

MINUTES

REGULAR MEETING OF THE BOARD OF WATER SUPPLY

November 28, 2016

At 2:00 PM on November 28, 2016 in the Board Room of the Public Service Building at 630 South Beretania Street, Honolulu, Hawaii, Board Chair Andaya called to order the Regular Meeting.

Present: Bryan P. Andaya, Chair
Adam C. Wong, Vice Chair
Kapua Sproat
Ross S. Sasamura

Also Present: Ernest Lau, Manager and Chief Engineer
Ellen Kitamura, Deputy Manager and Chief Engineer
Erwin Kawata
Marc Chun
Karen Tom
Daryl Hiromoto
Michael Domion
Joe Cooper
Robert Morita
Mike Matsuo
Kevin Ihu
Kathleen Pahinui
Henderson Nuuhiwa
Jennifer Elflein
Mike Fuke
Guy Nomura
Thelma Kimura
John Nunnari
Georgine Flores

Others Present: Moana Yost, Deputy Corporation Counsel
Jeff Lau, Deputy Corporation Counsel
Tom Myers, Brown and Caldwell

Absent: David C. Hulihee
Kay C. Matsui
Ford N. Fuchigami

APPROVAL OF
MINUTES

Approval of the Minutes of the Regular Meeting held on October 24, 2016

MOTION
TO APPROVE

Ross Sasamura and Kapua Sproat motioned and seconded, respectively, to approve the Minutes of the Regular Session Meeting of October 24, 2016. The motion was unanimously carried.

ITEM FOR INFORMATION NO. 1

"November 28, 2016

RED HILL
ADMINISTRATIVE
ORDER ON
CONSENT

Chair and Members
Board of Water Supply
City and County of Honolulu
Honolulu, Hawaii 96843

Chair and Members:

Subject: Red Hill Bulk Fuel Storage Facility Administrative Order on
Consent

Erwin Kawata, Water Quality Division Program Administrator, will present a brief update on the status of the Red Hill Bulk Fuel Storage Facility Administrative Order on Consent meetings and activities to date.

Respectfully submitted,

/s/ ERNEST Y. W. LAU, P.E.
Manager and Chief Engineer

Attachment"

The foregoing was for information only.

DISCUSSION

Erwin Kawata, Water Quality Division Program Administrator, gave the presentation.

Mr. Kawata informed the Board about the number of meetings and conference calls they have had with the Parties (Environmental Protection Agency-EPA, State Department of Health-DOH, and the Navy) and that since February, BWS wrote 35 letters and submitted over 200 pages of comments, technical as well as supporting information, on various draft work plans and documents being developed under the Administrative Order on Consent (AOC), to the Parties. BWS received only 11 responses on the AOC to the 35 letters. One of the major things of concern to the BWS was how the regulatory agencies approved the Navy to reduce the amount of contaminants to be tested in the groundwater.

Mr. Kawata informed the Board that EPA also rejected the Navy's initial draft of their groundwater study plan. The EPA saw a number of deficiencies that echoed many of BWS's concerns.

Mr. Kawata explained that early this year, the Navy shut down the Red Hill Shaft because there was a problem with the transformers. After the shutdown, the Navy's groundwater monitoring data appeared to show a reduction in the amount of contamination at the Red Hill Monitoring Well No. 2. The levels went from 6,500 ppb TPH in January 2016, to 3,600 ppb TPH in July 2016. The shutdown can potentially change the direction

groundwater is flowing under Red Hill and cause contamination to move towards Halawa Shaft. Vice Chair Wong asked if any action has been taken due to this new data. Mr. Kawata replied that BWS would like to see the repairs made quickly to get the Red Hill Shaft pumping again because when it is not pumping, the environmental condition changes and the past data becomes difficult to interpret.

Manager Lau stated that being that Red Hill Shaft was offline, it was an opportunity to see what groundwater conditions would look like in terms of what the head levels or the elevations of the water table would be in different locations in the Moanalua to the Halawa areas. Mr. Lau mentioned that last week, they participated with the Navy, the Commission on Water Resource Management (CWRM), and the U.S. Geological Survey (USGS) in measuring head levels in about 21 locations in both valleys, and the USGS will compile and share that information.

Mr. Lau expressed concern that BWS was unaware that Red Hill Shaft was offline until about October when someone from the CWRM mentioned that their records were showing pumpage from the Red Hill Shaft had dropped substantially from about 3-4 million gallons per day (mgd) to about 20,000 gallons per day starting in February. Mr. Lau asked the Navy about this and they confirmed that they had problems with the transformers. About 10 mgd is pumped from Halawa Shaft and the question is could the heavy pumping from Moanalua Wells and Halawa Shaft have moved the contaminant plume closer towards Halawa Shaft. This is why BWS wants to develop monitoring or test wells to serve as sentinels to watch for flow of contaminants that may emanate from the Red Hill tanks toward BWS's facilities.

Board Member Sproat asked when the Navy will be receiving the transformers. Mr. Lau responded that the Navy unofficially said they would get Red Hill Shaft pumping again and bring it back to about the 3-4 mgd range around the end of this year or beginning of next year.

Mr. Wong asked if the location of the plume is still unknown. Mr. Lau responded yes. Mr. Wong remembers asking about the comparison of New Mexico having 100 monitoring wells versus the Navy having only four. Mr. Lau stated that BWS continues to raise that point. The EPA and the Navy discuss how drilling wells could inadvertently cause fuel to move into the groundwater more easily as you drill a hole down into the rock. Mr. Lau feels that it can be done if it's done carefully and safely to minimize that risk. He said that the Navy is planning to drill more wells, not in the 100 range, but they're talking about 14 wells. Mr. Kawata showed slide no. 8 where the red dots represent existing wells and the black dots represent the tanks. He said that most of the monitoring wells are focused in the tank area, so they know that there's contamination in this area. The plume has also extended towards the CWRM's well, but it is unknown how much more it has extended.

Mr. Kawata showed the Navy's monitoring well no. 2 on slide no. 9, where the highest contamination levels are. Unless additional monitoring wells

are installed, it's hard to know how much farther the contamination extends.

Mr. Kawata responded to Ms. Sproat's inquiry saying that the plume is moving upgradient. Mr. Kawata showed Ms. Sproat where the deep monitoring well is located. Ms. Sproat asked for clarification on how the contamination is measured since the wells are sealed. Mr. Lau explained slide no. 5, the vadose zone is the area above the blue area, where water occupies all the porous spaces and crevices in the rock so this blue area is fully saturated. BWS is recommending to the Parties that they further investigate the vadose zone or unsaturated area to characterize whether fuel may be trapped there so remediation can be done. Ms. Sproat asked about the blue section and if that was the top of the water lens, and Mr. Lau responded yes.

Mr. Lau commented that he was hopeful about EPA's rejection letter to the Navy on Sections 6 and 7, the groundwater hydrology and the fate and contaminant transports sections, because they mirrored a lot of BWS's concerns. EPA was going to require the Navy to do a much more serious job of addressing these unknowns, however, it now seems that EPA is softening their position with the Navy and the Defense Logistics Agency, so BWS is questioning EPA on that.

Ms. Sproat mentioned that in her conversation with the Navy, it seems that even if something is agreed upon, it will still take about one to two years at the least, to obtain funds for implementation. Mr. Lau added that if the study takes three years and it takes two years to obtain the funds, it will take at least five years until completion. Ms. Sproat asked what the timetable is for the USGS to complete their study. Mr. Lau responded that about six months ago, the USGS gave BWS an estimate of about two years. Ms. Sproat asked if this meant two years until publication of the study. Mr. Lau replied yes and explained that the USGS won't release preliminary information because they need to go through a rigorous internal peer review process first before publishing it for public information.

Ms. Sproat inquired if BWS will at least be getting information on the contaminant transport or levels in the wells in Halawa. Mr. Lau said he is hopeful that they will at least have water quality results from samples taken from the Navy's newest monitoring wells and the CWRM's deep monitoring well. Mr. Lau is also hopeful that within a year, BWS will have their wells in place to draw samples and test the water and then have a combined effort between the Navy, BWS, USGS, EPA and DOH to conduct pumping tests on Halawa Shaft and Red Hill Shaft to measure responses in the aquifer from the Moanalua to the Halawa areas. This information will help improve the models.

Mr. Lau mentioned that he and Ms. Sproat recently went on a site visit to the Red Hill facility and she did an excellent job in asking the Navy questions. Ms. Sproat mentioned that the Navy's presentation left her with a lot of questions, but she was encouraged how the Admiral seemed very open and willing to follow up on her questions and concerns.

Mr. Andaya inquired about the AOC, Sections 2-8, and asked if any of the work plans have been completed. Mr. Kawata replied that Section 2, Tank Inspection Repair and Maintenance Report, was submitted to EPA but was not yet approved and that the decision meeting has not taken place yet. Mr. Kawata added that the scoping meetings will determine what will be studied.

Mr. Andaya asked if all information including the contamination levels have been shared with DOH and EPA. Mr. Kawata stated that all information BWS has comes from the Navy's own data or their reports. Mr. Lau further explained that the Navy provides their information to the DOH and EPA who then post it on their websites, or provide BWS copies. Mr. Lau added that most of the information is obtained from DOH and EPA and only a few things have been obtained directly from the Navy through Freedom of Information Act requests, such as the 2010 Naval Audit Service Audit of the Red Hill Fuel Tank Facility.



WATER FOR LIFE

Safe, dependable, and affordable water now and into the future



Board of Water Supply
City and County of Honolulu

Waimalu – Moanalua Aquifer Update

Red Hill Bulk Fuel Storage Facility and Administrative Order on Consent (AOC)

Board Meeting
November 28, 2016





Today's Update

- Red Hill Bulk Fuel Storage Facility background
- Red Hill Shaft not operating since February 2016
- AOC process update and BWS participation
- Next steps

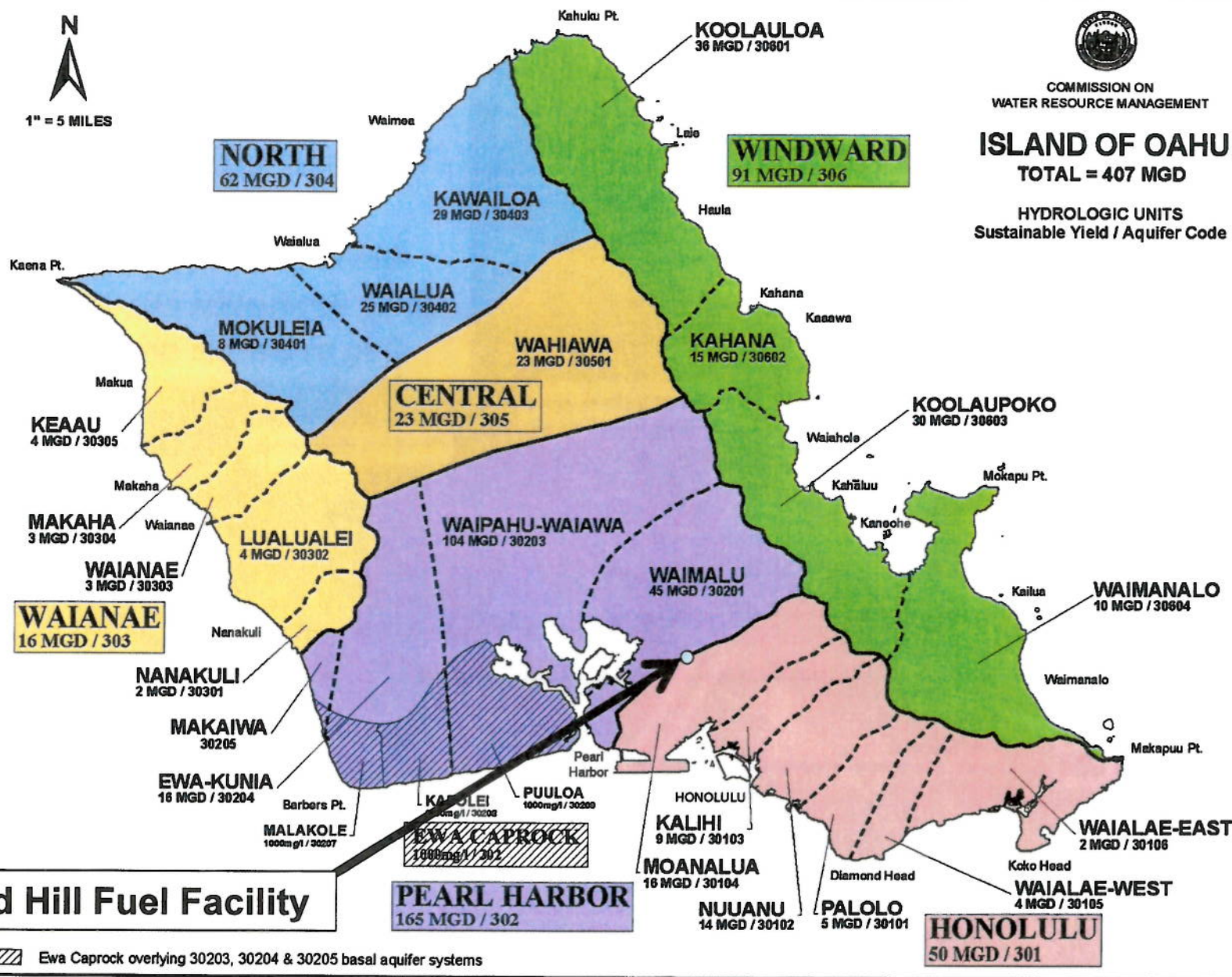


COMMISSION ON
WATER RESOURCE MANAGEMENT

ISLAND OF OAHU

TOTAL = 407 MGD

HYDROLOGIC UNITS
Sustainable Yield / Aquifer Code



Red Hill Fuel Facility

Map ID

Legend: Ewa Caprock overlying 30203, 30204 & 30205 basal aquifer systems

08/28/2008

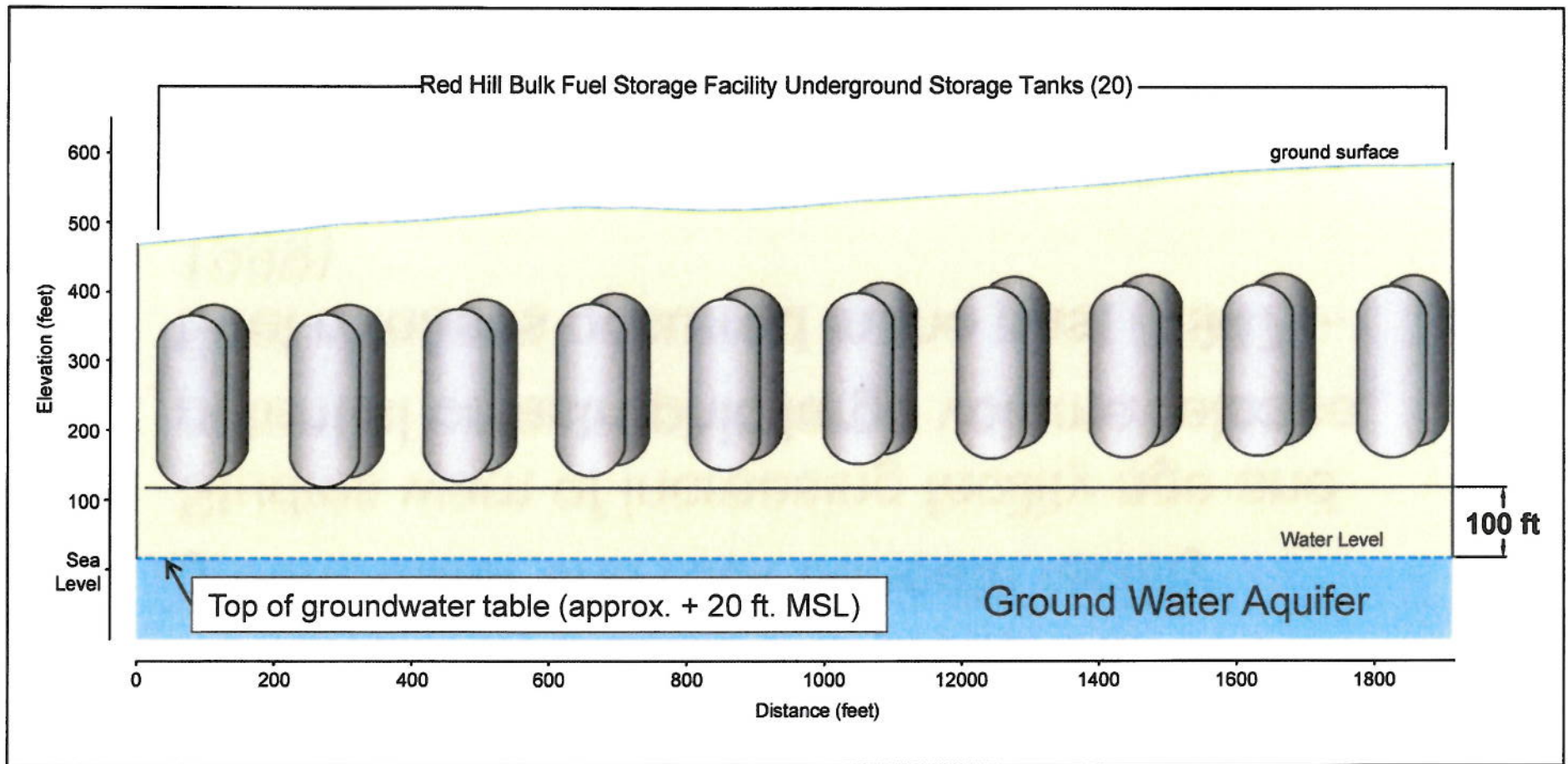
Map Projection: Universal Transverse Mercator

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Board of Water Supply
City and County of Honolulu





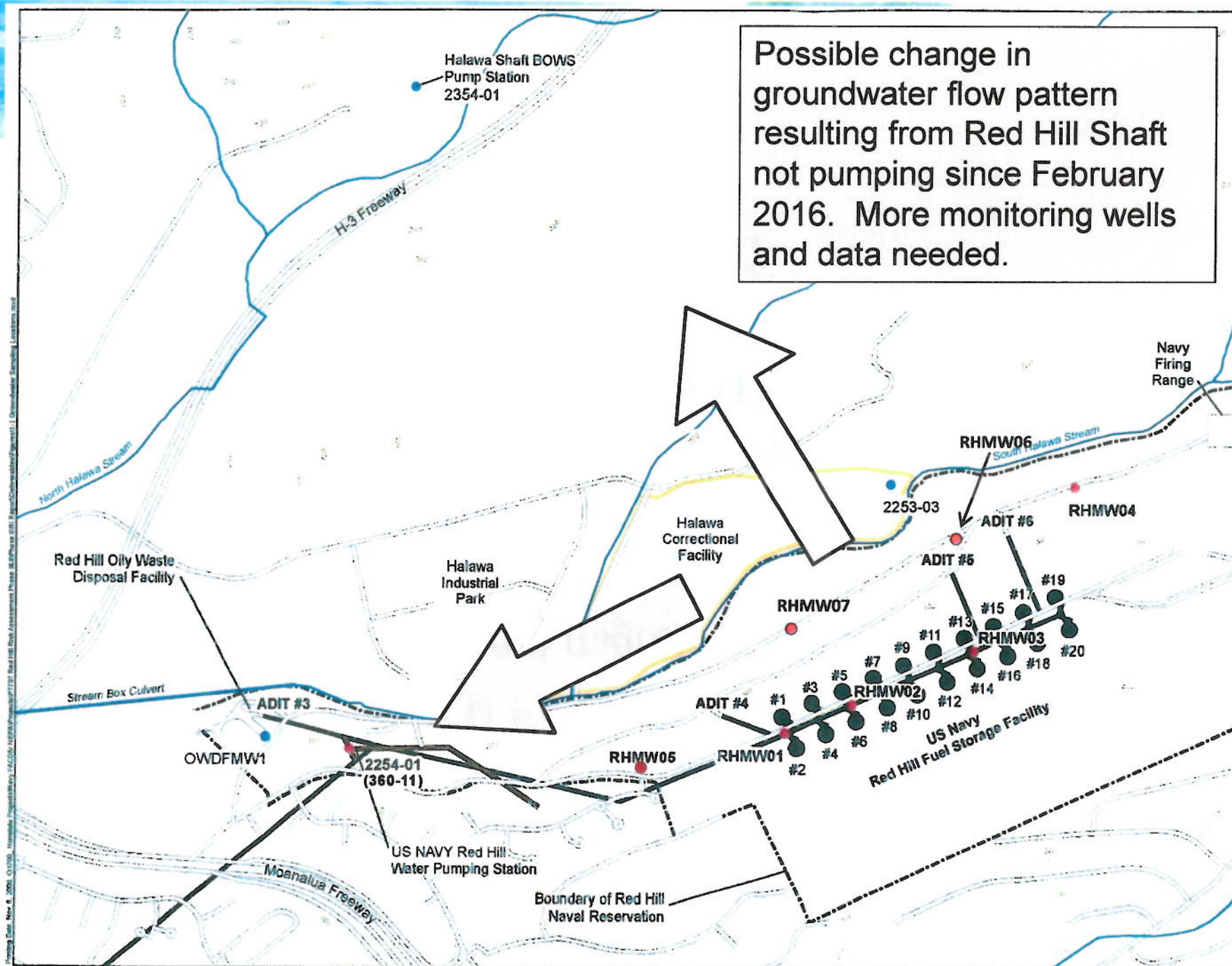
Navy Study Findings

- Petroleum hydrocarbons present in groundwater and rock beneath facility
- Studies warn of increasing facility age and potential catastrophic large volume release.
- Fuel releases occurred in the past (1947 – 1999)
- 2010 Navy audit validates reports/ findings.
- Past Navy studies examined water treatment costs, alternative tank design and leak detection

Navy Red Hill Shaft

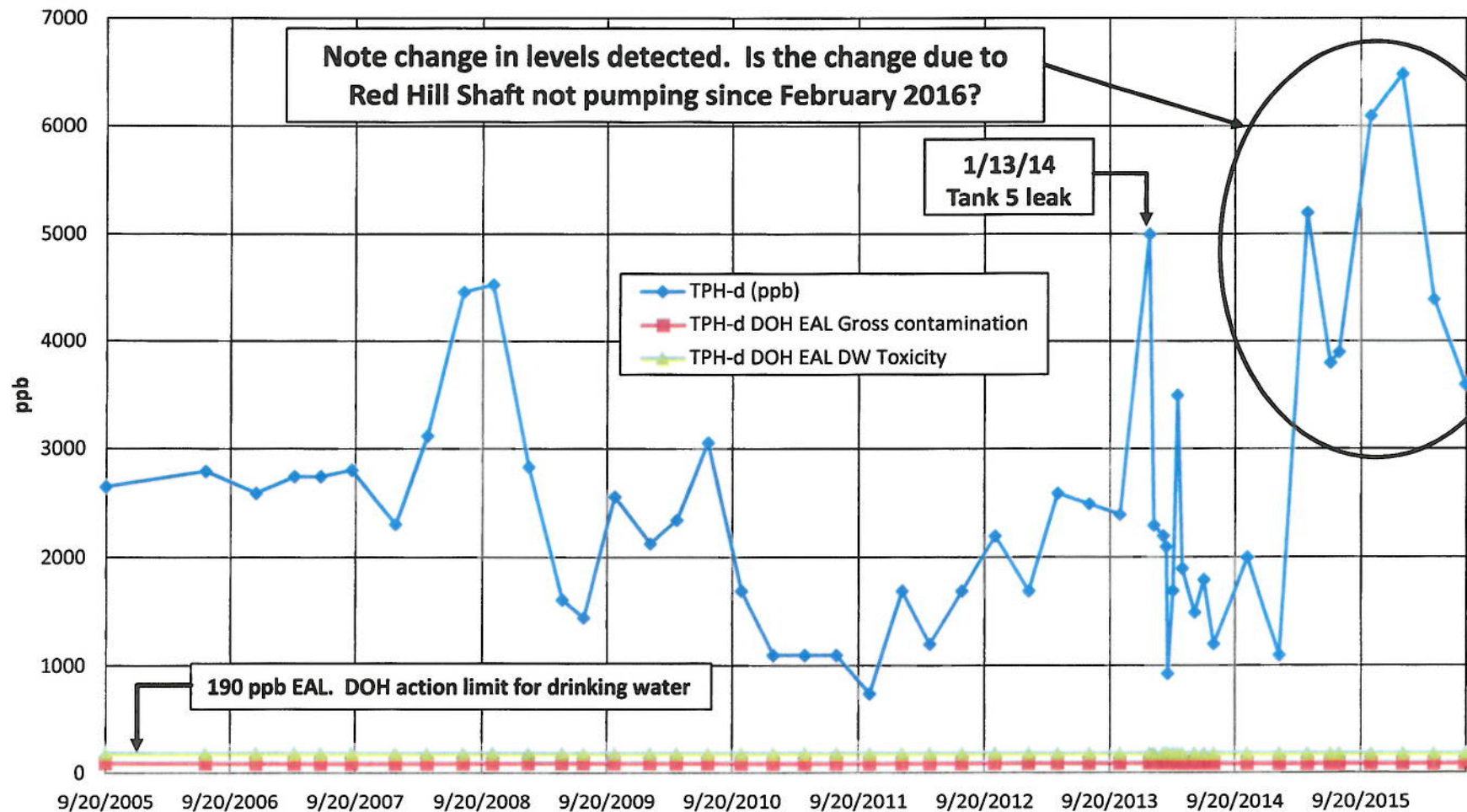
- Not in use since February 2016
 - Affect contaminant migration and groundwater flow pattern
- RHMW #2 levels
 - January 2016: 6,500 ppb TPH
 - July 2016: 3,600 ppb TPH
- Could lowering of TPH levels be affected by Red Hill Shaft not pumping?

Possible change in groundwater flow pattern resulting from Red Hill Shaft not pumping since February 2016. More monitoring wells and data needed.





Groundwater Contamination underneath Red Hill Tanks (RHMW02) as of July 2016



**Groundwater contamination
underneath Red Hill as of
samples taken July 2016**

Monitor Well (RHMW02)

3,600 ppb TPH diesel
280 ppb TPH oil
36 ppb 1-methylnaphthalene
13 ppb 2-methylnaphthalene
67 ppb Naphthalene
< 0.50 ppb Ethyl benzene
< 0.50 ppb Xylenes

Navy drinking water well

< 52 ppb TPH diesel
< 110 ppb TPH oil
< 0.02 ppb Naphthalene
< 0.50 ppb Ethyl benzene

Monitor Well (RHMW05)

< 52 ppb TPH diesel
< 110 ppb TPH oil
< 0.02 ppb 1-methylnaphthalene
< 0.02 ppb 2-methylnaphthalene
< 0.02 ppb Naphthalene

Monitor Well (RHMW01)

250 ppb TPH diesel
59 ppb TPH oil
0.032 ppb 1-methylnaphthalene
0.0068 ppb 2-methylnaphthalene
0.21 ppb Naphthalene

Monitor Well (RHMW03)

70 ppb TPH diesel
110 ppb TPH oil
0.0073 ppb 1-methylnaphthalene
0.0040 ppb 2-methylnaphthalene
< 0.02 ppb Naphthalene

Red Hill Administrative Order on Consent

- June 1, 2015
 - EPA/DOH announces proposed AOC to address Red Hill fuel leak
- June 18, 2015
 - EPA/DOH holds public hearing on AOC
- Sept 28, 2015
 - EPA/ DOH/ Navy/ DLA (The Parties) sign Red Hill AOC and SOW





AOC Work Sections/ Timelines

- Sec 2 – Tank inspection, repair & maintenance
- Sec 3 – Tank upgrade alternatives
- Sec 4 – Release (leak) detection and tightness
- Sec 5 – Corrosion and metal fatigue
- Sec 6 – Investigation & Remediation
- Sec 7 – Groundwater Protection and Evaluation
- Sec 8 – Risk / vulnerability assessment



BWS participation in AOC

- Dec 3, 2015
 - BWS invited to AOC meeting on water development, site characterization and tank vulnerability and risk assessment
- May 10 – 12, 2016
 - Attend AOC meeting on Sec 6 & 7 (groundwater study plan), Sec 2 (Tank repair/maintenance), Sec 3 (Tank upgrade), Sec 4 (Leak detection), Sec 5 (corrosion testing) and Sec 8 (Risk assessment)





BWS participation in AOC – cont.

- Aug 15, 2016
 - Invited to Sierra Club sponsored public meeting on Red Hill
- Aug 31 – Sept 1, 2016
 - Attend AOC meeting on Sec 8 (Risk assessment)
 - EPA Region IX, San Francisco

BWS participation in AOC – cont.

- Oct 4 – 5
 - Attend AOC meeting on Sec 6 & 7 (groundwater study plan), Sec 3 (Tank upgrade), Sec 4 (Leak detection), Sec 5 (corrosion testing) and Sec 8 (Risk assessment)
- Oct 6
 - Public meeting on AOC status by EPA/DOH/Navy
- Oct 19
 - Conference call with EPA, USGS, CWRM to discuss Red Hill Shaft not pumping since Feb. 2016





BWS contribution to AOC

- Feb 2014 – Sept 30, 2016
 - Written 35 letters; received 11 responses
- 14 AOC letters – (217 pages) of comments and supporting documents on AOC work plan
 - Groundwater study design and modeling
 - Remediation of fuel releases
 - Monitoring well design and installation
 - Corrosion, risk assessment, seismic vulnerability
 - Tank upgrades and alternatives
 - Chemical for testing (COPC) and GW test results



Chemical Contaminant Testing

- January 2016 – Navy proposes reducing the chemical of potential concern (COPC) testing list from 64 to 10
- February 2016 – EPA/DOH approves COPC testing list reduction
- March 29 – BWS sends letter to EPA/DOH opposing COPC list reduction





Navy Groundwater Study Plan

- May 2016 – Navy's draft sec. 6 & 7 work plan submitted to EPA/DOH
- September 2016 – EPA/DOH disapproves draft work plan
- EPA identified deficiencies:
 - Ensuring an adequate monitoring well network
 - Ensuring complete understanding of groundwater flows and contaminant migration
 - Complete collection of all data (i.e. historic leaks)
 - Process for obtaining stakeholder input



AOC Status to Date

- No work plans finalized.
- Schedule lagging behind
- AOC effective date:
9/28/15
- For example: TIRM sec
2.1 – scoping meeting
within 30 days from
effective date of AOC
- TIRM report within 120
days of final scoping
meeting

Status	Date
Initial scoping meeting	10/23/2015
Initial scoping mtg summary	11/6/2015
2nd scoping meeting	11/30-12/4/15
2nd scoping mtg summary	12/18/2015
EPA/DOH deems Scoping Completed	6/10/2016
Navy concurs scoping completed	6/23/2016





Next Steps

- Continue participation in AOC process – provide comments and recommendations
- Increase monitoring frequency of BWS Halawa Shaft and Moanalua Wells
- Conduct planning level assessment of BWS Halawa Shaft to understand cost of treatment
- Prepare emergency response plan
- Continue work on BWS groundwater study and install monitoring wells



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Board of Water Supply
City and County of Honolulu

Questions/ Discussion

ITEM FOR INFORMATION NO. 2

"November 28, 2016

PERFORMANCE
METRICS
UPDATE

Chair and Members
Board of Water Supply
City and County of Honolulu
Honolulu, Hawaii 96843

Chair and Members:

Subject: Board of Water Supply Performance Metrics Update

Jennifer Elflein, Customer Care Division Program Administrator and Joseph Cooper, Finance Division Waterworks Controller will present a brief update on the Board of Water Supply performance metrics to measure progress in meeting the three sustainability goals set in the strategic plan.

Respectfully submitted,

/s/ for ERNEST Y. W. LAU, P.E.
Manager and Chief Engineer"

The foregoing was for information only.

DISCUSSION

Jennifer Elflein, Customer Care Division Program Administrator, and Joseph Cooper, Waterworks Controller, gave the report.

Ms. Elflein informed the Board that for this year's first quarter, over 49,000 calls were received by the Call Center, which is an eight percent increase over last fiscal year and is primarily attributed to the increased collection efforts. In planning for this, they hired two contract workers devoted to making and receiving calls to delinquent customers, however, they found that two additional people were not enough to maintain their goals. The goal for the wait time is two minutes or less, but during this quarter they were at three minutes and three seconds. In addition to the two hires, seven employees left, and four more were hired. The level of discussion required to service delinquent customers lead to an increase of 30 seconds per call on average. The increase in calls, collection efforts and wait time took the abandoned calls to 15.3 percent this quarter. The goal for the abandon calls is five percent or less.

Mr. Elflein stated that as of November, all of their permanent customer service representative (CSR) positions were filled. They are in the process of trying to fill four contract positions and may seek approval for two additional contract workers. Besides hiring additional people, Thelma Kimura, head of the Customer Service and Records Section, and her staff are working to create more efficient processes. They dedicated one CSR to serve walk in customers, they dedicated one person to handle payment calls, and they have assigned clerical work to dedicated staff to ensure that written requests are handled in a timely manner without affecting the

customers who call in. Ms. Elflein added that during this quarter, the Customer Care Division received at least 18 written commendations from the public.

Mr. Andaya asked Ms. Elflein to describe the increased collection efforts and if that has matriculated into any measurable results. Ms. Elflein replied that in the first quarter of fiscal year 2017, they have delivered 465 shut off notices, secured 333 meters, and have reached mutually agreeable payment terms with 457 customers. In terms of dollars that's equivalent to more than \$670,000.

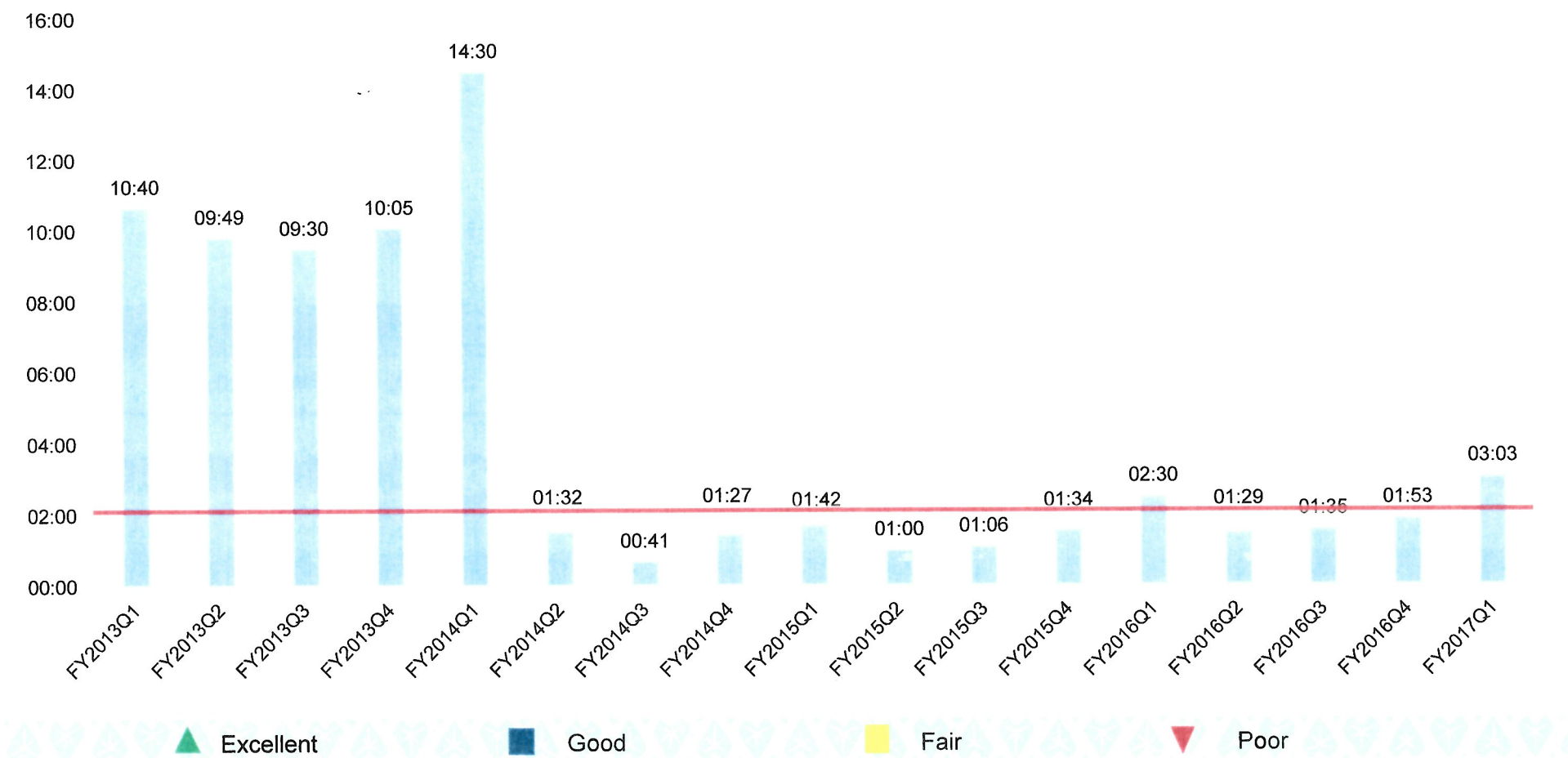
Mr. Cooper discussed the estimated bills. He stated that they try to obtain actual meter readings on all meters, but often for a variety of reasons are unable to do so. The goal is to have no more than two percent of estimated bills. In general they have been meeting that goal, however during July to September, over 7,400 estimated bills were sent, which equals to about 2.7 percent. An upload error occurred where the information from the meter reading software was not transferred to the billing system. This generated about 4,700 estimated bills for this one incident, which is about 1.7 percent, which drove the estimated bill percentage to 2.7. Since then, a new procedure has been instituted to prevent this problem from happening again. Mr. Lau commented that monthly billing is challenging and asked Mr. Cooper how many bills are sent out each month. Mr. Cooper replied that about 170,000 bills are sent out each month.

Mr. Andaya asked how many customers pay online and how many have automatic bill payment. Ms. Elflein said that she doesn't have that information with her, but will be sure to provide it to him.

Mr. Lau asked Ms. Elflein to inform the Board about the changes in the credit and debit card usage. Ms. Elflein explained that BWS processes credit and debit cards through a city contract which comes up for renewal at the end of this year. In order to continue serving customers without interruption and at a great rate, BWS will have to serve residential customers only. Commercial customers will not be able to pay by credit card. She stated that residential customers make up about 93 percent of the credit card paying customers. Mr. Lau added that First Hawaiian Bank charges BWS a flat rate charge of \$1.55 per transaction, regardless of the dollar value. Unfortunately, First Hawaiian Bank is losing money on the commercial customers who have bigger accounts.

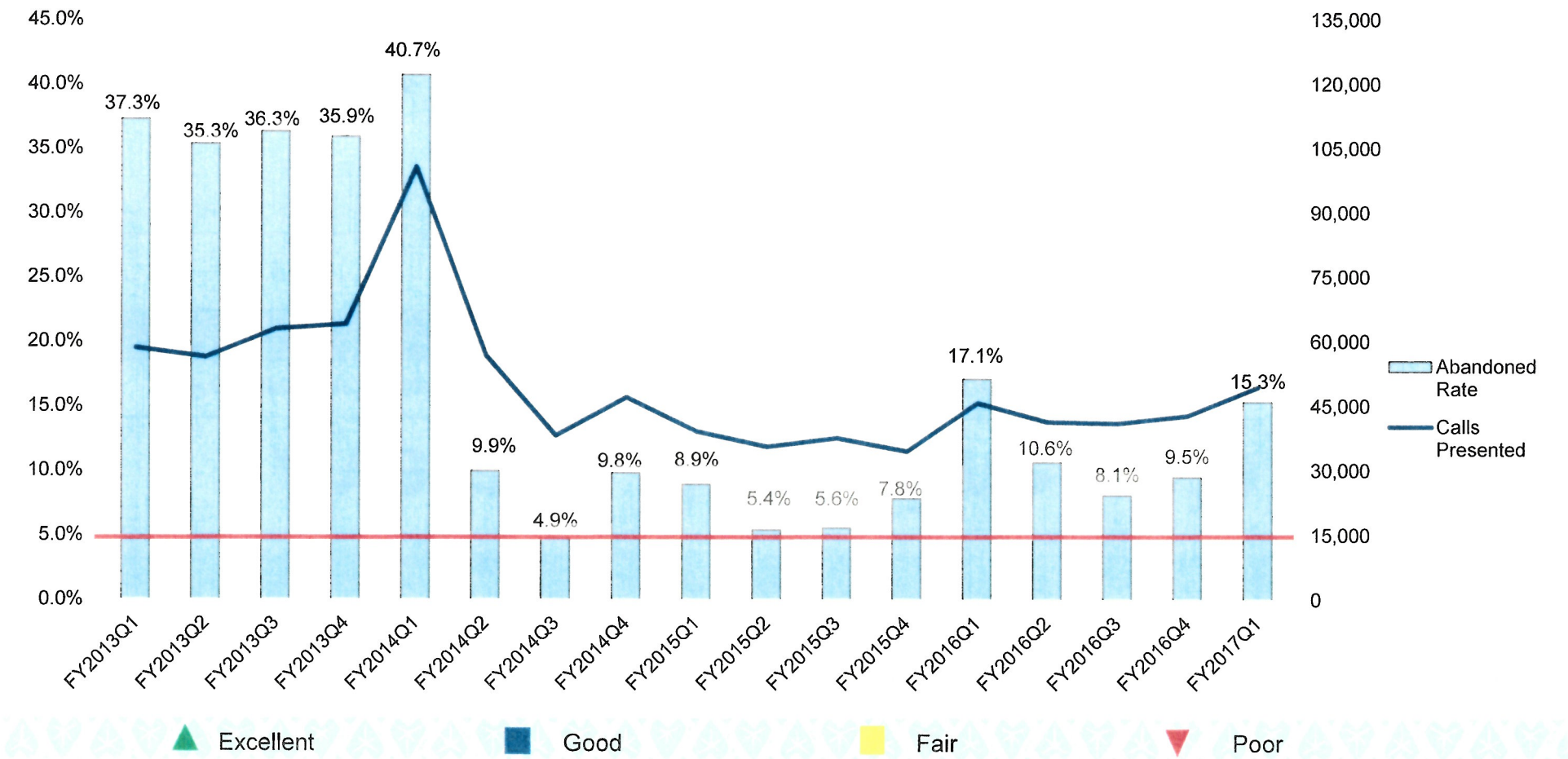
Average Wait Time (min)

Goals	Performance Metric	Base	Current	Target	AWWA	Status	Report	Lead
Operational	Call Center Average Wait Time (min)	6.9	3.03	<2.00	1.9	<div></div>	Q	CC



Abandoned Call Rate (%) vs. Calls Presented

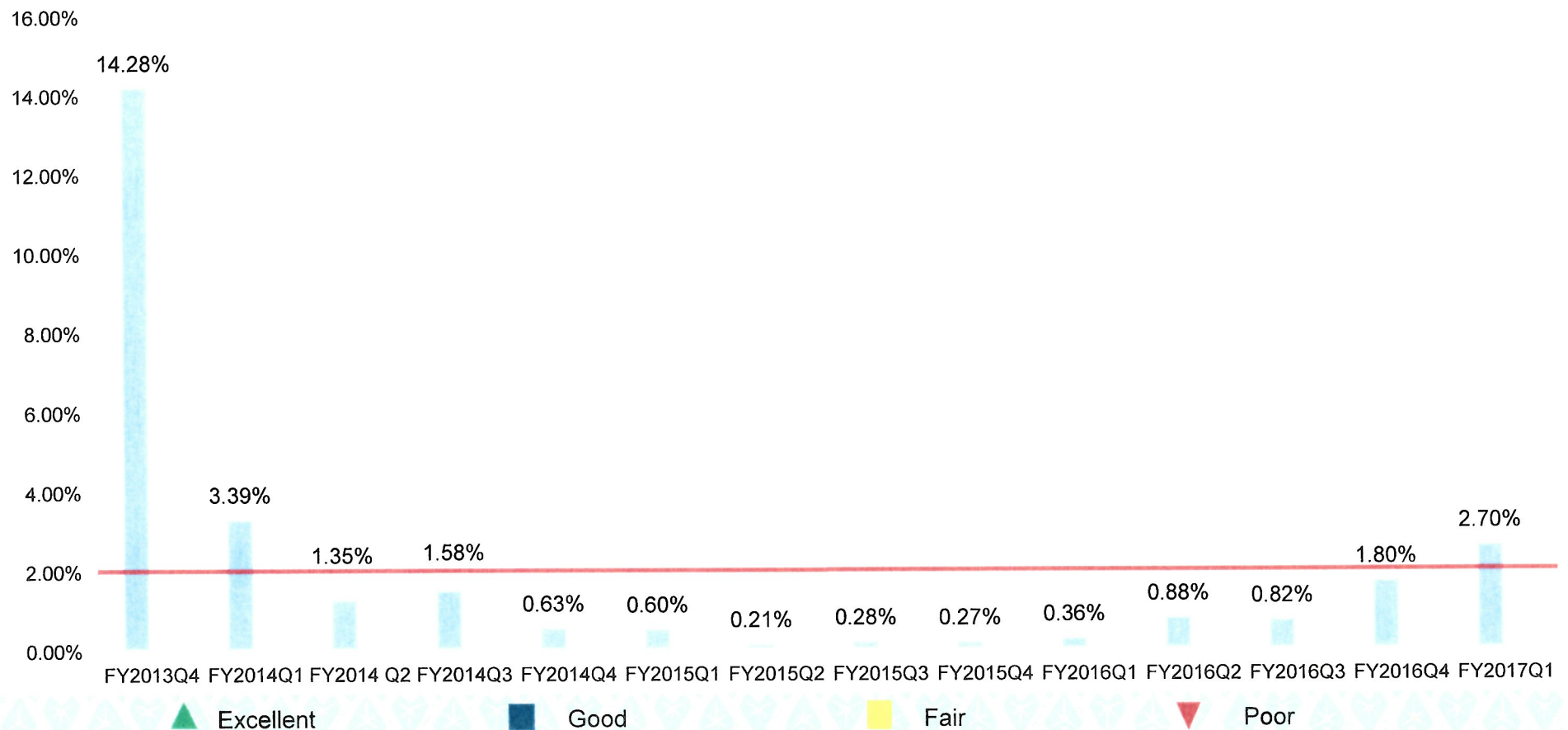
Goals	Performance Metric	Base	Current	Target	AWWA	Status	Report	Lead
Operational	Call Center Abandon Rate	22%	15.3%	5%	8%	▼	Q	CC





Estimated Bills (%)

Goals	Performance Metric	Base	Current	Target	AWWA	Status	Report	Lead
Financial	Estimated Bills Rate	7%	0.88%	<2%	NA	■	Q	FN



ITEM FOR INFORMATION NO. 3

"November 28, 2016

2017
WATER
CONSERVATION
WEEK POSTER
AND POETRY
CONTEST

Chair and Members
Board of Water Supply
City and County of Honolulu
Honolulu, Hawaii 96843

Chair and Members:

Subject: 2017 Water Conservation Week Poster and Poetry Contest

We are pleased to announce the upcoming 39th Annual Water Conservation Week Poster Contest and 9th Annual Water Conservation Week Poetry Contest officially launching December 1, 2016. Students in grades K-6 are eligible to enter the poster contest, and students in grades 7-12 are eligible to enter the poetry contest.

The 2017 Water Conservation Week theme, "Conserve to Preserve," is intended to educate students of the importance of conserving water now to preserve our water supply for the future.

There are four poster contest categories – kindergarten, grades 1 and 2, grades 3 and 4, and grades 5 and 6. There are three poetry contest categories – grades 7 and 8, grades 9 and 10, and grades 11 and 12.

This year's contest deadline is March 1, 2017. Posters and poems may be submitted to our Communications Office or any Satellite City Hall on Oahu (except Hickam). The winners of both contests will be announced in May 2017, at an Awards Ceremony at Mission Memorial Auditorium. Winning and honorable mention entries will be featured in our 2018 Water Conservation Calendar, which will be available to the public at the end of 2017.

Contest information and entry forms will be posted on the Board of Water Supply (BWS) website by launch date and are included in the 2017 Water Conservation Calendars, which were delivered to teachers at Oahu's public, private, and charter schools earlier this month. The 2017 Water Conservation Calendar you have received features the winning poster and poetry entries from last year's contest.

As in years past, we are seeking sponsors to help offset costs to produce the annual Water Conservation Calendar and Poetry Contests. Sponsorships allow for a win-win marketing opportunity with tax-deductible benefits for our sponsors, while providing the BWS with financial support for this key effort to protect Oahu's precious and finite water supply.

We look forward to seeing how Oahu students creatively express their thoughts in the 2017 contest entries, on the need to conserve water to sustain our island home. The thousands of entries submitted each year continue to demonstrate that the BWS's work to educate our island youth is

effectively promoting our message of resource sustainability – *Ka Wai Ola*
– Water for Life.

Respectfully submitted,

/s/ ERNEST Y. W. LAU, P.E.
Manager and Chief Engineer”

The foregoing was for information only.

DISCUSSION

Kathleen Pahinui, Information Officer, gave the report. There were no comments or discussion.

ITEM FOR INFORMATION NO. 4

**QUARTERLY CAPITAL IMPROVEMENT PROGRAM STATUS REPORT
ALL DIVISIONS**

Quarter Awarded	JUL - SEP		OCT - DEC		JAN - MAR		APR - JUN		Awarded to Date	Total Budgeted
Design Contracts Awarded (#/\$)	0	\$0.00		\$0.00		\$0.00		\$0.00	\$0.00	\$13,880,000.00
Construction Contracts Awarded (#/\$)	5	\$1,475,168.00		\$0.00		\$0.00		\$0.00	\$1,475,168.00	\$53,555,000.00
Project Totals	5	\$1,475,168.00	0	\$0.00	0	\$0.00	0	\$0.00	\$1,475,168.00	\$67,435,000.00

Quarter Completed	JUL - SEP		OCT - DEC		JAN - MAR		APR - JUN		Totals
Design Contracts Completed (#/\$)	2	\$1,133,706.68							\$1,133,706.68
Construction Contracts Completed (#/\$)	0	\$0.00							\$0.00
Totals	2	\$1,133,706.68	0	\$0.00	0	\$0.00	0	\$0.00	\$1,133,706.68

Ongoing Projects	
Ongoing Design Projects (#)	204
Ongoing Design Projects (\$)	\$65,649,391.69
Ongoing Construction Projects (#)	116
Ongoing Construction Projects (\$)	\$239,014,503.27

Quarterly Capital Improvement Program Status Report
All Divisions

DESIGN AND CONSTRUCTION PROJECTS COMPLETED - FIRST QUARTER FY 2017

Job #	Project Title	Completion Date	Contract Amount
2007-033	Wilhelmina Rise 811 Reservoir Replacement	7/19/2016	\$ 449,058.00
2004-033H	Mapunapuna Water System Improvements	9/29/2016	\$ 684,648.68
	1st Quarter totals		\$1,133,706.68

DISCUSSION Michael Domion from the Capital Projects gave the report. There were no comments or discussion.

ITEM FOR INFORMATION NO. 5

"November 28, 2016

SCHEDULE OF
MONTHLY
BOARD
MEETINGS
FOR 2017

Chair and Members
Board of Water Supply
City and County of Honolulu
Honolulu, Hawaii 96843

Chair and Members:

Subject: Schedule of Monthly Board Meetings for Calendar Year 2017

Attached for your information is the schedule of Board Meetings for the calendar year 2017.

Respectfully submitted,

/s/ ERNEST Y. W. LAU, P.E.
Manager and Chief Engineer

Attachment"

The foregoing was for information only.

DISCUSSION

Mr. Andaya asked the Board if there was any questions or discussion about the 2017 schedule. There were no comments or discussion.

BOARD OF WATER SUPPLY
CITY AND COUNTY OF HONOLULU

2017 BOARD MEETING SCHEDULE

Board Meetings are scheduled for the fourth Monday of each month at 2:00 p.m., in the Public Service Building (PSB) Board Room, unless otherwise noted.

January 30 (5th Monday in January)

February 27

March 28 (Tuesday)*

April 24

May 22

June 26

July 24

August 28

September 25

October 23

November 27

December 18 (3rd Monday in December)

*Monday, March 27 is a holiday

ITEM FOR INFORMATION NO. 6

"November 28, 2016

GROUNDWATER
LEVELS

Chair and Members
Board of Water Supply
City and County of Honolulu
Honolulu, Hawaii 96843

Chair and Members:

Subject: Status Update of Groundwater Levels at All Index
Stations

There were no aquifer index wells within low groundwater status for the production month of October 2016. The monthly production average for October 2016 was 140.45 million gallons per day.

The Board of Water Supply rainfall index for the month of October 2016 was 77 percent of normal; with a 5-month moving average of 172 percent. As of November 8, 2016, the Hawaii Drought Monitor shows some abnormally dry conditions for most of the island of Oahu, except for the Ko'olau Mountain Range.

The National Weather Service is forecasting above normal rainfall from November 2016 to May 2017, with higher probabilities in windward areas during the winter season.

Most index monitoring wells are exhibiting static or slightly increasing trends due to the decreased pumpage during the fall months.

Respectfully submitted,

/s/ ERNEST Y. W. LAU, P.E.
Manager and Chief Engineer

Attachments"

The foregoing was for information only.

DISCUSSION:

Marc Chun, Water Resources Division Assistant Program Administrator, gave the report.

Ms. Sproat referred to the production report for the recycled water and asked out of the 9 million gallons per day (mgd), what is the total amount of water used. Mr. Lau replied that the 9 mgd is usage. It's an "on-demand" system that pumps as much as gets consumed.

**PRODUCTION, HEAD AND RAINFALL REPORT
MONTH OF OCTOBER 2016**

POTABLE

STATION	MGD
HONOLULU (1)	
KULIOUOU	0.06
WAILUPE	0.04
AINA KOA	0.30
AINA KOA II	0.94
MANOA II	0.00
PALOLO	1.02
KAIMUKI HIGH	2.32
KAIMUKI LOW	2.18
WILDER	7.16
BERETANIA HIGH	5.07
BERETANIA LOW	1.01
KALIHI HIGH	1.58
KALIHI LOW	3.81
KAPALAMA	0.64
KALIHI SHAFT	8.07
MOANALUA	0.64
HALAWA SHAFT	7.73
KAAMILO	0.00
KALAUAO	7.12
PUNANANI	12.07
KAHUMANU	0.74
HECO WAIU	2.67
MANANA	0.41
WELLS SUBTOTAL:	65.59
MANOA TUNNEL	0.17
PALOLO TUNNEL	0.23
GRAVITY SUBTOTAL:	0.40
HONO. SUBTOTAL:	65.99

STATION	MGD
WINDWARD (2)	
WAIMANALO II	0.40
WAIMANALO III	0.30
KUOU I	0.50
KUOU II	0.09
KUOU III	0.08
LULUKU	1.00
HAIKU	0.00
IOLEKAA	0.00
KAHALUU	0.85
KAHANA	0.77
PUNALUU I	0.00
PUNALUU II	1.93
PUNALUU III	1.15
KALUANUI	0.00
MAAKUA	0.38
HAUULA	0.00
WELLS SUBTOTAL:	7.45
WAIM. TUNNELS I & II	0.00
WAIM. TUNNELS III&IV	0.19
WAIHEE INCL. WELLS	0.94
WAIHEE TUNNEL	5.14
LULUKU TUNNEL	0.11
HAIKU TUNNEL	0.00
KAHALUU TUNNEL	1.59
GRAVITY SUBTOTAL:	7.97
WIND. SUBTOTAL:	15.42

STATION	MGD
NORTH SHORE (3)	
KAHUKU	0.34
OPANA	0.69
WAIALEE I	0.00
WAIALEE II	0.17
HALEIWA	0.00
WAIALUA	2.18
N.SHORE SUBTOTAL:	3.37

STATION	MGD
MILILANI (4)	
MILILANI I	2.92
MILILANI II	0.00
MILILANI III	0.00
MILILANI IV	1.69
MILILANI SUBTOTAL:	4.61

STATION	MGD
WAHIAWA (5)	
WAHIAWA	1.75
WAHIAWA II	1.44
WAHIAWA SUBTOTAL:	3.18

STATION	MGD
PEARL CITY-HALAWA (6)	
HALAWA 277	0.90
HALAWA 550	0.00
AIEA	0.97
AIEA GULCH 497	0.52
AIEA GULCH 550	0.22
KAONOHI I	0.78
WAIMALU I	0.00
NEWTOWN	0.92
WAIU	0.76
PEARL CITY I	0.50
PEARL CITY II	1.18
PEARL CITY III	0.19
PEARL CITY SHAFT	0.92
PEARL CITY-HALAWA SUBTOTAL:	7.87

STATION	MGD
WAIPAHU-EWA (7)	
WAIPIO HTS.	1.53
WAIPIO HTS. I	1.01
WAIPIO HTS. II	0.34
WAIPIO HTS. III	1.20
WAIPAHU	1.69
WAIPAHU II	1.06
WAIPAHU III	3.93
WAIPAHU IV	3.14
KUNIA I	5.12
KUNIA II	2.52
KUNIA III	1.39
HOAEAE	7.48
HONOULIULI I	0.00
HONOULIULI II	4.16
MAKAKILO	0.38
WAIPAHU-EWA SUBTOTAL:	34.93

STATION	MGD
WAIANAE (8)	
MAKAHA I	0.81
MAKAHA II	0.10
MAKAHA III	0.99
MAKAHA V	0.38
MAKAHA VI	0.00
MAKAHA SHAFT	0.00
KAMAILE	0.27
WAIANAE I	0.17
WAIANAE II	0.01
WAIANAE III	0.78
WELLS SUBTOTAL:	3.52
WAI. C&C TUNNEL	1.40
WAI. PLANT. TUNNELS	0.16
GRAVITY SUBTOTAL:	1.56
WAIANAE SUBTOTAL:	5.08

NONPOTABLE

NONPOTABLE	MGD
KALAUAO SPRINGS	0.60
BARBERS POINT WELL	1.23
GLOVER TUNNEL NP	0.43
NONPOTABLE TOTAL:	2.25

RECYCLED WATER (SEPTEMBER 2016)

RECYCLED WATER	MGD
HONOULIULI WRF R-1	7.44
HONOULIULI WRF RO	1.58
RECYCLED WATER TOTAL:	9.02

**PRODUCTION, HEAD AND RAINFALL REPORT
MONTH OF OCTOBER 2016**

PRODUCTION SUMMARIES

TOTAL WATER	MGD
PUMPAGE	130.52
GRAVITY	9.93
POTABLE TOTAL:	140.45
NONPOTABLE	2.25
RECYCLED WATER	9.02
TOTAL WATER:	151.72

CWRM PERMITTED USE AND BWS ASSESSED YIELDS FOR BWS POTABLE SOURCES				
WATER USE DISTRICTS		A PERMITTED USE/ BWS YLDS	B OCT 2016	C DIFF. A-B
1	HONOLULU	82.93	65.59	17.34
2	WINDWARD	25.02	9.34	15.68
3	NORTH SHORE	4.74	3.37	1.37
4	MILILANI	7.53	4.61	2.92
5	WAHIAWA	4.27	3.18	1.09
6	PEARL CITY-HALAWA	12.25	7.87	4.38
7	WAIPAHU-EWA	50.63	34.93	15.70
8	WAIANAE	4.34	3.52	0.82
TOTAL:		191.71	132.41	59.30

CWRM PERMITTED USE FOR BWS NONPOTABLE SOURCES				
WATER USE DISTRICTS		A PERMITTED USE	B OCT 2016	C DIFF. A-B
7	WAIPAHU-EWA (BARBERS POINT WELL)	1.00	1.23	-0.23
TOTAL:		1.00	1.23	-0.23

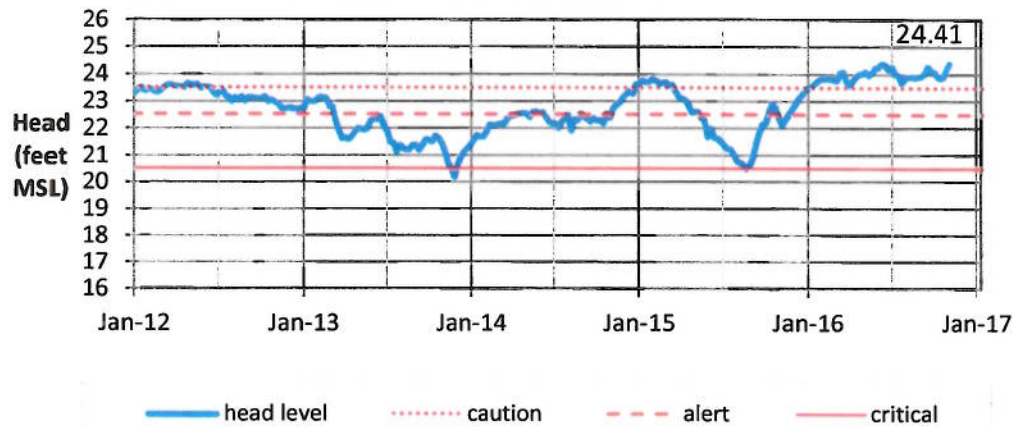
EFFECTIVE WATER DEMAND PER DISTRICT

IMPORT/EXPORT BETWEEN WATER USE DISTRICTS			
FROM	TO		MGD
2	1	WINDWARD EXPORT	0.14
7	8	BARBERS PT LB	5.62

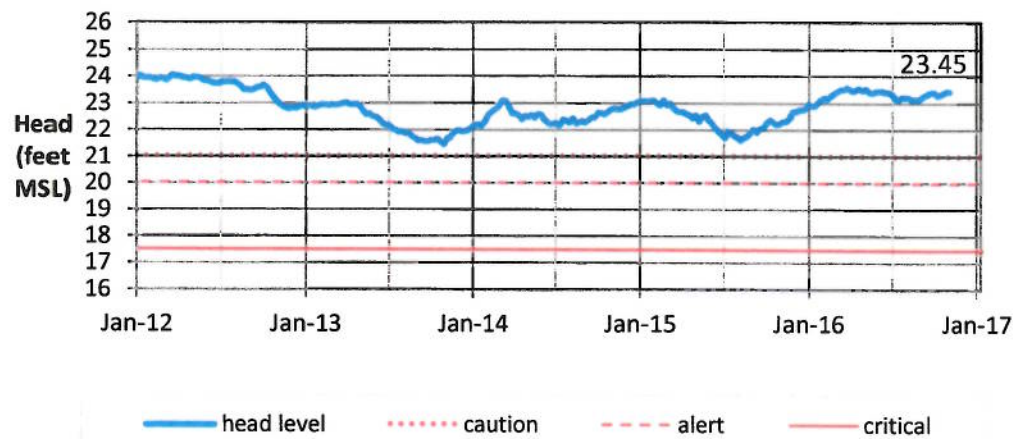
WATER USE DISTRICTS		SUBTOTAL	IMPORT	EXPORT	EFFECTIVE WATER DEMAND
1	HONOLULU	65.59	0.14	-	65.73
2	WINDWARD	9.34	-	0.14	9.20
3	NORTH SHORE	3.37	-	-	3.37
4	MILILANI	4.61	-	-	4.61
5	WAHIAWA	3.18	-	-	3.18
6	PEARL CITY-HALAWA	7.87	-	-	7.87
7	WAIPAHU-EWA	34.93	-	5.62	29.31
8	WAIANAE	3.52	5.62	-	9.14
TOTAL:		132.41	5.76	5.76	132.41

Weekly Head Report

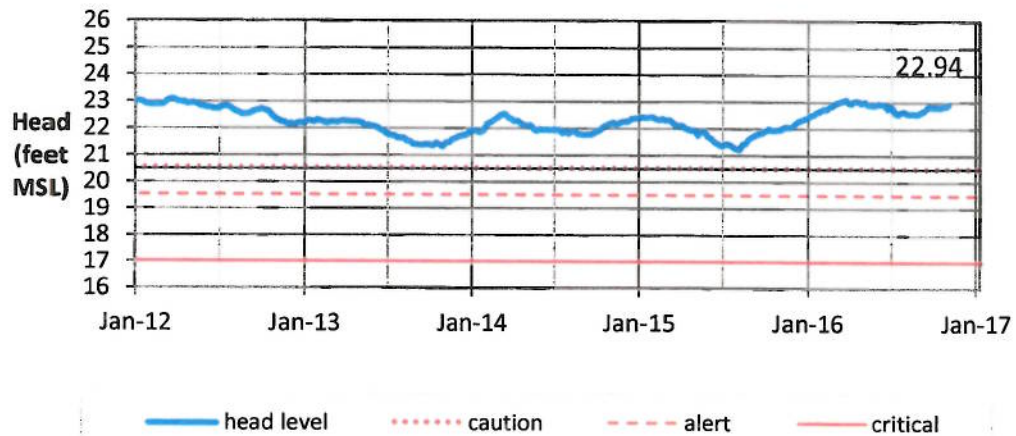
Kaimuki 11/06/16



Beretania 11/06/16

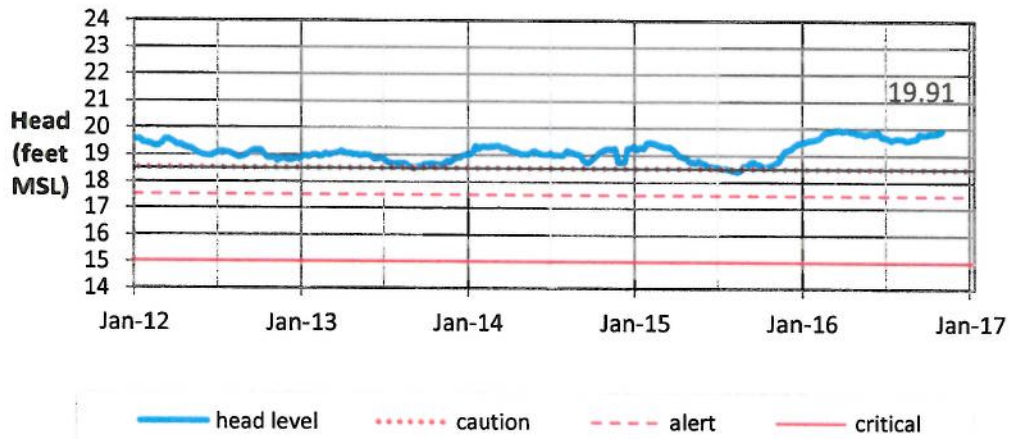


Kalihi 11/06/16

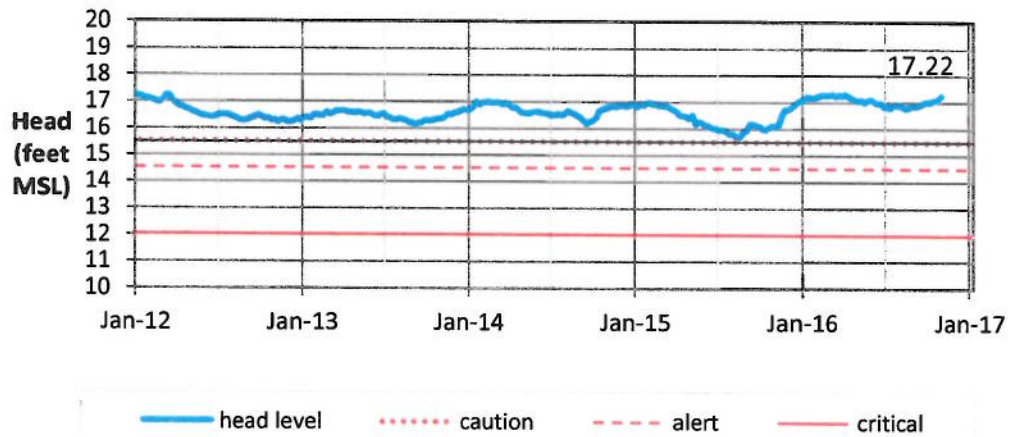


Weekly Head Report

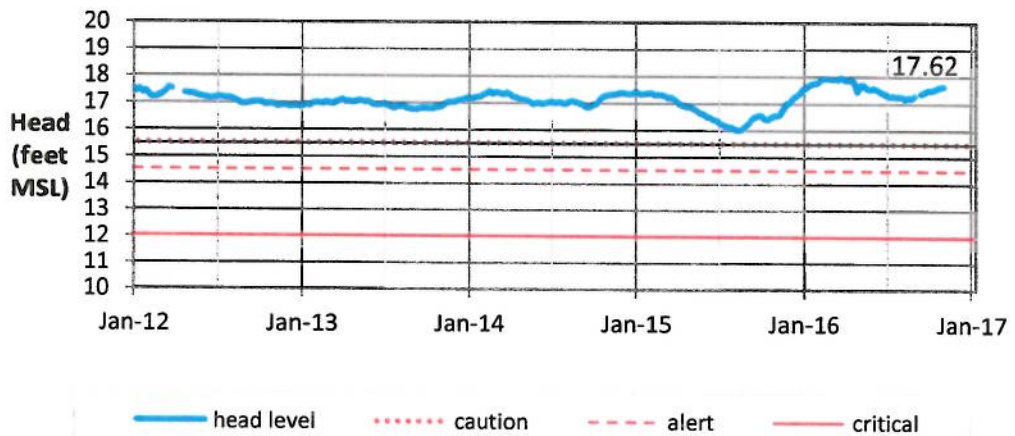
Moanalua 11/06/16



Halawa 11/06/16

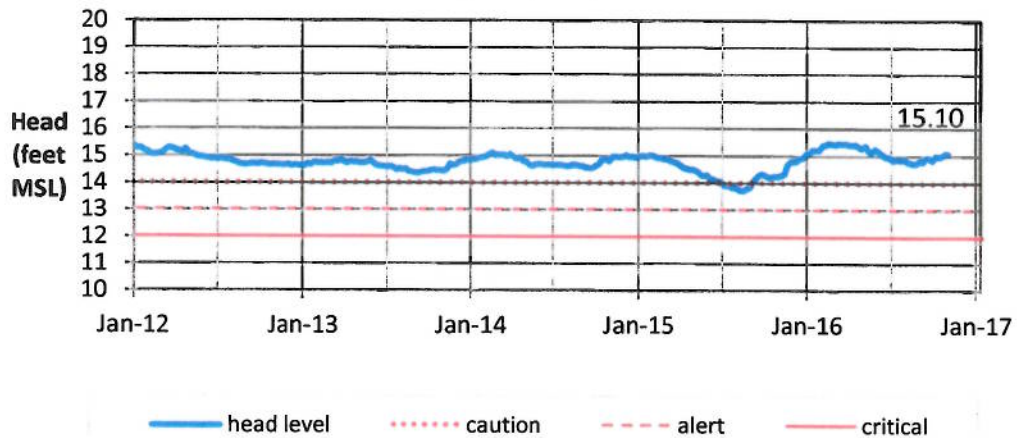


Kalauao 11/06/16

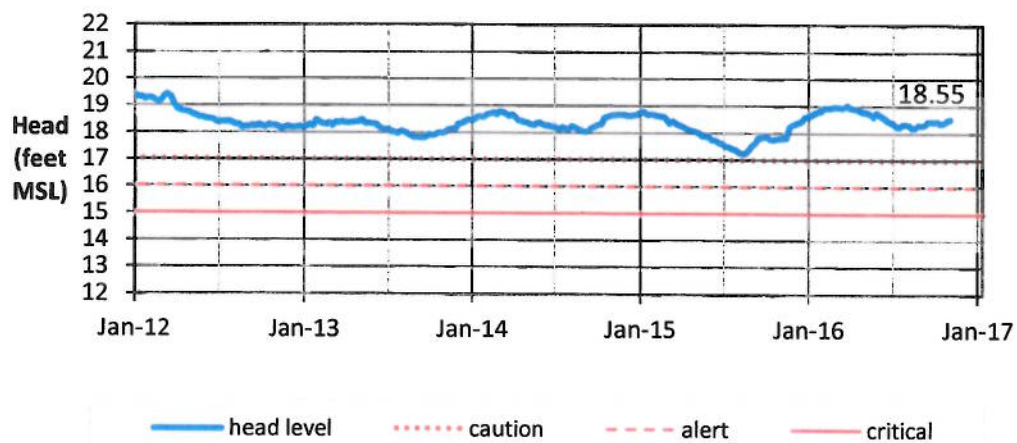


Weekly Head Report

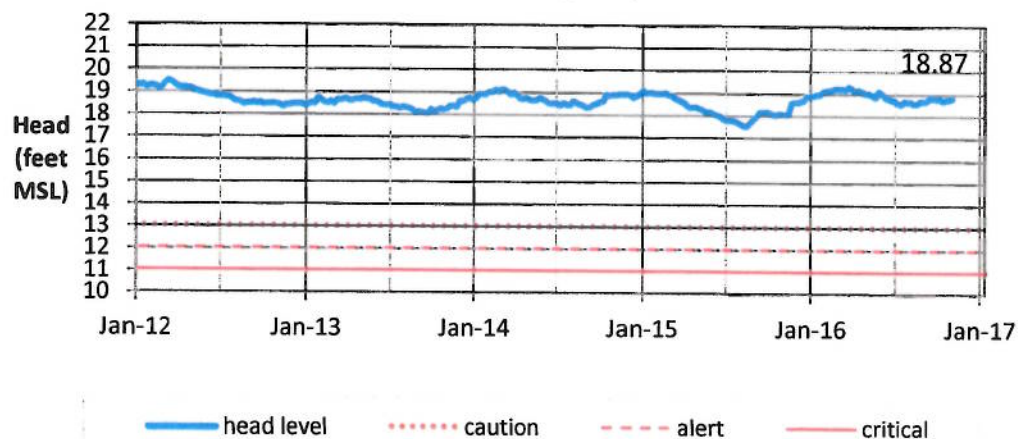
Pearl City 11/06/16



Waipahu 11/06/16

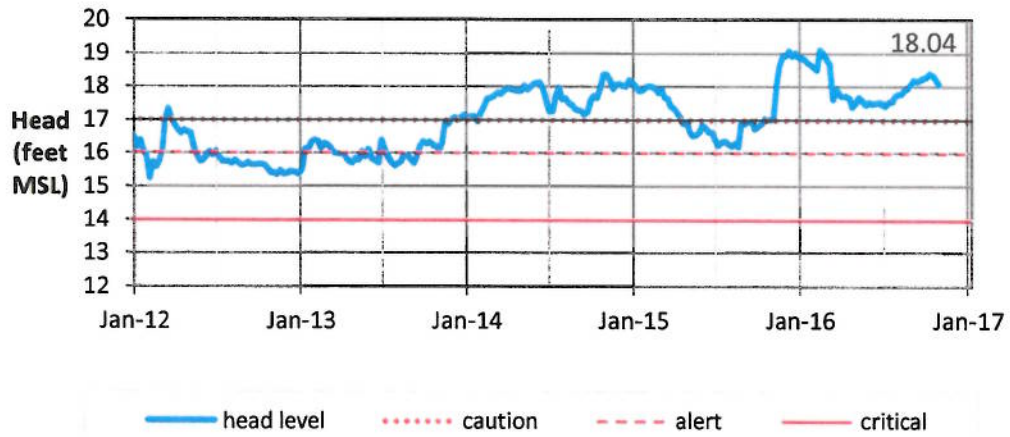


Hoeaee-Kunia 11/06/16

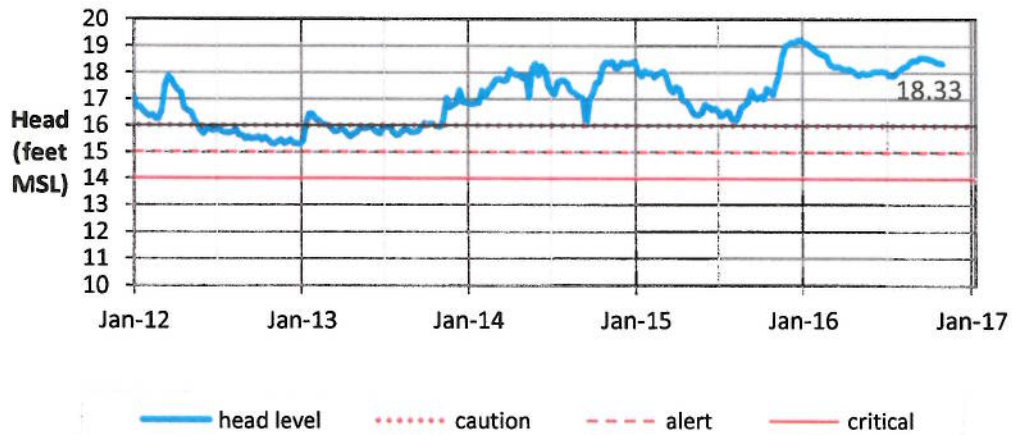


Weekly Head Report

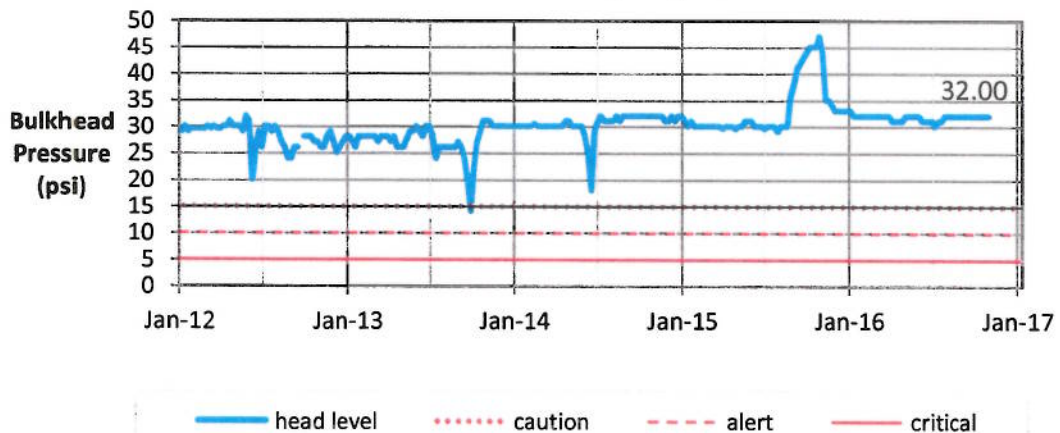
Punaluu 11/06/16



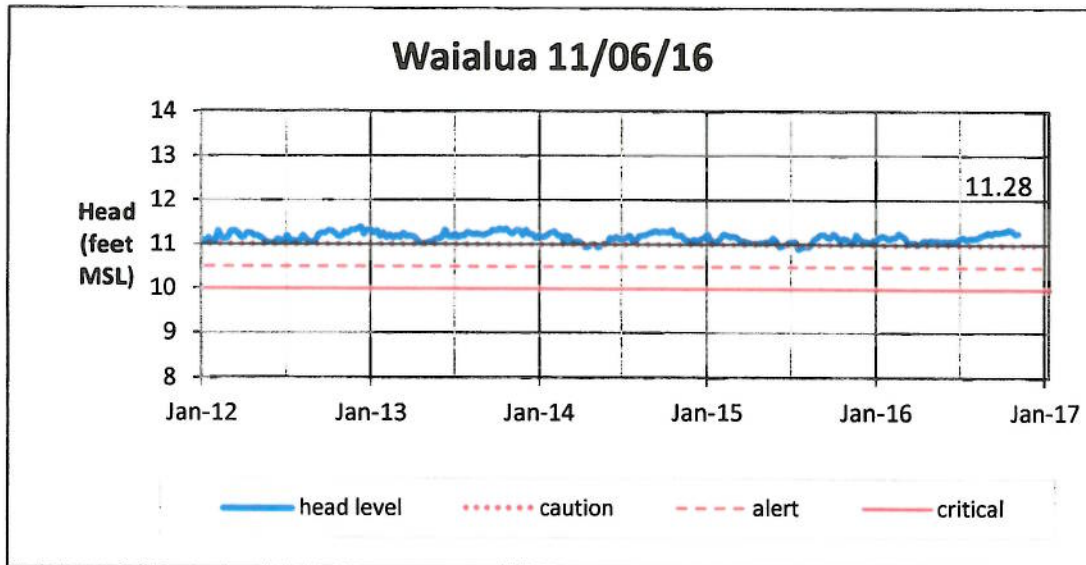
Kaluauui 11/06/16



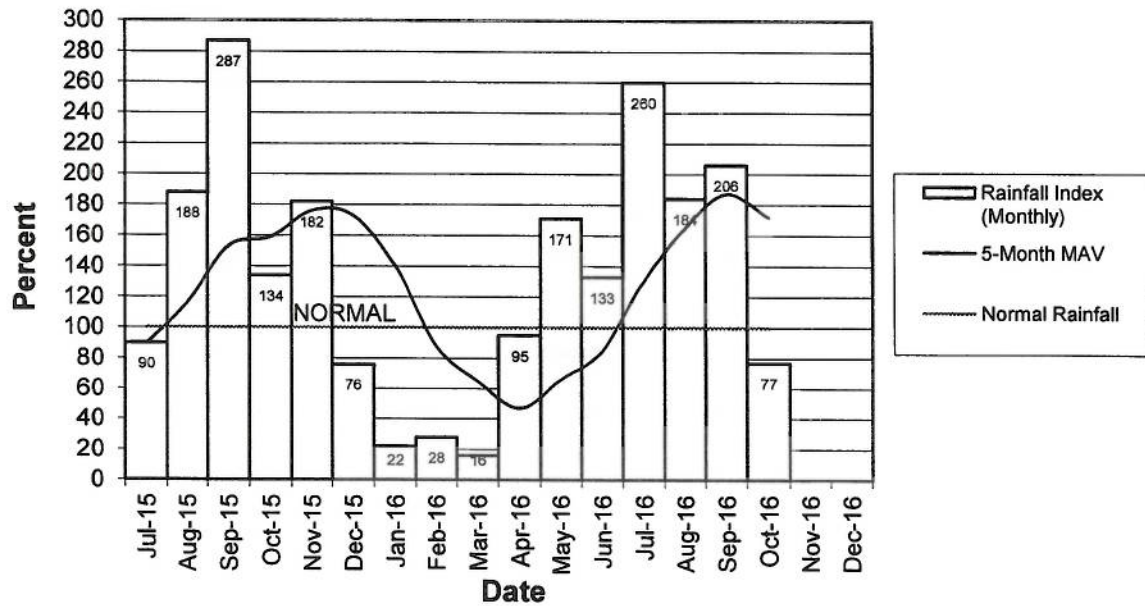
Waihee Tunnel 11/06/16



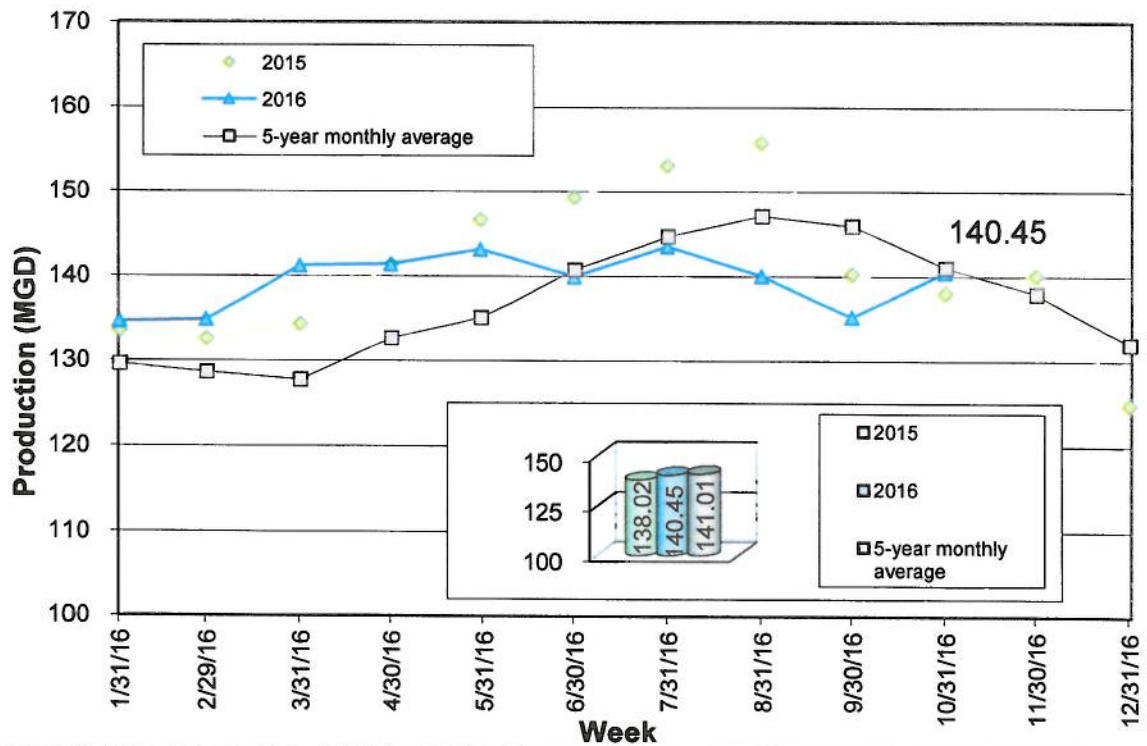
Weekly Head Report



HONOLULU WATERSHED AREA Rainfall Intake

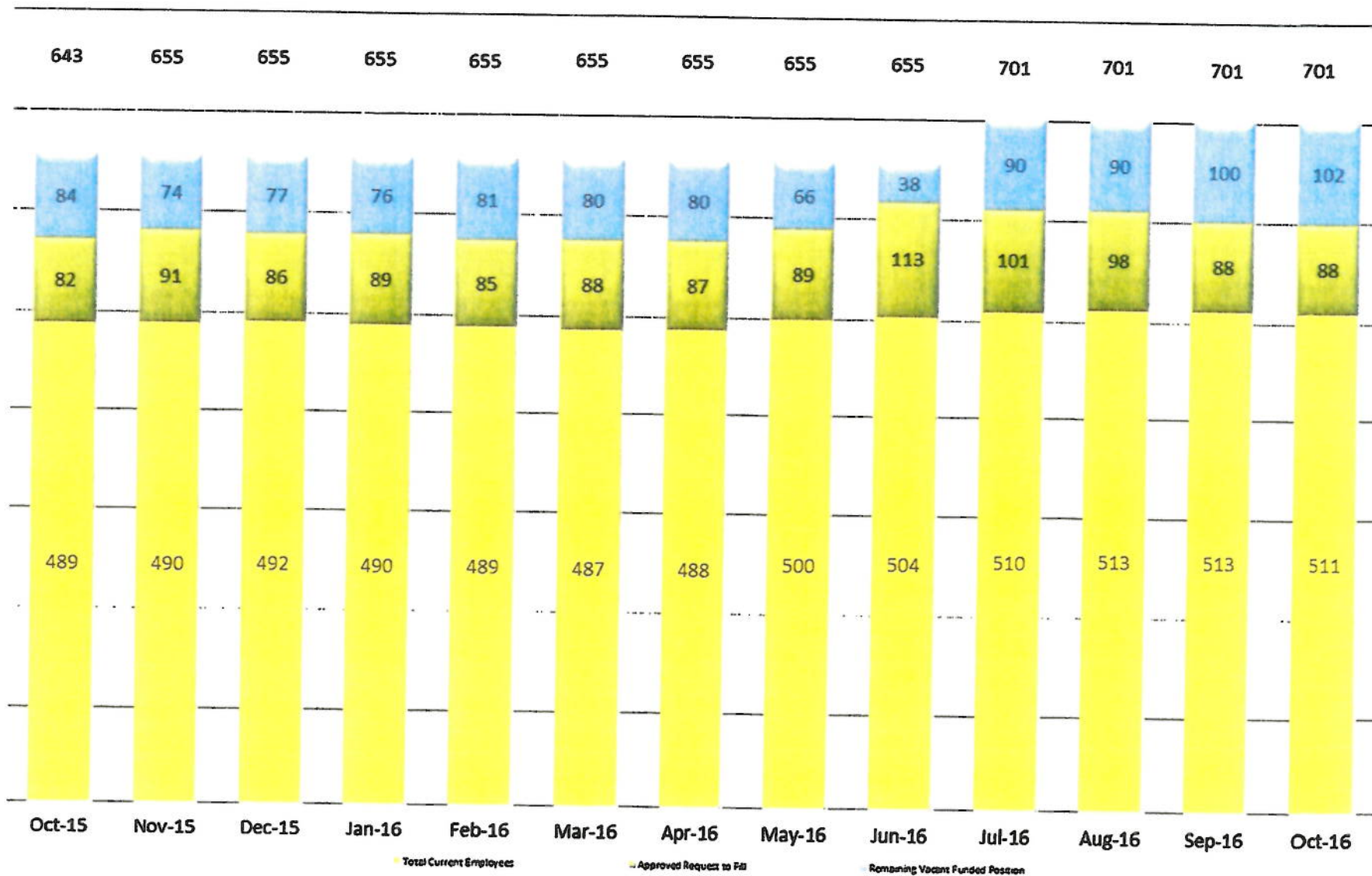


Monthly Production

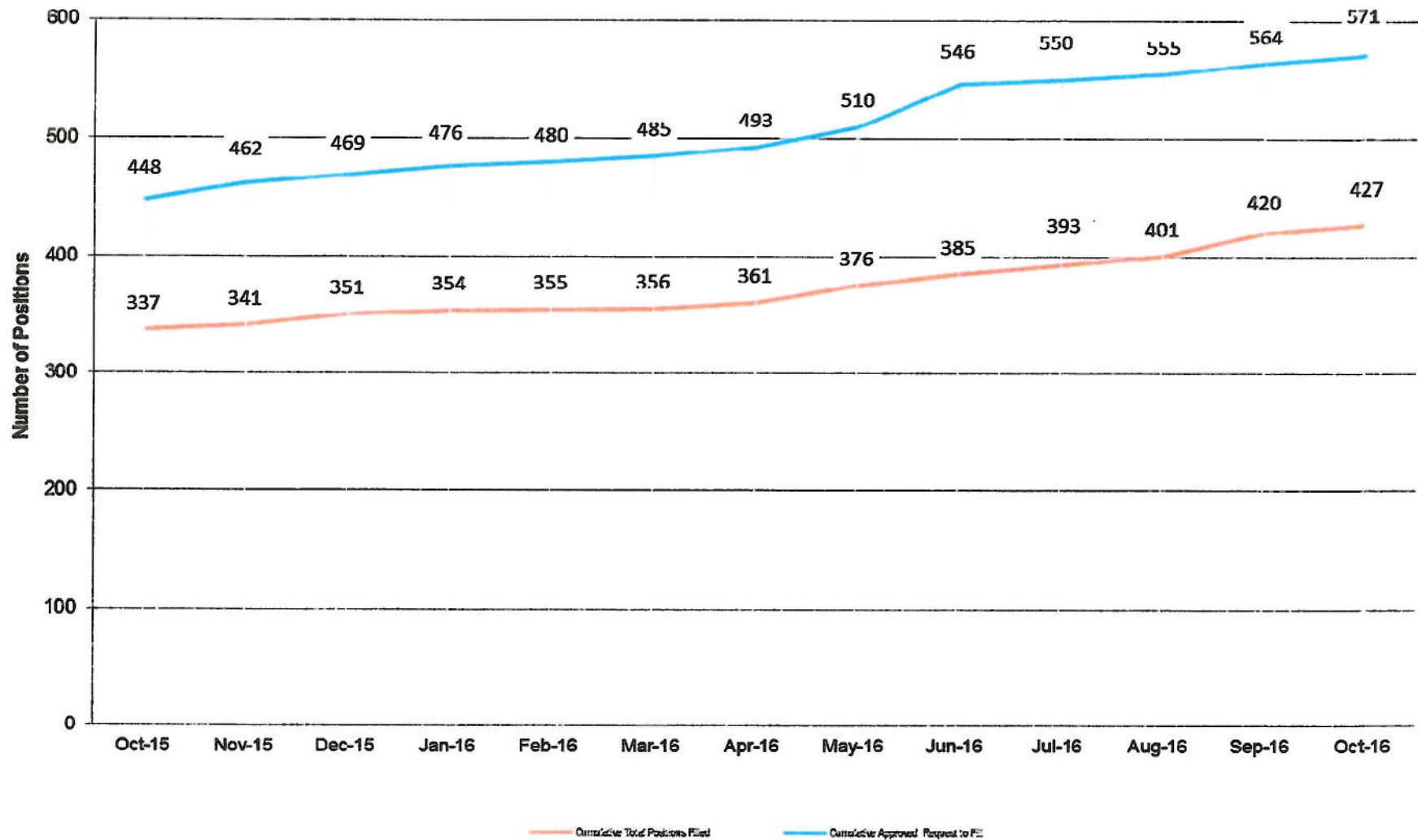


Positions Filled

October 1, 2015 through October 31, 2016



Cumulative Totals October 1, 2015 through October 31, 2016



DISCUSSION

Karen Tom of the Human Resources Office, gave the report. Mr. Andaya asked how many new hires were there for this period. Ms. Tom replied that they filled 34 positions which included new hires, promotions, transfers, and demotions. Mr. Lau stated that progress is being made, but it's not easy because people retire or resign also.

Ms. Tom stated that when she started at BWS nine years ago, there were close to 100 vacancies and new positions were also added. Mr. Wong added that when he first was appointed to the Board, BWS was just coming off of a hiring freeze of about two to three years. Mr. Wong stated that he was very anxious to hire so a lot of pressure was put on the BWS. It took a while because of the hiring process, but over the last year, there's been tremendous progress. Mr. Wong expects BWS to improve, but said they are doing a great job.

Ms. Tom informed the Board of a massive reorganization that started in 2000 that tried to flatten the organization and instituted the hiring freeze. She also explained how BWS divisions consider hiring at entry level, which helps to fill positions and explained the trades apprentice hiring process.

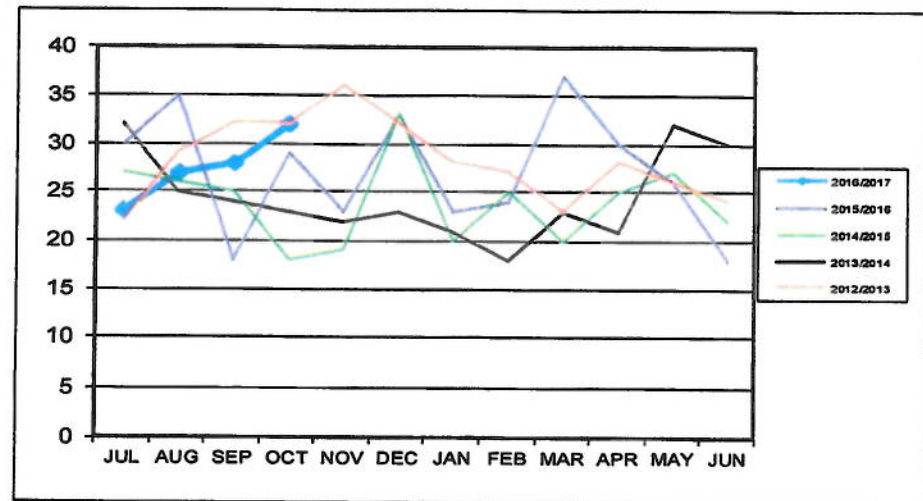
Mr. Andaya mentioned that a year ago there were 489 employees, but even after all the hiring, the count is only at 511. He said that he knows the challenges related to hiring and he understands. Mr. Andaya asked what the lowest count was. Ms. Tom replied about 430. Ms. Tom stated BWS is looking at developing a web-based application so people can fill out applications on their phones.

ITEM FOR INFORMATION NO. 8

WATER MAIN REPAIR REPORT for October 2016

	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	Total
2016/2017	23	27	28	32									110
2015/2016	30	35	18	29	23	33	23	24	37	30	26	18	326
2014/2015	27	26	25	18	19	33	20	25	20	25	27	22	287
2013/2014	32	25	24	23	22	23	21	18	23	21	32	30	294
2012/2013	22	29	32	32	36	32	28	27	23	28	26	24	339

Date	Address	Size
10/6	1211 Lunaai St.	8" CI
10/7	3 Aloha Tower Dr.	12" CI
10/8	2921 Kahawai St.	8" PVC
10/8	87-377 Heleuma St.	8" CI
10/9	943 Ala Kapua St.	8" CI
10/10	1015 Wilder Ave.	4" CI
10/10	979 Waiohinu Dr.	6" CI
10/11	2562 Alaula Wy.	8" CI
10/12	1206 Lunaai St.	8" CI
10/12	2237 Aulii St.	6" CI
10/12	2261 Aulii St.	6" CI
10/12	61-164 Iliohu Pl.	8" AC
10/12	7079 Niunalu Lp.	12" PVC
10/13	955 Ala Kapua St.	8" CI
10/15	94-271 Haaa St.	8" CI
10/17	91-554 Aekai Pl.	4" CI
10/21	91-727A Oneula Pl.	8" PVC
10/21	49-560 Kamehameha Hwy.	6" CI
10/21	614 Analu St.	4" CI
10/21	1930 Uiana St.	8" CI
10/23	1829 Lusitana St.	6" CI
10/23	92-775 Ahikoe St.	8" CI
10/24	621 Ulumalu St.	8" CI
10/24	4668 Sierra Dr.	6" CI
10/24	94-333 Waipahu Depot St.	8" CI
10/25	4658 Sierra Dr.	6" CI
10/25	94-140 Leokane St.	12" CI
10/26	651 Hahaione St.	8" CI
10/27	62-202 Kamehameha Hwy.	16" CI
10/27	61-174 Ikuwai Wy.	4" CI
10/29	395 Auwinala St.	6" CI
10/31	2331 Kuahea St.	8" CI



Bold * - Pro-active Leak Repair

30 miles of pipelines were surveyed by the Leak Detection Team in the month of October.

DISCUSSION

Daryl Hiromoto, Field Operations Division Program Administrator, gave the report. There were no comments or discussion.

MOTION TO
RECESS INTO
EXECUTIVE
SESSION

Upon unanimously approved motion, the Board recessed into Executive Session Pursuant to [HRS §92-5(a)(4)] at 2:59 PM to Consult with the Board's Attorney and to Consider Issues Pertaining to Matters Posted for Discussion at an Executive Session.

OPEN
SESSION

The Board reconvened in Open Session at 3:11 PM

MOTION TO
ADJOURN

There being no further business Chair Andaya at 3:11 PM called for a motion to adjourn the Open Session. Adam Wong so moved; seconded by Ross Sasamura and unanimously carried.


THE MINUTES OF THE REGULAR SESSION BOARD MEETING ON NOVEMBER 28, 2016 WERE APPROVED AT THE DECEMBER 19, 2016 BOARD MEETING			
	AYE	NO	COMMENT
BRYAN P. ANDAYA	X		
ADAM C. WONG	X		
DAVID C. HULIHEE	X		
KAPUA SPROAT	X		
KAY C. MATSUI			ABSENT
ROSS S. SASAMURA	X		
FORD N. FUCHIGAMI			ABSENT

Respectfully submitted,



LISA K. KIM

APPROVED:



BRYAN P. ANDAYA
Chair of the Board

DEC 19 2016

Date