(Complying.)
BY MR. RAUCHWAY:
Q. Let's talk about leakage from the district's storage ponds. You were here yesterday when Mr. Aley was testifying, weren't you?
A. I was.
Q. And you saw his water budget that concluded that the storage ponds leaked 21 million gallons in 2020?
A. I did.
Q. Do you think there's any way that's right?
A. I do not.
Q. Okay. Why is that?
A. Well, the amount of leak loss he was claiming was 21 million gallons. That's bigger than my entire Pond 3 volume. That's 18 million and change. If we had that kind of leak loss, we would see that. My operators would see that, that something was wrong. And you couldn't have that much leak loss without seeing it.
Q. Are you telling the jury that these ponds don't leak at all, not even one drop?
A. No. They do and can leak, and that's recognized by the department's rules that these ponds can leak some.
Q. Are you familiar with the master spreadsheet where the district keeps all of its data, the all sewer flow spreadsheet?
A. I am.

Q. Let's put up Exhibit 12, which is plaintiff's exhibit, the spreadsheet Mr. Aley worked from. Let's also put up Mr. Aley's table, and we'll see if we can correct his water balance.

(Complying.)

BY MR. RAUCHWAY:

Q. Let's start with line 1, sewage inflow. That's the district's data; right?

A. Yes. Everybody agrees that's the number for 2020.

Q. Okay. So that number is correct. Let's keep that number there.

Now, line 2 is annual precipitation. Do you recall Mr. Aley's testimony that precipitation could vary somewhere in the order of 20 percent from year to year?

A. Yes.

Q. And does that accord with your experience of working in Big Sky for 26 years?

A. Absolutely. For example, this year, our snow pack has been running 70 to 74 percent. This last few weeks, we're seeing a little more precipitation, but it can vary easily that much.

Q. Well, let's increase the number by just 15 percent. Do you have a calculator up there with you?

A. I brought this. I did not bring my calculator. There's one on the desk.

MR. RAUCHWAY: May I approach, Your Honor?

THE COURT: Give it to the clerk, please.

(Handing calculator.)

THE WITNESS: So if we increase line 2 by 15 percent, that's 11.18.

BY MR. RAUCHWAY:

Q. Okay. Let's fill that in?

And then line 3 is just 10 percent of line 2; right?

A. Right. So just move the decimal one spot to the left. There you go.

Q. And if we do some simple addition to get all the water inputs of lines 1 through 3, what do we get there?

A. 183.62.

Q. Okay. So that's all the water into the ponds. Let's talk about the change in storage. That amount changes a lot in December and January, doesn't it?

A. It does. And December is one of our biggest months, the week of Christmas to New Year's, one of our biggest traffic weeks of the year.

Q. So you could get a much different number there for that change in storage just by using slightly different dates; right?

A. Yes, correct.

Q. Now, Mr. Aley used December 9th of 2019 to December 2020. And if we look at Exhibit 112, the Pond Depth Master Pivot Table -- maybe you recall from Mr. Aley's testimony yesterday

that we also have measurements from January 17th of 2020 and January 15th of 2021?

A. Yes, he did show that.

Q. And if we actually use those dates instead of Mr. Aley's dates, would that be more accurate?

A. I think it would be. So you are looking at -- I think it's 364 days difference between those two. So it's closer to a full calendar year, being 365. The dates he used I think was 362 days apart.

Q. Okay. So if everyone will bear with us for a moment here, what was the measurement in feet as of January 17th of 2020 of pond water?

A. 6.99.

Q. Okay.

A. And when you say, "feet," so that's a measurement of the water that's in the ponds. My guys go out and take these periodic measurements. So from the feet, we've got a model that tells you what that volume of water is based on the depth of the pond.

Q. The same model as Mr. Aley's?

A. Same model, yes.

Q. Okay. So that's January 17th, 2020. Let's look at January 15th of 2021. And the measurement for that date?

A. 9.67.

Q. Let's switch over to the Pond 1 tab where we have the

conversion model. And 9.67 feet, what does that convert to?
A. 16.12.
Q. We didn't quite run the -- it didn't update. 1.67 --
A. Is 23.64 million gallons.
Q. If we put 6.99 in there, what do we get?
A. 16.12.
Q. All right. And if we take the difference in those values, just like Mr. Aley did, what do you get?
A. What was my first number there? I don't have any scratch paper, so I didn't write down the first number.
Q. 23.64 and 16.12.
A. 7.52 million gallons.
Q. All right. And if we go back to Mr. Aley's chart there, where does that number go?
A. That goes on line 5.
Q. All right. In place of the 12.34; right?

Okay. Let's move on to water outputs. Lines 9 and 10, I don't know if we agree on the allocution between those loops, but the total amount there is a metered number; right?
A. Yes.
Q. Okay. So we can accept those numbers for this purpose. And then line 11, that's the amount of water pumped to Yellowstone and Spanish Peaks for -- should be for the entire year; right?
A. It should be. That's just the irrigation season.

Q. The number Mr. Aley has is just the irrigation season?
A. Yes.
Q. All right. So let's go back to the tab, YCSP flows.
Okay. Now, the Yellowstone Pump Station 1 column, that shows the district's pumping from the storage ponds to Yellowstone in 2020, before irrigation season started; right?
A. Yes.
Q. So mercifully, Excel will add this up for us if we highlight it. So can you tell us what the total amount in millions of gallons that were pumped from the storage ponds to the Yellowstone Club in 2020, before irrigation season started?
A. It's 18.097. Right below the tab you can see the total that's shown there.
Q. The sum there?
A. Yep.
Q. Okay. And if we go back to the top of the spreadsheet, you'll see there's another column for Spanish Peaks Pump Station 1. That shows the district pumping to Spanish Peaks from its storage ponds after irrigation season ended in 2020; right?
A. Yes.
Q. All right. So let's highlight that and see what we come up with.
A. That total is 12.067.
Q. Okay. So if we add up 18.097 for Yellowstone, 12.067 for

Spanish Peaks, and the 16.212 that Mr. Aley had for just the irrigation season, what do we get?

A. 46.376 million gallons.

Q. Okay. Let's replace that in line 11. Line 12, I think we can agree with that. And then, line 13, this is Mr. Aley's assumption that the ponds are leaking the maximum amount allowed by DEQ; right?

A. Right.

Q. Which he calculated to be 2.89 million gallons per year. You think that's right?

A. No.

Q. Okay. And let's make sure we're communicating here. Do you think it's correct that the ponds are leaking the maximum amount that DEQ allows?

A. I don't think so, no.

Q. So what happens to this water budget if we take that number out?

A. If you make the zero -- you'll get a true reflection of the total leak loss in your water budget if you remove that.

Q. Let's do that.

Okay. Some more addition. What if we add up all of the outputs now, lines 9 through 13? What do we get there.

A. 175.772.

Q. I got something a little different. Let's try that again. So 9, 10, 11, and 12.

A. 175.83.

Q. All right. Let's put that in there.

And then if we do this arithmetic on the water budget, we take the inputs, we back out the change in storage and subtract the outputs, what do we end up with?

A. .27.

Q. And that's the total; right? That's not in excess over any allowed amount. That's the total amount of leakage?

A. Yes.

Q. If I'm doing my arithmetic right, that's less than 10 percent of Mr. Aley's calculation of what's allowed by DEQ, the 2.89 million gallon number; right?

A. That's right.

Q. Does that number seem reasonable to you, .27, in light of your experience running this facility?

A. It does.

Q. You've had over 35 years of experience running government water treatment works, haven't you, Mr. Edwards?

A. Yes.

Q. Do you believe the Big Sky Water and Sewer District is illegally discharging pollutants?

A. I do not.

MR. RAUCHWAY: No further questions, Your Honor.

THE COURT: Thank you.

Mr. Meyer, cross-exam.

CROSS-EXAMINATION

BY MR. MEYER:

Q. Mr. Edwards, you said that the water in the holding ponds is not treated sewage; is that right?

A. The water -- when you say, "holding ponds," which pond are you referring to?

Q. All of them, I suppose.

A. Well, there's a difference. The aeration pond is prefiltration. Pond 3 and Pond 1 are postfiltration chlorination. So they are different.

Q. So Pond 2 is treated sewage?

A. Pond 2? There's Pond 1 --

Q. The aeration pond?

A. The aeration pond is water that's come from the SBR plant. So it's gone through screening through the SBR process. It's prefiltration water, but it's not untreated sewage.

Q. Can you put up Exhibit 103, please.

While we're waiting, Mr. Edwards -- there we go. Can you scroll down, please. Next one. Next one. One more right there.

(Complying.)

BY MR. RAUCHWAY:

Q. So would you drink that?

A. I would not drink that, no.

Q. Okay. So it's possible --
A. That's the aeration pond.
Q. It's possible that's leaking into the Gallatin River?
A. Based on what I see, no, I don't think that is leaking. We don't have underdrain under the aeration pond.
Q. Why is the underdrain put in place?
A. To divert groundwater through the area so we don't float our liners. But the underdrain does not go under the aeration pond.
Q. And how old is the aeration pond liner?
A. That was put in, in 2002, as part of the second phase improvements. Pond 1, Pond 3 went in in '96, '7. We needed the new SBR plant online before we could reline the aeration pond. So this is actually a newer liner than what went in under Pond 1 and Pond 3.
Q. So the newest liner is 20 years old?
A. 2004, so 16 years -- 18 years, the aeration pond liner.
Q. Oh, I thought you said 2002. So 16, 18 years. Those liners can get warn and torn over 18 years; is that right?
A. Yes, liners can get tears in them over 18 years.
Q. And you just determined that there's .27 million gallons of treated sewage -- or whatever you want to call it -- leaking from these liners; is that right?
A. Based on the estimate we just went through on the water budget, it's possible you could have .27 over the course of a

year, which is still within DEQ standards on allowable leak loss, yes.

Q. Well, the DEQ just said if the liners are ripped, they need to be fixed; right?

A. And we do that. We intentionally inspect our liners. We've done repairs on them over the years. My operators visually look at those. We've hired liner crews in to fix those repairs. We haven't not fixed any tears in the liners since they were installed.

Q. So why are you leaking .27 million gallons of the stuff per year?

A. That's based on the numbers in the data we see that we just walked through, that it's possible there is some leak loss that's going into the groundwater.

Q. Well, it's not just possible. It's definitely happening; right? Because we put dye in the holding ponds and found it in the river. So we want to be very clear here.

A. I'm not arguing there's no leak loss. The numbers we just walked through support that.

Q. Okay.

A. Yeah.

Q. So we can have a quarter million gallons of this in the Gallatin River?

A. Not necessarily in the Gallatin River.

Q. Where would it go?