

WATER RESOURCES COMMITTEE

Council of the County of Maui

MINUTES

September 30, 2015

Council Chamber, 8th Floor

CONVENE: 9:01 a.m.

PRESENT: VOTING MEMBERS:
Councilmember Gladys C. Baisa, Chair
Councilmember Robert Carroll
Councilmember Stacy Crivello
Councilmember Mike White

EXCUSED: VOTING MEMBERS:
Councilmember Michael P. Victorino, Vice-Chair
Councilmember Elle Cochran
Councilmember Don Couch

STAFF: Kimberley Willenbrink, Legislative Analyst
Clarita Balala, Committee Secretary

Ella Alcon, Council Aide, Molokai Council Office (via telephone conference bridge)
Denise Fernandez, Council Aide, Lanai Council Office (via telephone conference bridge)
Dawn Lono, Council Aide, Hana Council Office (via telephone conference bridge)

ADMIN.: David Taylor, Director, Department of Water Supply
Eva Blumenstein, Planning Program Manager, Department of Water Supply
William Spence, Director, Department of Planning
Jennifer Oana, Deputy Corporation Counsel, Department of the Corporation Counsel
Edward S. Kushi, Jr., First Deputy Corporation Counsel, Department of the Corporation Counsel

Seated in the gallery:

Paul Meyer, Deputy Director, Department of Water Supply
Pamela Pogue, Planning Program Administrator, Long Range Planning Division, Department of Planning

OTHERS: Robert Whittier, Geologist, Department of Health
Rosemary Robbins
Albert Perez, Executive Director, Maui Tomorrow Foundation
Mercer "Chubby" Vicens

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Anders Lyons, Maui Board of Water Supply
Robin Shiroma, Department of Health
Daniel Chang, Environmental Health Specialist, Department of Health

PRESS: *Akaku: Maui Community Television, Inc.*

ITEM-1: WELLHEAD PROTECTION OVERLAY DISTRICT (CC 15-50)

CHAIR BAISA: ...*(gavel)*... Will the regular meeting of the Water Resources Committee please come to order. Today is Wednesday, September 30, 2015, and it's about a minute after 9:00 in the morning. Chair would like to thank everyone for being so prompt. I really, really appreciate this, but before we get into our meeting would you please check your cell phones to make sure that we have them on the silent mode and I'll check mine too. Okay, thank you very much. I'd like to introduce the folks that are here this morning. I'd like to introduce Mr. Robert Carroll, Council, he is the, he is our Member from East Maui.

COUNCILMEMBER CARROLL: Good morning, Chair.

CHAIR BAISA: Good morning, how are you? How's the weather in East Maui?

COUNCILMEMBER CARROLL: I came out this morning was the first time not one drop rain coming out.

CHAIR BAISA: Wonderful. Well we could do with a little bit of sunshine here for a while and then we'll say it's too much. We also have with us our Council Chair this morning, Mike White.

COUNCILMEMBER WHITE: Good morning, Chair.

CHAIR BAISA: Good morning, thank you very much for being on time. And Ms. Crivello from Molokai.

COUNCILMEMBER CRIVELLO: Good morning, Chair.

CHAIR BAISA: Good morning. And excused this morning the list is longer than the folks that are here. Mr. Victorino is excused, Ms. Cochran is excused, Don Couch is excused, and two of the members are not voting members of this Committee so they will not be here either and that is Mr. Hokama, and Mr. Guzman. However, with us we have Dave Taylor, the Director of Water Supply.

MR. TAYLOR: Good morning.

CHAIR BAISA: Good morning. And we have Eva Blumenstein, and she is the Planning Program Manager for the Water Department.

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MS. BLUMENSTEIN: Good morning.

CHAIR BAISA: Good morning. We also have Jen Oana, our Deputy Corporation Counsel.

MS. OANA: Good morning.

CHAIR BAISA: Good morning and thank you for being here. Mr. Kushi may be joining us later, we're not sure. We have our Committee Staff, we have Kimberly Willenbrink, my Legislative Analyst.

MS. WILLENBRINK: Good morning.

CHAIR BAISA: Good morning. And we have Clarita Balala, our Committee Secretary. Good morning, Clarita. And in our District Offices, we have Dawn Lono in the Hana Office. Dawn?

MS. LONO: Good morning, Chair. This is Dawn Lono in the Hana Office.

CHAIR BAISA: Good morning, Dawn, and just for your information we're going to do the presentation first without objection from the Members. So it may be a while before we get to testimony, I hope you don't mind. We also have Denise Fernandez in the Lanai Office.

MS. FERNANDEZ: Good morning, Chair. This is Denise Fernandez on Lanai.

CHAIR BAISA: Good morning, Denise. You heard the, my conversation with Dawn about the presentation?

MS. FERNANDEZ: Yes I heard.

CHAIR BAISA: Okay, I'm never sure who's hearing what so just checking. We have Ella Alcon in the Molokai Office.

MS. ALCON: Good morning, Chair, this is Ella Alcon on Molokai.

CHAIR BAISA: Good morning, Ella. And you heard we'll be doing the presentation first?

MS. ALCON: Yes, ma'am.

CHAIR BAISA: Alrighty. Thank you very much. So kind of stand by. We'll be doing testimony, presentation will last about a half an hour. So please stand by for that. Members, we have one item on today's agenda. And that is Water-1, Wellhead Protection Overlay District. The Committee is in receipt of Correspondence dated February 23, 2015, from the Department of the Corporation Counsel, transmitting a proposed resolution entitled Referring to the Lanai, Maui, and Molokai Planning Commissions a Proposed Bill Amending Title 19, Maui County Code, Relating to

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Wellhead Protection. The purpose of the proposed resolution is to refer to the planning commissions a proposed bill entitled A Bill for an Ordinance Amending Title 19, Maui County Code, to Establish a Wellhead Protection Overlay District. The purpose of the proposed bill is to establish a Wellhead Protection Overlay District to: (1) protect the public's health, welfare, and safety by minimizing the risks of contamination of aquifers; (2) to preserve and protect existing and potential drinking water sources; (3) to implement land use policies consistent with the General Plan; and (4) to prohibit land uses that are incompatible with groundwater protection. Members, without objections, I would like to do the presentation first before the testimony, I been kind of saying that, may I, do I have your permission? Any objections?

COUNCILMEMBERS: No objections.

CHAIR BAISA: Thank you very much. I also would like to make, have everyone rest understanding that we, there is no intent to take action on this matter today. This is to have more information given to the public as this has been brought up before. I've been asked, I have attended the, oh dear, the Water Board meeting, I have attended meetings of the Ag Working Group and I've been asked many, many questions about this ordinance. And I really felt that it was really important for us to have the opportunity to listen to what this is all about and to ask the questions about it before this Committee tries to move this on to the Planning Commissions. Because whether we do it here or do it there it's going to happen anyway. So might as well everybody understand what we're talking about and clear the air. I also would feel a lot more comfortable if I got a positive nod from the Water Board, which we have not been able to get at this point. Water Board is not really willing, they haven't taken a vote in support in this. And so I really would like everybody to have the opportunity to watch the presentation, see the information that's out there, ask the questions, and then we'll bring this back and we can vote on it at that time. So today's meeting is more informational. And I would like to ask the Members to please note your questions as Ms. Blumenstein goes through the presentation. So that we can ask them when she's done. After she's done we are going take testimony and then we should have a very nice discussion. So with that in mind I'd like to call on Mr. Taylor to get things going here. Mr. Taylor?

MR. TAYLOR: Thank you, Chair Baisa, and thank you, Members, for this opportunity to inform you of our efforts to develop a wellhead protection ordinance. I'm going to turn it over to, Ms. Blumenstein in just a second. I just want to leave you with some big-picture thoughts of what we're trying to do here. We all know that we're dependent on groundwater for most of our water needs. And I think we can all guess that if water sources get contaminated those sources can't be used, which would cause all sorts of problems. Wells would have to be taken out of service, additional treatment would have to be built, et cetera, and that could be, that could cause these consequences of lack of water services, mandatory cut backs, high costs for years. So there's a choice before us, we can live with the risks and just say well if it happens, you know, we'll just have to deal with it or we can say let's try to reduce the risks. We've looked at the situation and said although the risks are relatively small the

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consequences are very high. And so that leads to a situation where mitigating and trying to prevent issues from happening is usually the action. So that's what this ordinance tries to do. It says we've got some risks with a high consequence of failure so let's try to reduce those risks by taking some reasonable measures upfront. So that's again the choice we're going to have is do nothing and just live with this risk out there or try to reduce the risk. So that is the one, the one thing I'd like to leave in everyone's mind sort of a one way or another decision, do something and live with it, do something or do nothing. And what you're going to see now from Ms. Blumenstein is the details of what we think are the right things to do to take some action that will reduce the risks significantly without putting an undue burden on anyone. So that's the big picture of what we're trying to accomplish. And with that I'll turn it to Eva Blumenstein, our Planning Program Manager.

MS. BLUMENSTEIN: Thank you.

CHAIR BAISA: Thank you, Mr. Taylor. Go right ahead, Ms. Blumenstein.

MS. BLUMENSTEIN: Oh thank you, Chair, Councilmembers. This has been a long process and collaboration with the University of Hawaii Water Resources Research Center and the Department of Geology and Geophysics, and the State Department of Health Safe Drinking Water Branch, the Maui County Water Department, and Planning Department. What this program is we have developed this to protect the County's potable wells from contamination and to prevent the need for expensive treatment. A wellhead protection area is the surface and subsurface areas surrounding a well through which contaminants could reach the well. Typically you have groundwater flow with the gradient towards the ocean and as you start to pump the well you will impact that flow and start drawing water and contaminants towards the well. So the wellhead protection area could be the entire recharge area or it could be as an arbitrary fixed radius around the well or in our case we have a modeled capture zone based on groundwater flow and particle tracking. So some common sources of contamination are leaks and spills from chemical storage, industrial processes, pesticide fertilizer applications, and cesspools, and many others. So we know that there are multiple land uses that could contaminate our water supply. We are reliant on groundwater for over 70 percent of our potable supply, some areas like here in central Maui that's 95 percent. And in Hana and Molokai we use groundwater 100 percent for our potable supply. Once you have a contaminating event occur due to the slow hydrologic processes it's typically years before we detect that contaminant in our wells. State leading hydrogeologists have ranked the aquifers where we draw our, the base aquifers where we draw our groundwater from as vulnerable, and that's further proven by existing contamination in wells throughout Maui. The Department of Health map on the right shows 18 wells throughout Maui with existing various contaminants. I think there are 19 different contaminants and that's still not bad in comparison to Oahu where you have some 42 different contaminants, organic compounds that are detected in 73 percent of their public supply. So I think I can count us lucky. So that shows us that even though there are current Federal and State regulations that are quite broad and complex they are not sufficient to protect drinking water wells in the long run. We had the Chief of the Safe Drinking Water

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Branch of the Department of Health testify to this body and to the board that those gaps in regulations, there are not enough specific provisions to protect drinking water. That still puts us at risk. There is also support in the Maui Island Plan and several of the community plans to develop a well protection program for Maui County. So as Director Taylor said we have the option of do nothing and expect to pay for treatment later on. The expenses that are associated with contamination are treatment, monitoring, finding alternate water supplies, remediation, and litigation. On the right you have a cost analysis from EPA on the 2 common treatment technologies, granular activated carbon, which we use here on Maui and on Oahu and air stripping at 32 different sites. You can tell the capital costs mean is at \$2 million, on the average almost \$5 million, and average operating costs per year runs 770,000. I know the Honolulu Board of Water Supply, their annual operating, just operating costs for GAC treatment is \$2.5 million. So prevention is always less costly, more reliable in the long term because we know there are more complex combinations of chemicals coming out on the market and drinking water standards are getting stricter. So the key steps in developing a wellhead protection strategy is to delineate your well protection area, your capture zones, to inventory and assess potential contaminating activities, and then develop a protection strategy with public participation. The well protection capture zones for Maui County were delineated by hydrogeologists with UH using MODFLOW, which is a three dimensional numerical groundwater model and followed by MODPATH, which is particle tracking model. These are both USGS model codes that are being used extensively specifically to delineate wellhead protection areas. It was peer reviewed by an independent contract, contracted by EPA, and you can see on the right there is three zones delineated there, the first zone A is just a fixed 50-foot setbacks from the well itself. That's typically the area where that's fenced in order to prevent vandalism and tampering, that kind of things. You don't really want to have any kind of activities going on in that zone except normal well maintenance. Then the model zone B is the area where it would take the water particle two years or less to reach the well. This two-year zone E would address microbial contamination based on their typical survival times in, bacteria and viruses survival time in soil and groundwater. And then the ten-year time of travel or zone C will address chemical contamination that's typically more persistent and lasts longer once it reaches the groundwater. So you can tell from this overview that most of these capture zones, you have the blue ones is zone B, and the red ones zone C, they're quite long and skinny, except for the area in Central Maui where the, this a flat gradient this is where most of our wells are located. As I said earlier 95 percent of that, of our supply is from groundwater. And I'll look at that particular area a little closer later. So the second two steps in a well protection strategy was to assess or inventory potential contaminating activities and develop a protection strategy. And how that is done is the U.S. EPA through the Safe Drinking Water Act mandate all the states to complete source water assessments, inventory all potential contaminating activities, develop a wellhead protection program, and also adopt drinking water rules. The State then DOH Safe Drinking Water Branch complete the assessment, they develop the wellhead protection program which is the framework or the guidelines to develop protection measures on the local level. They provide the financial and technical assistance to the public water systems, the Department of Water Supply to do that, and they adopt drinking water standards. The drinking water standards are not preventive, per se,

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they are really just enforcing maximum contaminant levels after the fact. Then the Maui County Water Department, Planning Department work in collaboration to develop this protection strategy and ordinance. So this is how EPA really envision wellhead protection to work with us relying on the scientific source water assessment that's done for all public water system throughout the State with the guidance and framework from EPA and Department of Health. So the objective of this ordinance is to really just supplement where there's, where there are existing Federal, State, or County rules and regulations in place, not to duplicate that but to just find what the gaps are to ensure that we have adequate provisions for groundwater protection. This ordinance is modeled upon the EPA overlay zoning standard and it's been tailored locally through many community meetings, stakeholders, Planning Department, Zoning Administration, and legal counsel of course. Why this is an overlay zoning is because zoning is the only tool where you can actually outright prohibit the land use, in this case those that are ranked as high-risk land uses, they tend to be industrial type uses. While other uses that are not considered high risk could be permitted with best management practices or some mitigating measures in place. As with any zoning ordinance, existing uses and operations are grandfathered in. The list on the right, those are all the uses that would be outright prohibited by this ordinance. The ones that are shown in red would require an underlying Heavy Industrial zoning. That is not a zoning district we currently have in our capture zones. But properties could be rezoned so they are left in there because they are considered high risk. These are ranked high risk through the source water assessment and by EPA because due to the nature of the activities, the types of contaminants that are associated with them, and the history of contamination. So the nine or so remaining uses that are really, that could be operating if you had a Light Industrial or a Business zoned property in Maui or in Molokai would be new cesspools, commercial, electrical, electronic manufacturing and...I'm sorry not that one 'cause that's Heavy Industrial, commercial chemical processing storage facilities, mortuaries, and graveyards, golf courses, commercial metal plating finishing fabricating facilities, mines, landfills, injection wells on nonresidential properties, irrigation with R-2 or R-3 reclaimed water, sewage, sludge land applications, commercial slaughter houses, and wastewater percolation pumps. All other uses would be outright permitted or permitted with some mitigating measures in place. How an overlay zone district works is on the right you have a piece of property where the underlying zoning is partly Industrial and Residential. Then you have your well and wellhead protection area that spans both of these zonings. So say you wanna put in a new plastic production facility that would be permitted by the underlying zoning, Industrial zoning, but if that's in your wellhead protection area that will supersede the underlying zoning and it would not be permitted. On the left is the actual capture zone for Pookela Well Upcountry. The zoning there is Agricultural. So you couldn't put in a new plastic production facility because you would need Industrial zoning. A new landfill could be permitted but because this is a Wellhead Protection Overlay zone that would overrule or supersede that. But you could put in a new agriculture supply store with some BMPs, that's a permitted use in the well protection area and underlying Ag zoning. So this is the controversial area where we have that, what I mentioned, the flat gradient, it's a larger chunk of land because most of our production wells are located here and this is our larger customer base. Most of the underlying zoning in the capture zones of Central Maui are designated Residential,

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different Business, and very few Light Industrial. This bill does not really impact residential uses at all. This is a sewerred area. The business uses are all permitted with mitigating BMPs. The Industrial-zoned areas constitute less than one percent of all the properties within capture zones. So what this bill is really about is to make sure that we know what kind of contaminating activities, what contaminants are around our wells so we are prepared to respond to any contaminating event and to make sure there's some mitigating measures are put in place. Best management practices can be structural, they are meant to direct contaminants either away from the well protection area, mitigate infiltration into soil and water, or reduce the volume of a contaminant. The number one tool to make sure that leaks and spills do not reach groundwater supply is secondary containment. These two aboveground storage tanks should not be sitting on bare dirt in our capture zones, they should have some cement slab with a curb at least. Another BMP we recommend is to reduce pesticide applications through integrated pest management. Meaning that you target your test during times of the year with low rainfall, selecting pesticides that doesn't have high leachability that are known to leach into groundwater. And of course there's incentives for the business owners to do these BMPs because ultimately you the landowner or the business operator is responsible for any onsite cleanup. The Department is responsible if that contaminate ends up in our groundwater and our ratepayers are actually the ones who, they have the burden of paying for new treatment costs. So we had 12 or 13 public meeting over several years and they were of course comments that this bill is too strict, it's not strict enough, there were many concerns, and I've summarized some of the main ones and that we have addressed at public meetings and at multiple meetings with our board, one was the delineation groundwater model not acceptable level with a single peer review. The hydrogeologists applied as I mentioned USGS modeling codes, those are among the most widely reviewed codes available specifically to simulate groundwater flow and to find well capture zones. The peer review that was more than sufficient was contracted by EPA so it was independent. Concerns about impacts on property values. Case studies and input from other communities that have developed protection programs have not found them burdensome and also they, we really don't have any evidence that property values have been deflated or that it interfered with business development in the community. On the other hand all customers and business within, whether you are located within the capture zone or not you benefit from a protected water supply. Concern about legal challenges and takings. Overlay zoning is a well accepted method throughout the nation to address groundwater and resource protection. The key is that this, that it's science based and not an arbitrary, you have an two-mile arbitrary radius and impose restrictions on that, that could be a problem but our delineation has used one of the most sophisticated modeling available and it's the same method that's been reviewed throughout the SWAP program for all public water systems throughout the State. And of course we had thorough review by legal counsel for the provisions in the ordinance. Concern about costs to the community and customers. Developing this program has been grant, 100 percent grant funded through the State Department of Health, and going forward administering any permits would be absorbed by existing staff. The grant funding has also been used to do some retrofitting of existing potential contaminating activities in our capture zones. We have upgraded cesspools, installed some secondary containment for some worst case

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scenarios close to our wells. No justifiable need, no historical examples showing failures or current regulations. Well, you know, Department of Health Safe Drinking Water Branch are the regulating agency for drinking water, and DOH also regulates some of the Potential Contaminating Activities. And we had Director of Health and the Chief for the Safe Drinking Water Branch testify that there are multiple complex and broad regulations addressing various PCAs but there are enough gaps in those regulations, there's not specific provisions that address groundwater protection that put us at risk, and we have some examples of local failure scenarios including the Kunia site on Oahu, remediation running in the tens of millions of dollars. The Red Hill fuel spill, and just earlier this year Sand Island was an aboveground storage tank where some secondary containment could have mitigated that event. What about new wells? The Department has an internal policy for siting new wells away from contaminating activities, this bill will not change that. So in summary this is a comprehensive strategy where we propose outright prohibiting the really high-risk uses to Wellhead Protection Overlay zoning and having best management practices and mitigating measures in place for existing operations that we have grant-funded retrofitting along with public education and siting of new wells away from contaminating activities. We are reliant on our groundwater supply, we really need to protect what we have there, but this is really a proactive ordinance. This is not looking at penalizing existing operations, what's already there, we're trying to retrofit, but existing uses are grandfathered in so they're not really impacted by the bill. We know that current laws and regulations are still leaving us vulnerable and we have the support from Department of Health and EPA to do a proactive protection program on the local level. We know prevention is always going to be less expensive than treating so we see this bill as an insurance to decrease the risk of contaminating our water supply. Thank you.

CHAIR BAISA: Thank you very much. Members, you've heard the presentation and so now we would like to proceed with public testimony, if there are no objections?

COUNCILMEMBERS: No objections.

CHAIR BAISA: Thank you very much. Folks, testimony will be limited to the item on our agenda today. If you wish to testify please sign up at the desk located in the lobby. Testimony is limited to three minutes and you'll get an extra minute if you would like to have one so you can conclude, just give me a high sign. We have established connection to the District Offices and to be fair if there are folks out there we will rotate through each of the sites. So I would like to check with the District Offices first to see if we have anybody out there. Dawn Lono, in Hana, is anyone there waiting to testify?

...BEGIN PUBLIC TESTIMONY...

MS. LONO: There's no one waiting to testify at the Hana Office, Chair.

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CHAIR BAISA: Thank you very much, Dawn. Denise, in Lanai, is there anyone waiting to testify?

MS. FERNANDEZ: There is no one waiting to testify on Lanai.

CHAIR BAISA: Thank you. Ella, in Molokai, is there anyone waiting to testify?

MS. ALCON: There is no one here on Molokai waiting to testify.

CHAIR BAISA: Thank you very much. In the Chamber, Ms. Willenbrink, do we have folks to testify?

MS. WILLENBRINK: Yes, Madam Chair.

CHAIR BAISA: Go ahead.

MS. WILLENBRINK: Our first testifier is Robert Whittier from the Department of Health, followed by Albert Perez.

CHAIR BAISA: Mr. Whittier, would you like to please come forward and testify? Good morning and thank you for being here.

MR. WHITTIER: And thank you. Madam Chair and Councilmembers, I am Robert Whittier, the Source Water Protection Geologist for the Hawaii Department of Health Safe Drinking Water Branch. Prior to joining the Department of Health, I have worked commercially as a consulting hydrogeologist and as a research hydrogeologist at the University of Hawaii Department of Geology and Geophysics. These positions have afforded me the opportunity to be the senior hydrogeologist on very challenging projects such as the investigate, groundwater investigation at the Red Hill Fuel Storage Facility, the Lahaina groundwater tracer study, and the groundwater, source water interaction study in Idaho. My primary focus at UH was groundwater modeling for the Source Water Assessment Program or the SWAP. This included modeling the well capture zones that are in the proposed ordinance referred to as the Wellhead Protection Overlay Districts. The proposed ordinance does restrict or prohibit some activities within the overlay Districts and thus justifiable concern has been expressed about the accuracy of the overlay, how accurately the overlay districts reflect natural groundwater flow patterns to Maui County's drinking water wells. The quality of groundwater, of a groundwater model is determined by the experience of the modelers and the suitability of the models and methods used. I have stated my experience but the modeling at UH was supervised by Dr. Aly El-Kadi who has over 30 years experience in research and applied groundwater modeling. He has been instrumental in training nearly all the current groundwater modelers in the State of Hawaii. The modeling code selected were MODFLOW and MODPATH, well documented and time-tested programs developed by the USGS and the most widely reviewed modeling codes available. Five states specifically site MODFLOW as the modeling code for their SWAP, other States have selected other methods since the use of MODFLOW. While generating more concise overlay districts requires considerable more skill and

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resources. This challenge is overcome in Hawaii by DOH teaming with UH to do the groundwater assessments and the modeling at no cost to the water systems. A model's accuracy is evaluated by model calibration, expert reviews, and sensitivity analysis. All of these approaches have been applied to validate the SWAP modeling. To more rigorously test the models DOH and UH researchers work collaboratively to incorporate the SWAP models into ongoing groundwater research. This allows the model outputs to be tested against real world data and to better define the groundwater flow paths in the State of Hawaii. In conclusion, the SWAP modeling has been done using the best modeling codes available for this type of assessment. The models have been calibrated and subjected to expert review, and to ensure that the SWAP groundwater models reflect the best representation of Hawaii's hydrogeology they are tested in conjunction with ongoing groundwater research at the University of Hawaii. Thank you.

CHAIR BAISA: Thank you very much, and thank you for being here this morning. Members, are there any questions for Mr. Whittier? Seeing none, Chair, would also like to note that...

COUNCILMEMBER CRIVELLO: Chair?

CHAIR BAISA: Yes, Ms. Crivello go ahead.

COUNCILMEMBER CRIVELLO: Thank you.

CHAIR BAISA: I also want to note that we have a couple other folks from Department of Health here that are in the gallery this morning. We have Robin Shiroma and Daniel Chang so Department of Health is here in force if you have questions for them. So please go ahead.

COUNCILMEMBER CRIVELLO: Being that you're from the State Department of Health, are there any State laws in place?

MR. WHITTIER: Well we have many laws in place. I'm from the Safe Water Drinking Branch so we have, we actually regulate the Safe Drinking Water Act. And that looks at, we mandate certain chemical analysis be done to confirm the groundwater quality. We have a sister agency, the Solid and Hazardous Waste Branch which regulate things like underground storage tanks and Wastewater Branch which regulates wastewater. But these branches look at basically separate focuses of interest, certain amount of compartmentalization. And if I may diverge a bit, since I do have experience with the Red Hill Fuel Storage Facility I actually did a Safe Drinking Water Act assessment of all the contaminate chemistry that has been done at that facility. I took the chemistry in the most contaminated well at that facility, compared it to what we monitor for under the Safe Drinking Water Act and found that that water that smells like jet fuel would actually pass the Safe Drinking Water Act regulatory compliance for contaminate chemistry. So the focus of an overlay district ordinance would be to bridge that gap.

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CHAIR BAISA: Thank you. Ms. Crivello?

COUNCILMEMBER CRIVELLO: Thank you.

CHAIR BAISA: Anymore?

COUNCILMEMBER CRIVELLO: Yeah.

CHAIR BAISA: Okay.

COUNCILMEMBER CRIVELLO: I'll ask after...

CHAIR BAISA: Okay. Mr. White?

COUNCILMEMBER WHITE: Thank you for being here. I'm perplexed by the wellhead overlay maps and I'd like to get a little more of an explanation on what kind of onsite testing is done that feeds into the modeling, because several of these items are...well for example Map No. 2 the wellhead protection area is very linear, same for Map No. 8 which is out in Hana, the districts are very long and narrow whereas in Waihee and area towards Kahakuloa, the collection area or the protection area is quite wide. Even though in my memory the slope in these areas is similar. So I'm just wondering what kind of onsite testing there is of what's underground gets fed into the modeling or whether it's just based on terrain? Maybe you can just help us understand what goes into the modeling --

MR. WHITTIER: Sure.

COUNCILMEMBER WHITE: --because that's...

MR. WHITTIER: Okay, you bring up a very good point. Why are the overlay districts so contrasted in geometry? And I contrast West Hawaii with West Maui, I'm sorry West Maui with Central Maui. West Maui has, the overlay districts are very long and linear, you have groundwater flowing from the recharge areas in West Hawaii [sic] toward the coastline. So that defines a long and linear groundwater flow path. We get into the isthmus area of Central Maui, very complex hydrogeologically. The center of the West Maui Mountain, the core of it if you look from above is actually dike intruded, a dike is that molten rock that forced its way up through the geology then cooled in place. It does not have the fractures or the flow layering that you have in the flank lava flows. Therefore it acts like a groundwater dam so we have that area of oval low permeability in the center of West Maui Mountain, you go toward the coast in the Kahului-Wailuku area, you encounter the cap rock or those low permeability sediment formations that were formed by coral reefs, mud, and whatnot that are also low permeability. You also have significant number of production wells as been pointed out by Eva, so you have a combination of high pumping rate, an area sandwiched between two low permeability formations, groundwater's got to come from somewhere, it can't come directly from the recharge areas so it's going to come in from the margins and produce those large oval capture zones. As part of the modeling process we did not do any fieldwork except to

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do GPS location on the drinking water wells themselves and look for potentially contaminating activities that were within the model capture zone. But we did rely upon the wealth of literature that is available, primarily USGS geology reports, their previous modeling, and any other data that had been made available at the State databases such as the Water Commission, you know, pumping rates, DLNR reports and incorporated that into our models. And so I guess with that, was there something you'd like me to further elaborate on?

COUNCILMEMBER WHITE: No I think you've explained it. I'm not sure I understand it or but thank you for the explanation. The, it concerns me that there's little onsite testing to be sure, you know, to validate the modeling. The other question I had and you may not be the one that could answer this but it's noted in the PowerPoint that Oahu has 73 percent of their wells contaminated or...are you aware of the level of contamination on, in wells on Maui?

MR. WHITTIER: I have that data and I know that I believe in Napili, the Napili wells, at least one or two of those have significant levels of I think fumigant contamination. Also I believe there's some fumigate contamination in some of the Upcountry wells. I don't have that right at my fingertips. But back to the field work, okay, of course any effort is constrained by the budgeting available and that is why we actively collaborate with the University of Hawaii. They use our models in their studies, we take their data back, and it is producing field validated modeling results, and I do have...well I have one paper that's in press and one that is part of a dissertation thesis that actually demonstrates that collaboration.

COUNCILMEMBER WHITE: Okay, thank you. And I know you're a geologist, not a chemist but it's also stated here that organic compounds detected in 73 percent of Oahu public supply wells. What qualifies as an organic compound?

MR. WHITTIER: Well they come under tables but to me that means usually pesticides, herbicides, or petroleum hydrocarbons, also in that would be chlorinated solvents. So not being a chemist, you know, I don't have the exact answer but I do know what compounds fall in that and it's generally those three, the herbicides, pesticides, petroleum, and chlorinated solvents.

COUNCILMEMBER WHITE: Okay, because one of the big issues here on Maui has been...oh, with actually all the neighbor islands is the Department of Health's crackdown on cesspools. So it doesn't sound like those organic compounds are on the list are they?

MR. WHITTIER: No, no.

COUNCILMEMBER WHITE: Is there any hint of contamination of any of the wells on Oahu from cesspools?

MR. WHITTIER: Not in the wells but there is significant indications of coastal impact from cesspools, and that actually has been validated on one study, well at least one study here on Maui and on more than one study on Oahu.

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COUNCILMEMBER WHITE: That was the one done on the ejection wells not the cesspools.

MR. WHITTIER: No, no, this was actually done, one of the other studies I did was onsite storage disposal systems and that utilizes SWAP modeling and now the coastal ecologists have taken that, looked for the chemical indicators of wastewater and found a good correlation between what the model predicted and those chemical indicators of wastewater along the coast.

COUNCILMEMBER WHITE: Okay. Thank you. Thank you, Chair.

CHAIR BAISA: Thank you. Any further questions for our testifier? Seeing none, thank you very much.

MR. WHITTIER: Okay, thank you.

CHAIR BAISA: Ms. Willenbrink, our next testifier?

MS. WILLENBRINK: Our next testifier is Albert Perez, followed by Rosemary Robbins.

CHAIR BAISA: Good morning, Mr. Perez.

MR. PEREZ: Good morning.

CHAIR BAISA: Thanks for being here.

MR. PEREZ: Good morning, Councilmembers.

CHAIR BAISA: Get that way up there for you.

MR. PEREZ: Thank you.

CHAIR BAISA: Okay.

MR. PEREZ: I'm Albert Perez. I'm Executive Director of Maui Tomorrow, and I would just like to say that we are supporting the resolution to send the proposed ordinance to the Planning Commissions for review. I'm not sure of the justification for not protecting all wells in the County. I have a little bit of experience from my previous employment about the fact that there is a choice of possibly simpler methods that might be appropriate for other water system, well system owners, but anyway we do support it. Prevention is worth a pound of cure and protecting the water quality's going to provide both public benefit as well as private benefit for the people who own the land that is protected. We're looking forward to working with the Department of Water Supply, the Planning Commissions, and the Council as this moves forward. Thank you.

CHAIR BAISA: Thank you very much, Mr. Perez. Members, any questions for the testifier? Mr. White?

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COUNCILMEMBER WHITE: Thank you, Madam Chair. You mentioned that there are, that from an earlier job you had been exposed to simpler methods. What would those simpler methods be?

MR. PEREZ: This would be from memory, Mr. White. I remember there's numerical modeling, there's hydraulic modeling, and there's also just it's basically a distance from the well that's assumed. So as a former water system manager myself we use the simplest method and it was no trouble at all. But I can go into detail with you as this moves forward.

COUNCILMEMBER WHITE: Okay, I would appreciate that.

MR. PEREZ: Sure.

COUNCILMEMBER WHITE: Thank you. Thank you, Chair.

CHAIR BAISA: Thank you very much. Members, any other questions for the testifier? Seeing none, thank you.

MR. PEREZ: Thank you.

CHAIR BAISA: Ms. Willenbrink?

MS. WILLENBRINK: Yes, Madam Chair, our final testifier this morning that has signed up is Rosemary Robbins.

CHAIR BAISA: Good morning, Ms. Robbins.

MS. ROBBINS: Good morning, everybody. I hope that somewhere in the discussion fairly early on after this we'll ask the question and get the answer whether or not this is affiliated with the study that was done, sounds like the same categories of personnel involved back in '04 and same, not the same Water Director back in those days. The same Mayor as for now, so there's some history that's involved in that. And I do remember going to one of the sessions that were held upstairs on the 9th floor and the specialty people that they brought over were from Kunia. I used to live on that island, had family on that island, that was a God-help-us situation and they got brought in as the pros so hopefully we need to include that in the history of what right here on Maui we lived with. I did come down and go through the WR-1 deal and read in there about the Federal regulatory laws that affect groundwater. And they go from 1910 on, so there's whole lot of history in here, and there is a letter that was submitted by a member of the public that is in that and it talks about a number of different things. One of them being that the same Department of Health, Hawaii, the university are the same folks the same folks that...same outfits at any rate that were involved back in '04 so there's a lot of history. And at that time through the, I want to use the word engineering but whatever, navigating, Senator Dan Inouye, may he rest in peace, had secured a lot of money for us from the Fed level coming over. And the requirement

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was that there be a concerned citizens before any of that money could be released. We were not a 501(c)(3) and the money went to the Administration here, and just recognizing that a lot of the stuff that we were asking as concerned citizens, we were required in order that the County would get that money were questions that were not answered. And when they were answered and we got a chance to go back over the history they were not accurate by way of omission and commission, in some cases not in all. But nonetheless problems, let's take a look at them and consider all of those. I always, I also want to draw to the public's attention that just a Google search is available at our public libraries, no cost, to be able to go over materials including those that were under wraps during World War II but over the time span from then till now, that data is available. So feel free and I encourage you to do that and to just go and look at the people who were here at that time, adults who would have lived with responsibility through all of that, caring for our families that didn't know a whole lot of stuff that's now knowable. And that certainly has an opportunity to affect what goes into the water, including the fact that they were driving over in that Haiku area from the Marine base over there...driving jeeps to the end of the gulches with the batteries still in them, fuel still in them, we didn't know that for a long time, now we know it, and those were then agricultural areas and we're reaping the havoc from some of that and what happens in these zones. When I looked at the maps yesterday I didn't see a lot about Upcountry involved in that and we haven't been building water catchment up there, no big dams to catch the water that would be coming if we're not getting it from the ground and that is surface water there. So there are lots of angles that we need to deal with what we have here. Thank you for your expertise and coming in for that, and also from some of the stuff that we need to look into further.

CHAIR BAISA: Thank you. Members, any need to clarify any questions for the testifier? Seeing none, Rosemary, thank you.

MS. ROBBINS: You're welcome.

CHAIR BAISA: Thank you for being here. Ms. Willenbrink?

MS. WILLENBRINK: There's no one else in the Chamber signed up to testify.

CHAIR BAISA: Okay. Chair will ask, is there anyone in the gallery who would like to testify who is so moved now that you've heard what you've heard? Chair will be happy to have you testify. Seeing none, okay let me check with the District Offices to make sure that no one has showed up there that we have missed. Okay, over in Hana, Ms. Lono, is there anyone there?

MS. LONO: There's no one waiting to testify at the Hana Office, Chair.

CHAIR BAISA: Thank you very much. Ms. Fernandez, in Lanai, has anyone shown up to testify?

MS. FERNANDEZ: There's no one waiting to testify at the Lanai Office.

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CHAIR BAISA: Thank you. And, Ms. Alcon, in the Molokai Office, is there anyone there who wants to testify?

MS. ALCON: There's no one here on Molokai waiting to testify.

CHAIR BAISA: Thank you very much. Members, there is no one in the District Offices and there appears to be no one here in the gallery that wants to testify that hasn't testified. So without objections, Chair will close public testimony.

COUNCILMEMBERS: No objections.

CHAIR BAISA: Thank you very much, so ordered.

...END OF PUBLIC TESTIMONY...

CHAIR BAISA: Members, we have had the presentation and testimony is closed. Before we proceed into our discussion, Chair would like to let you know that I'm very honored today, we have some folks that have shown up here and they're, I'm sure they would not be adverse to saying anything if we needed their help. I'd like to thank Will Spencer [sic] for showing up, our Planning Director, thank you very much. I'd also like to let you know that Anders Lyons is here today and I'm very delighted that the Water Board has assigned him pretty much as a liaison to our meetings. Thank you very much for being here today. We're trying to work closer together, I think it's important that the Water Board and the Water Resources Committee be working together, and I'd like to thank Anders for taking that on, it's an extra job for him but it's nice to, you know, that we have this going on. I also would like to note that the Deputy Water Director Paul Meyer is here. Thank you very much. And we also of course have Mr. Kushi who snuck in right after we started. Thank you for being here. Okay, Members, are there any questions or anything that you want to talk about? First of all, before we get into that I'd like to ask the Water Director if there's anything that he would like to comment on as we, you know, we had a question here that I think you might wanna comment on and that was Mr. White's question which I thought was really important. When you asked the question about the Maui wells and the status of contaminants in the Maui wells. Any comments?

MR. TAYLOR: I would just answer that by saying we have contamination in a number of wells in Napili and in the Hamakuapoko wells and all of those are treated with granulated activated carbon. I'm unaware of any other wells that we have that have any sort of treatment other than disinfection which is just a, isn't actually treatment for contaminations, it's just a normal operation.

CHAIR BAISA: Thank you. Members, any questions or anything that you...yes, Mr. White?

COUNCILMEMBER WHITE: Could you share with us what the capital costs were and the operating costs for the Napili wells for that treatment?

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MR. TAYLOR: We could try to find that, I don't, I certainly don't have it with me I don't have a ballpark. I'm not sure whether that was a Capital Improvement Project or...a lot of this is anything having to do with the DBCP contamination is covered under the agreement with the chemical company so we get reimbursed for those things. I think if we get a request from the Committee for certain information we can try to look into what cost we have.

COUNCILMEMBER WHITE: Okay.

CHAIR BAISA: I'll be willing...

COUNCILMEMBER WHITE: Madam Chair, we have plenty of time I guess --

CHAIR BAISA: Yes.

COUNCILMEMBER WHITE: --since we're not taking action today.

CHAIR BAISA: Yes, we do.

COUNCILMEMBER WHITE: But I would...

CHAIR BAISA: I'd be happy to ask for that.

COUNCILMEMBER WHITE: Is the...Slide No. 4.

CHAIR BAISA: Okay.

COUNCILMEMBER WHITE: The one that, with the well, the cost of treatment. I would appreciate it if we could get the calculations for those items because looking under the 32 sites median, if you take 30 million gallons which that indicates is the, I guess the median, that's only 82,000 gallons per day which is a fairly low-producing well isn't it?

MR. TAYLOR: Yes, that's correct.

COUNCILMEMBER WHITE: So those numbers seem a little bit skewed and I'd like to know what the capital cost has been for Napili and for Hamakuapoko because as Mr. Taylor has stated and we've been told in the past the costs are covered largely by an agreement with chemical companies that made the contaminants. But I would appreciate getting a sense of what these, what the basis of these calculations is. I just took a well and maybe this is too big but a well that generates a million-and-a-half gallons and if the capital costs for treatment is 2 million then the ongoing cost per 1,000 gallons is not \$78 it's more like 18 cents over, you know, if you spread the cost over the normal SRF loan repayment schedule. And the operating cost are 48 cents not \$16. So I'd just like to get a little clarity on that from the Department.

CHAIR BAISA: Sure, I'll be happy to get that. Staff will look into it and work with the Water Department. Mr. Taylor, anything?

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MR. TAYLOR: Yeah, before you move on to that question I think Ms. Blumenstein might want to give some description of where these numbers came from. These are national numbers, these are not, this graph is not County of Maui costs. And I also just want to share that GAC happens to be one of the cheapest forms of treatment for certain things that it can treat. There's no moving parts, there's no electricity, you basically build a big vat, fill it with granulated activated carbon and run the water through it. There is all sorts of contaminant, contamination that that is not adequate treatment. Where a treatment plant would have to be built which has, you know, chemical addition and sludge that has to generated, et cetera, et cetera. So I think to explain this graph more Ms. Blumenstein may be able to add some clarity to your question.

CHAIR BAISA: Ms. Blumenstein, if you would?

MS. BLUMENSTEIN: Thank you. Yeah we do have, the coastal analysis, I can definitely provide that study. So this was for 32 different sites nationwide for various common contaminants with, using the two common technologies, GAC and air stripping. So this vary, they all vary in size as you noted and that's one of our main concerns because looking at these, our pumping rates for a typical Central Maui well is ten times larger than a small municipal system. And we can compare maybe closest to Oahu, their \$2.5 million in O&M for granulated activated carbon is mostly for carbon replacement itself plus labor and other related costs. They're treating about 13, they have 13 GAC plants for 18 wells. And what they're treating for is similar as we do for Napili A, DBCP and in their case TCP, those are what we call legacy contaminants that are remaining from agriculture applications decades ago. What we're more concerned about are as new chemicals, the combinations of them occur we note that drinking water standards are getting stricter so we are more concerned about the cost of or unknown cost of treatment technologies that we are not prepared to identify or treat for yet.

COUNCILMEMBER WHITE: Thank you.

CHAIR BAISA: Thank you. Thank you very much. Ms. Crivello?

COUNCILMEMBER CRIVELLO: Thank you, Chair. Thank you for being here, Department. And I'm not sure if you can answer this but I'm, you know, I guess on your Slide 11 in regards to the Kunia, Red Hill, and Sand Island, you know, it makes mention more groundwater specific protection is needed to address gaps and that's from the Department of Health. For us on Maui or Maui County what is it now that we do to address these gaps so we don't end up like a Kunia or Red Hill? What is it that we're doing today to address if there are the gaps?

MS. BLUMENSTEIN: This proposed bill was based specifically on looking at the regulatory framework for Federal and State and County regs and see what, where are there adequate provisions already in place. For example, there are State Department of Health regulate underground storage tanks. We don't want to duplicate any existing provisions that are there. Aboveground storage on the other hand is, could be

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regulated as a hazardous substance by EPA or if it's storage of a certain amount, 660 gallons or more of a certain substance. But there really aren't any provisions to make sure that a, what we are concerned about, a regulated substance meaning something that is covered under the safe drinking water rules is located right next to a wellhead. So that's an example of a gap. We looked at the wastewater septic systems, although we don't have new cesspools really going in, specifically not in wellhead protection areas, there is the existing rule to locate a septic system if you were within 1,000 feet of a drinking water well you need to install aerobic treatment to have some additional treatment of that wastewater. We extend that rather than having the arbitrary 1,000 feet to the actual capture zone, that is where we are concerned about microbes, bacteria, and viruses, and also nitrate are the typical contaminants from a cesspool.

COUNCILMEMBER CRIVELLO: So you're, what you're sharing right now is the, what the bill would bring for us. So are there no, you know, does the Feds have something in place, does the State have something in place, and do we have something in place today so that we are addressing the so-called gaps or is this the only means that will provide that?

MR. TAYLOR: Yeah. Member Crivello, I think you hit the nail right on the head is there are gaps that we're not addressing because we have no mechanism to address them. And so this ordinance is our recommendation of what we should do to address those exact gaps that you mentioned.

COUNCILMEMBER CRIVELLO: So does the State have any? The Feds have any means of addressing these gaps? And then will it take us additional manpower to, should we put this bill in place?

MR. TAYLOR: What the State has testified previously, Ms. Seto is the head of the Safe Drinking Water Branch who's testified either here or the board in that the State's view is that although they support this and they provided grants funding for us to get this far because the only way to fill in the gaps is with local zoning. They believe that the best way to deal with the actual situation is through municipal agencies who have zoning control because neither the Federal government nor the State has zoning authority which is they believe the only place you can actually regulate something like this. So that's why they're pointing to us saying say it shouldn't be a State law, it shouldn't be a Federal law it should be County action because zoning is the right mechanism for it.

COUNCILMEMBER CRIVELLO: Okay, so this brings of interest to me say if my district, Molokai, or CWRM, Commission of Water Resources, and then we have no specific zoning, we're Interim and I don't know when that will change so how would that, this work on Molokai?

MS. BLUMENSTEIN: In terms of the Commission they...

COUNCILMEMBER CRIVELLO: No with...

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MS. BLUMENSTEIN: With the zoning.

COUNCILMEMBER CRIVELLO: With this ordinance, yeah.

MS. BLUMENSTEIN: Yeah. This, the only area where we really don't, the County doesn't have authority to impose land use restrictions to Conservation District. And they're quite, chunks of land within that well protection area that are Conservation. But if zoning is Interim so whatever you are there's still certain uses that you can, that you're permitted to do within the Interim-zoned area. The Overlay District would just, as on Maui as with other zoning district it would supersede. So say that you have an Interim-zoned property on Molokai and you wanna put in one of the industrial uses, this bill would apply just the same way in the capture zones on Molokai.

COUNCILMEMBER CRIVELLO: You're definite about that?

MS. BLUMENSTEIN: Yes.

MR. TAYLOR: The Planning Director's in the audience and I'm, you know, we worked with him on this and I'm sure he'd be more than willing to come up and give any more...answer on this.

CHAIR BAISA: Would you like me to ask Mr. Spence to come down?

COUNCILMEMBER CRIVELLO: Yes.

CHAIR BAISA: Mr. Spence, could you please? Members, objections?

COUNCILMEMBERS: No objections.

CHAIR BAISA: Thank you. Thank you very much, Mr. Spence, for being here, I appreciate it. If you could answer the question? Ms. Crivello did you hear ...

COUNCILMEMBER CRIVELLO: Yeah. I think he hears me all the time about Interim.

CHAIR BAISA: I don't know if he heard your question.

MR. SPENCE: Would this apply to land zoned Interim, is that what the question was? Okay, because this is a district, because this a layer, another layer on top of existing zoning, yes, it would apply.

COUNCILMEMBER CRIVELLO: So it would be an overlay over the Interim zoning?

MR. SPENCE: That's correct.

COUNCILMEMBER CRIVELLO: Okay.

CHAIR BAISA: Okay, thank you very much. Is there anything...

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COUNCILMEMBER CRIVELLO: Not that I appreciate that kind of...

CHAIR BAISA: . . .*(inaudible)*. . .

COUNCILMEMBER CRIVELLO: Yeah, because you're not even able to do that otherwise by going through all the necessary process of the Planning Commission and what have you, and, you know, that's okay, I just have my own kind of...

MR. SPENCE: Right. And...

COUNCILMEMBER CRIVELLO: When it comes to the zoning on the island.

CHAIR BAISA: Right.

COUNCILMEMBER CRIVELLO: Yeah.

MR. SPENCE: I'm not familiar if overlay maps have been developed for Molokai as yet.

COUNCILMEMBER CRIVELLO: Yeah.

MR. SPENCE: I know they have been for Maui.

COUNCILMEMBER CRIVELLO: Right. Okay, thank you.

CHAIR BAISA: Thank you, Mr. Spence, and thank you, Ms. Crivello. Any other questions, Ms. Crivello?

COUNCILMEMBER CRIVELLO: Not at this time, thank you.

CHAIR BAISA: Members, do you have any other questions? Yes, Mr. White?

COUNCILMEMBER WHITE: Not for Mr. Spence though.

CHAIR BAISA: Anybody else? Mr. Spence, I think you're off the hook for now.

MR. SPENCE: Yay.

COUNCILMEMBER CRIVELLO: Thank you.

MR. SPENCE: Thank you, Members.

CHAIR BAISA: Thank you very much for coming. Chair White?

COUNCILMEMBER WHITE: Thank you, Chair. I would also be interested in learning where the sites are that if this is a national study and they've picked 32 sites from 1 and 32 sites...is it 32 sites total?

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MS. BLUMENSTEIN: Yes.

COUNCILMEMBER WHITE: Okay. Because I think it's important for us to know where these sites are because it occurs to me that they would pick sites that are near industrial, you know, heavy industrial uses to begin with, so I would just like to know what the location is and how close by there are industrial uses. Because we have very limited industrial uses on Maui. So I just, I'm kind of uncomfortable using a national study, that might have very little bearing to what happens here on Maui.

CHAIR BAISA: Water Department, whoever, Ms. Blumenstein?

MS. BLUMENSTEIN: Yeah, I'd be happy to provide the actual report, the EPA report. And I can't remember on top of my head exactly what the sites were. But I know there was a range from very rural areas with small pumps and that's what I was saying, I'm more concerned for our pumps tend to be larger so that our impact is sort of somewhere in between the large metropolitan area and rural. Even comparing it to Oahu is different because even though they're more urbanized the type of contaminants that they are treating for, the cost is mostly based on historic agriculture use. So we're...

COUNCILMEMBER WHITE: Yeah. And don't get me wrong, I totally support moving in this direction, it's just like, just that I want to have the blinders off as we move forward. Thank you.

CHAIR BAISA: Okay.

COUNCILMEMBER CRIVELLO: Chair?

CHAIR BAISA: Yes, Ms. Crivello?

COUNCILMEMBER CRIVELLO: Just...and I'm not sure if Director can answer this but you mentioned earlier that I believe the Board of Water Supply have not made any kind of decisions, I don't know if I understood that. And have you done presentations to the Board of Water Supply? And any idea, are they, when they may come forward in support or not support? What have they concluded or have they made any conclusions?

MR. TAYLOR: We...

CHAIR BAISA: Mr. Taylor?

MR. TAYLOR: Thank you. We, we've given the Board of Water Supply presentations I think it was little over a year ago. And that ended up with a recommendation not to proceed. At the same time we sent the bill here where it's in this Committee. So we've gone back to the board and we've had discussions with the board, more presentations, more in-depth questions and answers with the board over the past several months. Just at the last board meeting we discussed it again, and to mirror what Chair Baisa

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said at the beginning of the meeting, they're still discussing it, we wanted to use this opportunity as just general education, we recognize that nothing's moving out of this Committee yet. The board understands that we're asking them to take a position on it so that the Council can see what that is before moving it out of here. So we're really trying to deal with both this Committee and the board simultaneously and recognizing that there is this discussion between the two.

COUNCILMEMBER CRIVELLO: Thank you. And thank you, Chair, for bringing this forward for the education purposes. Thank you.

CHAIR BAISA: Thank you, Ms. Crivello. What I'm trying to do is, you know, it's difficult to make decisions without information and so I've been trying very hard to bring as much information as I can so that we can make a decision. And I know that, you know, in making our decision we would certainly like to see what position the Board of Water Supply has taken, but they are looking for more information too. And so we'll just wait until we feel comfortable. I don't want us to rush ahead and do something and, you know, it, nobody's comfortable with it. It's not a good thing to do. So thank you. Members, any further questions? Mr. White?

COUNCILMEMBER WHITE: I have one other question. You know, the, these wellhead protection areas are, as the question indicates are or as the question I asked earlier indicates that they're very wide disparity between sizes and linear versus like a big balloon. The question in my mind is I've always been told that under each island there's a lens of water and I've always looked at it, you know, maybe erroneously as a big pool of water that rises as it goes closer to the center of the island and tapers off as it gets closer to the ocean. So my question is if this is a big pool of water that we're drawing, you know, we're putting straws into and drawing out of, does it really matter where the water came from?

MR. TAYLOR: I'll give you a non-PHD answer because --

COUNCILMEMBER WHITE: Thank you, that's what I, that's what I need.

MR. TAYLOR: --I've asked these same questions. Okay, so let's just take a swimming pool with straws all through it just like your example. And on one end we fill it with cork which is porous but water has a hard time getting through cork. And the middle we fill it with marbles where water flows through marbles really easily. So even though the straws are in there, you draw a straw out of the cork, that water's going to suck through very slowly. Over in the marbles it's going to come through really quickly. So my understanding from the hydrogeologists is that an area like where we are now, the Iao Aquifer is more like the marbles, flows really freely. Other areas because of the soil it's more like cork where it doesn't flow as freely so it takes longer. So I think, you know, listening to what Mr. Whittier said and I don't want to speak for him but that's essentially I think what he was saying about the narrow versus the wide is it's the soil itself that's different. The water is still there but it moves through soil at different speeds based on the properties of the soil.

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COUNCILMEMBER WHITE: So are these soils...I mean the water...

MR. TAYLOR: He's saying sort of, I'm watching his head, so you may want to call him back to get a better, you know, hydrogeology view than my . . .*(inaudible)*. . .

COUNCILMEMBER WHITE: No, I like your marbles and cork better but, because I can kind of understand that.

CHAIR BAISA: Easy to understand.

COUNCILMEMBER WHITE: But the...oh now I forgot my other question.

CHAIR BAISA: Oh, I do that.

COUNCILMEMBER WHITE: Anyway, we'll have another day to take a whack at this, so.

CHAIR BAISA: Yes, we definitely will. Are there any other questions that the Members have? Seeing none, Department, are you guys have any closing remarks?

COUNCILMEMBER WHITE: Oh, I just remembered what my...

CHAIR BAISA: Oh here, Mr. Mike, remembered his question.

COUNCILMEMBER WHITE: Sorry about that.

CHAIR BAISA: This happens to me a lot. Go ahead, Chair.

COUNCILMEMBER WHITE: I can understand soils but my, you know, there're alluvial plains on both sides of the West Maui Mountains, but my understanding is that the straws go down way beyond the soil that we see. So are you suggesting that the corks and marbles are different even at that lower, much lower level?

MR. TAYLOR: You have now exceeded my knowledge of hydrogeology. We don't have any hydrogeologists on staff. We hire hydrogeologists. I try to tell our staff engineers not to play hydrogeologists, hire hydrogeologists, we read their reports. If you want that question answered, I would suggest that you bring Mr. Whittier back up and ask him that question.

COUNCILMEMBER WHITE: Okay.

CHAIR BAISA: Sure I'd be happy to if there's no objection?

COUNCILMEMBER WHITE: I'm happy to do that.

CHAIR BAISA: Mr. Whittier, if you would please join us at the podium. We might as well use your expertise.

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COUNCILMEMBER WHITE: And I'll try to clarify it a little bit. The --

CHAIR BAISA: Thank you.

COUNCILMEMBER WHITE: --water lens is at a reasonably stable level from my understanding. At what depth is that lens in this area or not in this area, in the area of the wells in say Waihee?

MR. WHITTIER: Just off the top of my head a few hundred feet, and actually you can roughly compute that because the thickness of the lens is equal to approximately 41 times the groundwater elevation. And you can find that data on the Internet. So if the groundwater elevation was 10 feet the thickness would be 410 feet or it would extend 400 feet below sea level.

COUNCILMEMBER WHITE: Okay, so if we're going down that far to pull the water out, I would think that the original geology is relatively similar on both sides of the volcano on West Maui side and the Waihee side of the West Maui Mountains. So what I'm having a hard time understanding is how we have marbles here and cork here when we've got similar, the same volcano creating the strata down in that level.

MR. WHITTIER: Yeah. Were you referring to my West Maui versus the Central Maui --

COUNCILMEMBER WHITE: No.

MR. WHITTIER: --comparison?

COUNCILMEMBER WHITE: Well I can understand Central Maui being different because that's all, it's much more alluvial than it is volcanic. What I'm having a hard time with is two sides of the same volcano with wells at similar levels going down into marbles on one side and cork on the other.

MR. WHITTIER: Okay. Actually you have the overlay districts that you're concerned about in front of you so which wells were you particularly looking at and see if I can actually recall the specific wells?

COUNCILMEMBER WHITE: Well we have the ones on the northeast of Lahaina which is Map No. 2.

MR. WHITTIER: And do you know the well name there?

COUNCILMEMBER WHITE: I don't see a well name.

MR. WHITTIER: Okay.

COUNCILMEMBER WHITE: It might be Kanaha or Kahoma.

MR. WHITTIER: Okay. Thank you.

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CHAIR BAISA: Thank you.

MR. WHITTIER: Which map number?

COUNCILMEMBER WHITE: Map No. 2.

MR. WHITTIER: Okay.

COUNCILMEMBER WHITE: And on the other side, the Waihee side would be Map No. 3.

MR. WHITTIER: Okay. So your concerns are these are contrasting capture zones is the term I use for wells that are located on the same mountain but basically on opposite sides.

COUNCILMEMBER WHITE: Right.

MR. WHITTIER: And on the west side of the West Maui Mountain groundwater, yeah, groundwater's going to flow directly from the recharge areas to the coast. The...and to bring up Dave's analogy there's very little cork in that path. Once you get...the center of West Maui Mountain is like the cork. It's a big oval in the center of that mountain and that is different from Haleakala. So you got the cork in the center but once you get past that cork on West Maui Mountain there's very little cork between that and the discharge points in the ocean. So basically a straight shot. You go to Map No. 3. You still have that big oval cork in the center of the West Maui Mountain but now you also have a big cork wedge fronting Kahului Harbor and coming inland. The rock which is the marbles is where we get most of our permeability from where we can draw our groundwater from. So here in the Waihee, Iao region you have cork inland and you have cork on the makai side of the aquifer. So our only marbles are going out to the sides of where the, of the aquifer. So therefore to meet the demands of the well we've got to draw from the sides of the aquifer rather than the straight mauka to makai flow.

COUNCILMEMBER WHITE: I'd feel much more comfortable if we had done some fieldwork and we drilled in these areas to see if it's cork or marbles.

MR. WHITTIER: Well actually that had, that's part of our literature search and it has been drilled in that area.

COUNCILMEMBER WHITE: Oh, okay.

MR. WHITTIER: And we can produce the boring log, so yes, that is well established.

COUNCILMEMBER WHITE: I wouldn't understand the boring log anyway.

MR. WHITTIER: 'Cause they're boring.

COUNCILMEMBER WHITE: Thank you.

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MR. WHITTIER: But perhaps at a future meeting something I could do is develop, you know, picture is worth a thousand words.

CHAIR BAISA: Right.

MR. WHITTIER: A series of pictures or potentially an animation to demonstrate what I'm trying to explain here with only limited success.

COUNCILMEMBER WHITE: Well that's, that has nothing to do with the teacher.

MR. WHITTIER: Thank you.

COUNCILMEMBER WHITE: It has more to do with the student.

CHAIR BAISA: Okay.

COUNCILMEMBER WHITE: Thank you, Chair.

CHAIR BAISA: Thank you, and thank you very much.

MR. WHITTIER: You're quite welcome.

CHAIR BAISA: Yeah, these technical issues are very difficult to explain to laypeople. Anyway, any further questions from the Members? Seeing none, Members, Chair feels that, you know, we've done what we needed to do today. I would like to thank everyone who has participated today. I especially want to thank Ms. Blumenstein. Thank you very much for your work on the presentation. Thank the Department of Health for being here today. I really appreciate it. And everyone who has been a resource. And I'd like to thank the Staff also for all of their hard work, and that we have completed the work on our agenda today. So we will adjourn this meeting. Chair would like you to know that we will not be meeting in October, it's not because we're going on vacation, it's because the first meeting in October falls at the time when Mr. Taylor and myself and I'm sure others will be attending the Hawaii Water Association Conference on Oahu. And the second week that we would normally meet is the week where Chamber will be unavailable because we're doing some improvements in here. I'm not really sure what the improvements are but they're gonna, the Chamber needs to be worked on. And so our next meeting is tentatively scheduled for November 4th for those of you who like to keep track of when this Committee will be meeting. So without more further business, Chair will adjourn the meeting. Meeting is adjourned. . . .(gavel). . .

ACTION: DEFER PENDING FURTHER DISCUSSION.

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ADJOURN: 10:24 a.m.

APPROVED:



GLADYS C. BAISA, CHAIR
Water Resources Committee

wr:min:150930jp

Transcribed by: Jean Pokipala

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CERTIFICATE

I, Jean Pokipala, hereby certify that the foregoing represents to the best of my ability, a true and correct transcript of the proceedings. I further certify that I am not in any way concerned with the cause.

DATED the 19th day of October, 2015, in Wailuku, Hawaii



Jean Pokipala