ISSUES CONFERENCE VOLUME 18

In the Matter of the Applications of

CROSSROADS VENTURES, LLC

for the Belleayre Project at Catskill Park for permits to construct and operate pursuant to the Environmental Conservation Law

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Margaretville Fire House
Margaretville, New York
August 26, 2004

B E F O R E:

HON. RICHARD WISSLER,
Administrative Law Judge

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LONG MEMO DATED 8/25/04
WITH ATTACHMENT -
DRAWING PH-4 DATED
8/24/04

	UNLIMITED V. CITY OF NEW YORK	
18	"SHANDAKEN TUNNEL SPDES PERMIT - CITY OF NEW YORK DEP"	4655

(AUGUST 26, 2004)

(9:35 A.M.)

P R O C E E D I N G S

MS. BAKNER: We'll mark these.

(JUNE 10, 2004 LETTER TO SUSAN AMRON AT NYC DEP FROM JOHN DUNN, P.C., NYS DOH RECEIVED AND MARKED AS APPLICANT'S EXHIBIT NO. 149, THIS DATE.)

(USEPA CONSTRUCTION FACT SHEET, PART II, FEDERAL REGISTER NOTICE, WEDNESDAY SEPTEMBER 9, 1992 RECEIVED AND MARKED AS APPLICANT'S EXHIBIT NO. 150, THIS DATE.)

(NYS DEC SPDES GENERAL PERMIT, PERMIT NO. GP-93-06 (8/1/93 - 8/1/98) RECEIVED AND MARKED AS APPLICANT'S EXHIBIT NO. 151, THIS DATE.)

(RESUME OF GUY A. APICELLA RECEIVED AND MARKED AS APPLICANT'S EXHIBIT NO. 152, THIS DATE.)

(RESUME OF STEVEN G. BILHEIMER RECEIVED AND MARKED AS APPLICANT'S EXHIBIT NO. 153, THIS DATE.)

(RESUME OF SCOTT A. LOWE RECEIVED AND MARKED AS APPLICANT'S EXHIBIT NO. 154, THIS DATE.)

(RESUME OF THOMAS B. VANDERBEEK RECEIVED AND MARKED AS APPLICANT'S EXHIBIT NO. 155, THIS DATE.)

("THE SOURCE LOADING & MANAGEMENT MODEL (SLAMM), PITT & VOORHEES 2000" [EXCERPTS] RECEIVED AND MARKED AS APPLICANT'S EXHIBIT NO. 156, THIS DATE.)

("TOTAL PHOSPHORUS LOADING CALCULATIONS AND COMPARISONS," LA GROUP, AUGUST 24, 2004 RECEIVED AND MARKED AS APPLICANT'S EXHIBIT NO. 157, THIS DATE.)

(MEMO "BIG INDIAN ACCESS ROAD CONSTRUCTION PHASING" CHIESLUK TO LONG MEMO DATED 8/25/04 WITH ATTACHMENT - DRAWING PH-4 DATED 8/24/04 RECEIVED AND MARKED AS APPLICANT'S EXHIBIT NO. 158, THIS DATE.)

(SHEET FLOW ANALYSIS, LA GROUP DATED 8/25/04, PREPARED BY LA GROUP RECEIVED AND MARKED AS APPLICANT'S EXHIBIT NO. 159, THIS DATE.)

(ADDENDUM TO THE STORMWATER MANAGEMENT REPORT - BELLEAYRE RESORT AT THE

CATSKILL PARK, ATTACHMENTS ARE DRAWINGS SD-5, SD-6, SD-7, SG-1, SG-6, SG-7, SG-8, SG-9, SG-10, SG-5 RECEIVED AND MARKED AS APPLICANT'S

EXHIBIT NO. 160, THIS DATE.)

("BELLEAYRE RESORT WATERSHED MODEL" BY LAWLER, MATUSKY & SKELLY ENGINEERS, LLP DATED 8/25/04 RECEIVED AND MARKED AS APPLICANT'S EXHIBIT NO. 161, THIS DATE.)

MS. MELTZER: We'll mark this.

("CALCULATION OF EXPORT COEFFICIENTS FOR TRIBUTARIES ON BELLEAYRE MOUNTAIN" RECEIVED AND MARKED AS CITY EXHIBIT NO. 30, THIS DATE.)

ALJ WISSLER: If I could have the appearances for the record.

MR. RUZOW: Dan Ruzow, Terresa Bakner for the Applicant.

MR. ALTIERI: Vincent Altieri for DEC.

MS. MELTZER: Hilary Meltzer.

MR. YOUNG: Kevin Young for the Watershed Communities.

MR. GOLDSTEIN: Eric Goldstein for the CPC.

ALJ WISSLER: Ms. Meltzer, I think you're first up here.

MS. MELTZER: As we discussed at the end of the presentations on stormwater at the end of June, the DEP based on its actual monitoring of stormwater runoff from the Belleayre Mountain site -- had reached a different conclusion as to the pre-development export of pollutants from the site than what the Applicant had indicated both in the DEIS and in Applicant's Exhibit 47, which was prepared in response to the City's stormwater presentations in this Issues Conference.

Charles Olson has developed an analysis and the report is City Exhibit 30, which I believe has now been marked. Charlie is going to talk about how he developed the pre-development export coefficient for phosphorous and total suspended solids, and also talk about how his results differ from the Applicant's results in the DEIS and in their Exhibit 47, and talk a little about the implications.

MR. CUTIETTA-OLSON: Thank you. Just again to review DEP's monitoring program, we have been monitoring five tributaries on Belleayre Mountain. This program began in

August of 2000. Data logging, which allowed us to quantify discharge at these tributaries while the data logging equipment was installed in April and May and September of 2001, except for the site Belle2, which is a difficult to access site, so that has not been automated, and storm event sampling to look at impacts of storm events specifically began in November of '01, but didn't include total phosphorous until the year 2002.

When I was here in June, I presented documentation regarding total phosphorous concentrations. Today I'm going to talk about export coefficient, which is a bit more complicated to describe.

The export coefficient is concentration times discharge, so it's actually a load, a load of particular pollutant of concern. And typically, it's expressed as a per-unit area per-unit time, so it allows you to standardize assessments over watershed areas specifically for the purpose of controlling pollution.

For example, when you do TMDLs, you develop export coefficients for particular land uses, and then you have a large watershed area with several different types of land uses and you can then extrapolate that coefficient to areas that you haven't monitored. So it allows you to derive a value that you are then going to apply to areas where you have no data. It allows you to model basically.

ALJ WISSLER: Similar areas, though; right?

MR. CUTIETTA-OLSON: Similar areas. In this particular case, we're talking about totally forested watersheds, so the land use is relatively homogenous. Export coefficients for modeling purposes are often taken from the literature, but the literature does not contain a lot of information or much information at all on export coefficients in the Catskill region in particular, and that's one of the reasons that we have a monitoring program that's looking specifically at the stormwater BMP retrofits, because although there's a national stormwater database on the effectiveness of stormwater control measures, there's no data on the effectiveness of these measures specific to the Catskills region, and we're trying to actually get that data.

One of DEP's motivations for starting this program was because there really isn't much data on small, single land-use catchments in this region. To develop the export coefficients from the data we have been gathering, I had a choice of using only two years, 2002 and 2003.

2003 was a very wet year, and since the export coefficient is a load, it's a function of the concentration and the flow. I didn't want to use a year that had very high flows because that would present a sort of high bias to the final result. You want to use something that is more representative of average long-term conditions. In the DEIS, the precipitation year that the Applicant used was 1993, which they established as an average precipitation year.

2002 compares closer to that. The precipitation quantity that I ended up working with -- I'm working with the same period now that was used in the WinSLAMM model which was March to November -- so it's not a full 12-month year, it doesn't include the ice-on period.

The precipitation quantity that I was working with from the Arkville rain data at that time was 38 inches for that March/November period. The Applicant in the original WinSLAMM model submitted in the DEIS used 32 inches. So I felt that that wasn't too far off, and I believe the 2003 year was something like 48 inches. It was very, very high. So I felt that was not representative.

At the Arkville gauge in 1993, the precipitation was 31 inches, which is much closer to what the Applicant used of 32 inches.

ALJ WISSLER: Charlie, what are you reading from?

MR. CUTIETTA-OLSON: Page 4 of City Exhibit 30, top paragraph is a review of the -- an explanation of how I selected the year and a comparison of precipitation values.

The point being that the precipitation volume that I'm working with that was recorded at the Arkville station was 38 inches, which is higher but not a lot higher than what the Applicant originally used. So the result is that I should have somewhat higher loads because now I've got more water, but I felt it was not so much higher as to make the final assessment unreasonable.

For this submission, 30, and previously, we looked at total phosphorous obviously because of the TMDLs and DEP's concerns with nutrient control. We also added total suspended solids, which is another analyte that we have been monitoring, and since Esopus Creek is actually a 303(d) listed water for suspended sediments, we felt that it was worthwhile to look at that, at the pre-development export off the site for TSS also, so that analysis had been included in this submission and had not been included in previous submissions that we had in June.

So now we have the sites automated. I have a stage discharge rating curve which allows us, knowing the height of water in the stream, which we record at 15-minute intervals every day with the automated monitoring equipment, we can relate that to discharge because we periodically go out and quantify discharge and then compare that to the depth of water.

Now, for those times that we don't actually go out there and physically measure discharge, we interpolate discharge based on how deep the water is. In our data set, we have a discharge value for every day in the March to November period of 2002, but I only have sampling data for certain days twice a month and then later on only once a month.

So I wanted to take advantage of the fact that I actually have a discharge value for every day, and to replace, develop a concentration value that I'm now going to replace into those dates that I don't have a sample, an actual sample. One of the ways to do this is just to take an average of all your data and stick that into dates that you don't have sample data for.

After speaking with the modeling group, and after doing some statistical analysis of the data that I had, I determined that it was more representative to actually develop separate concentrations for storm samples and for baseflow samples because the concentrations were statistically different.

So I developed those average concentrations. How I did that is also described in this submission. I can get into that if you want.

Then I went back to the Arkville rain data, and for dates where I had more than half an inch of rain falling over a 48-hour period, I marked those dates as storm dates, and the storm flow concentration was substituted into those dates where I had no concentration data. If I had any sample data, I used the actual sample data, but if I didn't, I substituted in the storm data. For those dates that were not storm flows, if I had no sample data, I substituted in a baseflow concentration.

And the concentrations that I substituted in for each of the sites are listed on pages 6 and 7 as Tables 5 and 6. In the second column, you'll see, the constituent, B is the baseflow default, and S is the stormflow, sort of default. Again, these were only substituted if I had no data for that date.

In those tables, Tables 5 and 6, the last column is what I finally calculated the export coefficient to be as an area-weighted average for the whole area. In other words, I have an export coefficient for each of the sites, then in column 4, the basin export coefficient, there are two sites that are on the Pepacton side and two sites that are on the Ashokan side, and I calculated an area-weighted average. And there are those two coefficients.

If you average area weight, all the sample points together, you come up with that number that's in the final column, which I consider to be generally representative of forested catchments in the Catskills.

I just wanted to note that in the TP export coefficient of .046 is actually very close to the coefficient of .05 kilograms per hectare per year that was used in the TMDL analysis. So my value, which is derived pretty much from data, agrees with a value for forested catchments that was used in the TMDL models. Then the export coefficient of 7.64, we have not actually used that in any -- for example TMDL analysis in DEP but -- yeah, we haven't done TMDLs for TSS yet.

So if you look at the concentrations

in this Table 6 for TSS, the default concentrations range from .026 milligrams per liter to 32.87 milligrams per liter, which is that high storm flow mean concentration, it's an average concentration.

I would like to point out that in Appendix 10A of the DEIS, the Applicant used a pre-development TSS concentration at Big Indian of 836.9 milligrams per liter. I did not go back and convert their results to an actual export coefficient, but with that concentration difference, there's going to be a substantial -- if they had used the actual data, there would be a substantial difference in what they're predicting as the pre-development load.

As we spoke of in June, the total phosphorous concentrations that I'm using were also significantly different from what the Applicant had proposed originally prior to the June '03 submission.

MS. MELTZER: That is Applicant's 47. You're looking first at the DEIS?

MR. CUTIETTA-OLSON: Right, I was referring to the DEIS before. Applicant's

Exhibit 47 uses -- refers to DEP's Giggle
Hollow data, our 1991 data, and comes up with
a load in kilograms per year that if you then

divide out by the area, comes down to an export coefficient of. 0927 kilograms per hectare per year, which is about twice what I calculated here as an average.

One of the reasons for that, if you look at these data, it turns out that Giggle Hollow has the highest concentration of any of the sites that we're monitoring. It also has among the highest flows, so it's going to have the highest load. In my opinion, again, it has also the larger watershed, but when you area weight the averages of all the sites, you're getting a clearer picture of what is going on overall on the mountain.

The other reason that there's a substantial difference is that the Applicant in the June '04 submission used a precipitation value of 50 inches, which was different from 32 inches that was originally used in the DEIS, and different from the 38 inches that I used. And I think they were using an annual precipitation value rather than trying to portion out that March to November portion of that annual value.

But again, if you add more water to

the system, because flow is a part of the load, you increase the load. So the 50 inches, added to the fact that Giggle Hollow has the highest export already, is the reason why that -- the coefficient they presented in June is still twice of what I'm calculating is the average coefficient off that mountain overall.

TSS has not been recalculated, but I do expect that it would show, if it was recalculated, using data that we developed, there would be substantial differences in the results of the assessment.

MS. MELTZER: If the Applicant were to reevaluate?

MR. CUTIETTA-OLSON: If the Applicant were to reevaluate TSS using the data that we have.

And the final point I want to make is again, we're not saying that this particular development is going to result in phosphorous loads that will cause a eutrophication problem or total suspended solid loads that will result in excessive turbidity at aqueduct intakes, but the purpose of an environmental assessment is to look at the incremental difference between a pre- and a post-condition.

If the preexisting condition, preexisting load or export is high relative to the increment, it doesn't look like there's a substantial environmental cost relative to the benefit of a given project; but if the preexisting load is very small, that same incremental difference between pre- and post-conditions could become -- could appear more significant.

So it's very critical that we use this time to accurately characterize what the preexisting condition is to assess what the environmental cost of the project will be relative to the benefit.

MS. MELTZER: Charlie, could you speak for a moment to what we found overall coming off this site, what the data showed coming off this site, both in terms of proportion of rainfall that ultimately was runoff and in terms of pollutant concentrations?

MR. CUTIETTA-OLSON: The concentrations of phosphorous and total suspended solids are very, very low. I didn't get the exact numbers, but I believe they're going to be near what would be considered irreducible concentrations for the purposes of stormwater management. In other words, you could not get them any lower than they are currently.

What we found with the -- looking at discharge in the stream versus the amount of precipitation we're recording at our rain gauges at the site is that during storms, very substantial proportions of the water are infiltrating, and that most of the water in these watersheds is coming out of the system as baseflow, which is logical in a forested watershed, but is not what happens in developed areas with stormwater controls where there is not as much infiltration.

Again, we would have to -- I didn't get into exactly comparing what we measured RV values, it's a coefficient -- what we did was we actually took the total volume of rain that fell within the watershed of one of our -- above one of our sampling points and the volume of discharge that we measured at that sampling point. And you divided the discharge by total volume of rain, and you get some number less than 1, because not all the rain that falls on the site actually runs off the site. Some of it evaporates, some of it goes up to the plants.

ALJ WISSLER: How did you determine the amount of rain?

MR. CUTIETTA-OLSON: We have rain gauges at the sites, tipping bucket rain gauges. During storms, that coefficient -- the coefficients that we looked at -- were often far less than 1 percent of the volume that fell on the watershed actually ran off the watershed during that storm. And the vast bulk of water that's coming off these watersheds, if you look at it on a per-year basis, March to November, the precip. that we measured versus the discharge that we measured coming out of the stream, the vast bulk of that water that is coming out as baseflow in those streams -- which is actually one of the protectors of water quality. It's that baseflow that's colder, that's cleaner because it's filtered now through the ground, and it's part of that process that helps to protect overall water quality and habitat.

ALJ WISSLER: You used the rain gauge at Arkville. Tell me how that was used in your analysis here and where is the data that you referred to.

MR. CUTIETTA-OLSON: The Arkville data, it's a NOAA station, it's a National Oceanic and Atmospheric Administration station. So I was able to get the precipitation record from one -- from the head of hydrology group at DEP, Jim Mayfield, was able to provide me with that record. And it simplified my analysis as opposed to looking at each -- the rain gauge at each individual site.

To be perfectly honest, Dave VanValkenburg, who is a scientist, who is actually the field person who conducts this work, was on vacation at the time that I was doing this analysis, and I couldn't get him to get all the rain data for each of the individual sites and do the analysis for me that would allow me to do it in a more site-specific way. But Arkville is not so distant from the mountain, and I felt for the purpose of this analysis, it was reasonable.

ALJ WISSLER: Is Arkville the closest NOAA station?

MR. CUTIETTA-OLSON: I think so. There is another one. I think there might be one at Big Indian, but I don't know if that's NOAA or participating volunteer. It is one of the closer stations. When I talked to Jim Mayfield, he seemed to feel that that would be fair.

ALJ WISSLER: That's daily precipitation data collected at that site?

MR. CUTIETTA-OLSON: Yes.

ALJ WISSLER: Charlie, you indicated that from that data, you avoided dates where you had a half inch of precipitation?

MR. CUTIETTA-OLSON: When that gauge showed half an inch of precipitation falling within a 48-hour period, I marked those dates as storm dates so that if I did not have any concentration data, I substituted in the storm concentration that I developed, and I go into -- in the submission, I describe how I developed those concentrations.

If I had a sample on that date, I used the data that I had. For those dates where it was not raining, which is most dates in the record, and one of the data appendices actually has the precipitation, the stream flow records, and it indicates which dates I used storm concentrations for.

ALJ WISSLER: That's appended to --

MR. CUTIETTA-OLSON: Appendix A is the discharge data for each site.

ALJ WISSLER: Explain those to me.

MR. CUTIETTA-OLSON: The data appendices?

ALJ WISSLER: Yes, take a look at the first one for Belle5.

MR. CUTIETTA-OLSON: Data Appendix A, discharge data for Belle5 is daily discharge, this is a mean value taken as a simple arithmetic mean of 15-minute interval measurements. You'll note there's a column that says "flow code," and there are S's there.

ALJ WISSLER: So the discharge in cubic feet per second would be a reading taken every 15 minutes through the 24-hour period?

MR. CUTIETTA-OLSON: An average of all those readings taken every 15 minutes.

ALJ WISSLER: So 24 hour times 4 divided by whatever that is?

MR. CUTIETTA-OLSON: Right. Average of 96. 96 readings.

ALJ WISSLER: Let me ask you this: If we look at 3/26/2002, and then we go to 3/27, we see a jump. Is that an indication of a precipitation event?

MR. CUTIETTA-OLSON: Yeah, because now it's raining, but the rain has stopped at the end of 3/27, but you can see the discharge is still high because now --

ALJ WISSLER: The effects of the rain?

MR. CUTIETTA-OLSON: But it's not overland flow, it's not storm flow anymore in the stream, it's increased baseflow.

In other words, when you have storm flow, there's an assumption that there's this overland flow component. That's what's carrying pollutants directly into the stream.

When the water comes in as baseflow through the groundwater, that's just water coming up through the bed sediments, and it's not typically -- it's certainly not carrying suspended pollutants like total suspended solids. It could be carried dissolved pollutants, like nitrate or ammonia; but for example, total phosphorous, a substantial amount of total phosphorous is particulate associated.

So, you know, there might be dissolved phosphorous in that baseflow, but there's not going to be much particulate phosphorous coming from that baseflow, unless it's somehow in the stream and getting re-suspended.

But in any case, yes, you see the flows jump.

ALJ WISSLER: The longer it takes them to get back to whatever that 28 or some value in that area?

MR. CUTIETTA-OLSON: You can see, it starts to get back down now around April 11th, '02. It's coming back down to what it was at 3/25.

ALJ WISSLER: The number of days it

takes it to come back down to whatever that lowest level is is a function of how much precipitation was experienced?

MR. CUTIETTA-OLSON: Yes. It's a function of a number of things. It's a function of the storage in the aquifer above the sampling point in that stream because it's the aquifer in the mountain that's contributing to that baseflow. So when it rains, that aquifer is recharging, it's storing water.

And in the case of the stream, it's a shallow aquifer, it's not the deep aquifers that, for example, Pine Hill is tapping for its water supply. It's a shallower aquifer that's contributing to that stream.

Actually, what happens, you can imagine, like a sponge -- if you have a sponge, you have it wet and you were holding it vertically and it's starting to run out, it doesn't just run out all at once, the water coming off that sponge starts at some larger amount and then gets smaller before it stops running out. It's like the head pressure actually is going down too at the same time.

That's one of the functions of the decreasing volume.

But in Giggle Hollow, there's always

some water. So there's always some amount of aquifer available there.

ALJ WISSLER: Tell me what the flow code S means.

MR. CUTIETTA-OLSON: That means that during those dates, it was raining. So if I didn't have any data for those dates, then the concentration that I substituted into that date is the storm flow concentration data which is in Tables 5 and 6, which is a higher concentration.

And this now allows me to treat storm events as contributors of pollutants, because you're now getting overland flow and there is an assumption -- and it was borne out to some extent by the data -- that storm flow concentrations of phosphorous were higher than baseflow concentrations of phosphorous.

In my professional opinion, they were not a lot higher, but as I said, after speaking with the modelers, they convinced me that I should find a way to treat those two different things differently to provide a more accurate picture of what the actual pollutant loads were.

So by coming up with a separate storm flow concentration, which is higher, I'm now taking into account the increased pollutant loads that occur during storms.

ALJ WISSLER: Ms. Meltzer, maybe it's available on the web, the NOAA data for that Arkville site; do we have that?

MS. MELTZER: I believe it is, but I'll provide either the website or I can provide the data itself.

MR. CUTIETTA-OLSON: I could certainly get it for you.

ALJ WISSLER: If you have -- for whatever years you have.

MR. CUTIETTA-OLSON: So you want me to provide you with the NOAA gauge data?

ALJ WISSLER: From Arkville, yes.

What years did you say you had?

MR. CUTIETTA-OLSON: The gauge data, they had '93. I would have to look at my notes to actually find out how long it went. I looked at specifically '02 and '03 to compare them to determine which would be a more representative year for the purpose of developing this coefficient.

In other words, you want some year -- if you're going to develop something like this, that you want to use to extrapolate to areas where you don't have any data and you're going to use it for long-term planning processes, you want something that reflects a longer term average. I'm not looking for a worse case here. I'm not looking for the best case here. I'm trying to come up with the closest I can the middle ground.

MS. MELTZER: So if we had had data from a 10-year period, we might have --

MR. CUTIETTA-OLSON: I might have picked a different year.

MS. MELTZER: You might have picked a different year or picked the range of years, but given you had one normal year and one very wet year, it made more sense to use the normal year?

MR. CUTIETTA-OLSON: Yes, which is still a little higher than the long-term average, but I didn't feel it was so much higher that it invalidated the results.

ALJ WISSLER: Okay. If you have it for the last five years, that would be great.

MS. MELTZER: We have nothing further.

MS. BAKNER: We don't really have any comments about what we just saw from Charlie, so I think we'll just reserve on that and comment later if that's okay with your Honor.

ALJ WISSLER: That's fine.

MS. BAKNER: We appreciate having the information. I have one question. I just have a question for Hilary. I notice that Charlie has said several times that he spoke with the modelers. Are you planning on providing -- and I also notice he focused on just the summer months which is what one would use in a WinSLAMM model. Are you proposing to or have you run those numbers in the WinSLAMM model?

MS. MELTZER: No.

MS. BAKNER: I was just curious.

We can go ahead with Dave Carr if that's okay with your Honor.

ALJ WISSLER: That's fine. If we have completed this area, I'll take responses.

MR. ALTIERI: We don't have any
responses. We'll reserve.

MR. GOLDSTEIN: No responses.

MR. RUZOW: Part of our presentation today deals with a parallel path.

MS. BAKNER: Right, we will return to the phosphorous issue, but it's not directly related to what Charlie presented. It's presenting some more model information, as well as some more calculations that Mr. Long did, but if it's all right with you, we would like to go through the HydroCAD stuff first, your Honor.

You asked me to go through the exhibits. The first exhibit is Applicant's Exhibit 149, which is a June 10th, 2004 letter to Susan Amron at DEP from John Dunn at --

MR. YOUNG: Can I interrupt you for one second, Terresa.

Can I ask one question of Charlie or Hilary?

MS. BAKNER: Sure.

MR. YOUNG: You talked about -- when you were comparing pre-development versus post-development and you expressed that it was important to use an average; not the worst, not the best, but what was realistic over time. Is that the same standard you used when you calculate post-development coefficients; that you're not looking for the worst or the best, but you're looking for the same average so you can compare apples to apples?

MS. MELTZER: I think it depends on for what purpose you're looking at the post-development information. For purposes of designing a stormwater pollution prevention plan, you need to be looking at the high end of the potential pollutant loading because that's what you need to mitigate. For purposes of evaluating the overall impact -- if you're looking at long-term average pollutant loadings from the site, I think you look to the average, but I don't think there's a single answer to that question.

MR. YOUNG: I'm looking at the increment, I guess.

MS. MELTZER: For what purposes? The purpose of designing a plan?

MR. YOUNG: Any purpose. In other words, if you're looking at an increment, whether it's an increment during a storm event or an increment during a normal day. I take it what you want to know is what the pre-development levels were during a storm event, and compare that with a post-development level during a storm event.

So this coefficient is useful in looking only at the increment over a long-term basis, but it's not necessarily useful in looking at the increment in any type of short-term storm basis?

MS. MELTZER: Again, I'm not sure what purpose you're talking about. I don't want to speak for Joe and Charlie, and I'll let them address this, but we haven't looked at what a post-development export coefficient for phosphorous or suspended solids would be.

You guys can speak to whether you would view literature values is appropriate for looking at post-development pollutant loadings from turf or from impervious surfaces or from other post-development areas. This isn't something obviously we calculate based on data because we don't have the data.

Would you look to literature values

for those export coefficients?

MR. CUTIETTA-OLSON: You wouldn't have a choice. You would have to look at export coefficients. We don't have post-development export data for things like golf courses or small subdivisions in the Catskills. We've never done it before.

MS. MELTZER: I'm not sure if that answers your question, but that's what would be comparable for post-development conditions would be literature values, because we don't have real data, but where there is real data -- we're saying we have a preference for using it.

MR. YOUNG: My question is: Charlie started his presentation by saying the key here is to look at -- Charlie indicated that the City is not taking the position that this particular project is a significant source of phosphorous such that it would cause eutrophication of the reservoir, it's not a significant source of TSS that's going to cause a major turbidity problem, but that it was --

MS. MELTZER: I'm not sure he said

that.

MR. YOUNG: But the focus was looking at what the background level of turbidity was and the background level of phosphorous.

And I guess -- so my question is: When you were talking about what the increment is, were you talking about the increment over a long-term because that's the average, average typical year mass loading of TSS and phosphorus?

MR. CUTIETTA-OLSON: Specifically for my analysis, the average condition that I'm looking at has to do with the amount of precipitation because that is one of the factors that drives the load.

In the DEIS, they looked at 32 inches of precipitation as representative of the long-term average, and they used that same value of precipitation for their pre-analysis and their post-analysis, and that is the way I would expect it would be done.

MR. YOUNG: Thanks.

MS. BAKNER: The first one is Exhibit 149, it's a June 10th, 2004 letter to Susan Amron at New York City DEP from John

Dunn of the New York State Department of Health.

The next exhibit is Exhibit 150, which

is an excerpt of the US EPA Construction Fact Sheet, Part 2, Federal Register Notice, Wednesday, September 9th, 1992.

The next exhibit, 151, is the DEC General SPEDES Permit for construction discharges, GP-93-06; and it was from August 1st, '93 through August 1st, 1998.

152 is a resume of Guy A. Apicella.

153 is a resume of Steven G. Bilheimer.

154 is a resume of Scott A. Lowe.

155 is a resume of Thomas B. Vanderbeek.

156 are excerpts from the Source Loading and Management Model prepared by Pitt, Dr. Pitt and Mr. Voorhees, and it's dated 2000. These are excerpts. These were the ones that your Honor requested when we went through that analysis.

Exhibit 157 are revised Total Phosphorous Loading Calculations and Comparisons, prepared by the LA Group dated

August 24th, 2004, which will be the topic of testimony by Mr. Long.

Exhibit 158 is the Big Indian Access

Road Construction Phasing Plan. It's a plan drawing, PH-4, dated August 24th, 2004, and described in a memo from Mr. Long to Mr. Ciesluk dated August 25th, 2004. Either Mr. Long, Mr. Carr or Mr. Franke will present that.

Exhibit 159 is a Sheet Flow Analysis, which is a sensitivity analysis prepared by the LA Group dated August 25th, 2004. That will be presented by Mr. Carr.

Exhibit 160 is an addendum to the Stormwater Management Report, and a list of plans. There's SD-5, SD-6, SD-7, SG-1, SG-6, SG-7, SG-8, SG-9, SG-10 and SG-5. They've all been -- they all have revised dates on them. That will be presented by Mr. Carr, and that addresses the concerns raised regarding the Big Indian stormwater operation phase overland discharges.

Exhibit 161 is the Belleayre Resort Watershed Model performed by Lawler, Matusky & Skelly, the HSPF model, and it's dated August

25th, 2004, and Dr. Lowe is here to present that.

Dave, if you want to take it away.

MR. CARR: As Terresa mentioned, first I'm going to focus on Exhibit 159, which is a sheet flow analysis that we compiled.

From our last get-together here at the Issues Conference when we were talking about stormwater, Mr. Damrath spoke of not introducing sheet flow into the HydroCAD model, that it would artificially raise the peaks and cause the ponds to be undersized.

Later in the proceedings, Mr. Ferracane also mentioned the concern of the lack of sheet flow, yet he stated that if it was looked at consistently between the pre-development and the post-development condition, that it's probably okay.

So I felt it was warranted to go back and pull a sub-watershed out of one of the models and introduce sheet flow to show exactly what it would do, and that's what this Exhibit 159 is. And I'll go through that with you.

Again, I want to reiterate, it's still

my contention that introducing sheet flow in this model is not correct because of the slopes and the conditions out there, that it doesn't exist. Mostly it's utilized on plane surfaces, but for purposes of discussion, I wanted to introduce that sheet to see exactly what would happen.

If you turn to Exhibit 159, there are -- the third and fourth page are two figures. They're actually reductions of drawings SD-1 and SD-2 that indicate the study area I utilized. It's an approximately 87-acre area in Wildacres. And SD-1 is the existing condition and SD-2 is proposed condition.

If you turn right to Table 1, which is on the first page of the analysis, basically what Table 1 indicates is that in the pre-development condition, there's one subcatchment; in the post-development condition, it's broken down into ten subcatchments.

Basically what we did, to be consistent, is we utilized a sheet flow segment in every subcatchment where it could possibly happen. Obviously in an area that possibly starts with a channel and sheet flow doesn't exist, and it would be totally incorrect to introduce it into that subcatchment, so we didn't do that.

And I don't think that happened in any one of these subcatchments, but the longest segment you can use is 150 feet. That requirement is in the Guidelines for Urban Erosion Control dated April 1997, and it's on page 10.19 which states that a sheet flow -- after 150 feet, sheet flow then turns to shallow concentrated upland flow.

So obviously we never introduced a segment longer than 150 feet because that would not meet the required standards.

Basically Table 1 is a table of just the straight time of concentration. So by adding sheet flow into each of these subcatchments has increased the time of concentration in the pre-development and the post-development condition.

So in other words, in pre-development, subcatchment 4, the time of concentration went from 64.2 minutes to 70.2 minutes. So that

means from the farthest point in the
watershed, that's the amount of time it takes
for a drop of water to reach from one end of

the watershed to the other, to the design point. Without sheet flow, again, 64.2; with sheet flow, 70.2.

So again, yes, the peak rate did decrease, but then you have to look at the post-development condition. And in turn, as you can see, with the ten subcatchments, the peak also decreases there as far as length of time, and there are some stark differences. I want to show you what those differences mean.

If you turn to page 36 in the Wildacres Resort proposed HydroCAD model, and page 14, a duplicate one. What page 36 is, if you look at subcatchment 105, that is the modeled subcatchment as we've proposed it in our HydroCAD model. There is no sheet flow component in the time of concentration. The time of concentration is shown at the bottom of subcatchment 105. You'll see shallow concentrated upland flow, and if you look over to the right, it will give you a TC, which is time of concentration, in minutes.

So the first segment is .7 minutes, the second segment is 9.2 minutes, the third segment is 5.2 minutes. Each segment depicts either a change in cover type or a change in grade, so what you end up with is a total time of concentration, which in this case is 15.1.

MR. RUZOW: On Table 1, if you look under 105 on the side, you'll see that?

ALJ WISSLER: Right.

MR. CARR: If you turn to page 14, this is where we introduce sheet flow, which you would normally do on paved surfaces. As you can see, the first 100 feet is modeled as sheet flow. And the time of concentration, if you flip back, has actually doubled from .7 minutes to 1.4 minutes. So the actual time of concentration length, overall length is the same, 1,300 feet, but the time of concentration has risen that .7 minutes. So what this indicates is for smooth surfaces, the changes aren't that great.

But if you turn to page 37 and look at subcatchment 107 and page 15, which are the two following pages, subcatchment 107, the first segment is within a densely wooded area.

You can see in the proposed model, the first segment is 11.9 minutes. Just taking the first 150 feet out of that 400-foot segment, which is shown on page 15, that rises to 34 minutes.

So the differences are greater in wooded areas. So where the coefficient of friction, or the friction on the ground is greater, adding sheet flow more largely increases the time of concentration. On smooth surfaces, its very close, not much change; where there's a lot of friction, the increases are increased quite a bit.

But remember, you have to do this in the pre-development and post-development condition.

What this does is, if you go to Table 2, and thinking about that subcatchment 107 where the time of concentration went -- back to Table 1, and I'm sorry we are flipping back through tables, but the time of concentration went from 15.8 to 45.7 minutes, almost tripling.

If you go to Table 2, look at pond 7, which includes subcatchment 107, the required storage actually dropped from .49 acre feet to .45 acre feet. So by flowing the water down, the ponds aren't artificially small, they're actually a little bit artificially large -- by a small amount. But again, that shows you the difference what adding sheet flow does.

It's correct. The statement that was made was that if you don't introduce sheet flow in the pre-development condition, your peaks are going to be artificially increased. I don't agree with the word "artificial," but it is increased. But again, you have to consistently do that in the post-development condition.

What this indicates, if you take that sheet flow segment and use it consistently between pre-development and post-development, what happens is your ponds can actually become a little smaller in this scenario, because of the amount of wooded areas we have on this site.

Basically what Table 3 is, is kind of a synopsis of all the flows running off the site. On Table 3, the differences overall between adding sheet flow and not having sheet flow are very small.

I know that's a lot of information. Do you have any questions on that?

ALJ WISSLER: No, I mastered it all.

MR. CARR: Basically the front is the narrative with the tables, and the back of this exhibit shows all the HydroCAD runs between what was submitted and the model where we added the sheet flow. So you could go back and at a later date compare each subcatchment.

MS. BAKNER: Dave, just to ask a few questions. You wanted to be responsive to criticism that we hadn't incorporated sheet flow in pre-development?

MR. CARR: Correct.

MS. BAKNER: And the goal of this -- as you understand the principles of HydroCAD, if you use sheet flow in the pre-development and then you don't use sheet flow in the post-development, is that appropriate?

MR. CARR: If you do use it in the pre-development and don't use it in the post-development. What would happen would be -- your times of concentration in the post-development would increase and pre-development would decrease. You would need to use it consistently through the model. If you use it in one case, you have to use it in the other case.

But again, I want to reiterate that the existing -- in my opinion, the existing site conditions dictate that, you know, you wouldn't utilize that sheet flow because the description of sheet flow is water moving over plane surfaces, and those surfaces should be consistent. That's why -- you normally use sheet flow for parking areas.

ALJ WISSLER: You chose the study area here that you chose because it's the most level?

MR. CARR: Correct. It's probably the most level -- Big Indian in general is steeper than Wildacres, but correct.

MS. BAKNER: So you gave it a very fair shot. You picked the spot where it would make the most sense, even though you don't agree it makes sense or is appropriate to use the model in that way even at this location?

MR. CARR: Correct.

MS. BAKNER: Does anyone share your

opinion on that issue? Did you have anyone
else peer review the issue of sheet flow, no
sheet flow?

MR. CARR: LMS looked at it -- I gave them my explanation, and they totally agreed with it. There is no directive that says sheet flow -- all drainage starts with sheet flow, it has to exist.

Even in talking with Scott, Scott Lowe, who you will hear from later, last evening, he kind of looked over at me and said: Why would you use sheet flow in this model, considering the site conditions out there; being wooded, being steep slopes, being inconsistent?

So you would just not utilize that in that condition. It's more of an urban -- it's more of an urban-type segment.

MS. BAKNER: In addition to the challenge of modeling this in terms of its rural nature and it's unusual characteristic over other typical developments, unusual in the sense that, as Charlie said earlier, it's so homogeneous, it's so wooded, is there anything about the choice that you have made, your professional judgment, that results in the analysis being less protective of the environment?

MR. CARR: Less protective -- no.

MS. BAKNER: In fact, if you use sheet flow, we most likely have, on average, smaller basins rather than larger basins?

MR. CARR: Probably. In this case, yes.

MS. BAKNER: And you don't know of any reason why it wouldn't, on average, be larger -- they wouldn't, on average, be smaller using sheet flow --

ALJ WISSLER: What does "probably" mean?

MR. CARR: Well, I didn't look at the entire model. I can only speak -- from what I analyzed the answer is yes, but I think you have to look at the entire model, and I haven't done that.

MS. BAKNER: Fair enough.

MR. RUZOW: We didn't ask you to. We asked for your judgment about what would be the most likely to yield the changes.

MS. BAKNER: Right. Does this get

affected at all by the fact that there's so much forested land that's going to remain unchanged pre- and post-development?

MR. CARR: For sheet flow?

MS. BAKNER: Yes.

MR. CARR: No. And I don't think it's the cover type that's the variable here. I think it's the undulations of the land and the quick changes in grade and those things. Sheet flow can happen in a wooded area or it can happen in a paved area, but I think it has more to do with grade and the actual condition of the site. It is unusual to have sheet flow within a wooded area, yes, but it could happen.

MS. BAKNER: Dan, did you have any other questions?

MR. RUZOW: No.

MS. BAKNER: Do you want to go ahead at this point and discuss 160, which is the changes to the Big Indian post-construction stormwater operation plans?

MR. CARR: Actually, before I get into that, I want to touch on one item that came to our attention that I don't believe was discussed in the Issues Conference.

MS. BAKNER: That is attached however --

MR. CARR: That is attached to Exhibit 160, that's correct.

MS. BAKNER: Can you just say for the record what the designation is?

MR. CARR: Yes, drawing SG-1, which is a grading plan from Wildacres Resort. It came to our attention that the New York State Department of Health had a concern with a number of the ponds that are in close proximity to the Fleischmanns water supply. So they asked us to go back and look at ponds 14, 16, 17, 19, 20 and 23, six ponds in total.

MS. BAKNER: Let me clarify that a little bit. They asked us specifically to line the ponds?

MR. CARR: Yes, line the ponds. So what we introduced to those six ponds is a clay liner, which would be -- what we're proposing at this point is a geosynthetic clay liner that can be placed. A foot of good soil can be placed over the top of it which would accept vegetation.

Obviously these ponds are going to be vegetated. Basically this did not change the hydrology, nor the model because in this area, the soils are fairly poor and we were not taking any credit for infiltration anyway so the model didn't change.

MS. BAKNER: So when you say poor, you mean they were essentially impervious?

MR. CARR: Essentially, but this guarantees that they're impervious.

MS. BAKNER: What do you estimate, if you know, the additional cost associated with that?

MR. CARR: I don't know.

MS. BAKNER: But it is certainly additional cost over the original proposal?

MR. CARR: Correct.

MR. RUZOW: That revised drawing is now found in Applicant's Exhibit 160?

MR. CARR: Yes.

Now what I would like to address is the concern that Pat Ferracane from New York State DEC voiced with respect to 10 ponds along the Big Indian Plateau, specifically concerned with the overland discharges emanating from those ponds.

If you remember, the ponds are at Belleayre Highlands, pond 8, which was labeled as a work level spreader here. You can go to -- SD-6 is what I'm pointing to. 8, 13, 15, which is over on this side, 16, 17 and 21, those six ponds on the Belleayre side of the world and an SD-7, pond 25, which resided in this area, and ponds 36, 37 and 38. Those are indicated on sheet SD-7.

The concern was -- had to do with overland discharges mainly associated with the 100-year storm emanating from these ponds turning to overland flow, down steep slopes and causing erosion.

What we did was we went back and looked at the model to see how we could deal with those overland flows. Basically what we have done is we have eliminated them all together in all cases. I will go through them in detail. The discharges from all these ponds now are either piped to other ponds, go to stone channels or are actually piped to discharge points. So there's no free-flowing discharge overland of these ponds, which was the concern.

So what I would like to do is show you how we have done that. And if you turn to sheet SD-5. SD-5 is the pre-development model for Big Indian Plateau.

Basically by redesigning this, it caused us to change the model a little bit. What we have done is -- Design Point 3 moved to the south up Woodchuck Hollow Road, Design Point 4 has been eliminated altogether so we are sending no discharges to the Lost Clove Road side. Everything is going to the north now. The area to Design Point 2 has been reduced.

And in a separate matter, not having to do with this, we've added a pond at Design Point 7 and Design Point 8. And Design Point 7 is the employee parking area and Design Point 8 is the lower section of the entry road which were missed in the original HydroCAD model. So we added those additional design points. Those are not related to the concern with overland discharge.

So, what I would like to do is go to the SG drawings because that shows in detail

what we have done here. SG-5, which is
Belleayre Highlands and includes -- I don't
know why I didn't color it -- but ponds 13,

16, 17, and the level spreader at 8. Basically in the last iteration for the 100-year storm, basically there was a weir and they discharged over land down the slopes, and that's what precipitated the concern.

What we have done is we have taken all of the ponds, including 13, 16, 17, and all the ponds to the south were upslope, basically are all interconnected via pipes or swales to ponds 16 and 17. So basically, it's almost like a funnel. They're routed through ponds -- which that happened in many cases before, but we actually tightened it up a little bit.

Then when you get to pond 16, the discharge happens at a -- there's an existing swale which exists along a driveway which goes to the Brisbane mansion that exists on the mountain.

So our proposal is to improve that swale and take all those discharges down that improved swale, across Woodchuck Hollow Road with a culvert and have a direct discharge into Woodchuck Hollow. So instead of discharging down the slope, we were actually taking it to a point to the water course, and controlling it all the way to the water course.

ALJ WISSLER: Everything you have covered in, the swale drainage routes are all on this; just not colored?

MR. CARR: Right. I could leave you the colored one.

ALJ WISSLER: It will be a whole lot easier. If you want to mark mine up, that would be fine.

MS. BAKNER: Dave, did you discuss how pond 8 was eliminated?

MR. CARR: What we're proposing to do with pond 8 -- originally when we left here the last time, we asked the highway engineers who designed this connecting road to see if we could move this low point, because it is in a fairly tough position. And when we found we couldn't do that, the only way not to discharge from that low point down the slope is to actually pipe the water to Giggle

Hollow.

So that's what we're proposing to do from both directions, is actually take the water through a pipe directly to Giggle Hollow. So there's no overland discharge to get to that point. That's also colored on here so you can see that. (Indicating)

ALJ WISSLER: I'm going to ask that these charts that you're using become the charts that become part of this record.

MR. CARR: Fine. The only thing I have to do is put the dates on there.

ALJ WISSLER: Okay. And on a break or something, if folks need to mark their exhibits, we'll do that.

MR. CARR: Or I can do it for you.

SG-6 includes pond 15, and again, pond 15 -- this was one that was actually very easy to deal with. Pond 15 had an overland discharge, and basically we simply removed the overland discharge and took the discharge into pond 14, so there's more of a connection. Instead of flowing this way, it basically flows this way; it basically flows this way through a pipe and then along the road and down. So it never goes over land, always goes through a controlled structure.

Sheet SG-9 is really the one that

shows the most of -- it had the largest changes. As I mentioned, as shown on SD-5, there is no Design Point 4 anymore. And the reason for that is ponds 36, 37 and 38, which for lack of a better word are on the back side of the development, there's really no way to have a discharge from those ponds and take them down the mountainside without -- the only option would be to either pipe it down the mountain or cut a stone channel down the mountain, which you're probably creating more problems with doing that than solving this problem.

So basically what we did was we routed the discharges around to the north side -- there's only about ten acres of land that we're even affecting that is within that area that flows to Lost Clove.

Basically the discharges are very minor. Basically what we're proposing to do is pipe the discharges from 36 to pond 38, because by grade we couldn't get to 37, and 37

is piped around it. So you see the red line,
showing the discharge, instead of going this
way, it's basically coming around the

mountain. That's basically what it's doing. If the water were to make it, it's coming all the way from 36 all the way to the access road.

MS. BAKNER: You primarily did this to capture flows that would have been over-topping essentially during the 100-year storm.

ALJ WISSLER: Were there some kind of weir structures that they're overtop?

MR. CARR: That's what we had originally. So now what we have is an actual structure with pipe coming out of it.

ALJ WISSLER: What, just below the 100-year level or something like that?

MR. CARR: Correct, so it's guaranteed not to top over the pond.

ALJ WISSLER: So for most precipitation events, it's not going to over-top? You'll never make the pipe. The pipe exists if, as and when it occurs?

MR. CARR: But each pond has a drain

also which goes through that pipe. So if the maintenance person -- every once in a while the ponds have to be cleaned out. There will be a valve in there, sluice gate normally that you can actually open up -- it's important to remember that even if say pond 37 didn't have a discharge with 100-year storm, you designed your pond so it collected all the water and it just sat there, you still have to provide for maintenance, and draining these things is going to have a discharge. It may only be a four-inch pipe, but it's still a discharge. So you have to account for that.

Even though it's not modeled as dealing with a design storm, if this pond is starting to need maintenance, a person can go in there, they can drain the pond, they can replant vegetation, whatever they have to do to get it back on-line, so basically those discharges go through this system.

MS. BAKNER: Dave, just to put that in perspective, we build those systems?

MR. CARR: Yes, correct.

MS. BAKNER: Assuming nothing unusual, you would maintain them, what; once a year, every other year?

MR. CARR: It depends. A year like this year, you may have to maintain them a little more.

MS. BAKNER: Just to give some sense of it.

MR. CARR: Right. So again, I mean the idea is to control all this water on the top, not -- for lack of a better word -- let anything go down the side. So pond 25, which existed in this location, has been removed completely.

Basically what we have done is we've removed pond 25 -- we didn't remove it, we relocated it between holes 6 and 7. So there was a concern that maybe we were introducing some stormwater where there were some existing drainage courses that -- those have been removed. We're not sending any drainage in any of those areas; it's all being controlled on top and routed to the access road basically. Nothing is falling over the side.

MS. BAKNER: So pond 25 was -- in terms of the site visit that we took, Dave, where was that?

MR. CARR: There was a ledge down here off of Winding Mountain Road, above Winding Mountain Road.

MR. RUZOW: I think Joe led us to that section when we were on the site visit.

MR. CARR: And that has been removed because really there was no way -- the reason why I used it to begin with was it was a fairly even spot we could deal with stormwater, but the problem was there was no way to get out of it safely and meet Pat's concerns. So we had to pull it up into the development and discharge it through the development.

MS. BAKNER: So Dave, the only way you could have gotten the water out of there is by pumping it artificially?

MR. CARR: Yes.

MS. BAKNER: Which we don't want to do, which isn't a good idea.

MR. CARR: Well, that was the question that was raised -- pond 36, for example, is in very close proximity to the irritation ponds which is labeled as pond 1. You could pump stormwater from 36 to 1. I've never designed a system -- I've seen them -- where there is a pumped system of stormwater. Basically this pipe here, by gravity from 36 to 38, is probably 2,000 to 3,000 feet, so it's going to be expensive to put in; but nobody has to manually move that water; it's just going to move by gravity. It's basically going to flow on its own.

Pumps break down. They need to be maintained. Again, if something happened with that pump system, you would be back in the same situation where once you filled up, you would be going over the slope. So these are designed to function without any maintenance.

ALJ WISSLER: The gravity system doesn't totally empty each of the ponds?

MR. CARR: No, no.

MS. BAKNER: They're designed micropool detention basins so they're wet ponds.

MR. CARR: Right. But they can be, if desired. That's the key.

MR. RUZOW: You need the ability to drain them when necessary for maintenance.

ALJ WISSLER: Thank you, Mr. Carr.

MS. BAKNER: I missed pond 8.
MR. CARR: Pond 8 is not a pond, that's what we called the level spreader.

It's not a pond.

MS. BAKNER: It's gone?

MR. CARR: It's gone. All the water quality requirements have been utilized in ponds above that so we're not sending any water to that area.

MS. BAKNER: Can you point out for the record the Lasher Road drainage basin and the one associated with the access road that you added?

MR. CARR: As I mentioned, there were two spots where I actually missed in the design, and one of them is the proposed employee parking area at Lasher Road, which is shown on SG-10. That has been included in the HydroCAD model that you have. It's a small area. It's separated from everything else, but it did obviously have to be dealt with.

There would be a direct discharge from that pond into the creek, which I have reviewed with Bill Mirabile from DEC. There's also -- the other additional pond is pond 104 which is actually --

MR. RUZOW: On SG-6.

MR. CARR: Yes, on SG-6. That was

more of a separated area from the rest of the development. It existed below the railroad tracks. Again, you have the small pond to deal with the entry road. Again, with direct discharge to the creek. And that is also included in the HydroCAD model that you have as part of the exhibit.

MS. BAKNER: Dave, I notice we don't have any revised drawings for Wildacres other than the pond liners. Is that because we have no overland discharge at Wildacres?

MR. CARR: Right, down steep slopes we don't. We have a couple that cross the golf course. When the golf course is designed in its final design stages, those could actually be put through channels, but we have a couple where there's a discharge that would cross a fairway and end up on a pond on the other side of the fairway, but none going off-site.

MS. BAKNER: There's none going off-site and none going over forest floor?

MR. CARR: Right. I'll date these and

roll them up for you.

ALJ WISSLER: We need them available so other folks can mark their own.

MS. BAKNER: Dave, I believe the next plan we need you or Dean to go over is Exhibit 158, which is the Big Indian Access Road Construction, which is facing that's -- showing some more detail on how we're proposing to construct the road. This is to directly address Joe Damrath's concerns regarding the steepness of the slopes and --

MR. CARR: I believe Dean Long is going to speak to that.

MS. BAKNER: For the record, this is only part of Phase 1. As you will recall, we did focus on Phase 2 in evaluating soil erosion and sedimentation control phasing plans for construction, but we have just agreed to go ahead and look at Phase 1 to try and address the concerns about whether or not the steep slopes which we're building the access road on will cause trouble. We have not done all of Phase 1, we've only done the road. (Indicating)

MR. LONG: This is drawing PH-4, Big

Indian Plateau. It's a drawing that we just developed as far as to break out phases of the main access road construction. What we have done here is to create seven segments of constructions broken down into 41 phases. The phasing for the access road construction is based on two criteria; one is slope, and then the second is being able to efficiently and quickly build temporary stormwater basins given the slope characteristics. So they are closely related.

Looking at Phase 1A right outside of the hotel, what you can see here is that the slopes are relatively gentle. So that phase is roughly about 700 to 750 feet long.

MR. RUZOW: And the width of the roadway?

MR. LONG: We assumed it all to be about 200 feet wide for the entire grading limits, which is a little wider than what actually is being planned. Normally we're down under 100, we're up towards 150. But for this phasing analysis, to make sure we have plenty of space, we were accounting for any of the outside disturbances. We just assumed our

grading limits would be 200 feet. So we're
talking about a corridor 200 feet wide,
750 feet long.

In this segment 1 which is on the ridge of the plateau, each of the phases is about 750 feet long. With the slopes and the width of the clearing being at that 200 feet, basically what we would need to do is to have our temporary stormwater basins, which will progress as well as be at terminal ends of each of the phases, needs to be roughly capable of storing an acre foot of stormwater.

The other thing I have to point out, and to keep this all in context is, as Terresa was saying, all the concepts we presented for Phase 2 being the pumpout of basins to the dispersion pipes, the use of erosion control mattings and all those types of techniques, are fully anticipated to be incorporated and implemented and tested as part of Phase 1.

So in any case, with that as part of the overall background, in Phase 1, they -- in the segment 1, they all tend to be about 750 feet. If we proceed down the road and you begin to look at 1F, what you see is that the interval into the phased project -- the project phase of it shortens, and that's because of the amount of grading and the side slope cutting and et cetera. When we get down into those smaller projects, then we need between .4 an .6 acre feet of storage.

This project of constructing the road has the challenge of having to blend all these grades side to side. We have not shown you specific basins because the basins are always going to be moving as the road construction proceeds down the slopes, but there will always be at the interface between the various projects, 1D and 1E, there will always be a temporary stormwater basin there in order to protect any of the water that gets collected.

The same process is followed throughout down through the road as far as that goes. That's how we came up with segmenting the project so that we would have temporary stormwater basins that were small enough to be rapidly built, and keeping them in proximity to the actual construction activity.

MS. BAKNER: Dean, when you talk about

them being small, you mean that they still
meet the Blue Book requirements?
MR. LONG: They meet our requirements

for containing 100 percent of the 10-year storm on bare soils. So that's the .6 to one acre feet of storage necessary to meet that requirement.

MS. BAKNER: To refresh everyone's recollection, that's roughly how many times larger than --

MR. LONG: 10 to 12 times larger than what the Blue Book requires.

ALJ WISSLER: How big a pond is that, structure is that?

MR. LONG: For one acre foot, that would have to be something that's going to be 50 by 100 by about three feet deep. It's pretty sizeable in the context of its short duration; that's why when we got onto the steeper slopes, we collapsed the construction road interval. That's why on the steeper slopes, like 1F, there we're only looking at between four-tenths of an acre foot to six-tenths of an acre foot. So there, you would only be talking something that was 50 by

50, and two and a half, three feet deep in order to get that kind of storage.

The pond sizes also are all designed

and all will stay within the disturbance zone of that 200 feet. So that was another criteria as to how to break this thing up into small enough chunks so that we didn't have to create any outside additional disturbance in areas that weren't going to be involved in future construction for the project. That was our overall sizing criteria, to come up with how to break this project into each of these discrete phases.

ALJ WISSLER: Let's take a look at 1E and 1F. Right at the break line there, that's where a pond would go?

MR. LONG: Right at the break line from 1E to 1F, there would be -- would have to be a pond that's roughly capable of storing an acre foot.

ALJ WISSLER: That would be the first thing constructed.

MR. LONG: I can describe how we envision the construction phasing. Each of these segments -- after the trees get cut, there will be a stump grubbing phase. As the equipment proceeds down through the right-of-way and the stump grubbing phase --

at the end of stump grubbing is when the ponds would be constructed.

Simultaneously, during stump grubbing, we're going to put in water bars as an intermediate temporary stormwater control because we're going to remove the trees, but the overall mass grades are going to be still forest floor, very undulating, not with any particular direction other than the very big picture downhill direction that the road is traversing.

So we'll have water bars as an intermediate protection, we'll have perimeter control installed as trees are cut. Then we will have the terminal ponds as the end-all piece of the stump grubbing phase as the final protective device.

What will happen once the stumps are grubbed is when we begin mass grading, and the grading to form the road valley and the side slopes, as well as excavate out the under materials in order to put in the road base and subbase materials. So that would be the next step in the construction process.

Again, you know, the pond is at the

bottom there. We're proceeding down the hill as the overall direction. As we proceed down the hill -- we'll talk about 1F here -- so it would be proceedings down the hill grading. Any of the side slopes would be stabilized with geomats and hydroseeded with a heavy matrix hydroseed materials.

So we would be utilizing both of those just in order to stabilize the upslopes, as well as stabilize all the slopes.

(Indicating)

Again, with the way we've got this phased, if during a heavy rainfall everything is going to collapse into the road and be contained within the construction site, it can't get down the slope into an undisturbed area because we have the terminal ponds on each of the phases.

MS. BAKNER: In addition to all the perimeter controls?

MR. LONG: In addition to the perimeter controls. All the grading is going

to start at the higher parts, and then fall
into the road.
MR. RUZOW: Dean, let me stop you for

a minute. When you think of a normal macadam road, the high point of the road is in the middle and the slopes down the slide, standard construction. In this case, you're suggesting at least in the early construction, that's different?

MR. LONG: Right. Plus, normally with roads, you tend to start at the bottom and cut back up. We're going to start at the higher edges and bringing it down so that we can stabilize the stuff that's adjacent to the forest early. That will assist us when we're trying to blend -- if you look at 3A 3B, 3C, the challenges here is trying to blend all the slopes between 3A and 3B, because you can see there's a lot of grading activity that's up near the forest edges. So by starting high and coming down on the side slopes, then we can -- if there's any large rainfall event, everything still ends up being self-contained.

Additionally, because we're not going to mass grub the thing, we have preserved the

forest soils, the root matrix and all that.
So we're attempting to minimize runoff
velocities and we're containing the -- any

runoff within the construction site so it doesn't get off-site.

MR. RUZOW: How long is the expectation for, I guess, an average segment? Some segments may take longer or shorter than others, but what is your estimate of the time that these basins would be open, in effect, before you ran into the next stage?

MR. LONG: Most of the basins will probably be on the order of seven to ten days, most of the segments.

MR. RUZOW: Workdays?

MR. LONG: Work is going to be continuous in order to construct everything within the limited season, which is one of the consents that we -- it's the same thing we said for the golf course. Everything just basically starts and then continuously is worked through the entire season.

MR. RUZOW: And how long overall is this construction phasing, your best estimate at this point?

MR. LONG: We're trying to get this phase in in a six-month window for the road construction during the first year.

MS. BAKNER: During the road construction, you will have the pond excavation going on, the irrigation pond excavation?

MR. LONG: Right, the irrigation ponds will be excavated. The other thing that happens, as the construction matures and as we proceed down, you can see the various permanent ponds which will also be integrated into the temporary erosion control segments as we complete portions of the road.

The other place we're going to avail ourselves of some additional stormwater opportunities is going to be the employee parking lot. It acts as a midpoint, and it's immediately above the segment 4 area and the 5 area that has a lot of grading in it. So we're going to be converting that over into also a temporary stormwater basin which then can be pumped out to the dispersion pipes.

We anticipate using all the same dispersion pipes other than dispersion pipe 1A that's on CP-2.

So again, the concepts that were put
forth in the phasing plan of the golf course

are essentially the same that are being utilized here as far as control and management of the stormwater discharges. So again, the midpoint parking lot will be converted as a large temporary stormwater basin as part of this to aid in the construction of the road in order to manage any of the water coming down through, through the upper parts of the site, so that we can minimize any water spillage onto this section that has some of the more difficult side slopes to deal with.

One of the timing issues is going to be the bridge crossing. The bottom -- most of the construction of course is going to go from the top down. At the bridge site, in part of this lower portion, we're going to build, as part of the bridge construction phases. So we'll be coming upslope for a short distance in this area, but because we're going to have permanent stormwater basins in this area, that's part of that management plan. So we'll be able to rely on those downslope permanent facilities for that last 700 to a thousand feet.

That's essentially big picture-wise

the way we believe we can construct the road, keep our site disturbances to a minimum, have temporary stormwater basins that are readily constructible that are small enough to be constructed rapidly.

MS. BAKNER: Dean, this is definitely at the stage where it's more conceptual than the drawings that were done for Phase 2?

MR. LONG: Correct.

MS. BAKNER: But in terms of details, all the proposed methodologies are set forth in Phase 2?

MR. LONG: That's correct.

MS. BAKNER: When you're finished with the segment, you put on the crushed rock to stabilize it, you do the side slopes with the fabric and the mulching. My question is: Where do you end up? Are you going to leave it graveled? Are you going to put on a binder coat? What is the plan?

MR. LONG: The preference is to try to get to a binder course wherever we can.

Certainly up in this flat section, because the pressure plant is going to be located up here, we're going to have ample crushed materials utilized for that section.

So where the slopes are very minimal, putting down a binder course is certainly not necessary. We need to probably get the binder courses on 2B and 2C sections because that's where the trucks -- many of the trucks are going to be off-road trucks. We're probably going to need to get to binder course in those particular locations, as well as like 3C and 3D.

So in general, it's most often going to be crushed stone. Whenever we can and wherever it's warranted, we want to get to a binder course of asphalt because it's going to be easier to manage.

MR. RUZOW: Obviously the plans that are eventually part of the SWPPP for this will be reviewed by the Department, presented to the Department in the greater detail than is required, and DEP as well -- prior to construction?

MR. LONG: Correct. I think the other

thing to note at this phase, what we're anticipating calling stabilization is once we have all the fabric down and all the stone down along the roadway is the point at which we will say -- which we believe everything is stable so that we can begin to go into the next phase and start blending those edges.

MS. BAKNER: As far as the vegetation, the material that's left over, do you anticipate trucking that back up to the top for treatment -- for chipping, whatever?

MR. LONG: Yes, forest materials.

MS. BAKNER: Any questions?

ALJ WISSLER: No.

MS. BAKNER: At this point I think what we would like to go over is Exhibit 157, which is the revised total phosphorous, or as Dean refers to it, the direct loading calculations and comparisons.

ALJ WISSLER: Do we need to take five minutes?

MS. BAKNER: That would be great.

(11:41 - 12:07 P.M. - BRIEF RECESS TAKEN.)

MS. BAKNER: What we're going to be

presenting on next is Applicant's Exhibit 157, and it's entitled, "Total Phosphorous Loading Calculations and Comparisons."

If you will recall the last time we were together on the issue of stormwater, we presented a very similar exhibit. The difference here is really twofold. One difference is, we did not have the correct and up-to-date copy of the DEC Stormwater Manual, which was posted on the Department of State website -- if I can just say in our defense.

So it showed a 40 percent pollutant removal credit for phosphorous from a micropool detention basin and the old manual had 50 percent. So that revision has been made here now.

The other revision that's been made here is the approach with runoff coefficients. Instead of using .9, we're using .64 and .6, and I'll let Mr. Long explain that.

MR. LONG: Okay. I'm not going to read the whole thing. As Terresa said, this is essentially an update of the entire exhibit. It includes an executive summary which explains -- which is what I'm going to run through so that everybody understands -- how we got started on this, and then I'll go through the first two tables which summarize the results and shows the changes that are caused in the total annual load of phosphorous for Big Indian, Wildacres.

Going to the executive summary, the first paragraph summarizes the reasons why, and the explanation of the change in the R value, the runoff coefficient value from the .9, which was used uniformly throughout the prior analysis, changing it to .6 for the Big Indian Resort, which is in the Ashokan Reservoir, and .64 for Wildacres, which is in the Pepacton Reservoir.

These numbers were found in the General Watershed Loading Function Model Analysis for the TMDLs for the respective reservoirs, and the references for all that material is found at the back of this document. So that was the first change, first full revision in this.

The second one related to the R value, is that for the limited amounts of impervious surfaces that we have in each of the respective projects, we changed the R value from .9 to .98, which is essentially derived from the TR-55 Soil Conservation Service, and correspondingly also from TR-20, also from the Soil Conservation Service, the two predominant conceptual models for stormwater runoff modeling.

With all that said, what we'll do is -- the next page is a summary of all the changes, and as the executive summary states, there are particular changes made on particular pages, and they're all summarized on this Table A, direct calculation, Giggle Hollow.

It's all pretty straightforward here, and I think the most useful thing is to proceed to Table B because it tells the story of what becomes the sensitivity or what we can begin to discuss as a sensitivity for the total phosphorous load versus the changes in these various input parameters for the stormwater -- for the total phosphorous annual load.

If you go to Table B, which is titled, "Giggle Hollow TP Loadings in Kilograms Per

Year," that again references that, again, we're going back to the Giggle Hollow numbers that I -- that we derived in the previous exhibit which is -- what was the number of that one -- the June Exhibit?

MS. BAKNER: 46.

MR. LONG: 46, what we derived, and all those pages are repeated in this one. Where LA Group, myself, derived the 20 parts per billion natural forest runoff value. So that's why we keep on talking about this Giggle Hollow value.

So I'll run through this table in detail right now. So Big Indian, we have the pre-development loading. The first column, separate RV values for impervious and forest. Pre-development, everything is forested so the RV value for Big Indian would have been the .6 that's utilized, so we end up with a total annual phosphorous load of 76.79. (Indicating)

MS. BAKNER: Dean, can I just interrupt you for a second. The 0.6 you have down here in footnote 1 says from the 2001 DEP document?

MR. LONG: Right, the General Watershed Loading Function Model document.

MS. BAKNER: And the General Watershed

Loading Function document was used to derive the TMDLs for the basins?

MR. LONG: Correct. So we're back up at the pre-development loading, 76.79. The next number over is the number that we presented in June, which is the 115.19 kilograms per year for Big Indian pre-development. Again, that was based on the -- on the RV value of .9 for that value. It's repeated in the second -- (indicating)

MS. BAKNER: Let me interrupt one more. The .9 that you used before, that was because that was a DEC value, sort of a default value that they have in their manuals?

MR. LONG: Yes. The next column, I'll talk about as we move down through because that shows -- that will begin to show the differences between the various phosphorous removals. Then the final column, November 2003, the WinSLAMM data, which is shown as 149 for the pre-development loading. (Indicating)

Next line of data -- again, all the details of this are in the back of this document -- post-development, pre-treatment loading. So at this phase of the analysis, there's the development project so the -- the development project. So this number is composed of both the native forest RV value, plus the revised .98 RV value for the impervious surfaces. (Indicating)

MS. BAKNER: So you take the acreage that's going to be developed, that's going to be impervious, and you assign the RV value of .98 to it, and you take the forest and you assign .6?

MR. LONG: Correct. And also times -- all the loading functions as far as for the impervious values, forest values -- because we've consistently always used the 20 micrograms per liter to 20 parts per billion level that we presented in June. All those numbers have not been varied in this analysis.

All this analysis really gets down to is the impacts of changing the runoff coefficient, and then subsequently changing the removals.

So anyhow, the next column presents the information of the 272, which was the value that was established in June using the single RV value of .9. (Indicating)

Next column is the same, 272 again, because it's derived in the same fashion. The last column was the WinSLAMM value found in the DEIS. (Indicating)

The next block where it says, "40 percent TP removal," this is where we're incorporating the changes in total phosphorous removal that's required by the August Edition of the DEC manual. So underneath that line, in the line of data for post-development/post-treatment, you take out the 40 percent from the 250 -- 40 percent of the phosphorous is removed and it becomes 172.75. (Indicating)

ALJ WISSLER: 172.55.

MR. LONG: .55, yes. Under the earlier analysis, if we did 40 percent removal of the June values, it becomes 197.35. (Indicating)

Then I repeat it, all the June values

as they were given -- all the values from the June report that's similar to this.

Then finally, the last column is the

WinSLAMM analysis, which WinSLAMM predicted the phosphorous removal as functions of the model itself. That's why there's no percent removal shown for that because that was internal to the model. (Indicating)

MR. RUZOW: The level of efficiencies of removal are built into the model.

MR. LONG: Right. The next line is the wastewater treatment plant effluent discharges, so this is the point source discharges for Big Indian. So that's 60 straight across for each of the lines of data or each of the columns that I've been describing. (Indicating)

The total post-treatment discharges, both non-point and point sources, is the next line of data.

So to derive that, you very simply take the post-development/post-treatment loadings and add the point source, the wastewater treatment, and becomes the total for the first line of 232.55 kilograms annually. (Indicating)

The next column becomes the 197.35 plus the 60, becomes 257.35. (Indicating)

The next column is the repeat of the June data; and the final column is the repeat of the November 2003 DEIS WinSLAMM of adding the 197 and 60, and becoming 257. (Indicating)

To get to the net loading, we take the post-development -- post-treatment minus the pre-development. So we take the benefit of all the treatment and subtract the pre-development loading. (Indicating)

So to derive that number for the first column is the 232.55 minus 76.79. (Indicating)

In the same way it's done for each of the successive columns, remembering that the next column over starts with the June data and just does the 40 percent removal; with the third column being the RVs -- consistent RVs, which is the repeat of the June values, has a net loading of 123. Then the WinSLAMM has a net loading of 108. (Indicating)

So what this analysis shows is the

sensitivity of the total annual phosphorous loads to the various changes in the RV values. What it shows is that by decreasing the RV values, it decreases the pre-development loads, which then does increase our post-development total net changes as shown in the last line of data. (Indicating)

MR. RUZOW: Dean, Charles Olson used the term, "increment." He is referring to that same increment, that's the increment increase; is that correct?

MR. LONG: Right, that's the incremental increase, because again, the point sources have been consistent, and what we're varying here is the RV values, and we've kept consistent in this analysis all the previous runoff loading values.

MR. RUZOW: But this particular 155.76 includes both the point source from the sewage treatment plant as well as the stormwater runoff components?

MR. LONG: Correct.

MR. RUZOW: So the increment -- using the math, the incremental increase is, if you start with 76.79 as the pre-development loading and you end up with post-development, post-treatment of 172, you're less than 100 kilograms per year as the increment associated with the stormwater?

MR. LONG: Correct, for non-point sources.

MR. RUZOW: For Big Indian.

MS. BAKNER: Just remember, some of the stormwaters are considered point sources. So it's 100 roughly.

MR. RUZOW: But I want to separate out in our minds, following Charlie's logic, which I understand, is the increment that we are increasing as a contribution.

MS. BAKNER: Dean, now that you have gone through Big Indian, do you want to just run through the first column of Wildacres?

MR. LONG: Yes. Using all the same conventions that I described for Big Indian, the one change being that Wildacres is part of the Pepacton watersheds, and the RV value for that is .64 as indicated in footnote 4.

Again, I used the same conventions of using the .98 for the impervious surfaces. Again, all the prior loading values that were utilized in June are also repeated here, are consistently utilized in this analysis.

(Indicating)

So, instead of going through all the columns, we'll look here -- the post-development/pre-treatment -- pre-development loading is 47.35. This is the natural forest loading condition for the Wildacres development -- Wildacres site on an annual basis.

Again, these are all on an annual cycle for the entire water year. Post-development/pre-treatment, we estimated as 168.24. Again, using a 40 percent removal, it becomes 113.50 as the non-point source as the runoff component of the discharges.

(Indicating)

The wastewater treatment plant discharges are estimated as 78 kilograms per year. So the total post-treatment discharges will be 191.5 kilograms per year.

(Indicating)

To get the net, or the increment as it's being called today, we subtract the 47.35 from the 191.50, and it becomes 144.15.

(Indicating)

MR. RUZOW: Again, with respect to focussing just on the stormwater component of it, the incremental increase there is approximately 83 or so kilograms?

MR. LONG: Correct. So, certainly the importance of the RV value is clear here.

The other thing that is clear from this analysis is that because we're developing relative -- we're developing very, very small portions of the forest, the amounts of impervious surfaces and the amounts of development are not -- are not the biggest -- not the biggest contributors to the overall loading of overall phosphorous loading at the project site.

MS. BAKNER: Now, I know you haven't had much time to take a look at what Mr. Olson has produced, but as I look at page 5 of 36, which is the total phosphorous calculations, the direct calculations from Giggle Hollow, there were some differences in the way you calculated it as opposed to the way that Charlie calculated it.

And I just want, if you could, to sort

of go over the differences. We're not making any judgment about, you know, whether one difference is good or one difference is bad, but just show the differences, if you can.

MR. LONG: The differences are we both segment it -- it's easier to tell you what --

MR. RUZOW: What you did the same.

MR. LONG: What we did the same, because to me, they're pretty close. As Charlie described, he segmented out the events. I did the same operation with the same year. What he was able to do, because he went through all the exercise of taking -- deciding to make the conventions and deciding to make some relatively complex decisions, he decided on how to address the incremental -- that 15-minute incremental cfs discharges, and then what value to select in order to multiply that in order to get to an average load of phosphorous. I simplified that by just looking at the total event number. So, in essence, it's -- the math concepts are the same, the math inputs are different.

MS. BAKNER: Did you have the data available to you to do the more complex operation?

MR. LONG: The data was available towards the end of the process. The hardest part of all of the decision, which is when do you stop a storm. Charlie has stopped the storm at 48 hours, I believe, and he presented a rationalization of why he stopped it there; but that storm loading, if you push it out a little bit longer, would lessen the incremental changes that he's finding in his analysis. That's a judgment decision, that's something that takes some more study and some more examination.

MS. BAKNER: All right. We'll, of course, put together whatever we need to with respect to what Charlie presented, but just to give you a sense of where they were similar and where they were different. As far as using the Giggle Hollow data, Dean, why did you focus on the Giggle Hollow data?

MR. LONG: Giggle Hollow is contained basically within the Big Indian Resort, and the watershed is forested, and for whatever reason, as Charlie noted, the discharges tend to be a little higher, but -- by not looking at the flows, by looking at the averages and by using, as I describe on page 536, more baseflow data, we have tried to minimize the impacts of any of the higher flows and higher values. (Indicating)

MS. BAKNER: To even them out?

MR. LONG: To even them out.

MS. BAKNER: Giggle Hollow, as you say, is entirely within undeveloped property. Do the other hollows have any impervious surfaces or a few houses or not to speak of?

MR. LONG: Not to speak of.

MS. BAKNER: So you had a reason for choosing Giggle Hollow, and you felt it was appropriate?

MR. LONG: Yes.

MS. BAKNER: The other question I had for you is, again, the GWLF runoff coefficient, those are significant in terms of the overall basin-wide TMDLs that have been established. Can you describe why they're significant?

MR. LONG: Those runoff values are based on the General Watershed Loading Function model analysis of the entire watershed.

In my executive summary, I explained why I think they're valid for this, because both watersheds are clearly dominated by forest and vegetation cover. There is very little development in each watershed, so that's why I felt that for this level of analysis, or for this next level of refinement, that they're applicable to the pre-development condition.

MS. BAKNER: These numbers are calculated for a year based on the 2002 data being available. Does that mean that that's the total annual phosphorous loading in every year?

MR. LONG: No, it's representative of that year. One of the other concepts we're putting forth here, or one of the other concepts we have to consider as we advance and move forward is that whatever value we end up selecting as a total annual load needs to have some sort of margin of safety factor on it.

You can see clearly from Table B the variation you get when you just change the single RV value; such as for Big Indian where we change it from .6, and you get 232, whereas, you keep it at .9, you got 257. So changing a single value causes a 20-kilogram annual loading variation.

MR. RUZOW: And Mr. Olson has yet another variation?

MR. LONG: Another variation on top of that, 20 percent in the other direction variation. So there needs to be incorporated into the final discussions and into any of the permits some sort of margin of safety, and the margin of safety that DEP and DEC have adopted for the TMDLs is 10 percent, which reflects the reality of the information. Whether or not that's the best one for project specific, it's difficult to settle 100 percent on whether it should be fixed at 10 or be slightly higher.

MS. BAKNER: So annual phosphorous loading numbers are always going to be estimates?

MR. LONG: Are always going to be estimates, and based on the particular year or the particular set of circumstances.

MS. BAKNER: And the post-development

runoff, as Mr. Olson mentioned, we can't go out and measure post-development runoff, so we're using convention for describing the runoff coefficients after it's developed and what's going to happen, so those as well are estimates?

MR. LONG: Correct.

MS. BAKNER: Is there anything else you would like to add, Dean?

MR. LONG: No.

MS. BAKNER: Your Honor, any questions?

ALJ WISSLER: Nope.

MS. BAKNER: Then last, in terms of our witnesses for today, I would just like to introduce Dr. Scott Lowe.

If you could go over your qualifications in connection to the project and everything, that would be great.

DR. LOWE: Sure. I'm an Associate Professor of Civil and Environmental Engineer at Manhattan College, which is in the Bronx, and I'm a senior project manager for Lawler, Matusky & Skelly engineers based out of Pearl River, New York.

You're looking for my qualifications on this model specifically?

MS. BAKNER: Yes, or your

qualifications to run models to do the work.

DR. LOWE: I've been doing environmental modeling for about 15 years. I've taught courses for the American Society of Civil Engineers on basins, the EPA package basins, on HSPF watershed model, and also a separate course specifically on water quality modeling, and I teach course at Manhattan College on those areas as well, as well as on hydraulic design.

MR. RUZOW: Scott, what degrees do you hold?

DR. LOWE: Bachelor of Engineering Degree, and Ph.D.

MR. RUZOW: His resume is Applicant's 154.

MS. BAKNER: If you could just describe what you were requested to do in connection with the project.

DR. LOWE: We were asked to put together an HSPF watershed model of the site, the proposed development site, and in order to do that, we had to also model a lot of area that exceeds beyond the boundaries of the site.

MR. RUZOW: Could you describe what the HSPF model is, EPA's model; what it seeks to do?

DR. LOWE: It's a comprehensive watershed model in the sense that it attempts to capture all the physical processes involved in rainfall runoff, including subsurface flow, interflow, groundwater flow, deep groundwater flow on the hydrology side; as well as it also picks up the physical characteristics of the reaches, reach length, slope, land slope, the ground cover types that exist on the surface -- the soil characteristics as well. That's just to do the flow.

Then in this model, we were asked also to run it to predict TSS and total phosphorous. So there's a fairly detailed series of calculations that's done on the -- to project solids coming off the water surface.

For example, scour calculations. It actually models the soil matrix, the binding of how the solids are bound to the soil matrix, how they become released from the soil matrix. Then there's a separate sediment transport component that's modeled in the waterways as well, in the water courses.

On the phosphorous side, it models absorbed phosphorous, phosphorous that's absorbed to the solids, and dissolved phosphorous. So basically with the absorbed phosphorous, as the solids move across the surface into the reaches and down the reaches -- as the solids move, so does the phosphorous load attached to them as well as dissolved phosphorous which is put into -- has a dissolved concentration in the groundwater and the interflow water, so we move both of them as well.

MS. BAKNER: You did the model and you also went through your process of calibration and verification?

DR. LOWE: Correct.

MS. BAKNER: Do you want to show that on the PowerPoint presentation?

DR. LOWE: Sure.

MS. BAKNER: We'll need a few minutes.

(12:39 - 12:57 P.M. - BRIEF RECESS TAKEN.)

MS. BAKNER: We're going to be going

over Applicant's Exhibit 161, so if you have any trouble seeing the screen from where you are, you might want to move. If you have any trouble, you can follow along with the Applicant's Exhibit 161, although I'm warning you, there will be changes. There has been some change in the order. So he's going to let us know when that happens.

DR. LOWE: What I'd like to do is go through what we did in this model, and I want to focus on getting to the results rather than belabor too much the complexity of the model and everything that's inside or otherwise we'll be here forever going through it.

The objectives here are the same as most of the analysis that's probably been done on the subject. Assess post-construction impacts of the proposed project on water quality, and specifically on total suspended solids and total phosphorous, which is -- I'm sure everyone is aware by now -- intrinsically linked in that the solids carry most of the phosphorous.

So the idea was to develop a watershed-based approach that integrates all the effects that are occurring across the entire system and where the development is going to occur. Then we can give some validity to what we're doing by using the DEP data that was collected within the site area, within the watershed.

So the program we used was HSPF, Hydrologic Simulation Program - Fortran, been around for a long time; has its origins back in the '60s in something called SWM, Stanford Water Model, and has developed since that time to become a very comprehensive model. It's supported by the EPA, also supported by USDA and Soil Conservation Service and USGS have all provided funding at different points in time for this model, for the purpose of developing it.

In terms of our application we were able to integrate a lot of GIS data that we had on the project area and bring that in and build the model around that GIS data. For example, land use characteristics, slope of land, slope of reaches, reach lengths and so on. (Indicating)

As I mentioned briefly before, this

model accounts for surface runoff, but also subsurface flow as well, a phenomenon called interflow which is flow between the ground surface and the actual groundwater -- as well as the interflow, it also accounts for movement of the groundwater itself.

So the flow comes down, precipitation -- precipitation drives everything on the watershed. And then that flow, that rain that comes down has its option of different pathways that it can go, surface, subsurface and so on. (Indicating)

The solids procedure is basically a wash-off off the surface where we have build-up of solids on the surface, and in terms of impervious surfaces, those solids are sometimes contained in a soil matrix, sometimes they're loose, above the soil matrix on top of the surface. Those processes I considered. (Indicating)

In terms of the impervious surfaces, they are -- the way that calculation is done, it's actually done as a daily build-up of solids on the surface, and then when a rain event comes along, depending on how big an event it is, you basically wash those solids off the surface. All those solids that move off the surface end up in the reaches of the model, and they can be transported downstream.

(Indicating)

Within the reaches, there's a whole transport process that goes on, so these solids can settle out to the bottom of the reach, they can scour off the bottom of the reach back up into the water column, and those processes are considered as well.

(Indicating)

We consider phosphorous in two parts, absorbed and dissolved. So basically absorbed is absorbed under solids, so when the solids move, you move phosphorous with you.

(Indicating)

The dissolved phosphorous, as I mentioned before, we consider that in the interflow and groundwater portions. We have dissolved phosphorous there that can move to the stream. Within the stream itself, we can partition phosphorous between absorbed and dissolved states. The solids can go back and forth. That's based on partition, chemical equilibrium theory. (Indicating)

We included what we knew about permitted point sources that were in our watershed area.

The extent of this model encompasses all the tributaries potentially affected by the proposed development.

This is what the entire domain that's affected by the development looks like. This is the -- this is on the Delaware side here. I call this "Delaware" in the model, you guys call it Wildacres. (Indicating)

MR. RUZOW: That's what we call the development.

ALJ WISSLER: For the sake of the record, you're referring to --

MS. BAKNER: We will introduce that as an exhibit. We don't have copies today.

You might want to get closer, your Honor, because it shows the tributaries. I don't know if you can see those or not.

ALJ WISSLER: Oh, yes.

DR. LOWE: What this map is basically showing, even though the development is in here, this is on the Delaware side, and this is the Big Indian side, that in order to encompass that development, you end up having to capture these entire areas. These are all hydraulically connected. (Indicating)

Now, what we have is we actually made two models because the Delaware side and the Big Indian side are not hydraulically connected so we can't make one model. Essentially they're two separate models. (Indicating)

The next figure is just a close-up of the internal part of this figure. Basically what we did was just cut off these extending watersheds that go out just in the figure. So here is the development here and here. (Indicating)

Now, all the different colors here represent different sub-watersheds that we picked up, and those sub-watersheds were delineated based on the DEP stations that were set up.

If you look at these figures here, you

see BelleTod, Belle5 separately delineated. BelleGig, BelleLost are all broken out separately. That formed the basis of how we segmented this model.

So instead -- the reason we don't just have one big segment for this side and one big segment for that side is we would have lost all the details of the DEP stations. If we lose the detail, then we can't calibrate it. In order to calibrate the model, we had to divide it up this way. And we wanted to use that data obviously. (Indicating)

This point, it says the downstream boundary of the model, also called the pour point in watershed jargon, is where all of the development, plus all the associated area drains into. (Indicating)

So in this Delaware side, for example, these reaches converge down this way from Emory Brook up from lower -- and on this side, they're draining upwards here, and they all converge at this downstream point here. This is the downstream point. (Indicating)

ALJ WISSLER: That you call the pour point?

DR. LOWE: Pour point.

This other side, the Big Indian side, here is the development here, kind of right in the middle. Remember from this figure, we cut this huge area with Big Indian Hollow. What you have here, you essentially have two main branches. You have this Birch Creek Branch draining down here, and then you have this Big Indian Hollow coming up from the other side, and they kind of converge to here. (Indicating)

It takes a bit of figuring out and getting used to looking at these figures, the orientation of where things are actually flowing. When you first glance at these, unless you're used to looking at tributaries and watersheds all the time, it's not obvious exactly how the flows are converging and merging. (Indicating)

So as I said, we ended up with two completely separate HSPF watershed models, Big Indian and -- I see it is Wildacres -- I refer to it as Delaware because when I was first setting up the model, I didn't know the name of the development on that side and it was part of the Delaware system.

Conceptually this is how the model -- this is how the linkages go together. This is the Big Indian side. This is the pour point down here, and here is the branching system that we used. As I said, the branching system, the networking is set up so that we can isolate these DEP stations in the DEP watershed areas that they captured. (Indicating)

ALJ WISSLER: The pour point seems to be at the confluence of Birch Creek and Esopus?

DR. LOWE: Right.

ALJ WISSLER: That is that one?

DR. LOWE: Yes. I call it a surface lower. Really what this is -- this is not so much a watershed as it is a junction. So it just kind of forms the joint between those two. The important thing is it captures the flow, what's coming off. (Indicating)

Here is the same thing for Wildacres, Delaware side. Again, this is a little simpler delineation. It was contained at getting to these data points up there. Again, two systems converge at an outlet point down there. (Indicating)

So we have DEP field data to work

with, we have some flow, we have some TSS and TP data to work with. In addition, on the Big Indian side, we have a USGS flow gauging stages which provides us -- we didn't have water quality data but we had flow that we can also calibrate against.

It was decided to use two periods where the most data was. So you have a period of 12 months, April 2001 to March 2002. We call that our calibration period. Then this verification period which is a little shorter, April 1, 2003 through the end of October 2002. (Indicating)

Just to explain what these are, this is jargon that's used in modeling. Calibration is the way you adjust your coefficients in the model to match the observed data, and the verification is then where you take that calibrated model and you run it over a different period and see how it compares with other observed areas. So basically you set it up here and run it against this data set and see how it looks.

(Indicating)

The most important data for any sort

of watershed analysis is the precipitation data. Everything that happens on the watershed is driven by precipitation. If you get precipitation wrong, then all the analysis that follows is wrong.

So we spent considerable time and effort -- much, much more than I would have originally thought -- in getting the precipitation as accurate as we reasonably could. Our main precipitation station is right on the mountain, Belleayre Mountain. It's a DEC station. We get hourly precipitation data from there, and that was the driving data set for this whole calculation. (Indicating)

This was not 100 percent complete. There were gaps in this data that we did have to -- we didn't fill in every gap but we compared to the NOAA station in Tannersville because it was fairly close by, also at a similar elevation. (Indicating)

As you're aware, elevation generates

large differences in precipitation data. So we actually filled in the periods of missing data with data from that Tannersville station.

We didn't fill in every day that was missing. We looked at the Tannersville station. If we saw there was a reasonable, a significant rain event in that time, then we filled it in, but we didn't try to fill in every day.

As I just mentioned, there's a large variation that occurs through elevation changes and we used this Prism Climate Mapping Program -- which is the baby of some guy out in Oregon who I can't remember because I didn't actually do this myself.

We used this Prism methodology to account for the differences in elevation on the sub-watersheds. What we ended up getting from that -- basically what we ended up doing was for every one of these sub-watersheds, we generated a new precipitation record that was adjusted using Prism to account for some sites that were higher or lower than others. Again, this was an attempt to get an accurate as possible precipitation data set to drive this model. (Indicating)

What we're going to show here is some pictures showing the graphical comparisons of our model and the data. (Indicating)

Same for the water quality.

(Indicating)

Having said -- all the manipulations we went through to get good precipitation data, we still have no way of knowing exactly what fell on a given watershed at a given time. We're not going to pick up every storm.

And it's very obvious to see when you don't big up storms. When you look at a tributary flow data and you see it spikes up and comes back down, that was a rain event. If we don't have that rain event driving our model, then we don't pick up that spot. It's as simple as that. And we're not going to pick up every spot. That's a given.

Once we have calibrated the model, and I'm going to show you some figures in a second, I have a separate file showing that, then we had to come up with design conditions for our model projections. This was using our calibration model.

We were going to do a one-year

simulation period, 1993. We're going to take that historical precipitation data, 1993. I assume it has been discussed a fair amount over these few days of why that was chosen, so we're just going to use that.

We used the Tannersville station, again, fairly close, similar elevation. Then we adjusted that using our Prism methodology to basically generate precipitation of all these different watersheds that we believe to be fairly accurate.

These are just other things we put into the proposed development. We accounted for the new point sources that we were told about. Going through these -- wastewater treatment plants and this whole system where they would be discharged to irrigation ponds from May through the end of August. (Indicating)

To put in the land use changes, it turns out that the actual land use change has affected a total of eight sub-watersheds between these two models. The extent of the development which is shown here -- and you probably been looking at the plans of this development ad nauseum so you will be aware that a lot of the boundary of the development -- within that boundary, a lot of that area isn't going to be changed at all. There's only certain patches that are changed. So areas that aren't changed don't show up in our model. They remain the same. (Indicating)

So the changes -- these changes here only affected eight, and these were the changed acres as they were put in the model.

So we had three categories; we had landscaped, golf course -- these are both changes to pervious surfaces. Then we had the addition of impervious surface areas. (Indicating)

You can see the order of these. This Wildacres site is roughly, from memory, is about 21,000 acres to the pour point. And you can see the changes on that basis, a small area. (Indicating)

Big Indian, again, an order of 250 acres here -- over 27,000 acres that goes to the pour point of the model. (Indicating)

Then we ran -- we actually ran three

model scenarios, only two which I'm going to show because one is kind of an intermediate scenario. Obviously the existing conditions.

We ran a scenario with the proposed changes for development without any of the BMPs put in. Then we ran the proposed development changes with the effect of the BMPs put in.

That's the one I'm going to show you, the first and the third one, because that's the way the development is expected to proceed, and that includes all the things that we have already referred to, stormwater detention ponds. (Indicating)

HSPF actually has a BMP module to do this. The way we do this is we took that 80 percent solids reduction number and replaced that so we could curtail our solids off those land uses that are going to have the BMPs in them by 80 percent, and that's where we got our phosphorous reduction.

We don't put in an extra 40 percent for the phosphorous, all we do is reduce the solids, and then because we model phosphorous absorbed to solids, those solids captured, we could capture some phosphorous as well. We didn't want to go and put an extra 40 percent additional phosphorous reduction because we thought that would be double counting phosphorous reduction. That's kind of the overview. (Indicating)

Let me talk about the calibration. At this point, this is going to diverge from the order that you have in your handouts. Basically the calibration verification plots are at the back of that file of handouts, and there's more in there than I'm going to show here. (Indicating)

The first thing we do in the calibration is to calibrate to the flow because it's solids and phosphorous are going to come in logical order after that. So these are just some, not all of the calibration, and these are both calibration and verification. I'm not going to split them out. Essentially you're going to be looking at the same thing. (Indicating)

This is the USGS flow data for Birch Creek, and the model is in blue and the data points are in red. (Indicating)

Of course the thing that everyone notices right away is this -- this is the big snowmelt. This model does calculate snow. It creates fallen snow and it forms a snowpack on the ground, it builds that up over the winter, and then when the temperatures rise, it melts it away. (Indicating)

ALJ WISSLER: These are actual flows down out of Birch Creek?

DR. LOWE: These red ones are actual daily measured.

ALJ WISSLER: And the precipitation is in inches?

DR. LOWE: Yes.

ALJ WISSLER: Where is that data obtained from?

DR. LOWE: This is the data that we used in our model. This is our -- basically Belleayre Mountain data, augmented by the missing days we filled in, and then all of that has gone through that whole Prism methodology to adjust it. (Indicating)

ALJ WISSLER: Which was Tannersville; was it?

DR. LOWE: Yes. We only included a

handful of days. We didn't fill in every
missing day. I only like the big events.
What happened is when we looked at the

Belleayre Mountain data and we looked at Tannersville, we saw there was a fairly significant discrepancy of the total rainfall. Then we looked at data -- it was obvious there were chunks of time where there was just no data. Then we looked at Tannersville, and if we saw a big event that fell within that time, we put it in.

We ended up putting in seven or eight events over a period of a year. We didn't try to fill in every day, because I mean, filling in small days is going to just affect little bumps. (Indicating)

ALJ WISSLER: Just so that I'm clear. So that -- this is for the same January 2001 through December 2002, that's for the same period?

DR. LOWE: Yes, this runs on the same time line.

ALJ WISSLER: But for instance, in April 2001, you have a increase in flow suggesting a precipitation event occurred within that period?

DR. LOWE: No, this is snowmelt. That's an area of significant snowfall. This is always the most dominant. (Indicating)

ALJ WISSLER: But then we have, like September here, a bit of an increase, and then corresponding to that precipitation --

DR. LOWE: A big event there.

ALJ WISSLER: Here in July/August, you have precipitation that's occurring but nothing corresponding in the flow of Birch Creek; do you understand what I'm saying?

DR. LOWE: Yes.

ALJ WISSLER: Why is that?

DR. LOWE: This is data that we just added recently. Two reasons for that. One is that the station might have gone off-line, they might actually be just zeros, there's a chance of that; or the other reason is in the summer, you lose a lot to evaporation. So now you're wetting the ground. The ground isn't frozen anymore. So you have all this rain and it's working its way through the ground. And as it goes through the ground, you lose it by evaporation.

You can see the model picked that up as well. It didn't get quite as low, but you can see it's getting low, even though we had a big chunk of rain. (Indicating)

Bear in mind that around these cold months, you don't lose anything to evaporation.

ALJ WISSLER: These points here, here, here. January and February? (Indicating)

DR. LOWE: Basically when the air temperature is below freezing, below 32 -- probably anything from 40 degrees Farenheit on down, your evaporation loss is really starting to be curtailed. (Indicating)

You can see actually next year here, you have snowmelt but you have nowhere near the same intensity. So you might have either had less snow or you had the same amount of snow, it just melted over a longer period of time. This looks like it just warmed up and never went cold again. So you just basically, in a short period of time, washed off all the snow. (Indicating)

The other phenomenon -- this is where you generate large volumes of flow without associated large amounts of solids or phosphorous because it's not scouring. It's not rain hitting and washing stuff off the surface; it's a more controlled process. So you get relatively clean water coming off. (Indicating)

Then you can see some weird things happen too once you pass this point. Once the snowcap is gone, you can expose a lot of solids there. So if you were to get -- it happened here. Once the snowcap goes, then you get a big rain event, you potentially have a huge spike in solids. (Indicating)

These are just snapshots of the other data. This is some of the BelleGig flow data for our calibration period. Again, the day this started, right around that time, you were seeing a fairly large snowmelt. (Indicating)

Here is the verification period of flow at BelleGig. (Indicating)

ALJ WISSLER: The difference between the blue and the -- this is the actual empirically observed --

DR. LOWE: Yes, this is the observed. The dots are --

ALJ WISSLER: And the blue is?

DR. LOWE: Blue is the model. So it's continuous.

The other thing I didn't mention, this model runs in one-hour time slips, so it does a calculation every hour. And these observations -- the output files from the model are actually daily, daily average values, just to get down the amount of days that you have. (Indicating)

Similar stories. (Indicating)

Again, this is what we do first. We try to calibrate the flow. This is Birch Creek. (Indicating)

The one thing that I was trying to do, is because we have a fairly homogeneous watershed, is not to adjust parameters on a watershed-by-watershed basis in order to match the individual data that we're picking up.

So basically all of these -- both of these two models use essentially the same coefficients, which is what you would expect if you have fairly homogeneous watersheds in terms of land use characteristics, so it wouldn't make sense to have a wide range of coefficients going across the sub-watersheds. That would improve the calibration --

ALJ WISSLER: Let me ask you this:

The model suggests this increase in flow here, and that corresponds to the precipitation, yet the observed is kind of flat?

DR. LOWE: Yes.

ALJ WISSLER: What is that?

DR. LOWE: That's modeling. Who knows. As I said, we have no way of absolutely guaranteeing that our precipitation is actually what happened on the watershed, and this is -- you can see the correlation is direct. It rains, it spikes. Sometimes we're just not going to get the precipitation right. And sometimes in the real world, you see data that 9 percent of the time models seem to do it, other times it just doesn't.

One of the things that always catches people's eye is the spikes, but with watershed models, this -- this is one day, one day live values, and the same with the data. Sometimes you get those spikes. (Indicating)

When we have what we think is a reasonable flow calibration, then we move on and we do the solids. And the reason we do the solids after the flow is obvious -- if we get the flow wrong, then we don't have a chance of getting the solids right.

Solids are a difficult proposition to model for a lot of reasons. One of the reasons is that a lot of the data is just a single grab sample. Somebody goes out and collects a grab and takes it back. If you have one sample at one point in time, that sample, even over the course of a day or 24 hours, the solids in the stream are going up and down.

So you may not have a great representation of that day, let alone what we're trying to do, which is project this over the course of a year.

So the best we hope to do with solids is to try to put the model in the same range as the observed data. The more data that we have, the better we can generally adjust the model to fit the data. (Indicating)

This is Belle5. For example, Belle5, looks like -- at least in this period -- every time they went out and sampled, it was not during an event, judging by these incredibly low numbers that they're picking up, which you wouldn't expect if you went and sampled during a storm event. (Indicating)

ALJ WISSLER: You would expect more turbidity, and you would expect solids to be in the water?

DR. LOWE: Yes. If you look at these numbers, these numbers are in the one to two range. It would be hard to believe that that was during an event. But of course --

ALJ WISSLER: Notwithstanding the fact that the model suggests that there was an event.

DR. LOWE: Well, the model picks up the events and correspondingly spikes up the solids. These days kind of fall a lot. (Indicating)

The other trick in this game is to look at the scales. The scale changes. You can see the scale only goes up to 25. So it's only up to 20, 25. (Indicating)

This is just more of the same. Again, you can see -- probably no storm events in here. At least you're seeing good consistency in the data. One spike there. (Indicating)

ALJ WISSLER: For instance, in this case, even though the chart -- the model is for this one-year period, you only have observed data through the 1st of August?

DR. LOWE: Right, that's all the data there was. If they collected it, we plotted it.

ALJ WISSLER: Just as an aside, you have this enormous spike here and you have a precipitation event that is relatively low. Over here, you have a spike and you have a precipitation event that appears to be twice as long?

DR. LOWE: Yes. That's exactly the nature of calculation. For example, the highest spikes that you'll see in solids don't always correlate to the biggest events. The worse case is if you had a very long dry period with no precipitation and then you get a rain event, even a moderately sized rain event, you get a tremendous amount of solids washes off, huge spike, because it has accumulated basically.

Then if you were to get a bunch of

minor rain events but consistently occurring and then you got a huge rain event, you wouldn't see a corresponding huge amount of solids because basically the previous however many days before you kind of scoured off the loose stuff and already moved it. So it's not a linear process by any means.

In this case you can see that we had nothing for a time period of two weeks before, and then this relatively modest storm comes along, it builds up and gets washed down. (Indicating)

So in general, you see spikes in solids where you see spikes in precipitation, but they're not always linear-related. In fact, in general, they never are. And if you get a period of persistent rainfall, then you may not see a spike.

This is actually three years plotted on one plot. This is phosphorous. After we were okay with what we were doing with solids, then we went on and we looked at phosphorous. Phosphorous is, again, in general it's less data than the solids data, and it tends to be much more volatile. In this case -- this is a

verification, the modeling starts here. This model is really only working up here.
(Indicating)

Again, we have very limited data. We're picking up -- looks like one day a month here -- so we don't have a tremendous amount of data so that the -- because the model is run every hour, it's going to show much, much more variation. (Indicating)

Again, we see this large variation, large numbers that pop up occasionally, and your model may never get all those spots. Sometimes it will, but sometimes it won't. (Indicating)

What I look for in this sort of plot is that a lot of times we're hovering around where a lot of the data was, and then we have a bit of a range that is somewhat approaching that high number, but it doesn't always happen. It doesn't get all the way up to the top of that range, and we probably would not expect it to. (Indicating)

This was BelleGig verification showing there was only two points during this time. So in this case we have the two points, and when you only have two points like this, such limited data, the most we could expect the model to do is to kind of drift around the same range.

ALJ WISSLER: You're pointing to here and here? (Indicating)

DR. LOWE: Yes. This is just the legend, telling what's going on. This is just a plotting error. For some reason, it picked up some negative numbers in the fall and tried to plot them. That's just spurious noise from the plotting. (Indicating)

Again, not a lot of data, model more or less gone through the middle of the data. (Indicating)

Here is a little more data. Some larger events at the end of the period that we pick up. Part of that -- we didn't particularly have a lot of rain that we were driving the model with so we may not have seen old precipitation that actually came down. (Indicating)

Same thing for a different site. (Indicating).

So our conclusion is that we don't

have a perfect model obviously, and we're never going to have a perfect model. It's just the nature of sporadic data, and trying to capture that exactly would be an impossibility, but what we think we have is a model that more or less represents what's going on. We tend to get things in the same range and we think on that basis we have a model that is as calibrated as we think we're going to get, without spending a tremendous amount more time. We'll probably getting little benefit from going there.

So we think we have a model that's consistent. We have parameters that are consistent across the watershed. This isn't a model that's been tweaked for every one of those small watersheds individually -- which we could do. If we do that, we'll get the model to go through the data. But we didn't do that. We have a model that if you looked at all of the data together, we have a model that does a fair job of representing where all the data is at.

Then on that basis, we went ahead and ran these projection runs. This is 1993 year.

I'm only going to show solids and phosphorous. Flow didn't change. Our model is on too large a scale to pick up the individual flow changes. We're using data at times that you're never going to see any differences in flow. So what we're looking for is differences in solids and phosphorous. (Indicating)

I'm only going to plot the watersheds that changed. The watershed that had no change, obviously their before and after are exactly the same. What I'm going to show is from the top of the watershed working down -- so Emory Upper is our uppermost portion of this watershed. What you should see is the watersheds that have the biggest percentage change in them should show the biggest differences. (Indicating)

So the blue line here, BMP -- this is the proposed conditions with the BMP, and the green line is the existing conditions. Unfortunately the blue and the green are going to flip back and forth because I have no control over this plotting program whatsoever. This is an HSPF add-on utility, and it seems to have a mind of its own in how it produces the colors. (Indicating)

So on the upper portion of the

watershed right at the top here, we see that the changed conditions listing the solids, the spikes are larger most of the time than the existing condition. (Indicating)

ALJ WISSLER: Why is that?

DR. LOWE: We're projecting more TSS, aquatic TSS loadings. In some cases, where you see one line, it's not obvious where this peak ends, one obliterates the other. (Indicating)

That's what we would expect to see up in the upper reaches of the watershed where the effect is going to be most felt. So a result like this gives us some confidence that our model is actually doing something. If we didn't see any change here, then the conclusion would be: Well, the model isn't doing anything, it's not working. The fact that we do see differences, which you expect, is good.

This is the same watershed, Emory Upper right at the top of that system. Again, the blue line indicating an increase after development as compared to existing conditions. (Indicating)

As you work your way down this Emory Brook system, the next piece you get to is the Belle5 Watershed. Here the colors are flipped around. In this case, what you see is that, in general, the proposed conditions are lower. In some cases, it's hard to tell. They may be the same or slightly larger, but overall the blue poking through here is the existing condition. So it's actually showing you a reduction in projected solids. (Indicating)

This is the phosphorous for that same site, still higher than the existing conditions. Again, probably somewhat what you would expect on these real small watershed that's the same land use change. That's going to be most affected. (Indicating)

Below those systems is what we call Emory Lower, so we're working our way down through the system now. What happens as you work your way down, you're accumulating larger and larger drainage areas. This individual watershed that we parceled out may not be all that large, but it's also receiving contributing flow from everything above it. So the acres that drain into this are going up and up and up as you go down. (Indicating)

What you see here is a bit -- in some places, the blue line here is the projected. Some cases it's lower. The high points are lower. And over the summer, it was projected to be higher. (Indicating)

So on average, about the same for phosphorous, but made up of sometimes being higher, sometimes being lower.

This is the corresponding TSS plot to this Emory Lower Watershed. As you can see, they're pretty much on top of each other at this point. What you're seeing is what we expect to see. As you go down the system and add area, you see a dampening effect. And that's exactly what we're seeing through the model. (Indicating)

This is just the outlook point, looks kind of like Emory -- the lower one before it, it's directly downstream. Essentially the same. That's like the previous part. (Indicating)

Then for completeness, show BelleTod, BelleTod kind of comes in right at the pour point down there. It sits on its own little system off to the side there, and you can see they're pretty close. Again, you can see the numbers rising towards the end of the spring melt. You see that big spot. (Indicating)

Solids, BelleTod, pretty much on top of each other. (Indicating)

Finally, the last thing I have to show you is exactly the same sequence on Big Indian. Working from the upper reaches of the watershed, this Birch Creek Upper working down towards the pour point. (Indicating)

You'll see this in all the plots on this Big Indian. The phosphorous plots are dominated by this one day when this huge number came off. I'm not exactly sure what propagated that huge number but I suspect -- if I had to guess -- that we had snowmelt in here. This is probably the point where the snowpack disappeared, and now the ground is laid bare, and then we have a precipitation event and washed all the solids off with that. So you're going to see that spot showing up right there again. (Indicating)

Again, this is a large solids load coming off of it. (Indicating)

This particular portion, the upper point of the watershed, there wasn't a lot of land use changes, that's why we don't see a lot of difference there. (Indicating)

As we work our way down, BelleGig is down here, working the way down the system; smaller watershed, more changes, so you see -- again, the big number, but you can see that we're predicting, for much of the year, increases in TP from the changed conditions. (Indicating)

Solids, I'm not actually sure this plot is right. I think this plot may be two different days that got mixed up. (Indicating)

ALJ WISSLER: How so?

DR. LOWE: They look so different. This thing looks completely flat here so I am not sure. You saw all the others. There was a correlation between the before and after, and this one, there's no correlation at all, so I wouldn't read too much into that. It may be likely that we plotted two different dates.

(Indicating)

BirchMid, not any noticeable

difference between before and after there. Some slight differences in the solids on the peaks, not a lot -- looks like the post-development peaks are slightly higher later on in the year. (Indicating)

During this snowmelt period, they look like they're pretty much tracking the same. That may well be the case because when the ground is covered with snow, these changes kind of get nullified and snow is snow, and the land use that's under it is obviously covered. (Indicating)

Again, no noticeable changes there. Although, if you were to re-plot this and take out this peak and everything moved up, you may see some more discrepancies. (Indicating)

A similar story here for the solids. (Indicating)

This is just the outlet, this is the combined. Basically what happens is all this huge Big Indian Hollow Watershed gets added into the calculation, so all of the numbers

are flowing and everything continues to jump.
(Indicating)

This is the last plot. This is the

TSS for the outlet point on that.
(Indicating)

MR. RUZOW: Your read of that, Scott, is that they're matching up basically between pre- and post?

DR. LOWE: That's what, for the most part, the plots are showing --

MR. RUZOW: By the time they're reaching the outlet points, the pour points as you suggested for the basins themselves, the watershed areas that are affected, they're running very parallel between pre- and post?

DR. LOWE: Yes. This side, much more -- I mean you can't even tell the difference -- but this is a big watershed. This is like 27,000 acres. You're trying to look at the difference of 250 acres of change over 27,000 to get a total capture. You would expect that you're just going to dampen everything out. (Indicating)

The other side was a little more interesting, the Delaware side, because the averages looked the same but you could actually see the discrepancies. That was the one where you saw the post-development peaks were lower, but it tended to carry a larger concentration over the summer. That's it.

MS. BAKNER: This, for us, is pretty much close to the first time we have seen this information. So what we would plan to do is submit a report to go along with it so that it's clear when you're looking at it back in the office what the slides mean. It will also give us a chance to look at the BelleGig 1993 slide to see if there was an error with that.

MR. RUZOW: The plotting with that. But let me ask Scott. You have seen the data that the LA Group put together in terms of predicting phosphorous levels in this area. You have done your own modeling for purposes of that.

Are the changes -- Keith Porter from the Water Resources Institute at Cornell characterized the changes that these various models and estimations were predicting, I believe the word was trifling in the watersheds in which this project is located.

Would that be your view as well?

DR. LOWE: I think my view is kind of the story that I represented. When you go up to the upper reaches where you are at the real small watershed, then you see a change. The plots show that, you saw the change. But then as you go down, the change is very hard to detect. It's getting lost in just the volume of material that's coming from elsewhere. So, yeah, the changes look small.

MS. BAKNER: That's it. That's all we have with respect to that.

ALJ WISSLER: Are you finished?

MS. BAKNER: Not completely finished but I can do this quickly. I just wanted to point out that we have the resume of Guy Apicella in the packet. He assisted Scott in doing the model. Steven Bilheimer and Thomas Vanderbeek reviewed the HydroCAD analysis that LA Group did, and we'll be entering a letter into the record at a later date sharing their views on the HydroCAD analysis. As you can see, we just had one part done relatively recently, so we wanted to make sure we had everything in there.

The other thing we have introduced into the record is the three exhibits, 149, 150 and 151. 150 and 151 have to do with the old SPEDES General Permit. We thought it was important to put that in there because Pat, during his presentation, talked about how we applied under the old permit, and then of course there were changes later under the new permit. So we just wanted to make sure we had a complete record on that.

Similarly, with respect to the DEP letter concerning Phase 1 and Phase 2 of the stormwater program, we just wanted to make sure that we had everything regarding those programs that we could find in the record. That's all.

MR. ALTIERI: Can we have a minute, your Honor?

ALJ WISSLER: Certainly can. You can have five of them if you want.

(2:06 - 2:20 P.M. - BRIEF RECESS TAKEN.)

ALJ WISSLER: Mr. Goldstein.

MR. GOLDSTEIN: A quick process point on today's going-on, if I may. Maybe I'm missing something here, but there's a concern that we have -- the project Applicant and the sponsor prepared the Draft Environmental

Impact Statement and all the supplementary materials. The City, CPC, the State came in, presented their issues for adjudication. We have had rebuttals on all sides again, but today, particularly on the stormwater issue, the Applicant, in addition to presenting rebuttals, is presenting revisions to plans.

Those revisions may address some issues, may create other problems. I'm wondering how the City, the State and CPC will be able to address those. Obviously, in an adjudicatory hearing, we would be happy to discuss those in more detail, but short of that, it's unclear to me, I mean, this could be a never-ending process.

ALJ WISSLER: I think if Mr. Gerstman was here, he would say something like: Your Honor, we reserve the right to respond in writing to the submissions that were made today.

MR. GOLDSTEIN: Well, that would certainly be one thing that we would ask.

ALJ WISSLER: And I think that's, at this point, just about understood for virtually everything we have done.

MR. GOLDSTEIN: We'll continue that process then.

MS. MELTZER: Your Honor, to pick up on that question which we share, I guess -- the question of whether or not issues have been -- ultimately that you'll be looking at whether or not adjudicable issues have been raised -- will be based on -- not on responses to the initial submissions by the Applicant to the DEIS and the plans as of May, but it will be based on remaining or new issues raised by the potential intervening parties concerning submissions as of August, or concerning submissions as of October?

It's not clear -- I would like some clarification on what we're looking at. What issues are you considering in terms of determining whether they're adjudicable?

ALJ WISSLER: I'm not sure I'm clear on what you want from me. Clearly, there are responses that need to be made in the nature of sur-rebuttal or sur-reply of some kind.

To the extent that you believe that new issues have been raised, then -- and to the extent that -- let me just understand --

to the extent that new issues have been raised and those issues you don't feel are covered in your petition, are you asking me about whether or not to amend --

MS. MELTZER: I assume you'll let us respond to the submissions that have been made today and raise issues based on those, even if they are not identical to issues that we raised initially?

ALJ WISSLER: Of course, sure.

MS. MELTZER: To use a specific concrete example, one of the issues that we raised had to do with whether or not the -- some of the stormwater ponds would create point source discharges.

At this point that issue has shifted because the Applicant has -- subject to our review of the new plans of course, which we haven't had a chance to review -- but based on their presentation today, it looks like that issue has shifted.

They have proposed an alternative way

of dealing with these potential point sources, actually creating actual point sources. So the issue that we originally raised has been either addressed or modified, but that issue is no longer really before you. So I'm trying to clarify what is the status of that issue, what is the status of new issues.

ALJ WISSLER: You mean an issue that may have been raised may be rendered mute as a result of changes?

MS. MELTZER: Yes.

ALJ WISSLER: Well, it just seems to me, using that original issue as a starting point and seeing where we have now ended up, if the issue has morphed into a different issue --

MS. MELTZER: The question then is whether or not, based on the new plans, there is an adjudicable issue.

ALJ WISSLER: Right. I mean you should feel free to raise that. I'm not going to stop you from raising that.

MS. MELTZER: Thank you.

ALJ WISSLER: Is that helpful to you, Mr. Goldstein?

MR. GOLDSTEIN: Yes, your Honor.

ALJ WISSLER: Mr. Altieri.

MR. ALTIERI: Thank you, your Honor.

Introducing Pat Ferracane, he was introduced before.

As to the prior discussion of the stormwater issues, you articulated a certain concern regarding stormwater runoff from ponds; correct?

MR. FERRACANE: Correct.

MR. ALTIERI: Briefly what was that concern?

MR. FERRACANE: The concern was related to the discharge of overland flow to steep slopes and the potential for creating erosive flows down the slopes and erosion on the slope.

MR. ALTIERI: Today, from the Applicant we saw a presentation and some plans that seemed to address that concern; is that correct?

MR. FERRACANE: Yes.

MR. ALTIERI: In your opinion, does the modified -- these modified plans, does that address your initial concern?

MR. FERRACANE: They appear to based on the presentation that the LA Group has given on the modifications. It seems that it has addressed the flow by removing it from part of the plan, but we do need the opportunity to take a closer look to see that indeed it has, and that in doing so, it hasn't created some another problem.

MR. ALTIERI: In that regard, we're simply reserving the right to review more closely the written submissions and whatnot.

ALJ WISSLER: So noted.

MR. ALTIERI: And this general reservation, I guess, would also apply regarding the modeling we just saw, and any written materials that will be forthcoming in that record, and having staff have adequate time to review these plans and the modeling.

Pat, you had one more concern regarding --

MR. FERRACANE: More a point of clarification. Ms. Bakner made the statement that the New York State Stormwater Management Design Manual changed and altered the pollutant load reduction for phosphorous from

50 percent to 40 percent; when in fact, chapter 5 of the manual, which has not changed since its original introduction in 2001 --

chapter 5 being the performance standards of the manual -- state that 80 percent and 40 percent -- 80 percent total suspended solids and 40 percent phosphorous removal are the removal rates associated with all of the practices in the design manual.

The change that occurred from one version of the manual -- from the 2001 version of the manual to the 2003 version was the elimination of an appendices that addressed a pollutant load model that had a different pollutant load removal efficiency associated with the micropool extended detention ponds, and that was 50 percent.

But that was never intended to be a performance standard or be considered a performance standard. The only performance standard is in chapter 5, and that always was, and still is, 80 percent TSS and 40 percent phosphorous removal.

MS. BAKNER: So can I ask you a question: Did we use the right number?

MR. FERRACANE: If you used 80 percent, 40 percent, yes, you used the right number. It was more of a clarification.

MR. YOUNG: Was there a performance standard in the Phase 1?

MR. FERRACANE: Explain what you mean by Phase 1. You mean initial permit, GP 9306, was there a performance standard?

MR. YOUNG: Yes.

MR. FERRACANE: There was a guideline in one of the appendices that stated that the post-development pollutant load should be attenuated to pre-development conditions; but it was not in the body of the permit. It was in one of the appendices and I can't recall offhand which one it was.

MR. YOUNG: What does that mean?

MR. FERRACANE: We never interpreted it as a standard, as a requirement. Let me qualify that by saying, we never interpreted it in DEC Region 3 area as an absolute, that you had to attenuate post-development pollutant loads to pre-development levels.

MR. ALTIERI: Unless your Honor has any questions --

ALJ WISSLER: Two things for you. One is DEC 11.

MR. ALTIERI: Correct, left that on

there this morning.

ALJ WISSLER: Are we introducing this?

MR. ALTIERI: I believe it was already admitted but it had to be copied. And I distributed copies and you have the original.

ALJ WISSLER: Dr. Lowe in his presentation made reference to Belleayre Mountain DEC Air Monitoring Station hourly precipitation data used in his modeling. I want that.

MR. ALTIERI: Your wish is my command.

ALJ WISSLER: With that, Mr. Young.

MR. YOUNG: Your Honor, the reason that the Coalition is here, and today I'm speaking on behalf of all the watershed communities, is what we see in this proceeding terrifies us that we'll never have another project. Particularly on this issue of stormwater, that we're still at an Issues Conference and we're adjudicating whether or not something to -- well, we're investigating whether or not there's something to adjudicate.

I have to estimate this Applicant has spent 500, $600,000 by now. He must be spending $10,000 a day on just having all these technical people here.

The point is that if you weren't in the New York City Watershed the way we are, we have a stormwater program, and the stormwater program, up until two years ago, said you had to disturb five acres before you triggered the stormwater program. Now it's two acres or one acre. Now it's one acre.

In a normal watershed, you have an engineer who prepares your plan. That plan has an erosion control component to it, and it has a component as to how you're going to handle post-development stormwater. The focus of the plan, as I understand it, is the selection of the technology that is going to collect the water and achieve the 80 percent or 40 percent reduction. That's what they focus on.

A person outside the watershed has an engineer, develops a plan, they submit a notice of intent with some description of the plan and how they comply with the -- they don't need to submit the plan but from the description, that they comply with the general permit, wait five days and they can go ahead.

In the watershed, because we're in a TMDL -- regardless of whether we're stressed for phosphorous -- every water body has a TMDL for phosphorous, and if we're going to admit phosphorous, then we have to do a 60-day notice period.

In addition, we have in the watershed, we have an individual permit that we have to get from DEP. Just as Mr. Ferracane indicated -- well, different than what he indicated -- DEP interprets their regulation absolutely as saying that you can have no net increase. That's what we're fighting about. They interpret that there's a performance standard; you can't admit more post-development than you admitted pre-development.

This Applicant, when he is done with all this, still has to go and get that individual permit from DEP. So all these calculations that we're doing for purposes of this Issues Conference are going to be done again for purposes of that to the satisfaction of DEP, and he is going to have to prove to

DEP, as part of the individual permitting, that his discharges are no greater now than they were pre-development.

So what are we going to adjudicate at the adjudicatory hearing if the Applicant, if the standard that the Applicant has to meet -- you might as well say this: The baseline is also the DEC draft permit.

In this particular case, unlike every other case I have been involved in, instead of just relying on a general permit, DEC issued an individual -- proposes to issue an individual permit.

An individual permit with monitoring the effluent, monitoring the stormwater basins to conform that it's all kosher, that the Applicant does what he says he's going to do, and as part of that individual permit, they have to submit detail design plans on their stormwater collection system and on their stormwater treatment system and have them approved by DEC, in addition to having them approved by DEP.

We're worried about, I take it, two primary pollutants, phosphorous and TSS. We have sort of demonstrated -- or the City will concede -- that this is de minimus from a phosphorous point of view, that the amount of phosphorous that this particular project, under -- no mater whose estimates you're going to review -- is de minimus. It's not going to have an impact on the overall water quality of the Pepacton or the Ashokan.

And on TSS, I think, you know -- I can't -- there is a problem. We had -- was it Mr. War -- who was the fly fisherman who came in the other day?

ALJ WISSLER: Darrow.

MR. YOUNG: We had Mr. Darrow who came the other day who was talking -- basically it was an eloquent presentation -- on the impact that's happened in the Esopus since 1996. Mr. Darrow also gave an eloquent presentation in the United States District Court when Trout Unlimited sued New York City over the Shandaken Tunnel. He made the same presentation.

The problem with turbidity in the Esopus has nothing to do with what we in these communities has done; it has hundreds to do with the Shandaken Tunnel, and the City's basically taking water from the Schoharie and sending it to the Shandaken Tunnel.

And I guess we would like to introduce the court decision in the Shandaken Tunnel case together with -- the court required the City to submit a permit application to the DEC for a SPEDES permit for the Shandaken Tunnel. DEC issued in February a draft permit. The City provided comments on the draft permit and the DEC recently issued a new draft permit in August.

So we would like to introduce the court's decision and the City's comments on the draft permit. Because to us, it demonstrates that the TSS that we're worried about from a project like this, although it may be a big project, again is de minimus relative to what is the TSS problem with the Esopus or the Ashokan Reservoir.

One of the things in the draft permit that the DEC asks for is that if there is an exceedance of turbidity, that the City do an investigation and address the source and remediate the source, but the City's position is that -- the draft permit states that: "Once the sources of the exceedances are identified, the identified sources shall be used to prioritize compliance actions to be taken in a schedule of compliance, thus DEC relies on the underlying assumption that the program set forth on page 9, Stream Restoration Critical Area Seeding, Conservation Easements will actually reduce turbidity in the Schoharie Watershed.

This underlying assumption has not been established. We believe that these programs provide water quality benefits by, among other things, forestalling new potential sources of turbidity in the watershed by virtue of its geology and topography, referring to erosion; however, while the programs may lead to localized turbidity reductions during low-flow conditions, we do not believe that they will significantly reduce turbidity exceedances under the permit, which are more likely directly related to severe wet weather events. These high-flow storm events are likely to have significant increases in turbidity in the Schoharie

Reservoir and in the Shandaken Tunnel."

Later on they say that from these measures that we are taking now in the Schoharie, stream bank stabilization, seeding -- they say you are not going to be able to measure -- you can't measure that impact in the quality of the water in the Ashokan.

So it seems to us that if these major things can't be measured, and here we're spending literally tens of thousands of dollars to determine it in a very detailed, absolute manner what the phosphorous uploads are pre- and post and what the TSS loads are pre- and post, it will prevent any other project from going forward, and is not necessary.

There is enough information in this record for DEC to issue its final permit, and for DEC to review the design plans that they are going to have to submit on that final permit. And there's enough information in this record for DEP to issue its individual permit.

I don't know what we're going to

adjudicate. Are you going to adjudicate whether .05 kilograms per hectare acre is the right phosphorous exporting load?

I just wanted to -- you know, when DEC -- when DEP did the TMDL for the Ashokan Reservoir, they did all the background work. They identified the amount of acreage that is deciduous forest, and they identified what the loads were from those units. When I calculate out -- when I divide the loads by the acreage, the lowest I get is .16 kilograms per hectare acre, which is not higher than the .05.

When -- DEP issued -- DEP has issued a guidance document for Phosphorous Offset Pilot Programs. This is the procedure, if I am going to put a new discharge in a phosphorous-restricted basin, I have to get an offset 301 for the phosphorous loads. This document describes the procedure I have to use to calculate the pre-phosphorous load and the post-phosphorous load from the entire project, from the stormwater, from the point sources.

So they have a procedure that they have identified and they require an Applicant to use in getting a pilot offset.

That procedure relies on something called a simple method. It tells you to use a rainfall of 50 inches a year in the Ashokan Reservoir. It tells you to use the runoff coefficients from -- runoff coefficients using the National Urban Runoff Program Database.

In other words, it has a procedure in it as to how to calculate the post/pre-, and is different than what's being asked of this Applicant here, and much, much simpler than what's being asked of this Applicant.

So our feeling is that -- we're concerned that the process in itself is too much for any developer to overcome, and we urge you not to find that this is an adjudicable issue.

ALJ WISSLER: Do you want the court decision and comments to be entered as exhibits?

MR. YOUNG: Yes, and also the pilot offset.

ALJ WISSLER: I'm sorry?

MR. YOUNG: Also the Guidance for Phosphorous Pilot Offset Programs.

ALJ WISSLER: So you're giving me

three items?

MR. YOUNG: Yes.

ALJ WISSLER: We actually have no Exhibit 6. Would you like to make one of those Exhibit 6?

MR. YOUNG: I'll make the New York City Department of Environmental Protection Guidance for Phosphorous Offset Pilot Program as Exhibit 6.

Then I'll make the court decision whatever the next exhibit is.

ALJ WISSLER: It will be 17.

MR. YOUNG: And the City's comments will be 18.

ALJ WISSLER: Fine.

("NYC DEPARTMENT OF ENVIRONMENTAL PROTECTION GUIDANCE FOR PHOSPHORUS OFFSET PILOT PROGRAMS" RECEIVED AND MARKED AS WATERSHED COMMUNITIES EXHIBIT NO. 6, THIS DATE.)

(COURT DECISION IN CATSKILL MOUNTAINS CHAPTER OF TROUT UNLIMITED V. CITY OF NEW YORK

RECEIVED AND MARKED AS WATERSHED COMMUNITIES
EXHIBIT NO. 17, THIS DATE.)
("SHANDAKEN TUNNEL SPDES PERMIT -

CITY OF NEW YORK DEP" RECEIVED AND MARKED AS WATERSHED COMMUNITIES EXHIBIT NO. 18, THIS DATE.)

ALJ WISSLER: Anything else from anybody?

MR. RUZOW: Since Marc isn't here, I need to --

ALJ WISSLER: The last word.

MR. RUZOW: With respect to Kevin Young's point, the watershed communities' points about the phosphorous issue -- these issues, the stormwater issues that are the subject of the permit and these limits, I do want to echo his point in that we have demonstrated -- there has been acknowledgment -- that these numbers, the variations of the numbers, are not significant, and that their contribution, at the end of the day, to the receiving waters is not significant. Not unimportant, I stressed that before.

The reason that we all addressed these

issues, the reason we have come back with additional analysis both at the request of the City, as well as DEC, is that we understand that there needs to be a measurement. But we believe there's enough -- we'll supplement the record and clarify it to the extent we can -- there's enough information in this Administrative record for the Department to reach a judgment with regard to -- and at the end of the day, it may be the Department staff that makes that determination as it is appropriate -- to make a judgment about an appropriate number to be used in this TMDL amendment and in the SPEDES permits that we can hopefully achieve in a consistent fashion, assuming the project is built.

We think there is no real issue here to be adjudicated. The record needs to be clarified. It needs to be simplified with respect to how to come up with that point. We believe, to a certain extent, that whatever number is arrived at by the Department, it will probably have to be re-noticed from a procedural point of view for the purpose of SPEDES; but nevertheless, that's the process that we're in.

This process of Issues Conference, that may or may not lead to an adjudicatory hearing, is supposed to be an iterative process. It is not a process by which armed camps come to battle and it's decided, period, and everybody goes home.

The obligation of an Applicant, as has been expressed by Mr. Gerstman and others, is to meet the burden of meeting the statutory standards and regulatory criteria, both under the ECL, as well as other laws, including SEQRA, and we take that obligation quite seriously.

When we hear from one or more of the parties that there is something that we need to address that we need to think about differently, we need to analyze differently, we take that seriously and respond.

So the supplementation of the record, with additional plans, with refinements, et cetera is something that is an ongoing process, and indeed, when we get responses -- we expect to get additional responses. If we feel that is necessary we will provide an additional response. And if it requires a little more time for people to respond, we will provide for that. We have done that all along here. But we see that as our obligation, and that is the nature of this process. It is indeed integral to it.

The role of the ALJ, the role of the Commissioner is to come out with a decision that makes sense under the ECL, not act on a certain set of prescribed submissions and walk away from it. That's not anybody's obligation, and least of all the Applicant's. We think that's an ongoing element.

I think we've heard extensively that this issue is not -- at least regarding phosphorous and these numbers -- is not capable of the kind of precision that indeed adjudication was thought about as a process to help resolve.

We are at the earliest stages of the methodological development of testing, et cetera. We have heard of the good efforts by DEP. They have advanced these issues enormously in the last ten years. They will continue to be advanced, but they're not yet at a point, a standard setting for precision. And in that light, there's not much we can do about it.

Lastly, and I feel bad that Mr. Gerstman isn't here, but there has been a tendency to describe the project itself and cast it as a mega project, a big box -- things that, at least in the land use business, that connote things that are viewed as land uses and activities that are aesthetically unacceptable or ordinary or have a character that connotes a high negative. It's done, perhaps in part, for press purposes or perhaps to place an image.

I need to be very clear, that the design of this project by dozens of professionals, with incredibly talented credentials and experience, has been directed towards designing, fitting this into a sensitive environment, recognizing that it's sensitive; recognizing that the design of the buildings, the design of the course, what is left up in terms of trees and buffer areas and all the rest, to the best extent we can, harmonize and balance an important economic opportunity for the region, as well as protecting the environment to the extent we can.

The design of the buildings -- to call these buildings a "big box" -- and our firm knows from some big box development because we represent a number of developers who, in the appropriate place, seek to place these types of land uses -- to call this project a big box is an unfair characterization.

It is my hope, and I think over the last several weeks of this effort, counsel for all the parties have done a good job at avoiding, to the extent we can, rhetoric as opposed to trying to focus on science, and argue an important issue for your Honor, because at the end of the day, you are blessed with the obligation to sift through all of this stuff.

Our hope is that as we proceed with this, and we have had opportunities's today -- and we appreciate DEP's taking on that responsibility and asking Mr. Olson to go back to look at his analysis. That is something that is not an obligation by DEP to do in the ordinary course of DEP's commenting, but I think it helped the record and I think it will help us and help your Honor in terms of fashioning a judgment about how to proceed.

It is with that vein that we look to all the parties in terms of the development of ideas or conditions, or indeed concerns they still have, to share those with the Applicant, in whatever format that they choose to, and we will respond. We do not dismiss anybody's comments about anything on this project.

And with that, I will close. Thank you.

ALJ WISSLER: Anybody else?

MR. GOLDSTEIN: There are many things I could say at this point. Of course my colleague, Marc Gerstman, could say them no doubt with more authority better than I. So I'll just say that we'll respond -- we had said that there were not going to be closing statements, and we're not intending to make any now, so why don't we just close on a positive note.

I think we all ought to congratulate Theresa, our intrepid court reporter, for doing a very, very good job under tough circumstances; and on behalf of the CPC, we would also like to thank you, your Honor, for the patience and respect you have shown throughout this proceeding. You have ruled against us on more than one occasion, but we appreciate the way in which you conducted the proceedings anyway.

ALJ WISSLER: Thank you, Mr. Goldstein. I would like to indicate for the record that I really appreciate and commend all counsel for their very professional and very zealous representation of their respective parties and constituents. I'm particularly thankful for the spirit of cooperation that has been the hallmark, I think, of this rather long Issues Conference which ain't over yet.

Again, I echo Mr. Goldstein's sentiments in thanking Theresa, who of all of us, has been the only person who has actually had to listen to everything we have had to say over these many days. With that, we will conclude. Thank you.

(2:57 P.M. - WHEREUPON, THE ABOVE

ISSUES CONFERENCE CONCLUDED.)

C E R T I F I C A T I O N

I, THERESA C. VINING, hereby certify and say that I am a Shorthand Reporter and a Notary Public within and for the State of New York; that I acted as the reporter at the Issues Conference proceedings herein, and that the transcript to which this certification is annexed is a true, accurate and complete record of the minutes of the proceedings to the best of my knowledge and belief.

THERESA C. VINING

DATED: September 16, 2004