

MINUTES
FOR THE MEETING OF THE
COMMISSION ON WATER RESOURCE MANAGEMENT

DATE: November 15, 2016
TIME: 10:00 am
PLACE: DLNR Board Room
Kalanimoku Bldg.
1151 Punchbowl St., Room 132
Honolulu, Hawaii 96813

Chair Case called the meeting of the Commission on Water Resource Management to order at 10:05 am. The following were in attendance:

MEMBERS: Ms. Suzanne Case, Mr. William Balfour, Jr., Dr. Kamana Beamer, Ph.D., Mr. Michael Buck, Mr. Neil J. Hannahs, Mr. Milton Pavao

DEPARTMENT OF HEALTH'S DESIGNEE: Mr. Keith Kawaoka

STAFF: Rebecca Alakai, Neal Fujii, Roy Hardy, Lenore Ohye, Dean Uyeno

COUNSEL: Linda Chow, Esq.

OTHERS: Bianca Isaki (NPS), Jon Nishimura (Fukunaga & Associates), Nancy Nishikawa (CH2M), Jason Kage (CH2M), Lauren Doo (Akinaka & Associates), Michael Shibata (QLT)

A. ACTION ITEMS

1. Application for a Stream Channel Alteration Permit (SCAP.4469.3) Hālonā Street Bridge Replacement, State Department of Transportation, Kapālama Stream, Honolulu, O'ahu, TMK: (1) 1-6-006

STAFF PRESENTATION by: Rebecca Alakai

This project is a stream channel alteration permit for Hālonā Street Bridge. It is in Kalihi about a mile from the ocean. The bridge does not meet current safety standards and will be replaced with a new three-span precast bridge. The four existing piers will be removed and replaced with two piers that will align with the two existing and adjacent H-1 bridge piers. Kapalama Stream is tidally influenced and can be up to one (1) foot above sea level during high tide. A biological assessment for the project reach found that, although the water was turbid, striped mullet, barracuda juveniles, poeciliids and tilapia were observed. The 2014 State of Hawaii Water Quality Monitoring and Assessment Report lists Kapalama Stream as impaired. The Department of Transportation completed an 800-page Best Management Practices Practitioners Guide associated with this project. The bridge surrounding has some lava rock wall and the stream channel is a natural streambed. The project is expected to be completed in approximately one year.

RECOMMENDATION

That the Commission:

1. Approve the Stream Channel Alteration Permit (SCAP.4469.3) application to demolish the Hālonā Street Bridge and replace it with a new three-span precast bridge subject to the standard conditions in Exhibit 3.

Commissioner Pavao said the bridge appears to be a small bridge, why one year?

Jason Kage, CH2M, explained that the year is for construction activities. During construction, a portion of the existing bridge will remain open and CH2M will need to manage pedestrian traffic. The mauka side of the bridge will be removed until construction begins and the remaining bridge will be removed once the new section is installed and operational. One year is conservative as work will occur only during normal work hours.

Commissioner Beamer asked how is the cofferdam going to move the water away from the stream?

Mr. Kage said the cofferdam will be set up around the existing piers so that water can be pumped out where the work is being done. The channel around the cofferdam will still flow. When the cofferdams are removed, the stream will be able to flow again.

Commissioner Hannahs asked if the vegetation is native vegetation.

Ms. Alakai believed there was no vegetation. In response to Commissioner Hannahs' question regarding the sentence on page 3, "Revegetate disturbed areas as soon as possible after construction" she mentioned that this is standard language and is not applicable to this site.

Commissioner Hannahs asked what is the source of the impairment?

Ms. Alakai said it is a highly urbanized area.

Commissioner Hannahs asked what will the effects be on the water quality of the stream?

Ms. Alakai deferred to the Department of Health regarding water quality issues.

**MOTION: (Pavao / Hannahs)
To approve the staff recommendation.
UNANIMOUSLY APPROVED.**

B. PRESENTATIONS AND UPDATES

1. County of Hawaii Water Use and Development Plan Update for the Keauhou Aquifer System Area Phase 2

Lenore Ohye explained that Item B.1. is a briefing on the Keauhou Water Use and Development Plan Phase 2 Update. The Commission approved Phase 1. Phase 1 projected authorized planned use for the Keauhou area was approximately 28 mgd. Phase 2 is the County's Plan to meet that authorized planned use demand. Subject to any comments, the Plan will be presented to the County Water Board and County Council for adoption and approval. Should the plan be adopted by the County, it will be resubmitted to the Commission for adoption following a 90-day public hearing process. She introduced Jon Nishimura (Fukunaga & Associates), and Keith Okamoto and Kurt Inaba (Department of Water Supply).

Commissioner Buck asked how this document will provide the Commission with additional information to make a decision on whether to designate the Keauhou Aquifer System Area as a water management area.

Ms. Ohye said this document is one of several milestones that the Commission ordered to obtain more information before it made a decision on the designation petition for the Keauhou Aquifer System Area. The objective of the Hawaii Water Plan's Water Use and Development Plan is to show that the Counties have a plan to meet future demands that will not negatively impact public trust resources and uses. The Water Use and Development Plan projects long-term needs and includes the Counties strategies to meet it within the limits of supply that the Commission has set in terms of streamflows and sustainable yields.

Roy Hardy stated that the Commission requested information regarding where wells will be located and this plan identifies the infrastructure.

Commissioner Beamer asked if the County is accepting the term authorized planned use.

Ms. Ohye said the County's plan references anticipated water demands. The Commission has established that authorized planned use and anticipated water demand are synonymous. The County does not reference authorized planned use, however it is a legal term of the Water Code.

Jon Nishimura, Fukunaga & Associates, gave a powerpoint presentation of the Status Update and Preliminary Findings for the Water Use & Development Plan Update, Keauhou Aquifer System.

Key goals included providing guidance to ensure that future water needs of the County are met, while preserving the integrity of the island's water resources and also to ensure that sustainable water resources are integrated into the formulation and development of land use policies by the County.

Guiding Principles apply the Public Trust Doctrine – waters of the State are held for the benefit of the citizens of the State. Water is a most precious resource & shall be used wisely – to be conserved; not wasted. Highest quality water shall be used for the community's highest beneficial uses. Lower quality water (reuse water, surface water, brackish water) should be used whenever feasible.

The County Water Use and Development Plans are derived from other parts of the Plan that are in different levels of detail and development. It is using the best available

information and is a work in progress. The reference to the link for the State Water Plan: <http://dlnr.hawaii.gov/cwrm/planning/hiwaterplan/>

The reference to the link for the Water Use & Development Plan: <http://dlnr.hawaii.gov/cwrm/planning/hiwaterplan/countyplans/>

Hawaii County Water Use & Development Plan Background: 1) Updated original Water Use and Development Plan prepared in 1990; 2) Initiated in 2004; 3) Final Draft Plan 2010; 4) Adopted by County Ordinance in February 2011; and 5) Accepted by the Commission on Water Resource Management in November 2011.

Hawaii County Water Use & Development Plan – Current Update: 1) Assessment of actual water use and anticipated demands; 2) Incorporation of environmental and cultural issues; 3) Source/infrastructure development program & meeting anticipated demands; 4) Non-potable source strategies; 5) Next steps.

[Commissioner Pavao requested a recess at 10:25 am. The meeting was reconvened at 10:38 am.]

A. ACTION ITEMS

2. Request to Delegate Authority to the Chairperson to Enter into a Joint Funding Agreement with U.S. Geological Survey for the Second Phase of a Cooperative Study to Estimate Low-Flow Characteristics for Streams in Hawai‘i

Presentation by USGS on “Natural Low-Flow Characteristics for Streams on Kauai, Oahu, Molokai, Maui, and Hawaii: Estimates at existing gaged sites and a tool for providing estimates at ungaged sites”

STAFF PRESENTATION by: Dean Uyeno

This submittal is to request that the Commission delegate authority to the Chairperson to enter into a joint funding agreement with the U.S. Geological Survey (USGS) for the second phase of a cooperative study on the low flow characteristics for Streams in Hawaii. It is an essential component to moving forward for a lot of areas that the Commission does not have stream flow data. The project first started in March 2013 when the Commission authorized the Chairperson to enter into a Joint Funding Agreement (JFA) to begin Phase 1 of the study. The Commission funded a quarter of that study which was co-funded by the USGS, the Department of Hawaiian Home Lands (DHHL) and the Office of Hawaiian Affairs (OHA). On April 1, 2016, the USGS initiated Phase 2 of the study, by entering into a JFA with OHA for \$105,000. On August 3, 2016 a report from Phase 1 was issued and that report is available online. The total cost for Phase 2 is budgeted at \$2,327,500 (includes the JFA between USGS and OHA for \$105,000), with the proposed JFA between the USGS and Commission budgeted at \$2,222,500. Phase 2 is a 5-year study and Chui Ling Cheng from the USGS will explain what will be happening in Phase 2. Under Hawaii Revised Statutes §343-5(a), the use of state funds triggers the need for an Environmental Assessment (EA). The proposed action is exempt from the EA based on Hawaii Administrative Rule §11-200-8(a)(5) and the Exemption List for the Department of Land and Natural Resources approved by the Environmental Council on June 5, 2015 that states “basic data collection, research,

experimental management and resource evaluation activities which do not result in a serious or major disturbance to an environmental resource.”

RECOMMENDATIONS

Staff recommends that the Commission:

1. Delegate authority to the Chairperson to enter into a Joint Funding Agreement between the Commission and the U.S. Geological Survey to conduct ~~Phase 1~~ Phase 2 of a Study on estimating low-flow characteristics for streams in Hawai‘i, and to approve funding not to exceed \$1,500,000 to complete the Study. Commission funding will be from general or special funds or a combination of both, subject to the availability of funding. This Joint Fund Agreement is for the remainder of Phase 2 in the amount of \$2,222,500, shared by the Commission (\$1,500,000) and the U.S. Geological Survey (\$722,500).
2. Delegate authority to the Chairperson to make such further amendments or modifications of the contract agreement (consistent with the terms set forth above) as may be necessary to accomplish the goals described here, provided that any amendment or modification does not require additional Commission funding.
3. Find and determine that the work is exempt from the requirement to prepare an EA.

Commissioner Buck asked if this was a Legislative appropriation. He understands the need for the data, however he believes it is difficult to commit \$2,222,500 beyond the current budget period.

Mr. Uyeno explained that Phase 1 included background research into the existing data that was collected and an analysis to identify where there were gaps in the data. Phase 2 is going to examine the gaps via gaging stations which will involve field work which is the primary reason for the large cost.

Commissioner Buck asked if the Commission has to wait to 2021 to get any information.

Mr. Uyeno said, “yes,” however the Commission has been trying to focus on priority areas for studying instream flow standards which is why it has been doing site specific work with the USGS. Last year a low flow study for West Maui was completed and USGS is currently doing a study for southeast Kauai. As issues arise in East Maui, Central Maui and Na Wai Eha, the Commission has embarked with the USGS on site specific studies for these areas. Phase 2 focuses on other areas where the Commission does not have any data.

Commissioner Buck asked by utilizing this technology, in 2021 will the Commission have at least modeled all the streams including all the low flow streams?

Mr. Uyeno said yes, for the 5 major islands.

Commissioner Balfour questioned the different methods used to arrive at the conclusion as well as the statistical data. He remarked on the \$2,222,500 cost and asked who will be undertaking the project?

Mr. Uyeno replied, "USGS."

Chui Ling Cheng, USGS, explained that this study looks at quantifying baseline streamflow conditions for the 5 major Hawaiian Islands. Baseline conditions mean looking at natural flows or flows that are not diverted. Low flow conditions would be flows lower than the median flow. This study is divided into 2 phases. Ms. Cheng summarized the Phase 1 study results. Knowing the quantity of water is very important especially during low flow conditions because during low flow conditions not enough water is available to support these different uses. In addition to satisfying the State's needs for establishing instream flow standards, low flows are also very useful for identifying critical areas for further study for determining biological flows as well as for cultural uses to inform water management restoration projects and to support management decisions. Many of the USGS low flow studies are site specific that target specific areas of the islands, particularly water dispute areas. Many of the studies look at the effects of surface water diversions and some of the studies look at native habitat availability for the native fish fauna. However, a few studies look at low flows on a statewide basis. The goal of Phase 1 is to apply estimates of natural low flows for streams with existing data at gaged locations and those estimates are going to be available in StreamStats. The goal of Phase 2 is to develop a tool to estimate natural low flows for streams at ungaged sites or sites where there is no data available. This tool will be incorporated into StreamStats to allow the computation of low flows at the ungaged sites. The major difference between the 2 Phases is Phase 1 contains no field data collection. It is compiling all the archived data, historical files and paper files and putting that into the USGS online database which is available to the public. Phase 2 will develop a tool that will estimate flows at sites where no data is available. A major component in Phase 2 is the field work. StreamStats is similar to Google Maps. It is an online GIS database based on quad maps. StreamStats will be able to compute flow characteristics at a specific stream location. The scope of Phase 1 included compilation of over 6,000 streamflow measurements and 1,000 measurement sites.

Phase 1 used two types of measurement sites to produce low flow statistics, Q50 and Q95. The first measurement site is a continuous record gaging station that produced a continuous record of flow at a particular location. The second type of measurement site is a partial record station. There are no gaging stations at this site. A site is selected and measurements are taken repeatedly over a period of time. If there are 10 measurements at a particular partial record site, it would correlate the 10 measurements with the same day discharge at the continuous record station. By building a relation based on that, that relation is used to estimate the Q50 at the partial record site. The partial record sites would be sites where low flows need to be determined.

Commissioner Buck asked when the model estimates are based on this correlation, what is the reliability and standard deviation?

Ms. Cheng explained that to contain the variability it wants to measure the partial record site during Q50 and Q95 flow conditions. The low flow conditions are made during stable flow conditions to reduce the data variability.

Commissioner Buck asked how reliable are the estimates?

Ms. Cheng said for Phase 1 the correlation factor is .8. The models explain 80% of the variability in the data. In Phase 1 it is looking at .8 as an acceptable value.

Commissioner Buck asked if USGS is hoping that the correlation factor of Phase 2 will be .8 as well?

Ms. Cheng said it is difficult to know at this point because it is looking at low flows and low flows are being controlled by groundwater and the geology is very difficult to quantify.

Commissioner Buck asked what is the value of obtaining estimates on every stream versus collecting data from high priority streams?

Ms. Cheng said in the long term, a statewide study will cost less than a multiple site specific low flow analysis study.

Commissioner Beamer commented that although he was not familiar with StreamStats, he assumed it was the industry standard for assessing low flow and other stream characteristics.

Ms. Cheng said StreamStats calculates streamflow characteristics for a selected site along a stream.

Chair Case asked staff to provide the Commissioners with the links to the Phase 1 Scientific Investigation Report and StreamStats.

Ms. Cheng explained that StreamStats is a geographic information system with USGS gaging stations and users will have the option of viewing data collection station reports which include information about the station, location, gage name, gage description, basic characteristics with years of record for precipitation, soil data and peak flow statistics and as part of this study, it will be able to incorporate the low flow characteristics in this report as well. The goal of Phase 2 is to develop a tool to estimate natural low flows for streams at ungauged sites that have absolutely no data and this tool is going to be incorporated into StreamStats. A major component of Phase 2 is data collection. The first part is reconnaissance, understanding how the water is being routed in between watersheds and throughout the island. The second part of the field data collection is taking the measurements, 10-12 measurements per site. The third part of the field data collection involves conducting seepage runs.

Commissioner Buck asked if the measurements will be one time measurements with no permanent gages.

Ms. Cheng said no permanent gages and explained that the measurements will be made at the same site, 10-12 times because that is how many measurements will be needed to create a correlation.

Commissioner Buck asked if the sites are permanent sites or random sites.

Ms. Cheng said the sites will depend on accessibility.

Commissioner Buck asked if there were difficulties obtaining permission from private landowners to access their diversions.

Ms. Cheng said there have been difficulties but they were able to work it out.

Mr. Uyeno clarified that measurements will be made repeatedly, 10-12 times, at a particular location. He asked how often will the seepage runs be repeated?

Ms. Cheng said seepage runs will be done once. Seepage runs will be focused on areas where no geological information is available.

Mr. Uyeno said that is a huge undertaking and a big component of what is unknown, are streams gaining or losing water in those areas.

Commissioner Buck asked if it is more feasible to test StreamStats with a smaller area.

Mr. Uyeno said the Commission is mandated to set instream flow standards statewide. This study focuses on areas that do not have site specific studies.

Commissioner Buck believes this study will bring valuable information to the Commission regarding the relationship between ground and surface water and whether or not groundwater is contributing to the low flow instream use.

Commissioner Hannahs asked what is the Commission's mandate?

Mr. Uyeno replied to establish instream flow standards statewide.

Commissioner Hannahs asked what is the Commission's alternative plan for meeting this mandate?

Mr. Uyeno said the instream flow standards are status quo. He explained that establishing instream flow standards are becoming more problematic as irrigation systems/sugar plantations close and new use applications are submitted.

Chair Case believed that the Commission does not have meaningful instream flow standards. Therefore, this study will take the available data and develop a statistical method to estimate the low flow standards on all of the other streams.

Commissioner Buck's concern is the allocation of the resources. Is it better to invest in permanent gaging stations for high priority streams?

Steve Anthony, Director, USGS Water Science Center, acknowledged Commissioner Buck's concerns and said with respect to additional stream gaging through this project, it is going to be taking measurements at additional sites and it will attempt to identify the important data gaps. With the funding for this project, there is a limited time period under which measurements will be made at the partial record site. A separate project is underway with support from the Commission to evaluate the data collection needs in the State. It cannot afford to have a continuous stream gage at every location where someone wants stream flow information. One of the lower cost approaches is to establish partial record sites. The goal is to have a monitoring network that will incorporate both

continuous record monitoring sites and partial record monitoring sites to allow for more information over much more broader areas of the State without investing \$25,000 a year for continuous flow monitoring.

Commissioner Buck asked if a 5 year study for every island is necessary to determine the validity and quality of StreamStats.

Mr. Anthony said one of the challenges staff faces is the question of what is the flow at a particular location on a stream. This study will estimate flow characteristics on a particular stream at a specific location. This tool will facilitate the process of providing information on unengaged sites.

Commissioner Buck asked if it was necessary to monitor all the unengaged streams over a 5-year period.

Mr. Anthony responded that in order to come up with statistical confidence in the estimates, it needs to capture a broader range of the spectrum.

Commissioner Buck commented that the Phase 2 map of Kauai is not going to correlate with each other at all.

Mr. Anthony replied that the division that is used in the estimates for peak flow StreamStats is based on Windward versus Leeward, it is not based on Oahu versus Kauai.

Ms. Cheng said it is anticipating the Windward and Leeward regions for this study is going to be more complicated as the study will be based on geology by island, the similarities among islands and because it does not have a lot of data it will be doing some exploratory analysis. In looking at all the islands it can come up with similarities and possibly regions that will cross islands and that could tell a different story about what methods can be used, therefore it is beneficial for a statewide study versus a specific island or region study. The deliverables in Phase 2 include a USGS scientific investigation report and the StreamStats application. StreamStats will delineate the basin and calculate basic characteristics for a particular basin. It will also provide low flow statistics as part of the study as well as provide error estimates.

Commissioner Buck commented that the estimates could easily be 50% off.

Mr. Anthony said that the variability in a continuous record stream gage is almost 20%. There is variability because quantifying hydrology in a stream is not as easy as monitoring flow in a pipe.

Commissioner Buck apologized and said his concern is the allocation of resources.

Chair Case said the Commission advocated for this study and although the Commission may need additional data this is an imperfect but meaningful way of measuring in a complex and incomplete system that is outdated.

Commissioner Buck supported the USGS's efforts but hoped it could focus the study on high priority areas.

Mr. Anthony said the USGS is working with hydrologists in its headquarters office and evaluating different statistical approaches that will resolve to a more informed decision to collect data and ensure it is doing it in the right places for the right reasons.

Commissioner Buck asked if state funds will be required to fund the monitoring network.

Mr. Anthony said there were many other state agencies, county agencies and federal agencies that collaborated with the USGS and it did focus on getting support from the Legislature. He understands Commissioner Buck's perspective as the Commission is now being asked to fund this study.

Commissioner Hannahs asked what are the consequences of not having a more precise tool?

Ms. Cheng said the Commission would be setting an instream flow standard without any knowledge about what the flow in the stream is. This study explains 50% of the variability and the other 50% is unknown. It at least gives the Commission a range of numbers.

Commissioner Hannahs believes if the results of this study translate to implications for crops, jobs or the economy then it can gage the value of the investment against the return on the investment.

Mr. Anthony said an example of where there will be a good return on investment with respect to staff time is as part of the fieldwork will be done, a lot of knowledge will be gained on the diversion systems and the current status of it as it relates to the water that is being taken. As seepage runs are done along the length of the stream, it will be gaining knowledge of where the stream is gaining and losing water and that is time saved by staff that has to go out when they receive an inquiry about what is going on in a particular stream with respect to a diversion that the plantation has abandoned.

Chair Case asked the USGS to report back to the Commission with its preliminary results.

Mr. Anthony agreed that it would provide interval briefings on its progress. It will report back on what is the appropriate statistical method to use as well as where it is going to be making additional measurements and whether they are in key places that meet the needs of the project and also meet the needs of the stakeholders.

Ms. Cheng said it is currently looking at different methods as well as high priority areas.

Commissioner Hannahs asked if this is the most cost effective option.

Mr. Uyeno said as staff attempts to set instream flow standards in certain areas there is always the question of why doesn't the Commission do more? He understands Commissioner Buck's concern about paying for gaging stations in priority areas, however the Commission is also being asked to install gaging stations where instream flow standards have been set for monitoring purposes. There are site specific studies that the Commission is undertaking at an approximate cost of \$700,000. The Commission receives stream diversion works permit applications and it is difficult to do an adequate

analysis because it has minimal streamflow data. This study takes advantage of new GIS technologies to obtain better estimates on median streamflows.

Commissioner Pavao asked if this is a Legislative appropriation.

Chair Case said the Commission did advocate for stream studies.

Commissioner Beamer acknowledged Commissioner Buck’s concerns as well as commented that the Commission will be in a much better situation to have these estimates across Hawaii and he believes it could be a good tool for the future.

Commissioner Hannahs commended the Chairperson and the Department for taking responsibility to set instream flow standards by investing in this study.

Chair Case said she is very excited about the opportunity to have a tool for meaningful estimates statewide to set instream flow standards even if it is imperfect.

Ms. Cheng said the timeframe for this study, to get estimates statewide, is 5 years. The timeframe for site specific studies may be upwards of 20 years.

In response to Commissioner Beamer’s question regarding updating the Commission, Mr. Anthony noted that the USGS will be interacting with staff at least quarterly. An agenda item update before the Commission will be determined at a later date.

Mr. Uyeno noted a correction to recommendation 1., Phase 1 should read, “Phase 2”.

**MOTION: (Buck / Beamer)
To approve the staff recommendations as amended.
UNANIMOUSLY APPROVED.**

The meeting was adjourned at 12:44 pm.

Respectfully submitted,


KATHY YODA

APPROVED AS SUBMITTED:


JEFFREY T. PEARSON, P.E.
Deputy Director