

MINUTES
DEPARTMENT OF WATER SUPPLY
COUNTY OF HAWAI‘I
WATER BOARD MEETING
December 17, 2019

Hilo Operations Center Conference Room, 889 Leilani Street, Hilo, Hawai‘i

MEMBERS PRESENT: Mr. William Boswell, Jr., Chairperson
Mr. Eric Scicchitano, Vice-Chairperson
Mr. Bryant Balog
Mr. David De Luz, Jr.
Mr. Nestorio Domingo
Mr. Leningrad Elarionoff
Ms. Julie Hugo (10:25 a.m.)
Mr. Keith K. Okamoto, Manager-Chief Engineer, Department of Water Supply (ex-officio member)

ABSENT: Mr. Zendo Kern, Water Board Member
Mr. Kenneth Sugai, Water Board Member
Director, Planning Department (ex-officio member)
Director, Department of Public Works (ex-officio member)

OTHERS PRESENT: Ms. Diana Mellon-Lacey, Deputy Corporation Counsel
Mr. Kelly Kimball, Brown and Caldwell
Mr. Dean Nakano, Brown and Caldwell
Ms. Michele Sorensen, Brown and Caldwell
Mr. Kaleo Salvador, Jas. W. Glover, Ltd.
Mr. Michael Chung, Heide & Cook
Mr. Shane Vasconcellos, Heide & Cook
Mr. Riley Smith
Mr. Benjamin Ney
Mr. Fred Camero, Beylik Drilling
Mr. Jeff Zimpfer, National Park Service (10:02 a.m.)

DEPARTMENT OF
WATER SUPPLY STAFF: Mr. Kawika Uyehara, Deputy
Mr. Kurt Inaba, Engineering Division Head
Mr. Richard Sumada, Waterworks Controller
Mr. Daryl Ikeda, Chief of Operations
Mr. Clyde Young, Operations Division
Mr. Eric Takamoto, Operations Division
Mr. Warren Ching, Energy Management Analyst

- 1) CALL TO ORDER – Chairperson Boswell called the meeting to order at 10:00 a.m.
- 2) STATEMENTS FROM THE PUBLIC - None

3) APPROVAL OF MINUTES

The Secretary announced a change to be made to Page 8, 6th paragraph down, where it begins “Mr. Ching continued...” Cross out “and the difference and goes into” and after “internal use,” insert the words “which is.”

Chairperson Boswell noted that the Minutes would be amended to read as follows: **“Mr. Ching continued his report with regard to water loss. The diagram shows overall production, consumption, internal use, which is authorized but not metered on the customer side, and then real losses (leaks).”**

ACTION: Mr. De Luz so moved for approval of the Minutes, as amended; seconded by Mr. Scicchitano and carried unanimously.

4) APPROVAL OF ADDENDUM AND/OR SUPPLEMENTAL AGENDA - None

5) POWER COST CHARGE:

Departmental power costs from all power sources decreased since the last Power Cost Charge rate was determined. The Department proposes to decrease the Power Cost Charge from \$2.00 to \$1.90 per thousand gallons as a result of this decrease. Power cost charges over the past two years were as follows:

<u>Effective</u>	<u>PCC</u>
October 1, 2019	\$2.00
June 1, 2019	\$1.96
February 1, 2019	\$1.89
August 1, 2018	\$1.94
April 1, 2018	\$1.88
December 1, 2017	\$1.62

Before the Power Cost Charge is changed, a Public Hearing should be scheduled to accept public testimony.

The Manager-Chief Engineer recommended that the Board approve holding a Public Hearing on January 28, 2020, at 9:45 a.m., to receive testimony on decreasing the Power Cost Charge from \$2.00 to \$1.90 effective February 1, 2020.

ACTION: Mr. De Luz moved for approval of the recommendation; seconded by Mr. Scicchitano and carried unanimously by voice vote.

6) PRESENTATION BY BROWN AND CALDWELL ON JOB NO. 2017-1061, POWER SYSTEM STUDIES:

Brown and Caldwell did a presentation of their findings to date for North Kona high level water deepwells.

Mr. Kelly Kimball, P.E., of Brown and Caldwell introduced their technical advisors, Ms. Michele Sorensen, P.E., and Mr. Dean Nakano, and went through a follow-up presentation related to the North Kona well assessments.

They had two different people working on this. One was a subject matter expert in Denver and another in Davis, California, and other mechanical and electrical personnel contributed. Ms. Sorensen is based in Waimea, and Mr. Nakano and Mr. Peter Ono are both on Oahu.

Scope of Services: They were charged to look at seven different sites in the North Kona area: Honokōhau, Hualālai, Keopu, QLT, Wai‘aha, Palani, and Kalaoa, to look at the wells from the standpoint of determining the likely causes of failure for the systems. The expected outcome was addressing these likely causes of failure to promote increased service life for the existing equipment, which was a very iterative process of elimination and improvement.

Mechanical Findings: There were four different major findings and failure modes, essentially bearings, seals, well casing drift, and hydraulic transient. He showed a slide of a deepwell submersible pump. The top is the pump assembly, essentially rotating parts that physically move the water to the surface. In the middle, you have a suction inlet. There is a coupling that couples the upper pump assembly to the motor assembly, and then the thrust bearing. The submersible motor itself sits at the bottom of the well; and the thrust bearing, which is essentially a compensator for force, sits at the bottom.

Major mechanical failure points that were observed: There were some cases with seal failures. There are two major seals on the motor assembly itself. One is the motor shaft seal which prevents environmental factors from getting into the motor such as sand and dirt. There is a cable seal on the upper portion which essentially is the electrical connection and keeps water and other environmental things out. The second part is bearing failure. The major element, as mentioned previously, is the thrust bearing that sits at the bottom of the pump assembly. What a thrust bearing does is it is essentially a compensator for when the motor spins up and the pump assembly spins up to pump water to the surface. These pump assemblies are anywhere from 1,500 to 2,000 feet deep in the North Kona area. The thrust bearing operates with a stationary pivot shoe that sits on the bottom with a rotating element on top. As it spins up very quickly, it hydroplanes so there is a water cushion between the two devices. As it pumps these tons of water to the surface, it is compensating for the forces that are being exerted on it. It is a major piece of equipment. One of the major failure modes for thrust bearings is the boiling of the water wedge, so essentially if your pump and motor assembly get too hot, it can boil the water which causes no cushion, carbon discs grind together, and catastrophic failure results. Motor overheating: Shown in the presentation is a diagram of the motor and pump assembly and the well casing. Typically, there is a blank casing section and then a perforation section of the casing itself. In a correct cooling mode, typically the motor would be set above the perforations in the well casing. What that allows is groundwater to enter horizontally and then it passes by the motor which cools it by convection. Sometimes it is required to put the pump and motor assembly in the perforations because standing water levels change over time. That puts you in a situation where water is entering the perforations horizontally to the suction inlet and is not being passed by the motor, resulting in reduced cooling effects.

Mr. De Luz asked if there is a sensor that would indicate when the level of the water changes and if there is a capacity to move it up or down.

Mr. Kimball asked Mr. Inaba if there was a permanent device installed down-hole.

Mr. Inaba replied there was but it had to be pulled out to read it. There are regular water level sensors. The level does not move that quickly.

The Manager-Chief Engineer added that it only moves quickly during actual pumping when there is drawdown. His understanding is every time there is a pump repair, the water level is verified so that when equipment is put back down, we know that it is down deep enough below static water level and that accounts for the historical drawdown. Basically we are not pumping air when we turn it on.

Mr. De Luz asked if there is any technology that is part of the casing that has some type of sensor in it to measure the water levels.

The Manager-Chief Engineer replied that there are water level indicators--whether it be pressure transducers or the old school air bubbler. The air bubbler is basically a tool but it gets brittle over time causing it to break apart and fall down the hole. Transducers carry a similar risk. If the casing is not perfectly straight, it might get abraded as it goes down. There are transducers on some of the wells.

Mr. Kimball stated that there is some additional instrumentation and devices they recommend to be installed down hole to give better data about changing conditions, motor temperature, etc.

Chairperson Boswell asked if the diagram shown on the right (in the Motor Overheating slide) was the optimal installation and the condition after the fact would be the one on the left.

Mr. Kimball replied that it is not always possible to be in the correct cooling mode, but there are some things you can do to help alleviate it if you find yourself in that situation. He continued discussion on flow inducer shrouds. They can be installed around the motor if it needs to be installed in the perforation section. This is a sheath that goes around the pump itself and allows groundwater to intake horizontally, vertically down to the bottom, around the shroud, past the motor, and into the suction inlet. It creates a uniform cooling flow and also provides a centralizer, making sure the pump is centered in the well casing and allows it to be installed in the perforations.

Mr. Domingo thought it was a good design; however, it is a known fact that if the flow is not fully developed, it will not be able to remove heat efficiently. You have to have sufficient clearance between the motor and the shroud so that you can totally develop flow, whereby removing the heat and ensuring efficiency.

Mr. Kimball stated that you would be looking for a couple of different things. You are looking for a minimum and maximum flow velocity on the water itself as it passes across and by the convection, the water is heating up, going past the motor, and is being carried away. If it is too fast, you do not get enough time for the heat transfer. If it is too slow, you are not carrying the heat away from the motor and pump assembly itself. It is correct that you do need the proper standing water levels in order for there to be sufficient passing of water in the well.

Mr. Domingo stated that inducing the flow is not sufficient to take away the heat. He would say it is still substandard.

Mr. Kimball stated that there is another way which would be essentially measuring the motor temperature directly via some additional instrumentation so that regardless of whether you are achieving that uniform cooling flow, you know what is happening in the motor. That was something that was observed during one of the wells' replacement very early on almost before Brown and Caldwell were involved. The temperature was spiking in the motor assembly itself. That is usually indicative of a number of things, which start with how straight the well is. In a

number of these wells, there was a standard practice that had been used for about six years to measure well drift, or how straight the well is. No wells are perfectly plumb and straight and there is some drift that still meets national standards in terms of acceptability. There is a new technology called a gyroscopic well survey which essentially maps the well at certain increments in order to have a solid understanding of how plumb the well is. When the well is not plumb, you get into situations where you may have proper cooling water flowing past one side of the motor but not on the other side because it is not centralized in the well casing. The second piece to that can also lead to radial bearing failure because you are essentially putting uneven pressure on the motor because it is kinked and jammed in the hole, thus causing the motor to work harder.

Chairperson Boswell asked how much deviation you can get in the couplings on the column pipe. In the picture shown, the well casing looks perfectly plumb but actually it is more likely that the casing is not plumb and the motor is trying to be straight.

Mr. Kimball stated that the physical dimensions shown for Honokōhau well, which is the first one that was looked at in terms of measuring the outside diameter of the motor itself and then the well casing was that one side of the motor was probably not achieving the proper water cooling flow. It could be uneven pressure on the motor itself, and you need that surface area with the water in order to carry the heat away. The biggest killer of mechanical and electrical assemblies in submersible pump systems is usually heat.

Mr. Domingo asked how you mitigate centralizing it.

Mr. Kimball replied that flow inducer shrouds have a tendency to do that pretty well, but there are some trade-offs. When you do a flow inducer shroud, obviously, you need to have a smaller motor which means you have limited pumping capacity to the surface. If your demand is really high and you are trying to keep up with the demand and you install a smaller pump with a flow inducer shroud, your capacity to the surface is limited. The flow inducer shroud helps align it. Even if the flow inducer shroud is touching the walls, it is still maintaining the proper spacing around the motor itself such that you are getting cool water flow past the motor into the suction end. You could use a flow inducer shroud even if you are not putting it in the perforations if the intent is to just centralize the motor itself.

Mr. Domingo asked if it is still free to move about laterally.

Mr. Kimball replied there might still be some play, depending on the spacing, pump selection, and the flow inducer shroud; but he was not sure if the play is a major concern.

Mr. De Luz suggested what the Department might want to do is a cost benefit analysis when replacing pumps, comparing that to conservation and mitigation for storage, so the Board can understand when someone questions why equipment is being replaced. Future Board members can go back and say the initial cost versus benefit was looked at and the decision was made based on that. Maybe storage was prohibited but the well still needed to be pumped from. You have to get something for something.

The Manager-Chief Engineer thought that as this presentation progresses, the Board will see the findings as well as the Department's experiences over the past several years. Each case is different. There is no smoking gun or no one solution to one problem. Holistically, those challenges will be identified such as where capacity needs to be maintained versus de-rating in certain areas. In the long term, it will feed into some of the long-term CIP projects.

Mr. Kimball stated that one major point is that these findings are covered in general for all of the wells discussed. The report is going into much more detail, but they are specific to the well that was looked at.

Mr. Domingo felt that we should be able to incorporate some kind of restraint to keep the pump and motor from having play inside the casing.

Mr. Young mentioned that 3D modelling is being looked into to look at all of the loads created on the pump, the motor, and the couplings. That will be coming and will address some of his questions.

Chairperson Boswell suggested that the Board hold comments until after Mr. Kimball was finished with his presentation.

Mr. Kimball continued with other reasons for mechanical failure. One is water hammer, which is large shifts in water movement from the pump starting or stopping. Above the pump assembly in the column pipe, there is a series of check valves that go all the way to the surface. The intent of the check valve is to help with abrupt changes in the fluid movement when you start pumping or stop pumping and there can be a couple tons of water in that column pipe that are pushing back down. We are trying not to damage the motor and pump assembly itself by that pressure of vacuums that are created by abrupt changes in pumping. The check valves compensate for this. One item to note, back to what Mr. Young said, is each of the motor manufacturers has a different take on it. They looked at five different motor manufacturers and they had five different answers on what type of check valves to use, what the spacing is, and how they are expected to operate. He went on to cover some of the electrical findings. Motor overheating was talked about from a mechanical standpoint, thrust bearing failures, and systems heating up. This is more of an outcome of typical overheating of the system which can be a variety of different factors that were talked about. Essentially, insufficient cooling water can leave the motor burned out. He showed a picture of melted motor windings at Hualālai Well. Those motors are a series of copper wires that are wrapped around a stator and they have a thin insulation so if you get them too hot, they melt and burn out. Motor binding is uneven pressure on the pump system assembly itself which causes the motor to work a lot harder than it is supposed to which can heat the motor up and cause premature motor failure. Poor power quality is another contributor to reduced service life. If you have a voltage sag on the incoming line from HELCO, it usually manifests itself in a higher electrical current needed by the motor to operate, which then heats the motor up and can burn it out. The next piece is electrical system settings. Each one of the reduced voltage starters, or variable frequency drives essentially drive these pump assemblies anywhere from 300 to 600 different settings on them that are designed to protect the equipment itself. They took an in depth look at all of the settings for each one of the devices for all seven wells and there were only two major findings--one was in some of the cases, the overload setting, which is essentially how hard you allow the motor to work before turning it off, was set slightly higher than recommended by the manufacturer. They do know that if you have motor binding or other mechanical type features that are working on the pump system itself, the motor does need to work harder. Having the Overload Setting (FLA) higher is something you would expect to see if you want to pump water for that system. There were other settings, but only minor adjustments not worthy of mentioning. The last piece was the power quality analysis, which is essentially how good the power quality is coming in from the utility. They looked at four of the sites--Hualālai, Honokōhau, QLT, and Keopu and installed their own metering systems anywhere from 10 days to three months, depending on operational limitations of getting the devices installed. They reported the incoming power from

HELCO and measured the power quality going directly to the submersible motor itself. Three of the four sites were pretty much okay. On the fourth site, there were some issues with current imbalances coming in from the utility; but the tariff agreement with HELCO is about 10% current imbalance. The motor manufacturer says do not get outside of 5% so now you have this gray area between five and ten percent where HELCO can deliver something that is within their tariff to you, but it is not recommended by the motor manufacturer. What to do in those types of situations is, first, say the meter was only installed for about 14 days at Keopu, he would say install power monitoring equipment that can monitor and trend it over a long period of time. If the issue persists, consider taking the next step which would be some type of power conditioning equipment such as a UPS or isolation transformer that could help fix that. The findings showed it was about 5.9% versus 5% so it was a contributor to reduced service life but not something that would cause catastrophic failure.

Recommendations for increased service life: These are for all of the wells but the reports go in detail and have other recommendations as well, but they are minor. The first one is motor and pump overheating. Where applicable, install a smaller diameter pump and motor, use flow inducer shrouds, ensure proper unit responsibility, which is essentially considering the motor manufacturer, the pump manufacturer, and the person installing the motor cables and other devices one entity, so when it fails, DWS would go back and say there was unit responsibility, it is a three-year warranty, please replace, repair, and fix the situation. Two, perform a transient pressure analysis, which feeds back into what type of check valves should be used, where should they be spaced, and it will tell you elements of that nature. Three, do a gyroscopic survey, figure out how straight the well is, and then perform a 3D model and maybe do a finite element analysis to figure out the pressures on the devices. That will tell you check valve location and undue stresses on the motor. Four, install permanent power quality meters to trend and monitor where power quality issues persist and are more concerning, and it will evaluate power conditioning equipment. The fifth recommendation is adjustments to the electrical settings. They recommend looking at the settings in detail to make sure the equipment is properly protected.

In 2018, shortly after Brown and Caldwell were on board, there were some standards for all new wells that were issued or recommended from the DWS staff. Almost all of the recommendations covered today are in line with the findings. There was one major difference where the recommendation was to possibly go with two 700-gpm wells at new sites instead of one larger 1,400-gpm well. That gives more reliability and redundancy. One of the wells that received the majority of the betterments was the Hualālai Well, which is currently up and running. It received a shroud and slimline motor. A gyroscopic alignment was done, and the well was extremely crooked. There were permanent power quality meters installed that are being trended. There was a fair amount of down-hole instrumentation installed so motor temperature and pressure are being monitored. The electrical settings were adjusted and there was a change-out of the type of motor cable that was used for the installation. The only thing that has not been done yet was the transient pressure analysis and the major limitation there was that DWS needed to get the well up and running to get out of the situation where conservation measures were in place and could not wait for the transient pressure analysis. There are three major things. One was the question posed whether there is a single cause of reduction in use and service life. Unfortunately, there is no one single cause. There were some things that should be applied broadly; but in looking at all seven wells, there was no single smoking gun issue. They are essentially playing doctor, whereby if they see symptoms that are exhibited by the pump system itself, they try to address them and do better next time; but they are essentially trying to eliminate or mitigate those one by one. This concluded Mr. Kimball's presentation.

The Manager-Chief Engineer added that for Hualālai Well, because of its history, the Department tried to pursue the unit warranty situation so the pump, motor, and cable are all supplied by the same manufacturer, in this case, Centrilift. Not in all applications will a slim line be utilized because there have been challenges in the past with slim lines; however, there have been challenges with whatever is put down the hole. The Department will do what makes sense, based on the findings, in its strategies moving forward.

Mr. Kimball stated there were a number of these recommendations that say “where appropriate” so you still have to apply some good engineering and business judgment when considering them.

Mr. Domingo thought that the major thing to address is the issue of overheating. If the overheating issue is not mitigated, you will still have that problem.

Mr. Kimball stated that they are in the process of eliminating and mitigating each one of the potential likely causes of failure found and are moving through the list, starting with the pump and motor. The recommendations one through five are not in a prioritized manner. It is a shopping list for the Department.

Mr. Domingo thought there should be some other studies or alternatives done.

Mr. Kimball stated that there are not a lot of options for pump and motor systems in a submersible fashion because they are installed so deep. The “belt and suspenders” approach is to use a smaller diameter motor with a flow inducer shroud. You could go in a different direction with installing a smaller motor, as long as you can validate the water levels. Maybe that is balanced with what was mentioned earlier about maintaining capacity based on demand where you might not be able to use a flow inducer shroud.

Mr. Scicchitano commented that it sounds like a triage approach.

Mr. Kimball agreed. It is a mitigative strategy to eliminate each one of the likely causes and symptoms of what was observed and what those fixes look like.

Mr. Elarionoff asked what sets the consultant apart as far as qualifications where the Department’s engineers could not do this work themselves.

Mr. Kimball replied that they have a national pump expert who used to be on the research and development team for three different pump manufacturers. That expert understands these systems much better than he does. Also, the Department does not have an electrical engineer on staff that could look into this level of detail. Although he was originally an electrical engineer, Brown & Caldwell has a national expert who comes from an oil and gas background, where they have similar installations--just a different type of application.

Mr. Elarionoff stated that the reason he asked was that he noticed Mr. Kimball asking questions of staff during the presentation which lead him to believe that if they could answer, why could they not do the job.

Mr. Kimball replied that over the last two years, they have been in close communication with DWS staff about a variety of things. He did not want to misspeak when it comes to an operational or business type decision.

Chairperson Boswell asked what, in oil and gas, is used for the column pipe--whether it was steel pipe.

Mr. Kimball replied he believed it was steel pipe.

Chairperson Boswell stated that he asked that because of their tendency to go down in horizontal; and if it is, then it is just down a large sweeping radius. He added that he had worked on oil platforms offshore and had seen what appeared to be column pipe, but that was 35 years ago, and is now trying to put two and two together.

Mr. Kimball stated that they have a tendency to use more Reda or Centrilift systems so they almost exclusively go with slimline motors. Slimline motors are typically about two-thirds of the outer diameter but are two-thirds taller, so you have to have a much straighter well. They had to search far and wide for others with similar situations such as depth, and found some in Albuquerque.

Chairperson Boswell asked what the casing size would be.

Mr. Inaba replied they are looking at a 20-inch casing, at a maximum, without getting into extreme costs.

The Manager-Chief Engineer noted that in the past, the Department would accept different types of set-ups from developers that would be turned over to the Department. Moving forward, these requirements will be made a part of developer agreements.

Mr. Elarionoff asked if, when Mr. Kimball referred to tons of water, it was a figure of speech or if he was referring to actual tons.

Mr. Kimball replied he was referring to actual tons. There can be about 40 tons of water in the column pipe.

Chairperson Boswell added that the weight of the pump and motor would be on top of that.

Mr. Kimball stated that it relates to the pressure analysis. It was disturbing to him to hear that five different manufacturers all have different recommendations. It leads him to wonder if they really understand. Regardless of what they are saying, it comes down to what makes sense to the Department of Water Supply.

Mr. De Luz commented that what Mr. Elarionoff had mentioned earlier was a good point. Perhaps a credentials page prior to the presentation, including why the consultant was selected and the timeframe of the study, would be beneficial for newer Board Members to understand.

Brown and Caldwell's presentation concluded at 10:50 a.m.

7) SOUTH HILO:

A. **JOB NO. 2019-1115, PANA'EWA WELL A REPAIR – REQUEST FOR ADDITIONAL FUNDS:**

The contractor, Derrick's Well Drilling & Pump Services, LLC, is requesting a contract change order for additional work in association with the installation of the Pana'ewa Well A for the amount of \$12,174.81. The description of additional work and associated fees are attached.

Original Contract Amount: \$ 98,000.00
Original Contingency Amount: \$9,800.00
1st Additional Contingency Request: \$8,003.05

1st Change Order: \$250.64
2nd Change Order: \$5,377.60

Total Revised Contract Amount: \$115,803.05

The Manager-Chief Engineer recommended that the Board approve an increase in contingency of \$8,003.05 to Derrick's Well Drilling & Pump Services, LLC, for JOB NO. 2019-1115, PANA'EWA WELL A REPAIR. If approved, the total revised contract amount shall be \$115,803.05.

MOTION: Mr. Elarionoff moved for approval of the recommendation; seconded by Mr. Balog.

Mr. Young showed photographs of the motor and discharge head which showed a large crack in the top portion of the assembly that failed. It is made of cast iron. The failure could have been due to fatigue or corrosion. The unit is a 15-year old line shaft.

ACTION: Motion was carried unanimously by voice vote.

B. JOB NO. 2012-983, KA'IE'IE MAUKA FACILITY IMPROVEMENTS – REQUEST FOR TIME EXTENSION:

The contractor, Isemoto Contracting Co., Ltd., is requesting a contract time extension of 56 calendar days. This time extension request will allow the contractor to complete the project after experiencing a delay in the issuance of a building permit for this project. The delay was beyond the control of the contractor.

Staff reviewed the request for a contract time extension and finds the 56 calendar days justified.
Note: There are no additional costs associated with this time extension.

1st time extension – 56 calendar days

The Manager-Chief Engineer recommended that the Board approve a contract time extension of 56 calendar days to Isemoto Contracting Co., Ltd., for JOB NO. 2012-983, KA'IE'IE MAUKA FACILITY IMPROVEMENTS. If approved, the contract completion date will be extended from December 13, 2019, to February 7, 2020.

MOTION: Mr. Elarionoff moved for approval of the recommendation; seconded by Mr. Scicchitano.

Mr. Inaba stated that staff did a follow up with the Building Division. Because it was under review by other agencies, the Department followed up with those agencies to speed up the process. In the meantime, the contractor had contacted DWS for the time extension.

ACTION: Motion was carried unanimously by voice vote.

RECESS: Mr. Scicchitano moved for a 5-minute recess at the request of the Secretary in order to check the audio recording; seconded by Mr. De Luz and carried unanimously by voice vote. Meeting resumed at 11:00 a.m.

8) SOUTH KOHALA:

A. **JOB NO. 2018-1085, PARKER #1 DEEPWELL REPAIR – REQUEST FOR TIME EXTENSION:**

The contractor, Beylik Drilling & Pump Service, Inc., is requesting a contract time extension of 91 calendar days. The contractor encountered fit-up issues with the spare pump and motor equipment furnished by the Department of Water Supply (DWS), which are currently being addressed by the supplying vendor. These delays were beyond the control of the contractor.

Staff reviewed the request for a contract time extension and found that only 62 calendar days of the requested time can be considered justified. *Note: There are no additional cost associated with this time extension.*

1st time extension – 61 calendar days (Due to replacement check valves)

2nd time extension – 92 calendar days (Due to replacement discharge case)

3rd time extension – 62 calendar days

The Manager-Chief Engineer recommended that the Board approve a contract time extension of 62 calendar days to Beylik Drilling & Pump Service, Inc., for JOB NO. 2018-1085, PARKER #1 DEEPWELL REPAIR. If approved, the contract completion date will be revised from November 30, 2019, to January 31, 2020.

MOTION: Mr. Elarionoff moved for approval of the recommendation; seconded by Mr. Scicchitano.

In response to Mr. Elarionoff's question of what fit-up issues meant, Chairperson Boswell replied that it is where the components are bolted together.

ACTION: Motion was carried unanimously by voice vote.

B. **JOB NO. 2011-970, WAIKOLOA RESERVOIR NO. 1 EARTHQUAKE REPAIRS – CONTRACT TIME EXTENSION:**

The contractor, Henry's Equipment Rental & Sales, Inc., is requesting a contract time extension of 344 calendar days to compensate for the unworkable days caused by the DWS request to suspend construction activities in July 2019.

The DWS issued the July 2019 work suspension because it was necessary to modify some of the Reservoir repair and improvements design details due to the discovery of unforeseen conditions of the existing reservoir (structure, concrete panel lining, north and northeast facing exterior embankments and rain runoff accumulation at the west side of the reservoir).

The DWS recommends a 30-calendar day extension to the January 5, 2020, contract completion date.

The 30 calendar days will allow time for the State of Hawai‘i, Department of Land and Natural Resources (DLNR), Dam Safety Program, to complete its review and approval of the design modifications of the reservoir repairs and improvements; for the DWS to analyze construction cost estimates associated with the design modifications; and for the DWS to review a revised construction schedule to accurately reflect the time necessary to complete the modified scope of work.

As the reviews and approvals progress, the DWS will be better able to determine a reasonable contract time extension and a cost estimate to complete the modified project scope of work.

Staff reviewed the request for the contract time extension and found that an extension of 30 calendar days is justified. *Note: There are no additional costs associated with this time extension.*

1st time extension - 30 calendar days.

The Manager-Chief Engineer recommended that the Board approve a contract time extension of 30 calendar days to Henry’s Equipment Rental & Sales, Inc., for JOB NO. 2011-970, WAIKOLOA RESERVOIR NO. 1 EARTHQUAKE REPAIRS. If approved, the contract completion date will be revised from January 5, 2020, to February 4, 2020.

MOTION: Mr. Elarionoff moved for approval of the recommendation; seconded by Mr. Domingo.

Mr. De Luz stated that he would like to recuse himself from voting on this item because he has had various transactions with this contractor in the personal sector.

The Manager-Chief Engineer clarified that the project will not be completed by February 4, 2020. This is to get it past the completion date in early January. Hopefully, by that time, the Department will have an indication from DLNR Dam Safety on how this will move forward.

Chairperson Boswell noted that they have to approve the plans before the contractor can move forward. He asked if any work is going on at this time or if they have been able to mobilize their equipment out there.

Mr. Inaba replied that in order to prevent additional costs to have equipment out there, the Department put a stop to the project.

Chairperson Boswell asked if the ramifications for the time extension will be adjusted with the new pricing, if there are any increase in prices of materials along the way, it would be repriced based on new plans.

The Manager-Chief Engineer replied that could happen. If it is within contingency, it probably will not need to come before the Board. If it goes beyond the contingency, it will; but the Department will update the Board either way.

ACTION: Motion was carried by voice vote (Ayes: 6 – Ms. Hugo, Messrs. Balog, Domingo, Elarionoff, Scicchitano, and Chairperson Boswell; 1 Recusal: Mr. De Luz; and 2 Absent: Messrs. Kern and Sugai.)

9) NORTH KONA:

A. JOB NO. 2018-1098, PALANI DEEPWELL A REPAIR – REQUEST FOR TIME EXTENSION:

The contractor, Derrick’s Well Drilling & Pump Services, LLC, is requesting a contract time extension of 10 calendar days. Logistical issues associated with the vendor furnishing and delivering the shroud delayed the delivery of the shroud. These delays were beyond the control of the contractor. *Note: There are no additional costs associated with this time extension.*

1st time extension – 60 calendar days (due to failure of motor manufacturer’s lamination machine)

2nd time extension – 40 calendar days (due to incorrect motor lead length and shroud)

3rd time extension – 10 calendar days

The Manager-Chief Engineer recommended that the Board approve a contract time extension of 10 calendar days to Derrick’s Well Drilling & Pump Services, LLC, for JOB NO. 2018-1098, PALANI DEEPWELL A REPAIR. If approved, the contract completion date will be revised from December 1, 2019, to December 11, 2019.

MOTION: Mr. Elarionoff moved for approval of the recommendation; seconded by Mr. De Luz.

The Manager-Chief Engineer noted that it is past December 11 and the project is not completed yet. Mr. Takamoto has followed up with the contractor to get a better timeframe; but at this point, the Department is considering them beyond the contract completed date and anything past that will be subject to liquidated damages. Completion is anticipated in January 2020 (Mr. Takamoto confirmed). They have the material. It is a matter of getting it down the hole.

Chairperson Boswell asked where it goes from here--whether the Board approves this ten days and then additional days are requested down the road.

The Manager-Chief Engineer replied that all they have justified from staff are the days up to December 11, 2019. Anything beyond that will be liquidated damages.

Mr. Takamoto stated that they may be submitting something down the road; but at this point, until staff sees it, it is as the recommendation shows.

ACTION: Motion was carried unanimously by voice vote.

B. JOB NO. 2016-1043, WAI‘AHA WATER SYSTEM IMPROVEMENTS - TRANSMISSION – REQUEST FOR TIME EXTENSION:

This time extension is to allow contractor to complete the waterline work on the three stream crossings. The designs of the crossings were revised to address Department of Public Works concerns and to eliminate impacting the profile of flood waters at the crossings. These concerns and redesigns occurred after the job was bid out. The contractor could not construct the stream crossings while doing other critical path work, hence the stream crossings are now the critical path items. The contractor will need more time to complete the work and is requesting for 210 calendar days to complete the redesigned stream crossings.

Staff has reviewed the request and finds that the time extension request is justified to complete the work required for the project. *Note: There are no additional costs associated with this time extension.*

1st time extension – 210 calendar days

The Manager-Chief Engineer recommended that the Board grant this extension of contract time, of two hundred ten (210) calendar days, to Isemoto Contracting Co., Ltd., for JOB NO. 2016-1043, WAI'AHU WATER SYSTEM IMPROVEMENTS – TRANSMISSION. If approved, the contract completion date will be revised from November 1, 2019, to May 28, 2020.

MOTION: Mr. Elarionoff moved for approval of the recommendation; seconded by Mr. De Luz.

The Manager-Chief Engineer noted that this was his fault because he pushed staff to bid out the project because of the need for it; however, the final approval was not received from the Department of Public Works (DPW). It was thought that their concerns could be addressed after the award. Their concerns were to have DWS place the pipeline underneath the culvert crossings and DWS did not think that was a prudent solution so the consultant and staff worked with DPW to come up with a solution that was acceptable to them and kept it on the culvert crossings, nearer to the surface. To go under the stream crossings would have made it hard for DWS as far as maintenance. Mr. Inaba added that some of the items on the stream crossings, because it is now above-ground, had to be fabricated, such as the brackets and hangers, and resulted in long lead times as they could not get the materials in on time.

Mr. Elarionoff asked if there was additional charge for all of this work.

Mr. Inaba replied that it was just time requested by the contractor and there were no additional charges.

The Manager-Chief Engineer felt that it was very gracious of them.

Chairperson Boswell stated that it would likely be a reduction in cost versus additional costs.

ACTION: Motion was carried unanimously by voice vote.

C. JOB NO. 2017-1063, SOURCE WATER ASSESSMENT – NORTH KONA MID-LEVEL MONITORING WELL:

The contractor, Derrick's Well Drilling & Pump Services, LLC, is requesting a contract time extension of 365 calendar days. The contractor experienced delays caused by the Department unable to obtain a Conservation District Use Application permit prior to securing the Well Construction Permit. During this period to obtain the permit, the project was put on hold and no activity occurred.

The Office of Conservation and Coastal Lands (OCCL) determined that, before granting a Conservation District Use Application (CDUA) for the proposed monitoring well, the unpermitted status of the project parcel's subdivision of Tax Map Key No. 7-3-009:027 from its original Tax Map Key No. 7-3-009:017, must be addressed first. This permit and the Site Plan

have been approved as of December 2, 2019. The contractor may now begin work at the site.

These delays were beyond the control of the contractor.

Staff reviewed the request for contract time extension and the accompanying supporting documentation and found that only 305 calendar days of the requested time can be considered justified. *Note: There are no additional costs associated with this time extension.*

1st time extension – 305 calendar days

The Manager-Chief Engineer recommended that the Board approve a contract time extension of 305 calendar days to Derrick's Well Drilling & Pump Services, LLC, for JOB NO. 2017-1063, SOURCE WATER ASSESSMENT – NORTH KONA MID-LEVEL MONITORING WELL. If approved, the contract completion date will be revised from October 27, 2019, to August 27, 2020.

MOTION: Mr. Elarionoff moved to approve the recommendation; seconded by Mr. De Luz.

The Manager-Chief Engineer noted that it was not realized until after award, and the contractor had gone for their well drilling permit, that the Conservation District Use Application (CDUA) was not taken care of, even from when the parcel was subdivided out. The process that took place to get this application submitted and approved is what this item is about.

ACTION: Motion was carried unanimously by voice vote.

D. ASSIGNMENT OF WATER UNITS – WELL DEVELOPMENT AGREEMENT – LANIHAU PROPERTIES, LLC, WEST HAWAI'I BUSINESS PARK, LLC, AND PALANI RANCH COMPANY, INC.

The Developer of the subject agreement is assigning four (4) Water Units from their allotment to Tax Map Key (3) 7-4-008:057, subject to the approval of the Water Board. DWS staff has reviewed the assignment of units and finds that it is consistent with the intent of the First Supplemental Well Development Agreement (Section 4.d. – Assignment of Equivalent Units), which is to another property of the Owner, that is in the process of being sold.

The Manager-Chief Engineer recommended that the Water Board approve the assignment of four (4) Water Units from the WELL DEVELOPMENT AGREEMENT and the FIRST SUPPLEMENTAL WELL DEVELOPMENT AGREEMENT (Palani Well) from the receiving parcel, Tax Map Key (3) 7-4-008:005 to Tax Map Key (3) 7-4-008:057.

MOTION: Mr. Elarionoff moved to approve the recommendation; seconded by Mr. Balog.

Mr. Domingo asked how water units are defined.

Mr. Inaba replied that one water unit equals 400 gallons per day. DWS issues water units to a property or assigns a number of units to a certain meter.

Chairperson Boswell noted that when they sold the small portion off, the water units went with that portion.

ACTION: Motion was carried unanimously by voice vote.

10) MISCELLANEOUS:

A. MONTHLY PROGRESS REPORT:

Job No. 2013-989, Kahalu‘u Shaft Inclined Lift Replacement

Mr. Inaba reviewed the work on this project. The contractor, Jas. W. Glover, Ltd., and their subcontractor, Heide & Cook, were present to answer questions. In December of 2018, the order for the cart was placed, and everything had to be manufactured and shipped to the factory where the cart and assembly were being put together. A test track was built to make sure they could test the cart under load. He showed some photos of the frame for the cart being built. There was a concern about the rollers because of their wear on the track. The rollers sit on the track, and there is another roller underneath the guide so it does not allow roller movement. They have very tight tolerances, which was a concern in terms of trying to replace sections of the track. They needed a smooth transition to the new dimensions of the material they were able to find. He showed a photo of the actual cart and the cage which can carry equipment. There is a counter weight that sits within the higher “H” beams, which is a critical component because it does carry a load. In August, they had replicated a test track, tested it, and reported on the tolerances. Everything now has been shipped and received by the contractor. He showed a photo of what the cart will look like once it is on the track. The contractor did have a concern about the track that needs to be addressed, which has to do with alignment and corrosion.

In response to Mr. De Luz’s question of whether this new engineering would have more capacity for repair, Mr. Inaba replied it would. Mr. Inaba continued with photos of how the braking assembly works. Mr. Salvador of Jas. W. Glover, Ltd., noted it was a challenging project because it is at a 30-degree slope and the track is very long.

Job No. 2016-1043, Wai‘aha Water System Improvements - Transmission

Mr. Inaba stated that because of the delay where the contractor will not be on site, they did a hot mix patch on the road yesterday to improve road conditions. It is still a temporary patch. The first patch was done with cold mix material.

Chairperson Boswell noted that asphalt availability in Kona can be a challenge.

Mr. Inaba stated that the contractor was planning to do the hot mix on a particular day and had gotten cancelled that morning without warning. Grace Pacific was closed which delayed it further.

B. REVIEW OF MONTHLY FINANCIAL STATEMENTS:

Mr. Elarionoff asked about Page 4 at the top under “Operating Revenues,” where it was noted that water sales dropped by \$1 million. He asked why it was listed as unfavorable.

Mr. Sumada replied it is unfavorable only because it is less than last year. If it had been more than last year, it would be favorable.

Mr. Elarionoff thought that for Power Cost Charges, it should be favorable if it dropped. He asked if it was the goal to sell more water or to just provide water.

Mr. Sumada replied that was a different question that is not represented in this report.

Mr. De Luz asked if it was correct that this was just representing the variance.

Mr. Sumada replied that was correct. It is not desirable or undesirable but whether it was more or less than the previous year.

C. **MANAGER-CHIEF ENGINEER'S REPORT:**

The Manager-Chief Engineer to provide an update on the following:

1. Kapulena Well – The Deputy reported that last week, the Department of Health issued a press release regarding a new well that was brought online March of this year. Per the Environmental Protection Agency (EPA), and Department of Health (DOH) requirements, the Department does initial quarterly monitoring. The water samples detected trace low levels of Atrazine, which is a regulated chemical, attributed to herbicides, probably from the plantation era. The water is safe to drink and is way below the maximum contaminant level. The water meets all EPA and DOH requirements.

Chairperson Boswell stated that he read the DOH's response and thought it was worded better than not. You do not want to see it at all, but they were clear it was nowhere near an advisory.

Mr. De Luz asked if this well addresses the long-term issue in that area.

Deputy Uyehara replied that was correct. It is part of the master plan. Prior to that, the Department had a spring source which had low production.

Mr. Elarionoff asked the one question that people in the area might ask and that is if you would drink the water too.

The Manager-Chief Engineer and Deputy Uyehara replied yes.

The Manager-Chief Engineer added, for clarification, that he did not quite agree with the need for the Department of Health to issue this press release. It has been documented in that system for decades because of the historical use during the plantation time. It has always been below the maximum contaminant level (MCL). When EPA sets MCL's, it is a list of dozens of chemical, biological, and radiological compounds. Anything below the MCL is safe and acceptable to drink. He added that if his family lived in that area, he would have no concerns about drinking the water. He added that if anyone has concerns, they can contact the Department and it can be explained in more detail. The level has been slowly declining over time but is not zero. To be proactive, the Deputy worked on a response, which was sent out to elected officials, providing additional background. It was not felt that our own press release was needed.

Deputy Uyehara stated that there will be additional monitoring going forward. A system of this size requires one sample every three years; but because of the new detection, it will be done annually for the next three years.

2. North Kona Wells – the Deputy stated that status the same for the wells. Four are still offline: Holualoa, Palani, Wai'aha, and Makalei. For Makalei, the developer's engineer

is working on the redesign and still projecting early 2020 for bidding out. For Wai'aha, there is a litigative hold; therefore, no comment on that. For Holualoa, the January 31, 2020, deadline is still current; and for Palani Well, the time extension granted today takes it to December 11.

3. Retirees of the Department - the Deputy announced that after 23 years with the Department, Mr. Daryl Ikeda was retiring. He started out as a Civil Engineer IV in October 1996, and became Chief of Operations in August of 2005. We are sad to see him go but glad he has this opportunity. He has been very dependable, can always be counted on, and was a good bridge between management and Operations staff. He has the largest division with almost 100 employees island wide.

The Manager-Chief Engineer stated that he and Mr. Ikeda started at DWS in the same year. He respects him for all he has done in interacting as the bridge for his 100 or so personnel. Basically, the water keeps flowing because of all the work the personnel do in the field. Whenever there is a situation such as a main break, he is always on it at whatever time of day. He is one of those silent but effective types and will be missed.

Mr. Ikeda stated that he is not the only retiree this month. Mr. Inaba has a retiree from Engineering who wanted to remain anonymous, and he has one in Operations who also wants to remain anonymous; but he also has one who is a Lead Electrician in Waimea, Mr. Curtis Kawamoto. He has been working with the Department for a number of years and is retiring at the end of this year. He joked that Mr. Kawamoto will be missed more than himself.

D. **CHAIRPERSON'S REPORT:**

Chairperson Boswell announced that this month, Mr. Leningrad Elarionoff and Mr. Bryant Balog are in their last month on the Board. They have served their five-year term, and their service is appreciated. They will be missed.

11) **ANNOUNCEMENTS:**

1. **Next Regular Meeting:** - January 28, 2020, 10:00 a.m.; Department of Water Supply, Hilo Operations Center Conference Room, 889 Leilani Street, Hilo, Hawai'i.
2. **Following Meeting:** - February 25, 2020, 10:00 a.m.; Department of Water Supply, Hilo Operations Center Conference Room, 889 Leilani Street, Hilo, Hawai'i.

8) **ADJOURNMENT**

ACTION: Ms. Hugo moved to adjourn the meeting; seconded by Mr. De Luz and carried unanimously by voice vote.

(Meeting adjourned at 11:50 a.m.)

Recording Secretary

(MINUTES APPROVED AT 1/28/2020 WATER BOARD MEETING)