MINUTES

REGULAR MEETING
OF THE
BOARD OF WATER SUPPLY

February 23, 2015

At 2:00 PM on February 23, 2015 in the Board Room of the Public Service Building at 630 South Beretania Street, Honolulu, Hawaii, Board Chair Miyashiro called to order the Regular Meeting.

Present:	Duane R. Miyashiro, Chair Adam C. Wong, Vice Chair Theresia C. McMurdo (arrived at 2:12 p.m.) David C. Hulihee Ross S. Sasamura
Also Present:	Ernest Lau, Manager and Chief Engineer Ellen Kitamura, Deputy Manager and Chief Engineer Barry Usagawa Erwin Kawata Daryl Hiromoto Paul Kikuchi Jason Takaki Shawn Nakamoto Robert Morita Joe Cooper Scot Muraoka Keoni Mattos Michael Cubas Teri Akana
Others Present:	Krishna Jayaram, Deputy Corporation Counsel Dan Lawrence, Deputy Corporation Counsel Cliff Lum, SSFM Chris Cleveland, Brown and Caldwell Eric Iwamoto, Bowers + Kubota Dan Purcell James Manaku, Sr. Catherine Cruz, KITV Kristine Uyeno, KHON2
Absent:	Ford N. Fuchigami

APPROVAL OF MINUTES

Approval of the Minutes of the Regular Meeting held on January 26, 2015

MOTION TO APPROVE

Ross Sasamura and David Hulihee motioned and seconded, respectively, to approve the Minutes of the Regular Session Meeting of January 26, 2015. The motion was unanimously carried.

"February 23, 2015

ADOPTION OF
RESOLUTION
No. 851, 2015

Chair and Members
Board of Water Supply
City and County of Honolulu
Honolulu, Hawaii 96834

Chair and Members:

Subject: Adoption of Resolution No. 851, 2015, Supporting the Installation of Secondary Containment at the Red Hill Underground Fuel Storage Facility to Protect Oahu's Groundwater

We recommend adoption of Resolution No. 851, 2015, which supports double-lining, also called secondary containment, at the Red Hill Underground Fuel Storage Facility and to urge the Navy to install double-lining to protect Oahu's groundwater aquifer.

Respectfully submitted,

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

Attachment"

DISCUSSION: Water Quality Program Administrator Erwin Kawata read Resolution No. 851, 2015. Chair Miyashiro asked what would become of this Resolution if the Board were to adopt it. Manager Lau replied that they would transmit a copy of the Resolution to the United States Environmental Protection Agency, the State Department of Health, the Navy, and to the Congressional Delegation so they could clearly understand BWS's position on the installation of secondary containment at Red Hill.

BOARD OF WATER SUPPLY
CITY AND COUNTY OF HONOLULU

RESOLUTION NO. 851, 2015

SUPPORTING THE INSTALLATION OF SECONDARY CONTAINMENT AT THE RED HILL UNDERGROUND FUEL STORAGE FACILITY TO PROTECT OAHU'S GROUNDWATER

WHEREAS, the Red Hill Underground Fuel Storage Facility is located near Pearl Harbor and operated by the United States Navy; and

WHEREAS, the Red Hill facility was built between 1940 and 1943 and contains twenty cylindrical tanks that can store up to 12,500,000 gallons of fuel in each tank; and

WHEREAS studies commissioned by the Navy indicate past fuel releases from the facility dating back to 1947 and document the impact of corrosion on the steel fuel tanks, the presence of fuel contaminants in the groundwater and soil underneath the facility and the risks of large releases of fuel to the groundwater aquifer and the environment; and

WHEREAS, the bottom of the Red Hill tanks is only 100-feet above a major groundwater aquifer that serves as a source for drinking water for thousands of Oahu residents; and

WHEREAS, federal, state and city officials on a task force convened in response to a fuel leak in January 2014 at the Red Hill Underground Fuel Storage Facility agree that the large, aging underground tanks should be double-lined to prevent future leaks from contaminating a major underground aquifer; now, therefore

BE IT RESOLVED by the Members of the Board of Water Supply, City and County of Honolulu, that they support double-lining the Red Hill tanks and urge the Navy to install double-lining, also called secondary containment, at the Red Hill Underground Fuel Facility and to provide all necessary measures to protect Oahu's groundwater aquifer.

ADOPTED:

DUANE R. MIYASHIRO
Chair

Honolulu, Hawaii
February 23, 2015

MOTION TO ADOPT

David Hulihee motioned to adopt Resolution No. 851, 2015, Supporting the Installation of Secondary Containment at the Red Hill Underground Fuel Storage Facility to Protect Oahu's Groundwater. The motion was seconded by Adam Wong.

DISCUSSION:

Mr. Miyashiro asked if any one from the audience would like to testify and asked for them to take the podium, state their name, and limit their comments to three minutes.

TESTIMONY BY MR. DAN PURCELL:
"Good afternoon, Dan Purcell member of the public, pleasure to be before you. I went to the Red Hill task force meetings. I got to see Ernest Lau there on a number of occasions. As I said here before, he did an absolutely outstanding job standing his ground, as did Gary Gill who was previously at the Department of Health. The Navy says this is a very, very important facility, and I understand they can gravity fill three battleships a day there at that facility. It's very important for national security and otherwise, but they need to treat it as if it's very important. Obama's budget for 2016, just the defense budget is $585 billion, $5.3 billion of that will be to continue air strikes against the Islamic state militants, Iraq and Syria. Forty-two and a half billion to continue operations in Afghanistan and ten and a half billion for 57 F35 striker jets, strike fighter jets. That's almost $200 million per fighter jet. It's estimated that those tanks there may cost upwards of a billion dollars to repair. If we can get by a half a billion dollars fixing that, that's two of those airplanes. If the air force could do with two less airplanes, we could fix that problem over there. So the military has the money, so we can't just say it's just a matter of money. If it is a national importance, then they need to treat it as such and get that fixed. Our water is very important, that's protecting our water supply. Much mahalo, thank you."

Mr. Miyashiro thanked Mr. Purcell for his comments.

The motion was unanimously carried.

RESOLUTION NO. 851, 2015, SUPPORTING THE INSTALLATION OF SECONDARY CONTAINMENT AT THE RED HILL UNDERGROUND FUEL STORAGE FACILITY TO PROTECT OAHU'S GROUNDWATER, ADOPTED ON FEBRUARY 23, 2015			
	AYE	NO	COMMENT
DUANE R. MIYASHIRO	X		
ADAM C. WONG	X		
THERESIA C. MCMURDO			ABSENT
DAVID C. HULIHEE	X		
ROSS S. SASAMURA	X		
FORD N. FUCHIGAMI			ABSENT

"February 23, 2015

ADOPTION OF
RESOLUTION
No. 852, 2015

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

Chair and Members:

Subject: Adoption of Resolution No. 852, 2015, the Creation and Establishment of a Board of Water Supply Reserve Release Fund to Account for Restricted Funds Released from the Board of Water Supply Reserve Fund(s)

We recommend adoption of the attached Resolution No. 852, 2015, that establishes a BWS Reserve Release Fund.

BOARD OF WATER SUPPLY RESERVE RELEASE FUND

Funds have recently been released from the Common Debt Service Reserve Fund because of the refinancing of BWS municipal bonds. Since some of these funds are not restricted, they were transferred into the Operating Fund. The remaining funds released are restricted to long-life capital improvements. In order to track these restricted funds efficiently, a separate fund should be established.

We therefore request your consideration and approval of Resolution No. 852, 2015, to formally establish the BWS Reserve Release Fund.

Respectfully submitted,

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

Attachment"

DISCUSSION: Waterworks Controller Joseph Cooper read Resolution No. 852, 2015. Board Member Wong asked Mr. Cooper to explain the Resolution so it was easier to understand. Mr. Cooper explained that when the BWS refinanced the bonds last year in December, it lowered its interest payments. The savings from the lowered interest payments produced an excess balance of money placed into the common reserve fund. Some of those funds were allocated to the Series 2006 bond, which are restricted. About $3 million of the excess in this fund need to be spent as if it were bond financed and follow the tax restrictions, which are to be expended within three years on long-term capital assets. So this is just to create a fund to track those funds appropriately.

Mr. Wong thanked Mr. Cooper for the explanation.

BOARD OF WATER SUPPLY
CITY AND COUNTY OF HONOLULU

RESOLUTION NO. 852, 2015

THE CREATION AND ESTABLISHMENT OF A BOARD OF WATER SUPPLY (BWS) RESERVE RELEASE FUND TO ACCOUNT FOR RESTRICTED FUNDS RELEASED FROM THE BWS RESERVE FUND(S)

WHEREAS, the Board deems it advisable and in the best interest of the water customers of the City and County of Honolulu, to create and establish a fund in which restricted funds received from any BWS reserve fund are deposited and separately accounted for; and

WHEREAS, disbursements from this fund shall be restricted to all the usual tax restrictions that apply to that money and the projects financed. These requirements include: to expend or encumber it within three (3) years, on long-life capital costs for the water system, with no private business use, and no expectation to sell the financed assets; now, therefore

BE IT RESOLVED as follows:

1. The Board of Water Supply, City and County of Honolulu, hereby establishes the Board of Water Supply Reserve Release Fund ("Reserve Release Fund"), which shall be held by the Treasurer of the City and County of Honolulu.

2. All restricted funds released from BWS reserve fund(s) shall be deposited into the Reserve Release Fund.

3. All monies collected into the Reserve Release Fund shall be expended or encumbered within three (3) years on long-life capital costs for the water system, with no private business use, and no expectation to sell the financed assets.

ADOPTED:

DUANE R. MIYASHIRO
Chair

Honolulu, Hawaii
February 23, 2015

MOTION TO ADOPT

Adam Wong motioned to adopt Resolution No. 852, 2015, the Creation and Establishment of a Board of Water Supply Reserve Release Fund to Account for Restricted Funds Released from the Board of Water Supply Reserve Fund(s). The motion was seconded by Ross Sasamura and unanimously carried.

RESOLUTION NO. 852, 2015, THE CREATION AND ESTABLISHMENT OF A BOARD OF WATER SUPPLY RESERVE RELEASE FUND TO ACCOUNT FOR RESTRICTED FUNDS RELEASED FROM THE BOARD OF WATER SUPPLY RESERVE FUND(S), ADOPTED ON FEBRUARY 23, 2015			
	AYE	NO	COMMENT
DUANE R. MIYASHIRO	X		
ADAM C. WONG	X		
THERESIA C. MCMURDO			ABSENT
DAVID C. HULIHEE	X		
ROSS S. SASAMURA	X		
FORD N. FUCHIGAMI			ABSENT

"February 23, 2015

ADOPTION OF THE SIX-YEAR CIP

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

Chair and Members:

Subject: Adoption of the Six-Year Capital Improvement Program for the Period July 1, 2014 to June 30, 2020

We submit and recommend for adoption the proposed Six-Year Capital Improvement Program (CIP) for the period beginning July 1, 2014 and ending June 30, 2020, with the understanding that it may, as needs dictate, be amended or modified by the Board.

The proposed Six-Year CIP has been reviewed by the City's Department of Planning and Permitting in accordance with the provisions of Section 7-105(d) of the City Charter.

The Six-Year CIP includes projects that address system renewal and replacement and capacity expansion to accommodate planned growth, pipeline and facility improvements. It improves system capacity and reliability to ensure that we meet the challenges of providing a consistent and high-quality water supply for our customers.

Staff will present the Six-Year CIP highlights.

Respectfully submitted,

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

Attachment"

DISCUSSION:

Scot Muraoka of the Water Resources Division gave the presentation and talked about BWS's challenges, the core functions of the Department, and key components of the water system and how they need to be maintained, repaired and improved upon.

Water Resources Program Administrator Barry Usagawa explained about the project to look at the removal of the Haiku Stairs (HS). He informed the Board that they are requesting approval of $500,000 for them to do a preliminary engineering study that would look at alternatives on how to best remove HS and its associated costs. The cost would also include a boundary and topographical survey of the HS, as well as an environmental assessment or an environmental impact statement. Mr. Usagawa gave a brief history of HS. He stated that in 1958, the City acquired the lands for water development purposes. The parcel was then subdivided into two parcels to make room for the H3 Freeway. He pointed out that the water

sources are located on the Kahuku side of the valley on a separate lot from the HS. The parcel where the HS are located has no water sources at all.

Mr. Miyashiro asked if the City acquired the HS because at that time it was one parcel, which included the Kahuku side where the water sources are at. Mr. Usagawa replied yes, and since then the parcels have been subdivided.

Mr. Usagawa stated that the stairs go up to about 2,700 feet and offers panoramic views of the Koolaus and of Kaneohe, but due to safety and liability concerns, the BWS is planning for the removal of the stairs. It will be a multiple year project. He described the stairs being modules about 70 feet long, railings on both sides, interlocked with bolts and spiked into the side of the cliff. Mr. Usagawa explained that in February 2015, there were some strong southwesterly winds that knocked down a bunch of trees that damaged the stairs. The trees knocked down eight sections of the stair's modules. Future strong winds could knock down more trees and cause further damage to the stairs and/or people on it.

Mr. Lau reiterated that this poses potential for more damage and is a very dangerous situation. The trees are not very stable and the soil is very shallow, so the HS could undergo more damage if there are future windstorms and heavy rains. Mr. Lau informed the Board that when questioned by the media, he expressed his concern that fixing the stairs is not part of the Department's mission. He explained that the Department is already spending about $167,000 a year for a contracted guard service, and it could easily increase to $200,000 a year in the near future. In five years, that would cost the Department about $1 million just on security guard service to keep people from going on the stairs.

Mr. Lau stated that the BWS's mission is to provide safe, dependable, and affordable water now and into the future, and spending money on HS is not keeping with the core mission since it does not involve maintaining water pipelines, tanks, pumps and sources. Mr. Lau stated that it's time for them to make a decision to move forward one way or the other. He said that their preference would be to transfer HS and the parcel where it sits on to another government agency that is better equipped to handle the managed access. A key component is to provide an access that will not impact the communities, which are heavily impacted with the trespassers. Mr. Lau called on Executive Support Officer Robert Morita to provide some of the statistics on the amount of trespassers.

Mr. Morita stated that over the last six months, the media reported that there were about 100 citations issued and six individual arrests made. This does not include the amount of people the security guard at the HS location turns away. From the security guard's observations, there have been about 100-150 people per week trying to get to the top of HS, not to mention hikers getting to the top from the Moanalua Valley side access.

Board Member McMurdo inquired if the $167,000 a year includes the Department's liability insurance cost. Mr. Lau replied that it does not include liability insurance. Ms. McMurdo asked what the liability insurance cost is.

Mr. Lau replied that he wasn't certain how much the premium was, but that they are self-insured and have an additional liability policy above a certain amount. It is to cover the whole operation of BWS, and there is no separate policy just to cover the HS property. Mr. Lau expressed his concerns about the liability to BWS if someone were to get hurt. He prefers another government agency who is more equipped to dealing with the managed access take over, however, he stressed the importance of the need to address the community impact issues which is very important for any kind of managed access.

Mr. Wong inquired about discussions between BWS and other agencies regarding taking over the managed access. Mr. Lau replied that they have approached the Department of Land and Natural Resources and the National Park Service, and they both politely declined. Mr. Lau also mentioned that they have had discussions with Councilmember Ikaika Anderson, and Mr. Lau believes that he understands where BWS is coming from.

Mr. Lau clarified that if the Board approves the $500,000, and the funds become available on July 1st, it doesn't mean that demolition of the HS will begin immediately. They will need to go through the proper planning and permitting process, an environmental process and probably a formal conservation district use application process. So it's about one to two years away from recommending to the Board an actual demolition construction project. Mr. Wong asked if a cost for demolition would come out of this preliminary study. Mr. Lau replied that the study would look at cost estimates for demolition. Ms. McMurdo inquired if the study would also look at the possibility of exchanging the land with a non-profit organization. Mr. Lau responded that they could look at different options, however, their preference would be to work with another government agency because it's a lot easier. They could look at conveying it to the trust for public land. Ms. McMurdo asked if the $500,000 would include looking at other options other than demolishing HS. Mr. Lau replied that the study would be focused on demolishing the stairs.

Mr. Miyashiro asked if BWS is aware of issues or complaints at the access points from the leeward side of the ridge. Mr. Lau stated that they are not aware of issues from that access point. Mr. Lau added that in addition to trespassing issues at HS, BWS also faces trespassing issues on their other watershed properties.

Mr. Muraoka concluded with the presentation and respectfully asked the Board for their approval of the Six-Year CIP and thanked them for their time.

Mr. Wong inquired about a redundancy plan should the island face a catastrophe where there is no electricity and pumps can't pump water into the reservoirs. Mr. Muraoka explained that they have several mobile emergency generators that can be transported to where it's needed. One of the projects in the CIP is to install permanent generators at critical facilities. Mr. Wong asked if the current generators would be able to provide indefinite access to water during a catastrophe. Mr. Lau replied that it would, subject

to the availability of diesel fuel. Mr. Lau mentioned that they also work closely with the Department of Emergency Management, the Federal Emergency Management Agency, and the Hawaii Emergency Management Agency to communicate BWS's needs and priority for diesel fuel. Because of the limited amount of generators BWS has, if the power goes out for more than a day or two, reservoirs will begin to run out of water and BWS will ask for the public's cooperation in conserving water. Ms. McMurdo asked for clarification on how many days' worth of water would there be in a calamity. Mr. Lau stated that there would be about one day's worth of storage in the system, but more if people conserved. Mr. Lau stated that BWS has asked people to store their own water before disasters hit, which is easier than going to the store to purchase bottled water.

Mr. Wong asked why there was a projection of only one mile of pipeline to be replaced in 2016. Mr. Muraoka explained that the design phase takes a couple of years of planning before the actual construction can begin. He stated that they are focusing their efforts and expenditure of the funds of about $52 million on pump renewal and replacement.

Mr. Wong stated that when the Board approved the rate increases in 2012, some hurdles were identified in the capital project delivery system. Mr. Wong said that it seems like those hurdles still exist. Mr. Lau replied that some of those hurdles are beyond their control, like in the permitting process. He mentioned that later in the agenda Jason Takaki would be giving a presentation on the steps the Capital Projects Division has taken to improve the project delivery process.

Mr. Wong stated that he doesn't recall seeing the line item, "construction cost index adjustment" in the CIP budget before. Mr. Lau replied that it has always been in the CIP budget, but it is now specifically titled as such.

MOTION TO ADOPT THE SIX-YEAR CIP

David Hulihee motioned to adopt the Six-Year Capital Improvement Program for the Period July 1, 2014 to June 30, 2020. The motion was seconded by Adam Wong and unanimously carried.

THE SIX-YEAR CAPITAL IMPROVEMENT PROGRAM FOR THE PERIOD JULY 1, 2014 TO JUNE 30, 2020, ADOPTED ON FEBRUARY 23, 2015			
	AYE	NO	COMMENT
DUANE R. MIYASHIRO	X		
ADAM C. WONG	X		
THERESIA C. MCMURDO	X		
DAVID C. HULIHEE	X		
ROSS S. SASAMURA	X		
FORD N. FUCHIGAMI			ABSENT

WATER FOR LIFE

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

Board of Water Supply
City and County of Honolulu

Board of Water Supply
City and County of Honolulu

FY 2015-2020
6-Year Capital Improvement Program
February 23, 2015

WATER FOR LIFE

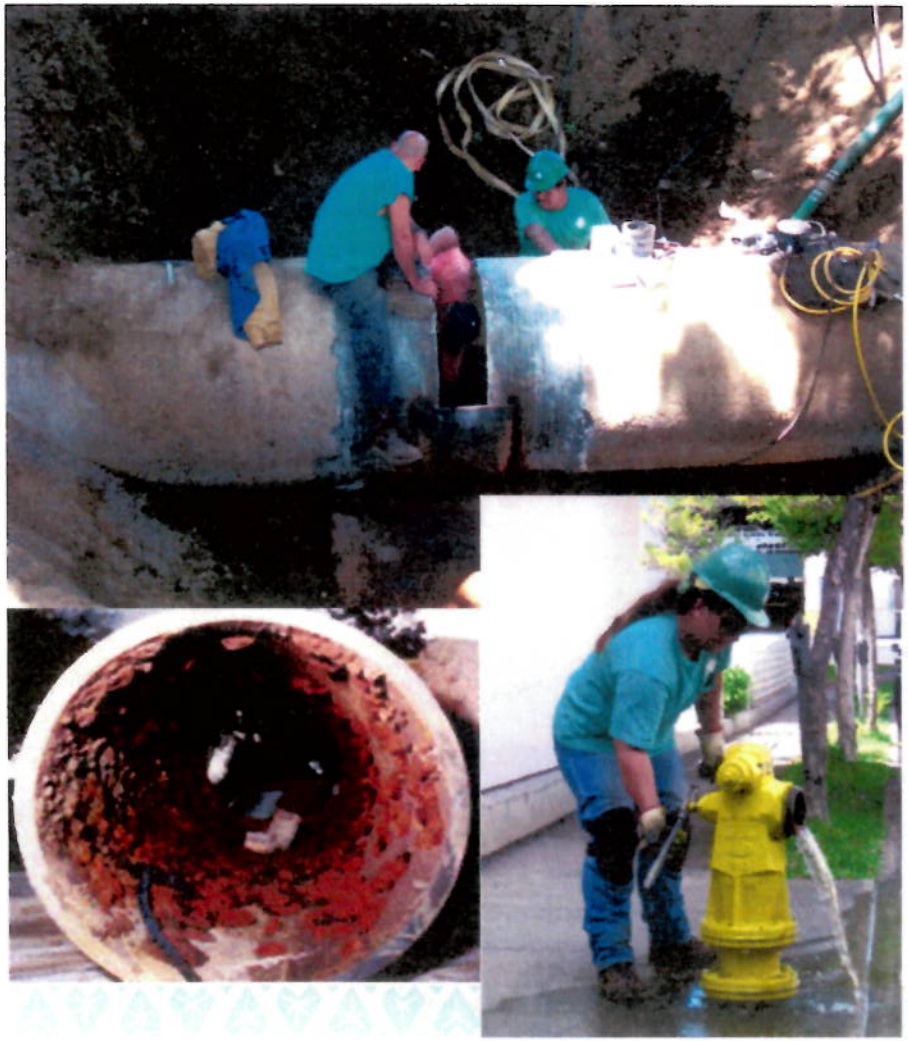
Safe, dependable, and affordable water now and into the future

Board of Water Supply
City and County of Honolulu

Capital Improvement Program Presentation

- Water System Overview
- City Charter Requirement
- CIP Basis
- CIP Project Highlights

Distribution System



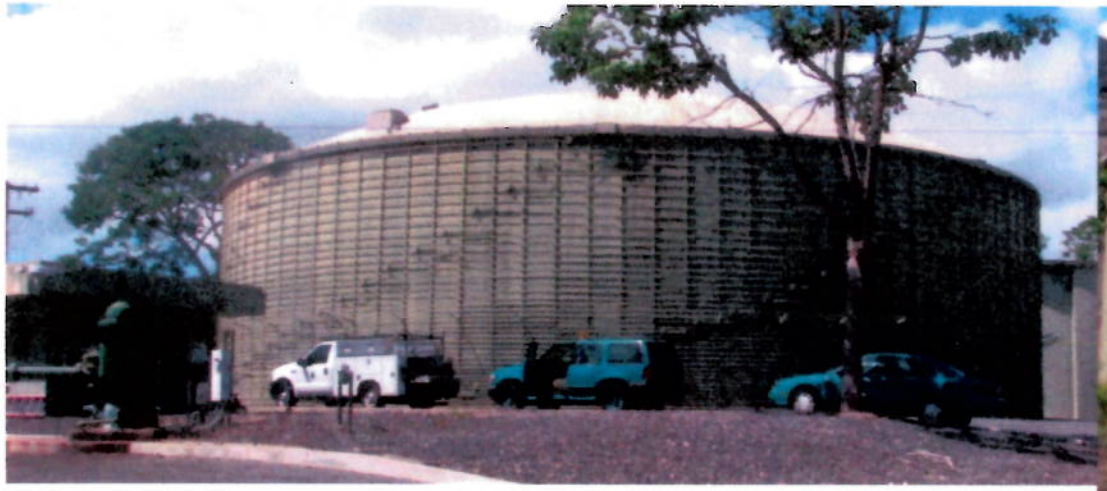
- **2,100** miles of pipeline
- **38,000** Valves
- **21,000** Fire hydrants
- **170,000** Customer Accounts

Pumps

- 94 water sources
  - 79 well stations
  - 15 tunnels
- 190 source pumps
- 422 mgd total capacity

- 90 booster stations
  - 191 booster pumps

Reservoirs



- 171 potable water reservoirs
- 2 brackish water reservoirs
- 4 recycled water reservoirs
- 5 dams

Water Treatment

- 12 Granular Activated Carbon (GAC) treatment facilities
- More than 20 million gallons of potable water filtered per day

BWS Buildings & Properties

- Beretania Offices
- Five base yards:

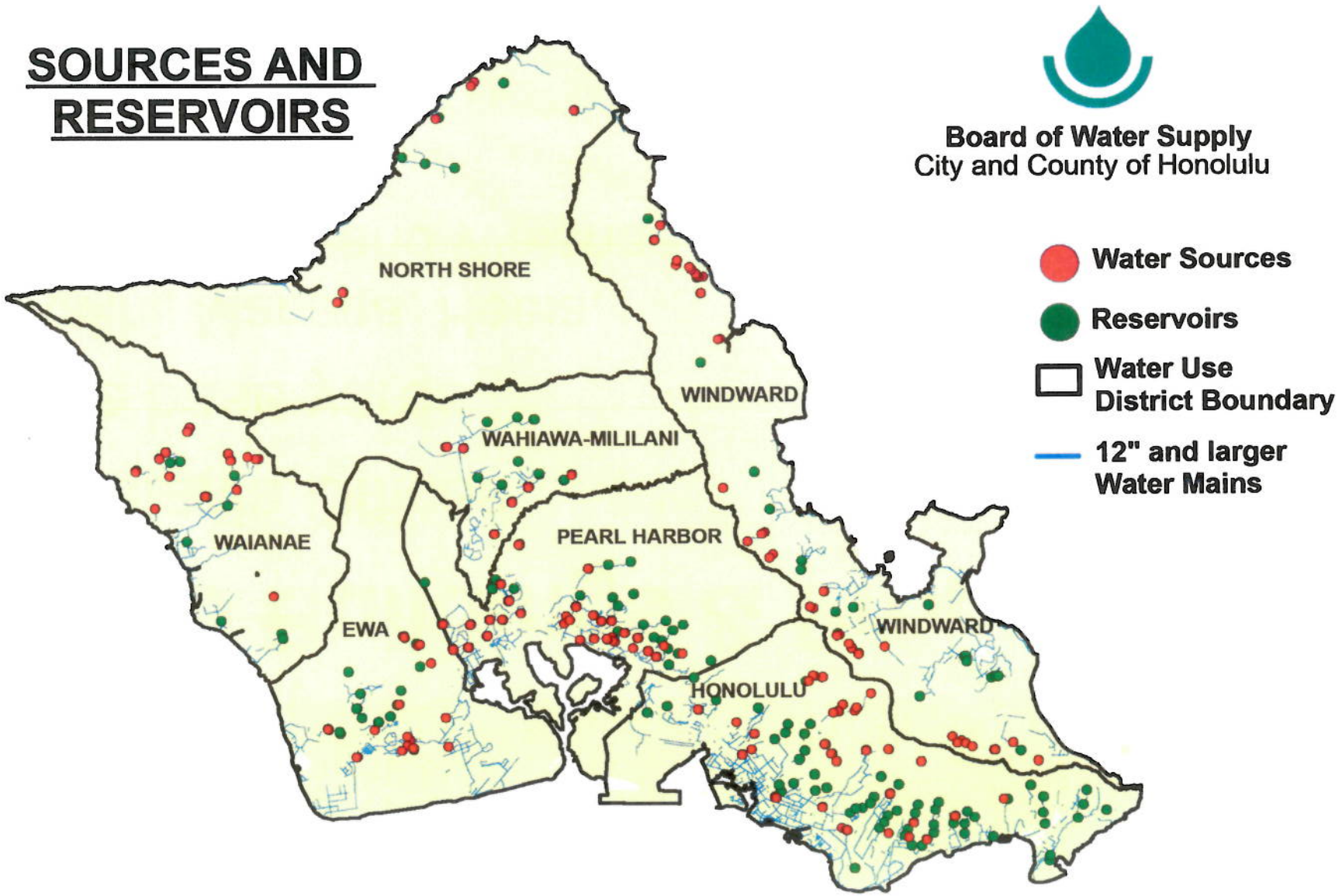
  Kalihi, Manana, Heeia, Wahiawa, and Waianae

WATER FOR LIFE

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

Board of Water Supply
City and County of Honolulu

SOURCES AND RESERVOIRS



Board of Water Supply
City and County of Honolulu

- Water Sources
- Reservoirs
- Water Use District Boundary
- 12" and larger Water Mains

Revised Charter of Honolulu

Section 7-105 (d), Powers, Duties & Functions of the BWS:
The Board of Water Supply shall:

"Determine the policy for construction, additions, extensions and improvements to the water systems of the city which shall include a long range capital improvement program covering a period of at least six years which shall be adopted after consultation with the director of planning and permitting and which may be amended or modified by the board from time to time."

WATER FOR LIFE

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

Board of Water Supply
City and County of Honolulu

CIP Budget Summary

Category	Total	2015	2016	2017	2018	2019	2020
RESEARCH AND DEVELOPMENT	11,530	2,380	2,900	3,250	1,000	1,000	1,000
RENEWAL AND REPLACEMENT	314,812	58,817	55,940	61,920	55,035	59,170	23,930
CAPACITY EXPANSION	122,303	2,223	15,275	20,580	22,635	16,955	44,635
SUBTOTAL:	**448,645**	**63,420**	**74,115**	**85,750**	**78,670**	**77,125**	**69,565**
CONTRACT & CONSTRUCTION COST INDEX ADJUSTMENT	66,199	9,599	10,469	13,029	12,248	10,713	10,142
TOTAL:	**514,844**	**73,019**	**84,584**	**98,779**	**90,918**	**87,838**	**79,707**

Long Range Capital Plan

- Aligned with 2012-2016 Rate Increase
- Meets Mission of Providing Safe, Dependable & Affordable Water
- Provides multi-year program guidance for project implementation and financial planning for **fixed infrastructure assets**
  - Research & Development
  - Renewal & Replacement
  - Capacity Expansion
- Projects are formulated, prioritized and scheduled by divisional committee using multi-attribute criteria

Project Prioritization Criteria

System Reliability to consistently deliver water with minimum interruptions

System Adequacy is having adequate system capacity to meet existing & future demands, including fire protection

Regulatory Compliance with Federal, State & County water quality regulations and addresses legal compliance & risk management

Increased Efficiency in producing, delivering and using water and how efficient energy is used

Reduced Maintenance is the ability to reduce the frequency and extent of water system maintenance

Agency Coordination is the level of project coordination required with other agencies

CIP System Objectives

- To keep 90 percent of pumps always in service and meet all system demand conditions
- To meet water quality & water system standards
- To meet maximum day storage and emergency storage requirements
- Will be re-evaluated by BWS Water Master Plan

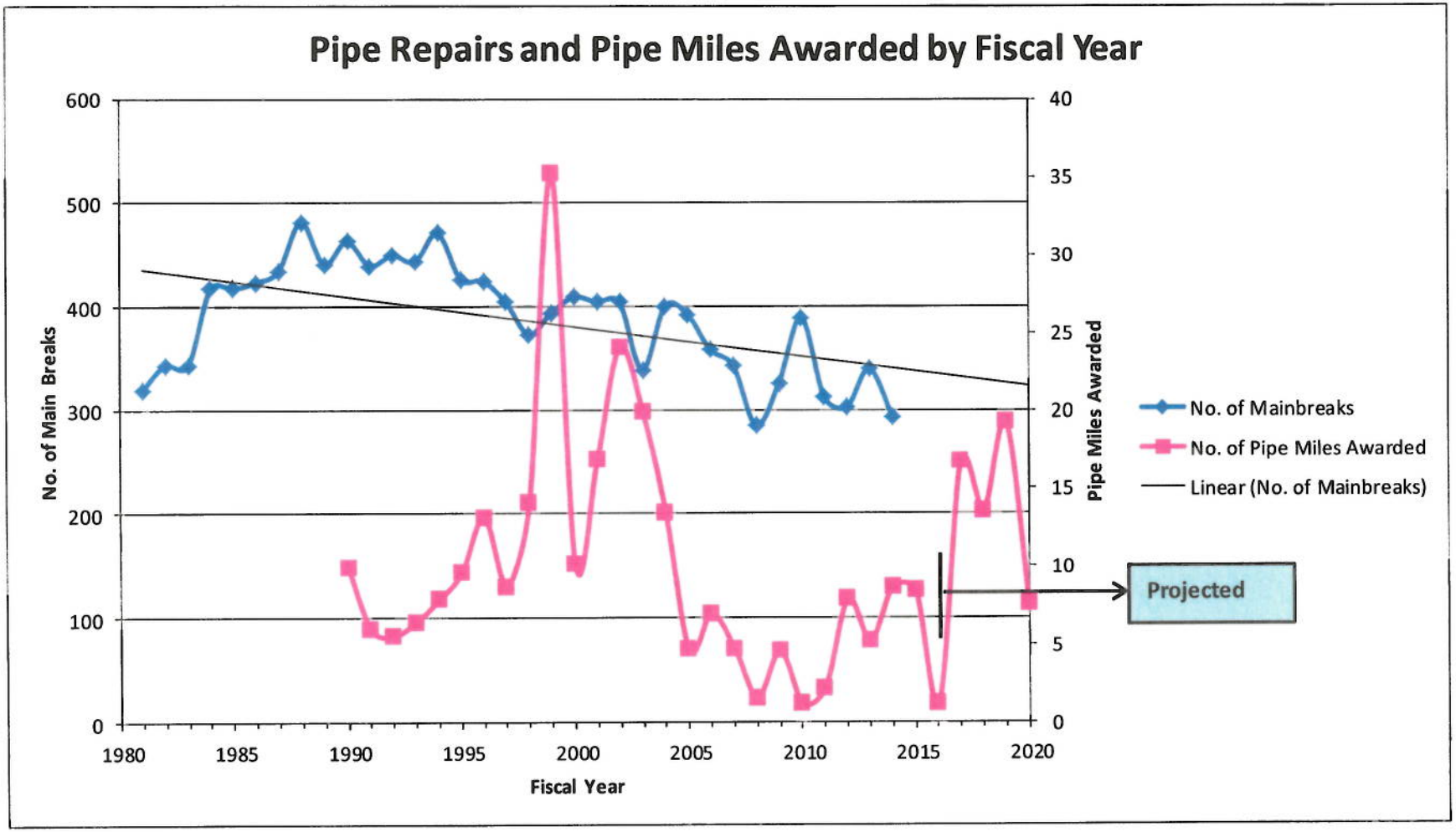
Renewal and Replacement Project Formulation

System Condition Assessment – Main breaks per pipe length, corrosion, pump condition, structural integrity

Fire protection improvement – Adding hydrants, increasing flow & pressures

Reduce public impact – replace pumps & pipes serving economic centers & critical facilities and along major traffic routes

Project coordination – Combine/Coordinate projects with other utilities/agencies, to reduce overall costs & minimize impacts on residents, businesses, and motorists


Pipe Repairs and Pipe Miles Awarded by Fiscal Year
No. of Main Breaks
Pipe Miles Awarded
Fiscal Year
0
100
200
300
400
500
600
0
5
10
15
20
25
30
35
40
1980
1985
1990
1995
2000
2005
2010
2015
2020
No. of Mainbreaks
No. of Pipe Miles Awarded
Linear (No. of Mainbreaks)
Projected

Capacity Expansion Project Formulation

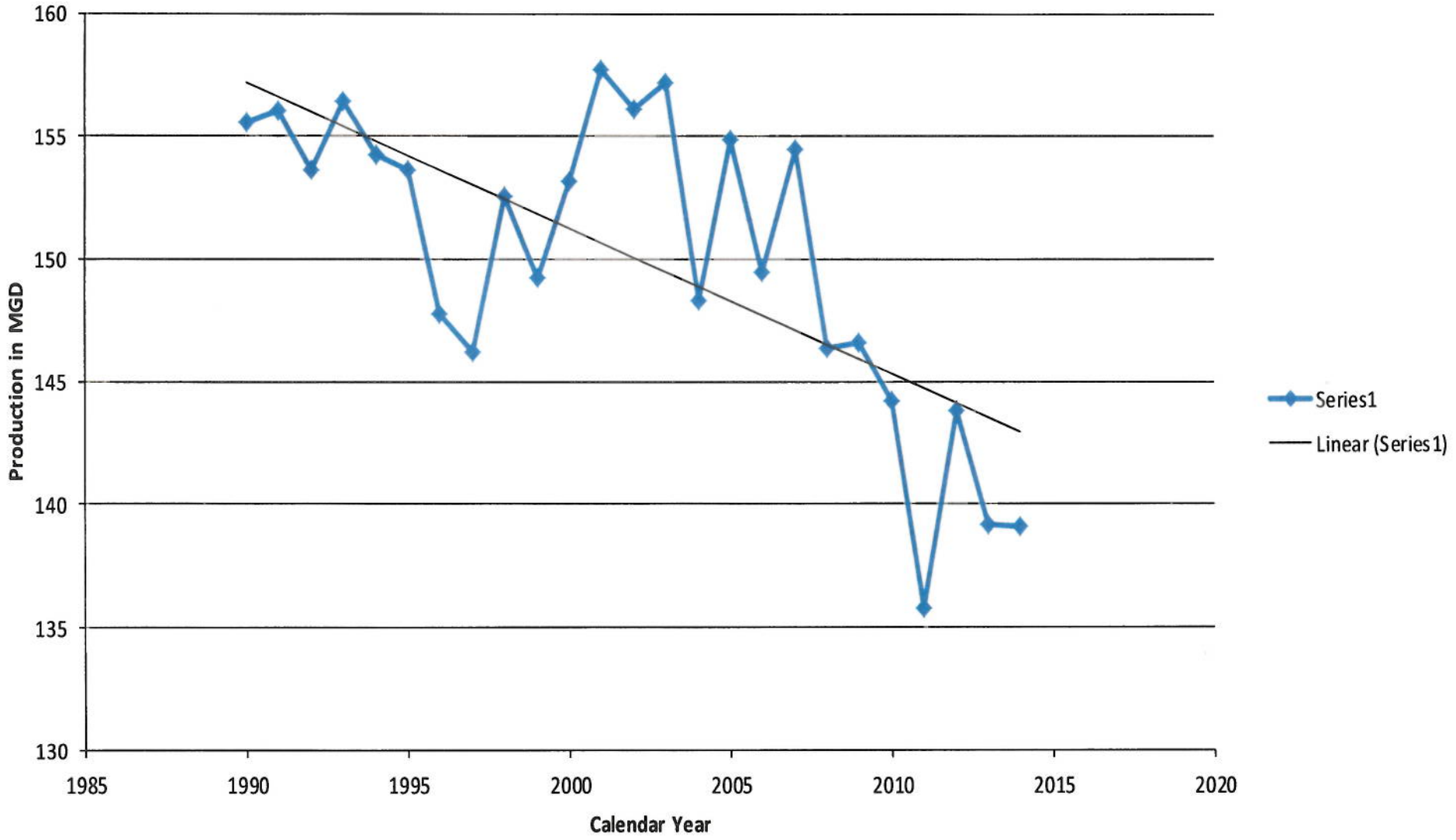
System Capacity Assessments

Trends of pumpage, metered consumption & water loss relative to system capacity

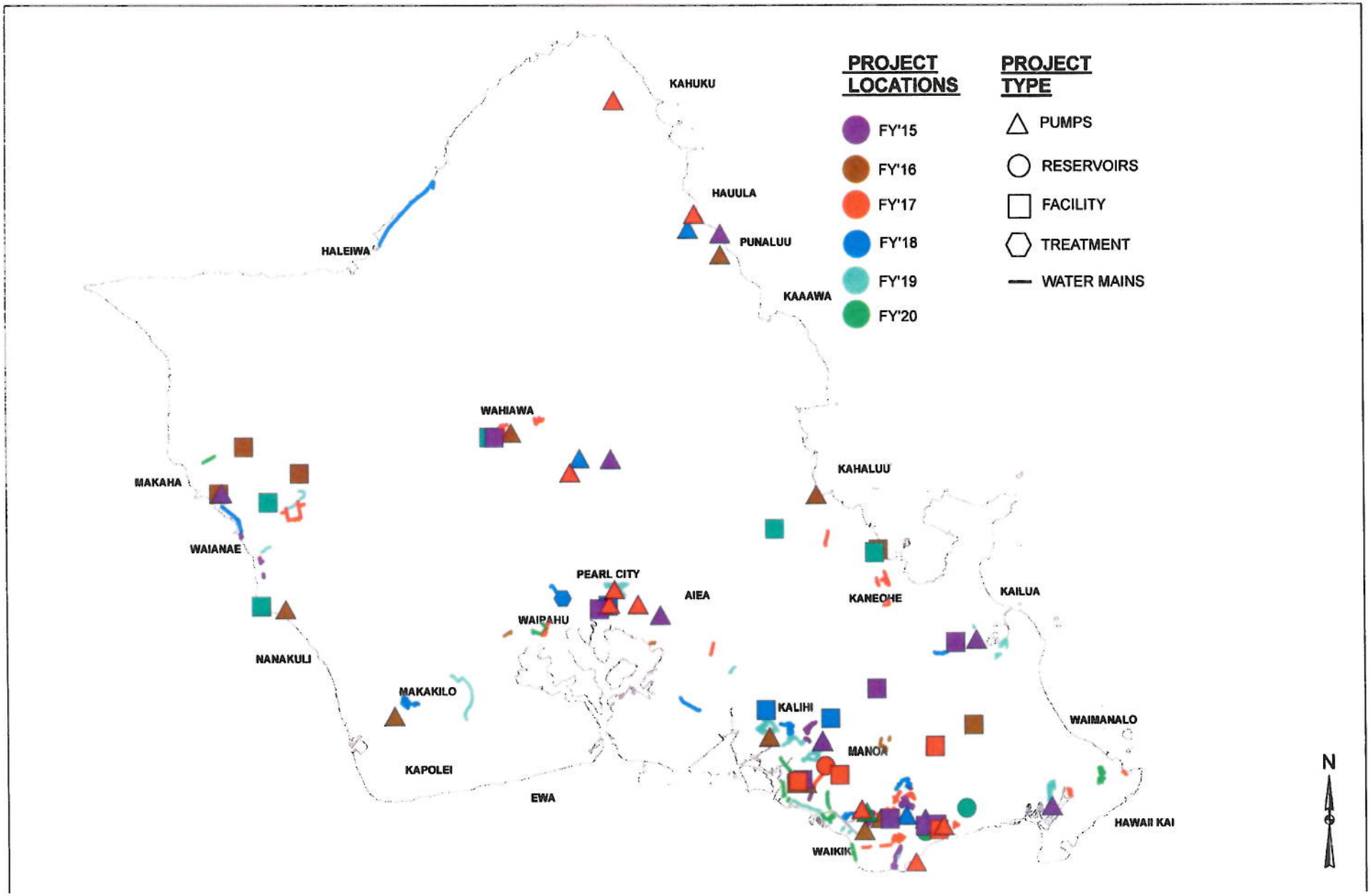
Monitor pace of development, water commitments & land use plans (i.e. Rail Transit Oriented Development)

Evaluate and Formulate Projects for system adequacy, reliability, efficiency, reduced maintenance, regulatory compliance, coordination & single points of failure

Islandwide Potable Production (MGD)

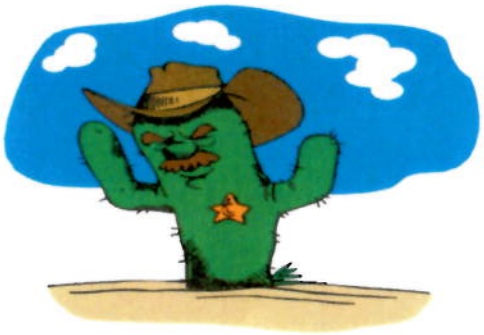


CIP Project Location Map



CIP Projects Summary

- 72 miles of pipeline (66 miles replacement, 6 miles new capacity expansion)
- 69 Wells/Booster pump renewals
- 31 Reservoir rehabilitation projects
- 15 renovation/repair projects at Beretania Complex/Corporation Yards



- 3 new wells – Kahuku Well #3, Maakua Well #2 and Waialae West Well
- 2 new reservoirs – Kalawahine 180 and Aina Haina 170 Reservoirs

CIP Projects of Note

- **Haiku Stairs** – Planning and engineering evaluation for removal of the stairs on BWS land

- **History:** Navy constructed the stairs in 1942 out of wood to access their communications equipment atop the ridge. Stairs were rebuilt by the Navy in 1955-1956 using steel. The City acquired for BWS use the lands on which the stairs are located in 1958 from Kamehameha Schools for water development purposes. At around the same time, the Navy ceased their activities in the valley. In 1975, the Coast Guard took over the old Navy facility and commenced operations of their Omega navigational facility and used the stairs to access their facilities atop the ridge. The Coast Guard also allowed public access to the stairs. In 1987, the Coast Guard closed the stairs because of vandalism and liability concerns. In 1997, the Coast Guard ceased operations of their Omega facility and the stairs remained closed to the public. Due to safety and liability concerns, BWS is proposing to begin evaluating how to remove the stairs.

Haiku Stairs Damage

- On 2/14/15 high winds uprooted a stand of octopus trees that damaged the Haiku Stairs at approximately 1,050' elevation
- 8 inter-locking stair sections were damaged on a relatively lower slope shelf, per 2/19 survey
- Tall trees remain on the ridge above and to the right of the stairs & have the potential to uproot and further damage the stairs
- The situation remains dangerous and hikers should stay away

CIP Projects of Note (cont'd)

- **Red Hill Exploratory Wells** – To monitor movement of fuel constituents toward BWS drinking water wells
- **Annual Pump Renewal and Replacement** - To address various pumping plant needs and keep pumps operational
- **Annual Water Main Installation and Replacement** - To address various pipeline replacement needs as quickly as possible
- **Annual Fire Hydrant Installations at various locations** - To address immediate fire protection needs.
- **Palolo Tunnel Portal Improvements** - To comply with DOH Sanitary Survey and Groundwater Rule requirements
- **Lualualei Line Booster Improvements** - To address partial building moratorium in Waianae
- **Kahuku Wells Pump No. 3** - To add capacity and reliability in the stand alone Kahuku system
- **Wireless and Security Camera Upgrades** - To install and increase telemetry control over all BWS facilities
- **SCADA Replacement** – New system to provide improved supervisory control and data acquisition over all BWS facilities

CIP Projects of Note (cont'd)

- **Punaluu Wells II Renovation** - For renewal and replacement of an important pumping station
- **Auloa Road and Ulukahiki Street 12-Inch Main** - Replacement needed due to pipe deterioration
- **Kalakaua Avenue Water System Improvements** - Replacement needed due to pipe deterioration
- **Kalawahine 180' 2.0 MG Reservoir** - To add needed storage for the Honolulu Metro water system, which is short on capacity
- **Kalihi Water System Improvements, Part VI** - Replacement needed due to pipe deterioration
- **Emergency Generator Installations** – Install permanent generators at critical pump stations
- **Honolulu District 42-Inch Mains** - To install a South trunk transmission main along Beretania and King Street for capacity & reliability

WATER FOR LIFE

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

Board of Water Supply
City and County of Honolulu

Water for Life:

Safe, dependable & affordable water now and into the future

BOARD OF WATER SUPPLY
City and County of Honolulu
Honolulu, Hawaii

SIX-YEAR
CAPITAL IMPROVEMENT PROGRAM

For the Fiscal Years
Beginning July 1, 2014 and
Ending June 30, 2020

Submitted by: ERNEST Y. W. LAU, P.E.
Manager and Chief Engineer

FOREWORD

The Six-Year Capital Improvement Program for fiscal years 2015 - 2020, contained herein, represents the projected funding requirements for research and development, renewal and replacement and capacity expansion to adequately meet system needs and the estimated water demand during the program period. Water demand estimates were derived from demographic and community planning data furnished by the Department of Planning and Permitting, City and County of Honolulu.

The level and rate of program execution in subsequent years will depend largely upon the financial capacity of the Board of Water Supply and the extent additional financing is available from various contributory sources.

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CHAIR AND MEMBERS
BOARD OF WATER SUPPLY
CITY AND COUNTY OF HONOLULU
HONOLULU, HAWAII

In compliance with Section 7-105 (d) of the Revised Charter of the City and County of Honolulu, the following is the Six-Year Capital Improvement Program for the period July 1, 2014 - June 30, 2020.

Submitted by:

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

2/23/15
Date

Approved:

DUANE R. MIYASHIRO
Chair

FEB 23 2015
Date

- SIGNATURES -

BOARD OF WATER SUPPLY
City and County of Honolulu

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BOARD OF WATER SUPPLY SIX-YEAR CAPITAL IMPROVEMENT PROGRAM

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BOARD OF WATER SUPPLY SIX-YEAR CAPITAL IMPROVEMENT PROGRAM

FISCAL YEARS 2015 TO 2020

SUMMARY OF COST ESTIMATES

CATEGORY	(FY15-20) TOTAL ($ 000)	PRIOR APPNS ($ 000)	FISCAL YEARS (FY) TOTALS ($ 000) 2015	2016	2017	2018	2019	2020
I. RESEARCH AND DEVELOPMENT	11,530	2,400	2,380	2,900	3,250	1,000	1,000	1,000
II. RENEWAL AND REPLACEMENT	314,812	65,057	58,817	55,940	61,920	55,035	59,170	23,930
III. CAPACITY EXPANSION	122,303	17,865	2,223	15,275	20,580	22,635	16,955	44,635
SUB-TOTAL CATEGORIES I - III	**448,645**	**85,322**	**63,420**	**74,115**	**85,750**	**78,670**	**77,125**	**69,565**
Construction Cost Index Adjustment			4,406	5,624	7,450	7,226	7,188	6,642
Contract Adjustment Account			5,193	4,845	5,579	5,022	3,525	3,500
TOTAL CAPITAL IMPROVEMENT PROGRAM BUDGET	**514,844**		**73,019**	**84,584**	**98,779**	**90,918**	**87,838**	**79,707**

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CATEGORY I

RESEARCH AND DEVELOPMENT

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BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

PROJECT	EXPEND TYPE	(FY15-20) TOTAL ($ 000)	PRIOR APPNS ($ 000)	Fiscal Year (FY) ($ 000) 2015	2016	2017	2018	2019	2020	REMARKS
I. RESEARCH AND DEVELOPMENT (R&D)										
1. HAUULA WELL REPLACEMENT										
Prepare Environmental Assessment for replacement exploratory/production well at existing Hauula Wells Station	**P&E**	80	0	**80**	--	--	--	--	--	Replace existing artesian well and connect to existing line shaft pumps. Well to be located within existing site
Drill and case replacement exploratory well at existing Hauula Wells Station (TMK: 5-4-015:030)	**Const**	350	0	**--**	--	350	--	--	--	
2. ALA WAI MEMBRANE BIOREACTOR FACILITY										
Conduct Feasibility Study and conceptual design for Ala Wai Golf Course MBR facility to conserve potable irrigation water. Develop Environmental Assessment and RFP for Design-Build-Operate-Maintain contract	**P&E**	300	0	**300**	--	--	--	--	--	
3. ENERGY SAVINGS PERFORMANCE CONTRACTING (ESPC) - BWS FACILITIES										
Implement an ESPC project on BWS facilities with a goal of reducing energy demand by 20%	**P&E**	500	800	**500**	--	--	--	--	--	
Construct identified ESPC projects	**Const**	500	0	**--**	500	--	--	--	--	
4. CONSTRUCTION MANAGEMENT FOR VARIOUS BWS CONSTRUCTION PROJECTS										Investigate and implement process and procedure improvements for construction inspection and contract administration, incorporating new tools, resources and training to improve project management and oversight, workforce efficiency, and quality assurance/quality control
Provide construction management and training services for selected BWS construction projects	**Const**	6,500	1,600	**1,500**	1,000	1,000	1,000	1,000	1,000	

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

	PROJECT	EXPEND TYPE	(FY15-20) TOTAL ($ 000)	PRIOR APPNS ($ 000)	Fiscal Year (FY) ($ 000) 2015	2016	2017	2018	2019	2020	REMARKS
5.	**RED HILL GROUNDWATER MONITORING WELLS**										
	Construct monitor wells around the Navy Red Hill Underground Fuel Storage Facility to monitor the movement of fuel constituents toward BWS drinking water wells and provide hydrologic data for groundwater modeling	**Const**	400	0	--	400	--	--	--	--	To be designed under an existing contract
6.	**HAIKU STAIRS REMOVAL**										
	Prepare Preliminary Engineering Study, Environmental Assessment and a CDUP for the removal of the stairs	**P&E**	500	0	--	500	--	--	--	--	
7.	**BERETANIA SITE MASTER PLAN**										
	Prepare a master plan for the future redevelopment of the BWS Beretania property	**P&E**	500	0	--	500	--	--	--	--	
8.	**KAIMUKI PUMP STATION EXPLORATORY WELLS**										Replace existing artesian wells constructed between 1898 and 1928
	Drill and case five (5) replacement exploratory wells at existing Kaimuki Wells Pump Station (TMK: 2-7-030:012)	**Const**	1,700	0	--	--	1,700	--	--	--	
9.	**NUUANU RESERVOIR NO. 1, 2 AND 3 DECOMMISSIONING STUDY**										
	Prepare study to identify the alternatives for decommissioning or retaining all three reservoirs, including but not limited to operations & maintenance requirements, improvements, costs, permitting, regulatory requirements, liabilities and potential issues	**P&E**	200	0	--	--	200	--	--	--	
	R&D P&E TOTAL	**P&E**	2,080	800	880	1,000	200	0	0	0	
	R&D Land TOTAL	**Land**	0	0	0	0	0	0	0	0	
	R&D Const TOTAL	**Const**	9,450	1,600	1,500	1,900	3,050	1,000	1,000	1,000	
	FY 2015-2020 RESEARCH AND DEVELOPMENT (R&D) TOTAL		11,530	2,400	**2,380**	2,900	3,250	1,000	1,000	1,000	

CATEGORY II

RENEWAL AND REPLACEMENT

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BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

PROJECT	EXPEND TYPE	(FY15-20) TOTAL ($ 000)	PRIOR APPNS ($ 000)	Fiscal Year (FY) ($ 000) 2015	2016	2017	2018	2019	2020	REMARKS
II. RENEWAL AND REPLACEMENT (R&R)										
A. PUMPS - R&R										
1. PUMP RENEWAL AND REPLACEMENT										Annual emergency and design for renewal/maintenance and replacement of BWS pumps
Renewal and replacement of various BWS pumps and plant facilities	**P&E**	3,000	3,388.4	**500**	500	500	500	500	500	
	Const	4,500	5,478	**1,500**	1,000	500	500	500	500	
2. KAMAILE WELLS RENOVATION										
Prepare plans and specifications	**P&E**	0	150	--	--	--	--	--	--	
Renovate and install drain line for pump discharges	**Const**	1,400	0	**1,400**	--	--	--	--	--	
3. MARINER'S RIDGE BOOSTER I: REPLACE PUMPING UNITS										
Replace two (2) existing pumps and motors including diaphragm and butterfly valves. Replace the existing two (2) check valves and four (4) rubber-seated butterfly valves on suction and discharge lines of the pumping units in the basement of the pump station. Install new MCC. Replace existing low voltage transformers and panel, which are used primarily for lighting and control power. Corrosion control and repaint all interior piping	**Const**	970	0	**970**	--	--	--	--	--	Design under Pump R&R
4. AINA KOA BOOSTER I: REPLACE PUMP NO. 2										
Replace Pump No. 2 motor. Replace altitude valve along with existing solenoid control valves and control panel. Replace existing rubber-seated butterfly valves at the suction and discharge lines of Pump No. 2. Replace gate valves at emergency discharge piping in the pump building. Replace existing cracked drain pipes, including fittings in the pump building basement. Replace compressor located in the utility room. Corrosion control and repaint all interior piping	**Const**	310	0	**310**	--	--	--	--	--	Design under Pump R&R

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

	PROJECT	EXPEND TYPE	(FY15-20) TOTAL ($ 000)	PRIOR APPNS ($ 000)	Fiscal Year (FY) ($ 000) 2015	2016	2017	2018	2019	2020	REMARKS
5.	**MAUNAWILI BOOSTER: REPLACE PUMPING UNITS**										
	Replace the existing four (4) gate valves on the suction and discharge lines with four (4) new non-rising stem, resilient seated gate valves, in place complete. Replace the existing two (2) control valves located in the valve vault with straight sections of pipe. Replace existing metal grating on top of the existing valve vault with new grating. Replace existing valve vault rungs with new service ladder. Replace deteriorated metal support beam in vault. No electrical work is to be performed at the Maunawili BPS site. Corrosion control and repaint all piping including booster pumping units	**Const**	100	0	**100**	--	--	--	--	--	Design under Pump R&R
6.	**KAONOHI BOOSTER I: REPLACE PUMPING UNITS**										
	Replace both existing pumping units with new pumping units including pumps, motors, pump mounting bases, valves, piping, and components. Provide new Low Suction Pressure Switches on the suction side of each pumping unit. Provide new rubber-seated butterfly valves and check valves on the suction and discharge lines of each pumping unit. Provide new surge-anticipator valve, piping, and appurtenances	**Const**	585	0	**585**	--	--	--	--	--	Design under Pump R&R
7.	**PACIFIC HEIGHTS BOOSTER RENOVATION**										
	Prepare plans and specifications	**P&E**	0	97	--	--	--	--	--	--	
	Replace pumping units, valves, discharge piping, MCC, replace roof and renovate building	**Const**	1,500	0	**1,500**	--	--	--	--	--	
8.	**MILILANI WELLS IV - REPLACEMENT OF PUMP NO. 2**										
	Replace pump, motor, MCC, starters, breakers, and conductors	**Const**	1,200	0	**1,200**	--	--	--	--	--	Design under Pump R&R

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

	PROJECT	EXPEND TYPE	(FY15-20) TOTAL ($ 000)	PRIOR APPNS ($ 000)	Fiscal Year (FY) ($ 000) 2015	2016	2017	2018	2019	2020	REMARKS
9.	**KALUANUI LINE BOOSTER: REPLACE PUMPING UNITS**										
	Replace three (3) existing pumping units with new pumping units on existing concrete pads including pumps, motors, and pump supports. Pumps and motors will be downsized from 2 MGD to 1 MGD. Provide new piping and valves. Perform corrosion control and repaint all interior piping. Renew/replace tiles on concrete pump bases. Replace existing RVAT starters with new solid-state soft start motor starters. Remove butterfly valves and their actuators	**Const**	935	0	**935**	--	--	--	--	--	Design under Pump R&R
10.	**WAIALAE IKI WELL RENOVATION**										
	Prepare plans and specifications	**P&E**	150	0	**150**	--	--	--	--	--	
	Replace pump unit, MCC, conduits, controls and wires	**Const**	600	0	**--**	--	600	--	--	--	
11.	**MILILANI WELLS II IMPROVEMENTS**										
	Prepare plans and specifications	**P&E**	150	0	**150**	--	--	--	--	--	
	Install permanent PRV assembly for system operations	**Const**	350	0	**--**	--	350	--	--	--	
12.	**PUNANANI WELLS MCC REPLACEMENT**										Redesign
	Prepare plans and specifications	**P&E**	300	50	**300**	--	--	--	--	--	
	Replace MCC, power cables and control wiring	**Const**	2,000	0	**--**	--	2,000	--	--	--	
13.	**PEARL CITY WELLS II ISOLATION VALVES**										
	Prepare plans and specifications	**P&E**	150	0	**150**	--	--	--	--	--	
	Install isolation valves	**Const**	700	0	**--**	--	700	--	--	--	

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

	PROJECT	EXPEND TYPE	(FY15-20) TOTAL ($ 000)	PRIOR APPNS ($ 000)	Fiscal Year (FY) ($ 000) 2015	2016	2017	2018	2019	2020	REMARKS
14.	**PEARL CITY WELLS I RENOVATION**										
	Prepare plans and specifications	**P&E**	150	0	**150**	--	--	--	--	--	
	Replace MCC and renovate building	**Const**	1,500	0	--	--	1,500	--	--	--	
15.	**KEANU LINE BOOSTER: REPLACE PUMPING UNITS**										
	Replace all three (3) existing pump units including pumps, motors, discharge head assemblies, valves, flow tube, and all above-ground piping and components. The construction work will be properly sequenced to maintain two (2) pumps in service at all times. Replace center-guided check valves with new tilting-disc check valves. Install mute structure if feasible. Replace/relocate MCC from existing weather-proof enclosures and install new into existing pump building; remove existing equipment from existing pump building. Install new solid-state soft-starters	**Const**	2,500	0	--	2,500	--	--	--	--	Design under Pump R&R
16.	**DIAMOND HEAD LINE BOOSTER: REPLACE PUMPING UNITS**										
	Replace four (4) existing pumping units with four (4) new pumping units including pumps, motors, discharge head assemblies, valves, piping, and components. Provide new metal-seated butterfly valve and check valve on bypass lines to match existing. Replace safety disconnect switches and junction boxes at bypass control valve and all four pumps. Perform corrosion control and repaint all piping	**Const**	2,000	0		2,000	--	--	--	--	Design under Pump R&R
17.	**WAHIAWA WELLS I UNIT 3 REHABILITATION**										In-house design Units 1 & 2 are active
	Rehabilitate Well 3: Clean and clear well of pump equipment debris; videolog entire length of well; test plumbness and alignment of well using 10-inch diameter dummy; install new solid and louvered casing and cement grout in annulus; surge well clean of particulates and pump test well	**Const**	375	0	--	375	--	--	--	--	Design the well repair to extend the well casing and address the partial well collapse causing turbidity in the well

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

	PROJECT	EXPEND TYPE	(FY15-20) TOTAL ($ 000)	PRIOR APPNS ($ 000)	Fiscal Year (FY) ($ 000) 2015	2016	2017	2018	2019	2020	REMARKS
18.	**BERETANIA PUMP STATION RENOVATION**										Re-design to update plans & permits
	Prepare plans and specifications	**P&E**	0	205	--	--	--	--	--	--	
	Replace four (4) pump units (3 low, 1 high service), valves, MCC, cables, controls and wires	**Const**	1,200	0	--	1,200	--	--	--	--	
19.	**BARBERS POINT LINE BOOSTER IMPROVEMENTS**										
	Prepare plans and specifications	**P&E**	0	200	--	--	--	--	--	--	
	Replace pumps and motors, discharge piping and valves, MCC, wiring and appurtenances	**Const**	3,000	0	--	3,000	--	--	--	--	
20.	**WAIHEE LINE BOOSTER: REPLACE PUMPING UNITS**										
	Replace motors at Pumps No. 1, No. 3, and No. 4 of Waihee set of pumps. Replace motors at Pump No. 1, No. 3, and No. 4 of Punaluu set of pumps. Replace shaft seals and flow switches for Pump No. 2, No. 3, and No. 4 of Waihee set of pumps. Replace shaft seals and flow switches for Pump No. 3 and No. 4 of Punaluu set of pumps. Coordinate with HECO to shut down overhead 46,000-volt line during crane lift operation for motor replacement. Perform corrosion control and repaint all above-ground piping for all eight (8) Waihee and Punaluu pumping units	**Const**	3,500	0	--	3,500	--	--	--	--	Design under Pump R&R

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

	PROJECT	EXPEND TYPE	(FY15-20) TOTAL ($ 000)	PRIOR APPNS ($ 000)	Fiscal Year (FY) ($ 000) 2015	2016	2017	2018	2019	2020	REMARKS
21.	**PUNALUU WELLS II RENOVATION**										
	Provide new pumping unit at Pump No. 6. Provide new piping, valves, wiring, and appurtenances at Pumps No. 1, 2, 3, 5, and 6. Provide new surge anticipating valve at Pumps No. 1, 3, and 6. Replace sodium hypochlorite system. Replace all existing motor controls with new soft starters. Provide new telemetering and supervisory control equipment in new SCADA cabinet with new UPS system. Replace existing underground pump discharge line from Pumps No. 1, 2, 3, 5, and 6. Replace existing main discharge line along access road, install a new main bypass line along the access road to serve as a redundant main discharge line. Provide new discharge lines from surge anticipator valves at Pumps No. 1, 2, 3, 5 and 6 to the existing storm drainage system. Widen access road to accommodate new utilities and to accommodate trailer for emergency generator. Renovate existing control building	**Const**	10,700	0	--	10,700	--	--	--	--	Design under Pump R&R
22.	**KALIHI PUMP STATION LOW AND HIGH SERVICE RENOVATION**										
	Prepare plans and specifications	**P&E**	0	200	--	--	--	--	--	--	
	Replace pumps, motors, discharge piping, valves, MCC, wiring and chlorinator	**Const**	4,500	0	--	4,500	--	--	--	--	
23.	**MILILANI WELLS I RENOVATION**										
	Prepare plans and specifications	**P&E**	250	0	--	250	--	--	--	--	
	Repaint and renovate GAC's, replace two (2) pumps, redesign mute roofs and ventilation system to facilitate motor pulls	**Const**	0	0	--	--	--	--	--	--	

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

	PROJECT	EXPEND TYPE	(FY15-20) TOTAL ($ 000)	PRIOR APPNS ($ 000)	Fiscal Year (FY) ($ 000) 2015	2016	2017	2018	2019	2020	REMARKS
24.	**KAIMUKI PUMP STATION REDEVELOPMENT**										
	Prepare Environmental Assessment and Redevelopment Plan for five (5) new wells. Perform Condition Assessment of existing suction piping for potential reuse	**P&E**	0	620	--	--	--	--	--	--	Plan to assess transition from artesian to submersible pump system
	Prepare plans and specifications	**P&E**	400	0	--	--	--	400	--	--	
	Incorporate five (5) new wells into existing suction piping	**Const**	4,000	0	--	--	--	--	--	4,000	
	R&R PUMPS P&E SUBTOTAL	**P&E**	4,550	4,910	1,400	750	500	900	500	500	
	R&R PUMPS Land SUBTOTAL	**Land**	0	0	0	0	0	0	0	0	
	R&R PUMPS Const SUBTOTAL	**Const**	48,425	5,478	8,500	28,775	5,650	500	500	4,500	
	R&R PUMPS SUBTOTAL		52,975	10,388	**9,900**	29,525	6,150	1,400	1,000	5,000	

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

PROJECT	EXPEND TYPE	(FY15-20) TOTAL ($ 000)	PRIOR APPNS ($ 000)	Fiscal Year (FY) ($ 000) 2015	2016	2017	2018	2019	2020	REMARKS
B. RESERVOIRS - R&R										
1. NUUANU 822/940 SYSTEM RESERVOIRS										
Prepare an Environmental Assesment and CDUP for the 0.2 MG 822 system replacement reservoir and the new 60,000 gallon 940 system reservoir	**P&E**	250	0	--	--	250	--	--	--	Existing 822 reservoir requires replacement, new 940 foot reservoir needed to meet domestic and fireflow requirements
Prepare plans and specifications	**P&E**	400	0	--	--	--	--	400	--	
Install reservoirs, booster pumps, connecting pipelines, landscaping and appurtenances	**Const**	0	0	--	--	--	--	--	--	PES on-going
R&R RESERVOIRS P&E SUBTOTAL	**P&E**	650	0	0	0	250	0	400	0	
R&R RESERVOIRS Land SUBTOTAL	**Land**	0	0	0	0	0	0	0	0	
R&R RESERVOIRS Const SUBTOTAL	**Const**	0	0	0	0	0	0	0	0	
R&R RESERVOIRS SUBTOTAL		650	0	**0**	0	250	0	400	0	

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

PROJECT	EXPEND TYPE	(FY15-20) TOTAL ($ 000)	PRIOR APPNS ($ 000)	Fiscal Year (FY) ($ 000) 2015	2016	2017	2018	2019	2020	REMARKS
C. PIPELINES - R&R										
1. LILIHA WATER SYSTEM IMPROVEMENTS, PART V										In-house design
Install 8-inch mains and appurtenances along Liliha Street from Wyllie Street to end, along Puunui Avenue from Wyllie Street to Hawaii Street, along Kauai Street from Liliha Street to Puunui Avenue, along Lanai Street from Wyllie Street to Liliha Street and along Hawaii Street from Liliha Street to Puunui Avenue - approx. 5,600 lin.ft.	**Const**	2,600	0	**2,600**	--	--	--	--	--	Replacement of failing mains (over 20 main breaks) within this residential community (1920's, 1930's)
2. DIAMOND HEAD WATER SYSTEM IMPROVEMENTS, PART II										Replacement of aging mains in Diamond Head residential area will eliminate easement mains (1930)
Prepare plans and specifications	**P&E**	0	317	**--**	--	--	--	--	--	
Install 12-inch mains and appurtenances along 22nd Avenue from Kilauea Avenue to Diamond Head Road, along Diamond Head Road from 22nd Avenue to Kahala Avenue, and along Kulamanu Street from Kahala Avenue to Kulamanu Place - approx. 5,235 lin. ft. Install 8-inch mains and appurtenances along Kulamanu Place from Kulamanu Street to end, along Malapua Place from 22nd Avenue to end, along Ulupua Place from 22nd Avenue to end, along Huanui Street from 22nd Avenue to Huanui Place, along Kaalawai Place from Diamond Head Road to easement, and along Kuine Place from Kulamanu Street to end - approx. 2,270 lin. ft.	**Const**	3,700	0	**3,700**	--	--	--	--	--	
3. KULAAUPUNI AND ALTA STREET WATER SYSTEM IMPROVEMENTS										
Install 8-inch mains and appurtenances along Kulaaupuni Street from 90 feet south of FH L03646 to St. Johns Road, from Apakee Street to FH L02925, from Kaukamana Street to Ohiohi Place; along Ohiohi Place from Kulaaupuni Street to End and along Alta Street from Glenmonger Street to Pokai Bay Street - approx. 2,455 lin. ft.	**Const**	1,150	0	**1,150**	--	--	--	--	--	In-house design Replacement of failing mains (1975)

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

	PROJECT	EXPEND TYPE	(FY15-20) TOTAL ($ 000)	PRIOR APPNS ($ 000)	Fiscal Year (FY) ($ 000) 2015	2016	2017	2018	2019	2020	REMARKS
4.	**PENSACOLA STREET WATER SYSTEM IMPROVEMENTS**										
	Prepare plans and specifications	**P&E**	0	396	--	--	--	--	--	--	
	Install 12-inch main and appurtenances along Pensacola Street from Kapiolani Boulevard to Young Street - approx. 2,550 lin. ft. Install 8-inch main and appurtenances along Pensacola Street from Young Street to existing 8-inch main (TMK 2-4-033:028) - approx. 3,540 lin. ft. Install 8-inch and 4-inch mains and appurtenances along Piikoi Street from Pensacola Street to Lewalani Drive - approx. 430 lin. ft.	**Const**	2,050	0	**2,050**	--	--	--	--	--	
5.	**WILHELMINA RISE WATER SYSTEM IMROVEMENTS, PART IV**										
	Prepare plans and specifications	**P&E**	0	636	--	--	--	--	--	--	
	Install 8-inch mains and appurtenances along Sierra Drive from Wilhelmina Rise to 125 feet east of FH M01653; along Nihipali Place from Sierra Drive to end; along Hilo Place, and Lilinoe Place from Wilhelmina Rise to end; along Lanihale Place from Sierra Drive to end; along Mariposa Drive from Sierra Drive to Monterey Drive; along Paula Drive from Mariposa Drive to FH M02338; along Iwi Way from Paula Drive to end of existing water main; along Niele Place from Iwi Way to end; along Nioi Place from Niele Place to end; and along Pakahi Place from Paula Drive to end - approx. 11,340 lin. ft. Install 4-inch mains and appurtenances along Palua Place from Paula Drive to end - approx. 170 lin. ft.	**Const**	6,000	0	**6,000**	--	--	--	--	--	

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

	PROJECT	EXPEND TYPE	(FY15-20) TOTAL ($ 000)	PRIOR APPNS ($ 000)	Fiscal Year (FY) ($ 000) 2015	2016	2017	2018	2019	2020	REMARKS
6.	**KAPAHULU WATER SYSTEM IMPROVEMENTS, PART I**										Project to address service pressure complaints from residential customers (1935)
	Prepare plans and specifications	**P&E**	0	401	--	--	--	--	--	--	
	Install 8-inch mains and appurtenances along Paliuli Street, Mokihana Street, and Olu Street, along Kaimuki Avenue from 4th Avenue to Kapahulu Avenue; along Lincoln Avenue from 4th Avenue to Kapahulu Avenue; along Pahoa Avenue from 4th Avenue to 3rd Avenue; along 3rd Avenue from Kaimuki Avenue to H-1 and from H-1 to Waialae Avenue; along Belser Street from Kaimuki Avenue to H-1 and from H-1 to Harding Avenue; along 2nd Avenue from Lincoln Avenue to FH M01349 and from H-1 to Waialae Avenue; and along Aloalo Place from Harding Avenue to end - approx. 8,400 lin. ft.	**Const**	4,000	0	**4,000**	--	--	--	--	--	
7.	**KAWANANAKOA PLACE 8-INCH MAIN**										In-house design
	Install 8-inch and 4-inch mains and appurtenances along Kawananakoa Place from Nuuanu Avenue to end - approx. 1,600 lin. ft.	**Const**	750	0	**750**	--	--	--	--	--	Fire protection upgrades (1931)
8.	**KUAHEA STREET 8-INCH MAIN**										
	Phase I - Install 8-inch mains and appurtenances along Kuahea Street from 2373 Kuahea Street to 2395 Kuahea Street - approx. 300 lin. ft.	**Const**	0	150	--	--	--	--	--	--	
	Phase II - Install 8-inch mains and appurtenances along Kuahea Street from Waiomao Road to Kuahea Place - approx. 410 lin. ft.	**Const**	200	0	**200**	--	--	--	--	--	To be coordinated with DDC
9.	**FIRE HYDRANT INSTALLATIONS AT VARIOUS LOCATIONS**										
	Fire hydrant installation at various locations	**P&E**	600	200	**100**	100	100	100	100	100	
		Const	1,800	0	**300**	300	300	300	300	300	

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

	PROJECT	EXPEND TYPE	(FY15-20) TOTAL ($ 000)	PRIOR APPNS ($ 000)	Fiscal Year (FY) ($ 000) 2015	2016	2017	2018	2019	2020	REMARKS
10.	**WATER MAIN INSTALLATION & REPLACEMENT**										
	Prepare plans and specifications	**P&E**	600	500	**100**	100	100	100	100	100	
	Install and replace water mains at various locations	**Const**	600	3,325	**100**	100	100	100	100	100	
11.	**PALOLO WATER SYSTEM IMPROVEMENTS, PART III**										
	Prepare plans and specifications	**P&E**	740	300	**740**	--	--	--	--	--	Redesign
	Install 12-inch mains and appurtenances along Palolo Avenue from Kiwila Street to Palolo Place and along 10th Avenue from Palolo Place to Ahe Street - approx. 5,220 lin. ft. Install 8-inch mains and appurtenances along Kaululoa Place from Palolo Avenue to end, along Palolo Avenue from Kauhana Street to Palolo Place, along 10th Avenue from Palolo Place to Ahe Street, and along Makanui Place from 10th Avenue to end - approx. 4,520 lin. ft. Install 4-inch mains and appurtenances along Holomua Place from Makanui Place to end - approx. 365 lin. ft.	**Const**	1,895	0	--	--		1,895	--	--	
12.	**PALOLO WATER SYSTEM IMPROVEMENTS, PART IV**										
	Prepare plans and specifications	**P&E**	670	300	**670**	--	--	--	--	--	Redesign
	Install 16-inch mains and appurtenances along Pakui Street from 10th Avenue to Wilhelmina Rise 405 Reservoir, along 10th Avenue from Maluhia Avenue to Pakui Street, along Pukele Avenue from 7th Avenue to Maluhia Avenue, along 7th Avenue from Kaau Street to Pukele Avenue, along Kaau Street from Palolo Avenue to 7th Avenue and along Palolo Avenue from Kaau Street to Waialae Avenue - approx. 4,150 lin. ft. Install 12-inch mains and appurtenances along Kalua Road from Mahana Street to 10th Avenue - approx. 985 lin. ft. Install 8-inch mains and appurtenances along 9th Avenue from Paalea Street to Kiwili Street - approx. 2,410 lin. ft.	**Const**	4,700	0	--	--	4,700	--	--	--	

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

	PROJECT	EXPEND TYPE	(FY15-20) TOTAL ($ 000)	PRIOR APPNS ($ 000)	Fiscal Year (FY) ($ 000) 2015	2016	2017	2018	2019	2020	REMARKS
13.	**PIPELINE TUNNEL RENOVATION AT VARIOUS LOCATIONS**										
	Prepare plans and specifications	**P&E**	200	0	**200**	--	--	--	--	--	
	Renovate pipeline and tunnel at Keanu, Halawa, Makapuu and Ruger Tunnels	**Const**	1,000	0	--	--	1,000	--	--	--	
14.	**AULOA ROAD AND ULUKAHIKI STREET: 12-INCH MAIN**										
	Prepare plans and specifications	**P&E**	690	0	**690**	--	--	--	--	--	
	Install 12-inch mains and appurtenances along Auloa Road from FH W03044 to Kalanianaole Highway and along Ulukahiki Street from Kalanianaole Highway to Kailua Road - approx. 7,635 lin. ft.	**Const**	4,200	0	--	--	--	4,200	--	--	
15.	**WAIANAE WATER SYSTEM IMPROVEMENTS, PART III**										
	Prepare plans and specifications	**P&E**	690	0	**690**	--	--	--	--	--	
	Install 16-inch mains and appurtenances along Farrington Highway from Kaulawaha Road to Lualualei Homestead Road - approx. 6,470 lin. ft. Install 8-inch mains and appurtenances along Old Government Road from Farrington Highway to Plantation Road - approx. 1,200 lin. ft.	**Const**	4,600	0	--	--	--	4,600	--	--	
16.	**MOILIILI WATER SYSTEM IMPROVEMENTS, PART IV**										
	Prepare plans and specifications	**P&E**	450	0	**450**	--	--	--	--	--	
	Install 12-inch mains and appurtenances along Kapiolani Boulevard from Date Street to Kaimuki Avenue - approx. 2,400 lin. ft. Install 8-inch mains and appurtenances along University Avenue from Kapiolani Boulevard to Hihiwai Street, along Hihiwai Street from University Avenue to Kamoku Street, along Lauiki Street from Hihiwai Street to Kamoku Street and along Kamoku Street from Hihiwai Street to Kapiolani Boulevard - approx. 3,535 lin. ft.	**Const**	3,300	0	--	--	--	3,300	--	--	

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

	PROJECT	EXPEND TYPE	(FY15-20) TOTAL ($ 000)	PRIOR APPNS ($ 000)	Fiscal Year (FY) ($ 000) 2015	2016	2017	2018	2019	2020	REMARKS
17.	**KAMEHAMEHA HEIGHTS WATER SYSTEM IMPROVEMENTS, PART III**										
	Prepare plans and specifications	**P&E**	750	0	**750**	--	--	--	--	--	
	Install 8-inch mains and appurtenances along Kealia Drive from Kapalama Avenue to Hillcrest Street, along Hillcrest Street from Kealia Drive to Skyline Drive, along Naio Street from Kealia Drive to end, along Makanani Drive from Naio Street to Lolena Street, along Skyline Drive from Hillcrest Street to Puna Street, along Puna Street from Aulii Street to end, along Aulii Street from Makanani Drive to Kealakai Street, along Kula Street from Lolena Street to Kealakai Street and along Lolena Street from Makanani Drive to Kealakai Street - approx. 10,160 lin. ft.	**Const**	4,850	0	--	--	--	4,850	--	--	
18.	**AIEA KAI PLACE AND WAY 8-INCH MAINS**										
	Prepare plans and specifications	**P&E**	0	90	--	--	--	--	--	--	
	Install 8-inch mains and appurtenances along Aiea Kai Place from Kamehameha Highway to end and along Aiea Kai Way from Aiea Kai Place to end - approx. 1,260 lin. ft.	**Const**	570	0	--	570	--	--	--	--	
19.	**MANOA ESTATES WATER SYSTEM IMPROVEMENTS**										
	Prepare plans and specifications	**P&E**	0	140	--	--	--	--	--	--	
	Install 12-inch mains and appurtenances along Waaloa Way from Waaloa Place to Manoa Chlorinator - approx. 1,630 lin. ft. Install 8-inch mains and appurtenances along Manoa Estates Road from Pinoa Street to Waaloa Way - approx. 1,290 lin. ft.	**Const**	1,310	0	--	1,310	--	--	--	--	

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

	PROJECT	EXPEND TYPE	(FY15-20) TOTAL ($ 000)	PRIOR APPNS ($ 000)	Fiscal Year (FY) ($ 000) 2015	2016	2017	2018	2019	2020	REMARKS
20.	**KIPOU STREET 8-INCH MAIN**										In-house design
	Install 8-inch and 4-inch mains and appurtenances along Kipou Street from Hene Street to Hulahe Street and along Kenola Place from Kipou Street to end - approx. 1,850 lin. ft.	**Const**	710	0	--	710	--	--	--	--	
21.	**MAKAKILO WATER SYSTEM IMPROVEMENTS, PART III**										
	Prepare plans and specifications	**P&E**	560	0	--	560	--	--	--	--	
	Install 8-inch mains and appurtenances along Nohopono Street, Nohopaa Street, Nohona Street and Nenelea Street from Lihau Street to Palailai Street, along Newa Street from Makakilo Drive to Palailai Street, along Newa Place from Newa Street to end, along Lihau Street from Palailai Street to Newa Street, along Palailai Street from Nohona Street to Nohohale Street, along Nohohale Street from Palailai Street to Makakilo Drive, along Mehani Street from Akaula Street to Auwaea Street, along Mehani Place from Mehani Street to end, and along Makakilo Drive from 65 feet West of FH L02483 to 80 feet East FH L01850 - approx. 10,890 lin. ft. Install 4-inch mains and appurtenances along Nonohale Street from Makakilo Drive to Palailai Place - approx. 845 lin. ft.	**Const**	5,300	0	--	--	--	5,300	--	--	

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

	PROJECT	EXPEND TYPE	(FY15-20) TOTAL ($ 000)	PRIOR APPNS ($ 000)	Fiscal Year (FY) ($ 000) 2015	2016	2017	2018	2019	2020	REMARKS
22.	**KALIHI WATER SYSTEM IMPROVEMENTS, PART VI**										
	Prepare plans and specifications	**P&E**	690	0	--	690	--	--	--	--	
	Install 12-inch mains and appurtenances along Gulick Avenue from King Street to School Street - approx. 2,940 lin. ft. Install 8-inch mains and appurtenances along Gulick Avenue from North School Street to 66 feet southwest of Puaala Lane, along Ulana Street from Owawa Street to 78 feet southeast of FH M07178, along Uhu Street from Gulick Avenue to end, along Kealoha Street from Gulick Avenue to Nakuina Street, along Pahukui Street from Gulick Avenue to Nakuina Street, along Nakuina Street from Kealoha Street to Beckley Street, along Beckley Street from Gulick Avenue to Kalihi Street, along Kalihi Street from King Street to end of 6-inch near FH M02379, along Kaili Street from King Street to Beckley Street, along Kopke Street from King Street to Pacheco Street and along Pacheco Street from Kopke Street to Gulick Avenue - approx. 7,480 lin. ft.	**Const**	5,400	0	--	--	--		5,400	--	
	Install 4-inch mains and appurtenances along Beckley Place from Beckley Street to end, along Day Place from Kalihi Street to end and along Ulana Place from Ulana Street to end - approx. 575 lin. ft. Install 2-inch mains and appurtenances along Gertz Lane from Gulick Avenue to end, along Harvey Lane from King Street to end, along Hanu Lane from Kopke Street to end and along Lukela Lane from Kopke Street to end - approx. 1,060 lin. ft.										

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

	PROJECT	EXPEND TYPE	(FY15-20) TOTAL ($ 000)	PRIOR APPNS ($ 000)	Fiscal Year (FY) ($ 000) 2015	2016	2017	2018	2019	2020	REMARKS
23.	**HALEAHI AND PAHEEHEE ROAD 12-INCH AND 8-INCH MAINS**										
	Prepare plans and specifications	**P&E**	270	0	--	270	--	--	--	--	
	Install 12-inch mains and appurtenances along Haleahi Road from Paheehee Road to the existing check valves - approx. 1,135 lin. ft. Install 8-inch mains and appurtenances along Paheehee Road from Puhawai Street to Haleahi Road - approx. 4,210 lin. ft.	**Const**	2,400	0	--	--	--	--	2,400	--	
24.	**WAIAU WATER SYSTEM IMPROVEMENTS, PART II**										
	Prepare plans and specifications	**P&E**	160	0	--	160	--	--	--	--	
	Install 12-inch mains and appurtenances along the private lanes within Hillside Subdivisions I and II - approx. 1,900 lin. ft. Install 8-inch mains and appurtenances along the private lanes within Hillside Subdivisions I to IV - approx. 1,235 lin. ft.	**Const**	1,400	0	--	--		--	1,400	--	

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

PROJECT	EXPEND TYPE	(FY15-20) TOTAL ($ 000)	PRIOR APPNS ($ 000)	Fiscal Year (FY) ($ 000) 2015	2016	2017	2018	2019	2020	REMARKS
25. NORTH SCHOOL STREET WATER SYSTEM IMPROVEMENTS										
Prepare plans and specifications	**P&E**	880	0	--	880	--	--	--	--	
Install 16-inch mains and appurtenances along North School Street from Kam IV Road to Houghtailing Street - approx. 4,510 lin. ft. Install 8-inch mains and appurtenances along Ahonui Street from North School Street to Linapuni Street, along Hulali Place from Ahonui Street to end, along North School Street from Amelia Street to Leilani Street, along North School Street from Likelike Highway to Houghtailing Street, along Amelia Street from North School Street to Waikoae Road, along Waikoae Road from Amelia Street to Martin Street, along Martin Street from North School Street to Waikoae Road, along Kapalama Avenue from North School Street to Peter Buck Street and along Brigham Street from Kapalama Avenue to Kapalama Avenue - approx. 8,330 lin. ft. Install 4-inch mains and appurtenances along Palapala Place from Kapalama Avenue to end - approx. 205 lin. ft.	**Const**	7,200	0	--	--	--	--	7,200	--	

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

	PROJECT	EXPEND TYPE	(FY15-20) TOTAL ($ 000)	PRIOR APPNS ($ 000)	Fiscal Year (FY) ($ 000) 2015	2016	2017	2018	2019	2020	REMARKS
26.	**PEARL CITY WATER SYSTEM IMPROVEMENTS, PART IV**										
	Prepare plans and specifications	**P&E**	940	0	--	940	--	--	--	--	
	Install 8-inch mains and appurtenances along Palamoi Street from Kuahaka Street to end of 8" main near FH L02004, along Panee Street from Palamoi Street to Kaweloka Street, along Kaweloka Street from Panee Street to Palamoi Street, along Kalauipo Street from Kaweloka Street to Palamoi Street, along Kalauipo Place from Kalauipo Street to end, along Kalai Place from Kalauipo Street to end, along Maiha Circle from Waimano Home Road to end, along Maiha Place from Maiha Circle to end, along Hoohoihoi Street from Hoomoana Street to end, along Hoohoihoi Place from Hoohoihoi Street to end, along Hoowae Street from Hoohoihoi Street to Hoolele Street, along Hoomalolo Street from Hoomoana Street to Hoolaulea Street, along Hoolele Street from Hoolaulea Street to Hoomalolo Street, along Hoomoana Street from Komo Mai Drive to Hookeikei Street, along Komo Mai Drive from Hoolehua Street to Hoolaulea Street and along Hoolehua Street from Komo Mai Drive to end of CI pipe - approx. 16,420 lin. ft. Install 4-inch mains and appurtenance along Maiki Place from Maiha Circle to end - approx. 125 lin. ft. Install 12-inch mains and appurtenances along Huikahi Street from Hoolehua Street to Hoolaulea Street - approx. 940 lin. ft.	**Const**	7,870	0	--	--	--	--	7,870	--	

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

	PROJECT	EXPEND TYPE	(FY15-20) TOTAL ($ 000)	PRIOR APPNS ($ 000)	Fiscal Year (FY) ($ 000) 2015	2016	2017	2018	2019	2020	REMARKS
27.	**KEOLU HILLS WATER SYSTEM IMPROVEMENTS, PART II**										
	Prepare plans and specifications	**P&E**	380	0	--	380	--	--	--	--	
	Install 12-inch mains and appurtenances along Keolu Drive from Akumu Street to Nanialii Street, along Akumu Street from Keolu Drive to Alahaki Street, along Iana Street from Keolu Drive to FH W00766, and along Keolu Drive from Kanapuu Drive to Akalani Loop - approx. 3,580 lin. ft. Install 8-inch mains and appurtenances along Akumu Street from Alahaki Street to Holoholo Street, along Keolu Drive from Akalani Loop to Akahai Street, along Akahai Street from Keolu Drive to Akamai Street, along Akaiki Street from Akahai Street to Akamai Street and along Halula Place from Akumu Street to end - approx. 4,265 lin. ft. Install 4-inch mains and appurtenances along Akumu Place from Akumu Street to end, along Akiu Place from Akumu Street to end and along Akalei Place from Akumu Street to end - approx. 540 lin. ft.	**Const**	3,770	0	--	--	--	--	3,770	--	
28.	**LANAKILA WATER SYSTEM IMPROVEMENTS**										
	Prepare plans and specifications	**P&E**	320	0	--	320	--	--	--	--	
	Install 8-inch mains and appurtenances along Palama Street from Panalaau Street to North School Street, along Alaneo Street from Alaneo Street to Kuakini Street, along Lanakila Avenue from North School Street to Kunawai Lane, along North Judd Street from Kunawai Lane to Apio Lane, and along Kamaka Lane from Lanakila Avenue to Kunawai Lane - approx. 7,100 lin. ft.	**Const**	3,200	0	--	--	--	--	3,200	--	

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

	PROJECT	EXPEND TYPE	(FY15-20) TOTAL ($ 000)	PRIOR APPNS ($ 000)	Fiscal Year (FY) ($ 000) 2015	2016	2017	2018	2019	2020	REMARKS
29.	**MARINER'S RIDGE WATER SYSTEM IMPROVEMENTS, PART II**										
	Prepare plans and specifications	**P&E**	550	0	--	550	--	--	--	--	
	Install 12-inch mains and appurtenances along Kaluanui Road from Kaahue Street to Kalihiwai Place, along Kaumoku Street from Kaakaanui Street to end and along Kaakaaniu Street from Kaluanui Road to Kaumoku Street - approx. 4,425 lin. ft. Install 8-inch and 4-inch mains and appurtenances along Kapa Place, Kanakou Place, Kalahu Place, Kailiu Place, Kaalula Place, Kamookoa Place, Kaupaku Place, Kalihiwai Place and Kaoopulu Place from Kaluanui Road to end, along Kaluaa Place from Kaumoku Street to end and along Kaoopulu Way from Kaoopulu Place to end - approx. 7,940 lin. ft.	**Const**	5,560	0	--	--	--	--	5,560	--	
30.	**PAUOA WATER SYSTEM IMPROVEMENTS**										
	Prepare plans and specifications	**P&E**	500	0	--	500		--	--	--	
	Install 8-inch mains and appurtenances along Lusitana Street from Pauoa Road to Concordia Street, along Auwaiolimu Street from Lusitana Street to Tantalus Drive, along Kanealii Avenue from Pauoa Road to Kapalu Street, along Boyd Lane from Lusitana Street to end, along Kapaloala Place from FH M06992 to Pauoa Road and along Ohelo Lane from Lusitana Street to end - approx. 8,100 lin. ft.	**Const**	3,650	0	--	--	--	--	3,650	--	
31.	**ALA AOLANI 12-INCH MAIN**										
	Prepare plans and specifications	**P&E**	150	0	--	150	--	--	--	--	
	Install 12-inch mains and appurtenances along Ala Aolani Street from the 16-inch cross country main to Ala Aoloa Loop - approx. 1,800 lin. ft.	**Const**	810	0	--	--	--	--	810	--	

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

	PROJECT	EXPEND TYPE	(FY15-20) TOTAL ($ 000)	PRIOR APPNS ($ 000)	Fiscal Year (FY) ($ 000) 2015	2016	2017	2018	2019	2020	REMARKS
32.	**ANOI ROAD WATER SYSTEM IMPROVEMENTS**										Replacement of failing mains along major thoroughfare for Kaneohe business district and Windward Mall shopping center (1954, 1958)
	Prepare plans and specifications	**P&E**	0	419	--	--	--	--	--	--	
	Install 8-inch main and appurtenances along Anoi Road from above Paleka Road to end; along Keaahala Road from Kamehameha Highway to Keaahala Place; along Kamehameha Highway from Kahuhipa Street to Keole Street and along Luana Place from Paleka Road to end - approx. 5,850 lin. ft.	**Const**	6,560	0	--	--	6,560	--	--	--	
33.	**LULUKU ROAD WATER SYSTEM IMPROVEMENTS**										
	Prepare plans and specifications	**P&E**	0	138	--	--	--	--	--	--	
	Install 12-inch and 6-inch mains and appurtenances along Luluku Road and Kamehameha Highway - approx. 1,800 lin. ft. Transfer service laterals along Apapane Street from Luluku Road to near FH W01009 - approx. 600 lin. ft.	**Const**	1,100	0	--	--	1,100	--	--	--	
34.	**PUHAWAI ROAD, KUWALE ROAD AND PUUHULU ROAD WATER SYSTEM IMPROVEMENTS**										In-house design
	Install 8-inch mains and appurtenances along Puhawai Road from Puuhulu Road to Paheehee Road, along Wikolia Place from Puhawai Road to end, along Puuhulu Road from Puhawai Road to Kuwale Road, along Kuwale Road from Puuhulu Road to Paheehee Road, along Haama Place from Puuhulu Road to end, along Puululu Place from Puuhulu Road to end, and along the side street from Kuwale Road to end – approx. 10,780 lin. ft.	**Const**	4,200	0	--	--	4,200	--	--	--	
35.	**POOLA STREET 8-INCH MAIN**										In-house design
	Install 8-inch mains and appurtenances along Poola Street from 165 feet south of FH M06045 to Panalea Place and along Palaole Place from Poola Street to end - approx. 2325 lin. ft. Install 4-inch mains and appurtenances along Panalea Place from Poola Street to end - approx. 160 lin. ft.	**Const**	950	0	--	--	950	--	--	--	

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

	PROJECT	EXPEND TYPE	(FY15-20) TOTAL ($ 000)	PRIOR APPNS ($ 000)	Fiscal Year (FY) ($ 000) 2015	2016	2017	2018	2019	2020	REMARKS
36.	**KAIMUKI WATER SYSTEM IMPROVEMENTS, PART I**										In-house design
	Install 8-inch mains and appurtenances along Maunaloa Avenue from 16th Avenue to 20th Avenue; along Kaimuki Avenue from 16th Avenue to 21st Avenue; along Pahoa Avenue from 18th Avenue to 150 feet beyond FH M03591; along 17th Avenue from Kilauea Avenue to Kaimuki Avenue and along 18th Avenue from Kaimuki Avenue to Pahoa Avenue; along 19th and 20th Avenue from Maunaloa Avenue to Pahoa Avenue - approx. 9,850 lin. ft.	**Const**	2,930	0	--	--	2,930	--	--	--	
37.	**MONSARRAT AVENUE WATER SYSTEM IMPROVEMENTS**										In-house design
	Install 16-inch and 8-inch mains and appurtenances along Monsarrat Avenue from Paki Avenue to Campbell Avenue - approx. 3,200 lin. ft.	**Const**	1,670	0	--	--	1,670	--	--	--	
38.	**WAHIAWA WATER SYSTEM IMPROVEMENTS, PART I**										Fire protection upgrade and replacement of failing mains within residential Wahiawa (1959, 1960)
	Prepare plans and specifications	**P&E**	0	1,246	--	--	--	--	--	--	
	Install 12-inch mains and appurtenances along California Avenue from Maalo Street to Mahele Street - approx. 2,100 lin. ft. Install 8-inch mains and appurtenances along California Avenue from Maalo Street to Auhili Place, Kaalalo Place, Lei Awapuhi Place, Lei Aloalo Place, Longley Place, Kukui Street, Olive Street from Kamehameha Highway to Cypress Avenue, Ohai Street, Ohai Place, Milikana Place, Koele Way, Kilani Avenue from Lehua Street to Holoku Place, Kamehameha Highway from California Avenue to Avocado Street, and along Nihiwai Place and Hiwi Place - approx. 15,950 lin. ft.	**Const**	7,060	0	--	--	7,060	--	--	--	

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

	PROJECT	EXPEND TYPE	(FY15-20) TOTAL ($ 000)	PRIOR APPNS ($ 000)	Fiscal Year (FY) ($ 000) 2015	2016	2017	2018	2019	2020	REMARKS
39.	**WILHELMINA RISE WATER SYSTEM IMPROVEMENTS, PART V**										
	Prepare plans and specifications	**P&E**	0	280	--	--	--	--	--	--	
	Install 12-inch mains and appurtenances along Wilhelmina Rise from Sierra Drive to Sierra Drive, along Sierra Drive from 110 feet west of FH M04010 to Maunalani Circle, along Maunalani Circle from Sierra Drive to Sierra Drive, and within the Wilhelmina Rise 811 and 1100 Reservoir sites - approx. 4,610 lin. ft. Install 8-inch mains and appurtenances along Halehoola Place from Sierra Drive to end and along Mana Place from Maunalani Circle to end - approx. 965 lin. ft.	**Const**	2,500	0	--	--	2,500	--	--	--	
40.	**PACIFIC HEIGHTS WATER SYSTEM IMPROVEMENTS, PART II**										Replacement of mains along major thoroughfare for area residents. Eliminates cross-country mains that are difficult to maintain (1930's)
	Redesign plans and specifications	**P&E**	0	494	--	--	--	--	--	--	
	Install 12-inch main and appurtenances along Pacific Heights Road from Haili Road to Ahekolo Street, along Ahekolo Street from Pacific Heights Road to Booth Road, along Booth Road from Ahekolo Street to Kekuanoni Street - approx. 4,800 lin. ft. Install 8-inch main and appurtenances along Laniloa Road from Pacific Heights Road to end, along Pacific Heights Place from Pacific Heights Road to end, along Hiolani Street from Booth Road to end and along various side streets - approx. 2,055 lin. ft.	**Const**	2,540	0	--	--	2,540	--	--	--	
41.	**NIUMALU LOOP AND KUKII STREET 8-INCH MAIN**										
	Prepare plans and specifications	**P&E**	0	140	--	--	--	--	--	--	
	Install 8-inch mains and appurtenances along Niumalu Loop from Kamilo Street to Kamilo Street and along Kukii Street from Kamilo Street to Niumalu Loop - approx. 2,755 lin. ft.	**Const**	1,300	0	--	--	1,300	--	--	--	

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

	PROJECT	EXPEND TYPE	(FY15-20) TOTAL ($ 000)	PRIOR APPNS ($ 000)	Fiscal Year (FY) ($ 000) 2015	2016	2017	2018	2019	2020	REMARKS
42.	**KAHUAILANI STREET WATER SYSTEM IMPROVEMENTS**										In-house design
	Install 12-inch mains and appurtenances along Mokuola Street from Waipahu Street to 70 feet beyond Nalii Street - approx. 500 lin. ft. Install 8-inch mains and appurtenances along Kahuailani Street from Hikimoe Street to end, along Puamano Place from Waipahu Street to end, along Kahiki Place from Puamano Place to end and along Hikimoe Street from Waipahu Depot Street to FH L04002 - approx. 4,020 lin. ft. Install 4-inch mains and appurtenances along the side street from Hikimoe Street to end - approx. 115 lin. ft.	**Const**	1,810	0	--	--	1,810	--	--	--	
43.	**WAHIAWA WATER SYSTEM IMPROVEMENTS, PART III**										In-house design
	Install 8-inch mains and appurtenances along Uluwehi Street from California Avenue to Walea Street, along Uluwehi Place from Walea Street to end, along Hoolulu Road from Uluwehi Street to Hoomaha Street, along Walea Street from Uluwehi Street to Walea Uka Place, along Hoomaha Street from California Avenue to Walea Street and along Walea Uka Place from Walea Street to end - approx. 4,720 lin. ft. Install 4-inch mains and appurtenances along the side street from Hoomaha Street to end - approx. 135 lin. ft.	**Const**	2,100	0	--	--	2,100	--	--	--	
44.	**HUI ULILI STREET: 12-INCH, 8-INCH AND 4-INCH MAINS**										In-house design. Replacement of mains installed in highly corrosive soils (1969)
	Install 12-inch, 8-inch and 4-inch mains and appurtenances along Hui Ulili Street from Hui Kelu Street to Hui Oi Street - approx. 2,825 lin. ft.	**Const**	1,400	0	--	--	1,400	--	--	--	

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

	PROJECT	EXPEND TYPE	(FY15-20) TOTAL ($ 000)	PRIOR APPNS ($ 000)	Fiscal Year (FY) ($ 000) 2015	2016	2017	2018	2019	2020	REMARKS
45.	**SEASIDE AND KAIULANI AVENUE 12-INCH MAINS**										
	Prepare plans and specifications	**P&E**	110	0	--	--	110	--	--	--	
	Install 12-inch mains and appurtenances along Kaiulani Avenue from Kuhio Avenue to Ala Wai Boulevard and along Seaside Avenue from Kalakaua Avenue to Kuhio Avenue - approx. 1,560 lin. ft.	**Const**	860	0	--	--	--	--	860	--	
46.	**DIAMOND HEAD WATER SYSTEM IMPROVEMENTS, PART III**										
	Prepare plans and specifications	**P&E**	110	0	--	--	110	--	--	--	
	Install 12-inch mains and appurtenances along Puu Panini Avenue from 22nd Avenue to Palekaua Street, and along Palekaua Street from Puu Panini Avenue to Hakaka Street - approx. 1,100 lin. ft.	**Const**	500	0	--	--	--	--	500	--	
47.	**BARBERS POINT 215 WATER SYSTEM IMPROVEMENTS**										
	Prepare plans and specifications	**P&E**	150	0	--	--	150	--	--	--	
	Install 30-Inch main and appurtenances along the Barbers Point 215 facility from Old Farrington Highway to Reservoir No. 1 - approx. 300 lin. ft. Install new drainline along the flowage easement to facilitate the draining of the reservoirs	**Const**	500	0	--	--	--	--	500	--	
48.	**APIO LANE 8-INCH MAIN**										
	Prepare plans and specifications	**P&E**	75	0	--	--	75	--	--	--	
	Install 8-inch mains and appurtenances along Apio Lane from Kekau Place to end - approx. 520 lin. ft.	**Const**	210	0	--	--	--	--	210	--	

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

	PROJECT	EXPEND TYPE	(FY15-20) TOTAL ($ 000)	PRIOR APPNS ($ 000)	Fiscal Year (FY) ($ 000) 2015	2016	2017	2018	2019	2020	REMARKS
49.	**KAILUA ROAD 8-INCH MAIN**										
	Prepare plans and specifications	**P&E**	90	0	--	--	90	--	--	--	
	Install 8-inch and 2-inch mains and appurtenances along 1005 Kailua Road from Kailua Road to end - approx. 720 lin. ft.	**Const**	290	0	--	--	--	--	290	--	
50.	**MAILIILI ROAD 20-INCH MAIN**										
	Prepare plans and specifications	**P&E**	195	0	--	--	195	--	--	--	
	Install 20-Inch mains and appurtenances along Mailiili Road from Paakea Road to FH L05823 - approx. 2,230 lin. ft.	**Const**	1,340	0	--	--	--	--	1,340	--	Replace concrete cylinder main leaking into Mailiili Stream
51.	**KALAMA VALLEY WATER SYSTEM IMPROVEMENTS, PART II**										
	Prepare plans and specifications	**P&E**	390	0	--		390	--	--	--	
	Install 12-inch mains and appurtenances along Kealahou Street from 661 Kealahou Street to Papalalo Place - approx. 2,305 lin. ft. Install 8-inch mains and appurtenances along Wawau Street from Honokahua Street to Kaeleku Street, along Honokahua Street from Kaeleku Street to end, along Kealahou Street from Papalalo Place to end, along Nakalele Street from Kealahou Street to Pihana Street, along Pihana Street from approx. 45 feet north of FH M06514 to end and along Ipuai Street from Kealahou Street to Honokahua Street - approx. 4,185 lin. ft. Install 8- and 4-inch mains and appurtenance along Kalina Place from Kealahou Street to end, along Maloo Place from Honokahua Street to end, along Ohina Place from Honokahua Street to end, along Honokahua Place from Honokahua Street to end, along Kiaala Place from Kealahou Street to end and along Papalalo Place from Kealahou Street to end - approx. 2,040 lin. ft.	**Const**	3,840	0	--	--	--	--		3,840	

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

	PROJECT	EXPEND TYPE	(FY15-20) TOTAL ($ 000)	PRIOR APPNS ($ 000)	Fiscal Year (FY) ($ 000) 2015	2016	2017	2018	2019	2020	REMARKS
52.	**KILI DRIVE 16-INCH MAIN, PART II**										
	Prepare plans and specifications	**P&E**	150	0	--	--	150	--	--	--	
	Install 16-inch main and appurtenances along Kili Drive from Huipu Drive to Makaha 242 Access Road - approx. 2,850 lin. ft.	**Const**	1,570	0	--	--	--	--		1,570	
53.	**WAIPAHU 36-INCH MAIN RELOCATION**										
	Prepare plans and specifications	**P&E**	280	0	--	--	280	--	--	--	
	Install 36-inch main and appurtenances along Waipahu Street from 280 feet northwest of Awamoi Street to Paiwa Street and along Paiwa Street from Waipahu Street to FH L02966, north of Koaki Street - approx. 5,170 lin. ft.	**Const**	3,620	0	--	--	--	--		3,620	

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

	PROJECT	EXPEND TYPE	(FY15-20) TOTAL ($ 000)	PRIOR APPNS ($ 000)	Fiscal Year (FY) ($ 000) 2015	2016	2017	2018	2019	2020	REMARKS
54.	**KAMEHAMEHA HIGHWAY - HALEIWA WATER SYSTEM IMPROVEMENTS, PART I & II**										Replacement of aging main through a heavily traveled stretch of Kamehameha Highway (1938, 1961)
	Prepare plans and specifications	**P&E**	0	874	--	--	--	--	--	--	
	Part I: Install 8-inch mains and appurtenances along Kamehameha Highway from 625 feet northeast of FH C00049 to 10 feet northeast of FH C00041 and along Pohaku Loa Way from Kamehameha Highway to Kamehameha Highway - approx. 6,600 lin. ft. Install 8-inch and 4-inch mains and appurtenances along a private road (TMK: 6-1-012:040) from Kamehameha Highway to end of road across of FH C00501, along Punalau Place from Kamehameha Highway to end, along Ikuwai Place from Kamehameha Highway to end, along Ikuwai Way from Kamehameha Highway to end, and along various side streets - approx. 2,700 lin. ft. Install 2-inch mains along TMK 6-1-011:010, TMK 6-1-011:001, TMK 6-1-011:002, and TMK 6-1-011:015 - approx. 1,150 lin. ft.	**Const**	940	0	--	--	--	11,900	--	--	
	Part II: Install 12-inch main along Kamehameha Highway from Papailoa Road to approximately 300 feet northwest of Kawailoa Drive - approx. 2,400 lin. ft. Install 8-inch main along Kamehameha Highway from 16-inch main interconnection near FH C00059 to approximately 550 feet northeast of FH C00056 - approx. 4,900 lin. ft.										
	R&R PIPELINES P&E SUBTOTAL	**P&E**	12,340	6,871	4,390	5,600	1,750	200	200	200	
	R&R PIPELINES Land SUBTOTAL	**Land**	0	0	0	0	0	0	0	0	
	R&R PIPELINES Const SUBTOTAL	**Const**	157,295	3,475	20,850	2,990	42,220	36,445	45,360	9,430	
	R&R PIPELINES SUBTOTAL		169,635	10,346	**25,240**	8,590	43,970	36,645	45,560	9,630	

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

PROJECT	EXPEND TYPE	(FY15-20) TOTAL ($ 000)	PRIOR APPNS ($ 000)	Fiscal Year (FY) ($ 000) 2015	2016	2017	2018	2019	2020	REMARKS
D. TREATMENT - R&R										
No Project Scheduled				--	--	--	--	--		
R&R TREATMENT P&E SUBTOTAL	**P&E**	0	0	0	0	0	0	0	0	
R&R TREATMENT Land SUBTOTAL	**Land**	0	0	0	0	0	0	0	0	
R&R TREATMENT Const SUBTOTAL	**Const**	0	0	0	0	0	0	0	0	
R&R TREATMENT SUBTOTAL		0	0	**0**	0	0	0	0	0	

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

PROJECT	EXPEND TYPE	(FY15-20) TOTAL ($ 000)	PRIOR APPNS ($ 000)	Fiscal Year (FY) ($ 000) 2015	2016	2017	2018	2019	2020	REMARKS
E. FACILITIES - R&R										
1. SLOPE STABILIZATION AT VARIOUS FACILITIES										Projects to mitigate potential for rockfall from BWS lands that may impact BWS facilities and neighboring properties
Prepare plans and specifications	**P&E**	0	200	--	--	--	--	--	--	
Slope stabilization at Keanu Tunnel, Waialae 180 and Waialae Iki 180 Reservoirs	**Const**	3,200	2,700	**3,200**	--	--	--	--	--	
2. NUUANU RESERVOIR NO. 4 DAM IMPROVEMENTS										
Prepare plans and specifications for improvements to Nuuanu Reservoir No. 4 (TMK: 2-2-054:001)	**P&E**	0	350	--	--	--	--	--	--	
Topographic survey, subdivision mapping, geotechnical exploration and analysis and supplemental engineering design reports	**P&E**	0	600	--	--	--	--	--	--	
Rehabilitate dam face, intake and outlet works, suspension bridge and access road; and install seepage measurement weirs on downstream face of dam	**Const**	1,500	0	**1,500**	--	--	--	--	--	
3. FACILITY RENEWAL AND RENOVATION										
Prepare plans and specifications	**P&E**	2,500	3,050	**500**	400	400	400	400	400	
Renewal, renovation, reroofing, fencing and repainting of select BWS facilities	**Const**	18,000	20,500	**3,000**	3,000	3,000	3,000	3,000	3,000	
4. 2-WAY RADIO UPGRADES										
Convert analog to digital for security and extended coverage	**Const**	1,500	0	**750**	750	--	--	--	--	
5. MICROBIOLOGICAL LABORATORY AIR CONDITIONING UPGRADE										
Prepare plans and specifications for microbiological lab air conditioning improvements	**P&E**	0	100	--	--	--	--	--	--	
Install microbiological lab air conditioning improvements	**Const**	740	0	**740**	--	--	--	--	--	No relocation of staff required at this time

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

	PROJECT	EXPEND TYPE	(FY15-20) TOTAL ($ 000)	PRIOR APPNS ($ 000)	Fiscal Year (FY) ($ 000) 2015	2016	2017	2018	2019	2020	REMARKS
6.	**RTU UPGRADES**										
	Project planning, design and management services	**P&E**	1,400	0	**200**	1,200	--	--	--	--	
	Replace obsolete RTUs. Existing RTUs do not support wireless system communications	**Const**	14,100	0	**1,500**	2,700	2,100	3,200	2,200	2,400	Replacement at approximately 150 facilities
7.	**STORM WATER MANAGEMENT PLAN IMPROVEMENTS**										Improvements needed at corporation yards to ensure compliance with Stormwater Management Plan and NPDES regulations for stormwater discharge
	Prepare plans and specifications	**P&E**	0	470	**--**	--	--	--	--	--	
	Install improvements to eliminate pollutant runoff from BWS corporation yards	**Const**	1,100	0	**600**	500	--	--	--	--	
8.	**KAILUA IWI KUPUNA REINTERMENT**										
	Construct site improvements for reinterment	**Const**	100	0	**100**	--	--	--	--	--	
9.	**SECURITY FENCING AT VARIOUS LOCATIONS**										
	Project planning, design and management services	**P&E**	1,100	100	**200**	100	200	200	200	200	
	Install expanded metal fencing at selected BWS facilities	**Const**	9,300	1,200	**600**	600	600	2,500	2,500	2,500	
10.	**RENOVATE / REPLACE RESERVOIR ALTITUDE VALVE ASSEMBLIES - MAKIKI & WAIALAE IKI 180 RESERVOIRS**										
	Prepare plans and specifications	**P&E**	100	0	**100**	--	--	--	--	--	
	Install improvements at Makiki 180 and Waialae Iki 180 Reservoir sites	**Const**	750	0	**--**	--	750	--	--	--	

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

	PROJECT	EXPEND TYPE	(FY15-20) TOTAL ($ 000)	PRIOR APPNS ($ 000)	Fiscal Year (FY) ($ 000) 2015	2016	2017	2018	2019	2020	REMARKS
11.	**NUUANU RESERVOIR NO. 1 DAM IMPROVEMENTS**										State DLNR declared Nuuanu Reservoir No. 1 a regulated dam and is requiring various improvements in the Phase I Dam Inspection Report dated June 2014
	Prepare Preliminary Engineering Study for proposed improvements to Nuuanu Reservoir No. 1 Dam (TMK 1-9-001:001)	**P&E**	500	0	**500**	--	--	--	--	--	
	Perform geotechnical exploration and analysis, prepare plans and specifications for proposed improvements to Nuuanu Reservoir No. 1 Dam; and acquire necessary permits	**P&E**	900	0	--	900	--	--	--	--	
	Rehabilitate dam, spillway and outlet works; install remote water level monitoring equipment; prepare Emergency Action Plan and Operations & Management manual	**Const**	2,000	0	--	--	--	2,000	--	--	
12.	**WEBSITE REDESIGN**										
	Redesign internal and external website for additional features and functions and to leverage mainstream development tools to ensure future supportability	**P&E**	755	0	**455**	--	--	300	--	--	
13.	**CUSTOMER INFORMATION SYSTEM**										Phased implementation of CC&B features, services and enhancements
	Customer Information System phased implementation	**P&E**	6,000	5,209	**3,000**	1,000	--	2,000	--	--	
14.	**COMPUTERIZED MAINTENANCE MANAGEMENT SYSTEM**										Upgrade Maximo/CMMS from current version (5.2) which is no longer supported by the vendor to a recent supportable version (7.5)
	Upgrade computerized maintenance management system software version and implement features to improve system performance and adhere to operational best practices	**P&E**	5,350	3,540	**2,375**	2,375	--	600	--	--	
15.	**IT PROJECT MANAGEMENT**										
	Project management services for IT applications	**P&E**	1,400	2,200	**1,400**	--	--	--	--	--	

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

	PROJECT	EXPEND TYPE	(FY15-20) TOTAL ($ 000)	PRIOR APPNS ($ 000)	Fiscal Year (FY) ($ 000) 2015	2016	2017	2018	2019	2020	REMARKS
16.	**PROFESSIONAL SERVICES FOR BWS PROJECTS**										
	Obtain services of archaeologists, botanists, environmental engineers, water quality labs, planners, government agencies and others	**P&E**	1,710	2,315	**300**	210	300	300	300	300	
17.	**KRONOS UPGRADE**										Existing software no longer supported
	Upgrade Kronos Time and Attendance system software to improve system performance and adhere to operational best practices	**P&E**	1,622	0	**857**	--	--	765	--	--	
18.	**SHAREPOINT SERVICES AND SUPPORT**										
	Implement document management systems to improve record management storage and adhere to operational best practices	**P&E**	800	0	**800**	--	--	--	--	--	
19.	**BERETANIA COMPLEX MODERNIZATION**										
	Evaluate space requirements, handicap requirements, lighting, electrical/mechanical systems, hazmat abatement and security assessment	**P&E**	1,000	0	**1,000**	--	--	--	--	--	
20.	**FUTURE METER READING TECHNOLOGY**										FY13 Automated Meter Reading Informational Study to determine improvements
	Install improvements to meter reading system	**Const**	1,000	0	**--**	1,000	--	--	--	--	
21.	**MAUNA OLU 530' RESERVOIR IMPROVEMENTS**										
	Install staff gauge, water level transducer and datalogger, telemetry equipment and controls, and appurtenant utilities	**Const**	50	0	**--**	50	--	--	--	--	To provide for remote monitoring of water levels in the open reservoir

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

PROJECT	EXPEND TYPE	(FY15-20) TOTAL ($ 000)	PRIOR APPNS ($ 000)	Fiscal Year (FY) ($ 000) 2015	2016	2017	2018	2019	2020	REMARKS
22. WAIMANALO TUNNEL I AND II AND WAIANAE PLANTATION TUNNEL III RENOVATION										
Investigate and assess tunnel conditions and prepare plans and specifications for improvements needed to reactivate tunnels	**P&E**	300	0	--	300	--	--	--	--	
Construct improvements to stabilize entrance for preparation of the Preliminary Engineering Study (PES)	**Const**	200	0	--	--	--	200	--	--	
Prepare PES and plans and specifications for Waimanalo Tunnels I & II and Waianae Tunnel III improvements	**P&E**	200	0	--	--	--	200	--	--	
Waimanalo Tunnels I & II: Install required tunnel improvements	**Const**	0	0	--	--	--	--	--	--	
Waianae Tunnel III: Install required tunnel improvements	**Const**	0	0	--	--	--	--	--	--	
23. NALU ENHANCEMENT										
Upgrade financial accounting system software version to address support and compatibility issues	**P&E**	1,640	1,402	--	1,640	--	--	--	--	Upgrade JD Edwards system (NALU) from current version to 9.1 to address support and compatibility issues
24. DOCUMENT MANAGEMENT SYSTEM										
Provide support services for SharePoint systems to improve system performance and adhere to operational best practices	**P&E**	500	0	--	500	--	--	--	--	Implement a Document Management system based on Sharepoint, Hyland, or similar technology to increase document management and availability
Implement document management systems to improve record management storage and adhere to operational best practices	**Const**	2,850	--	--	--	2,850	--	--	--	

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

PROJECT	EXPEND TYPE	(FY15-20) TOTAL ($ 000)	PRIOR APPNS ($ 000)	Fiscal Year (FY) ($ 000) 2015	2016	2017	2018	2019	2020	REMARKS
25. DATA CENTER RENOVATION PROJECT										
Assess, design and assist in the development of project specifications for the renovation of the BWS Data Center in the Beretania Pump Station Building	**P&E**	250	0	--	250	--	--	--	--	
	Const	750	0	--	--	750	--	--	--	
26. SECURITY ENHANCEMENTS FOR ALL BWS CORPORATION YARDS										
Prepare plans and specifications, life cycle cost analysis to install fencing and card access for Kalihi, Manana, Waianae, Wahiawa, Heeia Corporation Yards; Halawa Xeriscape Garden and Beretania Complex	**P&E**	200	0	--	200	--	--	--	--	
Kalihi Yard	**Const**	570	0	--	--	--	570	--	--	
Manana Yard	**Const**	430	0	--	--	--	430	--	--	
Waianae Yard	**Const**	300	0	--	--	--	--	300	--	
Wahiawa Yard	**Const**	350	0	--	--	--	--	350	--	
Heeia Yard	**Const**	300	0	--	--	--	--	300	--	
Halawa Xeriscacpe	**Const**	0	0	--	--	--	--	--	--	
Beretania Complex	**Const**	0	0	--	--	--	--	--	--	
27. WAIPIO ACRES CONTROL VALVE IMPROVEMENTS										
Prepare plans and specifications	**P&E**	150	0	--	150	--	--	--	--	
Install isolation valves for system operations and emergency pumping connection to allow 808 system to supply 1075 system	**Const**	0	0	--	--	--	--	--	--	

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

	PROJECT	EXPEND TYPE	(FY15-20) TOTAL ($ 000)	PRIOR APPNS ($ 000)	Fiscal Year (FY) ($ 000) 2015	2016	2017	2018	2019	2020	REMARKS
28.	**PALOLO TUNNEL PORTAL IMPROVEMENTS**										
	Prepare plans and specifications	**P&E**	0	317	--	--	--	--	--	--	
	Install Palolo Tunnel portal improvements, stabilize portal entrance, extend inlet piping 60 feet, install pipe supports and concrete dam, clean lower 6,000 feet of the pipeline to the chlorinator and install temporary booster pump	**Const**	400	0	--	--	400	--	--	--	
29.	**PILIUKA PRV REPLACEMENT**										
	Prepare plans and specifications	**P&E**	200	0	--	--	200	--	--	--	
	Replace and relocate PRVs, along Waianae Valley Road near FH L06812, to above ground within new building. Restore power, communications and supervisory controls	**Const**	600	0	--	--	--	--	600	--	PRVs in disrepair, relocate to above ground within new building for ease of maintenance
30.	**KAMAILE PLANTATION WELLS SEALING**										Seal adjacent unused wells to prevent potential contamination to Kamaile Wells Station
	Seal up to thirteen (13) unused plantation wells around Kamaile Wells Station. Locate wells; clear and prep each well area for sealing; backfill each well with cement grout	**P&E**	0	70	--	--	--	--	--	--	
		Const	325	0	--	--	--	325	--	--	
31.	**BUSINESS INTELLIGENCE / DIGITAL DASHBOARD**										
	Software installation and testing services for new version with enhanced features and performance	**Const**	1,930	0	--	--	--	--	1,930	--	
32.	**WAIHEE WELLS CAPPING**										
	Remove pumping equipment and appurtenances from two (2) wells. Videolog both wells and construct a locking lid for both	**Const**	130	0	--	--	--	--	130	--	Assess the condition of both wells and the probability of use as monitoring wells

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	PROJECT	EXPEND TYPE	(FY15-20) TOTAL ($ 000)	PRIOR APPNS ($ 000)	Fiscal Year (FY) ($ 000) 2015	2016	2017	2018	2019	2020	REMARKS
33.	**SCADA REPLACEMENT**										Existing system experiencing failures that are difficult to fix
	Project planning, design and management services	**P&E**	500	0	--	--	--	--	--	500	
	Install new SCADA system to provide enhanced user interface and additional functionality	**Const**	0	0	--	--	--	--	--	--	
	R&R FACILITIES P&E SUBTOTAL	**P&E**	29,077	19,923	11,687	9,225	1,100	4,765	900	1,400	
	R&R FACILITIES Land SUBTOTAL	**Land**	0	0	0	0	0	0	0	0	
	R&R FACILITIES Const SUBTOTAL	**Const**	62,475	24,400	11,990	8,600	10,450	12,225	11,310	7,900	
	R&R FACILITIES SUBTOTAL		91,552	44,323	**23,677**	17,825	11,550	16,990	12,210	9,300	
	P&E R&R TOTAL	**P&E**	46,617	31,704	**17,477**	**15,575**	**3,600**	**5,865**	**2,000**	**2,100**	
	Land R&R TOTAL	**Land**	0	0	**0**	**0**	**0**	**0**	**0**	**0**	
	Const R&R TOTAL	**Const**	268,195	33,353	**41,340**	**40,365**	**58,320**	**49,170**	**57,170**	**21,830**	
	FY 2015-2020 RENEWAL AND REPLACEMENT (R&R) TOTAL		**314,812**	**65,057**	**58,817**	**55,940**	**61,920**	**55,035**	**59,170**	**23,930**	

CATEGORY III

CAPACITY EXPANSION

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BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

PROJECT	EXPEND TYPE	(FY15-20) TOTAL ($ 000)	PRIOR APPNS ($ 000)	Fiscal Year (FY) ($ 000) 2015	2016	2017	2018	2019	2020	REMARKS
III. CAPACITY EXPANSION (CapExp)										
A. PUMPS - CapExp										
1. **KAHUKU WELLS UNIT NO. 3**										Third well unit provides additional capacity in accordance with BWS standards to accommodate growth, water commitments and system reliability for the stand-alone Kahuku system
Prepare plans and specifications and engineering report	**P&E**	220	0	**220**	--	--	--	--	--	
Install one (1) 1.0 MGD pump, connections, emergency generator and pump building improvements at existing Kahuku Wells Station (TMK: 5-6-008:005)	**Const**	2,500	0	--	--	2,500	--	--	--	
2. **WAIALAE WEST WELL**										Re-design to update plans and permits. Replaces Waialae Shaft source and provides additional source to Metro 405 water system
Prepare plans and specifications and engineering report	**P&E**	200	175	**200**	--	--	--	--	--	
Install one (1) 0.5 MGD pump, control building, pipeline, landscaping, irrigation system, accoustical facilities, electrical equipment, and appurtenances (TMK: 3-3-014:016)	**Const**	2,500	0	--	--	--	2,500	--	--	
3. **KALAELOA DESALINATION FACILITY**										To meet Ewa's ultimate water demand and provide drought proof water supply
Post-Treatment and Renewable Energy Study to address potential water quality changes in the distribution system and evaluate renewable energy for the facility (TMK: 9-1-031:028)	**P&E**	300	0	**300**	--	--	--	--	--	
Prepare plans and specifications and engineering report	**P&E**	0	3,730	--	--	--	--	--	--	
Construct desalination facility	**Const**	0	--	--	--	--	--	--	--	
4. **LUALUALEI LINE BOOSTER IMPROVEMENTS**										Increased booster pump capacity improves transmission to Waianae Coast
Prepare plans and specifications	**P&E**	0	237	--	--	--	--	--	--	
Install booster station improvements to increase pumping capacity	**Const**	3,000	0	--	3,000	--	--	--	--	

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

	PROJECT	EXPEND TYPE	(FY15-20) TOTAL ($ 000)	PRIOR APPNS ($ 000)	Fiscal Year (FY) ($ 000) 2015	2016	2017	2018	2019	2020	REMARKS
5.	**MAAKUA WELL UNIT NO. 2**										Second well unit provides standby capacity to single well station
	Prepare plans and specifications and engineering report	**P&E**	200	0	--	200	--	--	--	--	
	Install one (1) 1.0 MGD pump, connections and pump building improvements at existing Maakua Wells Station (TMK: 5-4-005:001)	**Const**	1,200	0	--	--	--	1,200	--	--	
6.	**MILILANI 994 BOOSTER STATION**										Provides supply to upper Mililani 1150 system
	Prepare plans and specifications	**P&E**	350	0	--	350	--	--	--	--	
	Install booster station at the Mililani 994 Reservoir to boost to 1150 system	**Const**	3,500	0	--	--	--	3,500	--	--	
	CapExp PUMPS P&E SUBTOTAL	**P&E**	1,270	4,142	720	550	0	0	0	0	
	CapExp PUMPS Land SUBTOTAL	**Land**	0	0	0	0	0	0	0	0	
	CapExp PUMPS Const SUBTOTAL	**Const**	12,700	0	0	3,000	2,500	7,200	0	0	
	CapExp PUMPS SUBTOTAL		13,970	4,142	**720**	3,550	2,500	7,200	0	0	

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

PROJECT	EXPEND TYPE	(FY15-20) TOTAL ($ 000)	PRIOR APPNS ($ 000)	Fiscal Year (FY) ($ 000) 2015	2016	2017	2018	2019	2020	REMARKS
B. RESERVOIRS - CapExp										
1. KALAWAHINE 180 2.0 MG RESERVOIR										To alleviate storage deficiency in Metro 180 system. Prepare plans and specifications for the new alignment along Pensacola Street. New funding awarded for the re-alignment
Prepare plans and specifications	**P&E**	0	1,434	--	--	--	--	--	--	
Install 2.0 MG reservoir and appurtenances (TMK: 2-4-043:082) and 24-inch main along Auwaiolimu Street and Pensacola Street to Kinau Street - approx. 4,700 lin. ft.	**Const**	8,000	0	--	--	4,000	4,000	--	--	
2. AINA HAINA 170 0.5 MG RESERVOIR NO. 2										New reservoir to meet storage needs in the 170 system from Aina Haina to Kuliouou
Prepare Preliminary Engineering Study for second 0.5 MG reservoir, including land requirements at existing Aina Haina 170 Reservoir site	**P&E**	0	100	--	--	--	--	--	--	
Prepare Environmental Assessment	**P&E**	0	150	--	--	--	--	--	--	
Prepare plans and specifications	**P&E**	250	0	--	--	250	--	--	--	
Install 0.5 MG reservoir and appurtenances at existing Aina Haina 170 Reservoir site (TMK: 3-6-016:040)	**Const**	2,500	0	--	--	--	--	2,500	--	
3. WAIALAE 180 3.0 MG RESERVOIR REPLACEMENT										To alleviate storage deficiency in Metro 180 system. Existing 1.0 MGD reservoir was built in 1935
Prepare Environmental Assessment	**P&E**	200	0	--	--	200	--	--	--	
Prepare plans and specifications	**P&E**	1,000	0	--	--	--	--	1,000	--	
Land	**Land**	150	0	--	--	--	--	--	150	
Demolish existing 1.0 MG reservoir and construct 3.0 MG reservoir, influent-effluent main, retaining wall, rock slide barricade, access road improvements, landscaping, irrigation system and appurtenances at existing Waialae 180 Reservoir site (TMK: 3-5-020:011)	**Const**	0	0	--	--	--	--	--	--	

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

	PROJECT	EXPEND TYPE	(FY15-20) TOTAL ($ 000)	PRIOR APPNS ($ 000)	Fiscal Year (FY) ($ 000) 2015	2016	2017	2018	2019	2020	REMARKS
4.	**EAST KAPOLEI 215 3.0 MG RECYCLED WATER RESERVOIR**										
	Prepare Preliminary Engineering Study and Environmental Assessment	**P&E**	300	0	--	--	300	--	--	--	Recycled water reservoir next to existing 4.0 MG East Kapolei 215 Reservoir
	Prepare plans and specifications	**P&E**	800	0	--	--	--	--	--	800	
	Install 3.0 MG reservoir, landscaping, irrigation system and appurtenances (TMK: 9-1-018:008)	**Const**	0	0	--	--	--	--	--	--	Connect reservoir to future main on Farrington Highway
	CapExp RESERVOIRS P&E SUBTOTAL	**P&E**	2,550	1,684	0	0	750	0	1,000	800	
	CapExp RESERVOIRS Land SUBTOTAL	**Land**	150	0	0	0	0	0	0	150	
	CapExp RESERVOIRS Const SUBTOTAL	**Const**	10,500	0	0	0	4,000	4,000	2,500	0	
	CapExp RESERVOIRS SUBTOTAL		13,200	1,684	**0**	0	4,750	4,000	3,500	950	

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

PROJECT	EXPEND TYPE	(FY15-20) TOTAL ($ 000)	PRIOR APPNS ($ 000)	Fiscal Year (FY) ($ 000) 2015	2016	2017	2018	2019	2020	REMARKS
C. PIPELINES - CapExp										
1. HONOLULU DISTRICT 42-INCH MAINS - LILIHA TO MOILIILI										Extends South trunk transmission pipeline for increased capacity and reliability in the Metro Low System
Prepare Route Feasibility Study	**P&E**	0	140	--	--	--	--	--	--	
Prepare Environmental Assessment for selected transmission main routes and booster station site	**P&E**	0	88	--	--	--	--	--	--	
Feasibility Study to determine the appropriate installation method(s) for Phase I and Phase II	**P&E**	400	0	**400**	--	--	--	--	--	
Phase I - Install 42-inch main along Beretania Street from Liliha Street to Richard Street, along Richard Street from Beretania Street to King Street, along King Street to Victoria Street, and along Victoria Street to Kinau Street 42-inch main - approx. 11,000 lin. ft.	**P&E**	2,000	0	--	--	2,000	--	--	--	
	Const	17,000	0	--	--	--	--	--	17,000	
Phase II - Install 42-inch main along King Street from Victoria Street to Isenberg Street - approx. 9,000 lin. ft.	**P&E**	1,700	0	--	--	--	--	1,700	--	
	Const	0	0	--	--	--	--	--	--	
2. ALA MOANA BOULEVARD 24-INCH MAIN										Replace and upsize 12-inch main along major thoroughfare for visitor traffic from the airport and downtown to Waikiki. Existing main has been failing periodically with last break requiring over 24 hours to repair due to location and deteriorated condition of main (1934). EA is part of the Honolulu Water System Improvements (along Ala Moana Boulevard from S. Nimitz Highway to Kalakaua Avenue, along Pensacola Street from the future Kalawahine Reservoir to Kinau Street, along Piikoi Street from Kinau Street to King Street) so the EA will include all similar upsizing projects in the area
Prepare Environmental Assessment (EA)	**P&E**	0	353	--	--	--	--	--	--	
Prepare plans and specifications	**P&E**	600	265	--	--	600	--	--	--	
Install 24-inch main and appurtenances along Ala Moana Boulevard from Ward Avenue to Atkinson Drive - approx. 6,200 lin. ft.	**Const**	6,820	0	--	--	--	--	6,820	--	

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

	PROJECT	EXPEND TYPE	(FY15-20) TOTAL ($ 000)	PRIOR APPNS ($ 000)	Fiscal Year (FY) ($ 000) 2015	2016	2017	2018	2019	2020	REMARKS
3.	**KUALAKAI PARKWAY 16-INCH RECYCLED WATER MAIN**										Transmission main to future East Kapolei 215 recycled water reservoir
	Prepare plans and specifications	**P&E**	300	0	--	--	300	--	--	--	
	Install 16-inch transmission main from future East Kapolei 215 recycled water reservoir to Mango Tree Road - approx. 10,750 lin. ft.	**Const**	3,300	0	--	--	--	--	3,300	--	
4.	**KALAKAUA AVENUE WATER SYSTEM IMPROVEMENTS**										
	Environmental Assessment and Feasibility Study to determine the appropriate installation method(s) for the installation of 16-inch mains and appurtenances along Kalakaua Avenue from Beretania Street to Kapiolani Boulevard, from Ala Wai Bridge to Kaiulani Avenue, and from Monsarrat Avenue to Dillingham fountain - approx. 11,960 lin. ft.; and the installation of 12-inch main and appurtenances along Saratoga Road from Kalakaua Avenue to Kalia Road - approx. 1,200 lin. ft.	**P&E**	0	200	--	--	--	--	--	--	Kalakaua Avenue main serves the dense grid of the Waikiki resort and business district (1929)
	Prepare plans and specifications (Phase II, III & IV)	**P&E**	1,000	1,500	--	--	1,000	--	--	--	
	Phase III: Install 16-inch main and appurtenances along Kalakaua Avenue from Beretania Street to Kapiolani Boulevard - approx. 3,200 lin. ft.	**Const**	3,600	0	--	--	--	--	--	3,600	
	Phase II: Install 12-inch main and appurtenances along Kalakaua Avenue from Monsarrat Avenue to Dillingham fountain - approx. 3,500 lin. ft. Phase IV: Install 16-inch main and appurtenances along Kalakaua Avenue from Ala Wai Bridge to Kaiulani Avenue - approx. 5,260 lin. ft. Install 12-inch main along entire length of Saratoga Road - approx. 1,200 lin. ft.	**Const**	14,000	0	--	--	--	--	--	14,000	Major traffic impacts would result from breaks within the project limits. Kalakaua Avenue main serves heavily-gridded Waikiki resort and business district (1925)

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

	PROJECT	EXPEND TYPE	(FY15-20) TOTAL ($ 000)	PRIOR APPNS ($ 000)	Fiscal Year (FY) ($ 000) 2015	2016	2017	2018	2019	2020	REMARKS
5.	**ALA MOANA WATER SYSTEM IMPROVEMENTS**										EA prepared as part of the Honolulu Water System Improvements
	Prepare plans & specifications	**P&E**	800	191	--		800	--	--	--	
	Install 24-inch mains and appurtenances along Ala Moana Boulevard from Ala Wai Boulevard to Kalakaua Avenue - approx. 2,780 lin. ft. Install 8-inch mains and appurtenances along Ala Moana Boulevard from the Ala Wai Canal to Kalia Road, along Ena Road from Kalakaua Avenue to Ala Moana Boulevard, and along Kalia Road from Ala Moana Boulevard to 65 feet before FH M01026 - approx. 4,110 lin. ft.	**Const**	5,900	0	--	--	--	--	--	5,900	Replacement of corroded, failing main within resort area (1930's, 1940's)
6.	**ALA MOANA WATER SYSTEM IMPROVEMENTS, PART II**										EA prepared as part of the Honolulu Water System Improvements
	Prepare plans & specifications	**P&E**	600	0	--	--	600	--	--	--	
	Install 24-inch mains and appurtenances along Aloha Tower Drive from Richards Street to S. Nimitz Highway and along Ala Moana Boulevard from S. Nimitz Highway to Keawe Street - approx. 2,500 lin. ft. Install 8-inch mains and appurtenances along Keawe Street and Koula Street from Ala Moana Boulevard to Ilalo Street - approx. 810 lin. ft.	**Const**	2,000	0	--	--	--	--		2,000	
7.	**NIMITZ HIGHWAY 16-INCH MAIN**										Main replacement along major arterial street (1942)
	Prepare plans and specifications	**P&E**	1,000	651	--	--	1,000	--	--	--	
	Install 16-inch mains and appurtenances along Nimitz Highway from Waiakamilo Road to Sumner Street and along Waiakamilo Road from Nimitz Highway to Hart Street - approx. 6,200 lin. ft.	**Const**	0	0	--	--	--	--	--	--	EA prepared as part of the Honolulu Water System Improvements

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

	PROJECT	EXPEND TYPE	(FY15-20) TOTAL ($ 000)	PRIOR APPNS ($ 000)	Fiscal Year (FY) ($ 000) 2015	2016	2017	2018	2019	2020	REMARKS
8.	**SALT LAKE BOULEVARD 36-INCH MAIN - FOSTER VILLAGE TO ALIAMANU**										Coordinated with City Department of Design and Construction's Salt Lake Boulevard Improvements. Addresses a bottleneck in the Metro West transmission system into Honolulu
	Prepare Environmental Assessment and plans and specifications	**P&E**	0	185	--	--	--	--	--	--	
	Re-design	**P&E**	0	340	--	--	--	--	--	--	
	Install 36-inch main along Salt Lake Boulevard (525 feet south of Maluna Street to Ala Lilikoi Street) - approx. 4,275 lin. ft.	**Const**	4,300	0	--	--	--	4,300	--	--	
	CapExp PIPELINES P&E SUBTOTAL	**P&E**	8,400	3,913	400	0	6,300	0	1,700	0	
	CapExp PIPELINES Land SUBTOTAL	**Land**	0	0	0	0	0	0	0	0	
	CapExp PIPELINES Const SUBTOTAL	**Const**	56,920	0	0	0	0	4,300	10,120	42,500	
	CapExp PIPELINES SUBTOTAL		65,320	3,913	**400**	0	6,300	4,300	11,820	42,500	

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

PROJECT	EXPEND TYPE	(FY15-20) TOTAL ($ 000)	PRIOR APPNS ($ 000)	Fiscal Year (FY) ($ 000) 2015	2016	2017	2018	2019	2020	REMARKS
D. TREATMENT - CapExp										
1. GAC FACILITY IMPROVEMENTS										
Prepare plans and specifications	**P&E**	500	150	--	100	100	100	100	100	
Install improvements at select GAC facilities to extend use of existing systems	**Const**	2,500	0	--	500	500	500	500	500	Annual design and construction improvements for select GAC facilities
2. GAC TREATMENT FOR WAIPIO HEIGHTS WELLS AND WAIPIO HEIGHTS WELLS I										Treatment to meet water quality standards by removing TCP
Prepare plans and specifications	**P&E**	0	388	--	--	--	--	--	--	
Part A - Install 16-inch mains and appurtenances along Lumihoahu Street from Waipio Heights Wells and Wells I to Lumiaina Street, along Lumiaina Street from Lumihoahu Street to Kamehameha Highway, along Kamehameha Highway from Lumiaina Street to Waipahu Wells III - approx. 4,000 lin. ft.	**Const**	5,300	0	--	--		5,300	--	--	
CapExp TREATMENT P&E SUBTOTAL	**P&E**	500	538	0	100	100	100	100	100	
CapExp TREATMENT Land SUBTOTAL	**Land**	0	0	0	0	0	0	0	0	
CapExp TREATMENT Const SUBTOTAL	**Const**	7,800	0	0	500	500	5,800	500	500	
CapExp TREATMENT SUBTOTAL		8,300	538	**0**	600	600	5,900	600	600	

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

PROJECT	EXPEND TYPE	(FY15-20) TOTAL ($ 000)	PRIOR APPNS ($ 000)	Fiscal Year (FY) ($ 000) 2015	2016	2017	2018	2019	2020	REMARKS
E. FACILITIES - CapExp										
1. SECURITY CAMERA SYSTEMS										
Install computer network-based security camera systems (camera, lights, speakers and motion detectors) at critical pump stations and reservoirs	**Const**	2,908	1,400	**403**	375	375	585	585	585	
2. PROJECT MANAGEMENT INFORMATION SYSTEM										Improve project information available throughout the department. Improve efficiency of construction inspection, and provide timely dissemmination of project information for better management decision-making
Formulate, install and implement a project information management system	**P&E**	0	443	--	--	--	--	--	--	
Administer and operate project management program and training	**Const**	500	--	**500**	--	--	--	--	--	
3. WIRELESS & SECURITY CAMERA SYSTEM UPGRADES										
Replace existing wireless and security camera systems	**Const**	1,100	0	**200**	700	--	200	--	--	
4. BACKUP POWER SYSTEMS FOR WIRELESS SYSTEMS										
Provide backup power for wireless, RTU and security camera systems at BWS facilities	**Const**	5,900	0	--	2,400	3,500	--	--	--	
5. HONOULIULI WATER RECYCLING FACILITY										Install a new UV system and concrete channel that will reduce energy demand by 60%. This new UV system will also meet the new DOH 2012 Reuse Guidelines. The new disk filter system will replace the sand filter pre-treatment system. Improvements will increase treatment capacity
Install new disk filter and UV system to improve operational efficiency and increase treatment capacity	**Const**	7,000	0	--	7,000	--	--	--	--	
6. SECURITY CAMERA MANAGEMENT SYSTEM										
Replace existing security camera management system. This system provides security video monitoring, alarming, recording, search and playback software	**P&E**	500	0	--	500	--	--	--	--	

BOARD OF WATER SUPPLY CAPITAL IMPROVEMENT PROGRAM (FY 2015 - 2020)

	PROJECT	EXPEND TYPE	(FY15-20) TOTAL ($ 000)	PRIOR APPNS ($ 000)	Fiscal Year (FY) ($ 000) 2015	2016	2017	2018	2019	2020	REMARKS
7.	**EMERGENCY GENERATOR INSTALLATION**										Alternate Project Delivery Pilot for P&E
	Prepare plans and specifications	**P&E**	1,350	0	--	150	300	450	450	--	
	Install permanent emergency generators at critical pump stations	**Const**	2,255	5,745	--	--	2,255	--	--	--	To be installed at Kunia Wells I, Kalihi Yard & Halawa Shaft
	CapExp FACILITIES P&E SUBTOTAL	**P&E**	1,850	443	0	650	300	450	450	0	
	CapExp FACILITIES Land SUBTOTAL	**Land**	0	0	0	0	0	0	0	0	
	CapExp FACILITIES Const SUBTOTAL	**Const**	19,663	7,145	1,103	10,475	6,130	785	585	585	
	CapExp FACILITIES SUBTOTAL		21,513	7,588	**1,103**	11,125	6,430	1,235	1,035	585	
	P&E CAPACITY EXPANSION TOTAL	**P&E**	14,570	10,720	**1,120**	**1,300**	**7,450**	**550**	**3,250**	**900**	
	Land CAPACITY EXPANSION TOTAL	**Land**	150	0	**0**	**0**	**0**	**0**	**0**	**150**	
	Const CAPACITY EXPANSION TOTAL	**Const**	107,583	7,145	**1,103**	**13,975**	**13,130**	**22,085**	**13,705**	**43,585**	
	FY 2015-2020 CAPACITY EXPANSION (CapExp) TOTAL		**122,303**	**17,865**	**2,223**	**15,275**	**20,580**	**22,635**	**16,955**	**44,635**	
	P&E TOTAL	**P&E**	63,267	43,224	**19,477**	**17,875**	**11,250**	**6,415**	**5,250**	**3,000**	
	Land TOTAL	**Land**	150	0	**0**	**0**	**0**	**0**	**0**	**150**	
	Const TOTAL	**Const**	385,228	42,098	**43,943**	**56,240**	**74,500**	**72,255**	**71,875**	**66,415**	
	FY 2015-2020 TOTAL		**448,645**	**85,322**	**63,420**	**74,115**	**85,750**	**78,670**	**77,125**	**69,565**	
	Construction Cost Index Adjustment		66,199		4,406	5,624	7,450	7,226	7,188	6,642	
	Contract Adjustment Account				5,193	4,845	5,579	5,022	3,525	3,500	
	FY 2015-2020 TOTALS (with Adjustments)		514,844		**73,019**	**84,584**	**98,779**	**90,918**	**87,838**	**79,707**	

ITEM FOR INFORMATION NO. 1

"February 23, 2015

BWS STAKEHOLDER ADVISORY GROUP UPDATE

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

Chair and Members:

Subject: Board of Water Supply Stakeholder Advisory Group Update

In both our November 2014 and January 2015 quarterly updates on the Board of Water Supply (BWS) Water Master Plan, we informed the Board of our efforts to establish a Stakeholder Advisory Group whose purpose is to provide important feedback on the BWS Water Master Plan, proposed rate study and other important initiatives. The establishment of this Stakeholder Advisory Group demonstrates our commitment to increased transparency and public engagement and also aligns with and exceeds the City Auditor's recommendations.

In the coming weeks, BWS staff and consultants will evaluate potential stakeholder constituencies and initiate the outreach process to them. We will also complete a customer phone survey and will conduct focus group meetings in March. The focus groups will provide important insights about the public's perception and awareness of the BWS and will allow us to test key messages and concepts. In April, we will present findings of both the survey and focus groups to the Board and will also recommend a comprehensive cross-section of stakeholder constituencies to be part of the Stakeholder Advisory Group for Board consideration and approval.

We will continue to update the Board on our progress at subsequent meetings and will be requesting your feedback on our proposed composition of stakeholder advisory group representatives.

Respectfully submitted,

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

The foregoing was for information only.

DISCUSSION: Ms. McMurdo asked who would be conducting the phone survey, if cell phone numbers would be provided as well as landline phone numbers, and how are the focus groups chosen. Mr. Lau replied that Ward Research will be conducting the phone survey and Mr. Usagawa replied that they will be using cell phone numbers as well as landline phone numbers, and there is a set process that was scoped in the project for selecting the focus groups.

ITEM FOR INFORMATION NO. 2

"February 23, 2015

ENTERPRISE ORGANIZATIONAL STUDY UPDATE

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

Chair and Members:

Subject: Enterprise Organizational Study Update

A request for proposals (RFP) for an Enterprise Organizational Study was issued on January 29, 2015, that will analyze the current Board of Water Supply (BWS) organizational structure and work processes, recommend improvements to increase operational efficiencies and develop an implementation plan. The implementation plan will include the appropriate organizational structure, span of control, staffing levels, competencies and training programs specifically for BWS.

Inputs to the study and recommendations will come from studies of peer utilities, employee and business culture surveys, optimal organization structure, succession/recruitment/retention planning and will also include the incorporation of findings/recommendations from the 30-year Water Master Plan, Capital Projects Management, and Water System Operations Program Management plans.

Responses to the RFP are due on March 23, 2015. Evaluation of the proposals will begin after receipt of the proposals, with a projected contract starting date of June 2015. Because it is a RFP, the proposals and details of the process will be limited until the award is made. Following the award, we will be making another presentation to the Board regarding the scope of work and scheduling of the study.

Respectfully submitted,

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

The foregoing was for information only.

DISCUSSION: Deputy Manager Ellen Kitamura gave the report. She mentioned that at the October 2014 Board meeting, they presented a draft scope of work and a preliminary advertisement date for the Request for Proposals (RFP) for the Organizational Study. Ms. Kitamura reported that on January 23, 2015, they released the advertisement for the RFP. The scope of work remained the same except instead of doing it in two phases, they will be doing it in one, with a completion time of 12 months instead of 18 months. Ms. Kitamura stated that Mr. Robert Morita of the Executive Support Office will take over as the project manager and would be giving future updates to the Board.

Ms. McMurdo asked if this study would cover concerns about staff and recruitment. Ms. Kitamura replied that it would and Mr. Lau added that it would cover succession planning, recruitment, retention, and how to plan for the work force for the future. Ms. McMurdo asked if the study would also look at looking outside of the box in terms of perhaps changing some laws to help with the recruitment process. Mr. Lau stated that they did not specify in the scope of work for this, however, it is not out of the question and it would be up to the vendor to recommend that. Ms. Kitamura added that they would be looking at other agencies of similar size to see how they are structured, what their processes are, etc. Mr. Miyashiro inquired if the Department would also be looking at other semi-autonomous agencies to see what processes they are following. He expressed his frustration that although BWS is a semi-autonomous agency, they are still required to follow the City's processes and go through all the red tape. Mr. Lau explained that although BWS is a semi-autonomous agency, it is still part of the City and County of Honolulu, falling under the Hawaii Revised Statues, the collective bargaining units, and the civil service system.

ITEM FOR INFORMATION NO. 3

"February 23, 2015

CAPITAL PROJECTS PROGRAM AND CONSTRUCTION MANAGEMENT UPDATE

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

Chair and Members:

Subject: Capital Projects Program and Construction Management Quarterly Update

Jason Takaki, Program Administrator of our Capital Projects Division, will provide an update on Program Management projects in the Capital Projects Division.

Respectfully submitted,

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

Attachment"

The foregoing was for information only.

DISCUSSION:

Capital Projects Division Program Administrator Jason Takaki gave the presentation. Ms. McMurdo pointed out the slide that explained how they are testing and enhancing their optimized procedures by applying them to selected sample projects, and also indicated there was favorable feedback. Ms. McMurdo asked who the feedback was from. Mr. Takaki replied that the feedback was from staff and their design consultant. He explained that the project definition report lays out the requirements for the project, what the plan is, why it's planned, the history of the project, etc. This was provided to the design consultant to help them better understand the scope of services. Both the BWS staff and the consultants felt that it was very beneficial for them to understand the project beforehand.

Mr. Wong referred to the gap analysis that was done and asked what the big gaps were. Mr. Takaki replied that they have staffing issues and experience issues (many young staff on board who don't have a lot of experience). Other improvements that need to be made are better interaction with other agencies to better understand the permitting process and staying on top of new regulations. Mr. Lau added that another gap is the standardization of process, which is focused on creating a Standard Operating Procedure and providing an automation tool to make it easier as young engineers come in, to help them understand the process. This provides a resource to help guide them in learning their jobs and improve the quality of work for the design and construction. Ms. Kitamura added that another gap was training. The SOP will help build these training programs because most of the training is on the

job. Mr. Takaki added that while the construction inspectors are good at construction inspection, training in contract administration will be one of the ways the division increases their capabilities in the construction management area.

Ms. McMurdo asked Mr. Takaki how many people are in his division. Mr. Takaki replied that there are about 50 employees, 20 of them are in the construction branch. Ms. McMurdo asked how many of the employees are veterans and how many are new. Mr. Takaki said that 40 percent of his staff is eligible to retire within the next five years.

Mr. Wong asked if the gaps are the reason why there is replacement of only one mile of pipeline scheduled in the upcoming fiscal year. Mr. Takaki explained that their efforts and funds are focused on pump renewal and replacement and other construction projects next year. However, while there is only funding for one mile of pipeline construction planned in the upcoming year, they will initiate design on many more miles of pipeline replacement than in previous years.

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City and County of Honolulu

Capital Projects Program and Construction Management

Board of Water Supply

February 23, 2015

Program Targets

- Our Work
  - Streamline project execution
  - Align business processes to best support the increased number and scale of projects
  - Improve quality control/quality assurance
  - Support the implementation of the Water Master Plan

- Our Organization
  - Standardize operating procedures & training
  - Streamline organization and staff succession plans for organizational sustainability
- Our Customers
  - Optimize organizational relationships
  - Improve communications

Progress to date

- Core teams continue to develop collaborative solutions to improve operations and crafting action plans for implementation

- Agreed on templates for Standard Operating Procedures and Protocols
- Beta testing of Project Management Information System (MANAO)

- Initiated sample projects to test and enhance workflows improvements
- Launched construction staff training program

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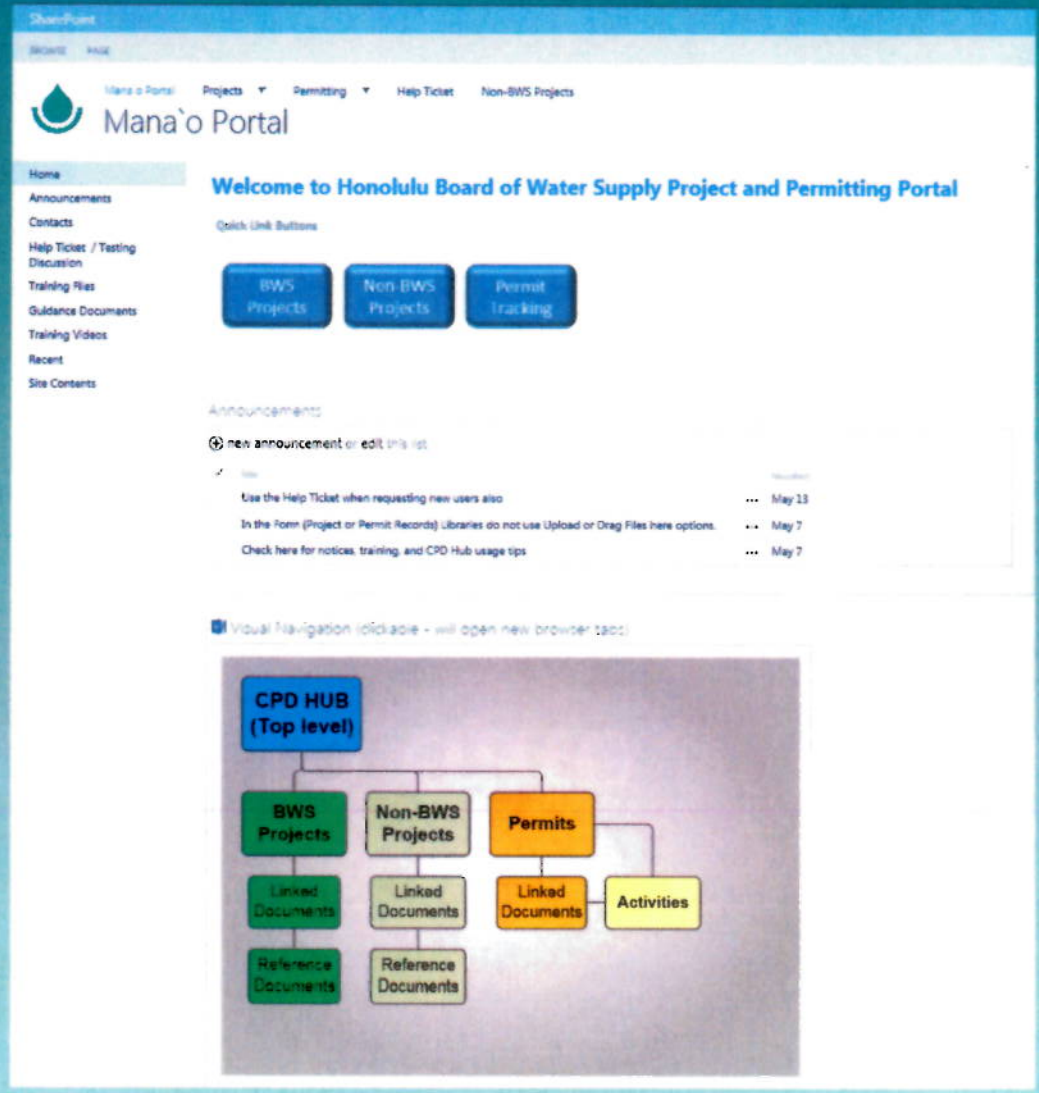
City and County of Honolulu

MANA'O PMIS

- **M**anagement
- **A**dministration
- **N**otification
- **A**ccountability
- **O**rganization



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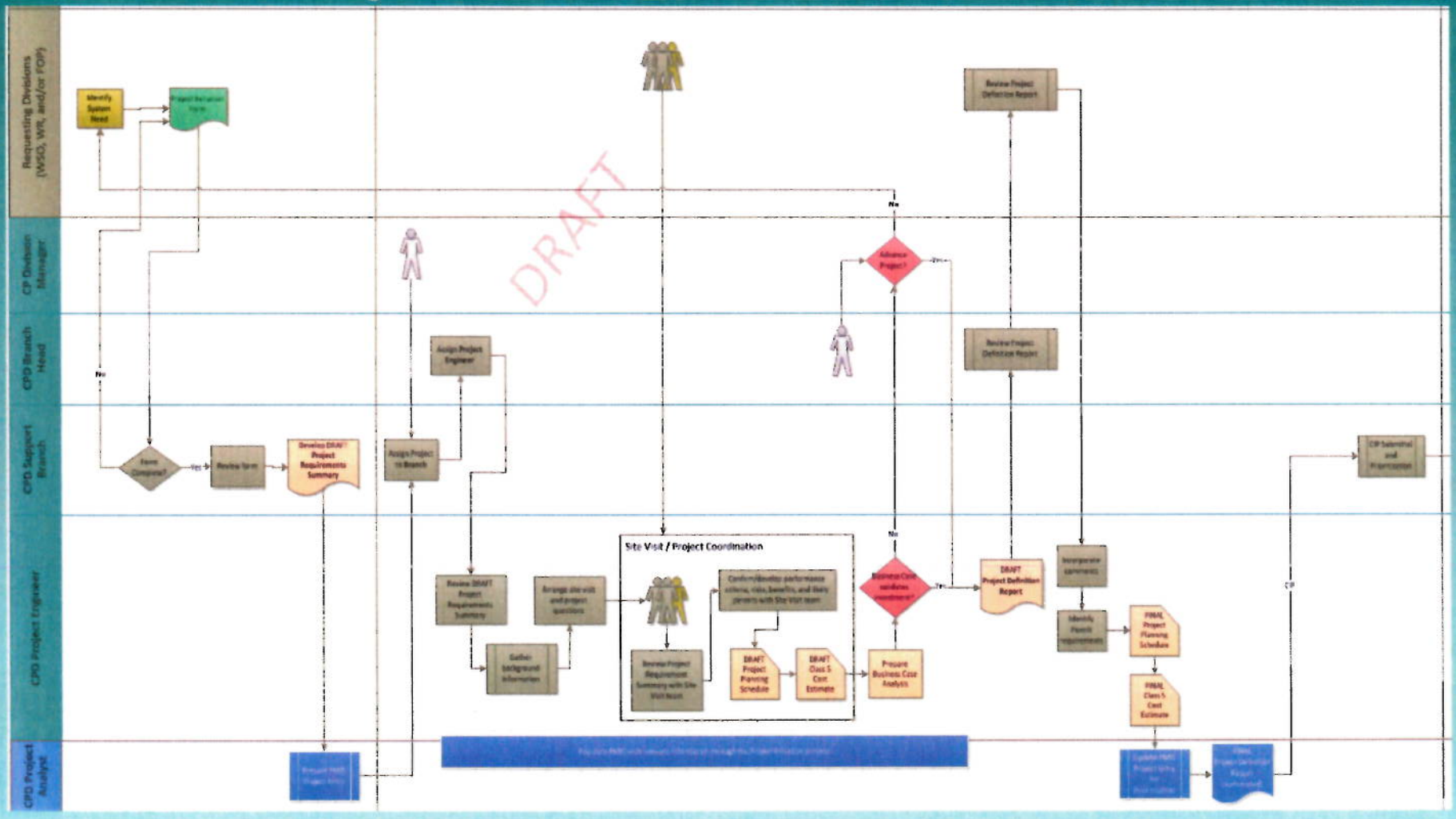
Project Initiation Workflow



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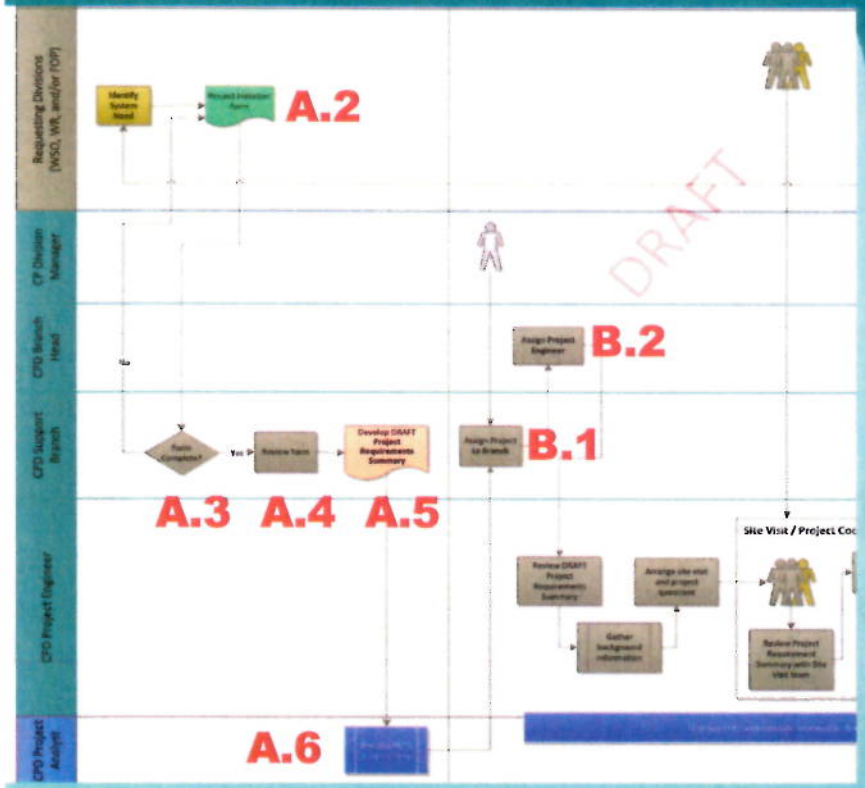
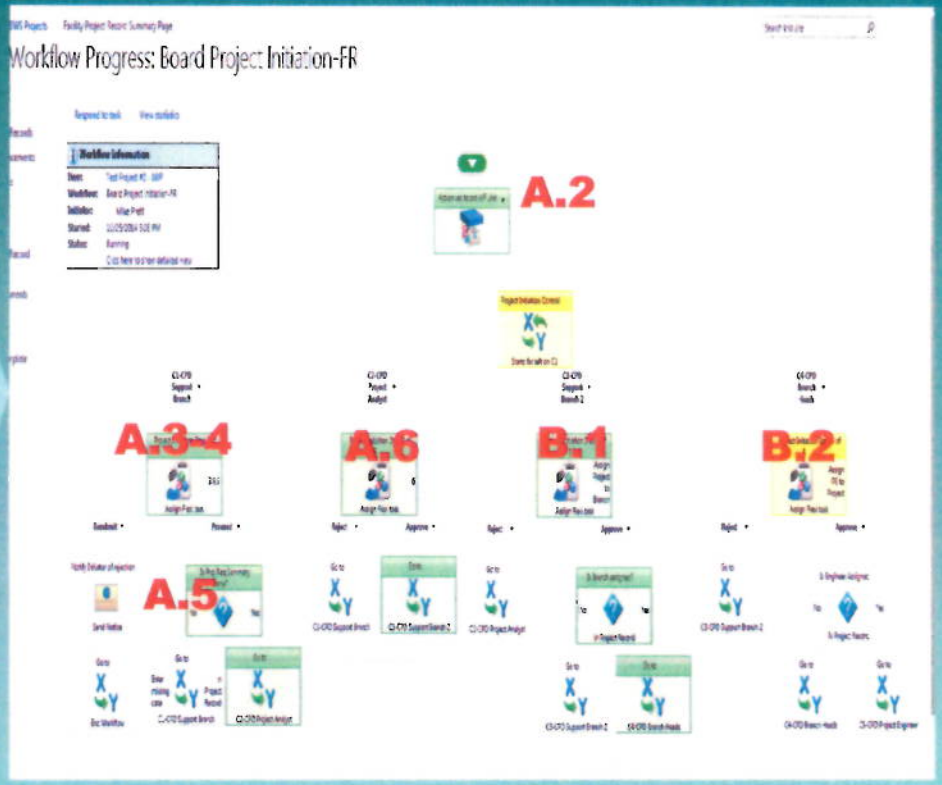
Workflow Guides PMIS Structure



Project Initiation Workflow



MANA'O 'Smart' System Guides Staff Through Process, Know Status, and Improves Access to Information for <u>All BWS</u>

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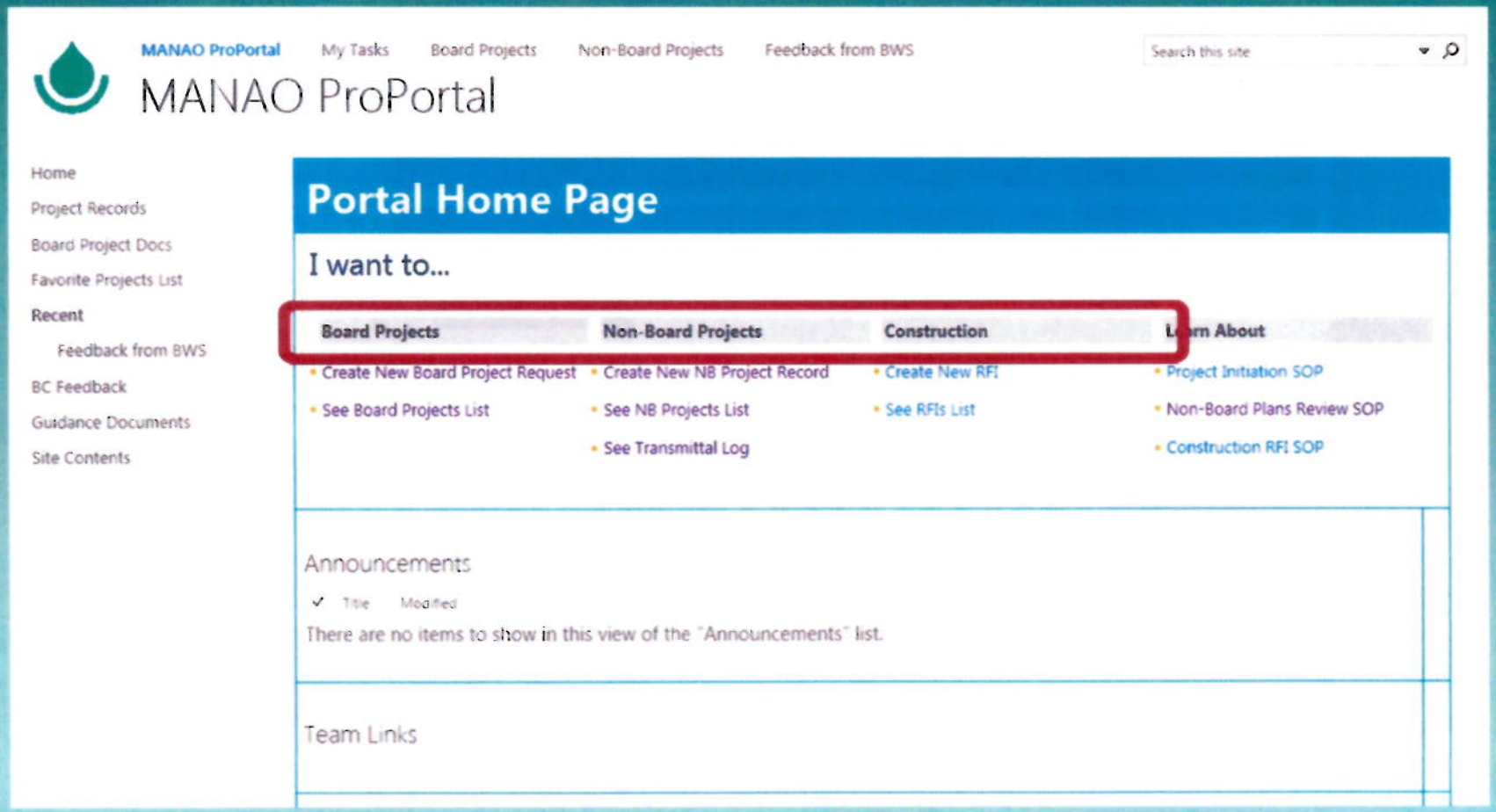
It All Starts Here…



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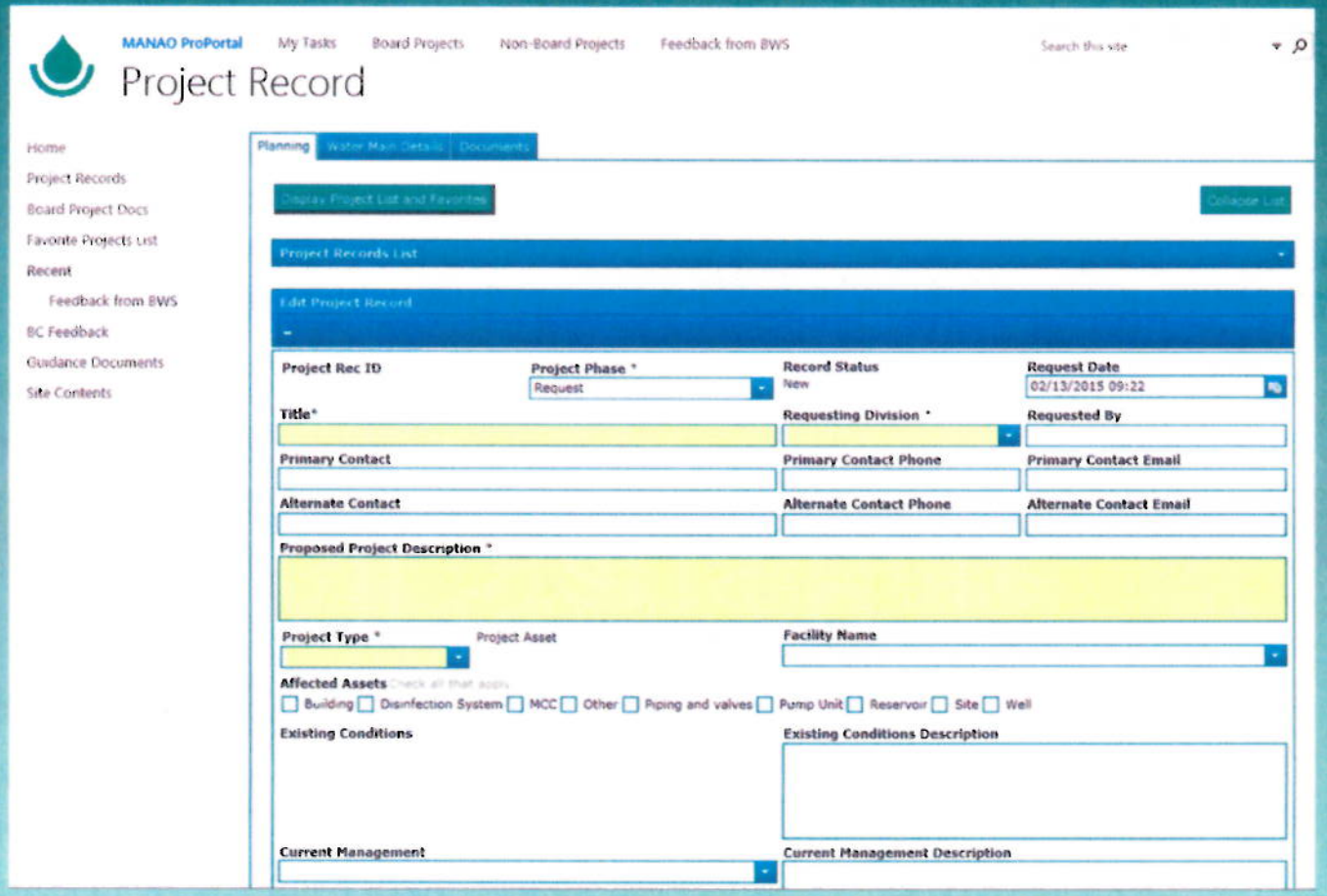
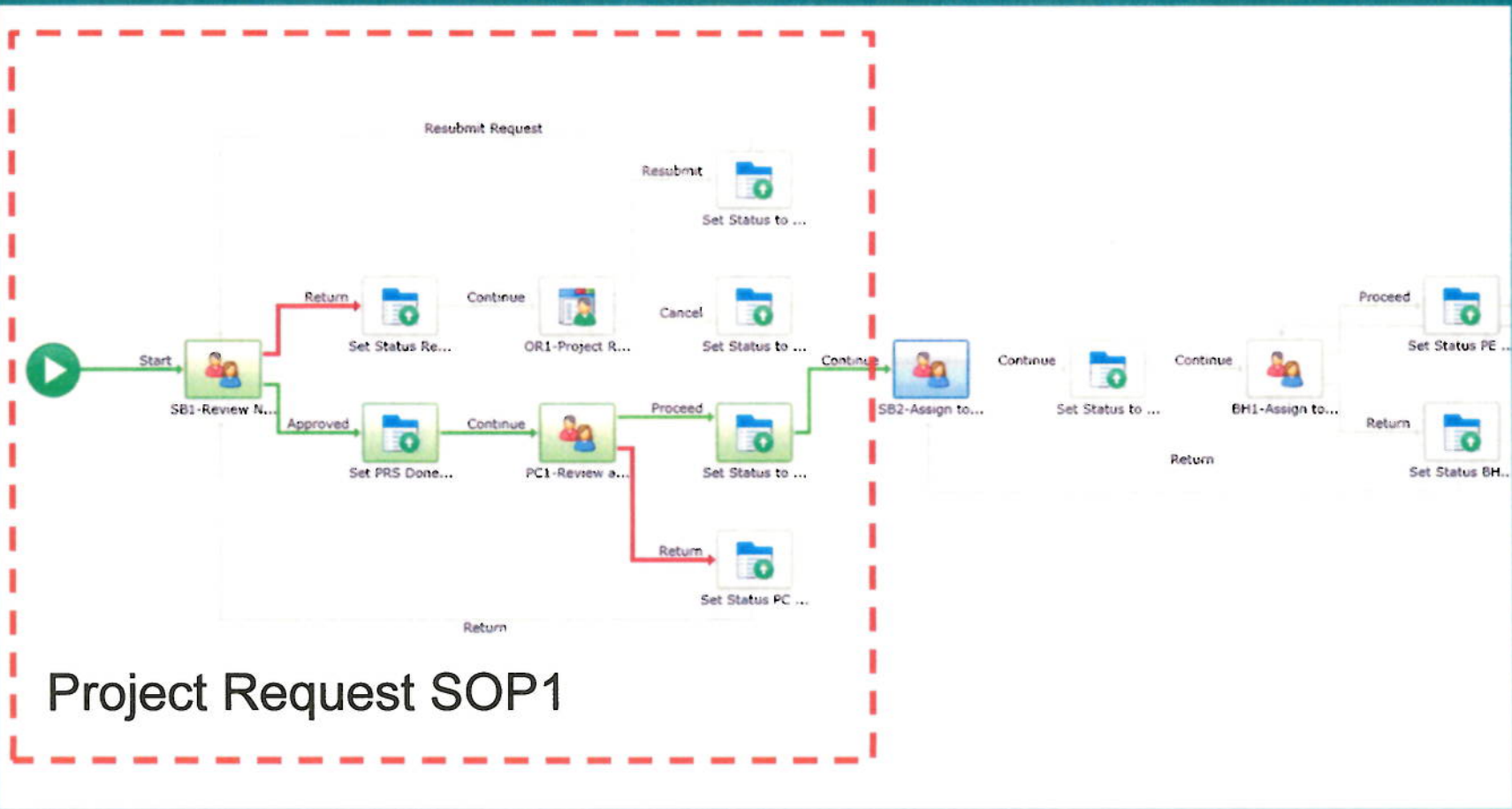
Project Initiation



Guided workflows



Standardized SOP templates

BWS Project Request SOP 1

SOP Name	New Project Request		
Workflow Steps	x-x	**Last Revision Date**	1/7/15
Objective	Identify a system need and gather enough information to develop a Project Requirements Summary for a CPD engineer to use to scope a new potential CIP project. The information recorded in these steps all build towards the development of a Project Definition Report and ultimately a new project to be executed.		
Preconditions			
Personnel Involved	• Requesting Division (WSO, WR, or FOP) • CPD Support Branch		
Products/Outputs	• Project Initiation Form • Project Requirements Summary		
Notes/Assumptions			
Step	**Responsible Party**	**Procedure**	
1	Requesting Division	Identify a system need and submit a Project Request Form to the CPD Support Branch through MANA'O.	
2	Support Branch	Review the Project Request Form in MANA'O and check for completeness. If information is missing or unclear, note the deficiency and send the form back to the requesting division for clarification.	
3	Support Branch	Fill out the next section of the Project Request Form to generate the Project Requirements Summary. The additional fields are geared towards collecting more background information about the potential project's site.	

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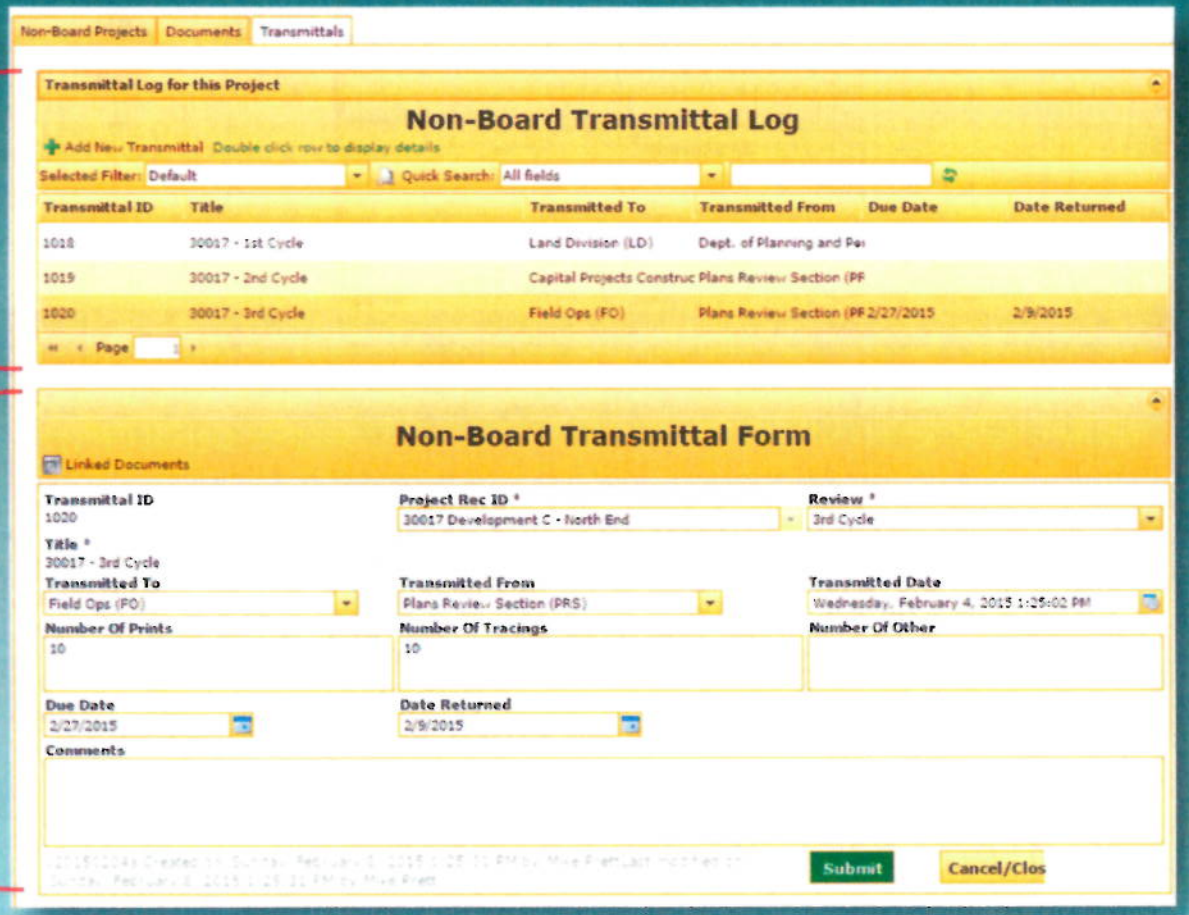
Plans Review project tracking

Project-specific Transmittal Log

Transmittal Form



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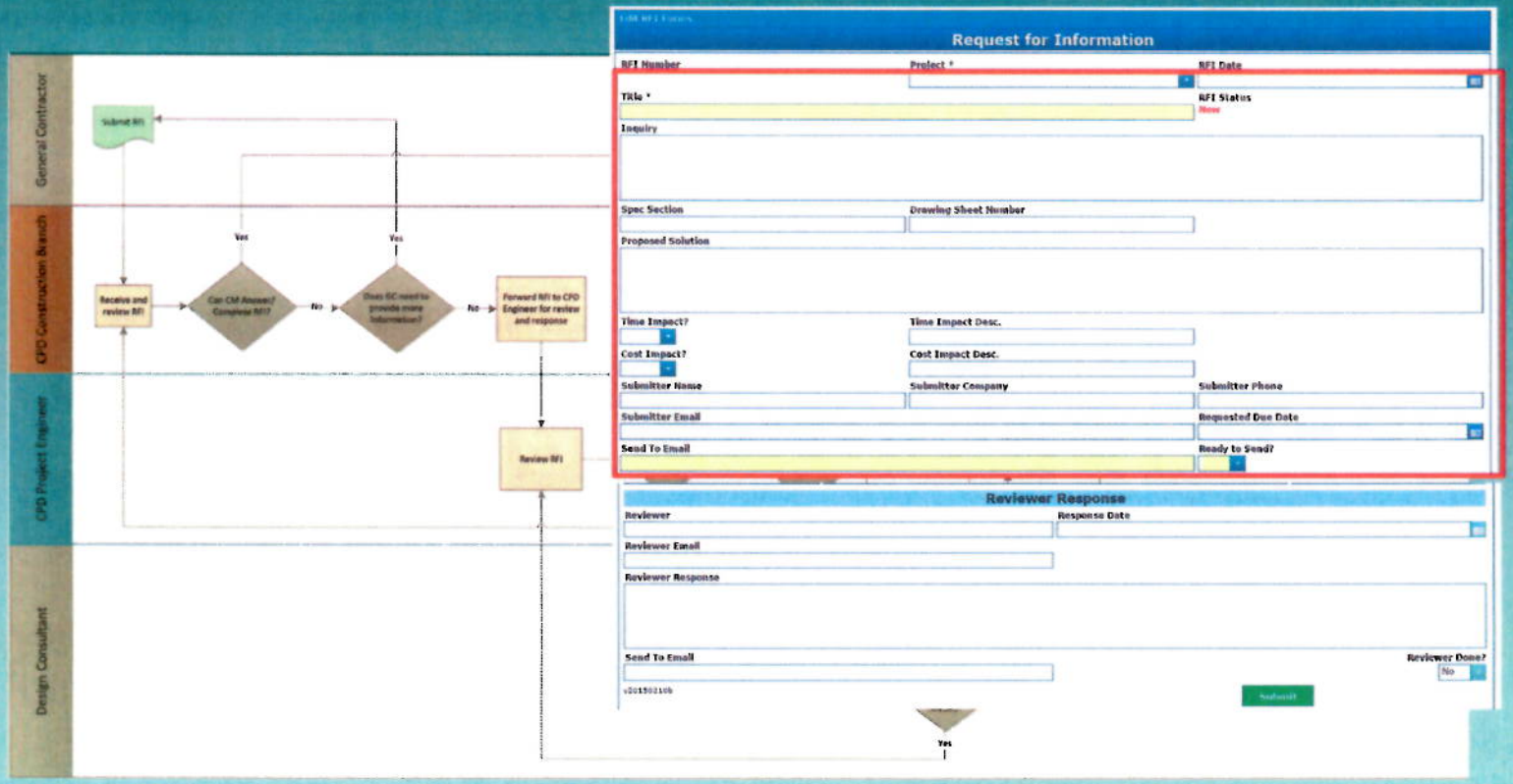
Construction RFI module

Request for Information - Form supports workflow

Link supporting documents to a specific RFI record on each project



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Key Project "Phases"

Every project follows same path

P Procurement

- Setup Project Record
- Obtain Approvals & Establish Funding

N Negotiation

- Complete Contract
- Obtain Approvals

E Execution

- Perform Work
- Control Costs & Change
- Engage Team

C Closeout

- Work Completed
- Final "Paperwork" *(no more paper)*

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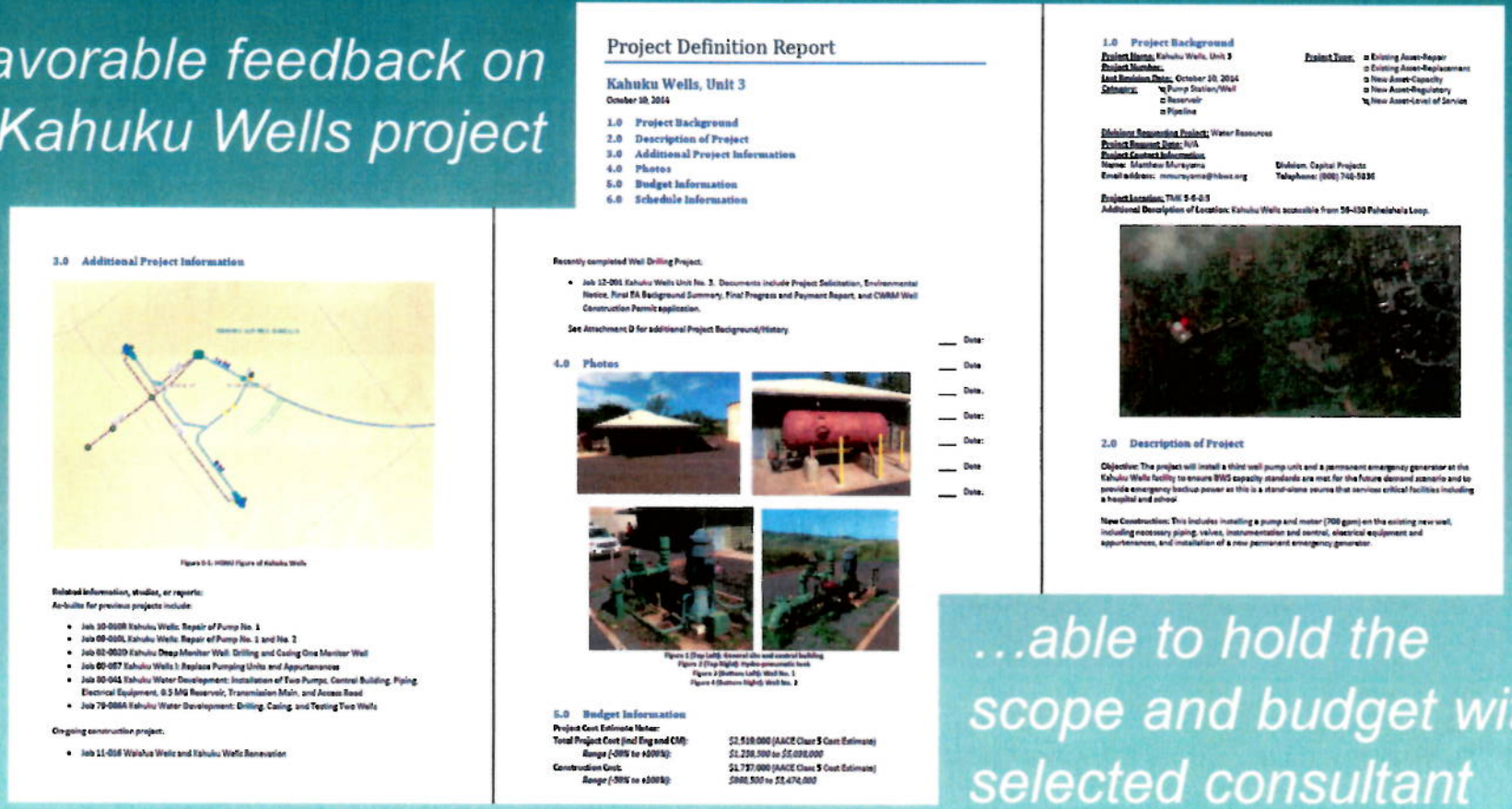
Verifying Field Effectiveness

Favorable feedback on Kahuku Wells project



Project Definition Report

Kahuku Wells, Unit 3

October 10, 2014

1.0 Project Background
2.0 Description of Project
3.0 Additional Project Information
4.0 Photos
5.0 Budget Information
6.0 Schedule Information

3.0 Additional Project Information

Related information, studies, or reports:
As-builts for previous projects include:

- Job 10-010R Kahuku Wells: Repair of Pump No. 1
- Job 09-010L Kahuku Wells: Repair of Pump No. 1 and No. 2
- Job 02-002D Kahuku Deep Monitor Well: Drilling and Casing One Monitor Well
- Job 00-007 Kahuku Wells 1: Replace Pumping Units and Appurtenances
- Job 80-04L Kahuku Water Development: Installation of Two Pumps, Control Building, Piping, Electrical Equipment, 0.5 MG Reservoir, Transmission Main, and Access Road
- Job 79-008A Kahuku Water Development: Drilling, Casing, and Testing Two Wells

On-going construction project:

- Job 11-01E Waiahua Wells and Kahuku Wells Renovation

Recently completed Well Drilling Project:

- Job 12-001 Kahuku Wells Unit No. 3. Documents include Project Solicitation, Environmental Notice, Final EA Background Summary, Final Progress and Payment Report, and CWRM Well Construction Permit application.

See Attachment D for additional Project Background/History.

4.0 Photos

Date:
Date
Date.
Date:
Date:
Date
Date.

5.0 Budget Information

Project Cost Estimate Notes:

Total Project Cost (incl Eng and CM):	$2,510,000 (AACE Class 5 Cost Estimate)
Range (-30% to +100%):	*$1,256,500 to $5,020,000*
Construction Cost:	$1,737,000 (AACE Class 5 Cost Estimate)
Range (-30% to +100%):	*$868,500 to $3,474,000*

1.0 Project Background

Project Name: Kahuku Wells, Unit 3
Project Number:
Last Revision Date: October 10, 2014
Category: ☒ Pump Station/Well ☐ Reservoir ☐ Pipeline

Project Type: ☐ Existing Asset-Repair ☐ Existing Asset-Replacement ☐ New Asset-Capacity ☐ New Asset-Regulatory ☒ New Asset-Level of Service

Division Requesting Project: Water Resources
Project Request Date: N/A
Project Contact Information:
Name: Matthew Muroyama — Division: Capital Projects
Email address: mmuroyama@hbws.org — Telephone: (808) 748-5836

Project Location: TMK 5-6-03
Additional Description of Location: Kahuku Wells accessible from 56-450 Pahelahela Loop.

2.0 Description of Project

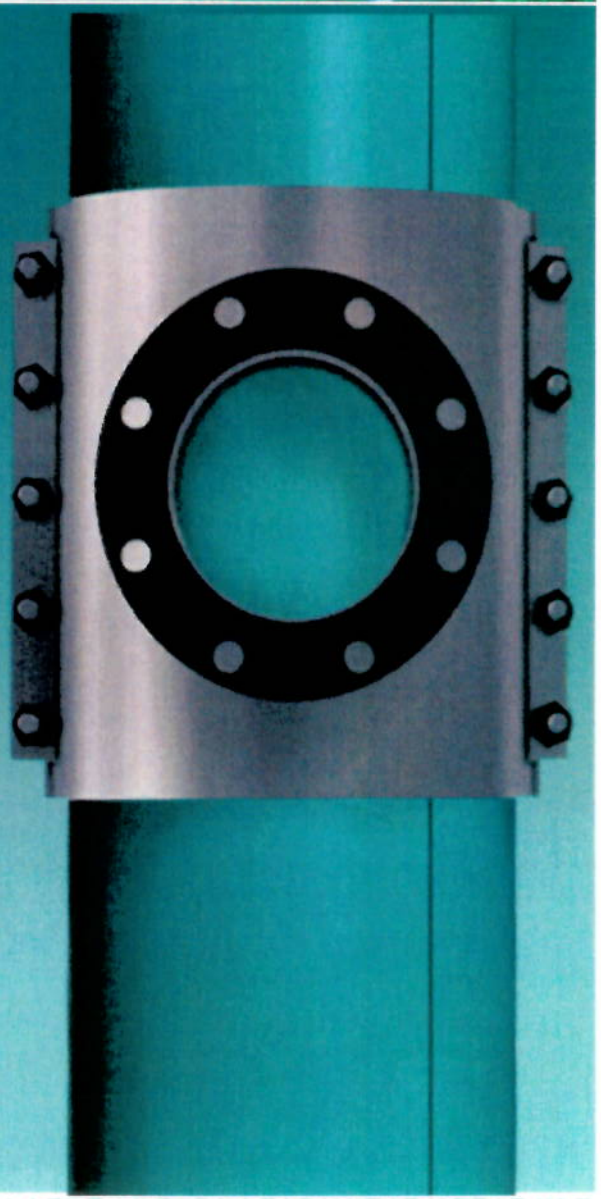
Objective: The project will install a third well pump unit and a permanent emergency generator at the Kahuku Wells facility to ensure BWS capacity standards are met for the future demand scenario and to provide emergency backup power as this is a stand-alone source that services critical facilities including a hospital and school.

New Construction: This includes installing a pump and motor (700 gpm) on the existing new well, including necessary piping, valves, instrumentation and control, electrical equipment and appurtenances, and installation of a new permanent emergency generator.

...able to hold the scope and budget with selected consultant

Construction staff training

- Pipeline installation training – January 28 and 29
- Construction scheduling – March 2015
- Safety in the field (OSHA 10 Training) – May 2015
- Cost estimating – July 2015



Next Steps…

- Continued rollout of MANAO (PMIS) modules
  - *Every 4-5 weeks*
  - *Workflows and SOPs*
  - *Testing / training sessions (migrate actual project data)*
- Begin addressing staff needs with HRO
  - *April 2015*
- Continued execution of action plans and improvement implementations

Next Steps…

- Incorporate changes to specifications and special provisions into contract documents
- Collaboration with City (DDC) on Contractor Evaluation Program improvements
- Ongoing consultation with GCA
- Continued project execution assistance to address workload and pilot, implement, and document standard operating procedures

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CPD Optimization Overview

Assess

- Step 1 – Internal gap analysis
- Step 2 – Summarize findings
- Step 3 – Develop initial **Action Plan**

Implement

- Execute **Action Plan** (Engineering and Construction)
  - Develop initial workflows, SOPs, PMIS
- Provide Staff support for selected projects

We Are Here

Optimize

- Add / organize staff to best aligned with long-term needs
- Ongoing staff support for selected projects
- Facilitate internal knowledge transfer

Implement and Optimize will continue to occur over several years

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Mahalo for your support

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 (#/$)	1	$1,350,000.00	0	$0.00		$0.00		$0.00	$1,350,000.00	$24,642,000.00
Construction Contracts Awarded (#/$)	3	$174,286.35	3	$534,508.00		$0.00		$0.00	$708,797.35	$43,343,000.00
Project Totals	4	$1,524,286.35	3	$534,508.00	0	$0.00	0	$0.00	$2,058,797.35	$67,985,000.00

Quarter Completed	JUL - SEP		OCT - DEC		JAN - MAR		APR - JUN		Totals
Design Contracts Completed (#/$)	3	$357,005.20	4	$774,478.00		$0.00		$0.00	$1,131,487.20
Construction Contracts Completed (#/$)	2	$2,106,110.00	0	$0.00		$0.00		$0.00	$2,106,110.00
Totals	5	$2,463,115.20	4	$774,478.00	0	$0.00	0	$0.00	$3,237,597.20

Ongoing Projects	
Ongoing Design Projects (#)	159
Ongoing Design Projects ($)	$64,949,035.72
Ongoing Construction Projects (#)	86
Ongoing Construction Projects ($)	$185,293,472.65

CAPITAL IMPROVEMENT PROGRAM QUARTERLY UPDATE
ALL DIVISIONS

DESIGN AND CONSTRUCTION PROJECTS AWARDED - SECOND QUARTER FY 2015

Item #	Project Title	Expend Type	Budget Amount	Awarded
006A	Hoaeae Wells: Replacement of Pump No. 6	CONST	$234,000.00	$234,000.00
006B	Kunia Wells III: Replacement of Pump No. 3	CONST	$261,000.00	$261,000.00
043N	Mauna Olu Non-Potable Reservoir Liner Emergency Repair	CONST	$39,508.00	$39,508.00
	2nd Quarter totals		**$534,508.00**	**$534,508.00**

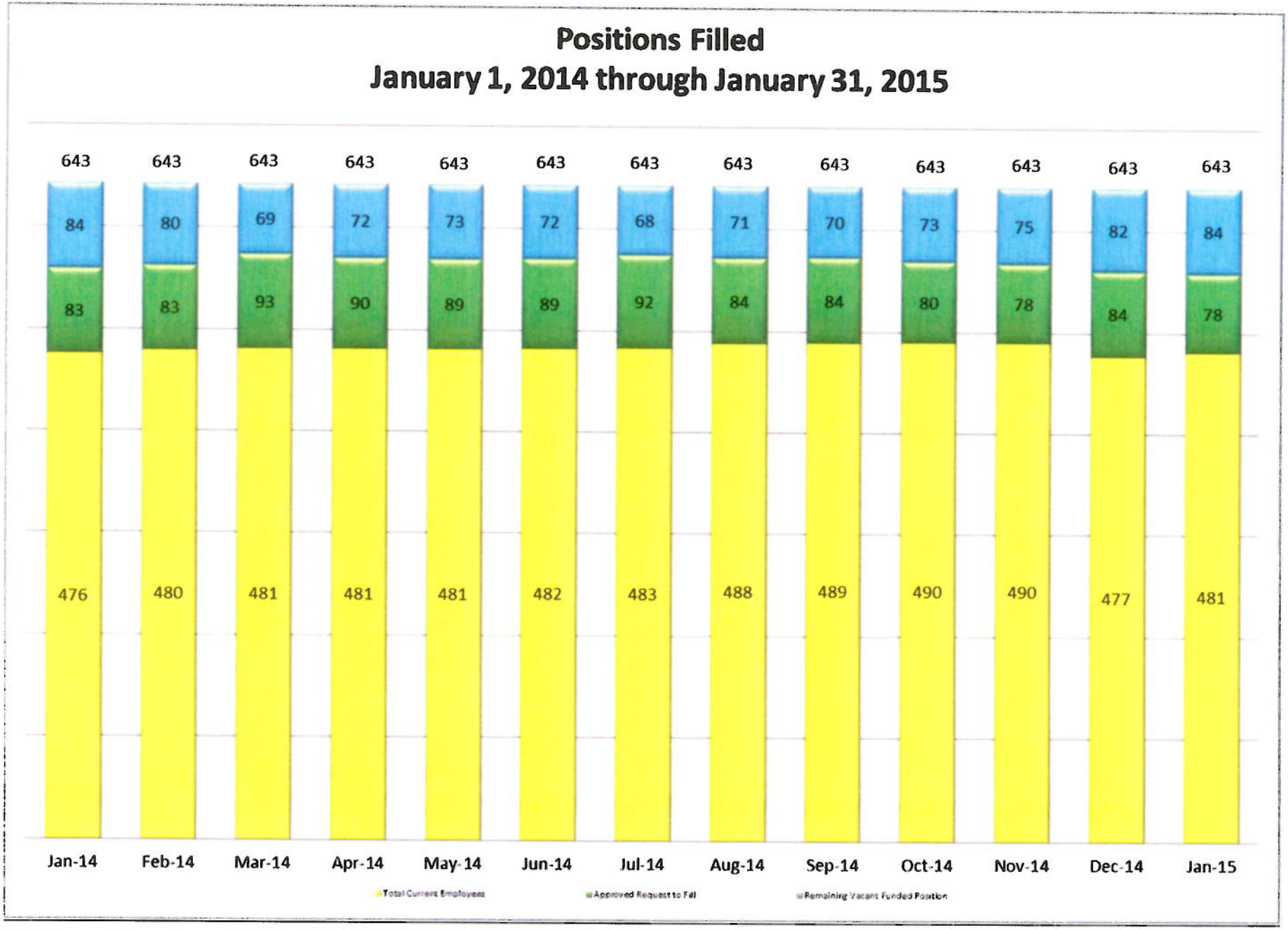
DESIGN AND CONSTRUCTION PROJECTS COMPLETED - SECOND QUARTER FY 2015

Job #	Project Title	Completion Date	Contract Amount
2010-008	University Avenue 12-Inch Main, Part II	11/6/2014	$129,280.00
2009-009B	King Street 12-Inch Main	10/24/2014	$202,700.00
2012-013A	Kilauea Avenue 8-Inch Main	10/16/2014	$172,426.00
2012-008CM	Construction Management for Ward Avenue 12-Inch And 8-Inch Mains	10/9/2014	$270,072.00
	2nd Quarter totals		**$774,478.00**

DISCUSSION: Capital Projects Program Administrator Jason Takaki provided the report. There were no comments or discussion.

ITEM FOR INFORMATION NO. 5

Actions: 5 New Hires, 4 Promotions, 0 Transfers, 1 Separation, 7 New Approvals to Fill, 4 Cancelled Requests



Cumulative Totals
January 1, 2014 through January 31, 2015

DISCUSSION: Teri Akana from the Human Resources Office provided the report. There were no comments or discussion.

ITEM FOR INFORMATION NO. 6

"February 23, 2015

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

For the production week that ended on February 7, 2015, there were no aquifer index wells within low groundwater status. The weekly production average for the period was 132.99 million gallons per day.

The Board of Water Supply rainfall index for the month of January 2015 was 33 percent of normal, with a 5-month moving average of 75 percent. The Hawaii Drought Monitor shows abnormally dry conditions across Oahu, as of February 10, 2015. The National Weather Service is forecasting below normal rainfall through May 2015, associated with El Niño. However, most index monitor wells continue to exhibit relatively level trends, reflecting seasonal reductions in pumpage.

Respectfully submitted,

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

Attachments"

The foregoing was for information only.

DISCUSSION: Water Resources Program Administrator Barry Usagawa provided the report. There were no comments or discussion.

PUMPAGE, HEAD, AND RAINFALL REPORT

Week of 2/01/15 to 2/07/15

STATION		HEAD	STATION	MGD	HEAD	STATION	MGD	HEAD		MGD	HEAD
METRO			WINDWARD			EWA-WAIANAE (CONT)			PH (CONT)		
KULIOUOU	0.00					MAKAHA IV	0.00		PEARL CITY II	0.93	
WAILUPE	0.00		WAIMANALO II	0.31		MAKAHA V	0.00		PEARL CITY III	0.49	
WAIALAE-IKI	0.00		WAIMANALO III	0.36		MAKAHA VI	0.18		WAIAU	0.94	
AINA KOA	0.48		KUOU I	0.87		MAKAHA SHAFT	0.00	16.44	NEWTOWN	2.11	
AINA KOA II	0.92		KUOU II	0.09		KAMAILE	0.29		KAONOHI I	0.76	
WAIALAE SHAFT	0.00		KUOU III	0.46		WAIANAE I	0.22		WAIMALU I	0.36	
MANOA II	0.76		LULUKU	1.04		WAIANAE II	0.73		AIEA	0.00	
PALOLO	0.93		HAIKU	0.36		WAIANAE III	0.27		AIEA GULCH 497	0.55	
KAIMUKI HIGH	3.30	23.86	IOLEKAA	0.22		MAKAKILO	0.07		AIEA GULCH 550	0.22	
KAIMUKI LOW	0.01		KAHALUU	0.49		HONOULIULI I	3.87		HALAWA 277	0.86	
WILDER	5.28		WAIHEE	0.00		HONOULIULI II	6.14		HALAWA 550	0.00	
BERETANIA HIGH	4.18	23.11	KAHANA	0.71		SUBTOTAL:	13.55		KAAHUMANU MTR(-)	0.00	
BERETANIA LOW	2.98		PUNALUU I	0.00	17.96	IMPORT FROM PH			KAAMILO FLO MTR (-)	0.00	
KALIHI HIGH	2.09	22.46	PUNALUU II	0.19		KAPOLEI LINE BSTR	14.67		KUNIA I	5.07	19.01
KALIHI LOW	3.23		PUNALUU III	1.19		HONOULIULI LB FLOW	16.42		KUNIA II	0.42	
KAPALAMA	0.43		KALUANUI	0.41		EWA BEACH FLOW	4.27		KUNIA III	1.42	
KALIHI SHAFT	8.62		MAAKUA	0.23		HONOULIULI I (-)	-3.87		HOAEAE	6.59	
MOANALUA	0.43	19.42	HAUULA	0.00		HONOULIULI II (-)	-6.14		EWA SHAFT	0.00	
SUBTOTAL:	33.63					SUBTOTAL:	25.35		WAIPAHU INTCON. (-)	-3.82	
			KAHUKU	0.00					EWA-WAIANAE (-)	-25.35	
IMPORT FROM PH			OPANA	0.93		PEARL HARBOR			PH LOCAL USE:	11.27	
HALAWA SHAFT	6.23	16.93	WAIALEE I	0.99		WAHIAWA	1.50		TOTAL SUBURBAN:	60.88	
KAAMILO	0.00		WAIALEE II	0.21		WAHIAWA II	1.90				
KALAUAO	8.16	17.34	SUNSET BEACH	0.00		MILILANI I	3.33		KALAUAO SPRINGS	0.68	
PUNANANI	11.35		SUBTOTAL:	9.06		MILILANI II	0.00		BARBERS POINT (NP)	4.56	
KAONOHI II	0.00					MILILANI III	0.69		GLOVER TUNNEL (NP)	0.48	
WAIMALU II	0.00	15.37	WIND. EXPORT	0.14		MILILANI IV	0.72				
KAAHUMANU	0.93					WAIPIO HTS.	0.15		HEAD CONDITION		
HECO WAIAU	2.78		HALEIWA-WAIALUA			WAIPIO HTS. I	0.04		CAUTION	ALERT	CRITICAL
MANANA	0.49		HALEIWA	0.00		WAIPIO HTS. II	0.35				
KAAHUMANU FLOW MT	0.00		WAIALUA	1.79		WAIPIO HTS. III	1.15				
KAAMILO FLOW MTR	0.00		SUBTOTAL:	1.79		WAIPAHU	3.82	18.69			
TOTAL IMP/EXP WAIP. INT:	0.00					WAIPAHU II	1.26				
IMPORT FRM WIND:	0.14		EWA-WAIANAE			WAIPAHU III	1.54				
SUBTOTAL:	30.07		MAKAHA I	0.88		WAIPAHU IV	2.07				
			MAKAHA II	0.13		PEARL CITY SHAFT	0.95	15.03			
TOTAL METRO:	63.70		MAKAHA III	0.77		PEARL CITY I	0.28				

CWRM PERMITTED USE FOR BWS POTABLE SOURCES						PUMPAGE	2015	2014	GRAVITY	2015	2014
	A	B	C	D	E	SUBURB.	60.88	53.70	SUBURB.	7.96	6.58
WATER	PERMITTED		DIFF.	YEAR/	DIFF.	METRO	63.70	58.02	METRO	0.46	0.39
DISTRICTS	USE	2015	B-A	DATE	D-A	TOTAL:	124.58	111.72	TOTAL:	8.42	6.97
HONOLULU	45.27	34.09	-11.17						Manoa	0.17	
WINDWARD	25.21	13.33	-11.88			NUUANU #5			Palolo	0.29	
NORTH SHORE	4.08	3.91	-0.17			(rainfall)	0.12"	2.79"	Waim. I&II	0.08	
WAHIAWA	4.27	3.39	-0.88						Waim. III&IV	0.19	
WAIANAE	4.34	4.26	-0.08						Waihee incl.	1.01	
EWA-KUNIA	15.88	10.08	-5.80						Waihee tun.	1.83	
PEARL HARBOR	92.65	66.98	-25.68						Luluku	0.21	
TOTAL:	191.71	136.05	-55.66						Haiku	0.63	
									Kahaluu	2.45	
									Waia. C&C	1.40	
									Waia plant.	0.16	

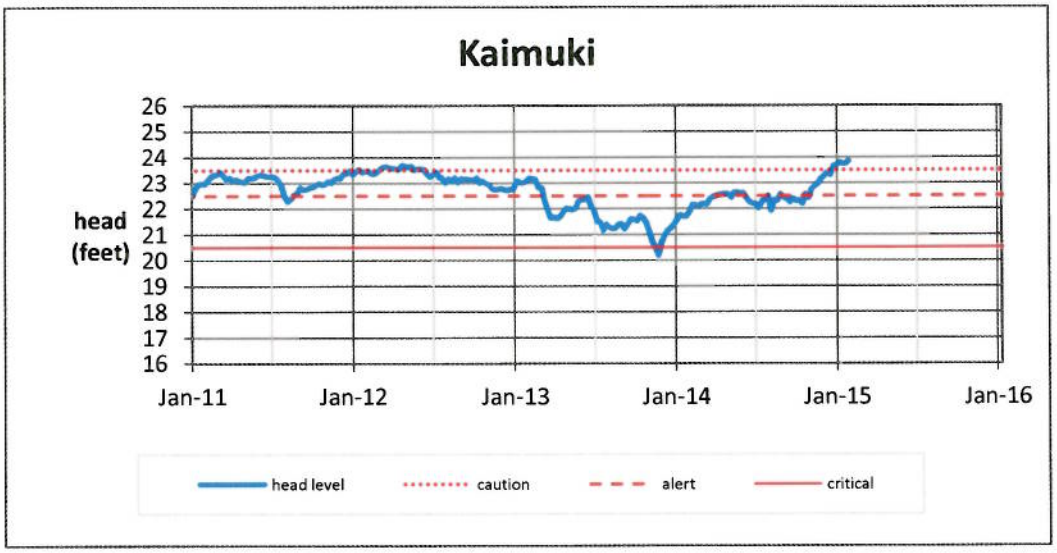
DROUGHT STATUS REPORT
DRAFT IN MGD

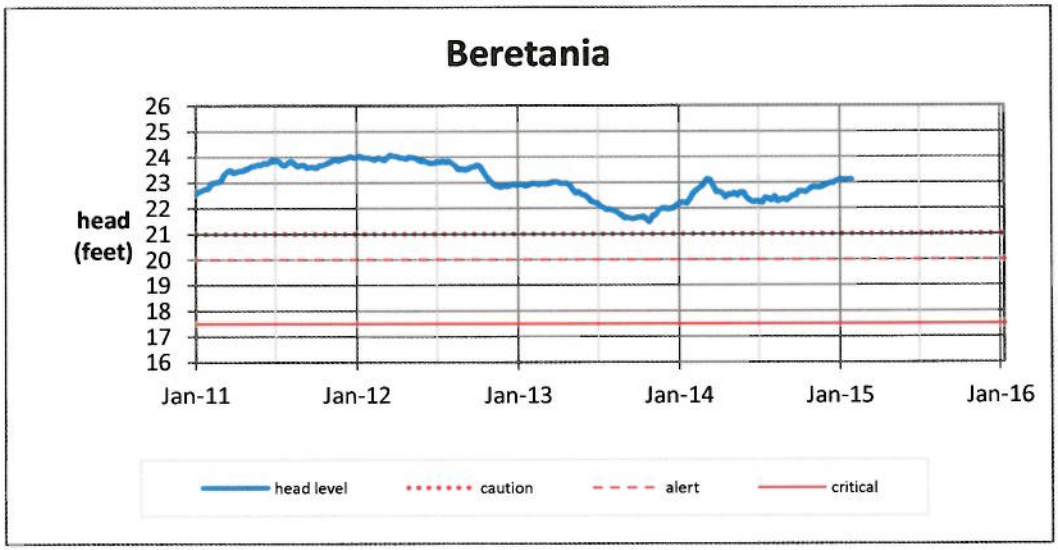
WATER USE DISTRICT	AUTHORIZED USE	2014	1/25-1/31 2015	2014	2/01-2/07 2015				
HONOLULU	45.27	31.69	33.30	30.32	34.23				
WINDWARD	25.21	11.35	12.73	11.16	13.19				
NORTH SHORE	4.08	2.98	3.89	2.87	3.91				
WAHIAWA	4.27	3.39	3.49	3.34	3.39				
EWA-WAIANAE	20.22	18.32	39.78	16.40	40.46				
PEARL HARBOR	92.66	52.17	38.03	54.61	37.81				
TOTAL	191.71	119.90	131.22	118.69	132.99				

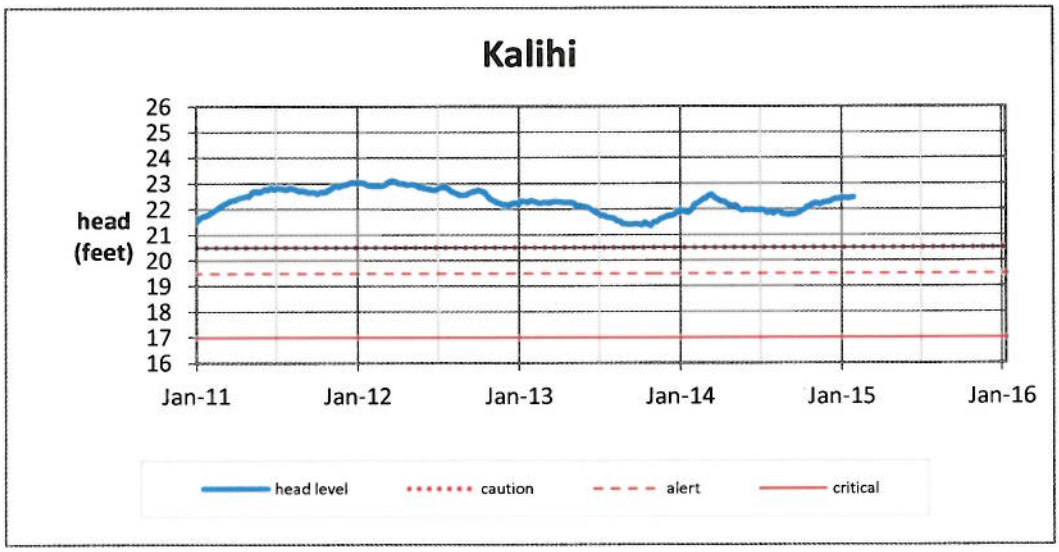
Accounts for in-district pumpage and transfers

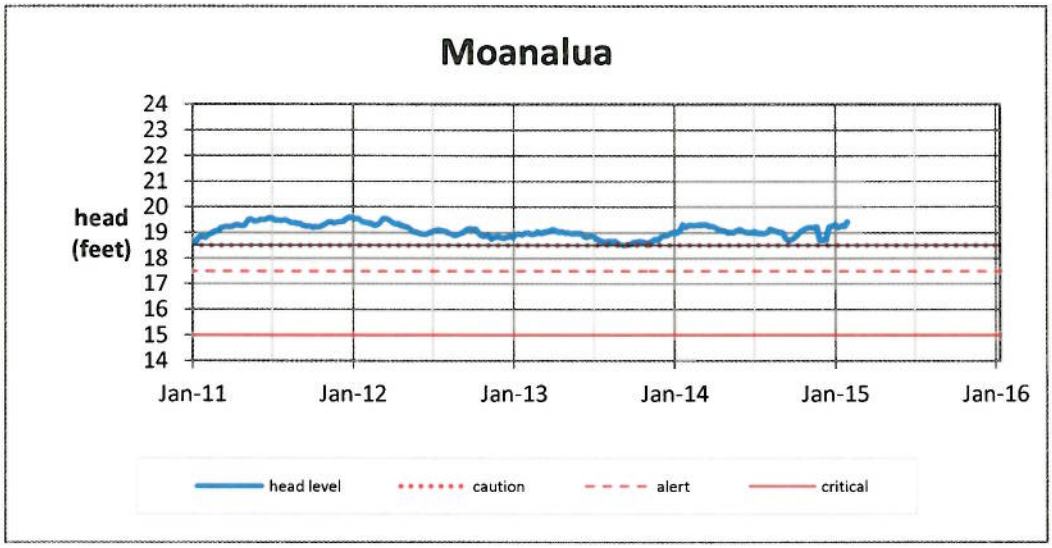
HEAD IN FEET

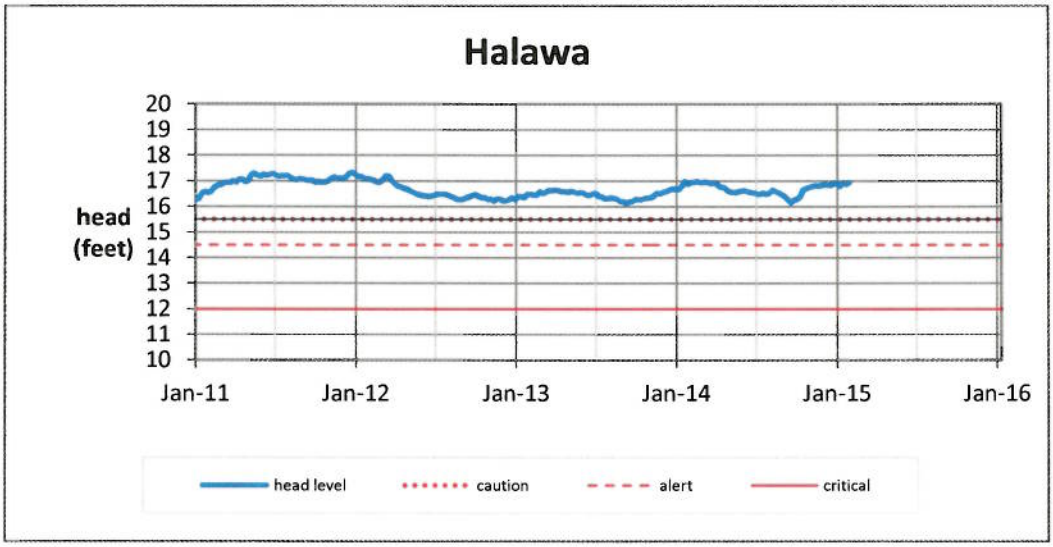
		2014	1/25-1/31 2015	2014	2/01-2/07 2015				
HONOLULU									
KAIMUKI		21.70	23.75	21.89	23.86				
BERETANIA		22.34	23.10	22.57	23.11				
KALIHI		21.95	22.43	22.18	22.46				
MOANALUA		19.20	19.23	19.28	19.42				
PEARL HARBOR									
HALAWA		16.86	16.85	16.93	16.93				
KALAUAO		17.21	17.33	17.28	17.34				
PEARL CITY		14.96	15.03	14.98	15.03				
WAIPAHU		18.61	18.71	18.71	18.69				
KUNIA		18.96	19.06	19.05	19.01				
EWA-WAIANAE									
MAKAHA		10.91	16.39	11.07	16.44				
WINDWARD									
PUNALUU		16.93	17.86	17.20	17.96				
KALUANUI		16.82	18.04	17.29	17.94				
NORTH SHORE									
WAIALUA		11.28	11.10	11.31	11.17				

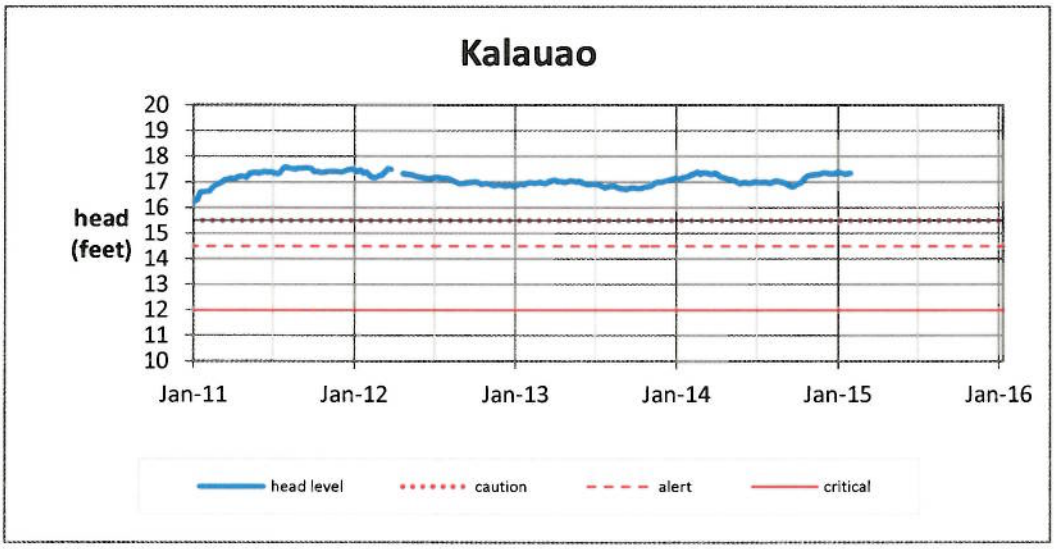

Kaimuki
head (feet)
26
25
24
23
22
21
20
19
18
17
16
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
head level
caution
alert
critical

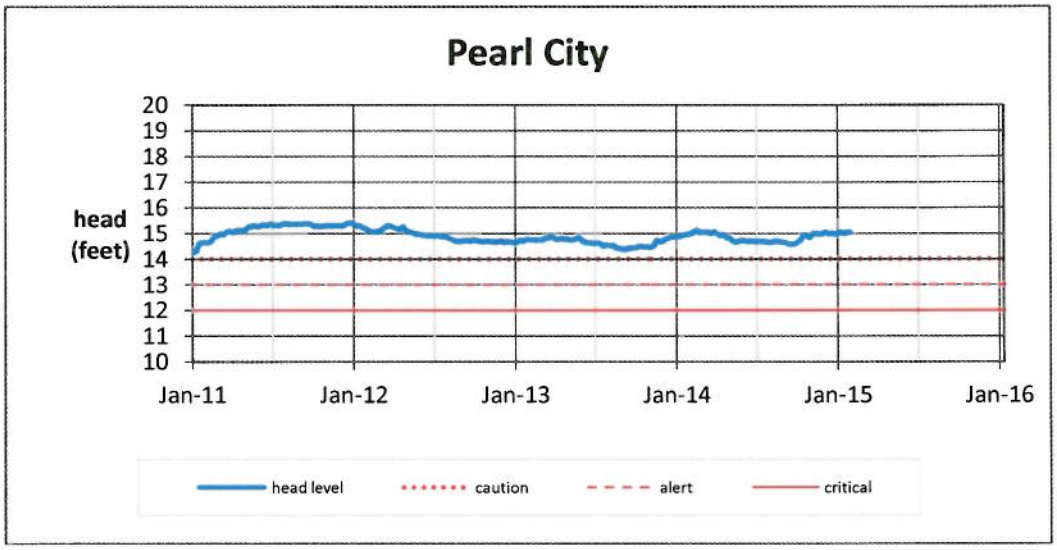

Beretania
head (feet)
26
25
24
23
22
21
20
19
18
17
16
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
head level
caution
alert
critical

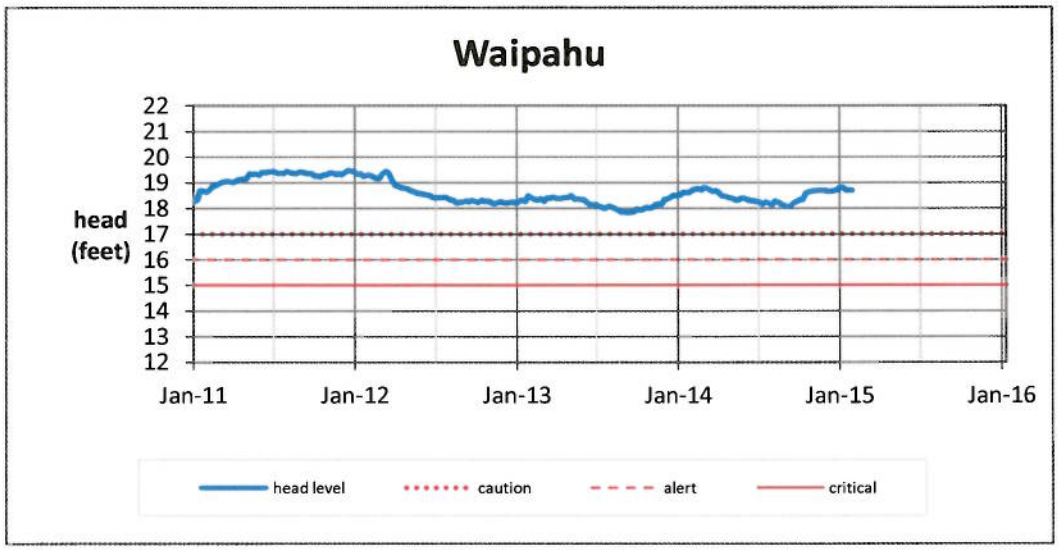

Kalihi
head (feet)
26
25
24
23
22
21
20
19
18
17
16
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
head level
caution
alert
critical

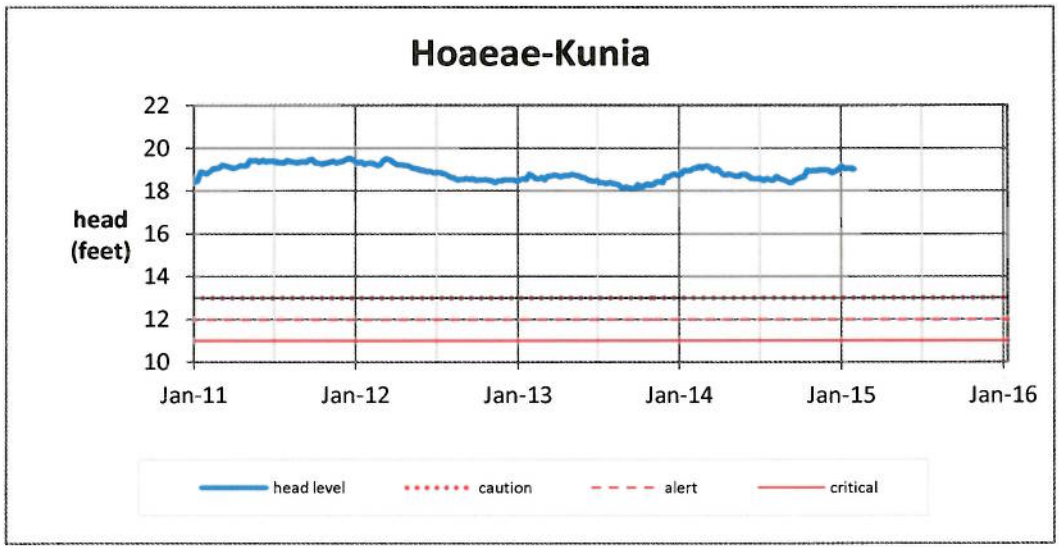

Moanalua
head (feet)
24
23
22
21
20
19
18
17
16
15
14
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
head level
caution
alert
critical

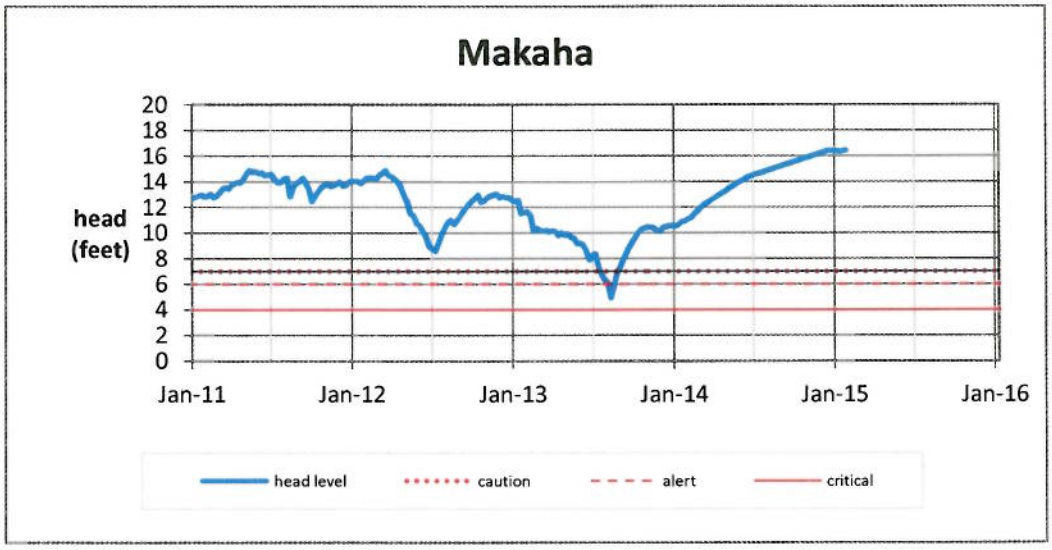

Halawa
head (feet)
20
19
18
17
16
15
14
13
12
11
10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
head level
caution
alert
critical

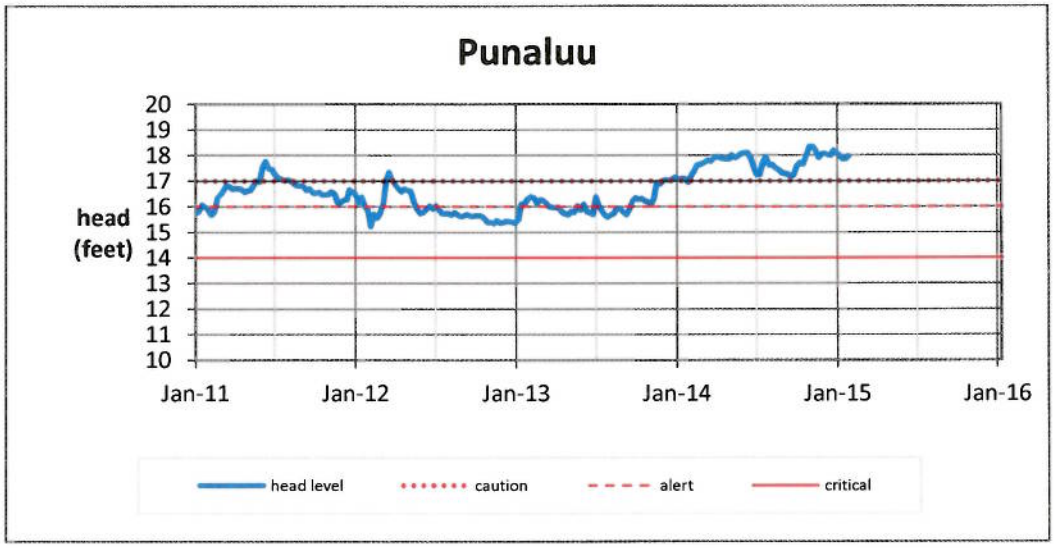

Kalauao
head (feet)
20
19
18
17
16
15
14
13
12
11
10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
head level
caution
alert
critical

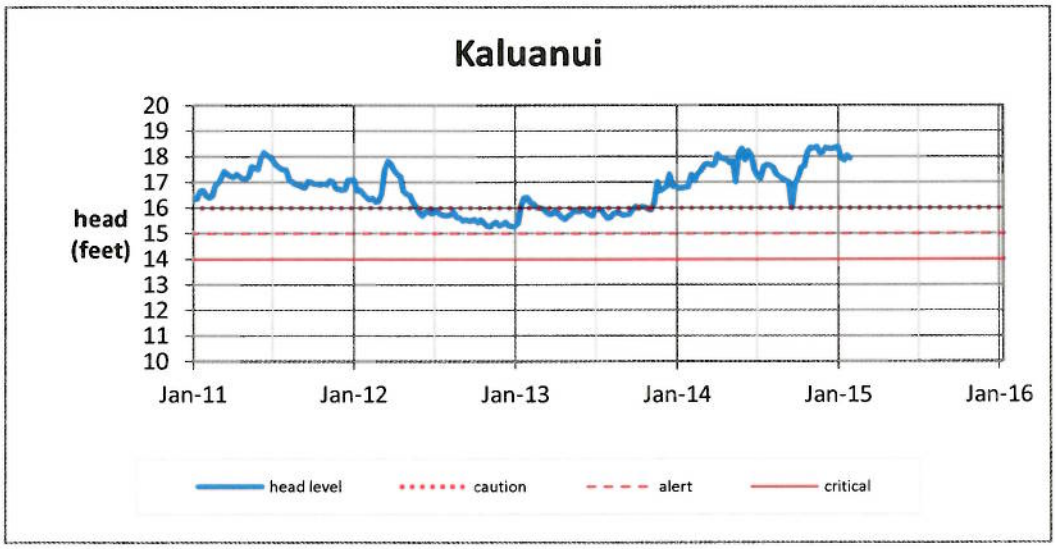

Pearl City
head (feet)
20
19
18
17
16
15
14
13
12
11
10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
head level
caution
alert
critical

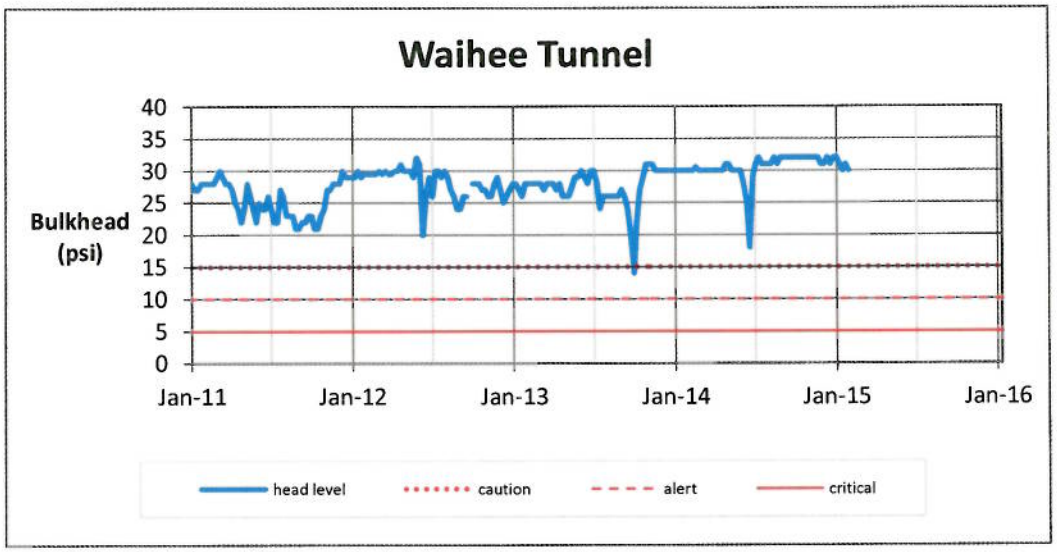

Waipahu
head (feet)
22
21
20
19
18
17
16
15
14
13
12
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
head level
caution
alert
critical

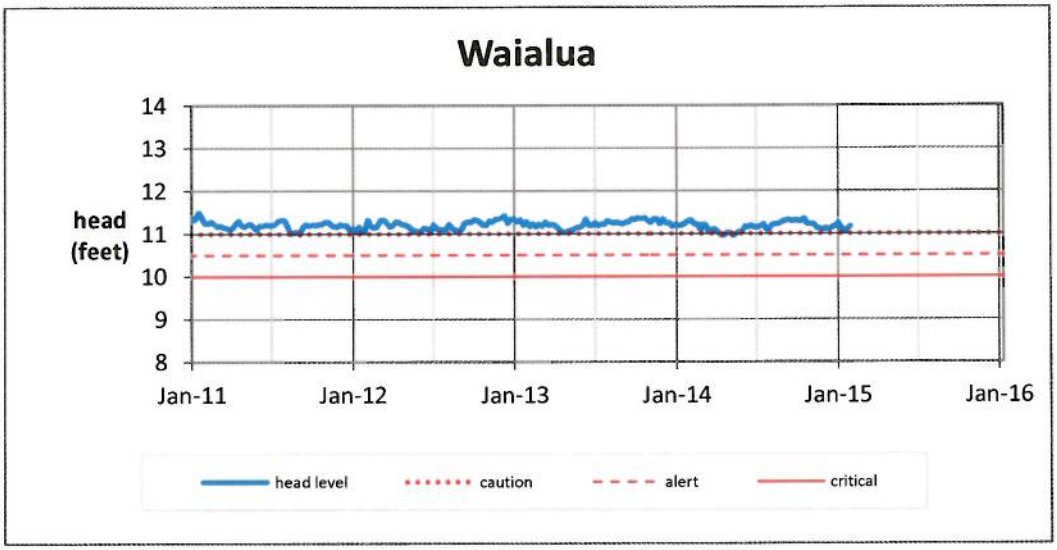

Hoaeae-Kunia
head (feet)
22
20
18
16
14
12
10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
head level
caution
alert
critical

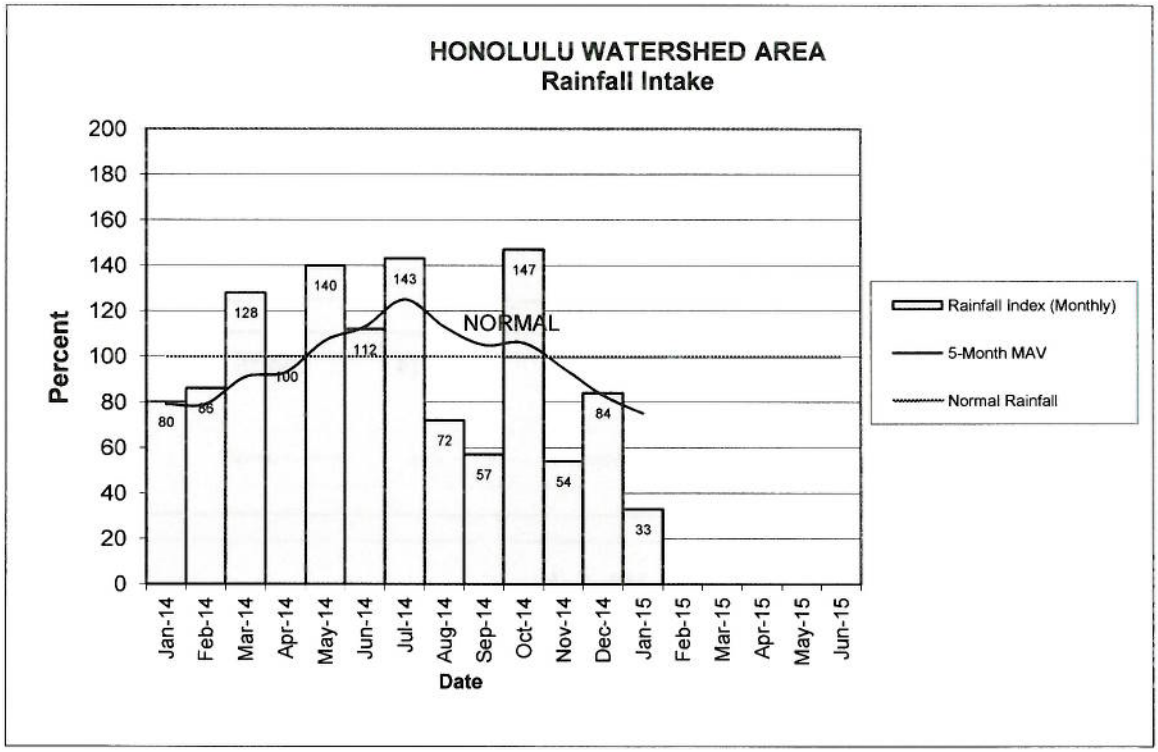

Makaha
head (feet)
20
18
16
14
12
10
8
6
4
2
0
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
head level
caution
alert
critical

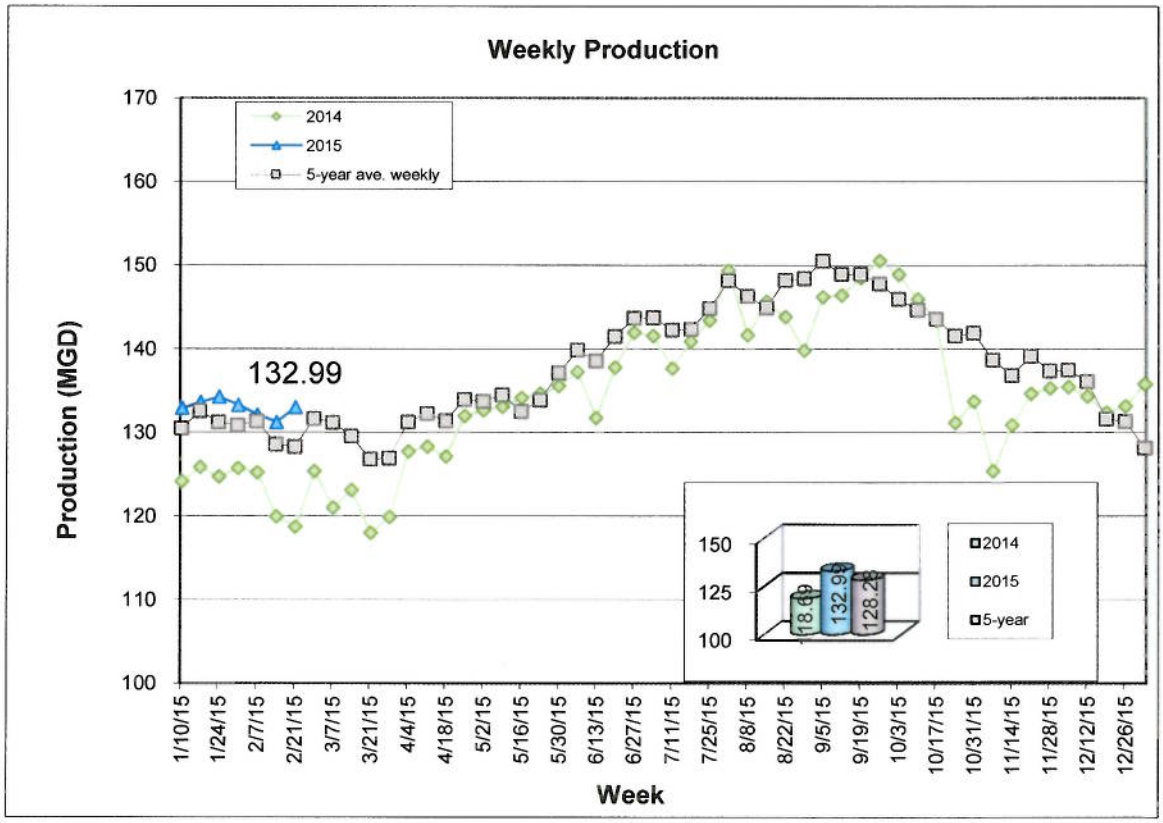

Punaluu
head (feet)
20
19
18
17
16
15
14
13
12
11
10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
head level
caution
alert
critical


Kaluanui
head (feet)
20
19
18
17
16
15
14
13
12
11
10
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
head level
caution
alert
critical


Waihee Tunnel
Bulkhead (psi)
40
35
30
25
20
15
10
5
0
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
head level
caution
alert
critical


Waialua
head (feet)
14
13
12
11
10
9
8
Jan-11
Jan-12
Jan-13
Jan-14
Jan-15
Jan-16
head level
caution
alert
critical


HONOLULU WATERSHED AREA
Rainfall Intake
Percent
Date
NORMAL
80
86
128
100
140
112
143
72
57
147
54
84
33
Jan-14
Feb-14
Mar-14
Apr-14
May-14
Jun-14
Jul-14
Aug-14
Sep-14
Oct-14
Nov-14
Dec-14
Jan-15
Feb-15
Mar-15
Apr-15
May-15
Jun-15
Rainfall Index (Monthly)
5-Month MAV
Normal Rainfall


Weekly Production
Production (MGD)
Week
2014
2015
5-year ave. weekly
132.99
2014
2015
5-year

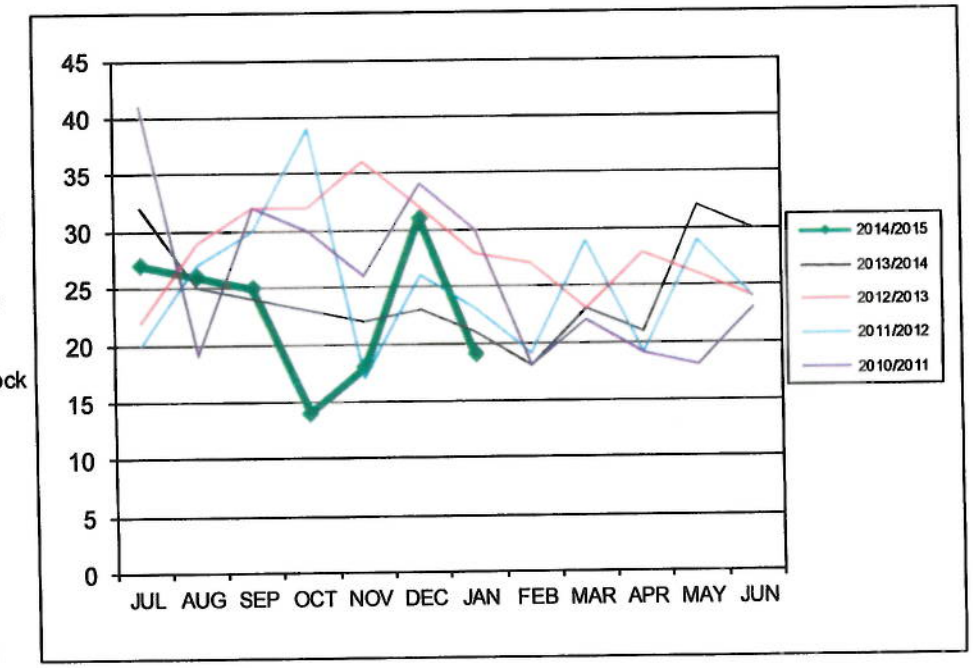
ITEM FOR INFORMATION NO. 7

WATER MAIN REPAIR REPORT

for January 2015

	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	Total
2014/2015	27	26	25	14	18	31	19						160
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
2011/2012	20	27	30	39	17	26	23	19	29	19	29	24	302
2010/2011	41	19	32	30	26	34	30	18	22	19	18	23	312

Date	Address	Size	Cause
1/1	2200 Hikino St.	8" D.I.	Corrosion
1/2	85-277 McArthur St.	8" P.V.C.	Pressure
1/4	3566 Pahoa Ave.	6" C.I.	Unknown
1/5	47-224 Kamehameha Hwy.	6" C.I.	Corrosion
1/5	near 618 Pokole St.	4" C.I.	Corrosion
1/5	368 S. Kalaheo Ave.	6" C.I.	Settlement
1/5	757 Ululani St.	8" C.I.	Clamp
1/6	98-1703 Ipuala Lp.	8" C.I.	Settlement
1/6	3531 Alani Dr.	8" C.I.	Unknown
1/8	5134 Kilauea Ave.	12" C.I.	Bear on Rock
1/9	1063 Kaluanui Rd.	6" C.I.	Unknown
1/9	2450 Coyne St.	8" C.I.	Corrosion
1/13	85-215 McArthur St.	8" P.V.C.	Pressure
1/15	1724 Kalauokalani Wy.	4" C.I.	Damage
1/17	67-313 Kiapoko Pl.	12" C.I.	Corrosion
1/18	1652 9th Ave.	8" D.I.	Unknown
1/21	94-248 Puamano Pl.	6" C.I.	Corrosion
1/22	2056 Mohala Wy.	4" Galv.	Corrosion
1/28	555 N. King St.	12" C.I.	Damage



Bold * - Pro-active Leak Repair

20.12 miles of pipelines were surveyed by the Leak Detection Team in the month of January

DISCUSSION: Field Operations Program Administrator Daryl Hiromoto gave the report. He stated that they are monitoring the area on McArthur Street in Waianae where they experienced many main breaks and also doing some analysis on the pipe material to see if that could have led to the breaks. 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)(2)] at 3:20 PM to Consider Issues Pertaining to Matters Posted for Discussion at an Executive Session.
OPEN SESSION	The Board reconvened in open session at 3:50 PM
MOTION TO ADJOURN	There being no further business Chair Miyashiro at 3:50 PM called for a motion to adjourn the Open Session. Adam Wong so moved; seconded by David Hulihee and unanimously carried.

THE MINUTES OF THE REGULAR SESSION BOARD MEETING ON FEBRUARY 23, 2015 WERE APPROVED AT THE MARCH 23, 2015 BOARD MEETING			
	AYE	NO	COMMENT
DUANE R. MIYASHIRO	X		
ADAM C. WONG	X		
THERESIA C. MCMURDO	X		
DAVID C. HULIHEE	X		
ROSS S. SASAMURA	X		
FORD N. FUCHIGAMI			ABSENT

Respectfully submitted,

Lisa K. Kim

LISA K. KIM

APPROVED:

DUANE R. MIYASHIRO
Chair of the Board

MAR 23 2015
Date