

## MINUTES

### REGULAR MEETING OF THE BOARD OF WATER SUPPLY

March 24, 2014

At 2:03 PM on March 24, 2014 in the Board Room of the Public Service Building at 630 South Beretania Street, Honolulu, Hawaii, Board Vice Chair Cypher called to order the Regular Meeting.

Present: Mahealani Cypher, Vice Chair  
Theresia C. McMurdo  
Adam C. Wong  
David C. Hulihee  
Ross S. Sasamura

Also Present: Ernest Lau, Manager and Chief Engineer  
Ellen Kitamura, Deputy Manager and Chief Engineer  
Alex Ubiadas  
Barry Usagawa  
Erwin Kawata  
Daryl Hiromoto  
Stuart Wong  
Mike Matsuo  
Clayton Shimazu  
Karen Tom  
Regina Souza  
Joe Cooper  
Jill Kuramoto

Others Present: Krishna Jayaram, Deputy Corporation Counsel  
Dan Lawrence, Deputy Corporation Counsel  
Russ Stepp, Stepp Consulting, Incorporated  
Chris Cleveland, Brown and Caldwell  
Glenn Hamamura, Systems Excellence LLC  
Eric Iwamoto, Bowers + Kubota  
Troy Shimasaki, Office of City Auditor  
Edwin Young, Office of City Auditor

Absent: Duane R. Miyashiro, Board Chair  
Glenn M. Okimoto

Manager Lau requested to move Item for Information No. 1, Revision of the 2013-2014 Capital Improvement Program Budget - Amendment No. 3, to Items Requiring Board Action. Deputy Corporation Counsel Jayaram and the Board approved Mr. Lau's request.

APPROVAL  
OF MINUTES

Approval of the Minutes of the Regular Meeting held on February 24, 2014

MOTION  
TO APPROVE

David Hulihee and Ross Sasamura motioned and seconded, respectively, to approve the Minutes of the Regular Session Meeting of February 24, 2014. The motion was unanimously carried.

"March 24, 2014

STRATEGIC  
PLAN  
DEVELOPMENT  
PROCESS

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

Chair and Members:

Subject: To Determine the Role of the Board in the Strategic Plan Development Process; Either with Participation of the Full Board or through the Creation of a HRS Section 92-2.5(b) Permitted Interaction Group

The department is developing a Board of Water Supply (BWS) strategic plan and requests the involvement of the Board in the process. The strategic plan will affirm the vision, mission, sustainability goals, and near-term objectives for the department. We are seeking approval of the process for Board involvement in the development of this plan. Ultimately, the strategic plan will be presented to the Board for adoption at a regular meeting of the Board. Preliminarily, there are two alternatives for Board involvement in this process. We request the Board's direction on the approach that it would like the department to proceed with.

1. Board Strategic Planning Workshop  
Under this alternative, a special meeting of the Board would be arranged, similar to the existing Budget Workshop that is held each year. The agenda would be noticed prior to the meeting and the entire Board would be involved in the discussion with the department's senior managers on the development of the strategic plan. Based on discussions with the Board, the department would then submit a final draft plan for adoption at a regular meeting; or
2. Board Strategic Plan Permitted Interaction Group  
Under this alternative, a permitted interaction group would be designated by the Board of up to three members (i.e., less than the number to constitute a quorum) to work with the department's senior managers on the development of a draft strategic plan for consideration by the Board at a regular meeting of the Board. The creation of the permitted interaction group is allowed under Chapter 92-2.5(b) of the Hawaii Revised Statutes. The pertinent section of the statutes is as follows:

*§92-2.5 Permitted interactions of members. (a) Two members of a board may discuss between themselves matters relating to official board business to enable them to*

*perform their duties faithfully, as long as no commitment to vote is made or sought and the two members do not constitute a quorum of their board.*

*(b) Two or more members of a board, but less than the number of members which would constitute a quorum for the board, may be assigned to:*

*(1) Investigate a matter relating to the official business of their board; provided that:*

*(A) The scope of the investigation and the scope of each member's authority are defined at a meeting of the board;*

*(B) All resulting findings and recommendations are presented to the board at a meeting of the board; and*

*(C) Deliberation and decisionmaking on the matter investigated, if any, occurs only at a duly noticed meeting of the board held subsequent to the meeting at which the findings and recommendations of the investigation were presented to the board; or*

*(2) Present, discuss, or negotiate any position which the board has adopted at a meeting of the board; provided that the assignment is made and the scope of each member's authority is defined at a meeting of the board prior to the presentation, discussion or negotiation.*

The strategic plan is an important opportunity to state overall near-term strategies of the Board and department that address the needs of the BWS and its customers, and to ensure that the Board and the department work together as a team.

Respectfully submitted,

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



**DISCUSSION:**

Vice Chair Cypher explained the two different options for Board involvement in the development of the strategic plan. Board member McMurdo inquired about the time commitment to both options. Mr. Lau explained that for the full Board workshop, it would take at least one, possibly two workshops. The whole Board would be involved in open discussions with no opportunity to break out into smaller group discussions. Ms. Cypher explained that under the permitted interaction group (PIG), up to three Board members could interact more freely on the various issues, with the Department and other members of the community. The PIG would then bring back a draft proposal to the whole Board at a regular open session Board meeting as an item requiring Board action, for discussion and approval. Mr. Lau stated that for the PIG, there would probably be a minimum of two meetings that would involve the BWS senior management team and the PIG.

Ms. Cypher stated that she preferred the PIG to allow some flexibility to the Board, and that the full Board would still get to review and approve or disapprove the draft proposal. Ms. Cypher recommended Board member Hulihee, Chair Miyashiro and herself to serve on the PIG.

Deputy Corporation Counsel Jayaram asked for clarification on the scope of work to be done by the PIG. Mr. Lau replied that the PIG would assist the Department in creating a strategic plan for the BWS for adoption by the Board. Some of the elements of the strategic plan include affirming the vision, mission, sustainability goals, and near-term objectives for the Department.

**MOTION TO APPROVE**

Adam Wong motioned to approve Chair Miyashiro, Vice Chair Cypher and Board member Hulihee to serve on the Permitting Interaction Group to develop a Board of Water Supply Strategic Plan. The motion was seconded by Ross Sasamura and unanimously carried.

CREATING A HRS SECTION 92-2.5(B) PERMITTED INTERACTION GROUP CONSISTING OF CHAIR MIYASHIRO, VICE CHAIR CYPHER AND BOARD MEMBER HULIHEE, TO DEVELOP A BOARD OF WATER SUPPLY STRATEGIC PLAN WAS APPROVED AT THE MARCH 24, 2014 BOARD MEETING			
	AYE	NO	COMMENT
DUANE R. MIYASHIRO			ABSENT
MAHEALANI CYPHER	X		
THERESIA C. MCMURDO	X		
ADAM C. WONG	X		
DAVID C. HULIHEE	X		
ROSS S. SASAMURA	X		
GLENN M. OKIMOTO			ABSENT

"March 24, 2014

REVISION OF  
THE 2013-2014  
CIP BUDGET

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

Chair and Members:

Subject: Revision of the 2013-2014 Capital Improvement Program  
Budget – Amendment No. 3

We recommend revision of the current Capital Improvement Program (CIP)  
Budget as described below:

1. Delete the following CIP project and appropriation:

		<u>Appropriation</u>	
		<u>Present</u>	<u>Proposed</u>
<u>Item No. 57 KALAWAHINE</u>			
180 2.0 MG RESERVOIR			
SPECIAL EXPENDABLE	CONST	8,000,000	---
FUND (appropriation only)			
SPECIAL EXPENDABLE			
FUND (appropriation only)			
(Contract Adjustment Account)			
		---	8,000,000

The project's transmission main was designed to connect to the Punchbowl 180 Reservoir 18-inch pipeline and to the suction side of the proposed Beretania Line Booster. Due to the resolution of the recirculation at the Diamond Head and Keanu Line Boosters, the Beretania Line Booster is no longer necessary. The Kalawahine pipeline will be redesigned to an alignment on Pensacola Street and interconnected to the existing Kinau Street 42-inch main. The reservoir site will also require a revised topographic survey. The funding for construction will be proposed after the design phase is completed. The funding for the construction phase of this project will be appropriated from the Special Expendable funds.\*

\*The Board of Water Supply (BWS) Special Expendable Fund was created and established in which customer deposits collected from the assessment of Water System Facilities Charges and negotiated agreements shall be deposited in a special fund. Per BWS Resolution No. 585, 1990 ... "disbursements from this fund shall be restricted to construct water source, storage, and transmission facilities only, including the acquisition of land"...

2. To reprogram the appropriations from Special Expendable Fund - Contract Adjustment Account to the Operating Fund – Contract Adjustment Account.

	<u>Appropriation</u>	
	<u>Present</u>	<u>Proposed</u>
SPECIAL EXPENDABLE FUND (appropriation only)	8,000,000	---
OPERATING FUND (appropriation only)	2,100,000	10,100,000

In accordance with Resolution No. 833, 2013 ... "the Manager and Chief Engineer, at his discretion, shall have the authority to adjust the method of funding the Capital Improvement Program Budget and that the Manager and Chief Engineer may increase or decrease the amount appropriated out of the Operating Fund, Improvement Fund, State Revolving Fund and Special Expendable Fund in the Capital Improvement Program Budget, provided that the total consolidated appropriation of the Operating Budget and Capital Improvement Program Budget remains the same"...

3. Delete the following CIP projects and appropriations:

Item No. 12 WAHIAWA  
WELLS I UNIT 3

OPERATING FUND	CONST	375,000	---
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This construction project will not be initiated in the current fiscal year. This project cannot be designed in-house due to the loss of key personnel. The funding for construction will be proposed after the design is completed.

Item No. 43 NUUANU  
RESERVOIR NO. 4  
DAM IMPROVEMENTS

OPERATING FUND	CONST	1,500,000	---
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The permitting process for this project is taking much longer than anticipated. The funding for construction is proposed for FY 2014-2015.

	<u>Appropriation</u>	
	<u>Present</u>	<u>Proposed</u>

Item No. 45 KAMAILE  
PLANTATION WELLS  
SEALING

OPERATING FUND	CONST	325,000	---
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The project's archaeological inventory survey has been completed, but the State Historic Preservation Division (SHPD) comments are pending. The department expects SHPD's project conditions will affect the project scope. The funding for construction will be proposed in a future fiscal year after conditions are formalized.

4. Add the following CIP projects and appropriations:

Item No. 3B EWA SHAFT  
HYDRO-GEOLOGICAL FIELD  
INVESTIGATION AND  
PRELIMINARY  
ENGINEERING STUDY

OPERATING FUND	P&E	---	2,000,000
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This study will assess seepage into the Ewa Shaft and propose physical improvements and provide a basis of design report.

Item No. 3D RED HILL  
UNDERGROUND FUEL  
STORAGE FACILITY AND  
GROUNDWATER  
CONTAMINATION STUDY

OPERATING FUND	P&E	---	300,000
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The purpose of this study is to determine the extent and impact of fuel releases from the Navy's Red Hill Underground Fuel Storage Facility on the Waimalu and Moanalua aquifers and BWS drinking water sources.

Item No. 20A WAHIAWA  
WELLS I UNIT 3  
REHABILITATION

OPERATING FUND	P&E	---	100,000
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The purpose of this project is to design the well repair to extend the well casing and address the partial well collapse causing turbidity in the well.

5. Increase the appropriation for the following CIP project:

		<u>Appropriation</u>	
		<u>Present</u>	<u>Proposed</u>
<u>Item No. 2</u> BWS WATER MASTER PLAN			
OPERATING FUND	P&E	5,500,000	10,250,000

This project requires an increase in appropriation to complete the infrastructure condition assessment, master plan, financial rate study, and communication plan.

6. Decrease the appropriation for the following CIP Contract Adjustment Account:

OPERATING FUND	10,100,000	5,150,000
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The appropriate pages of the current Capital Improvement Program budget will be revised for distribution.

Respectfully submitted,

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

#### DISCUSSION:

Water Resources Program Administrator Barry Usagawa gave a presentation that explained the reasons for the amendments to the CIP budget.

Ms. McMurdo inquired about the additional \$4.75 million for the Water Master Plan (WMP) and what that money was going towards. Mr. Usagawa replied that the bulk of the money is going into the condition assessment. Board member Wong questioned if the \$10.25 million that was proposed for the entire WMP stayed the same or if it was increased. Mr. Usagawa replied that it was increased from previous estimates by about \$1-2 million. The estimates for phases 2 and 3 were made during the phase 1 effort. When phase 1 was completed, they found that more effort was needed in the pipeline condition assessments. The pipelines are the largest asset, so more funding was added for the condition assessment. A criticality

analysis would determine which pipelines are the most important to delivering water in terms of single points of failures to critical facilities such as hospitals. Mr. Lau stated that during an early interview with the Star-Advertiser, he told the reporter that the total cost for the WMP was in the range of \$9-9.5 million, however, that was well before the project started. The cost has increased based on the needs identified as they worked through the project.

Mr. Wong commented that when the Board approved the rate increase a couple years ago, it was mainly for repair and replacements of the pipelines and infrastructure. Last year and this year, money is being taken out of physical improvements and being put into consultant contracts for IT, the WMP, etc. Mr. Wong understands that some of these contracts are necessary; however, he wants to be sure that the increase in rates go towards improvements on the infrastructure. Mr. Lau stated that BWS is responsible for over \$1 billion in assets. He stated that some of the earlier assumptions based pipeline replacements strictly on age, but through the work of the WMP, they found that age is not a good indicator of replacing pipeline. Newer pipelines may need to be replaced sooner due to factors such as aggressive corrosion. So the WMP gathers all this type of information and develops a long term plan and vision that balances affordability, reliability and high quality of water. Mr. Lau feels that if they don't develop a plan, they may be pouring money into areas that may not be needed at the moment. Ms. Cypher asked if the condition assessment assists the Department in prioritizing project improvements. Mr. Lau replied that that is the envisioned outcome from the WMP. Ms. McMurdo suggested communicating this with the public by informing them what the increase in water rates is going towards. Mr. Usagawa informed the Board that they have started with internal newsletters, and Mr. Lau added that they will be including quarterly newsletters to customers in their water bills.

Ms. Cypher questioned if the Kalawahine 180 Reservoir will be needed eventually. Mr. Usagawa replied that it will be because of lack of storage in the Metropolitan 180 system. Mr. Usagawa replied to Ms. Cypher's inquiring stating that this project would be deferred for at least two years.

Ms. Cypher asked if there were time constraints or limitations that the Federal or State expects for BWS to make corrections to the Nuuanu Reservoir Dam. Mr. Usagawa replied that he is unaware of any schedule expectations from them and that BWS needs to inform them of their revised schedule. Mr. Usagawa replied to Ms. Cypher's inquiry stating that they should be able to award this project in fiscal year 2015 and the target to start construction would be about March 2015, so that construction can occur during the dry season.

Ms. McMurdo inquired if the Navy should reimburse BWS for costs associated with the Red Hill fuel storage leak. Mr. Lau replied that at this point he is unsure, but they are keeping track of all expenses relating to the Navy fuel leak and may possibly request for reimbursement in the future.

Mr. Wong inquired about the monies that go into the contract adjustment account and asked where they go. Mr. Lau stated that it would be carried forward to fiscal year 2015, and this was confirmed by Waterworks Controller Joe Cooper.

**MOTION TO  
APPROVE**

Ross Sasamura motioned to approve the Revision of the 2013-2014 Capital Improvement Program Budget – Amendment No. 3. The motion was seconded by David Hulihee and unanimously carried.

THE REVISION OF THE 2013-2014 CAPITAL IMPROVEMENT PROGRAM BUDGET – AMENDMENT NO. 3 WAS APPROVED AT THE MARCH 24, 2014 BOARD MEETING			
	AYE	NO	COMMENT
DUANE R. MIYASHIRO			ABSENT
MAHEALANI CYPHER	X		
THERESIA C. MCMURDO	X		
ADAM C. WONG	X		
DAVID C. HULIHEE	X		
ROSS S. SASAMURA	X		
GLENN M. OKIMOTO			ABSENT



# **Revision of the 2013-2014 Capital Improvement Program Budget ..... Amendment No. 3**

Board Meeting  
March 24, 2014







# Summary of CIP Amendments

- Deferred Projects

– Kalawahine 180 Reservoir	\$ 8,000,000
– Wahiawa Wells I Unit 3, Construction	\$ 375,000
– Nuuanu Reservoir No. 4	\$ 1,500,000
– Kamaile Plantation Wells Sealing	<u>\$ 325,000</u>
Total:	<b>\$10,200,000</b>

- Added Projects

– Ewa Shaft Seepage Study	\$ 2,000,000
– Red Hill Fuel Contamination Study	\$ 300,000
– Wahiawa Wells I Unit 3, P&E	\$ 100,000
– BWS Water Master Plan	<u>\$ 4,750,000</u>
Total:	<b>\$ 7,150,000</b>





Board of Water Supply  
City and County of Honolulu

# Kalawahine 180 Reservoir

- Transmission main re-aligned to Pensacola St. rather than back to Alapai St.
- Eliminates need to replace Pensacola 8"
- Made possible due to system efficiencies gained by WSO, FO & WR staff
- Diamond Head Line Booster recirculation resolved. Saves \$400,000/year pump cost
- Kaimuki pressures increased and Waahila 180' Reservoir now fills
- Beretania Line Booster is no longer needed saving \$25 Million and upper parking lot is available for Beretania Redevelopment







# Wahiawa Wells I, Unit 3

- Well No. 3 needs to be deepened and repaired to address partial well collapse causing turbidity
- In-house design is no longer possible due to the loss of key personnel
- Portion of Construction funding will now be used for design





- [illegible]





Board of Water Supply  
City and County of Honolulu

# Kamaile Plantation Wells Sealing

- Kamaile Plantation Wells are no longer used and need to be sealed.
- Wells are conduits for contaminating the aquifer.
- Several cultural sites and heiau in the area complicate the well sealing.
- Awaiting SHPD's conditions to mitigate any damage to cultural sites.







Board of Water Supply  
City and County of Honolulu

# Ewa Shaft Seepage Study

- Hydro-Geological Field Investigation will address seepage into the shaft from Honouliuli Stream

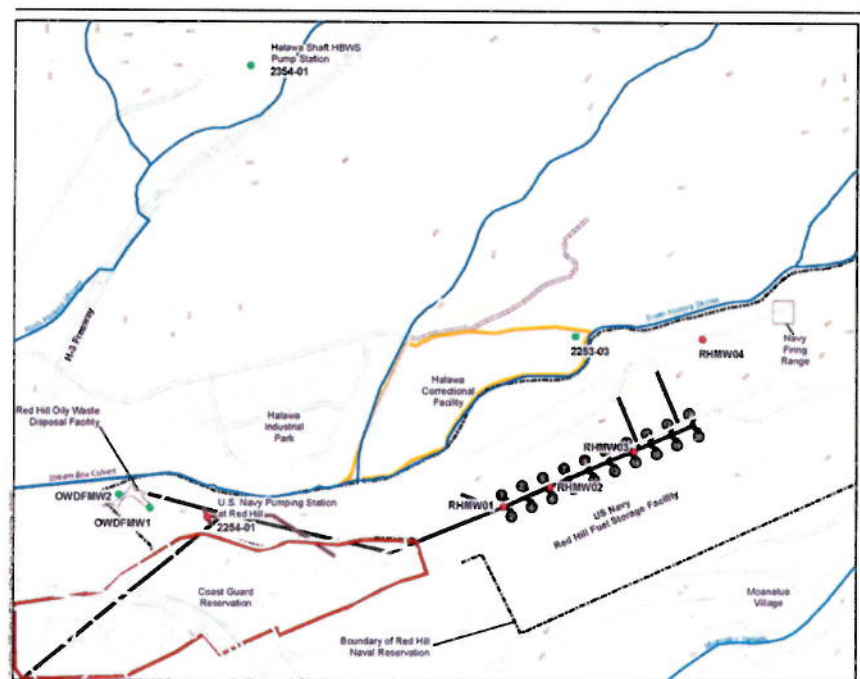




Board of Water Supply  
City and County of Honolulu

# Red Hill Fuel Contamination Study

- Study is to determine the extent and impact of fuel releases from the Navy's Red Hill Underground Fuel Storage Facility on the Waimalu and Moanalua aquifers and BWS drinking water sources







# Water Master Plan Phase 2 & 3

- Completes the infrastructure condition assessment, master plan, financial rate study, and communication plan.

Phase 2 Tasks – Condition Assessment	
Task	Description
1	Complete Causal Factors Analysis for Pipelines
2	Complete Risk Based Pipeline Prioritization Using CapPlan
3	Implement Condition Assessment Methodologies on Selected Pipelines
4	Update Causal Factors Analysis and Condition Assessment Report for Pipelines (Funding FY2015)
5	Condition Assessment Activities for Non-pipeline Facilities
6	Project Support for Condition Assessment (Possible Funding FY2015)
Phase 3 Tasks – Water Master Plan	
Task	Description
7	Summarize Background Information and Planning Data
8	Complete Water Source Evaluation
9	Complete Water Quality and Treatment Evaluation
10	Complete Water System Evaluation
11	Complete Operations and Maintenance Evaluation
12	Provide Recommendations for Transmission Pipeline Rehabilitation Technologies and Costs (Funding FY2015)
13	Identify Recommended Capital Improvements Program
14	Prepare Financial Plan and Rate Study
15	Communications Strategy Implementation
16	Prepare Master Plan Report (Funding FY2015)
17	Implementation Plan Coordination (Funding FY2015)
18	Project Support for Water Master Plan (Possible Funding FY2015)
19	Project Management





ITEM FOR INFORMATION NO. 1

"March 24, 2014

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 is one aquifer index well within low groundwater status for the production week that ended on March 8, 2014. Kaimuki is under an alert status. The weekly production average for the period was 117.95 million gallons per day.

The Board of Water Supply rainfall index for the month of February 2014 was 86 percent of normal, with a 5-month moving average of 79 percent. The Hawaii Drought Monitor indicates no abnormally dry conditions for Oahu, as of March 11, 2014. The National Weather Service is forecasting above normal rainfall through May 2014. Index monitor wells are indicating a normal seasonal recovery in head levels.

Respectfully submitted,

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

Attachments"

The foregoing was for information only.

DISCUSSION: There were no comments or discussion.

# PUMPAGE, HEAD, AND RAINFALL REPORT

Week of 3/02/14 to 3/08/14

STATION	MGD	HEAD	STATION	MGD	HEAD	STATION	MGD	HEAD		MGD	HEAD
METRO			WINDWARD			EWA-WAIAANAE (CONT)			PH (CONT)		
KULIOUOU	0.00					MAKAHA IV	0.00		PEARL CITY II	0.97	
WAILUPE	0.00		WAIMANALO II	0.15		MAKAHA V	0.00		PEARL CITY III	0.36	
WAIALAE-IKI	0.00		WAIMANALO III	0.26		MAKAHA VI	0.32		WAIU	0.92	
AINA KOA	0.40		KUOU I	0.00		MAKAHA SHAFT	0.00	11.84	NEWTOWN	2.07	
AINA KOA II	1.15		KUOU II	0.00		KAMAILE	0.77		KAONOHI I	0.67	
WAIALAE SHAFT	0.00		KUOU III	0.31		WAIAANAE I	0.07		WAIMALU I	0.00	
MANOA II	0.00		LULUKU	1.04		WAIAANAE II	0.08		AIEA	0.00	
PALOLO	0.83		HAIKU	0.34		WAIAANAE III	0.05		AIEA GULCH 497	0.44	
KAIMUKI HIGH	3.23	22.17	IOLEKAA	0.19		MAKAKILO	0.36		AIEA GULCH 550	0.22	
KAIMUKI LOW	0.57		KAHALUU	0.49		HONOULIULI I	2.66		HALAWA 277	0.00	
WILDER	6.05		WAIHEE	0.00		HONOULIULI II	6.80		HALAWA 550	0.00	
BERETANIA HIGH	3.55	22.95	KAHANA	0.69		SUBTOTAL:	12.19		KAAHUMANU MTR (-)	0.00	
BERETANIA LOW	0.58		PUNALUU I	0.00	17.66	IMPORT FROM PH			KAAMILO FLO MTR (-)	0.00	
KALIHI HIGH	1.77	22.42	PUNALUU II	0.19		KAPOLEI LINE BSTR	10.81		KUNIA I	3.77	19.16
KALIHI LOW	0.90		PUNALUU III	1.34		HONOULIULI LB FLOW	0.00		KUNIA II	2.02	
KAPALAMA	0.18		KALUANUI	0.91		EWA BEACH FLOW	0.00		KUNIA III	1.38	
KALIHI SHAFT	8.50		MAAKUA	0.16		HONOULIULI I (-)	-2.66		HOAEAE	4.23	
MOANALUA	0.18	19.28	HAUULA	0.00		HONOULIULI II (-)	-6.80		EWA SHAFT	0.00	
SUBTOTAL:	27.92					SUBTOTAL:	1.34		WAIPAHU INTCON. (-)	0.00	
			KAHUKU	0.29					EWA-WAIAANAE (-)	-1.34	
IMPORT FROM PH			OPANA	0.46		PEARL HARBOR			PH LOCAL USE:	30.48	
HALAWA SHAFT	6.29	16.92	WAIALEE I	0.12		WAIHAWA	1.74		TOTAL SUBURBAN:	52.97	
KAAMILO	0.00		WAIALEE II	0.36		WAIHAWA II	1.72				
KALAUAO	8.44	17.35	SUNSET BEACH	0.00		MILILANI I	1.94		KALAUAO SPRINGS	0.39	
PUNANANI	10.54		SUBTOTAL:	7.30		MILILANI II	0.00		BARBERS POINT (NP)	2.20	
KAONOHI II	0.00					MILILANI III	0.63		GLOVER TUNNEL (NP)	0.50	
WAIMALU II	0.00	15.06	WIND. EXPORT	0.14		MILILANI IV	1.99				
KAAHUMANU	1.30					WAIPIO HTS.	0.17		HEAD CONDITION		
HECO WAIU	2.80		HALEIWA-WAIALUA			WAIPIO HTS. I	0.10		CAUTION	ALERT	CRITICAL
MANANA	0.50		HALEIWA	0.00		WAIPIO HTS. II	0.11			Kaimuki	
KAHUMANU FLOW MT	0.00		WAIALUA	1.80		WAIPIO HTS. III	0.93				
KAAMILO FLOW MTR	0.00		SUBTOTAL:	1.80		WAIPAHU	1.72	18.79			
TOTAL IMP/EXP WAI. INT:	0.00					WAIPAHU II	0.24				
IMPORT FRM WIND:	0.14		EWA-WAIAANAE			WAIPAHU III	1.17				
SUBTOTAL:	30.01		MAKAHA I	0.41		WAIPAHU IV	1.75				
			MAKAHA II	0.26		PEARL CITY SHAFT	0.00	15.06			
TOTAL METRO:	57.93		MAKAHA III	0.40		PEARL CITY I	0.55				

CWRM PERMITTED USE FOR BWS POTABLE SOURCES						PUMPAGE	2014	2013	GRAVITY	2014	2013
	A	B	C	D	E	SUBURB.	52.97	60.66	SUBURB.	6.64	6.28
WATER DISTRICTS	PERMITTED USE	2014	DIFF. B-A	YEAR/ DATE	DIFF. D-A	METRO	57.93	68.54	METRO	0.40	0.33
HONOLULU	45.27	28.32	-16.95			TOTAL:	110.90	129.20	TOTAL:	7.04	6.61
WINDWARD	25.21	11.15	-14.06						Manoa	0.17	
NORTH SHORE	4.08	3.03	-1.05			NUUANU #5 (rainfall)	1.00"	0.31"	Palolo	0.23	
WAIHAWA	4.27	3.47	-0.80						Waim. I&II	0.24	
WAIAANAE	4.34	3.52	-0.82						Waim. III&IV	0.19	
EWA-KUNIA	15.88	9.83	-6.05						Waihee incl.	0.97	
PEARL HARBOR	92.66	58.23	-34.43						Waihee tun.	1.72	
TOTAL:	191.71	117.55	-74.16						Luluku	0.06	
									Haiku	0.00	
									Kahaluu	1.90	
									Waia. C&C	1.40	
									Waia plant.	0.16	

DROUGHT STATUS REPORT  
DRAFT IN MGD

WATER USE DISTRICT	AUTHORIZED USE	2013	2/23-3/01 2014	2013	3/02-3/08 2014				
HONOLULU	45.27	35.10	31.36	36.67	28.46				
WINDWARD	25.21	13.41	11.22	12.90	11.01				
NORTH SHORE	4.08	4.42	3.07	5.02	3.03				
WAHIAWA	4.27	2.55	3.51	2.64	3.47				
EWA-WAIANAE	20.22	23.00	17.08	23.54	15.09				
PEARL HARBOR	92.66	52.75	56.84	55.04	56.89				
TOTAL	191.71	131.23	123.08	135.81	117.95				

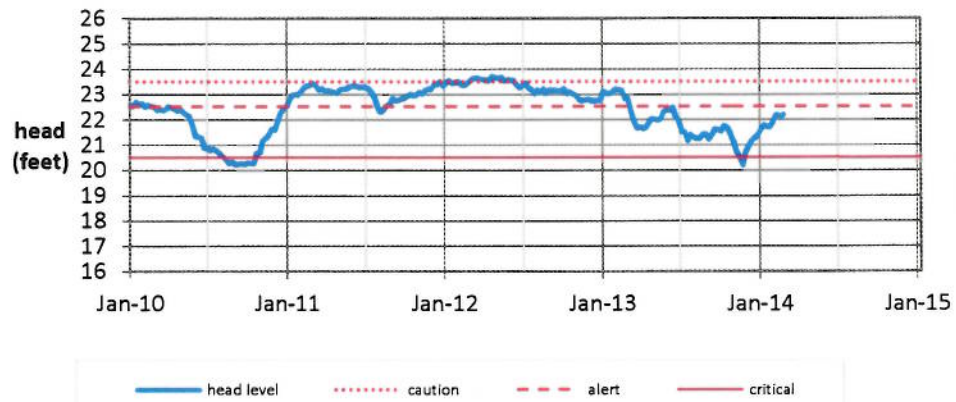
Accounts for in-district pumpage and transfers

HEAD IN FEET

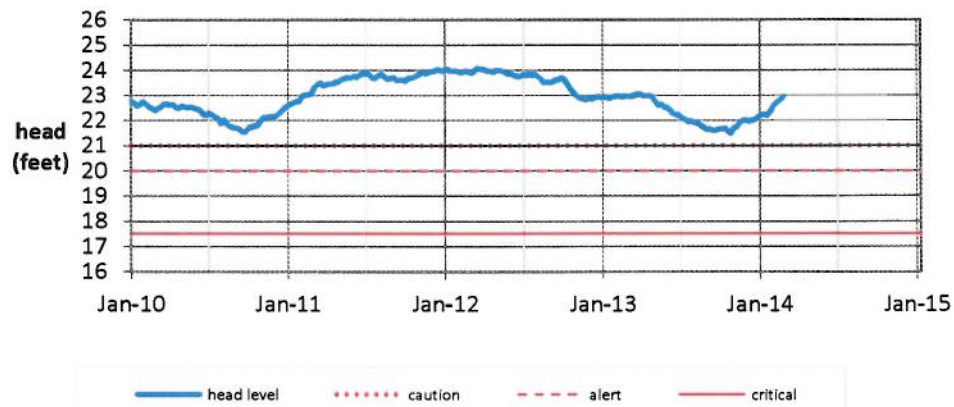
		2013	2/23-3/01 2014	2013	3/02-3/08 2014				
HONOLULU									
KAIMUKI		22.81	20.10	22.82	22.17				
BERETANIA		22.97	22.85	22.95	22.95				
KALIHI		22.26	22.39	22.27	22.42				
MOANALUA		19.03	19.30	18.97	19.28				
PEARL HARBOR									
HALAWA		16.57	16.93	16.50	16.92				
KALAUAO		16.99	17.31	16.96	17.35				
PEARL CITY		14.76	15.03	14.74	15.06				
WAIPAHU		18.38	18.71	18.28	18.79				
KUNIA		18.64	19.07	18.53	19.16				
EWA-WAIANAE									
MAKAHA		10.35	11.67	10.23	11.84				
WINDWARD									
PUNALUU		16.26	17.64	16.23	17.66				
KALUANUI		16.00	17.44	15.99	17.56				
NORTH SHORE									
WAIALUA		11.22	11.08	11.17	11.21				



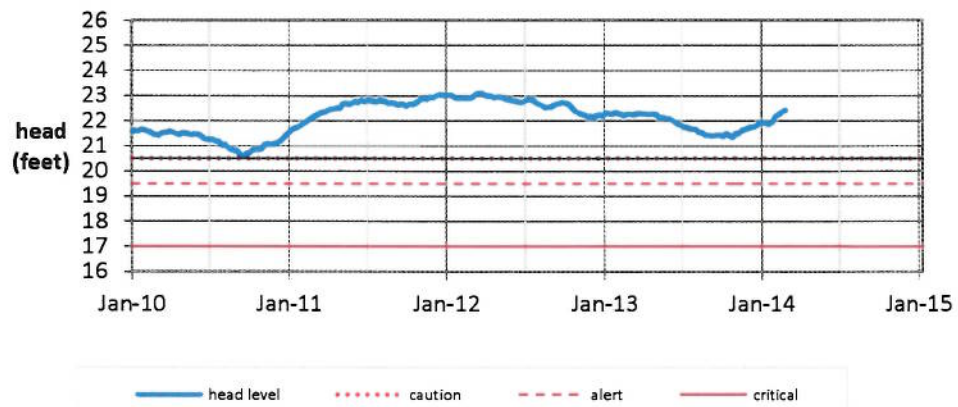
### Kaimuki



### Beretania

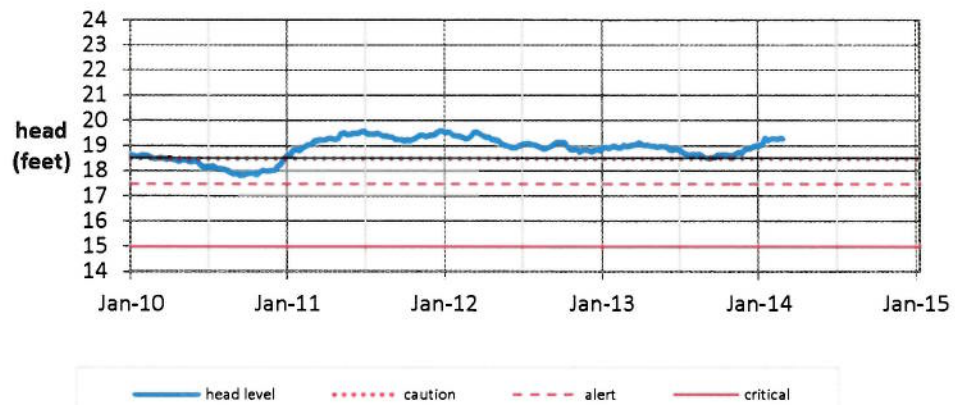


### Kalihi

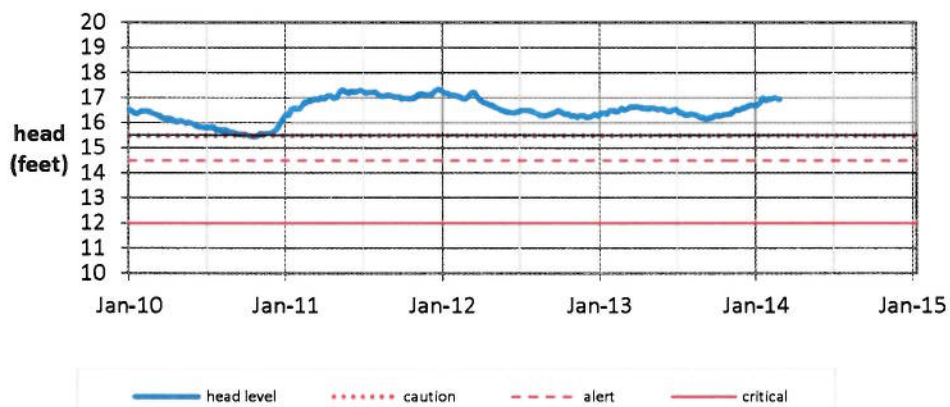




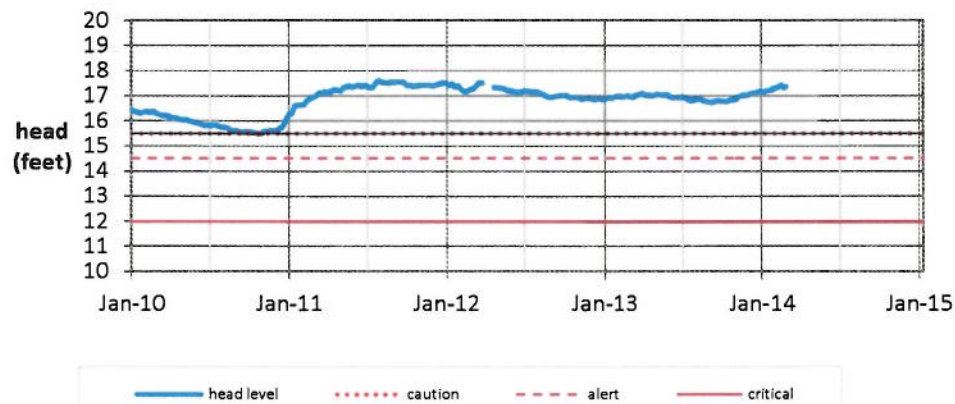
### Moanalua



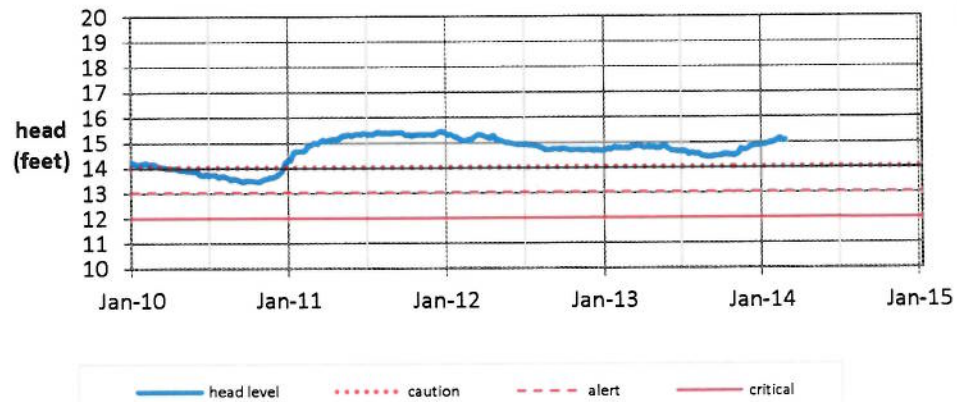
### Halawa



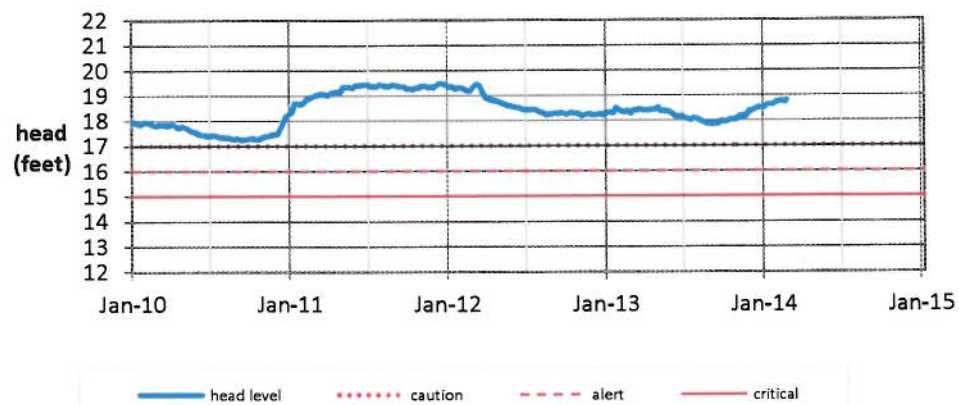
### Kalauao



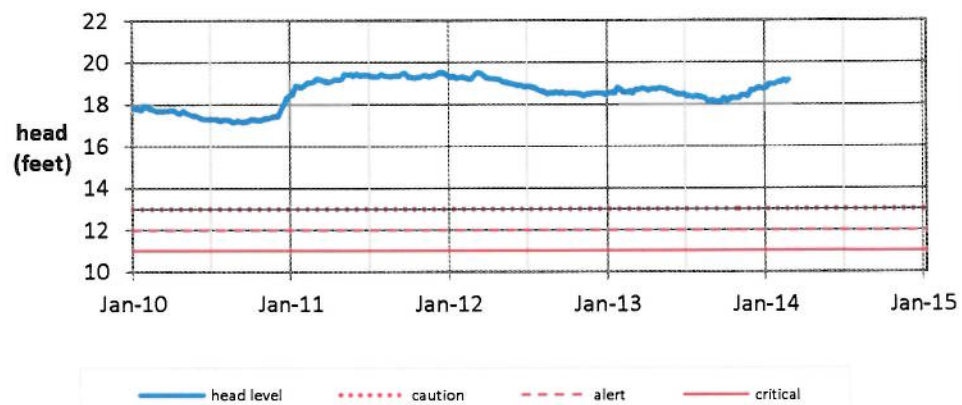
### Pearl City



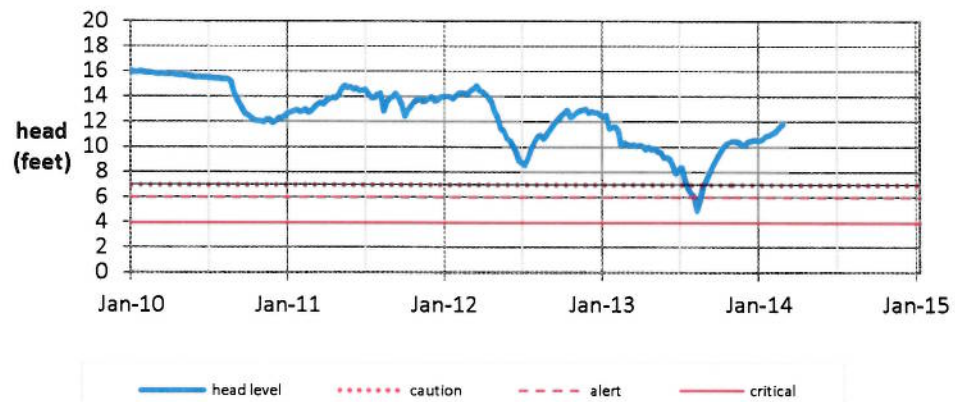
### Waipahu



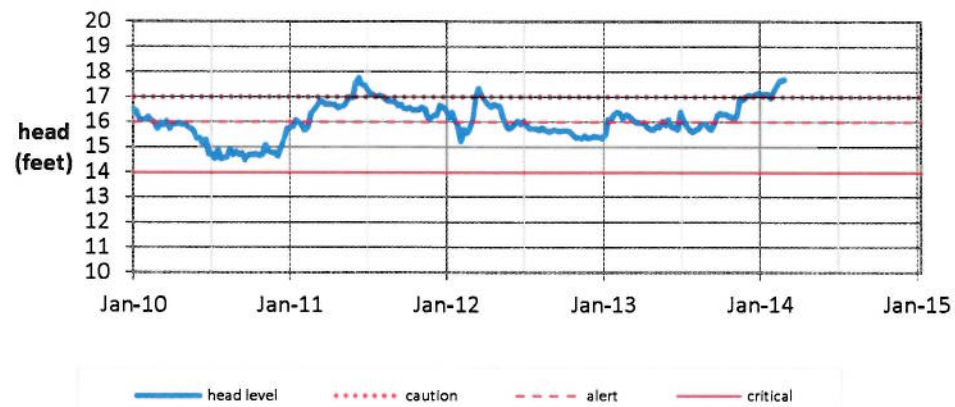
### Hoeaie-Kunia



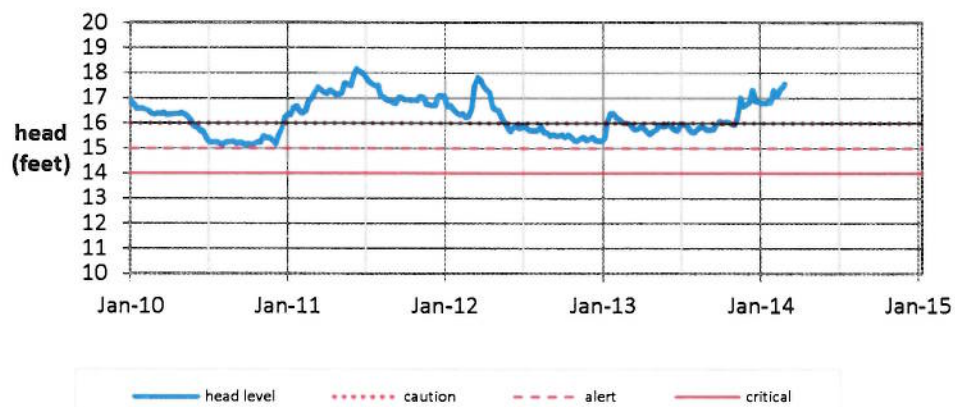
## Makaha



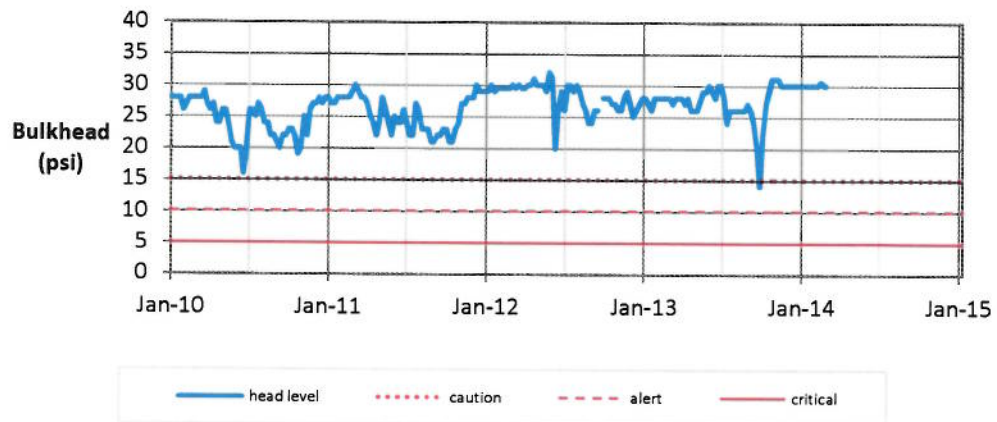
## Punaluu



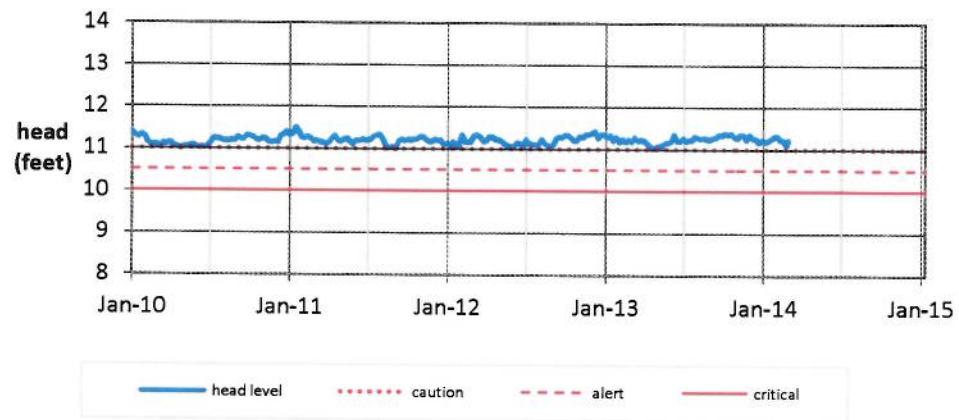
## Kaluanui



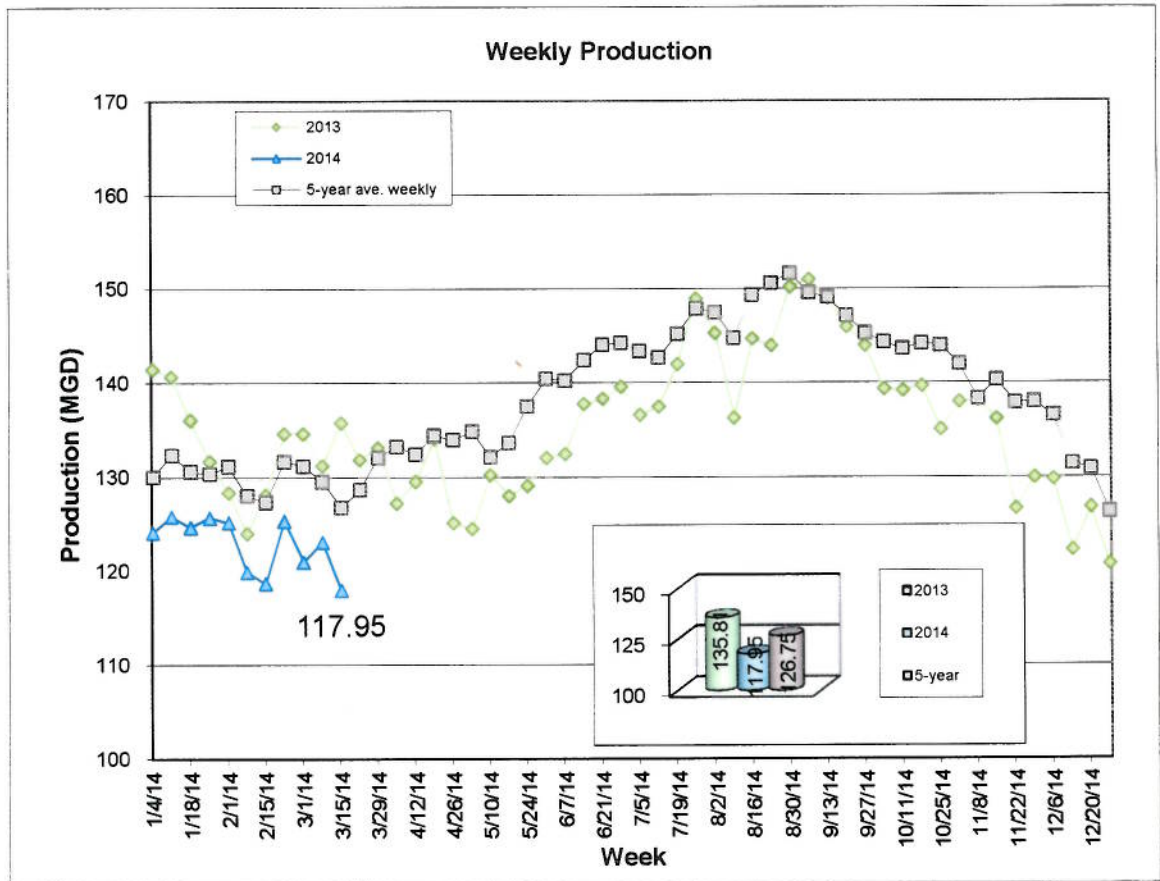
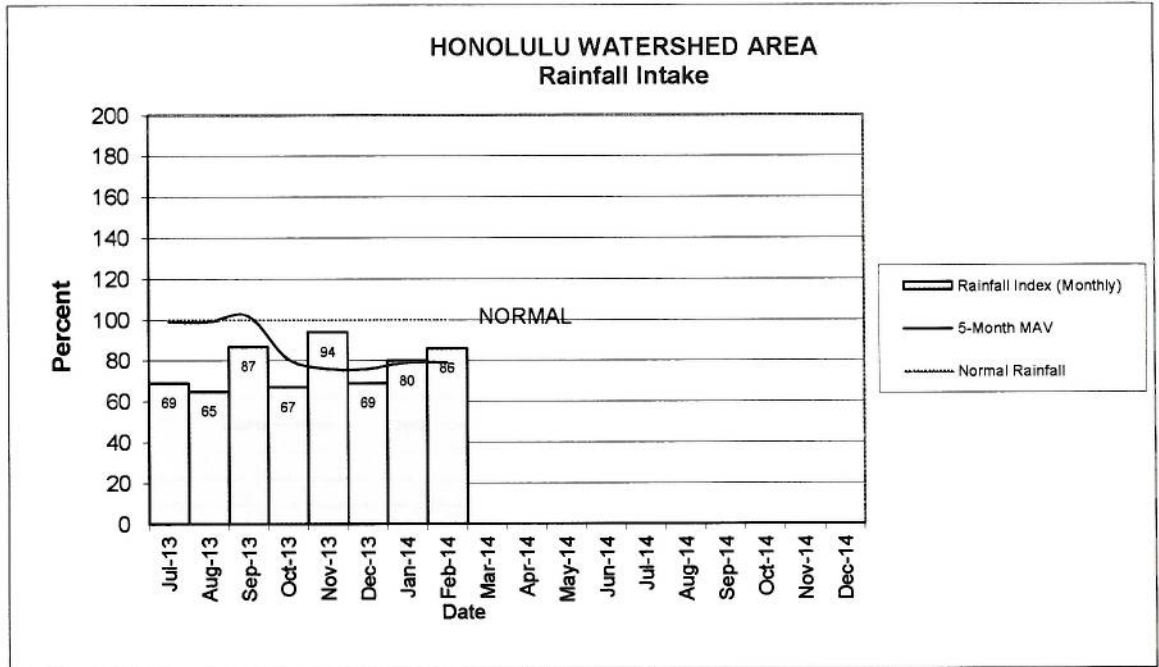
## Waihee Tunnel



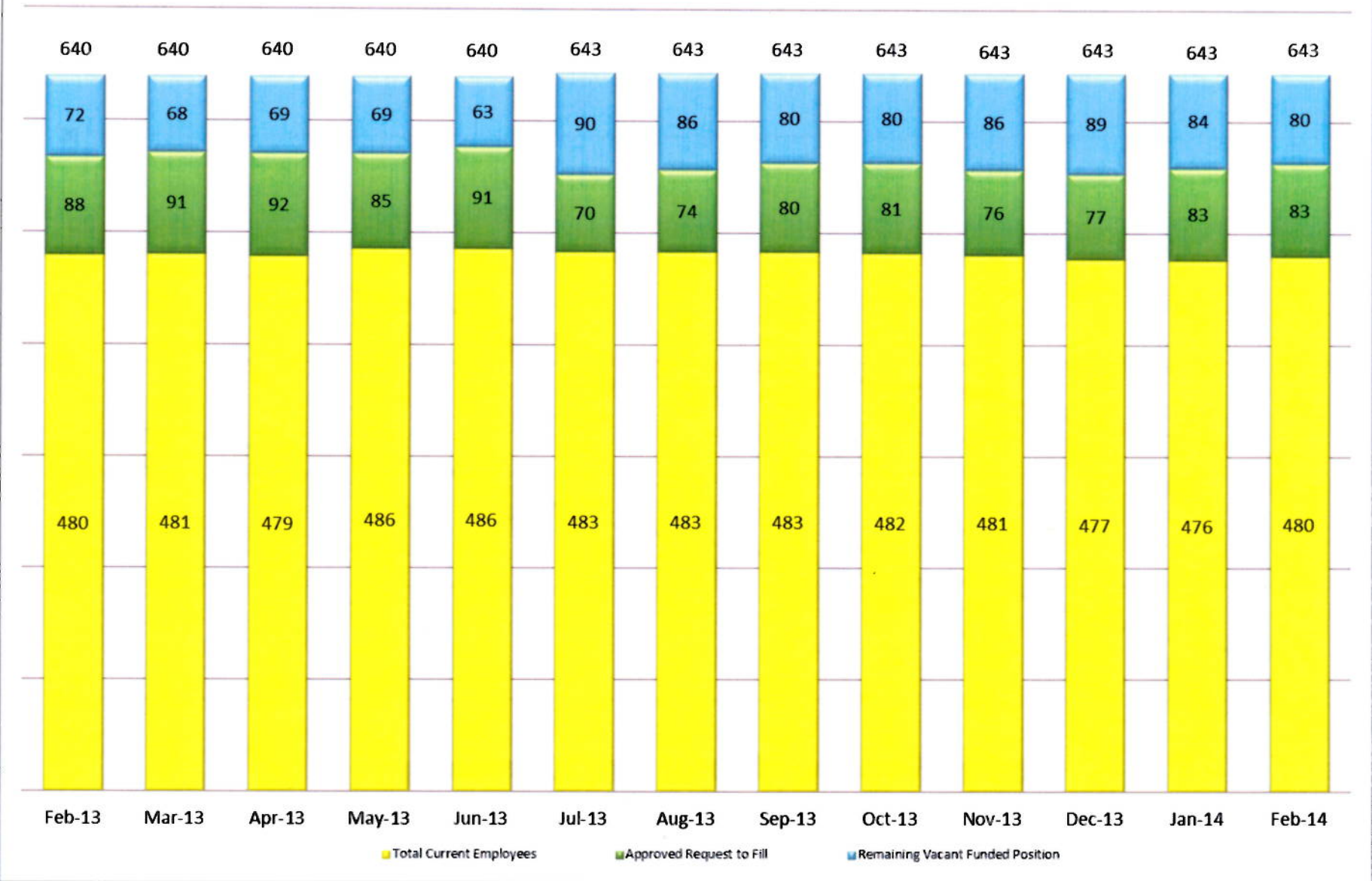
## Waialua



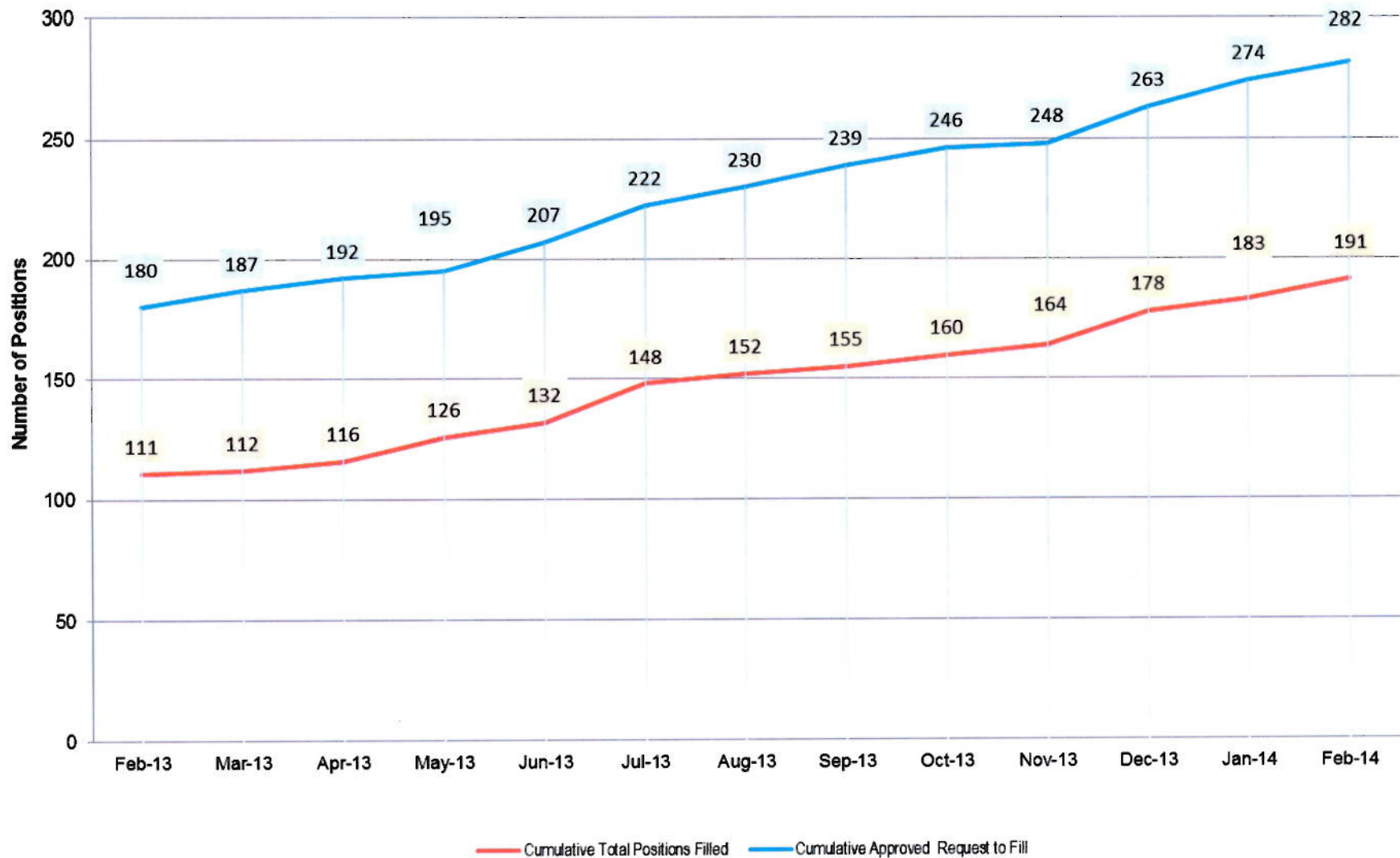




## Positions Filled February 1, 2013 through February 28, 2014



## Cumulative Totals February 1, 2013 through February 28, 2014





DISCUSSION:

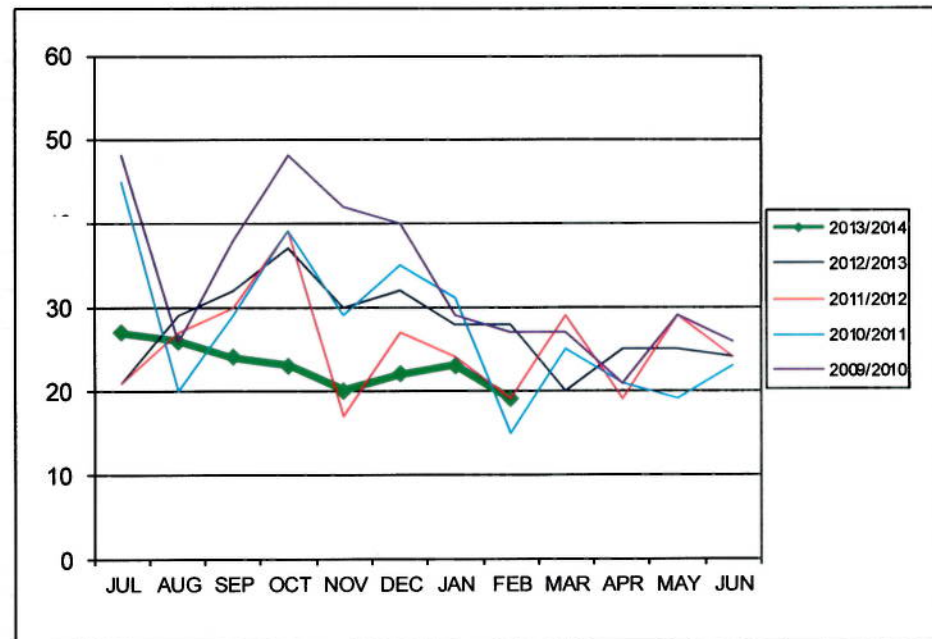
Karen Tom of the Human Resources Office presented the recruitment status. Ms. McMurdo inquired about the aging workforce and how the Department plans to address this issue. Ms. Tom and Mr. Lau explained that divisions are hiring at entry levels and also bringing in young engineers through the intern program, where they later have an opportunity for a permanent position. Mr. Lau informed the Board that hopefully by early next year, they would be ready to implement an apprenticeship program for the plant electrical/electronic equipment repair positions in the Water System Operations Division. Ms. Tom added that the Capital Projects Division is working on developing a training program to train entry level employees to become construction inspectors. Ms. Cypher expressed her concern about the middle managers being ready to move up when the senior managers retire. Mr. Lau and Ms. Tom stated that they are looking into management training in order to get them ready to assume administrative roles. Mr. Lau also mentioned that they are looking into piloting a cross training program to give junior engineers opportunities to learn different types of work in different areas of the Department.

Mr. Wong inquired about the \$10 million being spent on the Water Master Plan (WMP) and asked if any of that money will go towards hiring consultants to work on organizational development and other human resources (HR) issues BWS is facing. Mr. Lau replied that the WMP does not include a HR consultant because it is procured under professional services, so they had to hire an engineering company to qualify. He stated that currently things are being handled in-house, but if they find a need for a HR consultant, they could hire on a separate contract. Mr. Wong commented that the Department is spending \$10 million on the WMP and asked how they will implement this plan without enough people to do it. He encouraged the Department to hire a HR consultant to help with the HR issues, which is the Department's biggest challenge. Mr. Lau replied that he would take this under serious consideration.

## WATER MAIN REPAIR REPORT for February 2014

	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	Total
<b>2013/2014</b>	<b>27</b>	<b>26</b>	<b>24</b>	<b>23</b>	<b>20</b>	<b>22</b>	<b>23</b>	<b>19</b>					<b>184</b>
<b>2012/2013</b>	21	29	32	37	30	32	28	28	20	25	25	24	331
<b>2011/2012</b>	21	27	30	39	17	27	24	19	29	19	29	24	305
<b>2010/2011</b>	45	20	29	39	29	35	31	15	25	21	19	23	331
<b>2009/2010</b>	48	26	38	48	42	40	29	27	27	21	29	26	401

<u>Date</u>	<u>Address</u>	<u>Size</u>	<u>Cause</u>
2/2	1802 9th Ave.	8" C.I.	Corrosion
2/2	741 Hauoli St.	8" D.I.	Corrosion
2/5	3420 Hardesty St.	8" D.I.	Corrosion
2/5	2178 N. King St.	6" C.I.	Corrosion
2/7	5291 Halapepe St.	8" C.I.	Corrosion
2/8	560 Hanana Pl.	4" C.I.	Corrosion
2/9	98-150 Lipoa Pl.	8" C.I.	Corrosion
2/10	85-115 Alawa Pl.	8" C.I.	Corrosion
2/12	94-095 Leokane St.	12" C.I.	Corrosion
2/12	908 Uwao St.	8" C.I.	Corrosion
2/13	91-089 Parish Dr.	8" P.V.C.	Clamp
2/14	Easement-Kaumualii St.	8" C.I.	Corrosion
2/15	1133 Waimanu St.	6" P.V.C.	Corrosion
2/18	59-632 Maulukua Pl.	12" C.I.	Corrosion
2/19	327 Keawe St.	8" C.I.	Corroasion
2/19	Seaside Ave. & Manukai St.	12" P.V.C.	Clamp
2/25	3752 Old Pali Rd.	6" GALV.	Corrosion
2/27	67-311 Farrington Hwy.	8" C.I.	Settlement
2/28	46-457 Holokaa St.	8" C.I.	Unknown



**Bold \* - Pro-active Leak Repair**

29 miles of pipelines were surveyed by the Leak Detection Team  
in the month of February

DISCUSSION:

Field Operations Program Administrator Daryl Hiromoto reported that there were 19 main breaks for the month of February, which is still trending at a low rate. Ms. McMurdo congratulated the Department for doing a good job of keeping the main breaks down. Mr. Hiromoto informed the Board that they met with the Water System Operations pump operators and shared with them the low trending of the main breaks to show them that how they run the pumps matters and to continue with the system adjustments.

Mr. Hiromoto and Mr. Lau shared that they are fortunate to have many quality employees who are very committed to their jobs in providing water to the community.



ITEM FOR INFORMATION NO. 4

"March 24, 2014

RED HILL  
FUEL  
STORAGE  
TANK UPDATE

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

Chair and Members:

Subject: Update on Red Hill Fuel Storage Tank Situation

Erwin Kawata, Program Administrator of our Water Quality Division, will do a presentation on the Red Hill Fuel Storage Tank situation.

Respectfully submitted,

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

The foregoing was for information only.

DISCUSSION:

Mr. Lau stated that they have been in discussions with the Navy, the State Department of Health (DOH) and the U.S. Environmental Protection Agency (EPA) on the Red Hill fuel leak situation. Water Quality Program Administrator Erwin Kawata gave the presentation.

Following the presentation, Ms. McMurdo asked how the relationship with the Navy is. Mr. Lau replied that the Navy is committed to work together with the DOH, who has regulatory authority over the situation under the U.S. EPA Underground Storage Tank Regulations. The Navy has been cooperative in allowing BWS and the other stakeholders to visit their facility multiple times. The next step would be to work with the Navy to get more information from them.

Ms. Cypher questioned what the Navy's explanation was for not informing BWS of the previous leaks. Mr. Lau replied that he hasn't asked them that, however, he believes they did follow the legal process, under the U.S. EPA Underground Storage Tank Regulations, by informing the DOH at least after the facility was declassified. Mr. Lau informed the Board that the DOH notified BWS on January 13, 2014. Ms. Cypher inquired if the DOH has an explanation of why they never informed BWS of any previous leaks after the facility was declassified. Mr. Lau replied that this question should be posed to the DOH and that his main focus is learning about the situation, what the vulnerabilities are, and how they move forward as a group to protect this important groundwater resource. Ms. Cypher commented that she feels it is an obligation on both the Navy's and the DOH's part to share information with the BWS. Mr. Lau mentioned that there will be a hearing this Friday for a proposed Senate

Concurrent Resolution recommending the creation of a task force chaired by the DOH, involving the Navy, BWS and others to develop a report due back to the State Legislature in 2015. Ms. Cypher stated that the Board appreciates the efforts the BWS is making to deal with this situation and hopes that the Navy will reimburse BWS for expenses incurred.

Ms. McMurdo questioned what the Navy has done so far. Mr. Lau informed the Board that 15 of the 20 tanks are in operation, and the Navy is monitoring, sampling and testing. They had an oily waste pit that was remediated and became a superfund site. In terms of the groundwater contamination below the tanks, there's only been monitoring that's been done. The Navy has also been measuring soil vapor levels for petroleum hydrocarbons. Ms. Cypher asked if the consultant looked at this waste dumpsite. Mr. Lau replied that they will review the records that the Navy submitted to the DOH. Mr. Kawata replied to Ms. McMurdo's inquiry stating that the tank that was leaking has since been emptied and the Navy is working to ventilate the tank. Mr. Lau stated that the Navy hasn't gone into the tank yet because they need to be sure the gas levels in the tank are safe for them to enter. At that time, they will do a physical inspection of the material in the tank.

Mr. Lau told the Board that they would continue to periodically keep them informed of this situation. Ms. Cypher and Mr. Lau thanked Mr. Kawata for his presentation.



# Red Hill Bulk Fuel Storage Facility

Board Meeting  
March 24, 2014







## **BWS Vision:**

Ka Wai Ola – Water for Life

## **BWS Mission:**

Provide safe, dependable, and affordable water  
now and into the future

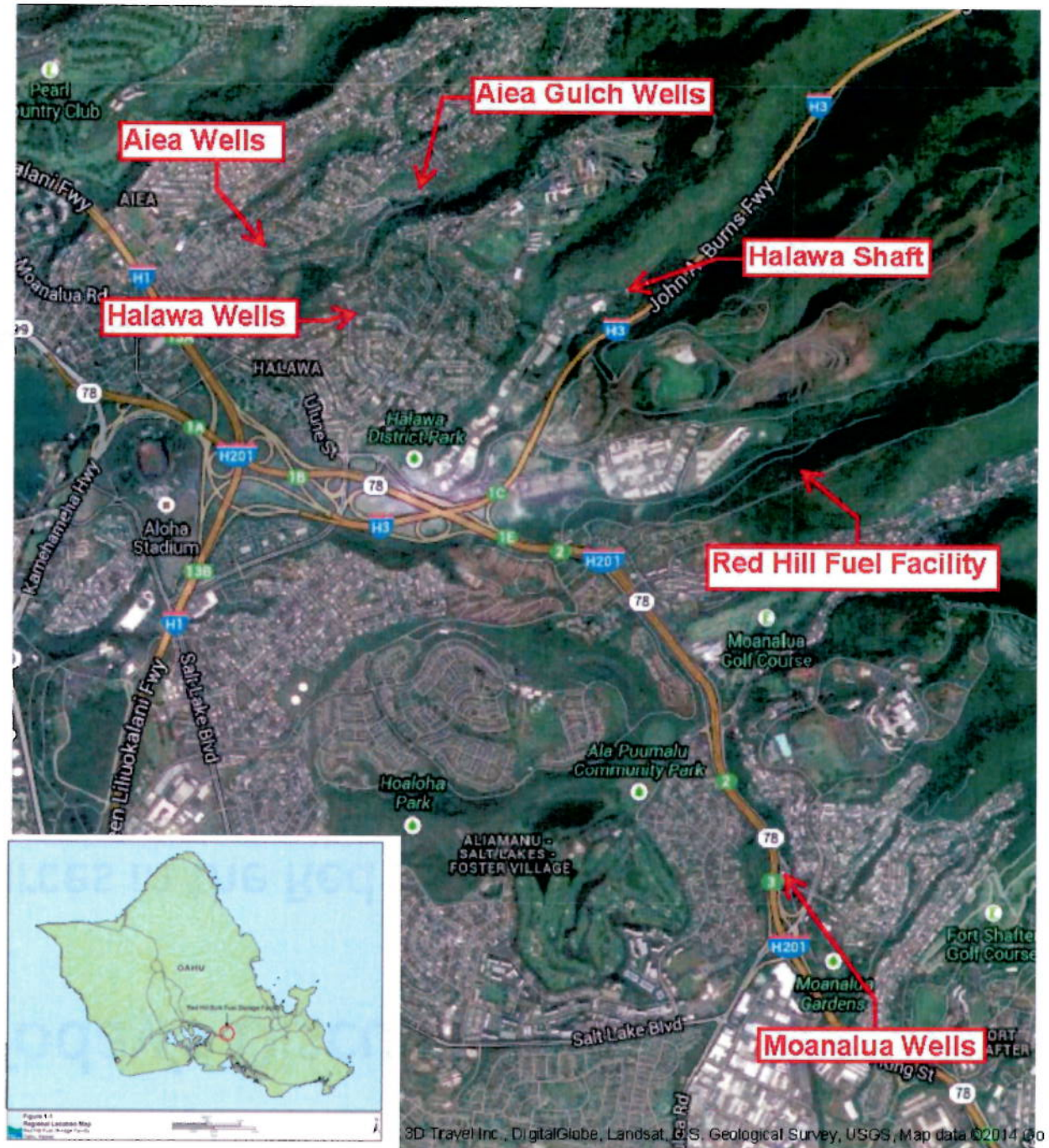


# Today's Discussion

- BWS water sources in the Red Hill area
- Red Hill Bulk Fuel Storage Facility
  - Background
  - Facility
  - Regulatory requirements
  - Studies and findings
  - Summarize
  - Questions/discussion



- Five BWS wells closest to Red Hill Facility site
- Irreplaceable Moanalua and Waimalu aquifer systems
- Five wells contribute 11.5% of the 140 MGD average daily production
- Halawa Shaft and Moanalua Wells contribute over 25% of the water serving Metro Honolulu system (Moanalua to Hawaii Kai)





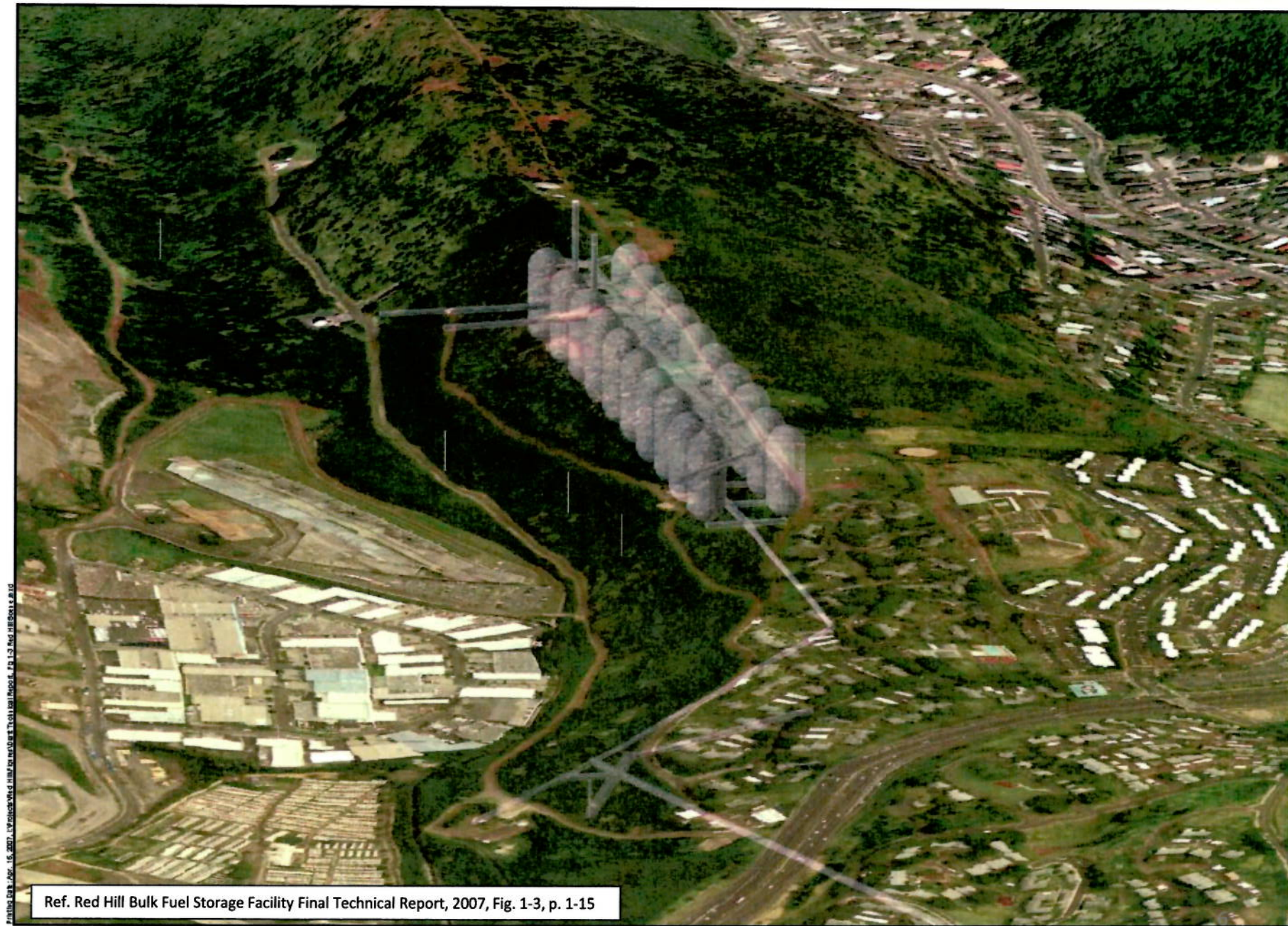
# Background

- January 13, 2014 – DOH notifies BWS of fuel leak at Red Hill Fuel Facility.
- Navy to date reports 27,000 gallons of JP-8 leaked from Tank 5.

Joint Navy, DOH, BWS press conference, 1/16/14







Ref. Red Hill Bulk Fuel Storage Facility Final Technical Report, 2007, Fig. 1-3, p. 1-15



Aloha Tower will fit into  
each of the 20 Red Hill  
Storage Tank

Each tank can hold 12.5  
Million Gallons of fuel

The Tanks were  
constructed inside of Red  
Hill from 1940 to 1943





# Fuel Storage and Handling

- Currently JP-5, JP-8 and F-76 (marine diesel)
- Also stored Navy special fuel and Navy distillate
- Tank 17 stored aviation gasoline (AVGAS) and motor gasoline (MOGAS) 1964-69
- Tank 18 stored AVGAS 1964-69





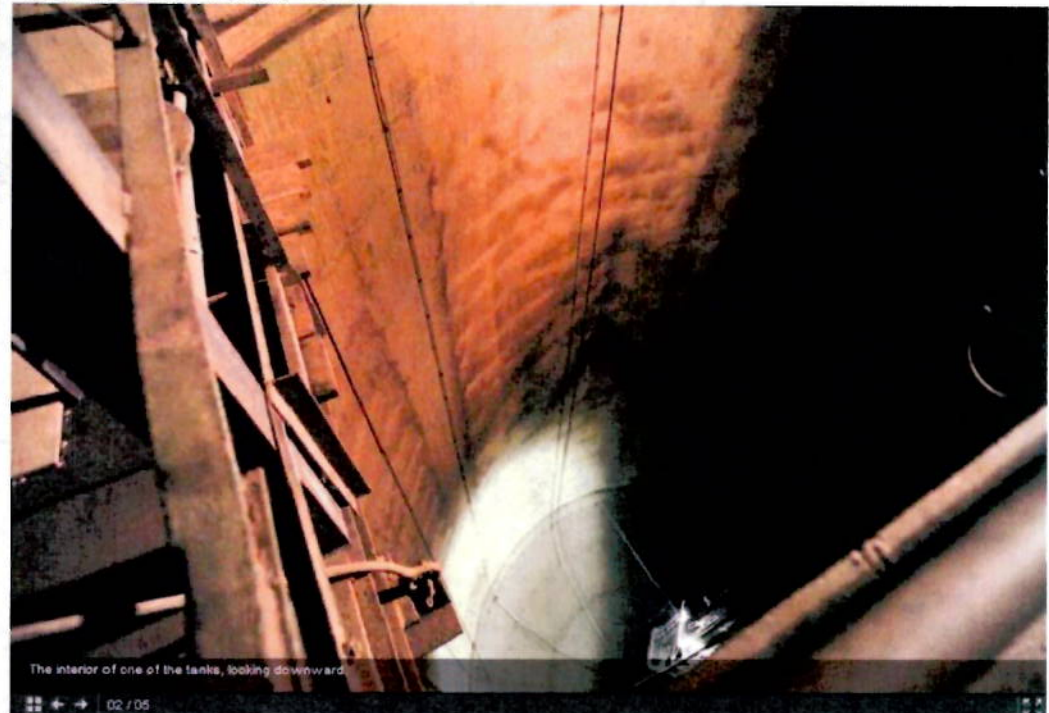
# Inside Red Hill Tank

Red Hill Underground Fuel Storage Facility/ Navy Photos



Ref: Red Hill: EPA May Force New Leak Detection System  
For Toxic Spills, Civil Beat, S. Cocke, 2/14/14

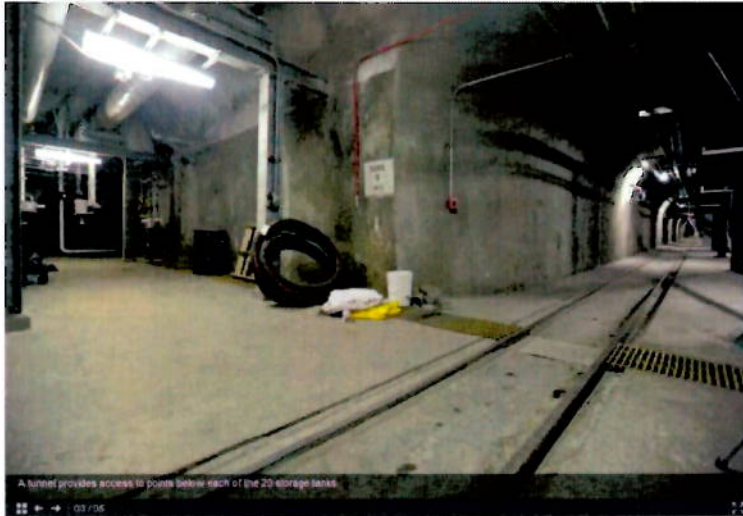
Red Hill Underground Fuel Storage Facility/ Navy Photos



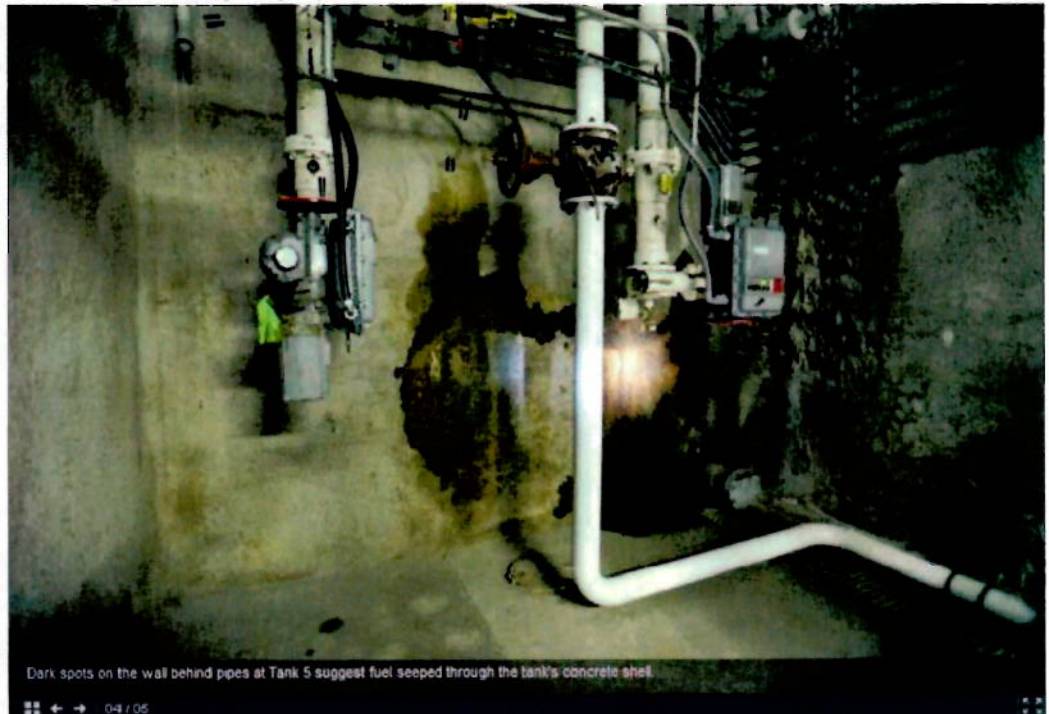


# Tank 5 Leak

Red Hill Underground Fuel Storage Facility/ Navy Photos



Red Hill Underground Fuel Storage Facility/ Navy Photos



Red Hill Underground Fuel Storage Facility/ Navy Photos



Ref: Red Hill: EPA May Force New Leak Detection System For Toxic Spills, Civil Beat, S. Cocke, 2/14/14

# UST Rules Applying to Red Hill

## UST Typical Owner & Operator Requirements

1. Design, construction, and installation
2. Notification, permits, and variances
3. General operating requirements (ie spill & overfill protection, repairs, recordkeeping)
4. Release detection
- 6. Release reporting, investigation, & confirmation\***
- 7. Release Response Action\***
- 8. Closure\***
9. Financial Responsibility
- 10. Enforcement\***

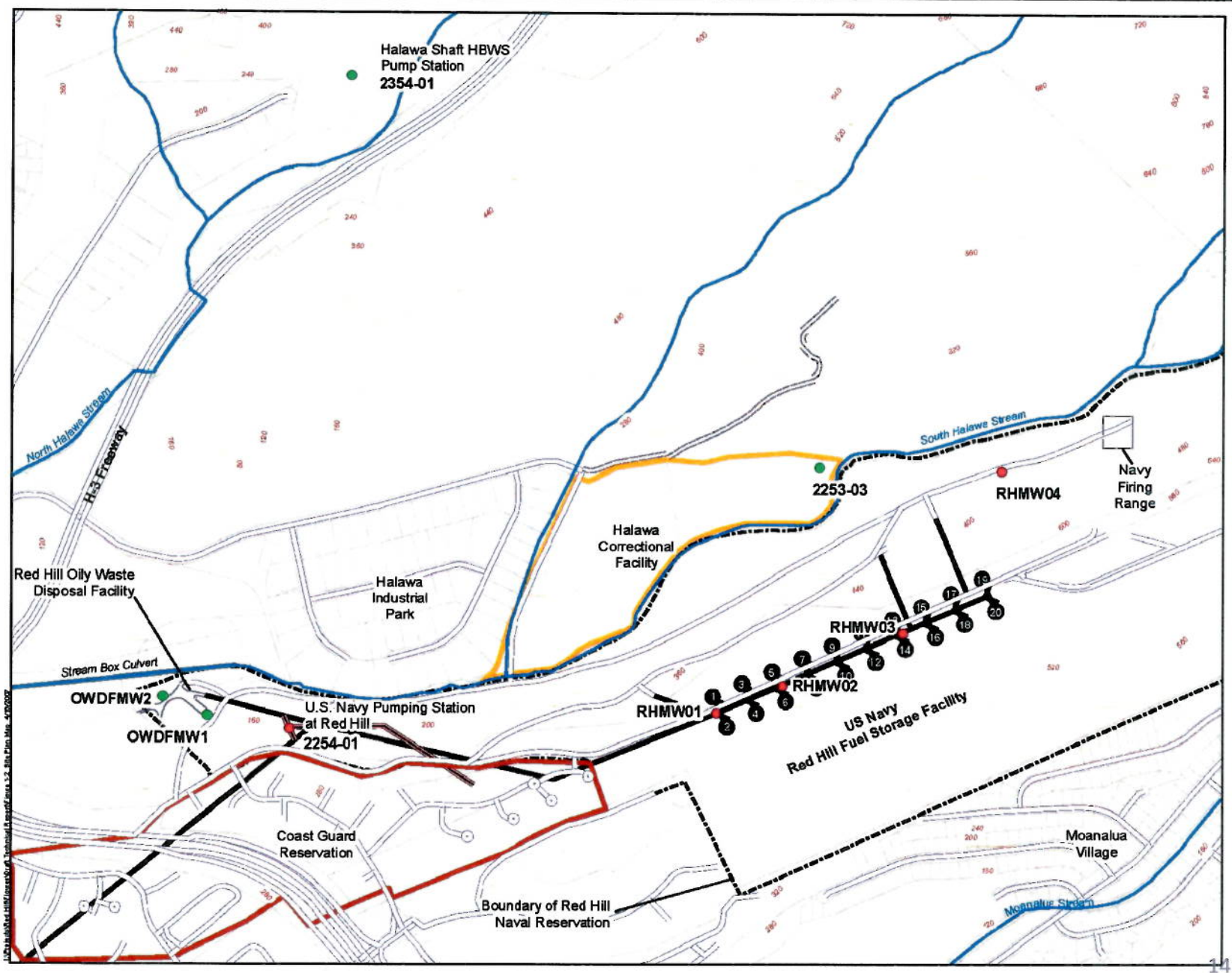
**\*Federal Statutory Exemption require Field Constructed USTS to comply with only 6, 7, 8 & 10.**



# Navy Study and Fuel Record Findings

- Navy commissioned studies
  - Petroleum hydrocarbons present in groundwater and soil beneath facility.
  - Warn of increasing facility age and potential for more releases both large and small.
- Fuel releases
  - Occurred in the past.
  - 1947 – 1999 records.
  - Detail varies.
  - According to DOH, Navy reports up to 1.2 million gallons released to date.





1998-2002  
Investigations:

Basalt core samples  
taken from under each  
tank show petroleum  
stains.

Ref: Navy Phase II Site Characterization Report, Section 4,  
page 11, March 1999. (Related to Release ID 990051)



Figure 4-7 Petroleum Stained Core - B16C, 49' to 60'

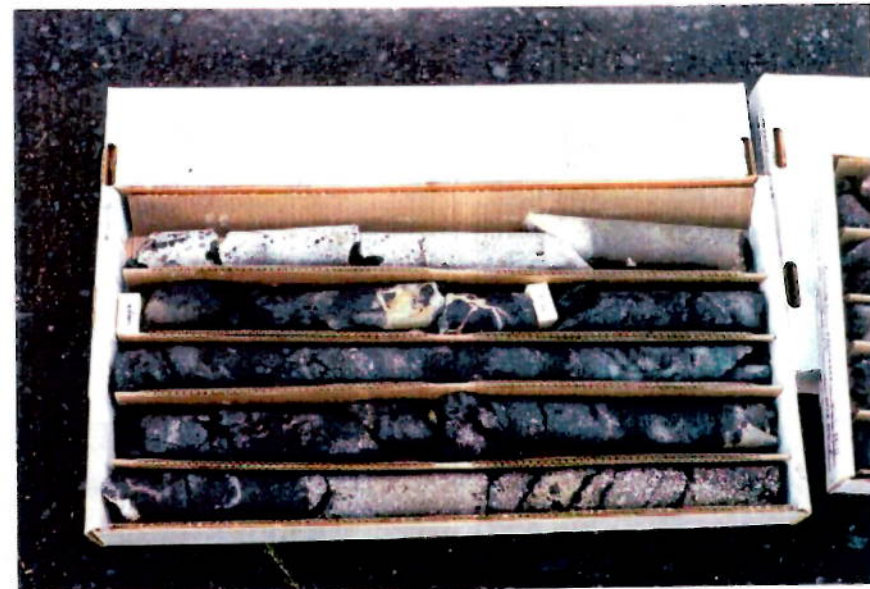


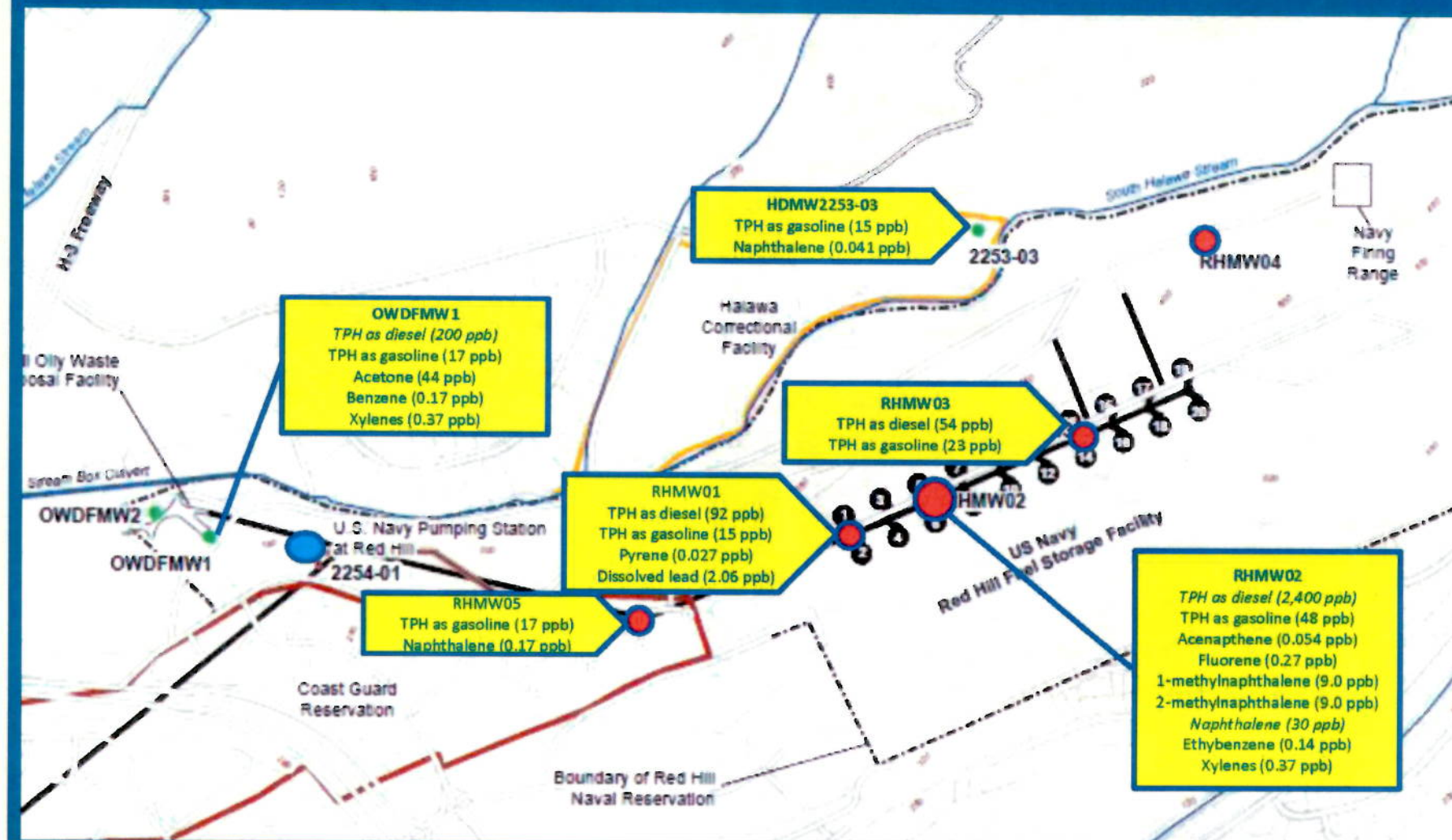
Figure 4-8 Petroleum Stained Core - B16C, 60' to 69'



# US Navy Red Hill Complex

## Construction of 5 Groundwater Monitoring Wells 2005 – 2009

(Sampling results from October 22-23, 2013)



Ref: DOH presentation, Joint Senate-House Briefing on Navy Red Hill Fuel Tanks, 3/7/14



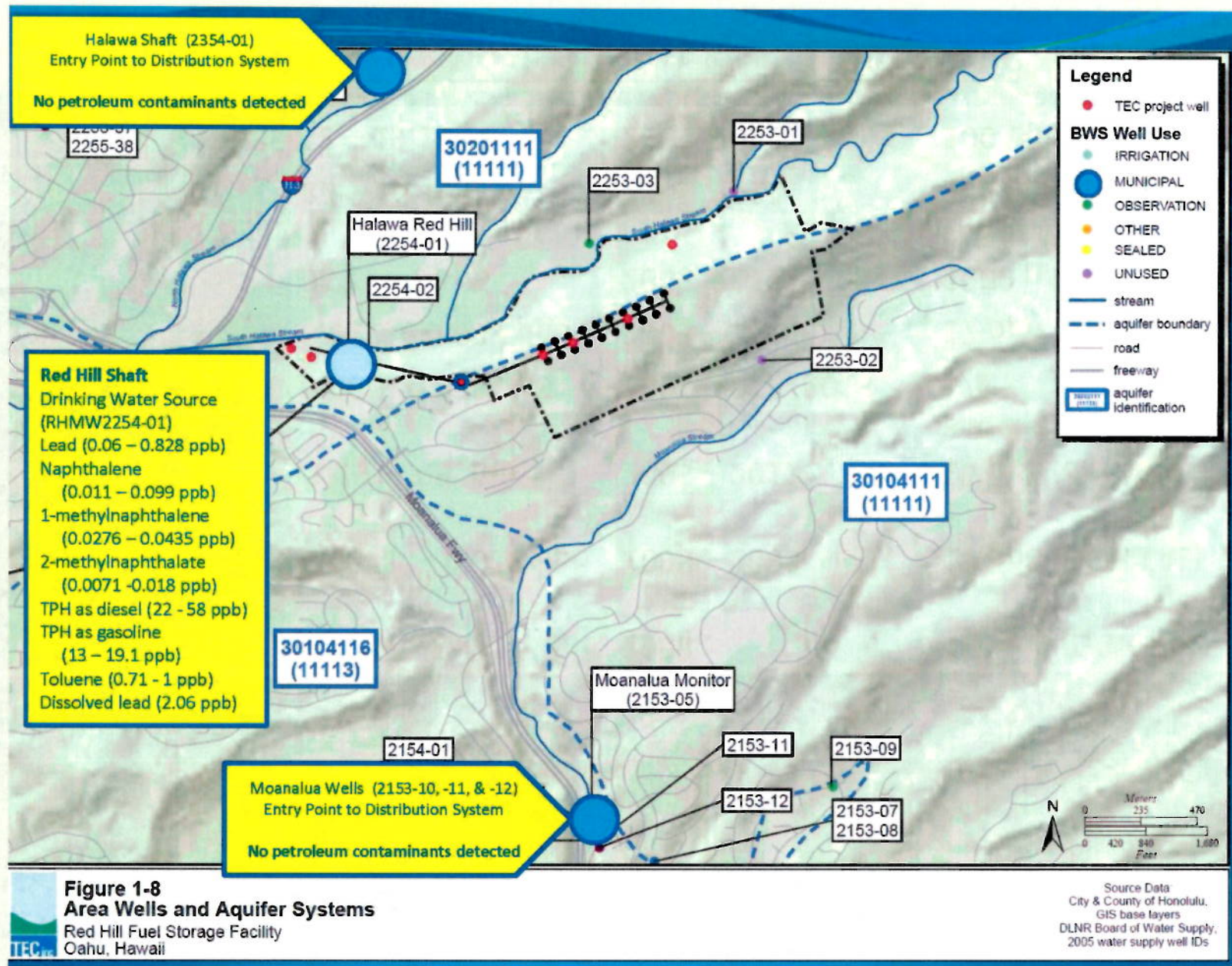
# Drinking Water Monitoring Results

## RHMW 2254-01 (Navy Red Hill Shaft)

contaminant	Detected range	Detected dates	Health advisory level
1-methylnaphthalene	0.0276 – 0.0435 ppb	2008	4.7 ppb (DOH EAL)
2-methylnaphthalene	0.0071 – 0.018 ppb	2005 – 2009	10 ppb (DOH EAL)
lead, dissolved	0.02 – 3.3 ppb	2005 – 2011	15 ppb (drinking water action level)
lead, total	0.06 – 0.828 ppb	2005, 2012, 2013	n/a
naphthalene	0.011 – 0.099 ppb	2005 – 2014	17 ppb (DOH EAL)
toluene	0.71 – 1 ppb	2005, 2012	1000 ppb (drinking water MCL)
TPH-d	22 – 58 ppb	2005, 2013	100 ppb (DOH EAL)
TPH-g	13 – 19.1 ppb	2009, 2012	100 ppb (DOH EAL)

Ref: DOH presentation, Joint Senate-House Briefing on Navy Red Hill Fuel Tanks, 3/7/14





## 2010 Navy Commissioned Study

- Northwest GW flow direction toward BWS Halawa Shaft.
- Northwest flow may be transporting hydrocarbon plume that is not being monitored.
- No monitor wells between BWS Halawa Shaft and Facility to evaluate this possibility.
- Free product plume within 1,200 ft. of BWS Halawa Shaft can cause contamination.
- Installation of two monitor wells recommended to check for any contamination migrating from Facility.



# Initial BWS Response to Leak Incident

- Shut down five well stations (1/13/14)
  - Halawa Shaft
  - Halawa Wells
  - Aiea Wells (resumed on 1/14 for operational reasons)
  - Aiea Gulch Wells
  - Moanalua Wells
- Collected and tested water samples
  - Volatile, semi-volatile organic chemicals and petroleum hydrocarbons (diesel, gasoline, motor oil, JP-5 and JP-8)
  - Jan. 13, 16, 22, 28, 31, Feb. 13
  - Test results show no petroleum contamination.
- Resumed operations of five wells (1/21/14)

## BWS Next Steps

- Increase testing frequency of five BWS wells in vicinity of Red Hill Facility.
- Work with the Navy and DOH to review and analyze all past and current Navy records and studies on Red Hill Facility.
- Initiate independent consultant assessment of situation and information from Navy and DOH.



## BWS Recommendations

- Invest in the Facility to insure it continues to support the Navy's mission and protect the environment
- Increase our knowledge of the impact of petroleum releases to the groundwater aquifer
- Collaborate and share information

# Questions/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 3:15 PM to Consult with the Board's Attorney on Questions and Issues Pertaining to Matters Posted for Discussion at an Executive Session.

OPEN  
SESSION

The Board reconvened in open session at 3:22 PM

MOTION TO  
ADJOURN

There being no further business Vice Chair Cypher at 3:23 PM called for a motion to adjourn the Open Session. Adam Wong so moved; seconded by Ross Sasamura and unanimously carried.

Respectfully submitted,



LISA K. KIM

APPROVED:



DUANE R. MIYASHIRO  
Chair of the Board

APR 28 2014

Date

THE MINUTES OF THE REGULAR SESSION BOARD MEETING ON MARCH 24, 2014 WERE APPROVED AT THE APRIL 28, 2014 BOARD MEETING			
	AYE	NO	COMMENT
DUANE R. MIYASHIRO			ABSTAIN
MAHEALANI CYPHER			ABSENT
THERESIA C. MCMURDO	X		
ADAM C. WONG			ABSENT
DAVID C. HULIHEE	X		
ROSS S. SASAMURA	X		
GLENN M. OKIMOTO	X		