air. So you see a lot higher corrosion on the silver bar than you do on the copper bar. So this is what is supported the fact that this copper dendrite formation on these components was due to the sulphurous gas that was in the rooms.

Q. If you will look at the first page of Exhibit I, did Purafil provide some figures regarding the concentration levels, hydrogen sulfide and sulphur dioxide?

A. So for hydrogen sulfide they had three to ten parts per billion and for sulphur dioxide it was between ten and 100 parts per billion.

Q. And did it conclude that sulphur -- hydrogen sulfide and sulphur dioxide at those levels can cause corrosion?

A. They -- they do have it in here. I also had found other literature whenever I was doing my search because this -- I gave them my background,

this is one of the problem that my company asked me to look at. So I had looked at other literature that had also talked about both of those components being issues in electronics corrosions.

Q. After reviewing these analysis, the Eaton analyses that are Exhibits F, G, and H and then Purafil analysis that is Exhibit I, did you concur in those analysis and conclusions?

A. Yes, I agreed with 1there conclusions.

MR. BOHNHOFF: Mr. Chairman, I would move the admissions of Exhibits F, G, H, and I.

MR. WOODWARD: No objections.

CHAIRMAN CATANACH: Exhibits F, G, H, and I will be admitted.

(Exhibits F, G, H, and I admitted.)

Q (By Mr. Bohnhoff) Now, with the modeling it reflects a potential for five parts per billion hydrogen sulfide being carried from the C.K. premises to the LES building.

Have you reached -- in taking into consideration Exhibits F, G, H, and I, have you reached any conclusions regarding the potential for corrosion of electronic components at the LES plant as a result of the operation of the C.K. facility?

A. Yes. My conclusion is that if there is

that level of H2S at our plant, then I will see increases levels of corrosion in my electronic components.

Q. Would you expect the operation of the C.K. facility to generate any sulphur dioxide emissions as well as the hydrogen sulfide emissions that would also have the potential to be blown on to LES' premises?

A. I don't know their process, I don't know if sulphur dioxide is a byproduct of their process, however, sulphur dioxide, in my experience, is a byproduct of diesel combustion. And whenever I was reading it I assumed that there was going to be a large increase in diesel truck traffic at that facility and there would be an increase in the sulphur dioxide concentration.

Q. In its application has C.K. provided any analysis of the quantity of SO2 that will be generated by diesel trucks that uses its facility?

A. No.

Q. In the absence of that kind of analysis, can you rule out the potential that corrosion of LES' electronic components will be increased or exacerbated further by the SO2 emissions?

A. I cannot rule out that.

Q. So let's talk about your second opinion regarding corrosion of equipment and vehicles by chloride salts. Let me ask you, do you see those two white notebook binders?

A. The permanent application?

Q. Yes. Turn to Volume 2, if you would, briefly. And in particular in Volume 2 there is a tab for Attachment K. Do you see that?

A. Yes.

Q. And turn to Page 12 of Attachment K. I'm sorry, Page 11.

A. Yes.

Q. I apologize. I did mean to refer you to Page 12. We had some discussion about -- before lunch about what the 12,000 barrels per day production would be. If you look four lines down from the initial paragraph in Section 6.0 on Page 12, you see that reference to the C.K. plant being expected to receive a peak flow of 12,000 barrels of water a day?

A. Yes.

Q. So it appears that C.K., at least is representing, that they are going to be processing 12,000 barrels of water per day, correct?

A. Yes.

Q. Do you have an understanding of what produced water is within the oil and gas industry?

A. In my experience produced water is what I would refer to as a brine. It accompanies whenever you are pumping up oil it doesn't just come up as oil like on the Beverly Hillbillies or something, there is water that comes up with it and for the most part this water is a brine.

Q. How much chloride is in water that is generated in oil and gas production?

A. So I did a research, literature research as to find out, and one of the papers I found had a table that showed Permian Basin produced water, chloride concentrations, and they were between about 25,000 and 75,000 parts per million chloride.

Q. Turn back to the black notebook. I will ask you to look at Exhibit DD.

A. I'm sorry?

Q. DD?

A. DD.

Q. Is this the article you are referring to?

A. Yes, this is. This is an article where what they -- what the intent of the article was, was they were trying to determine where, you know, geologically what era would this have come from,

would the water have been laid down and where I got those numbers from is if you go to Table 2 the Wolfcamp shale and the Cline shale.

Q. Let me interrupt you just to make sure we get oriented. What page is Table 2?

A. I'm sorry. That is on -- it is numbered Page 82.

Q. Thank you.

A. In the actual article itself.

So I went to that Table 2 and the Wolfcamp shale and the Cline shale were identified as being Permian Basin Type I, so I basically looked at those -- the numbers that they had there. I guess this one says -- does say between 19,750 would be the low one on that.

Q. In the high is?

A. 75,370.

MR. BOHNHOFF: I move the admission of Exhibit DD.

CHAIRMAN CATANACH: Any objection?

MR. WOODWARD: For what purpose is this being submitted?

MR. BOHNHOFF: Well, it is the information that Dr. McGovern looked at and it provides information about chloride content of produced

water.

MR. WOODWARD: I don't know really anything about the pedigree of this document or -- you know, I guess it could be admitted as something he relied on, but I don't want it to be admitted for the truth of the matters that are in the document.

CHAIRMAN CATANACH: Well --

COMMISSIONER BALCH: These are reputable published or scientific documents, right? For the purpose of saying that is exactly what he is using, is the basis of his numbers, that would be fine to me.

MR. WOODWARD: I am fine with that.

COMMISSIONER BALCH: I am not sure it is completely represented. It is Texas data, for example.

CHAIRMAN CATANACH: Well, produced water in the Permian Basin varies considerably even more than this. I think the Commission recognizes that, so for the purpose of this I think we can admit it. So DD will be admitted for that purpose.

(Exhibit DD admitted.)

Q. (By Mr. Bohnhoff) As defined in New Mexico, Dr. McGovern, how much chloride is in fresh water?

A. 200 -- the limit per NMAC is 250 milligrams per liter.

MR. BROOKS: Excuse me, I think that is not correct for the term fresh water. I know it is not correct under the OCD's definition. That is the drinking water standard. I just didn't want an error to creep into the record here.

COMMISSIONER PADILLA: Are we talking protectable water?

CHAIRMAN CATANACH: That's 10,000.

Q. (By Mr. Bohnhoff) Turn, if you would --

MR. BOHNHOFF: Well, I will link it up when we get to the third opinion that Dr. McGovern has regarding contamination of the water that is in LES' pond.

Q. (By Mr. Bohnhoff) As you reviewed the application that C.K. has filed, Dr. McGovern, where does C.K. propose to place this 12,000 barrels of water that they anticipate receiving daily?

A. Well, they talk about doing potentially two different things with the water after they clean it up with getting the oil and stuff out of it. One area that they talk about doing is they talk about putting it into the evaporation ponds, but there is another section here which is in that Section 6

where they talk about being able to recover that water so that it could be reused in the industry and they talk about doing reverse osmosis for that water. So they, you know, in that first paragraph they talk about they will have 12,000 barrels a day coming in, once they do the reverse osmosis they will have 7,100 and 7,140 barrels available to sell back to the oil industry so they can go back and reuse this water?

The remaining water, the more concentrated water after going through RO is then to be directed into the evaporation ponds.

Q. Turning back to that Attachment K, is there a description of a stripper tower in the processed water section?

A. Yes, there is.

Q. And, as described by C.K. would the stripping tower result in the release of chlorides into the atmosphere?

A. So, I don't see it. Well, what the stripping tower is doing is it is essentially in my -- from what I understand, it is misting the water out through nozzles and then basically goes over some packing so the misting through the nozzles, you would expect some material to be

released into the air.

Q. Okay. The other route of dealing with the water putting it in evaporation ponds, what happens to chlorides that end up in the evaporation pond water?

A. Per what I read in their application the evaporation pond, there is a plan to use some sprayers basically, spray it into the air; that aids in evaporation. I think in that if it is a high chloride solution, as the water gets misted into the air, sprayed into the air and the actual water is evaporated from the droplet, the small particles of chloride would be able to be entrained in the air at that point. The rest would mostly drop back down to the bed and get back into the pond and then whenever the pond was fully dry there would be a layer of salt on that pond.

Q. To the extent there is any period of time where the salt is on the bottom pond or the pond sides, is there any potential for wind to pick up the chloride salts and carry them?

A. In my experience where we live in Southeast New Mexico, the wind is a constant and often blows dust and stuff like that around. I think it would pick up some of the salt and carry it

with it.

Q. Whether it is atomized by the pond's aerators or blown with dust when the pond beds dry or dispersed into the atmosphere through the stripping tower, in which direction will the chloride salts be blown?

A. In most cases I would expect it to be blown northward towards my site.

Q. What is the first improvement on LES' property as you move northward from the C.K. property?

A. To me it is Pond 1. That is our storm water detention pond.

Q. What is north of Pond 1?

A. The parking lot and then the security building, after that.

Q. What do chloride salts do when they come in contact with metal?

A. Well, they lead to corrosion.

Q. Can you give an example from everyday life?

A. Well, I don't know how relevant it is to you all because since I moved down to New Mexico I haven't really experienced this. But if you are familiar with driving up north and when they use

salt on the roads in the winter, mostly your cars get corroded up north. Also I was in the Navy for nine years, we had a pretty much more corrosive environment because of the chlorides from the ocean water, the spray from our ocean water so our cars corroded a heck of a lot more than they do out here.

Q. Well, to the extent that chloride salts from C.K. ponds were blown on the LES premises, what impact would you expect them to have?

A. For the corrosion I would expect to see, especially for our vehicles that stay in that parking lot, you know, and are used by the site, plus, just kind of the infrastructure that is down there, our light poles, our fencing and stuff, I would expect to see it corrode, have a lot higher rates of corrosion.

Q. Were you present for the witness testimony yesterday?

A. Yes, sir.

Q. Was there any witness testimony that would tend to corroborate that opinion of yours?

A. The gentleman who was here yesterday from Sundance said that his vehicles are, you know, corroding a lot more than -- I took it to mean from him that they were corroding a lot more than he was

expecting and he was planning on moving them away from his ponds to try to get them away from the chlorides.

Q. Did he testify that he attributed the corrosion to chlorides?

A. Yes, he did.

Q. And chloride salts cause corrosion of electronic components?

A. Yes, they can.

Q. If chloride salts from the C.K. ponds were blown towards the fans that are the inlets for the air conditioning in the LES plant, would you expect those chlorides to contribute to corrosion of LES electronic components?

A. I would expect that they would get into the electronic components and I would see some corrosion from the chlorides also.

Q. Has C.K. provided in its application any analysis of the amount of dispersion of chloride salts into the atmosphere from its evaporation ponds?

A. I did not find any.

Q. In the absence of that kind of analysis, can you rule out the potential for damage to LES' electronic components as a result of the chloride

salt dispersion?

A. No, I can't rule it out.

Q. Finally let's talk about your third opinion, and that has to do with the impact of chloride salts on LES' pond.

Would chloride salts get into LES' pond in the same manner that you have described for chlorides getting into the LES premises and causing corrosion of vehicles, for example.

A. That is what I would expect.

Q. Is LES subject to any government requirement about the amount or concentration of contaminants that can be in its pond?

A. Yes. I have requirements by NMED Water Quality Bureau, and in that requirement they list what the concentrations are and are not allowed to have in that pond.

Q. What is the concentration that you are allowed to have for chlorides?

A. That is where our permits says 250 milligrams per liter.

Q. In your opinion would the transport of chlorides from C.K.'s evaporation ponds, ponds that could have concentrations in the ten of thousands of milligram per liter, likely cause LES' storm water

detention ponds' chloride concentration to exceed that 250-milligram per liter limit?

A. I believe it would end up increasing until we potentially had an exceedance.

Q. I will ask you to turn to Exhibit Z, Z as in zebra, and that is in the black LES exhibit notebook. Can you identify this as a copy of the report that you prepared in connection with this matter?

A. Yes, this is. This is where I wrote down what I concluded.

MR. BOHNHOFF: I move the admission of Exhibit Z.

CHAIRMAN CATANACH: Any objection?

MR. WOODWARD: No objections.

CHAIRMAN CATANACH: Exhibit Z will be admitted.

(Exhibit Z admitted.)

MR. BOHNHOFF: I pass the witness.

CHAIRMAN CATANACH: Mr. Woodward?

CROSS-EXAMINATION

BY MR. WOODWARD:

Q. Good afternoon, Dr. McGovern.

A. Good afternoon, sir.

Q. First off let me thank you for your

service to our country.

A. Yes, sir.

Q. You're a lucky man living in Andrews, Texas. That is a great city.

A. I agree, sir.

Q. Referring to your Exhibit Opinion 1, is it Exhibit Z, your report, Opinion 1?

A. Yes.

Q. The first line of Opinion 1 you say, "High likelihood of adversely impacting U.S -- UUSA operations." Did you do any calculations about the amount of chlorides or the amount of H2S you expect on your property?

A. No, I did not.

Q. Did you do any transport calculations?

A. No transport. I did no calculations regarding this.

Q. So what is the basis of your opinion of high likelihood?

A. The basis of my opinion is that we have already seen some corrosion from sulphurous compounds and when reviewing the literature that I looked at for this type of corrosion in electronic components, they identified essentially a threshold of three parts per billion. And whenever I saw that

there was a five parts per billion at our plant, that told me that there is likely to be some corrosion. And that if these components fail, this has an impact, adverse impact on us our operations.

Q. You now live in the middle of the Permian Basin?

A. Yes, I do.

Q. What is the major economic driver of the Permian Basin?

A. We do oil, in the Permian Basin, sir.

Q. And these impacts and these failures that you experienced of the electronic components at URENCO, you are not blaming this on C.K. Disposal, are you?

A. No, sir. C.K. disposal is not processing anything south of us at the time.

Q. Where do you think the hydrogen sulfide was coming from that caused the problems at the URENCO facility?

A. I think there is probably hydrogen sulfide from different -- it's either hydrogen sulfide or sulphur dioxide. I think it is a sulphurous compound. I think it is probably coming from the background that is in the region as we speak. The events that we have had have been based on the

natural background in the area right now.

Q. It is kind of the nature of the beast. Do you think that there is potential that some of those sulphuric compounds will come from LES -- I mean from Sundance?

A. There is probably potential that some came from Sundance.

Q. There are some pretty big industrial-type facilities for processing oil and gas resources in the Permian Basin, are there not?

A. Yes.

Q. Don't you agree that they also have uninterruptible power supplies?

A. I think they have similar electronics to us.

Q. Don't you believe that they have learned to manage by putting their UPS systems in controlled environments to avoid the problems from the sulphur compounds?

A. Yes, I believe that that is their number one tactic is that they put them in filtered environments and a lot of filtration between the environment that they are in and the actual components.

Q. So URENCO operates a critical facility

that needs to make sure the power stays on. Has URENCO taken any steps to protect its critical electronic components from the sulphuric compounds?

A. That -- honestly that is something that I -- is an engineering question that, you know, I look at the operation of the chemistry sites and I've looked at the corrosion reports, but I didn't look at what their corrective actions for those were.

Q. So you don't know if any special provisions have been made to protect these components from the sulphur compounds?

A. I don't know what steps we have taken.

Q. Would you agree with me that there needs to be some step taken to protect these particular components?

A. I would say it is prudent operations to protect your components the best can you.

Q. Because the sulphuric compounds already exist?

A. There are already sulphuric compounds.

Q. And you have already experienced failures?

A. Correct.

Q. Going further down that same page where you speak about your opinion based on the following,

and in A you state that the application states the hydrogen sulfide organic compounds will be emitted from multiple sources. Can you tell me from where in the application it states that?

A. No, I think that was -- that would be my conclusion based on just reading where the processing, where the different things were going. So it is probably not correct to say that the application states that.

Q. Okay. So would you like to correct that?

A. Yes, I would correct that to say that my conclusion would be that the hydrogen sulfide and organic compounds will be emitted from multiple sources.

Q. You have not done an independent study on the likelihood or the sources of where hydrogen sulfide will come from the C.K. Disposal facility?

A. No, I have not done an independent study.

Q. Okay. Now in B you said that the C.K. facility operation will result in increased concentrations by over five parts per billion at the URENCO building. Did you understand when you read the model that that was a worst-case assumption and characterization for the amount of hydrogen sulfide that could be found at the URENCO building?

A. Yes, I did. I am used to whenever I am reading these models to the assumption that the worst case is assumed and whenever you are making responses to it you assume that the worst case is what is going to occur.

Q. Now you agree with me that out in the oil patch diesel trucks are a reality?

A. I agree. Diesel trucks are a way of life and especially in the Permian Basin.

Q. And when we read that Exxon is committing $5.6 billion to the Permian Basin, we can expect there is going to be an uptick in diesel trucks in the Permian Basin?

A. Yes, I agree there is going to be -- there is a lot of truck traffic in the Basin and I think there is going to be more whenever the oilfield picks back up.

MR. WOODWARD: Thank goodness.

Q (By Mr. Woodward) Let's move to Opinion Number 2, and you talk about air dispersion of emissions from evaporation ponds. And I take it from your testimony you're talking about the chlorides from the ponds?

A. Yes, sir.

Q. Did you make any calculation as to how far

the evaporation ponds are from the URENCO property?

A. No, I did not.

Q. Did you make any calculations or do any mass balance or fate and transport to calculate the likelihood of chlorides reaching the URENCO property?

A. I did no calculations.

Q. So you did not quantify it in any way?

A. No, I did not. I didn't find any information that I felt I could reliably model.

Q. So when you conclusively say "would result in increased corrosion," you really don't have any solid data to back that opinion up?

A. No. It is based on my experience.

Q. Just your experience of living in West Texas now and knowing that dust moves in the wind?

A. My experience of -- and my experience of living near the seashore where we had water, where we had salts sprayed all over our vehicles from the ocean, sitting in my office looking out our windows and seeing on a windy day the dust being blown.

MR. WOODWARD: Can I have one minute off the record? I misplaced something here.

May I approach the witness?

CHAIRMAN CATANACH: Yes.

Q (By Mr. Woodward) Dr. McGovern, do you recognize where this picture was taken?
A. Yes. This is a picture from our east gate, the front entrance to our plant.
Q. Does that look like a fair and accurate representation of the east gate?
A. That looks like the east gate to me.
Q. Do you see that mound that is kind of framed with the pillars of the gate?
A. Yes, I do.
Q. What is that?
A. That is a landfill. I believe it is a landfill mound where they have moved dirt over at Waste Control Specialists.
Q. Let's refer to Exhibit D, I think it is. Actually E in the URENCO exhibits.
MR. BOHNHOFF: Is this photograph being labeled?
MR. WOODWARD: It is not labeled.
Q (By Mr. Woodward) Do you recognize or can you identify what Exhibit E of the URENCO exhibits?
A. This looks to be an overhead shot and oblique angle from, say, the southeast above the Lea County landfill of our site.
Q. Do you see in the upper right-hand corner

a mound of material?

A. Yes, I do.

Q. Do you know what that mound of material is?

A. I do not. I do not know. I know that is a mound of dirt. I don't know who that dirt belongs to. I know that Sundance is north of our property and I know that Waste Control Specialists has property north of our property.

Q. Waste Control is more to the east of you, aren't they?

A. Well, my understanding is that Waste Control is to the east of us and they have some property to the north of us in New Mexico.

Q. So, looking at this Exhibit E, there is a line, a straight line that goes past where all those trailers and cars are from Highway 176 running up?

A. Right. That is our fence line.

Q. That is your fence line.

Does that fence line pretty much run north?

A. Yes, sir.

Q. And that is the fence line that separates the URENCO property from the WCS property?

A. On the east side of our property is my

understanding, yes.

Q. Doesn't that mound, it looks like it maybe is a little bit to the west of that line?

A. That mound appears to be to the west of that line.

Q. Would it be correct to say that that mound is on the Sundance property?

A. Again, sir, I don't know where the Sundance property ends and where the Waste Control property ends. I have been told that Waste Control owns property north of our site also, so I don't know whose -- whose mound of dirt that is. I will say that we refer to that as -- we always talk about that being the mountain from Close Encounters of the Third Kind. As we are riding in to work and when I am riding in to work with my environmental supervisor who worked previously at Waste Control Specialists, he told me that that was one of their excavation mounds, but I don't know whose mound of dirt that is, sir.

Q. Would it surprise you if I told you that is a mound of oil and gas waste at the LES facility?

A. At Sundance?

MR. BOHNHOFF: Objection, Mr. Catanach. Now we have counsel testifying.

Q. I meant the Sundance facility.
A. If it was Sundance's dirt then no, that would not surprise me.
Q. So you agree that that mound is west of that line there then?
A. It appears to me that that mound is west of that line.
Q. So then let's look back at Exhibit D, and can you identify Exhibit D?
A. It looks like an overhead shot of pretty much the whole area around where our plant is.
Q. And if we identified the east property line of URENCO and took that straight north, you would see that that would appear to be eastern boundary of Sundance?
A. It looks from that image that that is the east. It looks like it is the east property of Sundance and then north of that the east of Wallach.
Q. And then if you look over there to the northeast of URENCO just inside New Mexico there at the State line, can you see those two big mounds there?
A. Yes, sir.
Q. So those are -- would be the --
A. Those are the Waste Control mounds.

Q. Those are the Waste Control mounds, correct?
A. That -- I would assume they were, sir.
Q. So what now has been marked as Applicant's Exhibit BB, would you agree with me that that mound in this letter -- in this picture appears to be the Sundance mound?
MR. BOHNHOFF: Objection. It's been asked and answered.
CHAIRMAN CATANACH: Go ahead and answer.
A. I would say most likely from comparing all of these images, I would conclude that it was Sundance's.
Q (By Mr. Woodward) And that mound is clearly visible from Highway 176, isn't it?
A. Yes.
Q. And would you agree that mound is clearly visible from the URENCO facilities?
A. Yes, it is.
Q. And would there be a possibility of wind carrying particulate from that mound onto the URENCO property?
A. Yes.
MR. WOODWARD: I would move admission of Exhibit BB.

CHAIRMAN CATANACH: Any objection?
MR. BOHNHOFF: No objection.
CHAIRMAN CATANACH: Exhibit BB will be admitted.
(Exhibit BB admitted.)
Q. (By Mr. Woodward) Dr. McGovern, are you an engineer?
A. No, I am not.
Q. And so you will confirm for me, then, you have not modeled or preformed any calculations on movement of particulates in air?
A. I have not.
Q. Your opinion is based more on your common experience than your education?
A. That's correct, sir.
MR. WOODWARD: I would move to strike his testimony and this exhibit as not being proper foundation showing proper expertise for the opinions in which he's supporting.
CHAIRMAN CATANACH: Do you want to respond?
MR. BOHNHOFF: Yes. His testimony is based upon his experience, including his experience working on air emission monitoring while he has been at LES. In addition, I think the witness can

testify on the basis of experience as well as training in reaching his opinion, so I think the testimony should stand.

CHAIRMAN CATANACH: That would be my conclusion that we can note that there aren't any quantifiable things that we can actually look at in terms of that, but we can take it for what its worth.

MR. WOODWARD: Thank you.

Q. (By Mr. Woodward) Dr. McGovern, thank you for your service. Again, thank you for your testimony today.

MR. WOODWARD: I have no further questions?

CHAIRMAN CATANACH: Mr. Brooks, did you have any questions?

MR. BROOKS: No questions.

CHAIRMAN CATANACH: Just a couple.

EXAMINATION

BY CHAIRMAN CATANACH:

Q. Can you tell me how many failures of your electronic equipment you guys have experienced?

A. We have had multiple failures. I don't know the actual numbers that we have had.

Q. In what period of time?

A. We have had them since I believe we were starting in 2011 that we have had intermittent failures of these pieces of equipment.

Q. And when did you guys open?

A. The first cascades I believe came online, I believe it was 2010. I was not an employee of the site at that time. That is when I was working at Xcel.

Q. Are those failure always similar in nature?

A. The failures that we are referring to that we -- that -- these UPS failures are similar, have been similar in nature. We have had other electronics failures that, quite frankly, we haven't evaluated to see if they were the same failures as these ones, that I am aware of.

COMMISSIONER PADILLA: The ones you are aware of were -- sorry, Mr. Chairman -- were caused by either H2S or SO2.

THE WITNESS: Yes, sir. These power failures of the UPSs that the investigations came up and said were sulphurous compounds.

Q. (By Chairman Catanach) Have you had any failures, internal failures from chloride issues?

A. None of these were attributed to chloride

issues.

Q. Have you taken any measurements inside your plant on any of these materials, H2S, SO2 or chlorides?

A. I have not taken measurements of my plants. Those corrosion coupons, those were taken in the rooms that these components are in and that wasn't me.

Q. That report assumed that you might have concentrations of nine parts per billion?

A. I don't know how they came up with the number in the report, if it was based on actual air monitoring or if it was based on assumption.

Q. You said they haven't taken samples inside the plant?

A. I said I have not taken samples inside the plant. I am not aware of if the engineering firms or the other firms took samples inside the plant.

Q. Would you expect -- in a chloride evaporation pond, would you expect that chloride to travel a great distance?

A. I think it would depend on the wind strength and I also think it would depend on what you are doing to the pond, how you are agitating it. If your spray height was high enough and your mist

was fine enough, I would expect the wind where we are at to carry it a pretty good distance.

Q. Not being a chemist, as far as you know chloride corrosion, does that also have to be accompanied by humidity to enhance that process?

A. Yeah, you generally need to have a humid environment.

Q. So the chlorides, if they were dry chloride particles that were migrating to your facility, that by itself would not cause corrosion?

A. Correct.

Q. It would have to be some humidity.

A. I would say that whenever we reached our time of year where we actually start getting some humidity, they would start to become solubilized and there would be a high enough concentration that it would probably proceed pretty rapidly at that point.

Q. Humidity in Lea County, how typical is that?

A. Well, I actually can tell you about that, sir, because I run a chemistry laboratory where humidity is an important thing. A lot of the year the humidity is around 17 percent, however, there is a time in the year where the humidity goes up, you will see inside our building humidity is up to 60,

70 percent at times in our buildings. That is ideal for doing balance measurements in a chemistry laboratory, so we are very happy at that point.

Q. Within your facility do you have any type of filtration that you -- for the intake air inside the system?

A. I am not in our -- I don't run our air handlers and stuff. I don't know what they have on there as far as filtration.

CHAIRMAN CATANACH: Okay. That's all I have.

EXAMINATION

BY COMMISSIONER PADILLA:

Q. Just a couple, Dr. McGovern. Following up on what Chairman Catanach was just getting at there, and you may not know the answer. You have obviously got quite a bit of experience in nuclear powers. Is it an industry best practice to isolate some of this equipment?

A. What do you mean by isolate?

Q. As in protect it in some mechanical fashion from these kinds of gases and making it -- putting it in a sealed environment?

A. That would be an industry best practice. That would be pertaining to design-type stuff that I

am not familiar with that, sir.

Q. Okay.

COMMISSIONER PADILLA: I think I will leave it at that. Thank you.

EXAMINATION

BY COMMISSIONER BALCH:

Q. So apparently you have ambient H2S levels in between three and ten parts per billion?

A. That is what that report says, sir, I don't have measurements in my area.

Q. And did Purafil when they did these evaluations, did they give you a chart or a table that would tell you at what level things become worse faster or is there any correlation?

A. No. No, when Purafil did these measurements they didn't.

Q. You don't know if 20 parts per billion or 90 parts per billion makes a difference on how fast or if this would occur?

A. Just the general assumption that whenever you are doing electrochemistry and you're doing these corrosion-type things, the more concentrated you get, the faster the corrosion rate occurs.

Q. Anywhere the Permian Basin you could expect to see up to 100 parts per billion and that

should be your expected operating environment anywhere up to that level, I think, .1 ppm?

A. That is the administrative, you know, the NMAC limit. I don't know that that is actual in practice that you would see.

Q. I think I would be pretty happy if it was only five parts per billion where you are considering what is going on around you.

You monitor the water and the storm runoff system.

A. Yes, sir.

Q. I presume you established some baseline data at some point in the past?

A. There was -- initial sampling was done, you know, years before I got here.

Q. And you sample every time there is a storm event?

A. No. We sample -- we have a requirement to sample our basins on a semiannual basis with the NMAC -- or with the Water Quality Bureau.

Q. So sometime in that six months you find water and you go pull samples?

A. We pull samples.

Q. Do you see any variation over time in the chlorides?

A. For chlorides, no, we generally don't.
Q. Haven't seen it? So looking at this diagram, Exhibit AA, and if you look at it just from the magnitude of the wind, the stronger winds are going to come from the south but only about 35 percent of the time would the wind from -- from -- what would be in a direction from the proposed facility towards URENCO. The other -- about another 25 percent of the time it is going to be coming from Waste Control, the rest of the time it will either be coming from the north or from the west. Not necessarily as high a wind, but still the wind direction. 35 percent of the time north-ish. So any amount of material that gets into the air from C.K. you can expect to cut that by about a third because other times it would be going in a different direction than towards URENCO. If you do some fate and transport calculations at some point I would hope you would take that into account.
A. Yes, sir. I don't have the expertise to do those type of things so I would actually probably employ someone similar to the Haley & Aldrich people to do that. But I would expect to give them this wind rose data.
COMMISSIONER BALCH: Thank you. That's

all I have.

THE WITNESS: Yes, sir.

MR. BOHNHOFF: I do have some redirect.

CHAIRMAN CATANACH: Okay.

REDIRECT EXAMINATION

BY MR. BOHNHOFF:

Q. Dr. McGovern, if you have already experienced corrosion to be attributable to hydrogen sulfide, would you expect the operation of the C.K. plant to exacerbate, increase the level of corrosion that you could expect in the future?

A. Well, yes, I would assume that that five parts per billion that we are talking about is on top of any levels that we have. And as you just said, if it is an increase concentration, I would expect to see the corrosion rates to increase.

Q. And similarly there was an observation made there is already diesel truck traffic for the oil and gas activity that is in place in and around Eunice today. If you -- if there was an increase in diesel truck presence directly south of LES, would you expect any corrosion attributable to sulphur dioxide to be exacerbated by the presence of additional multiple trucks at C.K.?

A. If there was an additional, you know,

large number of vehicles, then I would expect there to be a higher concentration of SO2 and I would expect the same thing.

Q. You were asked about quantifying corrosion that could be attributable to chlorides. If -- if C.K. had done an analysis of the potential environmental impact of its operation and provided that data, would you have been able to assess it?

A. That -- that is when I would have -- might have -- well, I probably would have done some calculations and done some literature search to find out what kind of corrosion rates I would expect from those levels if I had had them provided.

Q. Down in Southeast New Mexico can the wind blow dust half a mile or even more?

A. In my experience, yes.

MR. WOODWARD: Objection. This witness has no expertise in meteorological conditions or how far dust can blow. He is asking for a lay opinion here.

MR. BOHNHOFF: And, respectfully, the amount of distance that the wind can blow dust in Southeast New Mexico is a subject that is well within the --

MR. WOODWARD: How is that within the

educational and professional experience of a chemist?

MR. BOHNHOFF: Mr. Catanach, this witness can testify at the same time as an expert and as a lay witness who lives in that area.

CHAIRMAN CATANACH: I don't know if he can assess how much -- how far wind -- how far dust can go. He can testify as to wind speeds and maybe frequency of winds, but I don't see how he can quantify how far dust can travel.

Q. (By Mr. Bohnhoff) What basis did you have, Dr. McGovern, for making that statement just now in answering my question?

A. So, sorry for answering it before. When I am sitting up in my office or I am looking out my window and it is a day where we are seeing a lot of dust storms going by, you will watch a large cloud of dust traveling whichever way it is going and you can catch it traveling for miles along -- along on the road. And just -- now I don't know if in there stuff has dropped out and new stuff is picked up or anything like that, but I do see a continuous large cloud of dust that will blow along.

CHAIRMAN CATANACH: Well, we can take that as his opinion. That would be okay.

Q. (By Mr. Bohnhoff) Dr. McGovern, is there -- there was some suggestion about measures that could be taken within the LES plant to protect against chloride corrosion. Would there be any way to protect against chloride corrosion of cars in the LES parking lot?

A. I have not seen any, you know, practical things in any of the places I have been.

Q. In addition to rain that does fall in Lea County during the course of the year, do you have dew -- periods of time when dew will collect in the early morning?

A. Yes, we do.

Q. Lastly that exhibit that Mr. Woodward showed to you, Exhibit BB, the photograph of that mound, just so we are clear, do you know whether that mound belongs to WCS or belongs to Sundance?

A. As I have said, I do not know. We went through the exercise with Mr. Woodward, but I do not know who that belongs to.

MR. BOHNHOFF: That is all I have. Thank you.

CHAIRMAN CATANACH: This witness may be excused.

(A recess was taken.)

CHAIRMAN CATANACH: Okay. I call the hearing back to order at this time and turn it back over to Mr. Bohnhoff.

MR. BOHNHOFF: Mr. Chairman, LES calls its last witness, Nadia Glucksberg.

THE WITNESS: My name is Nadia Glucksberg, N-A-D-I-A, G-L-U-C-K-S-B-E-R-G.

(Whereupon, the witness was previously sworn.)

NADIA GLUCKSBERG,

after having been first duly sworn under oath, was questioned and testified as follows:

DIRECT EXAMINATION

BY MR. BOHNHOFF:

Q. Ms. Glucksberg, how old are you?

A. I am 49.

Q. Where do you live?

A. I live in Hollis Center, Maine.

Q. What part of Maine is that?

A. It is just outside of Portland.

Q. How are you employed?

A. I am employed by Haley & Aldrich, Incorporated.

Q. What position do you hold with Haley & Aldrich?

A. I am a Senior Associate. I am a lead hydrogeologist and a program manager.

Q. And I will ask you to first summarize your formal education since high school.

A. I graduated with a Bachelor's in geological sciences from Cornell University in 1989.

I have a Master's in environmental science engineering from the Oregon Graduate Institute, which I received in 1992.

Q. I assume the Oregon Graduate Institute is in the State of Oregon?

A. Portland, Oregon, the other Portland.

Q. I am not familiar with that school. Can you describe it?

A. It is actually -- currently it's been renamed the Oregon Health & Sciences University. It is a small -- smaller sort of think tank school of graduate studies that focuses on the environment and environmental matters of just hydrogeology, weather, health issues.

Q. In your -- I'm sorry, you may have covered this and if so, I blanked out. Did you have any area of concentration in your graduate studies?

A. Contaminant transport.

Q. Since -- and when did you get your

Master's?

A. That was in 1992.

Q. Since 1992 would you please summarize your employment.

A. Actually I started working for a company, E.C. Jordan Company that over the years until I left 21 years later, like Jay, had several different names, ended up as MACTEC.

I started out with them. They actually gave me a leave of absence and funded my graduate school with the condition that I come back and work for them. I came back and I started off, as most geologists do, doing sampling and doing fieldwork and understanding how samples are collected. Then over my career progressed up through running programs to being a program manager for two types of products in general, right now. The past 15 years, I have been responsible for supporting the power industry as far as Environmental Impact Statements underneath the National Environmental Policy Act that deals with siting and -- at least on in the environmental side. The other portion of work that I do deals with investigation and cleanup of contaminated sites.

Q. As part of your environmental impact and

evaluation work do you look at the impact on animals?

A. I do. I look at not only the impact on animals and how it can be concentrated up the food chain, but it starts with what is in the soils or what can be released to soils, groundwater, surface water or sediments.

Q. Are you familiar with the term ecological receptors?

A. Those are -- those are commonly called the bugs and bunnies, but you want to -- like Jay deals with human health, there is a lot of time surface water, sediments, surface soils are evaluated on how they could be -- how they impact or harm any of the animals starting with the lower, you know, the worms, caterpillars, how they can -- as they go up the food chain, concentrated impacts some of the higher animals such as predatory animals or birds.

Q. So that was going to be my next question. In connection with this environmental impact work, do you investigate environmental impacts to birds from time to time?

A. The Migratory Bird Treaty Act requires you to protect against -- well, you have got to protect against all the animals that live in the area

including, you know, and understand if there are any threatened or endangered species. But in addition to the site, the local animals you have got to protect for the -- per the Migratory Bird Act.

Q. On how many occasions have you investigated ecological impacts on birds in connection with your environmental impact projects?

A. I have worked on nine projects.

Q. What is aeolian transport?

A. That is what Dr. McGovern was talking about, the windblown transport of particles. That's the geological term.

Q. As an environmental engineer have you studied aeolian transport of contaminants from one location to another?

A. We have. It is in sort of two ways we look at that. I work on several sites where we have ponds that dry out and we have got to make sure that the material stays where it does not leave the property boundary, stays where it is, and we tend to either vegetate those ponds or keep them covered or keep them wet. Another place where we deal with windblown transport is when we are remediating contaminated sites. It's basic dust suppression. Dig things up you don't want -- you don't want

contaminated soils blowing in the air and getting offsite or getting where people or animals can have access to them.

Q. Have you previously performed work for LES?

A. I have.

Q. In particular have you performed work on LES' storm water retention pond on the south side of their property?

A. I have.

Q. From where on the facility does that pond collect runoff?

A. That pond collects runoff from the entire developed portion of the property with the exception of the UBC pad that was spoken to yesterday, I think, in testimony where there is a small -- those two small basins that drain from the UBC pad, everywhere else buildings, paved areas, the rest of the facility all surface -- all storm water runs to the storm water pond.

Q. How often is water in that pond?

A. It is tied to rain events, but it's been designed for the hundred-year flood and there is -- unlike -- there is no delta that -- it basically is designed to contain all storm water without any

runoff.

Q. And are there animals that are present in the pond when there is water there?

A. When there is water there, there is geese and other birds there. I don't know what the species are, but from the folks that work there and from hearing them, there is reports that every time there is water available the birds will land.

Q. Do you hold any professional licenses or certifications?

A. I do. I am a certified geologist in Maine, a professional geologist in Georgia, Illinois and Wisconsin and a licensed environmental professional in Connecticut.

Q. Are you a member of any professional organizations?

A. I am a member of the Environmental Professionals of Connecticut. I am also a member of the American Nuclear Society, Decommissioning Environmental Services -- Decommissioning and Environmental Sciences Division.

Q. Turn, if you would, to Exhibit U in the black notebook. It is LES' Exhibit notebook.

Can you identify that as a copy of your resume?

A. Yes, it is.
Q. Is it current?
A. Yes, it is.
Q. Does that accurately reflect your professional background and work experience?
A. Yes, it does.
Q. Were you, too, engaged by LES to provide expert opinion testimony in connection with this proceeding?
A. Yes.
Q. What was your assignment?
A. My assignment was to review the permit application with respect to impacts to the environment, like ecological receptors, as well as any potential impacts environmentally to LES' storm water pond.
Q. I would like you to summarize the opinions that you have formed and then -- I want you to state the opinions, then we will go through them one at a time to talk about the bases.
A. Well, there are two main opinions that I came out of that review. One is that what is being proposed for migratory bird protection is not adequate and could put migratory birds at risk, and the other one is based on my understanding from the

application on the management of the ponds, that there is potential for the drying beds to use wind transport and could impact LES' storm water pond and -- which they have to sample per NMED.

Q. So let's talk about migratory birds first. As you understand the process -- well, let me ask you this -- well, I will rephrase that.

As you understand the process that C.K. has described in its application, what will be in its evaporation pond water?

A. I believe there will be the salts, some metals and petroleum products, including semi-volatile organics.

Q. What does C.K. propose in its application to do to protect birds?

A. They state that they have -- that they are going to abide by a migratory bird protection plan, but there is not one in the application. And later they also state they expect they are going request an exemption for having to have an action plan.

Q. Well, what do the OCD's regulations require regarding the protection of birds?

A. They require that their plan must be in place or -- with netting or covering to prevent birds to come into harm or to have an exception or

some plan in place that is protective.

Q. What does the Migratory Bird Act provide?

A. The Migratory Bird Act requires that you can -- there can be no take of migratory birds. And take includes to harass, harm, pursue, hunt, shoot, wound, kill, trap, catch or collect. So you basically can't do any damage to birds either that would cause the mortality or shorten their life or impact any reproduction.

Q. What would you expect to happen to migratory birds if C.K. builds and begins operating its facility as proposed, including disposing of produced water into the ponds and then, two, inspecting the ponds daily as they state for the presence of birds?

A. I think they talk about removing most of the oils so they don't expect to have an oil sheen on those ponds, but still even if you remove 99 percent of the oil, you're still leaving 10,000 parts per million of material in this dissolved phase. The birds will likely land on the pond like they do across the road. If they ingest any of that, we don't know the numbers, but if you look the Ambient Water Quality standards and look at typical surface water quality standards, they're in the

parts per billion to maybe a couple hundred parts per million range. If you look at 1 percent of what is going to remain in the water per the testimony, that is in the 10,000 range. So there is a good chance they will ingest the metals and some of the petroleum products, which could impact them adversely.

Q. In what way would it impact them adversely?

A. You know, I don't know the biology that would go on inside the bird, but metals tend to have a much lower criteria because they tend to be more sensitive to that. So do petroleum hydrocarbons also have regulatory standards that are protective and spaced. I would not expect it to be a mortality, but it could impact them as far as longevity or reproduction. It would depend on the species and how long they were there and that is something we have not evaluated.

Q. Let's talk about LES' storm water detention pond. What constituents of the water from C.K.'s facility have you focused on?

A. I focused on mostly the inorganics or the metals that would be present in that water.

Q. We heard the testimony of Dr. McGovern

about his expectation of fluoride transport from the evaporation pond. To seek -- from the C.K. evaporation pond to the LES pond, do you have the same expectation regarding transport of metals?

A. I do. It is the same -- it is the same as when he was discussing the dry salt being transported. The metals that would be remaining in place after the ponds dried or on the edge of the pond could be transported as a sand particle would across the way to the north and be deposited in the basin, in the storm water basin.

Q. What about semi-volatile organic compounds?

A. We are also required, or LES is required to sample for a total petroleum hydrocarbons, so the semi-volatiles that make up those hydrocarbons would be transported into the storm water pond.

Q. With windblown transport of semi-volatile organic compounds as well as metals from the C.K. evaporation pond to the LES storm water detention pond, what impact, if any, would you expect on LES's to comply with the requirements of its discharge permit?

A. LES is required to sample semi-annually for total petroleum hydrocarbons, inorganics and

metals as well as some salts. And over time I would expect that to cause some exceedances. They are held to the drinking water standards. Even though it is a discharge pond for storm water, NMED is requiring them to hold all water that enters that basin to drinking water standards with the exception of a handful of compounds that they have provided alternative criteria for during background conditions.

Q. Turn, if you would, to Exhibit V as in Victor, 1. Can you identify V1?

A. This is a report I wrote on the storm water issues.

Q. And then look at Exhibit V2 behind it. What is that?

A. That is a report on migratory bird protection that I wrote.

MR. BOHNHOFF: I move the admission of Exhibits V1 and V2?

CHAIRMAN CATANACH: Any objection?

MR. WOODWARD: No objection.

CHAIRMAN CATANACH: Exhibits V1 and V2 will be admitted.

(Exhibits V1 and V2 admitted.)

MR. BOHNHOFF: I pass the witness.

MR. WOODWARD: Sorry if I mispronounce your name.

CROSS-EXAMINATION

BY MR. WOODWARD:

Q. Good afternoon, Ms. Glucksberg. It occurred to me that you are the first female to testify in this hearing.

A. Okay.

Q. Is this typical in the environmental fields or --

A. It is not atypical, but I work with both genders.

Q. Ms. Glucksberg, are you a biologist?

A. No, I am not.

Q. You are a hydrogeologist?

A. Yes.

Q. Are you a toxicologist?

A. No.

Q. So you're basing your opinion on the impacts on the migratory birds based upon your work experience?

A. I am basing it on evaluating sites and collecting -- evaluating data against criteria that are protective for ecological receptors. I have not done the ecological risk assessments, but the first

step is to collect samples and if they see -- trigger those standards usually there is -- those standards are in place to protect the species.

Q. You are not basing it upon any expertise as a biologist?

A. No.

Q. You have not done any studies regarding the types of birds to normally be expected in Southeastern New Mexico?

A. No. But part of the requirement of getting a migratory bird plan is to have an evaluation of what birds would be there and species and types and duration, and that would be expected as part of the migratory bird plan.

Q. But you have not done that analysis?

A. No.

Q. Okay. Did you look at the C.K. Disposal application about their inspection and maintenance program for their ponds?

A. I did. And they said that they would be inspected daily and if there was a bird in the pond, I'm assuming that had died, they would be retrieved.

Q. Didn't they also say they would be looking to see if there was any oil in the pond?

A. Yes.

Q. And that would be removed also?
A. Yes.
Q. On a daily basis?
A. Yes.
Q. And in truth, only treated water will be allowed to go to the pond?
A. Well, the treated water is to take out some of the oil.
Q. May I ask, would you answer my question, please?
A. I apologize. Yes.
Q. It is true only treated water is designed to go to the pond?
A. Yes.
Q. Are you familiar with the Sundance facility to the north of the URENCO site?
A. I am not.
Q. Would you look at the -- in the black binder that you have in front of you there, at the Aerial Photo D?
A. D, Delta?
Q. Delta.
If you look in that map just north of the URENCO site and you see what is labeled as Sundance-Parabo?

A. Uh-huh.
Q. Were you here yesterday to hear the testimony of Mr. Carrillo?
A. I was.
Q. Did you hear the description of what goes into those ponds?
A. Yes.
Q. It didn't sound pretty, did it?
A. No.
Q. Would you anticipate that those will be a far bigger threat to migratory water foul than treated wastewater in the ponds at C.K. Disposal?
A. You know, I don't know. I wouldn't say -- I don't think I could say one is a bigger threat than the other.
Q. Because you lack the expertise to do so?
A. Because untreated water may have oils in it and may impact the birds, but ingesting metals may have other -- other implications and I don't feel I can testify to that.
Q. But if you have got untreated oilfield waste going into ponds and I don't believe there is nets over them. I think we can look and see, those are pretty large ponds. But if a bird was to land in those ponds, wouldn't there be a far greater

chance of damage to that individual bird than in a pond that has had over 99 percent of the oil removed?

A. I don't feel I can answer that.

Q. Okay. With respect to the aeolian transport for the windblown transport of particles, if the ponds are full and the sediments are wet, there is a very low likelihood that particles are going to blow from the pond. Is that correct?

A. That is correct.

Q. Did you do any fate and transport calculations regarding the sediments from the C.K. Disposal facility to the LES facility?

A. I did not.

Q. So I think you -- in your report, V1, in your first opinion you said there is a potential for aeolian transport, so that means you believe there is a possibility?

A. It is a likely possibility. It is likely -- the report says this, I should correct that, with the amount -- if there is dried sediment that has solids or metals or petroleum products in them and the wind is blowing, they will be transported.

Q. So that is a lot of assumptions. If there

is wet ponds there is very low likely that any sediments will be transported?

A. Yes.

Q. So for a likely potential to occur we have to agree that those assumptions that you just listed occur?

A. Agreed. However, I also -- as ponds dry, and they are evaporating ponds, so the goal is for them to dry, the edges could also have -- this is the cross buildup on the outside of the precipitants coming out as it evaporates, it rests there, that is also subject to being blown.

Q. But you haven't calculated what volume or what likelihood there is for those salts to get on the edges?

A. No.

Q. And you also don't know what the maintenance of these ponds will entail, whether they are going to leave salt dry, standing dry, in these ponds?

A. I do not.

Q. So if they intend to maintain the ponds and engage a proper housekeeping and if they are dry and they get them cleaned out and transported to the proper disposal, then there is no likelihood of

discharge, correct?

A. The likelihood is when they are dry.

Q. Okay. So, in that first opinion and in the last -- based on the following you said would likely impact the URENCO-USA property. But, again, you didn't do any analysis to support, any actual calculations to support that opinion, did you?

A. No.

Q. Are you involved in any environmental monitoring at the URENCO site?

A. Not currently. I was involved from 2010 to I think 2014. We were collecting the samples and doing the evaluation reports for the discharge permit.

Q. Does that include groundwater monitoring at the site?

A. Yes.

Q. Why would there be uranium in the shallow groundwater beneath the LES site?

A. Uranium is naturally occurring element and we did loo at that. It is part of background concentrations and it matches the concentrations that we set during the baseline from preconstruction days.

MR. WOODWARD: I have no further

questions.

COMMISSIONER BALCH: I just have one.

EXAMINATION

BY COMMISSIONER BALCH:

Q. Do you baseline studies on the storm water runoff at the pond --

A. Uh-huh.

Q. -- and metals, VOCs or organics and then you have done periodic monitoring for some years since then?

A. Initially when we set up for the licensing for URENCO, part of it was the NMED discharge permit, which is a permit -- it is a discharge permit to groundwater or to protect groundwater, so we are required quarterly sampling for several years. I don't have -- I know it is at least four years but I don't know how many years and then now it is semiannually.

Q. Any changes to the baseline data in that time?

A. No.

COMMISSIONER BALCH: Thank you.

EXAMINATION

BY COMMISSIONER PADILLA:

Q. I just have one follow-up actually and I

will be Dr. Balch for a minute and say I'm curious. That 250 milligrams per liter threshold is maintainable even with flow coming from that entire developed property including, say, the parking lot and other structures with, you know, vehicles and --

A. All I can tell you is maybe we -- there has been several naturally occurring compounds that we did have alternate criteria set with NMED that are still protective. I am just checking, chloride is one of them, fluoride. So we do -- for some of the salts, we do have a higher threshold that is allowed.

During our background evaluation before construction, before we were online, with the data you sort of set what the background non-impacted conditions are both with groundwater and we hold the storm water to groundwater conditions. And through that, NMED approved a site specific criteria.

Q. So is the background for chlorides higher prior to -- well --

A. In groundwater it is a little bit higher, so we -- they link the surface water, storm water concentration, allowable concentration to the groundwater concentration. So I don't -- the table I have -- they don't differentiate where the sample

came from, they compare the two together. So for that we do have alternative criteria from NMED for that. So I would say that it is probably high at -- some of the groundwater there has some higher levels.

Q. There have never be any exceedances?

A. Of the new criteria, they have not been -- I have not seen the data for the past two years, though, so I can't speak to that.

Q. Just during the time that you were there?

A. It is very consistent.

COMMISSIONER PADILLA: Thank you.

EXAMINATION

BY CHAIRMAN CATANACH:

Q. Ms. Glucksberg, what are the options for protecting migratory birds in a facility like C.K. is proposing?

A. Usually a migratory bird plan first has to set the baseline of what birds they would expect, what frequency and sort of doing an evaluation or assessment of the area. There is netting, there is ways to keep them off. I think just -- and there are ways to evaluate it, but I think just even the first steps weren't done nor is there a plan in place that is provided. They speak to a migratory

bird plan and then there's a sentence saying we are going to ask for an exemption or survey it daily.

Q. Have you had any experiences with these ponds, these type of ponds being netted where the birds actually get tangled in a net?

A. I don't.

CHAIRMAN CATANACH: That's all I have.

COMMISSIONER PADILLA: Just one quick followup.

FURTHER EXAMINATION

BY COMMISSIONER PADILLA:

Q. What is the migratory bird plan at URENCO's facility with the ponds?

A. There is an exception -- there is an exemption. We do not have netting but we also have documented data from the storm water pond that the concentrations in the water are protective. We haven't exceeded any values. We don't have high metals, we don't have high salts, so therefore there is no risk for any ingestion and there is no release or possible release for oil to get in there either.

Q. Was that exemption granted from the get-go or was that something that you had to provide data for over time to receive?

A. I don't know the sequence. I know in the

environmental report, though, there was an exemption, so I don't know the exact sequence of that.

COMMISSIONER PADILLA: Okay.

MR. BOHNHOFF: Brief redirect if the Commissioners are finished.

REDIRECT EXAMINATION

BY MR. BOHNHOFF:

Q. Ms. Glucksberg, would you -- there was some discussion with Mr. Woodward about whether you had done any sort of quantification of the impact. Would you be better able to assess the extent of impact of aeolian transport of semi-volatile organic compounds and metals if C.K. had done these transport studies that Mr. Woodward had referred to?

A. Yes.

Q. In the absence of such a study can C.K. demonstrate the absence of any adverse impact to LES' pond?

A. I believe they could model it. It is not a complex model, but it has not be done.

MR. BOHNHOFF: That's all I have.

CHAIRMAN CATANACH: This witness may be excused.

MR. BOHNHOFF: LES rests. Thank you.

CHAIRMAN CATANACH: Mr. Woodward, what is your intention now?

MR. WOODWARD: I do have a rebuttal witness. I would like to call. I call Holly Holder.

THE WITNESS: Robert Holly Holder. R-O-B-E-R-T, H-O-L-L-Y. H-O-L-D-E-R.

(Whereupon, the witness was previously sworn.)

ROBERT HOLLY HOLDER,

after having been first duly sworn under oath, was questioned and testified as follows:

REBUTTAL DIRECT EXAMINATION

BY MR. WOODWARD:

Q. Mr. Holder, is the C.K. Disposal site located in any floodplain?

A. We actually sent a request to the Lea County floodplain manager for that determination and their floodplain administrator ruled that it was in what they classified Zone D, which is not to be covered under any special flood insurance program. So, no, it is not in a floodplain.

Q. Were you here to hear the testimony of Mr. Bohannan yesterday?

A. Yes, I was.

Q. What storm event did Mr. Bohannan insist should be used to evaluated drainage from the C.K. Disposal site?
A. He said 100-year storm.
Q. And did you hear him refer to FEMA to support that assertion?
A. Yes, he did. And looking at his experience, he does a lot of land development projects, a lot of -- probably near a lot of streams, where that is more critical when you have houses. So that is really not applicable in this case.
Q. Does FEMA provide any oversight to the proposed C.K. Disposal facility?
A. No.
Q. What storm event did PSC utilize in the design of the C.K. Disposal site?
A. Well, in part -- with the Rule 36, we use the 25-year storm event.
Q. So that is the peak storm event required by the rules of the OCD?
A. Yes.
Q. What does the Rule actually require?
A. Well, it just says to prevent runoff and run-on from flowing onto the active portion of the

landfill.

Q. Do the OCD regs require a pre and post-development analysis of potential storm water impacts on downstream properties?

A. No, they don't. But that is just good engineering practice, and that is what we actually did on this project.

Q. Is that typical of what you do when you are working for permitting a landfill site?

A. It is typical and it is required. And ever since I have been involved in landfills going back to 1989, when Subtitle D came out, they set the threshold to be the 25-year, 24-hour storm event and landfills in New Mexico all follow that Rule.

Q. Now, there was an assertion that there was a calculation error in the drainage calculations. Do you remember that testimony?

A. Yes, I do.

Q. Was there actually a calculation error?

A. No. And in listening to the testimony from Mr. Bohannan yesterday, he said that he disagreed with our rainfall number that we used and he used one from Hobbs which was 5.6 inches. Well, Hobbs is 20 miles away and good storm drainage engineering practice is you go to your spot where

you are going to design that facility and using the same isopluvial maps that he referenced, you get a number for that facility. And as it will happen, the actual site at Eunice is about seven-tenths of an inch rainfall less. He was at 5.6, we were right around 4.9.

Q. So that would explain the difference in the result of his calculation and PSC's calculation?

A. Yes. In fact, two of our engineers back at the office got on it last night and ran it and they confirmed his numbers. So that is not really what a storm drainage engineer does. Like I said, you go back to the point where you are designing that facility and you go to those same maps and you use the rainfall numbers off of there, be it the high/low, or the point number, it is both the same.

Q. Did you also hear the testimony about the size of the wiers that are proposed for the detention ponds?

A. Yes, I did.

Q. Sounded like there was some kind of concentration of the flow and creating a channel discharge on the downstream property. What is the actual size of these wiers?

A. Well, yeah. That is what it sounded like

and I don't know if -- if the wiers were explained well enough, but what they are, they are cobblestones nominally three to four inches in diameter placed in a very strong wire basket and they are wired together. And in this case, the southwest pond the wier is 200 feet long. The one in the southeast corner is 350 feet long. Well, that is goalpost to goalpost basically on a football field. That is how long those wier structures are. And as the wiers work, they are slightly permeable, so as the water rises in those basins the water will flow out through those wiers and so there is no concentrated flow. It is an evenly distributed sheet flow.

Q. And does the C.K. Disposal operation plan call for maintenance of the ponds and the wiers?

A. Yes, it does.

Q. What is to take place?

A. Well, they will have to clean sediment out from time to time, things that wash in. It is a matter -- I mean, Southeast New Mexico we do have blowing dust. Dust will get in those channels, that will have to be cleaned out from time to time as will any material that runs into the channels from the roads.

Q. If we get a real gully washer and there potentially is some kind of damage to these wiers, is there any requirement to repair them?

A. Yeah. They will be required to go in and replace that.

Q. As soon as practically possible, isn't it?

A. As soon as practically possible. You know, part of that, too, is going to be governed by their storm water permit that they are going to have to get through EPA Region 6, which Mr. Bohannan mentioned yesterday. That is a fact. That will have to actually have a couple of permits. One will be a permit to operate the facility, the other will have to be obtained by their construction contractor. Before he is even able to turn a blade of dirt he has to get his notice of intent filed with the EPA. He has to have storm water controls constructed during construction. And likewise a lot of those controls will remain during the life of the landfill to prevent erosion. You know, this facility is -- you know, this is a higher level of a facility than what has been constructed before and so it will be maintained at a higher level.

Q. That would include maintenance of roads?

A. Yes.

Q. So really the only storm water that goes to these ponds, would you describe the character of it?

A. Explain. It is wet.

Q. Will there be -- will this -- will any storm water going to these ponds come in contact with waste materials?

A. No. The waste materials, they have to set up a way to keep rainfall that falls on the waste area. Until it has an intermediate cover it cannot run off of that facility. It has to be maintained and controlled in that facility.

Q. And, likewise, there is going to be a requirement to monitor those roads and ensure there are no waste materials on the roads washing off into these ponds?

A. That is correct.

Q. Did you hear the testimony of Dr. Richardson yesterday?

A. Yes, sir.

Q. And there was some discussion about the lack of detail in the design drawings for the liquids processing area?

A. That is correct.

Q. What is included in the drawings that are

included in the application?

A. Well, there is a schematic layout.

MR. BOHNHOFF: Mr. Catanach, this is rebuttal and now we are -- we seem to be hearing the testimony of one C.K. witness to rebut the testimony of another C.K. witness on their case-in-chief. I don't think that is proper rebuttal.

MR. WOODWARD: There was a lot of hay made about the report of Dr. Richardson regarding the design and the -- of the liquid processing area and I would like to provide a little more detail for the OCC to understand the level of design that is in this application and why it is the way it is.

CHAIRMAN CATANACH: Okay. I think we will allow it.

A. Okay. There is a schematic layout that shows the flow diagram of how the material will flow through the system. Also included in there is a list of all the tanks, and we call out the tank sizes. And basically it is there so anyone that wants to look and see what is being proposed for the liquids handling it is here. It is already here present. So the only thing we would do later on is -- is an engineered set of plans before this goes into construction to define to the contractor what

he has got to build, what he has got to purchase. And that is an engineering item that comes in before you go to construction. But as far as permitting goes, we have identified everything that is going to be constructed. And that is just like we do with the landfill. These landfills drawings are issued for review, and we don't let a contractor go to construction with those. They actually have to have engineered drawings that really nail down everything so when he starts moving dirt he is doing it in the right spot. The controls are here, okay, but it is better for him to have an engineered set of plans that is much bigger scale, much larger details, but it all goes back to the information contained in this permit.

Q (By Mr. Woodward) When in the process are those engineering -- detailed engineering drawings prepared?

A. After he gets all the permits in place and they are -- they have received -- I think they have to get a building permit from Lea County and then they could go forward.

Q. So is the level of detail that is included in the C.K. Disposal application for the liquids processing area consistent with other permit

applications you have worked on?

A. Yes, they are.

Q. Is the level of detail of the drawings for the liquid processing area in the C.K. Disposal application consistent with other Part 36 applications that the OCD have approved?

A. My understanding, yes.

MR. WOODWARD: No further questions.

MR. BOHNHOFF: I have some cross.

CROSS-EXAMINATION

BY MR. BOHNHOFF:

Q. Mr. Holder, I understood you to testify when you took the witness stand as part of C.K.'s case-in-chief that you were the principal in charge?

A. Yes, sir.

Q. And Mr. Ybarra was actually the lead engineer for the project?

A. Yes.

Q. Mr. Ybarra designed the drainage, storm water drainage arrangements?

A. Yes.

Q. And it was Mr. Ybarra who on your case, C.K.'s case-in-chief, at least, described that storm water drainage plan for the OCC?

A. Yes.

Q. Yet he is not giving the rebuttal testimony about the storm water drainage plan, you are?

A. I am familiar with it. I was involved in the discussions. I know how the project works. I've done drainage designs for many years.

Q. You fully expect C.K. to get property insurance for this project?

A. Property insurance?

Q. Property insurance for its land and improvements, casualty insurance?

A. Yeah. I mean, that is kind of outside of my realm, sir. I don't really know what is required by an owner facility, much like I don't know what any of my municipality clients have in ways of insurance.

Q. You were asked about what would happen with sediments that accumulate into the storm water drainage plan and I believe you have testified that you expect that there -- that the sediments will be cleaned out from time to time?

A. Yes.

Q. You would agree that C.K.'s application doesn't contain any discussion or description of a sediment cleanout plan, correct?

A. Correct.
Q. And C.K. hasn't yet provided a, I think it is a SWPP, Storm Water Protection Plan?
A. Yes. And that would go in what Mr. Bohannan mentioned about the NOI, that before the facility can operate they will have to apply for that plan and that is where a lot of those details get ironed out.
Q. You haven't included a SWPP in the application, right?
A. No.
Q. And there is no discussion in the application, at least to date, about road maintenance, is there?
A. I would have to go back and read it. May I say one thing on the SWPP? We do provide erosion control plans for all of our construction projects, so the contractor when he bids that knows what is expected of him and that also is -- would be required in the storm water plan that the EPA will grant.
Q. That is not in the application so far?
A. No. That comes in later.
Q. Now, you had some conversations with Dr. Richardson, right?

A. Yes.
Q. And he is the one who told you he thought the relatively brief narrative in the application about the water processing arrangements was not adequate?
A. Yes.
Q. And what you told him was that you didn't think that you had to provide that additional detail and specification he was looking for until some later point in time?
A. Well, yes. What I told him is what we've got in the plans and we never had a subsequent conversation on that. And I made it clear that what we were providing him was the schematics and the layout and the call-outs and the tank sizes, but not the actual hard engineering calculations, that that would come prior to construction.
MR. BOHNHOFF: That's all I have. Thank you.
MR. BROOKS: I just want to ask this witness a question.

CROSS-EXAMINATION

BY MR. BROOKS:
Q. Because you have testified that the storm water is not going to come in contact with the

waste, you were talking about the waste in the landfill?

A. Right, correct.

Q. What protections are incorporated -- I read the OCD rules and I read some other things on this, but I read a lot of stuff very fast, and I don't remember. What protections are incorporated into your plans to prevent storm water from commingling with the water in the liquids processing ponds?

A. I think the way that the processing part was laid out it is a little higher up and so water is not going to flow that direction, it sheds away from those areas.

Q. And what protections do you have to prevent the water, in event of a storm, the water in the liquids processing facility, the water overtops the berms, what protections do you have to prevent that from flowing off into the storm water --

A. In the liquids processing facility, sir?

Q. Yes.

A. My understanding, I heard Mr. Ybarra talk yesterday about the amount of free board they have got in those ponds.

Q. There is a free board requirement that we

have.

A. I can't remember. It was a couple of feet or more.

Q. I remember one of my colleagues one time said when I was making coffee, I said, well, I don't want to spill this cup so I am leaving myself some free board. He said you must have been working on the Pit Rule.

MR. BROOKS: Thank you.

CHAIRMAN CATANACH: Commissioners?

COMMISSIONER PADILLA: I don't have any questions.

CHAIRMAN CATANACH: This witness may be excused. Mr. Woodward, anything further?

MR. WOODWARD: No, sir. No further witnesses.

CHAIRMAN CATANACH: Would counsel like to do closing statements or would you like to give written closing statements?

MR. WOODWARD: Ready to give closing statements today, if you would like to hear them.

MR. BOHNHOFF: No, I prefer written closing statements, written final argument and also submit proposed findings and conclusions. With a matter of this magnitude that goes over the course

of three days, we certainly need to be submitting proposed findings and conclusions, and I think we should be submitting final argument as well.

CHAIRMAN CATANACH: I think that is a good idea.

MR. BROOKS: We would like to do a written closing statement, too, because I would need to brief this jurisdictional issue and I haven't done my homework on it.

COMMISSIONER BALCH: We are going to deliberate at a later date, so written statements will be better than given an oral statement right now.

MR. WOODWARD: We are ready too move at the pleasure of the OCC, however you would like it presented it.

CHAIRMAN CATANACH: I think we will require written closing statements and --

COMMISSIONER BALCH: Findings and conclusions.

CHAIRMAN CATANACH: -- findings and conclusions.

MR. BOHNHOFF: Mr. Catanach, would it make sense to time the written submissions to be coordinated with the point in time when you have

your final deliberations?

CHAIRMAN CATANACH: We would certainly like those prior to the deliberation date. I do not know when the deliberation dated is.

COMMISSIONER BALCH: We are proposing the 27th to deliberate, 17 days. Seventeen days, is that enough time?

MR. WOODWARD: How far in advance would you like your written closings before the deliberations?

COMMISSIONER BALCH: A few days is fine with me.

CHAIRMAN CATANACH: Yeah, sometime during the week of the 20th, maybe the 21st through the 22nd. Give us a couple of days to review that.

MR. BOHNHOFF: I think the 22nd would work better since I believe the 20th is Presidents Day.

MR. BROOKS: The 22nd is not very good for me because I have a meeting of the horizontal well road task force on the 21st, and I would rather have a couple of days after that before having to submit a brief.

MR. WOODWARD: Would the 23rd be far enough in advance?

CHAIRMAN CATANACH: The 23rd would give us

a couple of days.

I can't guarantee we will have this done on the 27th either. We have a hearing on the 28th that is supposed to go two days. What I am saying is if we don't finish deliberations on the 27th we would have to bump that up to a later time.

That will be the plan. Let's have everything turned in by the 23rd, February 23rd. We will deliberate on the afternoon of the 27th. I am not guaranteeing that we will finish that day, but we can certainly try.

So 10:00 on the 27th.

BOARD ATTORNEY: Mr. Brooks will be able to explain this better than I can, but in your closing arguments brief the issue of whether the Commission has the jurisdiction for traffic safety.

MR. BROOKS: Yes. I am certainly going brief that issue. I don't know whether I will find anything, but I hope I will. I haven't found anything on it yet.

CHAIRMAN CATANACH: Okay. Anything else?

MR. WOODWARD: Not from the Applicant.

MR. BOHNHOFF: No, sir.

CHAIRMAN CATANACH: Thank you, gentleman. It's been a experience.

(A recess was taken.)

CHAIRMAN CATANACH: So there is one more item on the agenda for today's hearing. On February 8 -- this is a status report by representatives of the Division and Geolex, Inc., on events concerning acid gas inspection well replacements at Targa Midstreams Monument Gas Processing Facility, Lea County, New Mexico. This was proposed to be an information presentation only. I have discussed this with Mr. Filgets (phonetic), who was going to participate in that -- in that presentation. They have agreed to continue that presentation until the April 4, 2017 Commission hearing, so we will do so at that time. We will hear presentation at that time.

So, the next meeting, again, is on February 28, 2017. That is the next Commission meeting. And that being said, this Commission hearing is adjourned.

(Proceedings concluded at 3:36 p.m.)

I certify that the foregoing is a correct transcript from the record of proceedings in the above-entitled matter. I further certify that the transcript fees and format comply with those prescribed by the Court and the Judicial Conference of the United States.

Date: February 10, 2017

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PAUL BACA, RPR, CCR
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