MINUTES
FOR THE MEETING OF THE
COMMISSION ON WATER RESOURCE MANAGEMENT

DATE:	December 21, 2011
TIME:	8:30 am
PLACE:	DLNR Board Room Kalanimoku Bldg.

Chairperson William Aila, Jr. called the meeting of the Commission on Water Resource Management to order at 8:30 a.m.

The following were in attendance:

MEMBERS: Mr. William Aila, Jr., Mr. Neal Fujiwara, Dr. Lawrence Miike, Ms. Loretta Fuddy and Mr. William Balfour

ABSENT: Mr. Sumner Erdman

STAFF: William Tam, Lenore Ohye, Robert Chong, Neal Fujii, Roy Hardy, Charley Ice, and Ryan Imata

COUNSEL: Colin Lau, Esq.

OTHERS: Tom Nance, Vince Varnay, A. Gora, Bob Akinaka, Jim Greenwell, Scott Enright, Steve Bowles, David Paul, Sina Pruder, Jim Yamamoto, Riley Smith, Stephen Green, Dan Nakasone, Lisa Asagi, Melva Aila, Leo Asuncion, Philmund Lee, Michael Kumabe, Mary Lou Kobayashi, Russell Kokubun, Michael Hamnett, Tom Giambelluca, Jason Nakata, Barry Usagawa, Yvonne Izu, Hugh Strom, Sheldon Hunt, John Nishimura, and Jonathan Scheuer

A. APPROVAL OF MINUTES

November 16, 2011

MOTION: (Fujiwara/Miike)
To approve the minutes.
UNANIMOUSLY APPROVED.

B. ANNOUNCEMENTS

The next Commission Meeting is tentatively rescheduled for January 11, 2012.

C. GROUND WATER REGULATION

1. Application for Water Use Permit, Roman Catholic Church in the State of Hawaii, SSDC 1 Well (Well No. 2146-01 – correct Well No. is 2146-04), TMK (1) 4-2-011:004, WUP No. 936, Future (Municipal) Use for 0.010 mgd, Waimanalo Ground Water Management Area, Oahu

SUBMITTAL PRESENTATION by: Ryan Imata

Ryan Imata (Commission on Water Resource Management) informed the Commission that the correct Well No. should read as 2146-04.

The applicants request the Commission approve a water use permit for 0.010 million gallons of water per day (mgd) of potable dike-confined ground water from a proposed well to supply the potable needs of the Roman Catholic Church. Exhibit 1 shows the location. The completed application was submitted on September 22, 2011.

(1) Water availability

Normally for Waimanalo, high level dike-confined water use permits do not count against sustainable yield and are instead accounted for in the instream flow standards. However, because Waimanalo does not have an extensive basal ground water system, all water use permits are counted against the sustainable yield. Table 1. Waimanalo Aquifer System Area indicates potential available allocation of 8.132 mgd. The dike area and Maunawili Stream is down gradient. There is concern that the use may affect instream flow standards. However, pump tests should provide evidence of any potential impacts.

(2) Reasonable-beneficial

The use is consistent with the purpose. The quantity is also consistent with the request of 0.010 mgd for various domestic uses. When compared to the water system standards, the uses would be about 0.012 mgd. Therefore the requested amount is close to what the water system standards indicate. The applicant stated that the use is efficient. There are no practical alternatives.

(3) Interference with other existing legal uses

There is no interference with other existing legal uses. Pump tests do not show any adverse effects of pumpage.

(4) Public interest

The use is in the public interest. There have been no objections to this application.

(5) State & county general plans and land use designations
(6) County land use plans and policies
(7) Interference with Hawaiian home lands rights
(8) Other issues

The use is consistent with State and county general plans and land use designations, county land use plans and policies. The application will not interfere with Hawaiian home land rights. The use does not trigger the need for an Environmental Assessment (EA).

RECOMMENDATION:

That the Commission:

Approve the issuance of Water Use Permit 936 to the Roman Catholic Church in the State of Hawaii for the reasonable and beneficial use of 0.010 mgd of dike-confined water for municipal use from their proposed well (revised as Well No. 2146-04), subject to the standard water use permit conditions listed in Attachment B and the following special condition[s]:

1. In the event that the tax map key at the location of the water use is changed, the permittee shall notify the Commission in writing of the tax map key change within thirty (30) days after the permittee receives notice of the tax map key change.

2. Should pump tests indicate that a recharge boundary is encountered, then a petition to amend Instream Flow Standards for Maunawili Stream shall be submitted.

(DISCUSSION)

Chairperson Aila, Jr. asked if there were any questions for staff and if anyone from the public wished to testify on this matter.

Tom Nance of Tom Nance Water Resource Engineering stated the applicant had no objections to the staff's recommendation.

MOTION: (Fujiwara/Miike)
To approve the submittal.
UNANIMOUSLY APPROVED.

2. Application for Water Use Permit, Turtle Bay Resort, LLC, Opana 1 & 3 Wells (Well No. 4100-04 & -05), TMK (1) 5-7-002:019, WUP No. 927, Existing (Domestic / Municipal / Industrial) Use for 0.346 mgd, Koolauloa Ground Water Management Area, Oahu

SUBMITTAL PRESENTATION by: Ryan Imata (CWRM)

The applicant requests approval for a water use permit for 0.346 million gallons per day (mgd) of potable confined ground water from two existing wells to supply various existing domestic, municipal, and sewage treatment plant uses that are currently supplied by the Board of Water Supply's (BWS) Waialee System.

The Commission received the completed application on September 15, 2011.

1) Water availability

There is 17.082 mgd available. This is adequate to accommodate the requested amount.

2) Reasonable-beneficial

The applicant requests 0.346 mgd for domestic, municipal and industrial uses (see Exhibit 3 staff submittal). The quantities are the same as the estimates from the BWS Water System Standards, except for the last three items which were estimated based on actual metered use. These amounts are only 0.021 mgd (6% of the total applied amount). Because they were metered, they should be accurate. If they are too high, the Commission can always revoke them for 4 years of non-use. The applicant stated that the use is efficient and that there are no practical alternatives.

Practical Alternatives (5. Wastewater) The applicant is not applying for golf course irrigation, they are using treated wastewater for golf course irrigation at Turtle Bay.

3) Interference with other existing legal uses

Staff does not anticipate that there will be interference with other existing legal uses. Pump tests show no interference with other wells.

4) Public interest
5) State & county general plans and land use designations
6) County land use plans and policies
7) Interference with Hawaiian home land rights

The use is consistent with the public interest. There were no objections. The use is consistent with state & county general plans and land use designations. There should be no interference with Hawaiian home land rights.

8) Other issues

The application does not trigger an Environmental Assessment (EA). The current supply for Turtle Bay is through the Board of Water Supply (BWS) Waialee System. There are two wells ewa of Turtle Bay. Approval of this water use permit application would show apparent use to the use allocation of Waialee, but this is not recommended because the Koolauloa Watershed Management Plan identifies Waialee as the northern most system that supplies all of Koolauloa's needs. The plan states that the system does not allow adequate transfer between Waialee and Waialua. Barry Usagawa (Board of Water Supply) indicated that there are some engineering reasons why the systems are isolated, but they could actually be connected.

Regarding Koolauloa, Mr. Imata said they should remain constant at 1.9 mgd between 2010 and 2011. A watershed management plan has not been completed for the north aquifer sector. Future demands are unclear. Mr. Usagawa stated that the BWS recently denied an allocation request for a subdivision near the Waialee system. Pumpage records indicate that Waialee and Waialua are at times pumped over the allocation. Staff recognizes the need to spread out pumpage in the area and the increasing municipal demands. Therefore, staff does not recommend a reduction to the allocations to Waialee with the approval of this permit, but recognizes that the issue of water

allocation deductions needs to be addressed at a more appropriate time when the water use permit is dedicated to the BWS.

RECOMMENDATION:

That the Commission:

Approve the issuance of water use permit no. 927 to Turtle Bay Resort, for the reasonable and beneficial use of 0.346 mgd per day of potable water for domestic, municipal, and industrial use from the Opana wells (Well No[s]. 4100-04 & -05), subject to the standard water use permit conditions outlined in Attachment B of the staff submittal and the following special conditions:

1. In the event that the tax map key at the location of the water use is changed, the permittee shall notify the Commission in writing of the tax map key change within thirty (30) days after the permittee receives notice of the tax map key change.

2. When this permit is transferred to the Board of Water Supply, the allocations shall be examined and if warranted, a reduction in allocations to one or more of the sources should be applied for.

(DISCUSSION)

Commissioner Miike asked if the existing wells are currently being used.

There was a lengthy discussion/misunderstanding over which existing wells were being used. The applicant's attorney Yvonne Izu (Morihara Lau and Fong) clarified that the Opana wells (the subject of this request) were constructed quite awhile ago but have never been used. The applicant is now seeking to put the Opana wells into use.

Commissioner Miike asked Ms. Izu why the applicant was seeking to put the wells into use.

Ms. Izu said the original plan was for the wells to serve the Turtle Bay Resort. However, Turtle Bay obtained water via the BWS system for what was supposed to be an interim period. Today the BWS is concerned about the increasing demand on the Waialee system so they have asked Turtle Bay to complete the wells and put them into service. Ms. Izu went on to state that the intent is to eventually turn the wells over to the BWS.

Commissioner Miike asked if that would happen as soon as pumping commenced.

Ms. Izu said that she was not sure, but she was currently working on the dedication arrangements.

Commissioner Miike asked if Turtle Bay would be responsible for pumping costs until it is transferred over to the BWS.

Ms. Izu responded yes and wanted to clarify that the permit is only for existing use and is not intended for any future development at Turtle Bay. She stated that none of the water allocation is

intended to go to future development and will only be used to cover what is currently being used and as a substitute for what is being taken out of the BWS system.

MOTION: (Miike/Fuddy)
To approve the submittal.
UNANIMOUSLY APPROVED.

The Commission then took the Agenda out of sequence and presented Item F "Updates and Briefings."

F. UPDATES AND BRIEFINGS

4. Briefing on Central Oahu Reuse and Reclamation (Sheldon Hunt - Aqua Engineers). Presentation on potential use of R-1 treated wastewater and reclaimed surface water for agriculture, landscaping, irrigation, and recharge in central Oahu and Kunia to replace potable groundwater and stream water. Discuss steps to prepare a regional reuse plan

PRESENTATION by: Sheldon Hunt

Deputy Director William Tam introduced the staff from Aqua Engineers to discuss the feasibility of waste water reclamation in Central Oahu. Deputy Tam told the Commissioners that Aqua Engineers has a project underway at Schofield Barracks, which could serve as a model for what might be done on a broader basis.

Sheldon Hunt (Aqua Engineers) described the Schofield Barracks project and plant - a 4.2 mgd facility with current flows between 2.2 and 2.3 mgd. Mr. Hunt said that as soldiers come back on base, the flows go up to about 3.2 mgd. The current practice is to treat the water to an R-1 level and reuse that water on the sugarcane fields just below the dam at Lake Wilson. From there, the water is mixed with groundwater and distributed over 13,000 acres on the North Shore. In 1994 an agreement was negotiated with Senator Inouye for federal funding to promote diversified agriculture and establish a precedent for paying water fees. Mr. Hunt said that at that time the water was R-2, but the plant has since been upgraded to R-1. Presently, the Army is paying approximately $550,000 per year for Dole to take the water, which is then distributed to the north shore and eventually the ocean. Mr. Hunt told the Commission that the Army is interested in reusing as much water as possible. Aqua Engineers is in the process of constructing a line to the Leilehua Golf Course across Kamehameha Highway and using the water for irrigation, landscaping and other needs. Eventually the Army hopes to maximize the use of the effluent to replace the potable water.

Regarding effluent reuse, Mr. Hunt described Aqua Engineers' plan to produce the R-1 water, utilize storage tanks (1,000,000 gallons) and distribute that water to Leilehua Golf Course (~ 300,000 gallons on average). Aqua Engineers proposes to offer fill stations where people can take their trucks to pick up water and use it for dust control around the airfield. The Army has been looking at all the possible uses for the water and has worked with stakeholders to determine the most efficient use.

The guiding principles will help maximize effluent and other non-potable sources, provide regional solutions to optimize water use, and redirect effluent to Central Oahu where there is a greater need than on the North Shore. The Army's idea is a "net-zero" concept and the potential for biofuel. Reducing long-term costs is the last planning concept for waste water treatment, reuse, and disposal.

Regarding the current master plan, one of the large projects currently underway is a gravity sewer that drains Schofield Barracks. As part of that project, Aqua Engineers plans to put in a reuse line. The line would be built east into Leilehua Golf Course and west to address a more regional perspective and identify alternatives. Aqua Engineers has considered connecting to the Waiahole Ditch to provide more flexibility and to address some of the demands in the area, including biofuel development. Instead of sending the water north, where there appears to be abundant water resources, Aqua Engineers suggests retaining that water in Central Oahu. The Bureau of Reclamation Report to the CWRM (on website) suggests some options.

As part of the greater plan, Aqua Engineers plans to take advantage of other assets including the abandoned petroleum line installed during World War II to increase storage. The Wahiawa Reservoir could retain water closer to the need and reduce the cost. Biofuel development in Central Oahu needs to address food, and the reuse project as part of a viable solution.

An integrated Central Oahu Master Plan looks at all the water resources, all the demands, engages the stakeholders and finds a solution that fits best with the community. Aqua Engineers would like to address potable and non-potable water needs in the region according to a set of guiding principles. The Congressional delegation has expressed interest in providing federal funding. There is interest in engaging with more stakeholders including the City & County of Honolulu. From 1994 to 1998, the City & County of Honolulu led a Joint Agency Waste Water Task Force to find a solution in Central Oahu for waste water. There are plans to look at alternatives freeing up the reservoir for other uses. As an Army partner, Aqua Engineers is interested in engaging with the community, finding a solution that makes sense for everybody, supports the guiding principles and the Army's needs to achieve net-zero in energy and solid waste.

(DISCUSSION)

Commissioner Fujiwara asked how much farmers would have to pay for the R-1 water.

Mr. Hunt said that because golf courses use potable water, the economic comparative analysis is pretty simple since effluent water is cheaper. Regarding farmers, Aqua Engineers asked people what the affordable rate would be and what would be required to afford the infrastructure. A preliminary idea from the 1990s was to use federal funding - still a possibility. More data will lead to better economic solutions and the right pricing. There are discussion of using water from Lake Wilson and mixing it with the effluent to reduce costs and make it more affordable.

Chairperson Aila, Jr. recognizes Director for the Department of Agriculture, Mr. Russell Kokubun.

Commissioner Miike asked if all the options were downhill and gravity-based.

Mr. Hunt replied for the most part, yes. Due to friction, some water will have to be pumped.

Commissioner Miike inquired about the lines on the map and asked what the first phase would be.

Mr. Hunt said the first phase is to setup the discharge to Dole, but the tie-in to Waiahole is their top priority. The cheaper solution would be to use the Army easement as a more direct route. Depending on the stakeholder needs (BWS and others), it is hard to say if the Kamehameha route might make more sense.

A member of the public asked to be included in the process.

Mr. Hunt responded, absolutely, and said he would be happy to pass along his contact information.

Deputy Director William Tam interjected with a comment about financing, stating that multiple stakeholders on a regional basis could lead to economies. The City & County of Honolulu might reduce current costs. Often the benefits are going to be found in costs that do not have to be incurred to do something else. Regional plans save future costs by developing private waste water treatment that move infrastructure away from the shoreline and reducing energy and pumping costs. He said that maps are also available to the public for viewing.

2. The Rainfall Atlas of Hawaii: Presented by Dr. Thomas Giambelluca, Professor of Geography, University of Hawaii Manoa, who will discuss the methodology and findings of the investigation that went into developing the recently completed Rainfall Atlas of Hawaii (2011). He will also demonstrate features of the Hawaii Rainfall Atlas website and consider its implications for Hawaii's water resources. The Hawaii Rainfall Atlas can be accessed at http://rainfall.geography.hawaii.edu/

PRESENTATION by: Tom Giambelluca

Neal Fujii (Commission on Water Resource Management) introduced Dr. Tom Giambelluca's two presentations on the 1) Rainfall Atlas and 2) the Evapotranspiration project.

Dr. Tom Giambelluca from the University of Hawaii began his presentation by stating that Hawaii rainfall measurement data dates back to 1837 with the number of stations increasing over time. At the turn of the century (1900) there were over 100 stations and in 1920 there were over 400 stations. People starting mapping mean rainfall in the 1920s to discern patterns and amounts and began to realize that it varies quite a bit. He showed the records from older studies (1948, 1955, 1959, 1982) and sample maps of median rainfall in Hawaii. The original Rainfall Atlas was completed 25 years ago and stood as the standard until the most recent Rainfall Atlas was completed. He showed a map from a national study done by Christopher Daly from Oregon State University called the "Prism Project."

By looking through a database of monthly rainfall calculations, Dr. Giambelluca was able to get records for nearly 22,000 rain gauges in Hawaii that generated 43 station years of data. Rain gauges have an average record length of about 40 years. The distribution of gauges on the map, convey the high number of rain gauges in Hawaii. In 1968, at the

height of the plantation era, over 1,000 rain gauges were operating at the same time. Many were operated by private agricultural interests. As the plantations began to decline, the number of rain gauge stations also declined to the current number of 340 gauges. Dr. Giambelluca said that Hawaii has a very diverse rainfall pattern and is being impacted by climate change. 340 gauges are not enough. More are needed to monitor and keep track of the changes.

He said that all the gauges were active during different periods, meaning they have different start and end dates. In order to create a mean map it is important to have a common base period to calculate the mean. Therefore, the data must be adjusted to a common base period by "gap filling" the entire time series from 1920 to 2007 for as many stations as possible. Dr. Giambelluca told the Commission that in order to help fill in the gaps created by areas without rain gauges he created "virtual rain gauges" based on patterns of natural vegetation to provide some indication of rainfall. John Price from the University of Hawaii at Hilo was able to provide estimates of rainfall in areas where there were no rain gauges. Additionally, Dr. Giambelluca used independent estimates of the patterns of rainfall based on the Prism Maps, a numerical model used by weather forecasters and weather radar.

Dr. Giambelluca showed an example of a time series for a station, noting the blue part as the actual measured record and the red part as the gap fill, which includes periods before and after the rain gauges had been operating. He then pointed to a map on the right of the Big Island, which showed all the rain gauges as a way of discerning the spatial patterns. For the virtual rain gauge stations, John Price identified rainfall amounts that corresponded to the boundaries between one vegetation community type and another. Mr. Price took into consideration elevation to calibrate locations and virtual stations in places that had no rain gauges (for example: east Molokai).

He said he decided to use a 30 year base period (1978 to 2007) and used that rain gauge data to do spatial interpolation. Next, Dr. Giambelluca used the Prism Maps, MM5 and the radar rainfall as independent estimates of that pattern. Each was compared against the rain gauges to calibrate and adjust them to the observations in order to make sure they were in line. The estimates were weighted according to certainty and combined according to month to create patterns of uncertainty. The uncertainty was then compared against the rainfall mean.

The project team at the University of Hawaii at Hilo developed a web platform that allows people to find out about the rainfall history in Hawaii, investigate the methods used, download data sets in a variety of different formats, and go to an interactive map and pull out information about rainfall from anywhere in the State. The web-based Rainfall Atlas supplies mean annual rainfall in millimeters and inches, as well as graphs and tables for monthly amounts.

Dr. Giambelluca demonstrated how the website works and explained the various features of the Rainfall Atlas. He said the final report will be posted to the website shortly.

(DISCUSSION)

Deputy Director William Tam asked Dr. Giambelluca to explain the rainfall processes.

Dr. Giambelluca pulled up a diagram on the website showing the main rainfall process that creates the orographic rainfall. It can be found in more detail in the Report.

A member of the public asked if putting your cursor on any area of the map would produce rainfall data and if it would be the exact same type of data that you would get from a gauge.

Dr. Giambelluca responded saying it's the same type of data but it's available in a different form such as a GIS map and that the station data is also available as monthly tables.

Deputy Tam asked Dr. Giambelluca about the general conclusions of the study.

Dr. Giambelluca stated that the Rainfall Atlas is an effort to explain the current rainfall pattern in Hawaii and is different from prior maps. He cautioned that the Atlas should not be compared to previous analysis on rainfall. The analysis and methods are completely different. It is difficult to say which of those differences are due to actually change versus a difference in methods. He explained that Abbey Fraiser, a graduate student, is working on a project that will explain how the rainfall has changed by generating month/year maps from 1920 to 2007, taking the 30 year means and the 1920 data to generate maps for each month.

A member of the public asked if the maps dealt with seasonal or annual variability.

Dr. Giambelluca said that it is seasonal because of the mean monthly maps. It does not deal with the inter-annual variability or multi-decadal variability because it's averaged over a 30 year period. He said there is a long-term trend towards lower rainfall in Hawaii. There are also multi -decadal changes that go up and down. Therefore, in order to average out the multi-decadal variability one would need as long an averaging period as possible and recognize there are changes over the long-term, specifically a decline in rainfall in certain parts of the State. Dr. Giambelluca said that with the new data set, he will be able to average the different phases of El Niño and La Niña and produce maps that show trends over time.

3. Project Update Briefing: Establishing Evapotranspiration Rates in the State of Hawaii. Principal investigator, Dr. Thomas Giambelluca, Professor of Geography University of Hawaii Manoa, will brief the Commission on the status of this project, which is a joint effort between the Commission and the Army Corps of Engineers

PRESENTATION by: Tom Giambelluca

Dr. Tom Giambelluca briefed the Commission on his current Evapotranspiration Study and defined evapotranspiration as the total loss of water from the land surface to the atmosphere. Dr. Giambelluca stated that water resource availability is largely determined by rainfall and evapotranspiration and the difference between rainfall and evapotranspiration dictates what is available for streamflow and groundwater recharge. While the Rainfall Atlas is considered state of the art for spatial analysis of rainfall, no such analysis has ever been done for evapotranspiration in Hawaii. This means that the patterns of evapotranspiration are unknown. This limits the Commission's ability to estimate how much water is available for recharge and/or stream flow generation. He said that the objective of the Evapotranspiration Study is to produce digital maps and

spatial patterns of mean monthly and annual evapotranspiration. In others words, an Evapotranspiration Atlas of Hawaii, similar to the Rainfall Atlas.

Dr. Tom Giambelluca described the process of "environmental demand" as the rate at which a wet surface will evaporate and noted that evaporation will only occur when there is moisture. Similarly, moisture availability can be affected by a number of things including how much water is in the soil, the type of vegetation, the depth of the roots, and the roughness of the vegetation. Dr. Giambelluca explained that potential evapotranspiration (a.k.a. "environmental demand") can be measured and estimated through meteorological observations such as radiation, air temperature, relative humidity, and wind speed. In order to get estimates of potential evapotranspiration for the entire state, radiation, air temperature, relative humidity, and wind speed must be visually mapped. He defined net radiation as the difference between incoming solar radiation (shortwave), what gets reflected back out, and thermal infrared radiation (longwave) that is emitted from the Earth's surface, which provides a measure of the energy that is available for evapotranspiration. Next, you must determine the pattern of solar radiation, including satellite data (MODIS and GOES) to account for cloud cover.

Dr. Giambelluca provided a progress report stating that the model for clear sky radiation is ready to implement and he is in the process of merging the MODIS and GOES data. He showed images from the MODIS and GOES satellite data, pointing out the differences between the two. After merging the two data sets, the spatial and temporal resolution will be much clearer, resulting in high resolution digital mean, monthly, and annual maps – clear sky radiation, cloudiness, solar radiation, net radiation, temperature, and eventually evapotranspiration.

(DISCUSSION)

Deputy Tam asked Dr. Giambelluca to explain what would happen once this data was combined with the data from the Rainfall Atlas.

Dr. Giambelluca said that when it comes to water resource evaluation, this is the starting point, which will provide something previously unavailable – taking the rainfall map and subtracting the evapotranspiration map to get a pattern of water surplus. This is relevant to determining ground water recharge patterns and generation of water and streams.

Dr. Giambelluca said there will likely be follow-up work to these studies, involving people from the USGS.

Neal Fujii from the Commission on Water Resource Management thanked the Commission for their support of these projects.

E. PLANNING

1. Adoption of the 2010 Update to the Hawaii County Water Use and Development Plan for Incorporation into the Hawaii Water Plan

SUBMITTAL PRESENTATION by: Lenore Ohye

Lenore Ohye (Commission on Water Resource Management) introduced the updated Hawaii County Water Use and Development Plan (HWUDP). The original HWUDP was completed in 1990. This is the first update. The updated Plan is available on the Commission's website. Commissioners received updates and briefings throughout the process.

Ms. Ohye gave a general overview of the planning process. The State Water Code recognizes that long-range planning is a critical element of stewardship and sustainability and is needed to understand future demands. It is imperative to develop a coordinated strategy to meet those demands without resulting in an over-reliance on our aquifers. The Hawaii Water Plan is comprised of five different components. Each one is prepared by a different agency. The Water Resource Protection Plan (WRPP) is prepared by the Water Commission and sets forth policies and strategies to protect water resources including sustainable yields. The Water Quality Plan (WQP) is prepared by the Department of Health (DOH). Together the WRPP and WQP provide the overall protection framework within which all other component plans must work. Two other components are also prepared by state agencies. The State Projects Plan is prepared by the DLNR Engineering Division. The Department of Agriculture (DOA) prepares the DOA Water Use Plan. Agriculture demands have been identified as a planning gap, and more information is needed regarding how much water will be needed for agriculture. The County Water Use and Development Plans are prepared by each of the four counties to identify county-wide water demands. They must be consistent with state and county land use plans. The primary objective of the County Water Use and Development Plans is to set forth the allocation of water to land use and to develop policies and strategies to meet the future demands. The Water Code requires each county to look at existing needs and future demands with a 20-year time horizon. Because the plans are continually revised, it is an iterative cycle.

The HWUDP was initially adopted in 1990, with a condition that all component plans be updated within two years. In 1992, in accordance with the Commission's directive, all component plans were updated and submitted to the Commission for adoption. However, adoption was deferred, pending additional refinement of plan components. In 2003, the County of Hawaii Department of Water Supply (HDWS) allocated funding to update the HWUDP. In 2005, the Commission approved HDWS' project description for the HWUDP update (including a prototype draft chapter). In March 2006, Hawaii County held their first round of public meetings. In December 2006, the County came out with their first public review draft. Another round of public meetings in August 2007 identified agricultural water needs as a key issue. Farmers remarked that they could not afford to pump ground water to meet their needs. Instead they grow whatever crop could be sustained using ambient rainfall. Based on this feedback, the Hawaii County bracketed agriculture demands as either 1) no ground water (i.e., relying on rainfall) or 2) the Agricultural Water Use and Development Plan estimate of 3,400 gallons/acre for diversified agriculture. In 2010 the final draft was developed. In February 2011 it was adopted by ordinance by the County Council and submitted to the Commission for formal adoption. In August 2011, the Commission held public hearings in Kona and in Hilo. Today, the HWUDP Update is up for formal adoption by the Commission.

Ms. Ohye summarized the public hearing comments. Uncertainties regarding recharge, sustainable yield, and aquifer boundaries are more appropriately addressed in the WRPP. There is a lot of new information coming out, including the discussed, including the studies by Dr. Tom Giambelluca discussed. By 2012, USGS will finish updating their numerical model for the Kona area. This will help refine the conceptual ground water model and identify areas for ground water development that minimize the impacts to sensitive coastal areas. As new information becomes available, the Commission may revisit sustainable yields and make adjustments as needed. The National Park Service (NPS) raised concerns about the impacts of pumping on the cultural and ecological uses within the Kaloko-Honokohau National Historical Park. The Commission received a thorough briefing on this issue at last month's meeting. To address this concern, the Commission is expanding its monitoring network in the Kona area, continuing its participation in the various Kona water working groups, and continuing to analyze pump tests for local impacts. More information is needed on the salinity tolerances of biological resources, and other ongoing work includes the USGS numerical model update.

The NPS comment letter additionally requested that the Chairperson initiate water management area designation for the Keauhou Aquifer System Area. She described the designation process and criteria as different from long-range planning. Although the HWUDP can help to inform any designation proceedings, it uses different criteria. The Code provides that any person may petition for water management area designation, and if the Commission received a petition, it would follow the process outlined in the Code. Designation proceedings can be initiated at any time and may proceed on a parallel path. Others commented that the 20-year planning horizon is too short. But the HWUDP plan goes way beyond the 20-year build out. In addition, others suggested better integration between land and water use, which is the objective of the HWUDP.

Ms. Ohye revised a reference for a rainfall map included in the HWUDP, a correction to reflect the transfer of private water system ownership from Puuwaawaa Water Works to Napuu Water, Inc., and comments to recognize the occurrence of high-level water in the Kiholo Aquifer System Area.

Recently, the CWRM received comments from the NPS. A copy was distributed to the Commissioners along with their submittal packet. NPS raised issues of recharge and sustainable yield and concerns regarding the impact of pumpage on the ecological resources in the Kaloko-Honokohau National Historical Park. Ms. Ohye reiterated that issues regarding sustainable yield and recharge are more appropriately addressed in the WRPP and ongoing measures and activities to address NPS' concern regarding pumping impacts. This most recent NPS letter raised an additional issue regarding authorized planned use. This issue had not been raised before. "Authorized planned use" is one of the criteria for designating a ground water management area under Part IV of the Code, Regulation of Water Use. "Authorized planned use" is not mentioned anywhere else in the Code. Part III of the Code, Hawaii Water Plan, which governs the Hawaii Water Plan states that the county water use and development plans shall be consistent with county general plan and zoning. The HWUDP is consistent in this regard. The NPS letter also referenced the Kona Community Development Plan (released in September 2008), after the planning for the HWUDP had been completed. The exhibit attached to the letter shows areas on a map of the Big Island, indicating where smart growth developments,

later evolving into transit oriented development, should proceed with refined zoning. The other significance of the mapped areas is that any amendments to the LUPAG (Land Use Pattern Allocation Guide) must be consistent with the General Plan. The Kona CDP can not be used to further refine or clarify demand estimates.

A graph from the HWUDP for the Keauhou Aquifer System Area show sustainable yield in relation to 20-year projected demands and full-build out of zoning and LUPAG, both with and without agricultural demands included. Projected 20-year demands to the year 2025 are about half of the current sustainable yield.

Commissioner Miike asked why the bottom line is almost straight when there is evidence of development for that area.

Ms. Ohye said the 20-year projections are based on past growth patterns.

Commissioner Miike stated that past growth patters do not necessarily predict what the future will look like.

My Ohye agreed that there is much uncertainty about how growth will proceed. Historical growth provides one measure with which to make assumptions about the future.

Commissioner Miike argued that the straight line was not commensurate with the projected development.

John Nishimura, a consultant with the project, clarified by saying that the straight line is based on population growth projections from the General Plan.

Commissioner Miike asked if that means population growth north of Kona will be modest in the future – an assumption that does not seem accurate. Commissioner Miike said that the bottom line does not appear to be in sync with development patterns.

Mr. Nishimura said that this is the state population projections for the area into 2025. He explained that the assumption was that any given study area would be comparable.

Ms. Ohye reiterated that the utility of the Water Use and Development Plans is to give a heads up to county land use planners so they can understand the implication of their land use policies.

Deputy Tam noted that this is also the area where the University of Hawaii and Hawaiian Homes propose to develop.

Mr. Nishimura commented that population projections for this area are not refined well enough to consider these projects.

Ms. Ohye discussed strategies recommended for the Aquifer System including transferring water from adjacent systems, wastewater re-use, the possibility of desalinization, development density control and aggressive water conservation. She said that these are guidelines and alternative strategies that decision makers can implement.

Ms. Ohye reminded the Commissioners of additional letters from the Department of Water Supply and testimony from the Department of Hawaiian Home Lands (DHHL) in support of the adoption.

Ms. Ohye summarized the current status of other Hawaii Water Plan components.

AMENDED RECOMMENDATION:

That the Commission:

Adopt the 2010 update to the Hawaii County Water Use and Development Plan, as amended to include the proposed addenda items:

1. Include reference to rainfall maps
2. Correct private water system ownership (Puuwaawaa Water Works to Napuaa Water, Inc.)
3. Recognize the occurrence of high-level water in the Kiholo Aquifer System Area.

(DISCUSSION)

Commissioner Miike asked for clarification on changing sustainable yields.

Ms. Ohye said that the plan is a "living document" based on the best available information to serve as a guide to the county and the Commission. She reiterated the need for these plans to be continually updated. It is not restricted to wholesale adoption. She referred to the Commission's 2000 action to update sustainable yields in Pearl Harbor following cessation of sugarcane plantation agriculture on overlying lands and the resultant decrease in return irrigation recharge.

Deputy Tam explained that the plan creates a framework that will get filled in over time.

Chairperson Aila, Jr. asked if any members of the public wished to testify on this matter.

Larry Beck, a representative from the county, stated that he recognizes the HWUDP as a building block and would like to see some finality to this update, while recognizing that future updates will need to be made.

Jim Greenwell, Chairman, Lanihau Properties, distributed testimony to the Commissioners in support of the update. He explained his family's relationship to the land. He believes the data is presenting good science. He spoke on behalf of his "neighbors" and asked that the Commission be careful and considerate for how these resources are managed and used.

Jonathan Scheuer, a consultant with the National Park Service, said he was happy to answer any questions regarding the letter submitted to the Commission.

Commissioner Miike asked Ms. Ohye if the same methodology for each sector was applied when setting sustainable yields.

Ms. Ohye said that the RAM (Robust Analytical Model) was used to determine and set sustainable yields for all aquifers on the Big Island. RAM uses a water budget approach and sets sustainable yield as a percentage of the recharge based on head levels.

Commissioner Miike asked if the same rate is applied even if the area has cultural resources.

Ms. Ohye said yes.

Commissioner Miike asked if staff could start to consider modifying sustainable yield when resource issues are at stake. He said that a decision regarding sustainable yield should also take into consideration the public trust.

Commissioner Miike asked if there was a freshwater lens under the basal lens.

Ms. Ohye said yes. There has been at least one well that have found fresh water at depth below salt water.

Commissioner Miike asked if the sustainable yield for those areas was based only on the upper lens.

Ms. Ohye said it is based on total recharge. She informed the Commission that they recently discovered that some of that recharge is being released under the salt water. The staff is not sure how the high level and basal lens are connected and discharge at the coast. Ms. Ohye hopes that the USGS can provide more insight into the hydrogeology of the region.

Commissioner Miike asked how far below the top lens is the deep water.

Tom Nance said that in one well it was encountered around 1,000 feet below sea level. In another well it was encountered quite a bit higher.

Commissioner Miike asked Mr. Nance how far down the top lens is.

Mr. Nance said that the basal lens is thinner than expected and there is a change in salinity. The transition zone goes for a couple hundred feet and fresh water is encountered about 32 feet above sea level. He said the sustainable yield was set before fresh water was found, based on the assumption that everything was basal.

Ms. Ohye remarked that the high level water (hundreds of feet above sea level) was discovered around the same time that the Commission adopted the first Water Resource Protection Plan (WRPP).

Peter Young said the discussion about sustainable yield is important in this case because it is a high level aquifer and not a basal lens. He said the formula is being misapplied in the Kona area and is not consistent. For a basal lens the formula is to use a factor of 44% versus a factor of 75% if it is high level water. Mr. Young said he hopes the Commission adopts the plan but also instructs staff to look into the reevaluation of sustainable yield for Kona. The WRPP specifically states that the HWUDP is a living document and should be updated. He made the point that until the issue of sustainable yield is resolved there will continue to be conflict on this issue. Mr. Young pointed to two factors that should warrant an amendment to sustainable yield, including

new and better information such as the discovery of high level water and the new recharge estimates, which are 77% greater than what was previously thought. Instead of 38 million gallons, it goes up to 113 million gallons. He reiterated his support for the adoption of the plan, but asked that staff apply a consistent sustainable yield in this area based on the best available information (e.g. USGS recharge estimates). Mr. Young showed the Commissioners a chart of the expected water demands for the Kona area and said that the recharge in the Keauhou Aquifer is 77% greater than the estimates from before.

Steve Bowles said he sent a letter expressing his concerns. He discussed the Kona Water Roundtable, an ad hoc group sponsored by the Water Department, as a method of exchanging and sharing scientific information and said it has proven to be extremely valuable in managing conflict. He stressed that it is probably the best way to bring the current field knowledge into the room and make sure it is up to date. For example, every year since the discovery of the high level region in 1994, more and more has been learned. However, one of the unknowns is how that water gets discharged. Mr. Bowles said that the sustainable yield models are best guesstimates and that the discussion groups can serve as a good method by which improvements can be made.

Chairperson Aila, Jr. asked if any other members of the public wished to make comments and asked the Commission members to vote to approve the recommendation as amended.

MOTION: (Miike/Balfour)
To approve the submittal as amended.
UNANIMOUSLY APPROVED.

F. UPDATES AND BRIEFINGS

1. Briefing on status of all active Ground Water Use Permits in the Waialua Aquifer System Ground Water Management Area, Oahu

STAFF PRESENTATION by: Charley Ice

Charley Ice (Commission on Water Resource Management) gave an overview of the CWRM's comprehensive review of all the water use permits in the Waialua Ground Water Management Area.

Mr. Ice summarized the history of the Waialua Ground Water Management Area including the current situation noting that the total allocations for Waialua are now at 30.311 million gallons. This, coupled with a sustainable yield of 25 mgd, means that there is an over-allocation of 5.311 mgd. Mr. Ice explained that most of the water use permits in the management area are for Waialua Sugar, the Board of Water Supply and Kamehameha Schools. Overall, the total ground water pumpage today is much lower than it was in years past. Currently the Honolulu Board of Water Supply (HBWS) Waialua Wells use 1.73 mgd. They requested an additional 0.27 mgd. Mr. Ice showed graphs of pumpage for the HBWS (Water Use Permit (WUP) 040 and WUP 041).

Beginning in 2008, the CWRM started its 20-year review as mandated by the Legislature. A consultant collected information from the CWRM files to ascertain where the CWRM is today versus 20 years ago. Mr. Ice said that the Waialua users were contacted in

writing and by telephone. The CWRM staff conducted field investigations when necessary. They discovered that a lot of the WUP had been transferred to new owners, except in the case of Dole Food Co., which has not had the WUP transferred to them. He noted that Dole Foods has been the least responsive to requests from the CWRM.

Mr. Ice talked about the future development plans for Haleiwa and showed a map of the various wells in the Waialua Ground Water Management Area, color coded according to user (HBWS, KSBE, Dole, and Other). He said that Kamehameha Schools (KSBE) is in the process of converting some of the ditches into pipelines and has spent close to $10 million in improvements. Mr. Ice said that the CWRM is aware that KSBE expects to use the full allocation in the future, which is well above their actual pumpage today.

He went on to show pictures of the various pump stations in the area, including those owned by Dole (e.g. pump 2).

Commissioner Miike asked whether the law requires a new owner to obtain a new permit.

Deputy Tam responded by saying that the permits can be transferred so long as the use, location, and amount remain the same.

Commissioner Miike said the CWRM should start revoking permits from users who are not using their wells.

Deputy Tam told the Commission that due to staff reductions water use reporting must be done manually. A new electronic reporting system should alleviate some of those concerns.

Commissioner Miike asked what the consequence is of failing to report a change of ownership.

Deputy Tam said that once the electronic reporting system is up and running the CWRM will have the ability to do enforcement.

Mr. Ice showed pictures of wells in the Waialua Ground Water Management Area.

Deputy Tam asked if anyone knew the number of unused wells that currently need to be sealed. It is likely a very large number.

Mr. Ice talked at length about other small users, including Kawamata (WUP 43), Lopez (WUP 353), Poamoho Ventures (WUP 175), Gora (WUP 898) BG Farm (WUP 455) and Jewett (WUP 732).

Chairperson Aila, Jr. asked if there were any questions for staff and if any members of the public wished to testify.

D. STREAM PROTECTION AND MANAGEMENT

1. Proposed Declatory Ruling No. DEC-ADM11-S12, Amending Declaratory Ruling No. DEC-ADM03-S9 to Increase the Volume of Material to be Removed to Less than 5,000 Cubic Yards and the Duration of Stream Clearing Work to Less Than 30

Days for Stream Channel Alteration Permits for the State Department of Transportation, Highways Division, Statewide

SUBMITTAL PRESENTATION by: Robert Chong

Robert Chong (Commission on Water Resource Management) described the proposed declaratory ruling for the Department of Transportation (DOT) that amends an existing declaratory ruling, approved by the Commission in 2003. The proposed change is to increase the amount of debris and material to be removed from 500 cubic yards to 5,000 cubic yards, as well as extend the time of completion from two weeks to less than 30 days.

RECOMMENDATION:

That the Commission:

1. Amend declaratory ruling, DEC-ADM03-S9, to allow Chairperson approval of DOT stream clearing activities that remove less than 5,000 cubic yards and take less than 30 days to complete according to the terms and conditions listed herein. The new declaratory ruling to supersede DEC-ADM03-S9 will be DEC-ADM11-S12.

(DISCUSSION)

Commissioner Miike asked why this is being done.

Mr. Chong responded that it is intended to increase the amount of debris DOT may remove for the declaratory ruling so the Chair can approve a Stream Alteration Permit for DOT.

Commissioner Miike asked if this was statewide.

Mr. Chong said yes.

Commissioner Fujiwara asked if this is only for DOT.

Mr. Chong responded yes.

Commissioner Fujiwara asked why it could not be expanded to public works for all the counties.

Mr. Chong said separate declaratory rulings exist for the county.

Commissioner Balfour asked if it was the same for the counties.

Mr. Chong answered yes the quantities are the same.

Commissioner Fujiwara asked Mr. Chong to clarify if he means that the quantities for public works are less than 5,000 cubic yards.

Mr. Chong stated that the quantities for the county are less than 500 cubic yards and less than two weeks.

Chairperson Aila, Jr. asked Commissioner Fujiwara if he felt there was a need at the county level.

Commissioner Fujiwara explained that there is a need and cited an example from a couple years prior. He mentioned that a lot of the jobs for public works on intermittent streams are to clear out debris. Commissioner Fujiwara went on to say that if the debris is not cleared it ends up in the ocean. Therefore, it does not make sense to have to go the extra mile to get a permit, citing that the Department of Health has in the past required a public hearing.

Commissioner Miike asked how the 500 cubic yard quantity was determined.

Mr. Chong said that staff conducted a study of previous stream cleaning projects to arrive at that amount.

Commissioner Fujiwara mentioned the problem with public works is that they let it go for so long that when they have to clear it, it becomes a problem.

Commissioner Balfour said he agrees with Commissioner Fujiwara, also citing the long drawn out process of obtaining a permit. He said that Chairperson Aila, Jr. has agreed to meet with him next year (2012) to discuss how this process can be streamlined.

Commissioner Fuddy spoke up in defense of the Department of Health and the Clean Water Branch saying that there is no recommendation to notify someone about discharges.

Mr. Chong said that as part of the standard conditions, the applicant must a prepare best management practices plan and obtain water quality certification.

Deputy Tam asked the Commissioners if they wanted staff to bring a similar declaratory ruling for the counties changing the limits from 500 to 5,000 cubic yards to the Commission. Most of the counties have smaller amounts.

Chairperson Aila, Jr. asked if the Commission should take a look at what an appropriate volume should be.

Mr. Chong said there is only a declaratory ruling for City & County of Honolulu.

Deputy Tam said they would investigate further and come back to the Commission with their recommendations.

No one from the public wished to testify.

MOTION: (Fujiwara/Miike)
To approve the staff submittal.
UNANIMOUSLY APPROVED.

G. ADMINISTRATIVE OTHER BUSINESS

Deputy Tam wished everyone a happy and safe holiday and thanked the staff for their hard work.

H. NEXT COMMISSION MEETINGS (TENTATIVE)

1. January 11, 2012

Chairperson Aila adjourned the meeting at 11:38 a.m.

Respectfully submitted,

KATIE ERSBAK

APPROVED AS SUBMITTED:

WILLIAM M. TAM
Deputy Director