

County of Maui Water
Supply

BOARD OF WATER SUPPLY

COUNTY OF MAUI

REGULAR MEETING

Taken at the Kahului Shopping, Kaahumanu Avenue,
Kahului, Maui, Hawaii, commencing at 9:00 a.m. on May
28, 2002.

Reported By: Rachelle Primeaux, CSR #370

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ATTENDANCE:

Members Present:

Peter Rice, Chair

Mike Nobriga, Vice Chair

Howard Nakamura

Ginny Parsons

Jonathan Starr

Michael Victorino

Kent Hiranaga

Adolph Helm

Clark Hashimoto

Staff Present:

David Craddick, Director

Ed Kushi, Corporation Counsel

Fran Nago, Secretary

Herb Chang, Engineering

George Tengan, Deputy Director

Myles Fujinaka, Engineering

Wendy Taomoto, Engineering

Holly Perdido, Fiscal

Paul Seitz

Herb Kogasaka, Engineering

Others Present:

Charmaine Tavares, Councilmember

Dain Kane, Councilmember

John Mink

Delwyn Oki

Gordon Tribble

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CHAIR RICE: Good morning, everyone. I would like to call to order the regular meeting of the Board of Water Supply. It's Tuesday May 28th, 9 a.m. We're at the Kahului Shopping Center. Present are Board Members, my far right, Clark Hashimoto, Adolph Helm, Kent Hiranaga, Mike Nobriga. On my left, Howard Nakamura, Ginny Parsons, Jonathan Starr, Director Dave Craddick, Counsel Ed Kushi.

We have with us today Councilmembers Dain Kane and Charmaine Tavares and many important members of the community I see out there. Welcome, everyone. We're going to start. There are no minutes for approval today. Is there any testimony from the

public on the items on the agenda at this time?

Certainly we welcome to take testimony at the time we go through each of the agenda items. Hearing and seeing none, I'm going to move onto the first item on the agenda, presentation by the USGS regarding the Iao Aquifer. Gentlemen, you have the floor.

MR. TRIBBLE: Good morning. Can everyone hear me? Am I required to use this?

MR. CRADDICK: Yes.

MR. TRIBBLE: Are you picking up feedback?

MR. STARR: Go ahead and use it, please.

MR. TRIBBLE: I'll try and moderate my voice.

It seems very loud. Good morning to all of you. I want to thank the Maui Department of Water and Mr. Craddick for inviting us here. This is a -- this presentation that we're going to do is a think tank,

if you will, a process that we went through over the past couple of weeks of what would we would do to provide management information for the Iao Aquifer and it involves a series of data collections efforts as well as a numeric model. With me I have a gentleman, Delwyn Oki from the USGS office in Honolulu. He is going to give the presentation. I will be available to answer any questions. The goal of this is to give board members some background information on how we would approach a numeric model for the Iao Aquifer.

This isn't anything that's been cast in stone.

And we'll finish up our presentation with an example of the model that's being developed for Honolulu, the Pearl Harbor model in Honolulu so you get a sense of how these actually work and the information that comes out of them. I'll turn it over to Delwyn Oki.

MR. OKI: Okay. Thank you very much for the opportunity to hear us out here today. How is this? Is that better?

MR. TRIBBLE: Can you guys get that?

VOICES: Yes.

MR. OKI: Okay. There are a number of management issues that are unresolved for the central Maui area in terms of ground water, and some of these are addressed here, Can existing withdrawals in Iao Aquifer be sustained? What is the maximum yield from existing wells that they can get? And most importantly, how can additional ground water be best developed? I think most of us are familiar with the situation in the Iao Aquifer where pumpage has risen over time.

And this graph shows in the blue, the monthly pumpage, and the red line shows the 12-month moving average pumpage. And you can see how since 1984 through the mid-1990's pumpage has increased fairly steadily. And in the mid '90's, pumpage was greater than 20 million gallons per day, which is the level that the State Water Commission has set for the sustainable yield of the Iao Aquifer. Since the

mid-'90's, pumpage has declined slightly in Iao and it's gone up in other places.

But the question still remains can existing withdrawals be sustained? The reason the question is unresolved is that in spite of the fact that pumpage has gone down in Iao, water levels -- water levels have gone down and salinity has risen and continues to rise since the mid-1990's. Another major question is how can additional ground water be best developed?

Much of the attention thus far has been focused on Iao, but there are other areas to the north and south that could be potentially exploited for ground water. There are a number of different management approaches that can be taken and that historically have been taken here in Hawai`i and these range in cost and ease of use as well as in their predicted value. At the top end of the spectrum, the least costly but also the level with the least predicted value is to simply monitor salinity at pumped wells. This is very much a reactionary type of approach in where as salinity arises in your water, you simply cut

back pumpage. It doesn't allow you to predict, or it's also very difficult to do any long-term planning based on this level of management.

Going down in the level here, we look at the monitoring water levels of salinity in dedicated observation wells. That gives you a little bit better picture of how conditions might vary in the aquifer. And the third level represents an analytical model, which is basically where we are at now with regard to Central Maui. The State has set sustainable yield estimates based on an analytical model, and it does have some predicted value. It's fairly easy to use, but there still remains a number of unresolved issues. The final level of management would be to create a numerical model.

This is the most costly, but it also allows you to simulate a complex system in the best way possible, and therefore, it has the greatest predicted value.

So what kind of questions can be resolved with a numerical ground water model? Well, some very important ones. For instance, can existing wells in Iao Aquifer yield 20 million gallons per day, which is

what the State has set as their sustainable yield estimate. Also, where should new wells be drilled? And some long-term concerns, what happens if sugar cane cultivation stops? Sugar cane contributes a great deal of recharge to the ground water system, and there may be concern that if sugar cane ceases, you're also reducing the ground water recharge, also in terms of long-term planning and support to know what happens during droughts.

And these are the type of questions that can be answered by a numerical ground water model. So what exactly is a numerical ground water model? It's basically a mathematical representation of the ground water system. And it's currently the best available tool that we have for understanding ground water systems. Again, it's a management approach that allows predictive capability, so it's good for long-term planning purposes. In terms of the Central Maui ground water conditions, we were envisioning an approach in which we would develop say a reasonable model so we could answer certain questions related to

the reasonable flow system in the area.

For example, how does ground water in West Maui and East Maui interact? Also how does the high rainfall that occurs in West Maui mountains, how does that get distributed? Which way does the ground water flow? Does it flow to the north, the south? These are the types of issues that we would hope to resolve with a regional model. But in terms of the real important area in Central Maui, we were envisioning developing a more refined model of that area. And we would use input from the larger scale regional model as input to this more refined model.

There are a number of steps that would be required in developing a numerical model, and I've listed them here. The first step would be to compile and analyze existing data, and the second step, which is fairly critical, is to collect new data. The third step would be to compute a water budget so we can get a spatial estimate of how much ground water recharge there is.

And the fourth and fifth would be to instruct the regional and refined models. Now, it's important

to also understand that numerical models do have some limitations. If our understanding of -- if our conceptual understanding of the ground water flow system is poor, that's going to limit what we can do with the ground water model.

We can improve our understanding of the conceptual framework by collecting more data, and that's one of the things that we think is very important. Some of the data needs that we identified thus far I've listed here. First of all, would be to collect climate data so that we can get a better estimate of ground water recharge. Secondly, we need to collect more stream flow data so we can get a better idea of where ground water is discharging from the system. Third, we envision collecting water level salinity and pumping data, and that would allow us to estimate some of the aquifer hydraulic properties as well as to enforce some of the hydraulic connection between the areas.

And lastly, would be to drill some exploratory wells to provide additional hydrogeologic information,

and I'll go over each of these very briefly. The first was to collect climate data, and the reason this is important is because very little is known about certain parts of the hydraulic climate in West Maui. Two of the critical areas that are poorly understood are fog drip and evapotranspiration. Fog drip is basically cloud water that is not collected in your standard rain gauges but that can be intercepted by vegetation or the ground surface and that drips to the ground and or just collects in the ground and that contributes to ground water recharge.

So we would set up weather stations to look at this issue. But also, evapotranspiration from plants is poorly understood in the high rainfall areas, so we would also be looking at that. In addition, by setting up these weather stations, we can collect more rainfall data, which is important. There is one gauge currently in existence at Puukukui, but at the mid elevations, the data are fairly sparse.

And what we do with this data is essentially put them in data layers in the geographic information system, GIS, water budget model. We would be

collecting information such as rainfall and fog drip and evapotranspiration rates from our climate stations, and these will serve as the data layers in a GIS type of model.

Other things that would be included in a GIS water budget would be things like runoff. We have a few gauges that we collect surface water runoff from. We need also information on land cover and soil types. And by combining all these layers in a water budget model, we can then estimate how much ground water recharge there is spatially.

Another important data need for the area is to quantify the ground water discharge to streams. We would -- basically, what we've done in the past, and this is an example from East Maui, is to measure a stream flow along a stream in a number of different places to get an idea of where the stream is dry or where it's gaining and also where it's losing. So by doing these seepage runs or multiple discharge measurements along a stream, we can get an idea of where ground water discharge is and where it

potentially discharges.

Another data medium would be ground water monitoring. And this is useful for inferring some of the hydraulic properties. If we monitor closely the pumpage in an aquifer as well as the water levels, the water level response to the pumpage, and you can see here how when the pumpage is off, the water levels go up. By looking at this signal here, we can put them in various models to estimate some of the hydraulic properties of the aquifer. Also, this type of information is very useful for determining how much flow there is between areas.

The State basically manages their ground water systems as separate entities. And this, for example is the Iao Aquifer boundary, but it is recognized that there is flow into and out of the Iao Aquifer area that should be considered.

And the final data medium is some exploratory drilling. There are some geological features that could be better understood, and some of them include these valley fill deposits; for instance, Waihee Valley or even Iao Valley, there are lower

permeability deposits that fill these valleys that were carved out long ago. And by drilling some exploratory wells, we can get an idea of how thick these valley filling deposits are and how they impede ground water flow across the barrier. Exploratory drilling might also be useful for looking at things like ground water interaction between East Maui and West Maui in the isthmus area.

Okay. I'm going to switch gears now. I basically described an approach that could be used to better understand ground water conditions in Central Maui. And what I would like to do now is to show you a model that was developed for the Pearl Harbor Aquifer of Oahu, which is sort of the analog to the Iao Aquifer on this side. This is the satellite view of the island, and the yellow line kind of encompasses the model domain that we used for this three-dimensional numerical model that was created.

Okay. This is just a view of the ground, and the only reason I put it up here is to spatially orient you here. This is a view looking from the west

side of the island of the Ewa end looking towards Honolulu. And just like the Iao Aquifer, the Pearl Harbor Aquifer has a low permeability cap rock that overlies high permeability basalt or volcanic rocks. And this is a view of the various -- again, this green area here is the low permeability cap rock. The unshaded area represents volcanic rock of high permeability. These red lines, which you'll see in a subsequent slide, either represent wells, or you can see how they penetrate into the aquifer. Or for these superficial red dots, they just represent recharge areas, and I won't describe what these blue dots are.

Okay. I'm going to show you certain animation of what a three-dimensional numerical model can do. And I'll describe very briefly what some of these features are on this slide here. First of all, the red area -- the red area represents 90 percent seawater. Everything below the red zone is greater than 90 percent seawater, so it's actually talking about salt water below the red zone. The blue, dark blue area near the top here represents 2 percent seawater, which roughly corresponds to the potable

water limit, you know, what EPA recommends as drinking water.

So between the blue and the red, we basically have represented what's called a transition zone. Above the blue is the fresher water, and below the red, is the saltier water. Okay. And these vertical lines here represent wells in the system, and you can see here Pearl Harbor. Here is east lot, middle lot and west lot. And as I run this animation, this is the historical pumpage in the Pearl Harbor area. These units probably don't mean much to you, cubic inch per day, but the pumpage in the Pearl Harbor Aquifer started at pretty close to zero in 1889 and rose to over 200 million gallons per day in the mid-'70's, mid to late '70's, so the scale runs roughly from zero to a little over 200 million gallons per day.

There will be a green line that's going to scroll across there as I run this animation, and you'll see here, as the pumpage goes up with time, you can see what happens to the transition zone. It

starts to rise, which essentially means that your fresh water zone is thinning and your salt water zone is rising. Okay. I can run this again here.

So you can see how the wells are drawing up the transition zone, and this is something that's also happening in the Iao Aquifer over time. Okay. This is a view that I was looking from the Ewa area on the west side of the island towards Honolulu, and I also have a similar one here looking in the other direction looking from Honolulu towards the west. It's a similar animation.

You can see this green line is scrolling along with time from 1880 to 1980, and you can see how there's an overall rise in the transition zone and an overall filling of the fresh water zone above the blue. I want to run that one more time. Okay.

So that kind of concludes what we had wanted to present here today. I guess the bad news is that a study of this magnitude to collect the data to analyze the data to develop a water budget and the numerical model is not cheap, and we've run some preliminary cost estimates basically talking about a four-year

effort here that would cost about \$250,000 a year.

The bulk of the cost is in the data collecting effort. It's difficult to access some of the sites, and some of the equipment is relatively costly. So that's where the bulk of the cost is, but there are also significant costs related to estimating ground recharge with the water budget and also developing the numerical ground water model itself, so that's basically what we had desired to present here today, and we would be happy to try to answer any questions you might have.

CHAIR RICE: Thank you. Questions from Board Members? Dan, can you get that light? Any questions from Board Members? Mr. Starr.

MR. STARR: Yeah, first of all, I would like to thank you for an excellent presentation and coming over here. It was really interesting. The number that you estimated at the end of the presentation, does that include any additional monitoring,

monitoring wells, or is that simply surface data collection?

MR. OKI: Actually, that does not include the cost of drilling additional wells. It would include the cost of monitoring any wells that are drilled. I don't know if Gordon wants to say something about the exploratory drilling program. That's part of the County and the USGS agreement, but I mean it's a possibility that exploratory wells could be drilled.

MR. STARR: What would we want in the way of exploratory wells in addition to the single monitoring well that we have right now in the area?

MR. OKI: Yeah, there are a number of different issues that we could try to address with exploratory wells. One of them is I guess there's a question as to ground water withdrawals in the isthmus area, how that's affecting the volcanic rock aquifer, let's say the Iao Aquifer. So drilling exploratory wells in

that area could come to resolve that issue.

Furthermore, there's the issue of the valley filled barriers between areas, and drilling wells near or within those valley filled boundaries would help to get a better picture of the ground water system.

MR. STARR: I have one more question, and I'll give Ginny a chance. One of my concerns since I began studying this about a decade ago is that the regulatory management areas, in other words, the aquifer sectors divide areas of use and recharge and all that, and it seems that using this system where we tend to take Iao and not look at what's happening a mile outside of it, you know, or we take Waihee, even though we're using half of it, we use the sustainable yield for the whole of it, it seems we fool ourselves in a sense as a community by looking at, you know, a specific aquifer sector area, whether it's Iao or Waihee or any of the others.

What is being done in other places to get beyond this? And when you have a tool like this numerical model which really shows what's going on in a greater

area, how does management change when that data becomes available and you're no longer looking at fixed numbers for a fixed political boundary area?

MR. OKI: Yeah, we have actually developed other models throughout the State that have been used in some cases; for instance, on the island of Molokai, there's concern in the Kualapuu area. We developed the model of the whole island to look at how development within Kualapuu affects other areas including coastal areas and also nearby areas nearby Kualapuu.

So there is precedent for developing these numerical models and using them. Another example would be on the island of Kauai where we developed a numerical model of the Lihue basin. It's not limited by the existing aquifer system boundary that the State uses.

CHAIR RICE: Ginny.

MR. TRIBBLE: Can I take a stab at that, if I may. I think although the Water Commission still manages with the analytic model, they are showing increasing willingness to embrace numeric modeling results. For example, several years ago, when we reassessed the aquifer results from a couple of different numeric models, the analytic model developed for Statewide ground water management was going excellent at first cut. As we get closer and closer, the limits set by the analytic model, I think it behooves us to have more precise methodology, and the methodology, that was not available when the analytic model was developed.

The Water Commission obviously has to balance a whole variety of things, but I think they are showing increasing willingness to incorporate numeric modeling results into their deliberation, and perhaps at some point, may switch over to a management system that's more based on the numeric than analytic models. I can't speak for them, but that's a hunch the way things are swinging.

MS. PARSONS: You said in your statement that this is something that is happening in the Iao Aquifer over time. Apparently, you've already surmised that you have a problem there, and that's why you want to zero in on Iao Aquifer. It would seem to me -- I mean that was your statement, so it would seem to me that maybe we should be looking at the entire island rather than just a segment because we need some answers.

You can provide all the data that you want, but if that's not going to tell us where to go from that point forward, you know, we need -- when you're finished with this, we need to say, okay, what's the answer to this? If we're using this aquifer, what's next?

And to me, what I'm seeing, that may not provide enough information to give us that, the answer.

MR. TRIBBLE: Yeah, that's a fair comment. We kicked that around a fair amount in our internal deliberations exactly how to handle that. The regional model that we have has some boundary

conditions, and that would serve as a template for more detailed models in other areas, for example -- can you go back one -- for example, the regional model could be used also to address issues in Lahaina, Kaanapali area, maybe with a little bit of tweaking of those boundaries towards the east, some of the proposed development in Haiku.

But again, a model is simply a conceptual framework with lots of computing behind it, but if your information used to construct a model is off and you have come out with an extremely fancy looking product that is inaccurate, it's not going to be any better because of the information. It's simply a tool to take that information and synthesize it into a series that are put into a consistent hydraulic flow.

If the information you put into it is bad, if the conceptual framework you build a model with is ill-founded, you will come out with something that looks extremely scientific, but it's also wrong.

CHAIR RICE: A question on that concept. Could

you create a framework -- so you're saying if the framework is faulty, the whole thing is going to be faulty. But can you create a framework that is slightly larger than the regional, but then focus on specific areas? So let's say the first specific area is your defined model, right, but then move on to, once we get back on funds are allocated, we move on to the next most important area, but do you build the whole framework first or can you add to it?

MR. OKI: Yeah, I mean this is basically just a picture. We understood that Iao and the central area was probably critical at the current time. But this refined model basically uses input from that regional model. And certainly, one could develop a refined model also of say Lahaina based on results that we get from the regional approach.

CHAIR RICE: We have had -- the Board has been approached in terms of data collection by a group on Maui. You probably are familiar with Maui Tomorrow's project to gather data. And in our deliberations as a

Board, we wanted to make sure that as we supported that data, that was going to transform itself into assisting you in collecting data for this model. So that was an important question the Board had and if you're familiar with their efforts.

MR. TRIBBLE: As I understand it, the Maui Tomorrow work is focused on collecting pumpage data. What we would use in our construction of a model would be pretty much anything we can get our hands on. But what we would do is go back to the original source of that data, so really the most important thing for us to have would be a description of data sources, so then we can go back and say the original pumping company, agency, whoever handles the pumping, and we understand you have pumpage data for these wells for these periods and we would request that.

We would go back to the primary source of information rather than taking it from a third party, but identification of primary sources could save us a lot of labor.

CHAIR RICE: Yeah, Mike.

MR. VICTORINO: I don't know which mic I'm supposed to speak into. Let me ask you a couple of quick questions. Number one, using the atmospheric and some of the other methods of gathering data, the runoff, the stream flows and all that, which I think is very important, I don't think that has been done for a lot of years and needs to be really looked at because I think one of the things you did mention is the recharging by the sugar industry. And as that dissipates or as that continuously goes down in their acreage, we can look back and say, that's not going to help us a heck of a lot.

So we've got to turn to areas we know that the data that's been collected will be accurate. After this four-year period of time, would you be able to take much of this refined model and, like you say, spread out to other areas using some of the similar data considering that the atmosphere on the West Maui Mountains, even though it would be a little different

on Haleakala, the lower slopes would not be all that different. Would some of the information be able to help us on that side also?

MR. TRIBBLE: Yes, it would. And one of the big things we had was to estimate the evaporation or evapotranspiration on climate regions. We currently have two stations, one on Haleakala, one over on the -- in the Waikamoi Preserve operated by the Nature Conservancy and the other up in Ulupalakua Ranch. And they're measuring the amount of fog condensation as well as the amount of evapotranspiration. Now, that's a start. But what we're really looking at is not measurements of individual points. We're trying to get a handle on what other factor is in control of that evaporation, how can we predict that regionally, and so the information gathered from West Maui would be highly transferred to other areas over in Haleakala. Did that answer your question?

MR. VICTORINO: Yeah, to a degree, and I have

one more follow-up question. In the Iao area, since we have put in the flood control in the lower basin of Iao, I heard that that has dissipated a lot of the recharge because now that water basically goes over concrete and goes straight to the ocean. Is there any way of us with this study kind of incorporating some of that, how much recharge we are losing in that area based upon that theory that we are losing a lot of water going straight to the ocean and it no longer goes into the ground?

MR. TRIBBLE: Yes, one of the things that's done in the water budget is the land use is factored in, so that any impervious is not allowed to have any recharge. Probably we would take the current situation rather than hindcasting back to predevelopment scenarios, but do you have any thoughts on that?

MR. OKI: Yeah, another possibility, too, if that's a major issue would be to actually try to measure how much is running off into the ocean at that

site, and, you know, that's one of the things that's part of our data collection effort.

CHAIR RICE: Mr. Starr.

MR. STARR: Yes, I would like to know from Mr. Tribble, what about the bonafides of the USGS in doing this kind of work? I understand there's been some experience outside of Hawai`i, especially coming from the Stanford and the East Coast offices. Is it true you guys kind of developed modeling around the world?

MR. TRIBBLE: Well, it's a little bit before my time, but my understanding is the USGS did really develop numeric modeling. The models we're preparing to use here were developed by people on a national research program specifically for the kind of coastal environments that we have in Hawai`i. We are one of the few places in the country that was selected to beta test this model. That's what the Pearl Harbor

model was about.

That's now been improved. Once it's released, it will be available to everybody in the public as far as the source code, but I guess I would like to say that we have a fair amount of expertise in the field. That's not to say that other people can't also do this, but we basically wrote the modeling and how to use it.

CHAIR RICE: Go ahead, Howard.

MR. NAKAMURA: Regarding the scope of the project that you've identified, is this work to some extent within your present capability resourcewise, or is this all going to be external to what you're doing now; in other words, I guess the basic question is do you need a million dollars from somebody else?

MR. TRIBBLE: The quick answer is right now, yes. Typically, the projects like this, USGS can put up matching funds for half of the amount, but given

our current budget situation, we're out of matching funds for the next year or so.

So unless there's a big input, there is not a pool of matching funds that I can dip into to cover half the cost of this.

CHAIR RICE: Let me go back to Jonathan's question, not to be taken the wrong way. Who else does this kind of modeling?

MR. TRIBBLE: There's probably a variety of consultants in town that can do numeric modeling. There's some expertise from University of Hawai`i. There's consultants from the mainland that could come out and work here.

CHAIR RICE: Yeah, different capabilities to do it, but who is doing it is more my question.

MR. TRIBBLE: Who is doing it in the State? University of Hawai`i is doing a program for the State

Department of Health to look at -- captures specific wells. It's broadly similar in that they are using the numeric model, but it's a model that does not handle salinity. Its in terms of developing models, I'm not aware of any, but I could be wrong.

CHAIR RICE: We're clearly interested in it, and to the extent we've had one budget meeting, we've already allocated some money to participate in the process. And, you know, something -- I don't know what our total final budget is going to be, but if you could give us some idea, at least a number that could get you started, and maybe we could bring in University of Hawai`i and get some other matching funds if there's some way that they might want to participate in this. Who participated in the Pearl Harbor model?

MR. TRIBBLE: That was developed by Delwyn Oki and Steve Gingerich from our office locally and Cliff Voss from the international research program on the

mainland, so it was an internal USGS effort.

CHAIR RICE: You paid for the whole thing and you didn't get any matching funds?

MR. TRIBBLE: No, the way that worked was our headquarters office needed to beta test this program, so they had the computer model they needed to test. They had two sites where they tested it, and as far as the national folks are concerned, it's done. It's going to be ready for release in about two months.

CHAIR RICE: Our Councilmembers are here, so they might be ticking away some spots in their budget and some more funds might come. Ginny.

MS. PARSONS: What would be the natural progression if we were going to cover more than just this refined area? Would Iao and then East Maui and then Lahaina side be natural if you're going to look at what's going to interact? Because if we've got an

issue, we've got to fix the issue. We need to find out what's going to interact with the best to help clean that up, so which is going to be the most natural progression?

MR. TRIBBLE: Well, again, that's something that you would work with a partnership, but what I would see it as ground water development in East Maui proceeds, as it seems to be developing, the additional information that may be available and that could provide a little bit more ground treatment for a more refined model in that area.

Again, I also noted from discussions with the Water Department and others that there was concern about salinity levels in Lahaina, so which of those two are addressed first may be dependent on which is the more immediate pressing need.

CHAIR RICE: Yes, Mr. Starr.

MR. STARR: You mentioned that in the near term

it would be difficult to get that matching funding from the federal, at least a federal level and I believe the State level as well. Could we look forward to getting some matching budget in future years if different entities, the Department of Water Supply and the County and maybe some private help were able to cover the initial year or two?

MR. TRIBBLE: Yes, what I can do, if this is something that the Department and the Board wants to pursue further, is we can look at what our future commitments are. There's no mystery or secret about how this process works. There's a pool of money, in total about \$1.2 million a year that what's called "Hawaii district allocated" and that covers all of these kinds of programs, interpretative data collection, not only in Hawai`i, but in Samoa, Guam, Micronesia. And as projects come up, they have a life span, and as they went down, that releases funds in the future.

CHAIR RICE: Ginny.

MS. PARSONS: One more question, I promise.

There was an article in the Honolulu Star Bulletin a couple of weeks ago, I don't know exactly what the date was, and one of your former employees William Meyer made a remark in there, which I thought was quite irresponsible. And it may be his opinion only, but what would we have to -- I mean would we have to endure more of this kind of hot bed story if you took this on, or is this something that you are working with us to make sure that we're getting this cleaned up and taken care of? Because this was totally irresponsible, and I want to say one other thing. I've worked with Associated Press for many years. There's only one way that these stories get in. You either have a favor, or somebody pays for it. And that's the way it works, so I have a real problem with these kind things being thrown out, and if that's the operation that we're going to look at, we've got to think about that, too.

MR. TRIBBLE: Let me respond to that in two different ways. First, I don't understand the publication business, so I don't know how to respond to the second part of your comment. Bill Meyer is my predecessor. He's now retired. He's a private citizen. He's free to say whatever he wishes. The U.S. Geologic Survey does not tell people how to manage water resources. We don't advocate specific courses of action. We don't seek out water issues to interpose ourselves in. We are a federal agency. We are not a regulatory agency. We work in the public interest to promote science information.

I know from other people quoted in that story that they felt many things that were said were taken out of context. For example, there's a statement in there relating to USGS agents and Central Maui pumpage, and I don't know who those agents are but we don't have people sneaking around Central Maui monitoring pumps. That's not how we do business, so the one part of the story that I would have familiarity with seems to me very strange, so I don't know how to respond to that.

MS. PARSONS: We would have your assurances though this isn't something you would use, this isn't a tactic that you would use for any means, any other purposes? It looked like, because it was planted at the time when we were considering this, so it came at a very timely manner, but it looked like it was laying the groundwork for us to come in and hire USGS. And that's not what this should be about. This should be about getting the facts and the figures and cleaning up.

MR. TRIBBLE: I had no connection with that story. I had a person call me and I talked to him for about 10 or 15 minutes. I don't think I gave them the kind of information they were looking for, and that was the last I heard of the story. I was on the mainland when it came out. I don't know how to respond; in other words, we don't go around shaking people down for money.

We're a federal agency. We're not a syndicate.

I don't get a percentage of this. I don't get a bonus or a promotion by going out and getting these kind of projects. This is something that is strictly a professional partnership between our agency and other agencies.

MS. PARSONS: That's the answer I was looking for.

CHAIR RICE: Okay. All right. We can go around the room real quick. If you have a question regarding their presentation, okay, I want you to -- I don't want to get off on other tangents here. So let's start in an orderly manner. We're going to go across the back and just go this way up to the front. No takers. Okay. Don, you're up. Yes, sir.

MR. SHEPHERD: I don't know where to put my question. You say having to do with the presentation? My question and what I want to say is directed towards Ms. Parsons, what she just said.

CHAIR RICE: No, no, I don't want to get into that.

MR. SHEPHERD: I want to clarify about Bill Meyer.

CHAIR RICE: I think that's over with. No, this is about their presentation. We're not into her comment with them. Anybody else? Yes, Dan.

MR. GRANTHAM: Are those charts available on your web site?

MR. TRIBBLE: Which charts are you referring to?

MR. GRANTHAM: Well, you've presented some earlier charts.

MR. TRIBBLE: The one that showed the pumpage and the water levels?

MR. GRANTHAM: Yeah.

MR. TRIBBLE: That should be available on the public web page.

CHAIR RICE: Charmaine, any questions?

MS. TAVARES: No.

CHAIR RICE: Dain?

MR. KANE: No.

CHAIR RICE: Okay. We also have today with us
is Bill Mink -- John. Bill Meyer, sorry. I'm sorry.
John Mink.

MR. MINK: You want me to say a few words?

CHAIR RICE: Why don't you sit, it looks like
the electric chair.

MR. MINK: I've been involved --

MR. GRANTHAM: Could you guys turn down the bass

on the mic and turn up the treble so we can hear it?

It's really difficult to hear with that booming bass.

MR. CRADDICK: It's beyond our technical abilities, Dan.

CHAIR RICE: Go ahead, John.

MR. MINK: My name is John Mink. I'm a hydrogeologist. I spent some time with the U.S. Geological Survey, with the Board of Water Supply and various groups, and now I have my own firm. I've been involved in the Iao Aquifer system for many years.

As a matter of fact, back in about 1980, I did a study for Brewer. And before that, everyone had perceived the aquifer to have a capability of supplying, in some cases, it was 50 million gallons per day. It sort of precipitated down to 36 million gallons a day. Well, when I did my study for Brewer looking at all the data, everything that had been done by the agencies and what have you, I said no way. There's not 36 million gallons a day that you can take out of this aquifer.

And at that time, I said at most you can get 20 million gallons per day. But even that I qualified somewhat by saying maybe a little bit less because we don't have enough data to talk about what the exact conditions are. That 20 million gallons per day then became part of the ground water protection plan, and I think it's a pretty good number. You must realize that a lot of these things get involved in alarmism.

People get an idea that, oh, there's not enough water, let's change it. But in the nature of hydrology of ground water, things move very slowly. And we can keep a record of what is going on as we develop the water, and I think we have a pretty good record. And I think that so far, the 20 million gallons has been a nice figure, not the exact and final figure.

The model that the USGS is talking about, of course, is a -- it's something that is worth doing, and let me just say that I'm pleased that in their presentation, they did not engage in the same sort of alarmism as the Associated Press article did and that

they're taking a very positive stance about how to do this. Let me also say that amongst all of the modelers in Hawai'i, Delwyn Oki is probably the best. He's done very thorough and good work on all of the models that he has worked on. Now, in modeling, we don't come with a final conclusion.

Numerical modeling, which is very complex, requires a lot of effort, a lot of money, will put a limit on the uncertainty, but it will not eliminate the uncertainty. In the Iao Aquifer system, there are two things which are being argued about today. One of them is the nature of the pumping. The nature of the pumping is very suboptimal. In Mokuahau, the wells are deep. One of them is. They're too close together, so that, in effect, you're taking out a tremendous amount of water from a single point. At Waiehu, which the consultant on this was Harold Stearns who did the geology of Maui in the 1930's. It's an enormous well. It's very suboptimal.

In other words, that sort of decision made at those times seemed to be reasonable, but in retrospect and what has happened since, they are not reasonable.

So we all agree that the pumping distribution and the pumping amount is certainly suboptimal and has to be changed over the long-term. And I say the long-term because none of these things require an immediate action, but it requires a plan of action that will bring the pumping into -- into some sort of an optimal system.

The other characterization is the sustainable yield, and as I have said, I set the sustainable yield at 20 million gallons a day. It has not been shown that that is a sustainable yield that is excessive. And if it is proven excessive, there is plenty of time to make adjustments as long as we go ahead and redistribute the pumping and put in, perhaps we can start in a year or two, putting in a new pumping station with a smaller capacity and reduce the capacity, especially of Waiehu well and the Mokuahu wells. When we get to the matter of how one aquifer system affects another, yes, there is a continuity between the aquifer systems.

Again, I was the one who established the aquifer

systems throughout the State as part of the initial program of the Commission of Water Resources management to try to get a grip on how to manage the ground water. These aquifer systems were based upon the best available knowledge, and they were never meant to be absolute. And the qualifications are in all of the reports, and for anyone to look upon them as absolute boundaries, of course, is a falsification of what they actually were meant to be. And so the aquifer systems have been a very useful tool for management. The CWRN, of course, uses them as does the Department of Health. But it doesn't mean there can't be modifications made over time as more knowledge and more information is acquired.

In terms of this numerical model that USGS is proposing, I think it's a good idea, but I don't think that we should assume that it's going to be the absolute answer, and because in numerical models, one of the characteristics is because of the many unknowns, even though we gather a lot of data, we still have many unknowns. Assumptions have to be made, and the assumptions are made on the basis of

group decisions, individual decisions.

One group may choose a set of assumptions which are entirely different than another, and the answer that comes out will be different. So I think that if we go ahead with doing numerical modeling, there should be an opportunity for peer review in the community. And now I'm not sure that the USGS allows this, but I think it's a good idea because it keeps the people who are doing the model, these are very complex things, maybe on their toes and perhaps giving different insight into what -- how to compose what sort of answers they will come up with.

So in that regard, I think peer review is a very important aspect of this whole thing. I wrote a history of the Iao Aquifer system. I think it was distributed to all of you -- if you haven't got a copy, I'll make a copy for you -- in which I outlined what has happened over all the years, all of the contradictions, the confrontations and what have you.

And I just might say that when you'll read that history, you'll find that depending upon the time that

confrontation or the conflicts were arising, the opinions very much differ. Back in I think the early 1990's, '92 I believe, Bill Meyer said that there was four to eight million gallons more than 20 million gallons as a sustainable yield in the aquifer, so you see there are changing opinions that take place. And we have to be concerned that we're not just going to be involved in another opinion rather than something that has been quantitatively determined on the basis of the best data and the best knowledge. There's not much more I can say at this point, but I'll certainly be willing to answer any questions.

CHAIR RICE: Ginny.

MS. PARSONS: You mentioned that the community review might not be in the plan for USGS. Could you address that, or could you address that for us? Would we be able to have community review?

MR. TRIBBLE: What this gets to is the process

that the USGS has prior to releasing interpretive information. We have a internal peer review process. Our policy is when we release information, it goes to everybody at the same time. That really dates back to the days when we were and still do map oil and mineral resources, so selecting and releasing information could be an extremely lucrative venture for someone. So that's the background of our policy. And it's from that standpoint a very good policy, because the idea for us to maintain impartiality is we don't provide information to one party and not provide it to another, so we have to do that. Now, having said that, what John Mink is saying is a very important point, and we're working right now internally with the Water Commission and some of the other stakeholders, as this department is one, on how we are going to provide information to stakeholders for our stream flow study that we're going to be doing in East Maui.

Certainly, one would never expect to put a million dollars into a project and then not hear back from your partner until a report comes out and you don't see it until you read about it in the

newspapers. That's not how we intend to do business. On the same token, we need to think about how to structure this so when we get input, that input from the stakeholders is held in a way that it doesn't get selectively released to other people, so I'm not saying it can't be done. But it does have to be done the way that we don't selectively release information.

MS. PARSONS: Would you provide solutions at the time you're going to release this information, or is this just information that's released?

MR. TRIBBLE: Well, any interpretative information released has to go through this process. If it's just a measurement, a stream flow measurement, a water level measurement, that can be released without any review. But any interpretative information released has to go through a review process. Now, what we've done in the past is the review process has been such that it goes through

internally within the office, and we send it to two people on the mainland. The report will get sent to two people on the mainland, and they will give it a thorough technical review. These people are hydrologists who are not either involved or vested with local issues, so they don't know what the controversies are specifically and don't have any vested interest in them.

And after that, we deal with those comments accordingly and get permission to publish it. Now, we can share drafts of that material with our cooperating agencies. I think what Dr. Mink would like to see is, because it's a good word, a coalition of knowledgeable people involved in a review panel of the formulation of a model.

MR. MINK: No, not that deep an involvement, but just a peer review in which at that time point where you're making decisions that these decisions be given to, well, to a review panel or something to look at and to make comments on, which would be helpful to you and perhaps to the whole community in the long run,

but nothing as formalized as a panel that is there simply to look at that.

MR. TRIBBLE: I think actually we're very close. All we need to do is to make sure that we protect the spirit behind the policy, which is that we don't selectively release information to favor one party or another, and I think we can probably come to some sort of arrangement that that can be done.

CHAIR RICE: Okay. Mr. Starr.

MR. STARR: Yeah, perhaps since you would be the customer of the Board at that point, if the Board appointed a hydrogeological concern, whether it's Mr. Mink or some other group, that would kind of have an opportunity to review it and then their comments could be looked at as part of the process or when it comes out or something like that. Could we structure something like that? They would, of course, be professionally not able to release that information to

any commercial concern for anyone's benefit. They would be operating as consultants for the Board and the process.

MR. TRIBBLE: Yeah, I would think we could come up with some arrangement I think that would satisfy that. We can talk about this now or later.

CHAIR RICE: Yeah, that's a little bit down the road. Any other questions for Mr. Mink? Yeah, Mr. Starr.

MR. STARR: First of all, I want to thank you for coming. It's good to see you, John. I have a lot of respect, complete respect for what you've done over the years relating to our aquifers and the sustainable yield. And I know you've taken some brave and lonely steps along the way, and I thank you for that. I think you realize, as we all do, that there are kind of limitations to the set aquifer system where we look at, you know, each aquifer individually under a

microscope. You yourself say that there is transmission of water between them, and there's definitely an interaction, interaction. And, you know, I see this as an -- as an opportunity for the way we do business to evolve to another level just as it evolved in 1880 and the '70s when you did the studies of Iao and when it evolved in the '40s when Stearns and McDonald did their original work.

And I hope that whatever we come up with, you know, as a model or system of monitoring and adjusting our usage will evolve in the future as people think about it and use it and get better. I think that was what you were alluding to and, you know, we're not going to lock ourselves into this forever, that hopefully five years or ten years down the road, times will get better. We will have had experience and we will as a community be able to do an even better job.

But you know, one concern of mine that relates specifically to both Iao and North Waihee, and I think this is both part of what we're doing here today is, you know, we're trying to look at what our resources

really are for Central Maui. You know, beyond creating a model, which will take several years, I think we need to know where we're going at this point, and, you know, I'm glad to see some council members have taken a real interest and they're trying to create legislation that will help us deal with these issues. But while you're here before us, I want to ask you to clarify an issue that I know I've heard from you in the past, but I would like to get it out once and for all and that's regarding North Waihee and the area that we're utilizing in North Waihee between Waihee stream and Makamakaole is, as you know, and I saw you recently point out in a document that I have here is the only area that we've developed so far or have immediate plans to develop.

And we know that the sustainable yield for North Waihee is 8 million gallons a day, and we also know that our pumpage is between four and five million gallons a day. And so I know the public has been told by the Director in the past that that leaves us 3 more million gallons a day of water that we can extract. But to my understanding, there is a limitation of four

million gallons from where we've situated our wells, and if that's the case, then we've really exceeded what we're able to pump out of there and the Iao. And I was wondering if I could get you to clarify this.

MR. MINK: Let me start off by saying in your original comments, you gave a pretty good summary of how science works. And if you go all the way back to 1880 when water was, ground water was first developed, there was the science and there was a concern and if you go through the whole history, you find the same thing. And this is merely a continuation of that.

Insofar as the aquifer system, the Iao Aquifer system vis-a-vis the North Waihee aquifer system, again, this is a line that was drawn both on hydrogeological principals and as a management tool. In the North Waihee aquifer, we assigned a sustainable yield of 8 million gallons from Waihee Stream all the way to Kahakuloa. And we find later to say that only 4 million gallons would be developable between Waihee and Makamakaole. My understanding is that the

Department of Water Supply will maintain that number and that any new developments will go beyond Makamakaole for getting beyond the 4 million gallons per day. Insofar as the pumpage there in Iao is concerned, I think we're on pretty good grounds for now and that in the time that the numerical model would be done and the preliminary conclusions would come out, there is really no necessity to change the pumping of 20 million and 4 million in North Waihee, because, as I said, in ground water hydrology, we're not involved in instantaneous train wrecks as the Associated Press article said. These things take place, if there is over pumpage, the effects come about in a fairly long period of time, especially in the size of the aquifers that we're dealing with here on Maui.

So it would seem to me that if USGS and the numerical modeling came up with something astounding in the second year say, there would be plenty of time to make adjustments.

MR. STARR: I'm pretty much in agreement with

you. You know, I'm not -- I don't believe that now is a time we need to go and try to reduce this sustainable yield so that they're wrong, but I just want to clarify that pumping 90 percent of the sustainable yield for Iao, 18 million gallons I believe is pretty much our limit in what we're trying to maintain, and 4 million gallons out of the portion that we've developed in North Waihee below Makamakaole, that's really the maximum that we should be taking from that area.

MR. MINK: Yes.

MR. STARR: And one other question, those are our only sources for potable water for Central and South Maui at this time; is that correct?

MR. MINK: I believe so, but David would be able to give a better answer to that.

MR. CRADDICK: The next well that we're doing is

north of Makamakaole. And John can give you the reason behind picking that area there because he is the consultant with Takumi & Associates in doing that.

MR. MINK: Well, the reason is that we wanted to restrict the pumpage south of Makamakaole to four million gallons, and then to make up the additional four million gallons, you have to move out toward Kahakuloa.

MR. STARR: Could you give us an idea if that well turns out to be a good well, and, you know, there's no guarantee of that.

MR. MINK: There's no guarantee of that because we have very limited knowledge of north of Makamakaole.

MR. STARR: But just, I know, if we are lucky and we get a good producing well there, how many years

do you think it would be before we would actually be adding water from there into our system from this point, several years, am I correct?

MR. CRADDICK: It's going to depend on how quickly that exploratory well can be done and when we can get the information from it. But once we get that information, I'm sure a well could be connected up within a year.

CHAIR RICE: Mr. Nakamura.

MR. NAKAMURA: Getting back to the modeling issue, Mr. Mink, the impression I have is that you feel that this would be beneficial to the Department on a long-term basis for long-term planning. On the other hand, I get the impression that you feel that there is an adequate amount of information available now to assist the Department in establishing some shorter term management or shorter term management plan to better utilize, or to utilize the aquifer, is

that accurate?

MR. MINK: Well, what I'm saying is that the status of the aquifer now is such that I believe we can continue to pump 20 million gallons or 18 million gallons per day from all of the analysis that I have done. If, in fact, that is over pumping, there is -- nothing like a train wreck is going to happen. That article that came out, wherever it was, which I had a copy of, was journalistically irresponsible. And it made it sound as if tomorrow everything would salt up. Well, that's far from reality. So I think that at least over the term of several years and until the numerical modeling can begin to give concrete answers that we can go on as we are.

MR. NAKAMURA: But you still believe there could be some effort to better distribute?

MR. MINK: Yes, yes, I think you have to start planning to have a reduction of the individual wells.

Waiehu well I think is 3 million gallons a day.

That's an enormous amount of water to take out of one 26-inch cylindrical hole in the ground and that causes and over the very long term will cause problems. So that if a program were set up say that that can be reduced by putting in another well that produces say 1.5 million gallons a day, reduce the Waiehu to 1.5, something like that scaled out over a number of years would be the way to protect the aquifer.

CHAIR RICE: Mr. Starr.

MR. STARR: I know that there's one thing that we've heard from all agencies involved, that includes the Water Commission, USGS and private consultants, is that we should optimize our usage of the waters of Iao in terms of well depths. Some of them should have some concrete poured in them to raise the level and pump sizes and so on, and this is something that we've really not examined doing. And I do feel that it's time we create a plan to better optimize our usage of

the Iao. Could you suggest a path to that? Is that something that we could hire a consultant to work out?

MR. MINK: No, I think that would be incorporated into the numerical modeling. We all know and we all agree that the wells are really suboptimal in their developmental practices through no fault of anyone who is say alive today. Mokuhau was put in I think in the early '50's, '53, at which time the attitude was that you could take a tremendous amount of water out of a single, small place.

Mokuhau well field is a very small well field, but it has, as I recall, three wells, and they are so close to each other, it's as if you are taking the water out of one point. The wells at Waiehu were put in with the concept that take a lot of water out and reduce the water level in the Iao Aquifer way, way down, and that way you would maximum the amount of water. That, of course, was a concept which had some acceptability at that time but which now we all realize was erroneous. So that these manipulations in

order to improve optimality can be taken over time.

MR. VICTORINO: Mr. Chair.

CHAIR RICE: Yes, Mr. Victorino.

MR. VICTORINO: Being that I'm very new at this, Mr. Mink, and I hear the alarmists out there, so to quell their alarming the public, with your expertise and your background and all the wonderful things that have been said about you, so I would trust your opinion in this area. If we did nothing or very little to change what is occurring, how many years, as best you can calculate, would we run into some kind of problem area so that these alarmists can start saying -- you know, we got to do something -- but how many years in your best estimation?

MR. MINK: Well, at the present, pumping wells, Mokuau is already variable in the quality of the water as a result of over pumping from a single

point. The Waiehu wells seem to be pretty sturdy and probably could go on for certainly during the period of the numerical modeling. The Waiehu Heights well number two had to be drilled very deeply because the -- when the well was first put in, it didn't have a capacity of a million gallons a day that it needed, so they had to go much deeper and that has caused problems.

But as a general rule, we certainly would be able to maintain what we're doing during the period of this modeling, although I think you should start planning to put in another, at least another well and reducing the capacity at whichever well you think is desirable to Mokuau probably.

CHAIR RICE: So it sounds like what I'm hearing is that you would recommend that we proceed with the modeling and start a plan to spread out the pumping?

MR. MINK: I think that's a good idea.

CHAIR RICE: Spread out the pumping is something we need to do anyway.

MR. MINK: Yeah.

CHAIR RICE: Right, would that be your opinion?

MR. MINK: Yes, we do. We have to do that.

CHAIR RICE: Gordon is agreeing right there.

Any other questions for Mr. Mink?

CHAIR RICE: Thank you, John. Go ahead, Dan.

John, one question.

MR. GRANTHAM: Thank you, Mr. Chair. I recently had chance to interview a retired civil engineer from the Metropolitan District of Water Supply of Southern California, Carl Griffith. And he pointed out to me a real concern over head levels, and they have some 50 years' experience trying to deal with salt water

intrusions there, so far unsuccessfully.

Well, they've had some limited success, but it's once the damage is done, it's done. It could take lifetimes to replace it. And the thing that he pointed out to me that gives me some concern that I would like to ask Dr. Mink about is he pointed out that the head levels create a pressure of fresh water that is crucial in keeping the salt water out, that you have to have a certain head above the seawater level, which and it actually has to flow out to the ocean. If you don't flow fresh water out to the ocean, if you don't keep that flow, you will have intrusion. That's what keeps it flushed out, and as soon as head levels fall below the ratio of fresh water to, you know, the height of the fresh water. Fresh water is one-fortieth I believe lighter than -- and I'm sure Mr. Mink can tell you in great detail about this, but it has to maintain that positive pressure and that flow to keep the salt water out.

And I am concerned and he was concerned that some of the head levels that you saw on the chart up

there appear to be dropping below that safe level, and that's my concern.

MR. MINK: Let me just address that for a moment. The deep monitor well at Waiehu shows that the 4:1 ratio, which is what he is using, is down at 700 feet; whereas, the water table elevations are say at ten feet. So ten times 40 would be 400, but actually, the depth, the aquifer depth is 700.

The water table measurements are not really a measurement of hydraulic head. They have all the perturbations that can occur due to pumping, different than the recharge and what have you, so that when you have a water table elevation and use it as your hydraulic head, it's not really a proper thing to do. And let me just give an example.

When you turn off the pumping in a certain area, the head will recover maybe three or four feet. That is the water table will recover three or four feet. If we use a strict ratio, that would be 140 feet of change in the bottom. When you work out the volumes of how much water is involved, there's no way you can

adjust the system to account for the volumes of water. It would have to be either discharged or recharged to make the water table elevation consistent with the depth of the fresh water of the aquifer. It gets to be rather complicated, but this is the sort of thing that the numerical model would handle.

In California, it's also different than here.

The aquifers are much less permeable than our basaltic aquifers. And although I can't say that when salt water comes in, that it will never exit again, our experience shows that indeed the recovery is far greater than it would be in California. Let me just give an example. Over at Wailea where they irrigate the golf course, they will irrigate -- they will pump water all day or whenever the period is until the salinity gets up to maybe a thousand parts per million; that is, the intrusion comes in. They let it rest overnight. They start pumping it again in the morning. It's down at 500 or 300, and they will continue that endlessly, so the intrusion is not absolute. It can be corrected.

CHAIR RICE: Adolph.

MR. GRANTHAM: How is Mokuahau doing?

MR. MINK: You mean the wells?

MR. GRANTHAM: Yes.

MR. MINK: Well, I think if they pump them, probably they don't have to have the salinity that they have.

MR. GRANTHAM: The question was the Mokuahau 2 well, which was shut down for salinity, I asked how that was doing.

MR. MINK: I don't believe that salinity has affected the other wells, has it?

MR. CRADDICK: No, that was shut down for one

reason, and one reason only, because it is a backup well. We drilled another well out in Waikapu. We don't have to have it. And it's being used as an excuse for designation. Because I guess in past management practices, allowing the salinity to go way high, the only way to stop that, and it still hasn't really stopped it, is to remove the pump. And then nobody could say the salinity was rising in it anymore.

CHAIR RICE: Thank you, Dan. Mr. Helm.

MR. HELM: Yeah, I guess this is to either Mr. Tribble or Mr. Mink. My concern is I just have a question in regards to Molokai and the Kualapuu aquifer and also the similarities having a battery of wells, Department of Hawaiian Homes, the Board of Water Supply and now Molokai Ranch all being in one location.

Do you also at this time, if you folks are familiar with the current Kualapuu situation, Kualapuu aquifer situation, also recommend that, you know, the

best case scenario would be to spread those wells out, or are we at a point where we can continue to pump at the current situation?

MR. TRIBBLE: You want to answer that question?

MR. MINK: Well, I think in all cases, spread out pumping is desirable. The Kualapuu aquifer, we don't know what the limits are for one thing. It was, you know, a serendipity discovery that it was, in fact, discovered. I think they put in a deep monitor well, and I don't know what the results are, maybe Gordon can tell us, but as a general rule, spreading out the pumping and controlling the rate of pumpage is a desirable thing.

When I appeared a month before, I said that if we want true, absolute optimality in developing ground water, we would have a million syringes taking out a drop from each place in the aquifer, and this would not disturb anything else. But, of course, we can't do that.

MR. TRIBBLE: As you probably know, we're involved with a couple of aspects of working in and around Kualapuu aquifer. Several years ago, we constructed a numeric model. The model was limited by a lack of a lot of information. Since that time, we've drilled, as Mr. Mink said, a deep monitoring well to look at the transitions in Kualapuu. We've only been collecting salinity information from that well now for about a year. And that's really too short a baseline. As Dr. Mink points out, ground water changes are dynamic, but as they happen, there is change, but it expresses itself relatively slowly, particularly in a larger system.

My recollection, and Delwyn can correct me if I'm wrong here, but my recollection is that when we did our last analysis, there was a slight upward trend in chlorides. But I haven't kept up with that analysis. It's several years old. Does that answer your question?

MR. HELM: Yeah. Well, the reason why I was

concerned is currently, I, you know, understand that we're a resource management over there. And currently, I think now the Board of Water Supply is sort of receiving their daily allocation, and there's a possibility of looking for other potential sites for drilling a well.

And my concern was that if we continue to exceed over our daily allocation, that obviously we're going to, for some reason, anticipate some problems, and I think we're seeing some upward trends of salinity intrusion in that area.

MR. TRIBBLE: Well, this is a numeric model that's being published and would be available to anyone really if they wanted to use it. They could be helping to pick an alternate location for additional pumping wells.

MR. HELM: Okay.

CHAIR RICE: Thank you. Thank you, John. Let's

take a short recess here.

(Recess taken.)

CHAIR RICE: Call the meeting back to order.

Okay, Board Members, we had the presentation on those issues. We thank USGS and John Mink for coming today, so we can ingest that all information as we deliberate on our topic that we have for our Committee of the Whole meeting.

Next on our agenda, Discussion/possible action regarding Chapter 2.90A of the Maui County Code. We had this at our previous meeting. We asked -- the Board Members asked to have some time to review it, and today you received a handout from Mr. Kane on his rationale and we didn't get a chance to look that over, but having read the original documents and having Dain here, is there comments and questions? Okay. Mr. Starr.

MR. STARR: Yeah, I was wondering if we could

offer the podium to acting Chair Kane and Councilmember Tavares if they have some comments, because I like the way they're going with this, but I would like to hear their own personal thoughts if they want to share them with us.

CHAIR RICE: Sure. Charmaine first. You're speaking for the both of you?

MS. TAVARES: No, just for me.

CHAIR RICE: I should know better, right.

MS. TAVARES: Sherri is passing out a packet for you so you can kind of follow along. I understood that I was doing a presentation on the amendments that I proposed. Mr. Kane also has some amendments, and I just wanted to let you folks know that this is in committee, and the committee has not met on this at all, so we're at this point seeking comments from the Board of Water Supply regarding some of the amendments

that we are thinking of.

I think on your first handout titled the Proposed Amendments to Chapter 2.90A Water Reports, and, first of all, I'll just go through, and some of this will be a review. What is Chapter 2.90A of the Maui County Code? And this is the part that recognizes that water is a limited resource and must be protected for public use and it authorizes the County Council to allocate water use in those areas where ground water withdrawal reaches 70 percent of the sustainable yield. And the allocation of water is to be based on the land use categories contained in the community plans like agriculture, residential, public, quasi-public, business, park, et cetera.

Linnel Nishioka, Deputy Director of the Commission on Water Resources Management for State of Hawai'i testified before the Council Land Use Committee I guess it was earlier this year or last year, late last year. She reminded us that the Council does have authority to manage water resources, but we have not used this authority to date. And this

prompted me and Mr. Kane also to look at the 2.90A and figure out just what exactly our area of responsibility is and how we should be responding to certain triggers as specified in 2.90A.

We need, as a council -- you know, a council can be equivalent of people. We represent, you know, the community, and the information that we need in order to make wise land use decisions and planning decisions would ultimately come from this body, from you folks. And we also, you know, need to stress the fact that we do need to work together on these issues. We can't have one section of the County going off and planning this, that and the other thing, and then have another section of the County over here saying, oh, no, we're not guaranteeing water. This is not a good way to plan at all. We need to be in a coordinated effort, and I think this is what we're both, Mr. Kane and I, are attempting to do is to get some coordination and to make planning more meaningful in Maui County.

Too often we hear that planning is great. You produce these nice booklets and pretty pictures and things, and then it sits on a desk somewhere, and as

permits get handed out, it becomes whoever is in line first or whatever, gets their permits or gets their water or not. What I'm proposing in the Chapter 2.90A, the focus is on the notification of when we are to be aware that the withdrawal is in excess of the trigger set forth, either 60 percent or 70 percent of the sustainable yield. Currently, the law requires that you folks inform the Council when ground water withdrawal reaches those limits, like 60 percent of the sustainable yield of an area.

The only source of information that the Council currently receives on this is the Department of Water Supply's monthly water source report. This reports current usage, but there is no information about projected usage or a percentage -- or stated as a percentage of the sustainable yield. In Sections A.1-3 of the proposed amendment are intended to specify that the information the Council needs regarding current and projected water usage for each aquifer.

The idea to provide useful information on an

ongoing basis in addition to actual notification letters, and that's proposed in Section B, so that formal notification is not a surprise. Now, we had received and I think you folks had received an opinion earlier from Deputy Corporation Counsel that had stated that the monthly report was sufficient information for the Council to have notification of what happens.

So I ask you now to turn to that section in your packet that contains the monthly source, the monthly report. That's the chart. I think it's the second or third page. You should all be familiar with what this looks like. On this monthly report, you know, to me, this is analogous to receiving from your bank your checks and your deposit slips, and that's it. And you go figure out if you're overdrawn or not somehow. I have a little trouble with this report. For one thing, I was trying to figure out where the figure for the last 12 months, and I guess this is the average. And the last column where it says 16,651, I don't know what made up that figure. Because when I take the new number for this report reports 13 months, not 12

months.

So if you start from April 1st and you go to March of this year, I come up with an average of 16,651, which doesn't match. I mean I come up with 16,765, which doesn't match the 16,651 on the report. In this year, for this year's to date, I take it you would take January through March, January '02 to March '02. And it says this year to date is 13,394, and I come up with 13,872.666, so I'm not, you know, real sure how these figures come about and if they're supposed to balance or not.

But, you know, can anybody tell me in looking at this whether this trigger meets the triggers of 60 percent or 70 percent? We have to know what the sustainable yield is for each of the aquifers and then do the mathematics yourself. And we get these reports every month, and I even have our chief of -- our Director of Council Services to figure out or try to figure out whether or not we have, in fact, reached the triggers as provided for in Chapter 2.90A. And he responded back to me that he couldn't figure it out.

So I think what we're trying to do with the amendments, or I guess I can't say we, I, since this time it's just my proposal, is to figure out a way that we can be notified in clear terms, you know, the aquifer sustainable yield is X. The monthly average or the average to date is X. You are, therefore, at 67 percent or 52 percent of sustainable yield. That would be much more useful information for the County Council.

The other thing that I find interesting is that if you look at the daily averages for Waihee and for Iao and you total those two up together, it's already 22 point something million gallons per day, which we just heard earlier that that was about it. Should I just stop at certain points and entertain questions, Mr. Chair?

CHAIR RICE: Yeah, go ahead. You're finished with your presentation?

MS. TAVARES: With this part of it. I guess the point I'm trying to make is that the current way of

reporting the withdrawals does not give us useful information for the Council to make any kind of decisions.

CHAIR RICE: Mr. Starr.

MR. STARR: Yeah, I would like to apologize for these reports, and this is something I've brought up in, I believe it's maybe four out of the last monthly Board meetings, is that these charts are erroneous and designed more to confuse than to provide clear information. I've objected to them as a Board Member.

Nothing substantial has changed, and you're right, you cannot from these charts figure out the true picture because there are errors. And virtually every month that I've added them up, I've found errors and they're designed to confuse, so there needs to be a better mechanism. I would like to go a step further though. I think what you're trying to do is admirable, but I would like to request you to look a

step further because what we've really been talking about today with USGS and John Mink is to, in a sense, move beyond the limitations of the aquifer segment based -- based regulation model. And there are deficiencies. And, you know, the largest deficiency right now, the biggest example is concerning North Waihee where the entire aquifer has a sustainable yield of 8 million gallons. Now, that number has never been proven because we've just started putting wells there the last few years. The 8 million number was created at the time when Iao was thought to have 36 million gallons a day, so it may or may not hold up.

But more to the point is in North Waihee, we've only penetrated the southern half of it. And we've heard John Mink say that the area north of Makamakaole is untested. It may yield good water, or it may not. But the southern portion, according to John Mink, we should limit ourselves to 4 million gallons, not 8. So it's hard to tell from these charts, but we're pulling more than four million gallons out of there now.

It's hard to tell because the Iao tunnel is not a part of that. For some reason, David includes the Iao tunnel along with North Waihee, and I think that's meant to confuse. But if you drop out the Iao tunnel, you know, from the -- whether it's a 5.423 or the 6.099, you get a number that's still substantially over four million gallons or substantially more than we should be taking; however, if you look at it in light of the sustainable yield of the entire aquifer, you know, in terms of 8 million gallons, it's not 90 percent or it's 65 percent.

So, you know, right there is a problem; in other words, I don't quite know how to deal with it, you know. But we need to, you know, be looking at what we can actually take from an area rather than the regulatory limits of an aquifer per se.

MS. TAVARES: Right. You folks have a challenge. It's not a job -- I don't wish to be in your seat at all. Our concern or my concern on this is that we have a mechanism set up through this

chapter to regulate or to protect the water resources from the Council end of it. So for that part of it, we need certain information, and I'm sure the Department of Water Supply has this information. They must have. If not, you know, how could they function?

The sustainable yield for each aquifer, I think once that number is set and we can kind of agree on that number, you folks can agree on that number, then the daily or the pumpage from those aquifers gets reported, you know, to us and to you. And then you would know what the pumpage is for each of the aquifers. And we have a responsibility to kick in or to respond when it reaches certain levels. That's our responsibility as a Council as defined in this chapter.

So all of my proposals focus on is the reporting technique, the reporting procedure and the technique. Mr. Kane's proposal will go into a little more detail about some other things, and I don't want to steal his time, so I'll let him do that. That's all it is that I'm trying to do is make it clear for you folks and

for us to be able to know, to have the knowledge or the information so that we can act according to what's outlined for us in this chapter. So basically, you know, that's kind of my presentation at this point unless there's some questions.

CHAIR RICE: I have a few comments.

MR. STARR: I just have one more. You were at the meeting in Kula last week, and that was not the first time members of the communities have come and complained in a friendly fashion that in our giving out meters, we're not following the community plan or other documents which create a priority for water allocation. And it's something that I, as a Board Member, have struggled with, because I don't really know if it's fair to say, okay, this week, we're giving meters only to farmers, this week we're only giving meters to Hawaiian Homes or whatnot. I think that's a very difficult thing for us to try to do. There are priorities, and rightfully, there

should be priorities, but I don't -- it's difficult for a water utility to be the one to do that. So the question is should that happen when meters are being given out. At the meeting last week, it was suggested that perhaps when a new source comes on line, water from that source should be designated so much for agriculture, so much for Hawaiian Homes, so much for commercial and so on. And that's, you know, that possibility could be done. This seems to take it out of our kuleana, out of our hands and put it into the Planning and the Council area. And that would certainly make life easier for us and for us to try and deal with it. I'll just -- I'm just wondering if this is done, if we would not have to worry about that, that issue over water priorities.

MS. TAVARES: Yeah, I think that once that percentage is triggered, that it becomes our responsibility then to develop the allocation plan based on land uses as prescribed by law right now. That can help you folks. You know, when this is pau, I think we work in concert with each other is that we

can then help. We have the justification for saying okay, X percentage shall be for whatever land use.

And it would be similar I think to what happens with the waste water capacity. A certain percentage or so much gallons per day is allocated to the different kinds of land uses, so I see a similar thing happening with the water allocation plan that the Council will implement.

One of the other questions I have is if we're already at 22 million gallons per day on that average, what is there left to allocate? You know, that's like I mean kind of like, you know, what are we here about? Maybe you don't do anything until there is a new source developed. And when that new source is developed, then we kick in the allocation plan, or do we wait until that source reaches the 60 or 70 percent of sustainable yield trigger, triggers?

CHAIR RICE: Mr. Victorino.

MR. VICTORINO: Councilmember Tavares, thank you

again for being here. I think that's important that you've stated something that when I was in my interview process you brought up and some other council members, and so now it's all hitting me like a ton of bricks.

But going back to the reporting, I agree without the necessary information, it's hard for us and you or all of us to work on any kind of plan, so I think that's something that has to be addressed. But secondly, I think the most important thing is when we have this type of legislation that you come to us and work together with us to come up with something that all of us can live with and work together with, so I thank you for being here. I thank you for bringing this, and I agree, with the information that is set forth, I could never figure it out. And I've only been here for a couple of months. And you mentioned the guys who have been here for a couple of years, if they haven't figured it out, I'm in big trouble, aren't I?

CHAIR RICE: Charmaine, I have a few comments.

On your proposed ordinance in Section 2A-1, maybe it's understood, but I think it needs to be clear what you are asking for is what we know from the Board of Water Supply. What doesn't get addressed and I think is addressed in Dain's document is of all the people using water, there may be other users in that aquifer, and we have an understanding what you're going to get from us is not that entire use of that aquifer.

Possibly, maybe it is all coming from the Board of Water Supply, but maybe it's not.

So if we're thinking of legislating this kind of thing, I think we need to incorporate all, because it would not be fair if we were allocating water only from a portion of the people who were taking water from the aquifer, right? So I think it's really important if we're going to do something along the lines that you proposed, then it has to be clear we're only reporting what we know. And it's not necessarily all the aquifer. But I would prefer it to be more encompassing.

And I think we can probably in very short order

revise the report to pretty much comply with everything that you're asking here. Pending meters I had some questions about. Some of the information will actually come from other departments, from Planning in particular, building in terms of permits and that kind of stuff?

MS. TAVARES: Right. And a while back at one of the presentations, I had asked about the 20 million gallons per day sustainable yield for the Iao Aquifer and saying is that just the County of Maui sustainable yield, and the answer is, no, that is the sustainable yield, that figure. And so without knowledge of what private wells are drawing, it's kind of like a crap shoot, you know, so to speak.

And you've got many more straws in the glass.

And if you don't have any knowledge of what that's doing, we may be past, way past what the -- not way past the sustainable yield, or maybe we are. So I think the numerical models that we talked about here today or that were presented to us today are great, except I'm asking to what end does that suit or does

that meet our needs?

Are there now, in the analytical models, is there enough information in the analytical models to tell us that's it, you guys should stop? We should stop using those aquifers, and we should be looking for other sources of water and not continually trying to monkey around with numbers to figure it out. If the chloride levels keep rising and the well head or the transition zone keeps rising, to me, that's not sustainable.

Sustainable means you take out and it comes in, and you maintain a level of flow. Maybe this is just the pure layman's version of what a water table should be like. But if the water transition zones are rising and the chloride levels are rising, then I'm saying maybe we already have the information we need to manage that Iao Aquifer and the Waihee aquifer. Maybe our work should be in other aquifers.

CHAIR RICE: Well, I don't think there is any question we need to develop new sources. That's why I

asked the question of Mr. Mink that in the short term, should we consider spreading the pumping. Because in the break when I talked to the USGS guys, where you locate the wells is extremely important in terms of determining sustainable yield. So while, you know, the numerical modeling is not going to be done and someone is going to walk in and say, okay, here it is, the model is done, here is the sustainable yield, because it depends on so many variables.

But it will provide us with more information that we have now with the analytical model. But I think the answer to the question is we need to do some things right now. Ginny.

MS. PARSONS: My thought, too, Charmaine, is when you're looking at -- I know Planning is looking at where we fall into their permitting stage, which I think is real important, because a lot of people go through an awful lot of subdevelopment costs and get to us and find out there's no water meters, and that's a very sad situation for them to have happen.

And then they go out and they want to talk about

drilling their own wells. And to me, it would seem like we need a complete structure. If they're going to drill their wells, then I think the County should tell them, and the Board, but the County and the Board together, what reporting mechanisms they must put in. I mean that's got to be part of the procedure. And that they're going to be subject to the same drought notifications and usage and testing that all of our public wells would be and that they should stay at our public well level laws instead of being so -- they can slide underneath it. They want to drill their own wells, and they want to stay underneath the same levels of content that we have to go through. And that's something I think that when it comes in should be part of the package.

MS. TAVARES: Yeah, I think that's what

Mr. Kane's proposal addresses. Just a reminder, this law pertains only to ground water, not surface water. It's only ground water withdrawal, Chapter 2.90A.

CHAIR RICE: One second. What I think we're saying is if we're going to do this, let's try and get it as right as we can the first time, and that's why we appreciate you coming here.

MS. TAVARES: And I appreciate being here also.

CHAIR RICE: Mr. Starr.

MR. STARR: I think the direction we're ultimately heading with the numerical modeling is instead of looking at a large political area and column of numbers, we're looking at ultimately each individual data point and saying how much water is safe to take from there. And that is based on the continuity.

You know, for instance, at Iao, in Iao, there are people just outside the boundary of Iao who are pumping quite a bit of water. And they, you know, have not reported their pumping data. The commission promised to provide it to a State Senate Subcommittee about two months ago. But the data, as I understand

it, still has not been reported to the Water Commission.

So, you know, how do you take that into account what the aquifer -- you know, an analytical model, you can't. I feel like most people here realize something and it's something that's very difficult for people to say. And I'm going to stick my neck out and say it. It's kind of like of the emperor's new clothes. We have about 22 million gallons a day of available water for Central and South Maui, and we're using more than that.

And, you know, I would be happy to hear it from anyone if they disagree with me on this. We've heard that from John Mink today, and I think, you know, this is pretty much a given. And what do we do? I mean do we keep issuing water meters when we don't have anymore water to pump at the present time?

Yes, in future years, we'll have additional wells in other places, but right now, we don't. And probably for the next year or two, we won't. So, you know, I think this is something that the Board really

has to look into is what we're going to do in Central and South Maui now that we've exceeded our ability to produce water for all of Central Maui and all of South Maui. We have no more water to give right now, and to keep issuing meters is probably the wrong thing to do.

So I think this is something we're going to have to face and we're going to have to deal with, and I don't think it's going to be enjoyable for anyone. I don't think anyone wants to stop issuing water meters, but since we don't have anymore source at the present time, I think we're going to have no choice in the matter. I would like your comments, if any.

MS. TAVARES: Well, I guess that's part of our concern is that planning becomes very, very, difficult. As we approve land use changes, zoning changes and community plan amendments, we don't know what the impact of that is based on information that you folks might have about what is the availability or what does the future look like. Because our community plans are supposed to be looking at 10 to 20 years

out, and if we don't also have a parallel track of water source development, then we in the planning committee shouldn't be approving any land use changes.

Maybe we should leave it status quo until we have water development or source development. So we're just kind of shooting in the dark here trying to hit a mark. I mean one of the things to me that makes it difficult for me to understand is when we're talking about pumping gallons per day and yet you folks talk about meters and meter sizes, and all the meter does is measure how much water is going through it. It doesn't limit how much water will be used.

If I've got a -- if I'm at home and I leave my faucets on 24 hours a day, I'm going to use a heck of a lot more water with the same size meter as my neighbor who uses water just during waking hours. I don't know if there's a correlation and how that's figured out between how much usage goes with each meter that is given out. I think we have a little hazy area about water usage in gallons per day versus

the sizes of the water meters and uses of those water meters.

CHAIR RICE: Charmaine, let me be very clear.

The Board and -- Mr. Starr's opinion may well be the opinion of the Board, but it is not the opinion of the Board at this time. The Board convened a Committee of the Whole Meeting to take up the issue of Central Maui water availability. At that meeting, we determined that we needed more information, and that's why we asked these gentlemen here today.

And so the Board has not deliberated on that, and like I said, maybe that will be our conclusion. But lest someone be misinformed, this isn't the opinion of the Board at this time. I know Mr. Starr's opinion is his opinion, but I want to be clear on that.

MS. TAVARES: Thank you.

MR. HELM: I have got a question.

CHAIR RICE: Yeah.

MR. HELM: Charmaine, thank you very much for your concern about this. It shows that the Council people are very concerned about our precious resources of water. I would like to emphasize the fact my concern is when you do your land use planning and how you allocate the water, take into consideration and maybe a collaborated maybe effort with the Department of Hawaiian Homes to assure there are certain water reservations set aside for our native Hawaiians for the future belonging to the Department of Hawaiian Homelands. I just want to emphasize that fact that I hope you guys are also looking at that also in your land use plan.

MS. TAVARES: Okay, yeah, we do.

CHAIR RICE: One other thing I know you heard, it came up in our hearing last week upcountry. We

pass some of the hard decisions back to you guys. One of them is the definition of agriculture.

MS. TAVARES: Yes.

CHAIR RICE: That's a big issue, and it sure would help us, too.

MS. TAVARES: Yeah, it would help all of us.

CHAIR RICE: Yes, I'm sorry.

MR. NAKAMURA: Just one quick comment,

Charmaine. Thank you for coming and we appreciate you and Councilman Kane coming to take your time to be with us and share your thoughts. I would agree that certainly there is need to improve the manner in which the information is being provided to you so you can discharge your responsibilities. The only thing I would ask is that you consider whether or not all of the information you're asking for is really essential to the ultimate decision you're going to have to make

regarding allocation of land use. And the one I have a little bit of question on is the request about the information by subregions in the community plan, because I'm not sure how that's ultimately going to be translated into a decision Council has to make to allocate land uses within the community plan.

And I just raise that because, you know, we sometimes oversimplify the ability to get this information and further if we break it down. I don't know if David has any comments, but again, I guess my request is you consider whether or not the information is essential to your ultimate responsibility.

MS. TAVARES: We can certainly consider that or I'll consider it, too, as we go into discussions. The other thing was that the report, you know, as it looks like here, would be monthly. But there are some things I think that don't need to be reported monthly. Some of the things could be maybe quarterly or something like that. I guess what we're trying to do, too, is that the water use and development plans, you know, need to reflect what those water uses or

water resource demands are going to be based on community plans as they're adopted.

And right now, the plan that we have before us is the 1990 plan, and that has not taken -- been updated, and yet, we're on the last plan right now of that series. So I think the subareas are helpful -- would be helpful when the zoning people or Public Works or Planning, when they give out the zoning permits, they're able more to tell in a particular region or a particular village or town that, you know, we may have the allocations broken down even that finitely.

But right now, we'll take another look at that part of it, but I think in the other -- in the law, it had talked about subregions before. This was just dealing with what those subregions were.

MR. NAKAMURA: Yeah, and I guess I was just wondering whether or not that was your ultimate intent was to break the allocations down further between not only within the community, community plan, but also

within the subregion. Because it would seem like that's going to be a very monumental undertaking.

MS. TAVARES: Yes, I think so.

CHAIR RICE: You want to turn it over to Dain?

Any other questions before we do that?

MS. PARSONS: I have one more. Charmaine, if we're in a -- hypothetically, let's say we're in a crucial situation with the Iao Aquifer, and I'm not saying that we are, this is just hypothetically.

Would Council support means, immediate means to put in additional wells without any problem or even pipelining from something maybe that's been drilled upcountry and pipelining it down to get it into the system so that our folks that are on the system now won't have to incur any loss of use, any drought, whatever it might be that we might have to pull back on? Would Council support that?

MS. TAVARES: Well, I think Council supported it in the past when there were bond issuances for new infrastructure for different water development, source development. I feel at a loss because I don't know what the water use demand is for the present community plans. I don't know what that is, and I think not knowing what that is makes us hesitant about approving any other or any land use changes or community plan changes.

We're just doing our stuff. You know, the committees for land use and planning, we do our thing, and we dump it on your laps and we say, okay, we've approved this, you find the water for it. That's not a good way to plan.

MS. PARSONS: I agree with you. What I see happening and what I've watched over the last few years is water happens to be the -- it's starting to become the stop gap for development, and it's like if we can prove that there's not enough water, we can stop development situations. And that's a very political animal.

I'm looking at this when that happens, it affects all of our folks that are on line already all over the County. And if we need to develop more sources, as I'm told we have lots of sources that may be a little bit more costly maybe up in the hills, they may be able to pipe it around and put systems together to bring the water in. That should be our focus rather than worrying about stopping development totally from a planning situation. Let's figure out where we can source it from to get it in there so that we don't affect the folks that are on line already.

MS. TAVARES: Right, so the County Council's responsibility is to manage growth, and it shouldn't be your responsibility to manage growth because that's a huge responsibility for a Board that's appointed. We're elected to do that kind of work and we're elected to make those hard decisions, so managing growth is one of our -- is our key job here in Maui County. And, you know, that's why we get the big bucks here on the Council to manage growth. So please

don't feel that in your positions because you think water is running out or whatever, that you folks are responsible for managing the growth in Maui County.

Our management of growth is going to depend on the input that comes from the Department and the Board, but as far as actual making of the decisions, which is what we're doing through Land Use and Planning, becomes the elected officials' responsibility. And that's onerous enough in itself, but that's why I keep stressing we do need to work together on these things.

Now, getting back to your question, if the Department makes or the Board makes a case for why we need to float a bond for X, development of water or whatever, if the justifications are there, I can't see the Council turning it down. I mean this is water we're going to need. Or if we turn it down, we're saying we're going to control growth by not developing water. But that will be a conscious decision by the Council.

So, you know, in our current situation, you folks would present it as a bond authorization I would

assume or something like that, and we would weigh the merits on the proposal and act accordingly.

CHAIR RICE: Thank you, Charmaine. Okay. Dain.

MR. KANE: Good morning, Chair and Members of the Board, Dain Kane. What we've handed out to you earlier is basically a request that was made by your Board, Mr. Chair. And it's in respect to some proposal amendments that I as an individual member have made to the Council that has been referred to the Land Use and is currently in the Public Works and Transportation Committee. So, therefore, I would like to preface my comments by making it clear there has been no discussion, as Member Tavares has stated, and these are basically a starting point of my views and not of the Council's views as you stated earlier, Mr. Chair, of previous comments made.

Ultimately, it may come out where something may, via natural death in committee, never show up on a Council agenda, or it may reach consensus at committee

level and come out in its original form. I'm sure you folks understand that.

What I have before you, Board Members, is basically three amendments, and I'll direct your attention just to the summary page, the very first page of the introduction. We're basically looking at, first understanding that 2.90A mandates us on the Council to set forth an allocation once there's a trigger of withdrawal from the aquifers.

Based on that, it was determined by myself to put something forward to the Council and the committee for consideration to maybe look at legislating the collection of the data and the reporting and the notification to the Council of the information, so that's basically what's drawn up in here and highlighted.

On Page 2, first one, it's pretty clear cut. Regarding, "The Council shall," and you can see the justification parts in the middle of Page 2, and we've bolded it and outlined it just to show the language is clearly stated "The Council shall." That's obviously our position that we have to take. Now, by ordinance,

I've suggested that the Council adopt an allocation plan within a time frame.

Now, what we've put forward here is 180 days. Again, it could end up being something longer, shorter. Personally, I feel we need to have some flexibility, so within the discussions at the committee level, things like would we have to take the annual budget meetings to the community, so from March to May, as we were just finishing up now, obviously, we can't take up something like this as well. So things like that are taken into consideration to determine a time frame, so again, that's something we're putting forward at this point.

Moving on to the second one, the Council shall determine the allocation of water, and this is regards to notice. So on Page 3, you'll see the actual amendment. For your information, we have provided to you as Exhibit A your existing 2.90 and Exhibit B are the amendments that are being proposed, so you have that for your perusal at your convenience.

But back on Page 3, B2.90.060, Notice. And I

think this kind of touches on what Member Tavares was talking about earlier. This is basically, to dovetail off of what Member Tavares has stated, the report for us makes it very difficult to interpret, and so I think what we're doing here is we're just trying to get a statement that specifically comes out and tells us directly in plain language, and that's basically what we're looking for. So I'll keep it as simple as that. Unless you have any further questions, we'll address that a little later.

Moving on to Page 4, the reporting of data. As you can see, we get rather specific here, and it does deal with obtaining information from private property owners as Member Tavares stated earlier as well. And to Member Nakamura, and again, in the course of the discussion, we may determine that some of this information may not be important or essential for us to retrieve. So again, that kind of stuff may evolve. Whether it's consensus or not, we will find out.

So instead of just reading through all of these, you know, I give you folks the opportunity to take a

look at that. The bottom line is we understand and you folks obviously understand that we're not the only ones using the water, that we have private users. I think what we need to try and achieve is because we're both at the County level, it's difficult for the Council to have to depend on whether it's a federal agency, USGS, or a State agency, the Commission, who has the authority to get that information. I think it's incumbent upon us to depend on you folks to provide us that information; hence, hopefully, you folks can take it upon yourselves to gather that information from the State. And it will benefit both you and us and all of us in that respect.

That's basically what we have out of my office as far as proposals to amend Chapter 2.90. Again, this is kind of early. I wish I could come here and give you, as the acting Council Chair, a result of all of this discussion, but we're not there, so I'll leave it open for questions at this point, Mr. Chair.

CHAIR RICE: Mr. Starr.

MR. STARR: Yeah, I would like to compliment your efforts and I think you're moving in an important direction, so I thank you for that. Overall, I think these are both really good documents. And I hope they -- I hope they move forward expeditiously.

Two minor comments, and they're not in any way intended to take away from what you've done. But I would like to see where you have on Page 4B, the Director shall obtain from private property owners of Maui County the amount of water consumed from any aquifer affecting water resources of the County.

I think you might as well do all of the -- all of the County so that we don't get into the argument over whether a specific place is affecting the resources of the County or not. My belief is you have to look at the whole, you know, and as modeling gets better, we'll be able to do that, so I would like to see all of them reported there. The largest wells on Maui are not being reported currently. And we will all I think want to move in that direction.

And the second is that, and I'm not sure how to

do it, I would be happy to think about it, but we have to look toward when we move beyond the analytical aquifer model and create some wording that says if an area -- you know, if an area, you know, of an aquifer is being over pumped or something like that, that would also kick it in, because as we've seen with North Waihee, it's possible to exceed to pumping limits but not trigger the sustainable yield of an aquifer.

MR. KANE: Mr. Chair, Member Starr, thank you for those comments. We'll take those into consideration, and with no offense to any individual member, I think the Public Works and Transportation Committee would really benefit from a formal perhaps report that would have recommendations from your body for us to consider the proposed amendments that are being put forward to you folks for consideration by myself as well as Member Tavares.

And I think that would be a tremendous help and benefit for our discussions as we move through these

various amendments. Thank you, Mr. Starr and Mr. Chair.

CHAIR RICE: Anybody else? Mike.

MR. NOBRIGA: I would like to paraphrase from the Bible, "What hath allocations so be given shall not hath be takeneth away."

MR. VICTORINO: I never read that part. Different one, okay.

MR. NOBRIGA: You need to address somehow a way of identifying the allocation that has been set forth already because in the process of reviewing general planning community plans, there has been I guess a reliance that things would be available such as water, so it is our express purpose as the Department of Water Supply found in the general plan and community plan to find the source.

The things that have been hampering us

tremendously is financial. Although we have floated bonds in the past with new projects, we currently have to operate at a deficit. We don't bring in enough money to cover the loans we already have. The second phase of this, which is becoming more and more critical for our success, is the environmental impact. And on the third of these is the legal implications of what we are trying to do in order to meet the general plan and the community plan. It's one doozy.

MR. KANE: And I concur with your comments, Chairman, and Member Nobriga. I think from where we stand at the Council level, and because we're just about to finish up with our final community plan for this round, we're going into the new cycle with the general plan. And I think this has good timing for that effort because this is obviously a significant component of the general plan with respect to water. And I think Member Tavares would agree with me.

Member Tavares, as the Planning Committee Chair, has helped to get this thing finished up so we can

move into the next round and do a better job. All of us want to do a better job, so that's the effort here, and I think by looking at these small -- it's small, but it's significant. But it's small steps along the way that we can help to do a better job with what you're stating, Member Nobriga, so we appreciate your comments and we hear you.

CHAIR RICE: Yes.

MR. NOBRIGA: Historically, development has been very politicized in the past, and the huge gains that have been made with the unique pace of growth on the island has taken place only through use of a totally autonomous Board of Water Supply.

MR. KANE: Are you asking for a response?

MR. NOBRIGA: No, no response.

MR. KANE: And actually, my response would be,

Chair, is I'm here today to talk about the amendments that are being proposed at the Public Works. I don't have comments, quite frankly, with respect to, you know, with respect to those comments on autonomy or semi-autonomy. Fully semiautonomous I think is what Mr. Craddick called it.

And we're on the learning curve of that one, but I don't have any comments regarding that. I think the bottom line though is no matter what -- no matter what type of function we have, we need to I think coordinate a cooperative effort, because if we don't do that, then the loser is going to be John Q. Public and Jane Q. Public. And I think we all know that. And as long as we keep that in mind and keep that in front of our brains, no matter what system we set up, as long as we have that aspect and that spirit there, we'll be okay, so that's kind of a mutual response.

CHAIR RICE: Maybe we'll set up another meeting on that topic, Dain, anytime. Mr. Victorino and Mr. Nakamura.

MR. VICTORINO: Again, thank you, Mr. Kane, for taking the time to be here. And I think it's very apparent no matter what discussion, no matter whom, amongst which opinions you're listening to, I think all of us come to one point. If we can work in concert and let the public know, especially the private water developers, the private users out there, that they're part of the whole picture. Just because you're pumping your own well doesn't mean it excludes you from these reports. You need to be part. Because we can't give you or can't give a big picture unless we know all the sums of the parts. And that's the biggest problem I think we face is getting all the sums together.

What the Department doesn't give or gives us, whatever they give us, whether that's accurate or not, it's part of the problem. We need to get the private people, the private well users to tell us what they're using so that we can give you definitive answers to the questions, so when you make a community plan, those facts are in front of you.

But I think if anything that comes out of this meeting and comes out of your committee, and Charmaine, your amendments or your proposals, proposed changes is we're unified in the fact that we need answers and correct definitive answers to the question how much water are we using so that we can make a good plan for the future without sacrificing those who are on the meters now, those who have been waiting for beucoup years. Whether they're farmers, Hawaiian Homes, it doesn't make a difference. Those priorities got to be met.

But most importantly is we got to get the answers so that we can make a good plan and that plan comes from you folks, but if we can't give you the answers and the private sector cannot give us the answers, then we're all back to square one. I don't care what USGS State guys do, you cannot get the answers unless we get the information. Am I correct in saying that, gentlemen?

VOICES: Yes.

MR. VICTORINO: Okay, thank you.

MR. KANE: Mr. Chair, I would agree obviously.

And that's the whole effort of Part C, Section C, getting information. Because we all recognize that we don't have any information from private users. It's like the extra straw, yeah, on the side of the glass that nobody knows about. But we do know now, so we've got to start working towards that.

CHAIR RICE: Mr. Nakamura.

MR. NAKAMURA: I was just going to comment in the same vein about the private users. I think that information is very important and that's a very important objective. I believe the State Water Commission is charged with the responsibility to get that information and they have acknowledged that they are not doing a good job on that or they're not doing at that at all.

There doesn't seem to be any way of compelling the information, and I don't know whether or not that's something you might want to think about, you know, that there needs to be some penalties or a report or what have you. But it has turned out to be a very difficult undertaking from what I understand in addition to, you know, how you define what wells need to be reported. I guess there are probably some very small wells, but, you know, I think the objective is very desirable. Again, it's one of those things where there's a lot of detail to account.

The other comment I have is that I think your comments about working together, and in particular, Councilwoman Tavares' comments about planning and growth, management of growth. You know, there should be a required rating for everybody in the County. People look at us as growth managers. We're not growth managers. I'm glad you pointed that out. We provide infrastructure.

It's unfortunate that there are those in the community who use us to manage growth, and I, you know, wish there were a way that that would not

happen. Unfortunately, that's the name of the game I guess, but I appreciate your comments, both of your comments.

CHAIR RICE: Mr. Starr.

MR. STARR: Yeah, I would just like to take that good comment, take it one step further, which is that when we do manage growth by running out of water, it creates what I consider really a class inequity and we end up with situations where we've had upcountry where local families who have been here forever wait 10 or 20 years for a single water meter. And they'll watch a large subdivision go in next to them of hundreds of houses. And basically, you know, what happens is that that those who can afford it are always able to find some way to develop new source, but the ordinary people suffer, so it's not -- it's not a good method. There should be much better mechanisms rather than running out and then having water go to those who can afford it.

CHAIR RICE: Okay. Board Members, thank you.

My fellow Board Members are far more eloquent than I am. I also thank you for your spirit of cooperation.

MR. KANE: Thank you, Chair Rice and Members of the Board.

MS. TAVARES: Thank you. I have one more thing that I wanted to talk about. While we were talking about the triggers in the chapter, I was contemplating using the chloride levels as a trigger, too, and if you would in your comments to us address that. There are triggers based on the chloride levels in the Iao Rule, and so I'm wondering if we should also be including that in this rule as a trigger, not just a percentage of sustainable yield.

So that would be something that I would ask you to please comment on. And if I could with my final comment, I should have opened with this, but I think the interest Mr. Kane and I had in this was based on I think the hearings and meetings that we had when the State Water Resource Commission came over and are

talking about taking over management of the Iao Aquifer.

And I think we felt, as she pointed out to us, that we've had the ability to manage and we haven't taken that opportunity to manage. And I think part of this has to do with if we want to maintain control or retain control of how we manage water on this island, whether it be Iao or any other aquifer, that we have to do as much as we can to manage it before the State will say we're going to step in and manage it for you.

And I think this is what our objective has been in trying to look at the law and see where the flaws have been and how we can actually take, you know, take control of the management of the water for Maui County and not wait for the State Water Resource Commission to designate this. Thank you.

CHAIR RICE: Thank you, Charmaine. Thank you again for coming. Okay. We're moving on the agenda. We have Section 7, Approval to submit to the Mayor and County Council. First, a proposed amendment to

Chapter 2 Title 16 regarding appeals. We've heard public testimony at two meetings. Board Members. Mr. Starr.

MR. STARR: Mike, do you want to make a motion?

I would like to move that we --

CHAIR RICE: Go ahead, finish this. Go ahead.

MR. STARR: I think we've been around and around with this one. I would like to move that amendment to Chapter 2 Title 16, as went out to public hearing, be passed by the Board and submitted to the Mayor and County Council for action.

MR. VICTORINO: Second.

CHAIR RICE: It's been moved and seconded that the amendment to Chapter 2 Title 16 of the Board of Water Supply's Rules of Practice and Procedure relating to appeals of decisions and orders of the

Director of the Department of Water Supply to the Board be approved and submitted.

All in favor, say aye.

VOICES: Aye.

CHAIR RICE: Opposed, say nay.

(No response.)

CHAIR RICE: Motion is carried unanimous. Thank you. We'll take a quick break.

(Recess taken.)

CHAIR RICE: Okay. Call the meeting back to order. We're on Section 7B, Proposed amendment to Chapter 2 of Title 16 the Board of Water Supply's rules of practice and procedure relating to decisions and orders of the Board. This issue has been out at public hearing on two different occasions.

Board Members, you have before you a letter that you were just handed from Jim Smith regarding this particular rule. These are two copies of the same, one with a cover sheet.

MR. NOBRIGA: Mr. Chairman, in review of all of the testimony provided on the proposed rule amendment, I would like to move that this amendment be transmitted and submitted to the Mayor and County Council for approval.

MR. VICTORINO: Second.

CHAIR RICE: Moved and seconded. Is there any discussion? Okay. Ready for the question? All in favor, signify by saying aye.

VOICES: Aye.

CHAIR RICE: Opposed, nay.

(No response.)

CHAIR RICE: Motion is carried, unanimous. Next 7C, proposed amendments to Chapter 8 Title 16 of the Board of Water Supply's water system development fees rule. Mr. Starr.

MR. STARR: Yes, I very much want to see this moved forward. I have a technical concern though, which is I feel they should be moving simultaneously with another rule that went out to public hearing which I understand might need some work, so I would like to add, first of all, can we pass it through but not have it transmitted until the other one goes through? Is that an option? I would like to ask counsel.

CHAIR RICE: I spoke with Charmaine a minute ago, and she said she was comfortable with the progress made on the other rule, and she suggested we sent out the development fee rule.

MR. STARR: My other question is the development fee rule has two parts. Does this cover both parts?

There's a --

CHAIR RICE: Mr. Kushi.

MR. KUSHI: Yes, Mr. Chair, I was going to mention that as sent out to for public hearing, you're correct, there were two separate rules. One rule amendment to -- they both amended to Chapter 8. But one of the rules mainly dealt with the fee itself, although it did amend portions of Section 16-8-9, which goes toward the payment of water system fees, the payment, the time, penalties, extensions, et cetera, but basically covered the fee itself and the credits.

The other one, the other rule, separate rule, although both were properly noticed and went to public hearing, contains some language in Chapter 8 regarding definitions and some other miscellaneous sections, but

it also touched on Section 16-8-9. What I would suggest is that, if the Board feels it proper, that we submit one rule to the Council incorporating all of the amendments to this chapter and not send two sections regarding this section, not two amendments regarding the same Section 16-8-9.

CHAIR RICE: So we approve two sections, but the motion should include to send them together as one?

MR. KUSHI: Right, so what you're considering today are basically three sets of rules to go out to the Council maybe at the same time but separately. And in response to Member Starr's question, regardless of when the Board approves these rules, that the time clock starts ticking when the Mayor receives it. So it's at your direction to the Department when to send it up, and there's one more rule, as you all know, is the upcountry meter rule.

CHAIR RICE: Right. Mr. Starr.

MR. STARR: Mr. Chair, I would like to see this move forward. I'm going to recuse myself from voting simply because I have a meter application and it could possibly affect me.

CHAIR RICE: Okay. What's your pleasure? The sections of the water system development fee rule have been to public hearing properly noticed and the only comment that I think we need to consider and which was brought up by counsel was the consumer price index increase, the automatic consumer price index increase, and I believe he took that out the second time the rule went to public hearing.

Mr. Kushi is nodding his head that's a correct statement. Do we want to send it as it is without consumer price index increase? If so, I'll accept the motion to that effect.

MR. VICTORINO: So move.

MR. NOBRIGA: Second.

CHAIR RICE: It's been moved and seconded.

We're moving that the amendment of Chapter 8 water system development fee for the Board of Water Supply in its two parts will be approved and sent to the Mayor and Council for approval.

MR. NOBRIGA: Discussion.

CHAIR RICE: Go ahead.

MR. NOBRIGA: Would it be appropriate for us to amend the amendment by reinserting language to initiate an annual adjustment of an X percent or no more than X percent fee, would that be possible without us going back to public hearing?

MR. VICTORINO: You would have to go back to public hearing. I'm certain of that.

CHAIR RICE: Mr. Kushi, would you respond, please?

MR. KUSHI: I have thought about this, and as you recall, the first attempt we had at escalation based on CIP or whatever it was, and that got shut down. And then before the Board passed on the new version, we eliminated it. Mr. Victorino is partly right in that it was not noticed on the rules to the public.

However, as I recall, this set of rules went to two public hearings, one in Haiku and one in Kula. And at both times, as I recall, discussion was had in terms of the consumer price index or escalation. So for the record, I believe the Board has considered an adjustment, whether this be based on an index or based on an annual raise or percentage raise, and I feel that it doesn't need to go back to public hearing again.

However, if I may say and interject, as you all know, and so for the next agenda is that the rules of the game itself may change based on this charter amendment. Whether it's up or down or stays the same, it may change. So we may not need to go through this

process. So you may not even have jurisdiction to consider this process after the next election, so that being the case, I would say I would leave it up to your discretion or keep that in mind the charter amendments may pass one way or the other.

CHAIR RICE: The only comment I would make to Board Members is in terms of the increase, the main fee increase is the bulk of the increase. And it would be more favorable for us to send the rule up and get the increase and forget the CPI or anything thereafter than to have it not pass because we added something. So I think -- Mr. Nobriga, did that answer your question?

MR. NOBRIGA: Yes, thank you very much.

CHAIR RICE: So we have a motion to pass it as existing with no increase? Any other discussion?

(No response).

CHAIR RICE: All in favor, say aye.

VOICES: Aye.

CHAIR RICE: Opposed, say nay.

(No response).

CHAIR RICE: Motion is carried. It's unanimous.

MR. STARR: Mr. Chair, I'm recused.

CHAIR RICE: Let the record show Mr. Starr
recused himself. We're up to Number 8,
Discussion/possible action on charter amendments. The
Board has taken a position on the charter amendments.
Is there any reason to reconsider that position at
this time?

MR. NOBRIGA: Would you kindly summarize for the

new Board Members what the position was?

MR. VICTORINO: Thank you.

CHAIR RICE: We had a meeting in whereby the Board agreed that they supported a more autonomous position as was finally voted on by the Charter Commission. And I was instructed to write a letter to that effect, which I did, and I did note that there was -- it was not unanimous as Mr. Starr requested that I do so. And that's -- so our position was at that time was for support of the Charter Commission's recommendation for more autonomy.

That particular position provides for Public Works Director and the Planning Director to be members, and that in the future as members are replaced on this Board that they become replaced with engineers. At least two I believe of the Board will be engineers. Those were part of the more autonomous recommendations made by the Charter Commission.

Mr. Craddick.

MR. CRADDICK: This item was put on here because the Council -- well, partly to update the Board on what the Council has done on the Charter Commission's recommendations. Basically, they have asked the Charter Commission to put out a second proposal, one where the authority for the Board would be put under the Mayor and Council and I guess asking for two items to go on the ballot. And that was what I was hoping I would get some discussion on a little bit here today to know how to go to the Charter Commission about that, whether you felt that would be confusing to the public going with two proposals or whether you think that's a good idea to have both proposals on there.

My understanding, and I'll allow Ed Kushi to correct me if I'm wrong, but my understanding is that the two items could be on the ballot. Both items could pass, and the way they would look at it is the one that got the most yes votes would be the one that was finally put in. And I think Brian Moto explained it that you could have four choices; both yes, both no, one yes and one no or that reverse, so you could

have all those four choices by having these two items dealing with the same issue on the ballot, so that is what I was hoping there might be a little bit of discussion on between you.

CHAIR RICE: The legality of how the ballot is set up isn't for this Board to decide. I think this Board should be taking a position one way or the other, which we've already done, and that's I think the most important thing. And that's why I'm asking the Board if they want to continue with that position or they want to change it. That's what I think is the most important thing.

MR. HIRANAGA: Question.

CHAIR RICE: Kent.

MR. HIRANAGA: Just for clarification, the simple majority of the charter amendment determines which one is selected?

MR. KUSHI: I don't know.

MR. CRADDICK: That's what --

CHAIR RICE: Put that on his to-do list.

Mr. Starr.

MR. STARR: I would like to move to adjourn.

CHAIR RICE: You want to move to adjourn?

MR. NOBRIGA: It is in order.

CHAIR RICE: I guess there's no action on that.

Decision of the Board stands, and there's a motion to adjourn.

MR. VICTORINO: Second.

CHAIR RICE: Seconded. All in favor?

VOICES: Aye.

MR. HIRANAGA: Question.

CHAIR RICE: Wait, we have a question.

MR. HIRANAGA: It's not an agenda item. I
didn't receive it.

MR. STARR: I think we're adjourned.

CHAIR RICE: We didn't get any. The question
would have to be on the motion I think. Motion to
adjourn, and it was seconded. Okay, we're adjourned.

(The meeting concluded at 12:05 p.m.)

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