

MINUTES
REGULAR MEETING
OF THE
BOARD OF WATER SUPPLY

April 25, 2016

At 2:02 PM on April 25, 2016 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
David C. Hulihee
Bryan P. Andaya (arrived at 2:07 p.m.)
Ross S. Sasamura

Also Present: Ernest Lau, Manager and Chief Engineer
Ellen Kitamura, Deputy Manager and Chief Engineer
Alex Ubiadas
Erwin Kawata
Barry Usagawa
Paul Kikuchi
Karen Tom
Daryl Hiromoto
Jason Takaki
Joe Cooper
Robert Morita
Mike Matsuo
Kevin Ihu
Tracy Burgo
Henderson Nuuhiwa
Jennifer Elflein

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

Absent: Kapua Sproat
Ford N. Fuchigami

APPROVAL OF
MINUTES

Approval of the Minutes of the Regular Meeting held on March 28,
2016

MOTION
TO APPROVE

David Hulihee and Ross Sasamura motioned and seconded, respectively,
to approve the Minutes of the Regular Session Meeting of March 28, 2016.
The motion was unanimously carried.

The meeting was taken out of order.

"April 25, 2016

AUTHORIZING
A PUBLIC
HEARING

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

Chair and Members:

Subject: Authorizing a Public Hearing to Consider the Proposed
Fiscal Year 2016-2017 Operating and Capital Improvement
Program Budget

We recommend that the Board authorize a public hearing to be held at 2:00 p.m. on Monday, May 23, 2016 to consider the resolution to adopt the proposed Operating and Capital Improvement Program Budget for the fiscal year beginning July 1, 2016 and ending June 30, 2017.

Attached is the draft of the "Notice of Public Hearing" to be published prior to the hearing date.

Respectfully submitted,

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

Attachment"

NOTICE OF PUBLIC HEARING

NOTICE IS HEREBY GIVEN that the BOARD OF WATER SUPPLY, CITY AND COUNTY OF HONOLULU, will hold a PUBLIC HEARING in the Board Room, Public Service Building, 630 South Beretania Street, on MONDAY, MAY 23, 2016, at 2:00 p.m. or soon thereafter, where all interested persons shall be afforded the opportunity of being heard on the adoption of the Proposed Fiscal Year (FY) 2016 - 2017 Operating and Capital Improvement Program Budget of the Board of Water Supply for the fiscal year July 1, 2016 to June 30, 2017.

Information to be discussed at this public hearing is available at Room 319 of the Public Service Building, Board of Water Supply, 630 South Beretania Street. All comments on or suggested changes to the proposed FY 2016 - 2017 Operating and Capital Improvement Program Budget of the Board of Water Supply should be filed in writing before the date of the public hearing or presented in person at the time of the hearing. Persons wishing to speak are requested to register by 1:00 p.m. with Winifred Ching, 748-5176, by providing your name, phone number, and subject matter of testimony. Testimony is limited to three minutes and shall be presented by the registered speaker only. Any questions, please call 748-5176. Any disabled person requiring special assistance who plans to attend the public hearing, may contact Ms. Winifred Ching at 748-5176, no later than May 16, 2016, so that appropriate accommodations can be provided.

BOARD OF WATER SUPPLY
CITY AND COUNTY OF HONOLULU

DISCUSSION: Manager Lau, gave the report. There were no comments or discussion.

MOTION TO APPROVE A PUBLIC HEARING Chair Miyashiro called for a motion to Authorize a Public Hearing to Consider the Proposed FY 2016-2017 Operating and Capital Improvement Program Budget. David Hulihee and Ross Sasamura motioned and seconded respectively, and the motion was unanimously carried.

| AUTHORIZING A PUBLIC HEARING TO CONSIDER THE PROPOSED FY 2016-2017 OPERATING AND CAPITAL IMPROVEMENT PROGRAM BUDGET WAS APPROVED ON APRIL 25, 2016 | | | |
|---|-----|----|---------|
| | AYE | NO | COMMENT |
| DUANE R. MIYASHIRO | X | | |
| ADAM C. WONG | X | | |
| DAVID C. HULIHEE | X | | |
| KAPUA SPROAT | | | ABSENT |
| BRYAN P. ANDAYA | | | ABSENT |
| ROSS S. SASAMURA | X | | |
| FORD N. FUCHIGAMI | | | ABSENT |

ITEM FOR INFORMATION NO. 1

"April 25, 2016

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

An Enterprise Organizational Study was initiated to 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 includes the appropriate organizational structure, span of control, staffing levels, competencies and training programs specifically for BWS.

Matrix Consulting completed the requisite tasks and is working with BWS on some of their specific recommendations. A discussion draft and meeting with the managers should be scheduled by the end of April 2016.

Respectfully submitted,

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

The foregoing was for information only.

DISCUSSION

Robert Morita, Executive Support Office Executive Assistant, gave the report. There were no comments or discussion.

ITEM FOR INFORMATION NO. 2

"April 25, 2016

FINANCIAL
UPDATE

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

Chair and Members:

Subject: Financial Update for the Quarter Ended March 31, 2016

The following Board of Water Supply's financial reports and graphs are attached:

- Budget vs Actual Revenue and Expense Totals
- Statement of Revenues, Expenses and Change in Net Assets
- Current Quarter Statement of Revenues, Expenses and Change in Net Assets
- Balance Sheet
- Budget vs Actual Appropriation Budget – Total BWS Summary
- Graph Representing Operating Expenditures by Category
- Graphs of Total Budgeted Operating Expenditures and Total Budgeted Operating Revenues

Respectfully submitted,

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

Attachments"

The foregoing was for information only.

DISCUSSION:

Joe Cooper, Waterworks Controller, gave the report. Board Member Wong referred to the categories that are under budget and asked what happens to the excess funds. Mr. Cooper replied that they remain with the BWS and are reprogrammed for the following year to help offset the capital and operating expenses. Mr. Wong inquired if the excess funds are applied to capital improvement and if so, is 100 percent applied. Mr. Lau responded that it may be applied to either operational or capital improvement projects. Mr. Lau explained that there is no planned rate increase for at least the next two years, so BWS will have to depend on these carry-over funds for any increases in operating or capital improvement costs. BWS also needs to maintain certain reserves to maintain a strong financial position and to meet different bond covenant requirements. Mr. Wong stated that he assumes the budgeted amount keeps BWS within those covenants.

Mr. Lau stated that if there is still revenue not expended after the next two years, they can program those funds into the next rate increase. Another

consideration for having a reserve is for emergencies or catastrophic events. The monies would help to carry out operations through the recovery process. Mr. Wong asked if next year's budget will show the breakdown of the excess funds. Mr. Cooper replied that the budget does not show a breakdown, but they have informally built up some reserves for these purposes. Mr. Lau stated that the money is never lost and it stays for the sole use of the BWS.

Budget vs. Actual
Revenue and Expense Totals
As of March 31, 2016

| | YTD Actuals | YTD Budget | Favorable/ (Unfavorable) Variance |
|--------------------------------|-------------------|-------------------|--------------------------------------|
| Revenues | 179,589,000 | 164,403,000 | 15,186,000 |
| Operating Expenses | (104,492,000) | (141,511,000) | 37,019,000 |
| Net Revenues (expenditures) | <u>75,097,000</u> | <u>22,892,000</u> | <u>52,205,000</u> |

Board Of Water Supply
Statement of Revenues, Expenses And Change In Net Assets
As of March 31, 2016

| Current Month | % | Last Year | % | Description | Year to Date | % | Last Year to Date | % | % |
|--------------------|---------|----------------|---------|--------------------------------|----------------|---------|-------------------|---------|--------|
| Actual | Revenue | Actual | Revenue | | Actual | Revenue | Actual | Revenue | Change |
| REVENUE | | | | | | | | | |
| 20,004,094.62 | 100.00 | 17,474,142.63 | 100.00 | OPERATING REVENUE | 178,506,959.47 | 100.00 | 158,417,391.17 | 100.00 | 12.68 |
| 20,004,094.62 | 100.00 | 17,474,142.63 | 100.00 | REVENUE | 178,506,959.47 | 100.00 | 158,417,391.17 | 100.00 | 12.68 |
| OPERATING EXPENSES | | | | | | | | | |
| 2,633,616.25- | 13.17 | 2,428,215.68- | 13.90 | LABOR COSTS | 24,156,416.77- | 13.53 | 23,908,930.25- | 15.09 | 1.04 |
| 1,326,278.34- | 6.63 | 1,082,774.84- | 6.20 | SERVICES | 12,301,571.04- | 6.89 | 8,259,322.02- | 5.21 | 48.94 |
| 211,456.92- | 1.06 | 1,062,794.28- | 6.08 | SUPPLIES | 4,306,384.04- | 2.41 | 4,303,491.89- | 2.72 | .07 |
| 6,221.23- | .03 | 13,296.50- | .08 | EDUCATION & TRAINING | 113,907.80- | .06 | 83,790.71- | .05 | 35.94 |
| 2,190,741.93- | 10.95 | 3,936,322.68- | 22.53 | UTILITIES | 14,162,727.20- | 7.93 | 18,891,939.91- | 11.93 | 25.03- |
| 206,100.66- | 1.03 | 145,142.51- | .83 | REPAIR AND MAINTENANCE | 1,655,708.97- | .93 | 1,115,719.53- | .70 | 48.40 |
| 3,302,756.66- | 16.51 | 1,624,909.18- | 9.30 | MISC | 16,325,884.19- | 9.15 | 13,445,328.85- | 8.49 | 21.42 |
| 1,409,394.77- | 7.05 | 3,449,412.79- | 19.74 | RETIREMENT SYSTEM CONTRIBUTIO | 18,312,435.88- | 10.26 | 15,694,551.40- | 9.91 | 16.68 |
| 59,315.71- | .30 | 27,972.32 | .16 | MISC EMPLOYEES' BENEFITS | 208,016.20 | .12 | 265,101.90 | .17 | 21.53- |
| 11,345,882.47- | 56.72 | 13,714,896.14- | 78.49 | OPERATING EXPENSES | 91,127,019.69- | 51.05 | 85,437,972.66- | 53.93 | 6.66 |
| 792,073.16- | 3.96 | 1,440,314.52- | 8.24 | NON OPERATING REVENUE AND EXPE | 9,153,341.07- | 5.13 | 4,004,408.49- | 2.53 | 128.58 |
| 419,254.65 | 2.10 | 1,315,953.69 | 7.53 | CONTRIBUTION IN AID | 8,670,019.49 | 4.86 | 13,378,067.43 | 8.44 | 35.19- |
| 3,752,369.62- | 18.76 | 5,567,655.20- | 31.86 | OTHER EXPENSES | 33,554,316.04- | 18.80 | 37,403,681.85- | 23.61 | 10.29- |
| 4,533,024.02 | 22.66 | 1,932,769.54- | 11.06 | Change In Net Assets | 53,342,302.16 | 29.88 | 44,949,395.60 | 28.37 | 18.67 |

Board Of Water Supply
Statement of Revenues, Expenses And Change In Net Assets
As of March 31, 2016

| Current Quarter | % | Last Year | % | Description | Year to Date | % | Last Year to | % Revenue | % Change |
|--------------------|---------|----------------|---------|--------------------------------|--------------|---------|--------------|-----------|----------|
| Actual | Revenue | Quarter Actual | Revenue | | Actual | Revenue | Date Actual | | |
| REVENUE | | | | | | | | | |
| 57,203,001 | 100.00 | 50,201,657 | 100.00 | OPERATING REVENUE | 178,506,959 | 100.00 | 158,417,391 | 100.00 | 12.68 |
| 57,203,001 | 100.00 | 50,201,657 | 100.00 | REVENUE | 178,506,959 | 100.00 | 158,417,391 | 100.00 | 12.68 |
| OPERATING EXPENSES | | | | | | | | | |
| -8,216,642 | 14.36 | -7,872,066 | 15.68 | LABOR COSTS | -24,156,417 | 13.53 | -23,908,930 | 15.09 | 1.04 |
| -4,167,811 | 7.29 | -3,490,387 | 6.95 | SERVICES | -12,301,571 | 6.89 | -8,259,322 | 5.21 | 48.94 |
| -2,526,187 | 4.42 | -1,581,550 | 3.15 | SUPPLIES | -4,306,384 | 2.41 | -4,303,492 | 2.72 | 0.07 |
| -31,564 | 0.06 | -37,920 | 0.08 | EDUCATION & TRAINING | -113,908 | 0.06 | -83,791 | 0.05 | 35.94 |
| -5,033,593 | 8.80 | -7,566,587 | 15.07 | UTILITIES | -14,162,727 | 7.93 | -18,891,940 | 11.93 | -25.03 |
| -680,225 | 1.19 | -340,807 | 0.68 | REPAIR AND MAINTENANCE | -1,655,709 | 0.93 | -1,115,720 | 0.70 | 48.40 |
| -6,352,382 | 11.10 | -5,369,393 | 10.70 | MISC | -16,325,884 | 9.15 | -13,445,329 | 8.49 | 21.42 |
| -7,442,301 | 13.01 | -5,408,644 | 10.77 | RETIREMENT SYSTEM CONTRIBUTIO | -18,312,436 | 10.26 | -15,694,551 | 9.91 | 16.68 |
| -9,379 | 0.02 | 47,422 | -0.09 | MISC EMPLOYEES' BENEFITS | 208,016 | -0.12 | 265,102 | -0.17 | -21.53 |
| -34,460,084 | 60.24 | -31,619,931 | 62.99 | OPERATING EXPENSES | -91,127,020 | 51.05 | -85,437,973 | 53.93 | 6.66 |
| -1,251,292 | 2.19 | -1,387,137 | 2.76 | NON OPERATING REVENUE AND EXPE | -9,153,341 | 5.13 | -4,004,408 | 2.53 | 128.58 |
| 2,778,564 | -4.86 | 6,173,946 | -12.30 | CONTRIBUTION IN AID | 8,670,019 | -4.86 | 13,378,067 | -8.44 | -35.19 |
| -11,496,636 | 20.10 | -15,512,310 | 30.90 | OTHER EXPENSES | -33,554,316 | 18.80 | -37,403,682 | 23.61 | -10.29 |
| 12,773,553 | 22.33 | 7,856,225 | -15.65 | Change In Net Assets | 53,342,302 | 29.88 | 44,949,396 | 28.37 | 18.67 |

Board Of Water Supply
Balance Sheet
As of March 31, 2016

| Description | Amounts | | | Change | |
|----------------------------------|-------------------------|-------------------------|-------------------------|----------------------|-----------------------|
| | Current | Last Month End | Last Year End | This Month | This Year |
| ASSETS | | | | | |
| CURRENT ASSETS | 94,931,789.90 | 95,381,989.27 | 59,233,751.43 | -450,199.37 | 35,698,038.47 |
| RESTRICTED ASSETS | 8,716,841.83 | 21,028,284.58 | 19,889,822.28 | -12,311,442.75 | -11,172,980.45 |
| INVESTMENTS | 283,290,766.40 | 266,555,144.56 | 264,221,987.12 | 16,735,621.84 | 19,068,779.28 |
| OTHER ASSETS | 6,331,378.68 | 692,976.47 | 16,040,871.43 | 5,638,402.21 | -9,709,492.75 |
| PROPERTY / PLANT | 1,116,966,252.02 | 1,114,542,197.45 | 1,112,393,345.24 | 2,424,054.57 | 4,572,906.78 |
| TOTAL ASSETS | <u>1,510,237,028.83</u> | <u>1,498,200,592.33</u> | <u>1,471,779,777.50</u> | <u>12,036,436.50</u> | <u>38,457,251.33</u> |
| LIABILITIES | | | | | |
| CURRENT LIABILITIES | 18,322,935.84 | 16,493,409.81 | 30,025,924.23 | 1,829,526.03 | -11,702,988.39 |
| OTHER LIABILITIES | 36,140,891.82 | 36,295,545.46 | 37,574,134.95 | -154,653.64 | -1,433,243.13 |
| BONDS PAYABLE, NONCURRENT | 290,125,318.39 | 290,526,778.30 | 291,874,137.70 | -401,459.91 | -1,748,819.31 |
| LIABILITIES | <u>344,589,146.05</u> | <u>343,315,733.57</u> | <u>359,474,196.88</u> | <u>1,273,412.48</u> | <u>-14,885,050.83</u> |
| NET ASSETS | | | | | |
| RETAINED EARNINGS | 327,225,536.56 | 355,975,403.39 | 325,078,674.96 | -28,749,866.83 | 2,146,861.60 |
| FUND BALANCE | 594,633,831.66 | 594,633,831.66 | 594,633,831.66 | 0.00 | 0.00 |
| RESERVE FOR ENCUMBRANCES | 190,446,212.40 | 161,696,345.57 | 192,593,074.00 | 28,749,866.83 | -2,146,861.60 |
| CURRENT YEAR CHANGES TO FU | 53,342,302.16 | 48,809,278.14 | 0.00 | 4,533,024.02 | 53,342,302.16 |
| NET ASSETS | <u>1,165,647,882.78</u> | <u>1,161,114,858.76</u> | <u>1,112,305,580.62</u> | <u>4,533,024.02</u> | <u>53,342,302.16</u> |
| TOTAL LIABILITIES AND NET ASSETS | <u>1,510,237,028.83</u> | <u>1,504,430,592.33</u> | <u>1,471,779,777.50</u> | <u>5,806,436.50</u> | <u>38,457,251.33</u> |

Budget vs Actual Appropriation Budget - Total BWS Summary

Page -

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OPER UNIT ALL

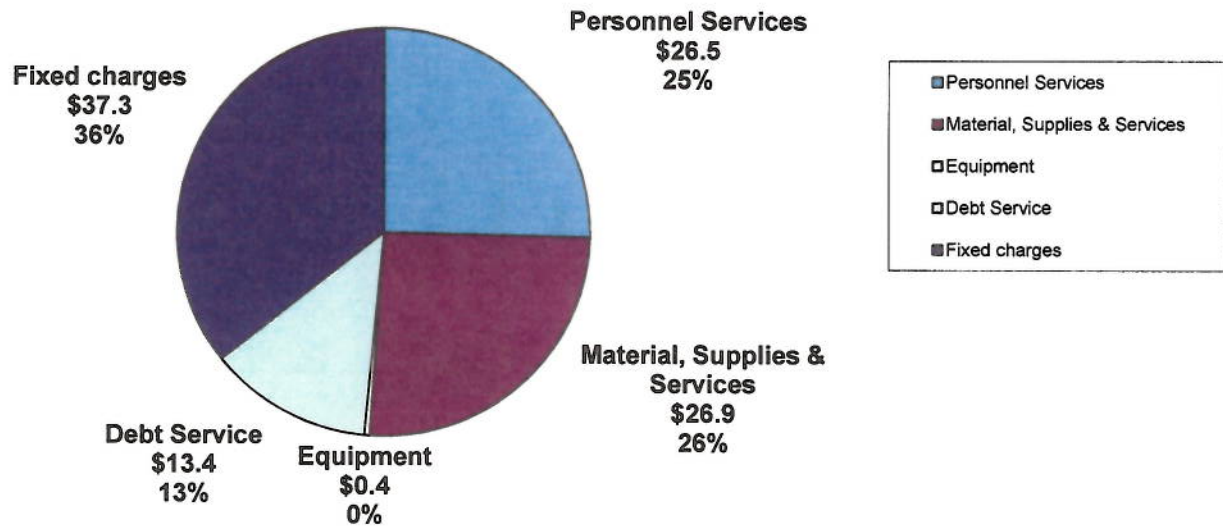
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BUSINESS UNIT ALL

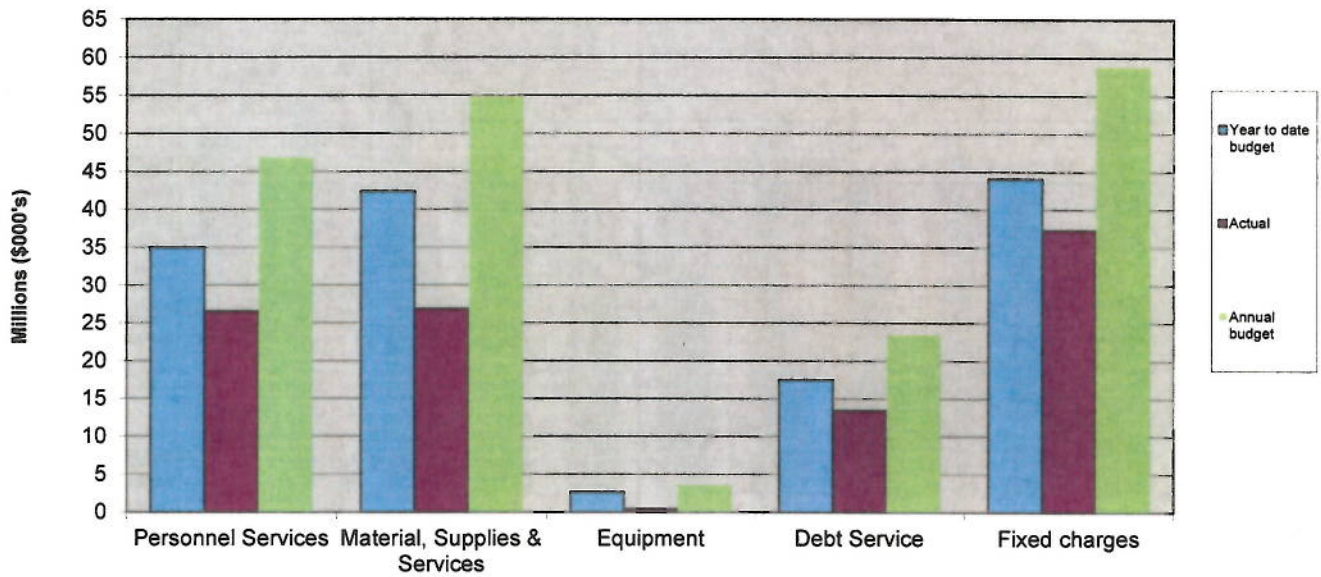
AS OF 3/31/2016

| YTD-TO-DATE | | | | FOR THE FISCAL YEAR | | | | | |
|------------------------|---------------|------------------|--------|--------------------------------|---------------------|----------------|------------------|------------------|--------|
| YTD Actuals | YTD Budget | Avail/ (Over) | % | Object Description | Revenues/ Expend | Open Encumb | Annual Budget | Avail/ (Over) | % |
| 179,589 | 164,403 | (15,186) | 9.24- | REVENUE | 179,589 | | 219,203 | 39,614 | 18.07 |
| OPERATING EXPENSES | | | | | | | | | |
| 26,537 | 34,963 | 8,426 | 24.10 | Personnel Services | 26,537 | | 46,790 | 20,253 | 43.28 |
| MATERIALS AND SUPPLIES | | | | | | | | | |
| 8,927 | 18,520 | 9,593 | 51.80 | Services | 6,962 | 1,965 | 23,702 | 14,775 | 62.34 |
| 8,091 | 11,517 | 3,426 | 29.75 | Supplies | 6,047 | 2,044 | 15,439 | 7,348 | 47.59 |
| 193 | 464 | 271 | 58.41 | Education & Training | 132 | 61 | 651 | 458 | 70.35 |
| | 9 | 9 | 100.00 | Utilities | | | 13 | 13 | 100.00 |
| 1,225 | 2,275 | 1,050 | 46.15 | Repairs & Maint | 972 | 253 | 2,930 | 1,705 | 58.19 |
| 8,433 | 9,555 | 1,122 | 11.74 | Misc | 7,210 | 1,223 | 11,960 | 3,527 | 29.49 |
| 408 | 2,657 | 2,249 | 84.64 | Equipment | 234 | 174 | 3,447 | 3,039 | 88.16 |
| 13,419 | 17,483 | 4,064 | 23.25 | Debt Service | 13,419 | | 23,311 | 9,892 | 42.43 |
| FIXED CHARGES: | | | | | | | | | |
| 15,420 | 23,859 | 8,439 | 35.37 | Utilities | 15,420 | | 31,813 | 16,393 | 51.53 |
| 2,475 | 2,475 | | | Care Fees | 2,475 | | 3,300 | 825 | 25.00 |
| 6,231 | 6,345 | 114 | 1.80 | Retirement System Contribution | 6,231 | | 8,460 | 2,229 | 26.35 |
| 13,133 | 11,389 | (1,744) | 15.31- | Misc Employees' Benefits | 13,133 | | 15,167 | 2,034 | 13.41 |
| 104,492 | 141,511 | 37,019 | 26.16 | TOTAL OPERATING EXPENDITURES | 98,772 | 5,720 | 186,983 | 82,491 | 44.12 |
| 75,097 | 22,892 | (52,205) | | NET REVENUES (EXPENDITURES) | 80,817 | (5,720) | 32,220 | (42,877) | |

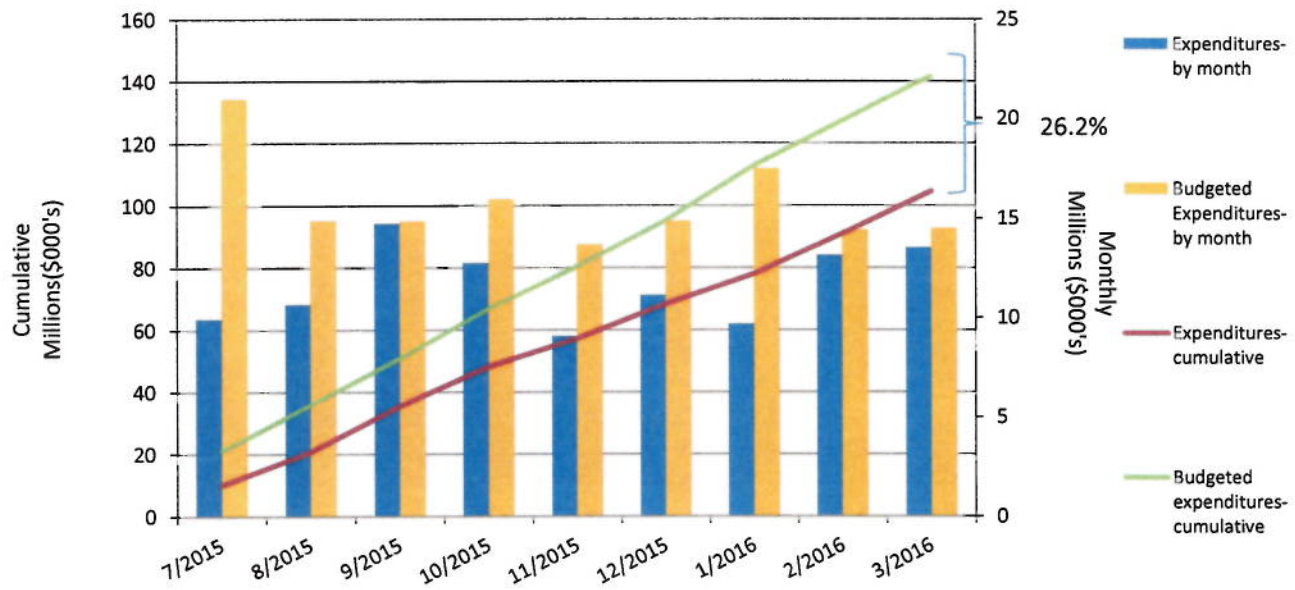
Total Operating Expenditures - \$104.5
As of March 31, 2016
(millions of dollars)



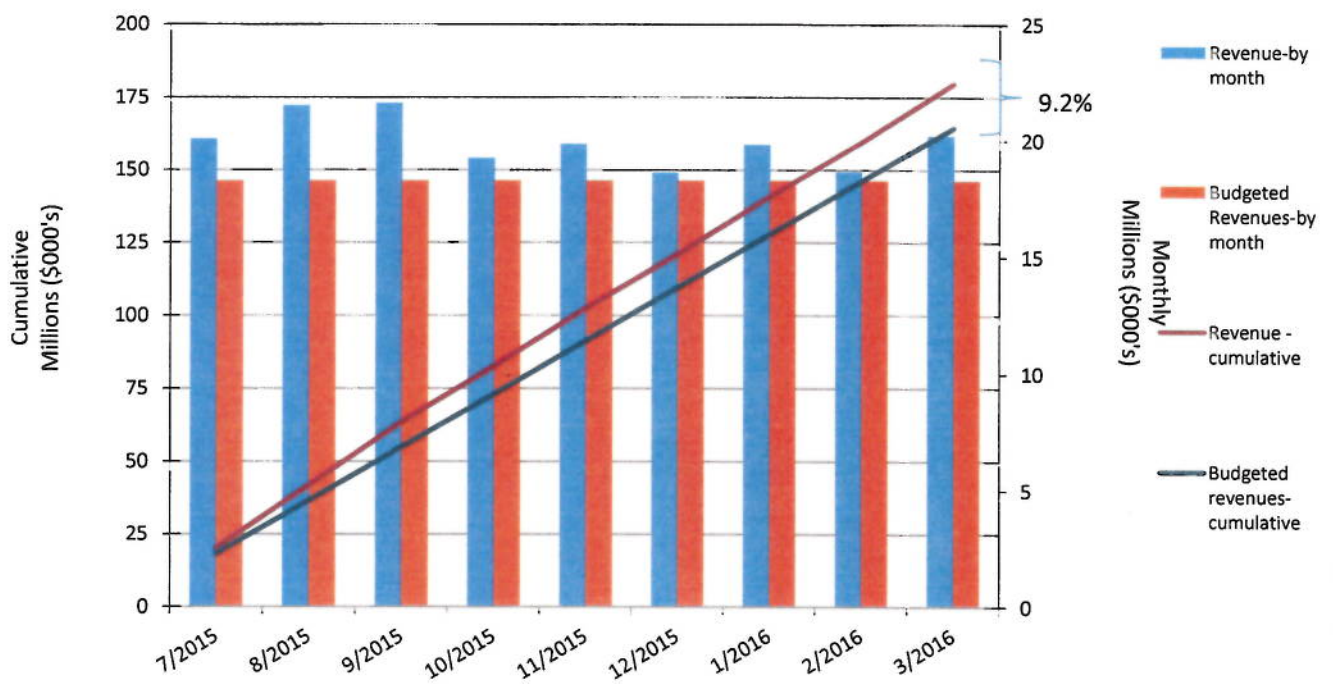
Operating Expenditures by Category (Budget vs. Actual Expenditures and Encumbrances)
as of March 31, 2016 (millions of dollars)



BUDGETED OPERATING EXPENDITURES FY 2016



BUDGETED OPERATING REVENUES FY 2016



WATER FOR LIFE

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



Board of Water Supply
City and County of Honolulu

Financial Performance

July 2015 – March 2016





Budget to Actual July 2015 – March 2016

- Actual Revenue \$180 million vs.
Budgeted Revenue \$164 million
- Operating costs are \$104 million vs.
Budgeted costs of \$142 million
- Actual Net Revenue \$75 million vs.
Budgeted Net Revenue \$23 million





Cost Drivers

Year to Date March 2016

| | Actual (millions) | Budget (millions) |
|---------------------|----------------------|----------------------|
| • Personnel | \$26.5 | \$35.0 |
| • Services/Supplies | \$17.2 | \$30.5 |
| • Repairs & Misc. | \$ 9.7 | \$11.8 |
| • Debt Service | \$13.4 | \$17.5 |
| • Utilities | \$15.4 | \$23.9 |

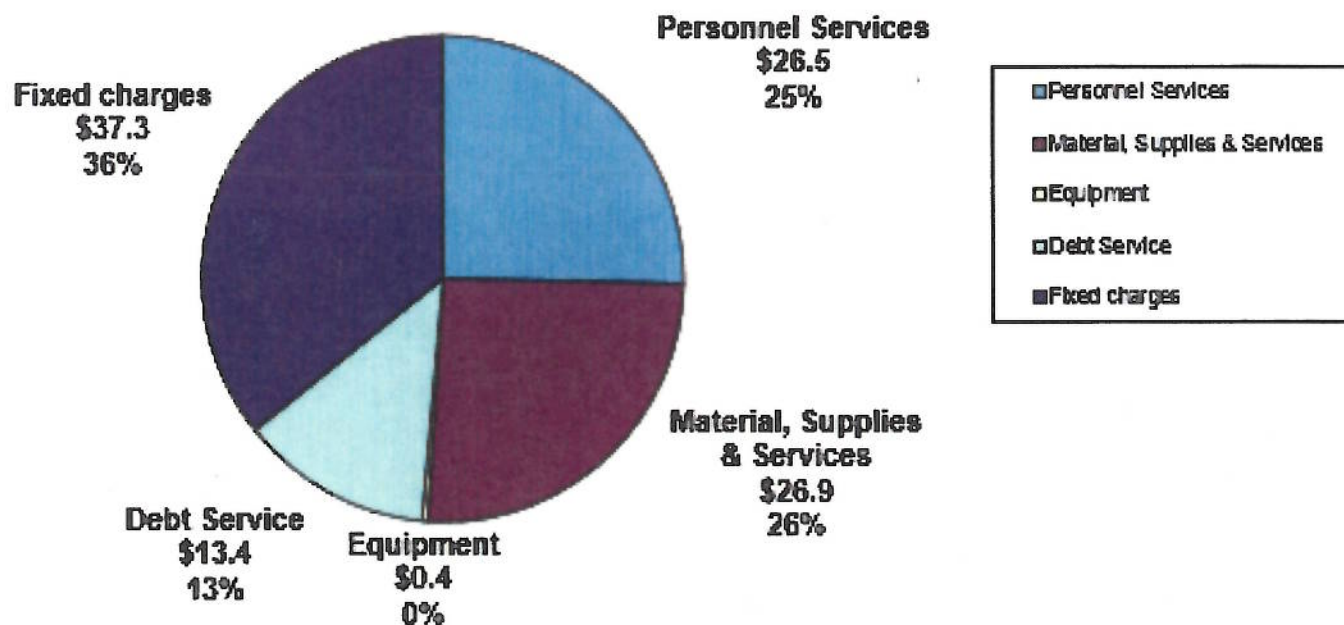
WATER FOR LIFE

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



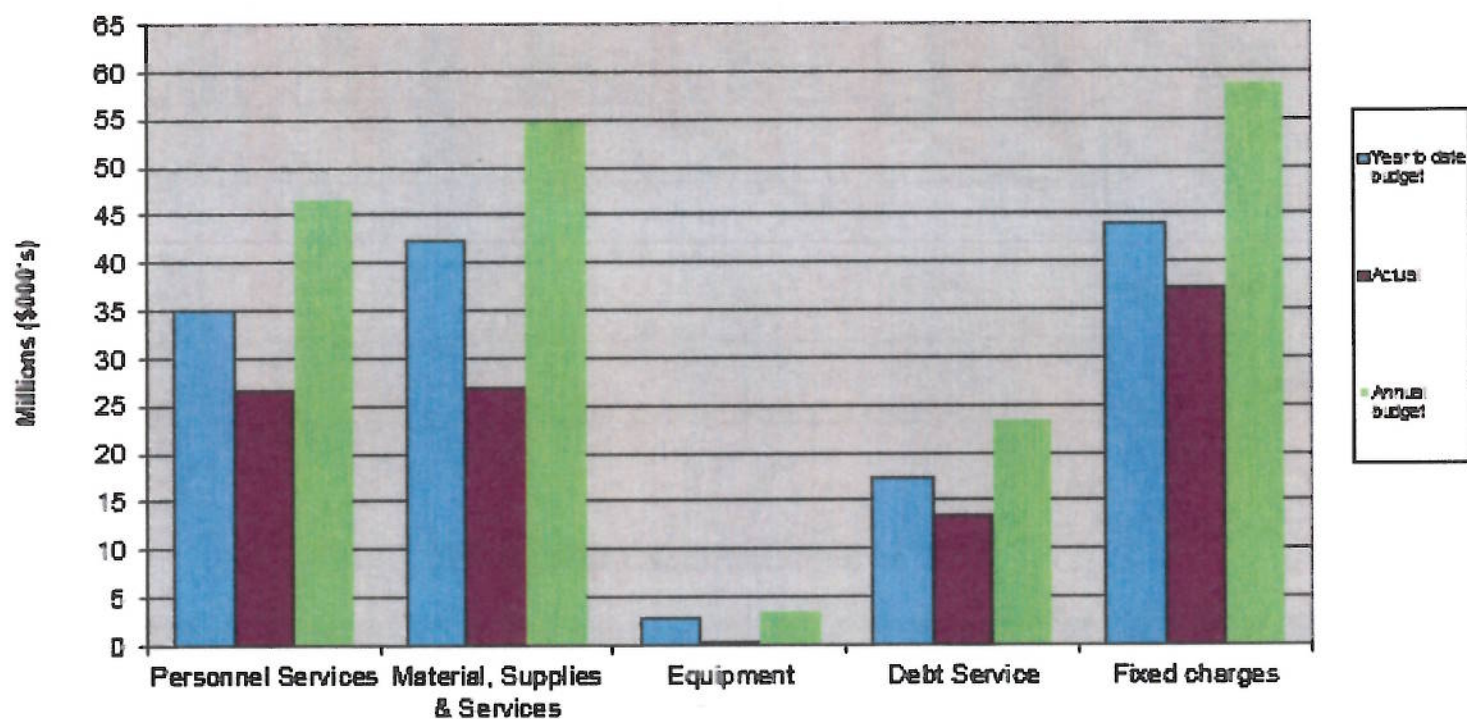
Board of Water Supply
City and County of Honolulu

Total Operating Expenditures - \$104.5 As of March 31, 2016 (millions of dollars)





**Operating Expenditures by Category (Budget vs. Actual Expenditures and Encumbrances)
as of March 31, 2016 (millions of dollars)**



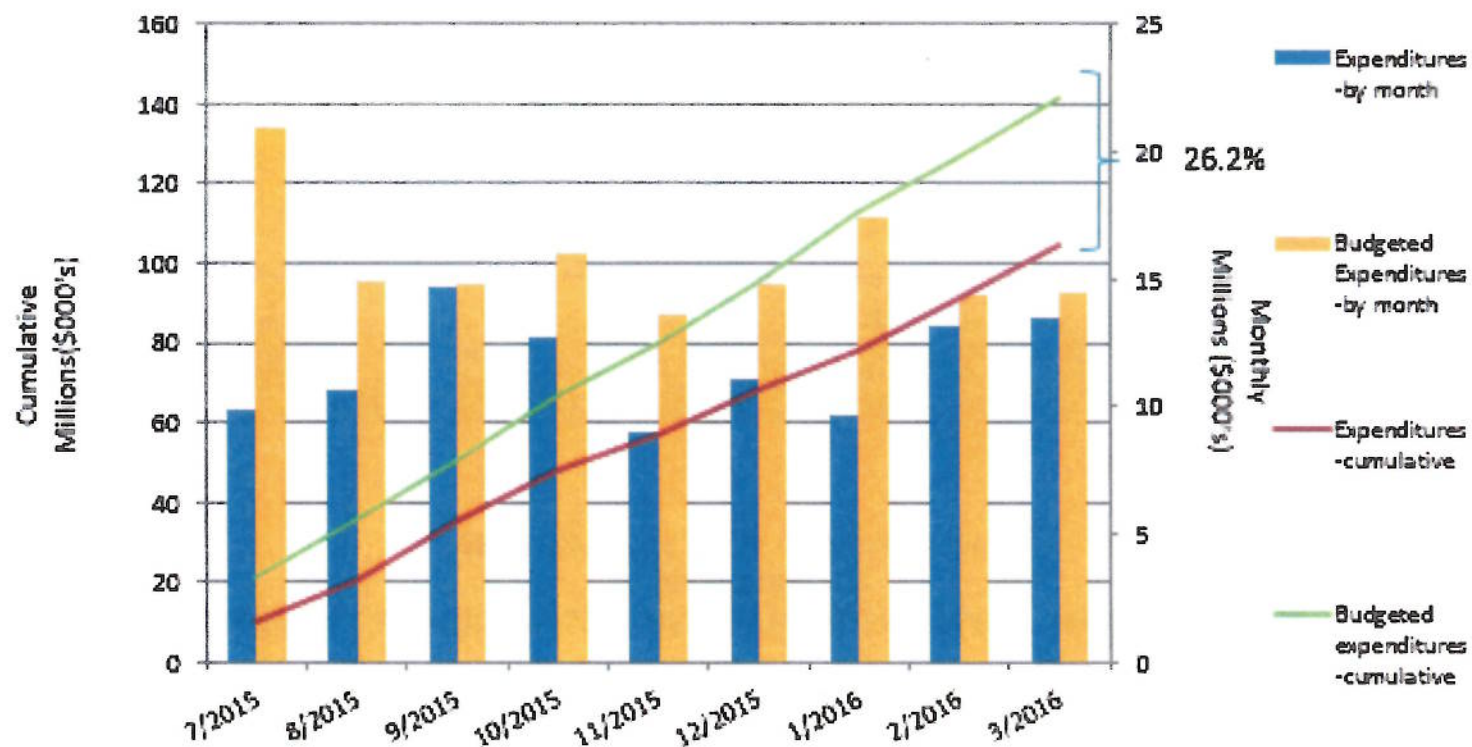
WATER FOR LIFE

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Board of Water Supply
City and County of Honolulu

BUDGETED OPERATING EXPENDITURES FY 2016



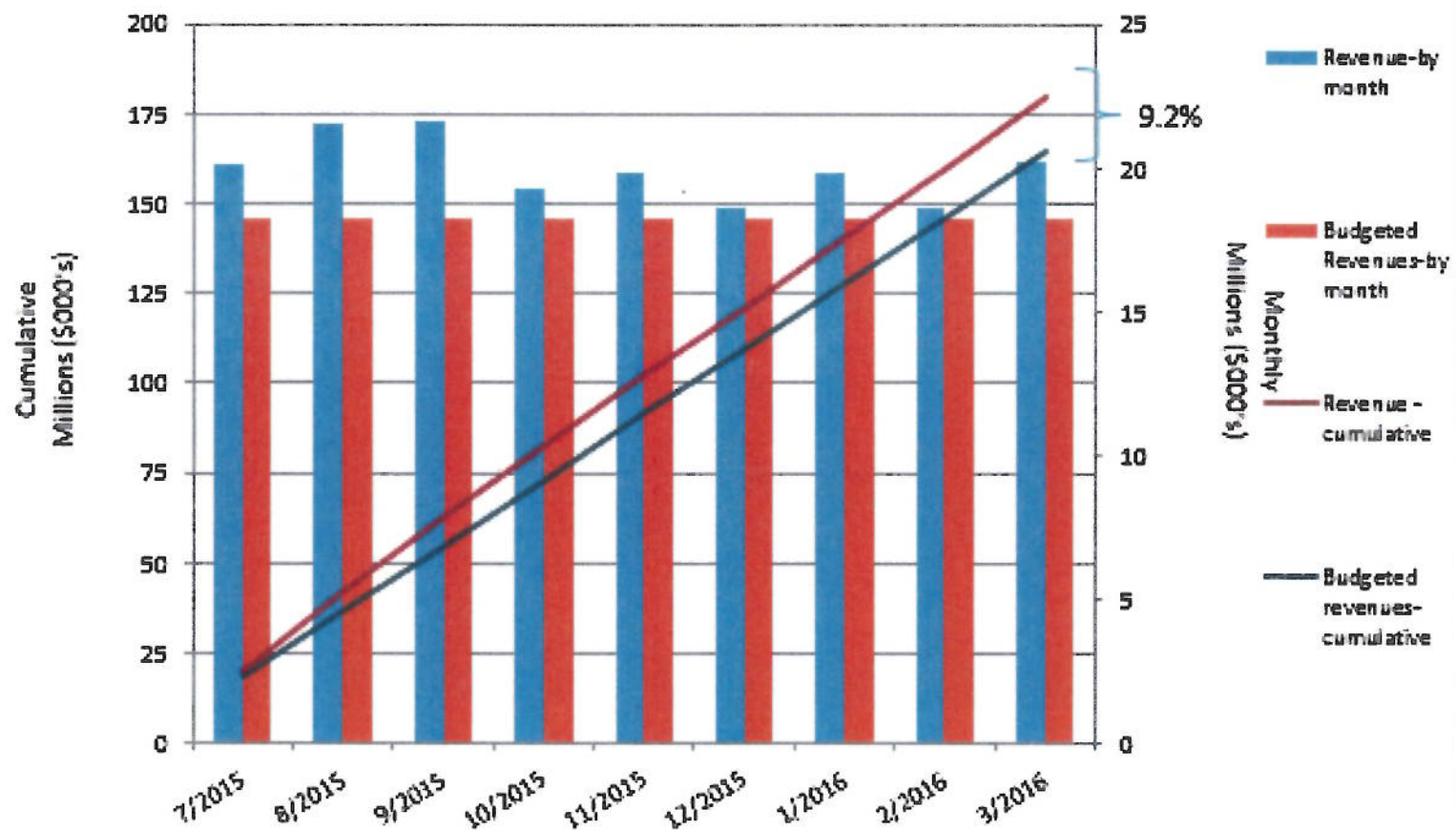
WATER FOR LIFE

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



Board of Water Supply
City and County of Honolulu

BUDGETED OPERATING REVENUES FY 2016



WATER FOR LIFE

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



Board of Water Supply
City and County of Honolulu

Questions
or
Comments



The meeting was taken out of order.

"April 25, 2016

ADOPTION OF
RESOLUTION
NO. 863, 2016

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

Chair and Members:

Subject: Adoption of Resolution No. 863, 2016, Acceptance of
Gifts to the Board of Water Supply from Various
Donors in Support of the 2016 Water Conservation
Week Program

We recommend the adoption of the attached Resolution No. 863, 2016, that accepts the proposed gifts to the Board of Water Supply (BWS), City and County of Honolulu, in support of the 2016 Water Conservation Week (WCW) Program. The donors' total value of these gifts is \$11,688.00:

| <u>Donor Name</u> | <u>Amount</u> |
|---|-----------------------|
| Sodexo (Refreshments for awards ceremony reception) | \$ 2,188.00 (in-kind) |
| Friends of Halawa Xeriscape Garden | \$ 2,000.00 |
| Times Supermarkets | \$ 2,000.00 |
| Hard Rock Café Honolulu (Cookies for awards ceremony reception, and gift cards for award recipients' and teachers' gift bags) | \$ 2,000.00 (in-kind) |
| Alexander and Baldwin, Incorporated | \$ 1,000.00 |
| Hawaii Energy | \$ 1,000.00 |
| Aloha Pacific Federal Credit Union | \$ 500.00 |
| Board of Water Supply Federal Credit Union | \$ 500.00 |
| Pasha Hawaii | \$ 500.00 |
| TOTAL | \$11,688.00 |

The WCW program is a successful, long-running public education program that promotes the value of water and the importance of water efficiency, as a component of sound water management, to Oahu's students in grades Kindergarten through 12. Studies have shown that when youth embrace water conservation practices at an early age, they are more likely to encourage their parents to be water efficient and later raise their own children to seek water efficiencies. The BWS hopes to perpetuate this lifestyle through our program.

Donations from these sponsors will help the BWS offset program costs that include the printing of 20,000 copies of the 2017 Water Conservation Calendars that feature the 2016 winning entries, as well as an awards ceremony for winners and honorable mentions of the 2016 WCW Poster

and Poetry contests. The calendars are distributed to all Oahu schools, elected officials, and the general public.

We deeply appreciate the continued support of this Board for this very valuable and worthwhile public education program. All participants in our WCW program are encouraged to always embrace their roles as responsible stewards of our precious water resource.

Respectfully submitted,

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

Attachment"

DISCUSSION: Mr. Miyashiro explained that this item was taken up at the March Board meeting, however, there was a lack of quorum. Tracy Burgo, Acting Information Officer, gave the report. There were no comments or discussion.

MOTION TO ADOPT RESOLUTION NO. 863, 2016 Ross Sasamura motioned to adopt Resolution No. 863, 2016, Acceptance of Gifts to the Board of Water Supply from Various Donors in Support of the 2016 Water Conservation Week Program. The motion was seconded by Bryan Andaya and unanimously carried.

| RESOLUTION NO. 863, 2016, ACCEPTANCE OF GIFTS TO THE BOARD OF WATER SUPPLY FROM VARIOUS DONORS IN SUPPORT OF THE 2016 WATER CONSERVATION WEEK PROGRAM, ADOPTED ON APRIL 25, 2016 | | | |
|--|-----|----|---------|
| | AYE | NO | COMMENT |
| DUANE R. MIYASHIRO | X | | |
| ADAM C. WONG | X | | |
| DAVID C. HULIHEE | | | RECUSE |
| KAPUA SPROAT | | | ABSENT |
| BRYAN P. ANDAYA | X | | |
| ROSS S. SASAMURA | X | | |
| FORD N. FUCHIGAMI | | | ABSENT |

DISCUSSION: Mr. Lau stated that Mr. Miyashiro and Mr. Sasamura will be attending the Water Conservation Week awards ceremony on Wednesday, April 27, from 3:00 – 4:00 p.m., at the Mission Memorial Auditorium, and he extended another invitation to the rest of the Members. Mr. Miyashiro confirmed with Mr. Hulihee that he is recusing himself on voting on this item due to a possible conflict of interest. Mr. Hulihee confirmed.

BOARD OF WATER SUPPLY
CITY AND COUNTY OF HONOLULU

RESOLUTION NO. 863, 2016

ACCEPTANCE OF GIFTS TO THE BOARD OF WATER SUPPLY
FROM VARIOUS DONORS IN SUPPORT OF THE
2016 WATER CONSERVATION WEEK PROGRAM

WHEREAS, the Board of Water Supply's (BWS) Water Conservation Week program is an annual activity that uses a poster and poetry contest to educate Oahu's youth about the importance of using water efficiently and features the winning and honorable mention entries in an annual Water Conservation Calendar; and

WHEREAS, the BWS may solicit gifts to the Department as long as it does not provide special consideration, treatment, advantage, privilege, or exemption for or coerces a potential donor; and

WHEREAS, the BWS will solicit for gifts on its agency website, which is available for access by any interested person or business; and

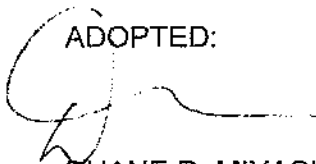
WHEREAS, Sodexo, Friends of Halawa Xeriscape Garden, Times Supermarkets, Hard Rock Café Honolulu, Alexander and Baldwin, Incorporated, Hawaii Energy, Aloha Pacific Federal Credit Union, Board of Water Supply Federal Credit Union, and Pasha Hawaii are offering monetary and other donations valued at a total of \$11,688.00 in support of the 2016 Water Conservation Week program; and

WHEREAS, a gift to the BWS benefits the Department because it assists endeavors such as the BWS's Water Conservation Week public education program and reduces the need for ratepayer funds to support the program's key components; and

WHEREAS, the gifts will be used to offset reasonable and necessary costs of the printing and delivery of 20,000 Water Conservation Calendars featuring the contests' winning entries, as well as an awards ceremony to reveal and recognize the student winners and honorable mentions; now, therefore,

BE IT RESOLVED that the Board of Water Supply hereby accepts the various gifts valued at \$11,688.00 and directs the Manager and Chief Engineer, or his delegate, to accept and thank the various donors for these gifts.

ADOPTED:



DUANE R. MIYASHIRO
Chair

Honolulu, Hawaii
April 25, 2016

The meeting was taken out of order.

ITEM FOR INFORMATION NO. 3

"April 25, 2016

WATER MASTER
PLAN UPDATE Chair and Members
Board of Water Supply
City and County of Honolulu
Honolulu, Hawaii 96843

Chair and Members:

Subject: Board of Water Supply Water Master Plan Quarterly Update

Barry Usagawa, Program Administrator of our Water Resources Division,
will present an update of the Board of Water Supply Water Master Plan.

Respectfully submitted,

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

Attachments"

The foregoing was for information only.

DISCUSSION: Mr. Lau called on Mr. Barry Usagawa, Water Resources Division Program Administrator, to give the report. Mr. Lau expressed how impressed he is by the hard work and efforts of Mr. Usagawa and the rest of the BWS staff in this very important project. Mr. Usagawa thanked Mr. Lau and began his report by describing what the master plan is, reviewing the master plan's schedule and talked about the Stakeholder Advisory Group's last meeting and upcoming meeting. Mr. Usagawa thanked Chair Miyashiro for attending the last meeting to address and thank the Stakeholder Advisory Group. Board Member Andaya asked what time the next meeting on May 17 begins. Mr. Lau replied that it usually begins at 4:00 and stated that all Board Members will be sent an invitation.

Mr. Usagawa continued with his presentation. He talked about the need to operate within sustainable yields, moving water to areas that are in more demand but without waste and doing no harm, developing new groundwater sources for growth and reliability, planning for sufficient water for agricultural uses, diversifying supply to address uncertainty, and monitoring trends and making adjustments as necessary.

Mr. Usagawa discussed how the 2040 high demand scenario calls for a max day demand of 27 million gallons of water per day from the Waipahu area for Metro Low and an additional 60 million gallons of storage. Mr. Usagawa showed an illustration of the Bella Vista and Punchbowl Reservoirs and stated that for example, to meet the additional 60 million gallons of storage, 16 additional reservoirs like these would be required but

need to be built at the same elevation as the existing reservoirs. The challenge is that the area is full of condominiums and there is not enough land to build the reservoirs at that same elevation. Mr. Usagawa explained different scenarios and proposals that BWS has come up with and Mr. Miyashiro asked if these scenarios are in addition to the infrastructure or if they are alternatives. Mr. Usagawa replied that they are alternatives, and adaptive time management allows BWS to make these adjustments by monitoring trends in population, climate change, maximum day demands, groundwater quality, and other uncertainties.

Mr. Miyashiro asked for confirmation that additional reservoirs would need to be built at the same elevation level as the existing ones. Mr. Lau confirmed that and added that the reservoirs at the 180 foot level are the lowest in the metro system.

Mr. Miyashiro thanked BWS for all the hard work that went into providing this incredible amount of information. Mr. Lau stated that it's a team effort, led by Mr. Usagawa, of the divisions' Program Administrators and BWS's consultants.

WATER FOR LIFE

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



Board of Water Supply
City and County of Honolulu

Water Master Plan

Board Quarterly Update No. 10



April 25, 2016



Previous Water Master Plan Updates

- Water Master Plan Components
- Main Break Causal Factors
- Pipeline Condition Assessments
- Pilot Pipeline Condition Assessment Tools
- 3-Year Public Engagement Strategy
- Leak Detection & Special Design Projects
- Echologics Leak Finder Survey:
- Stakeholder Advisory Group & Reservoir Condition Assessments
- Smart Ball Ahuimanu W16" Pipeline Assessment Findings
- System Capacity Evaluation Today's Topic



BWS Water Master Plan

- The Water Master Plan is a comprehensive program that, looking ahead over the next 30 years, evaluates the entire water system, identifies necessary improvements, and balances needs and costs for our customers.
 - A best practice of water utilities seeking to ensure stewardship of water supplies and infrastructure.
 - Provides vital information for policy makers to make decisions about how to balance water service adequacy & dependability with the cost of infrastructure improvements and rate affordability to our customers.

Water Service
Adequacy & Dependability

Infrastructure Costs
Rate Affordability



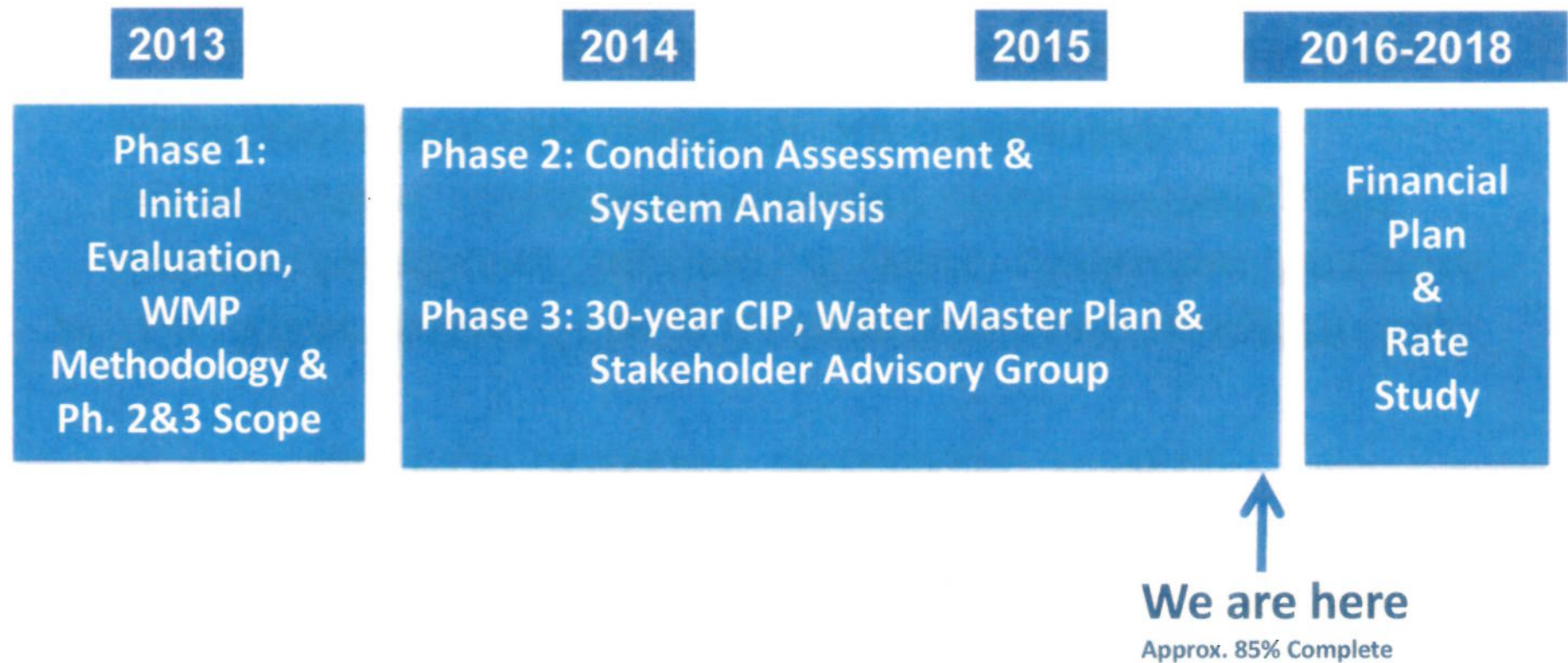
WATER FOR LIFE

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



Board of Water Supply
City and County of Honolulu

Water Master Plan Schedule



Water Master Plan Table of Contents (Draft)

| Chapter | Description |
|---------|--|
| | Executive Summary |
| 1 | Water Master Plan Approach and Methodology |
| 2 | Description of BWS Water System |
| 3 | Historical and Future Water Demands |
| 4 | Current and Future Water Supply Sources |
| 5 | Water Quality, Regulations and Treatment |
| 6 | Water System Standards |
| 7 | System Capacity Evaluation |
| 8 | Facility Condition Assessment |
| 9 | Water Supply Sustainability |
| 10 | Stakeholder Advisory Group Recommendations |
| 11 | Findings |
| 12 | Implementation |
| | Appendices |

WATER FOR LIFE

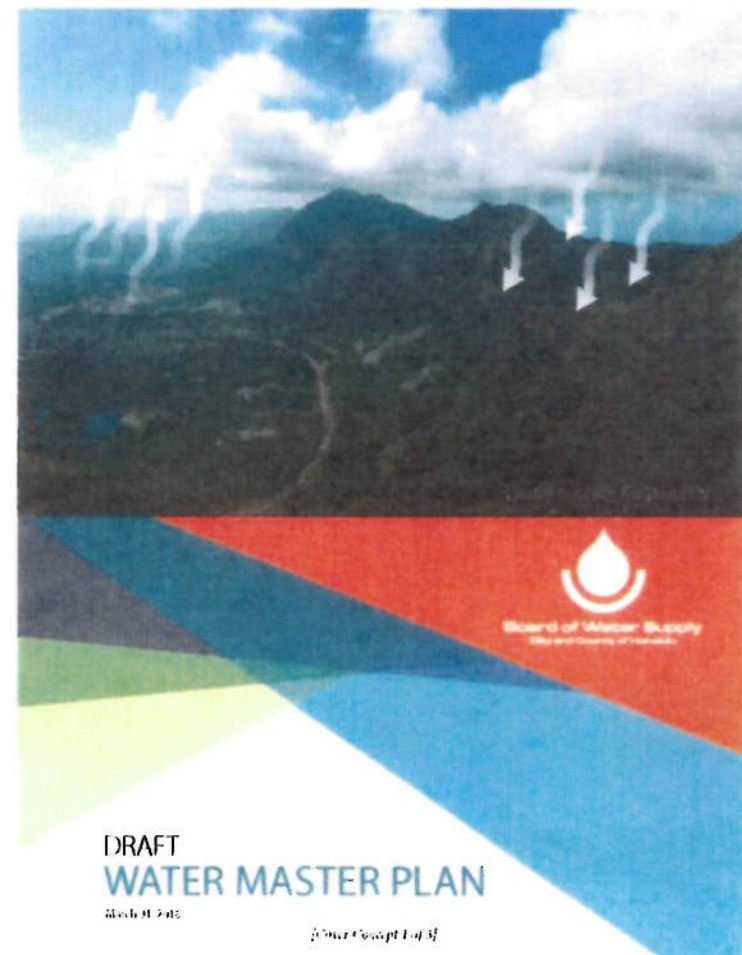
Safe, dependable, and affordable water now and into the future



Board of Water Supply
City and County of Honolulu

Water Master Plan Schedule

- Draft Water Master Plan is under BWS review
- Draft 30-Year CIP will be submitted to BWS in July
- Public review draft and SAG outreach is planned
- Board Adoption Target is September 2016





Stakeholder Advisory Group Active and Engaged

Meeting 6: March 16, 2016

- BWS Updates on Charter Commission
- Discussion of WMP Objectives
- Water System Capacity Evaluation
- Update on Freshwater Initiative Plan

Next Meeting 7: May 17, 2016 at BWS

- Tour BWS control center, pump station and labs
- Complete WMP Objectives
- Pipeline Condition Assessment

WATER FOR LIFE

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



Board of Water Supply
City and County of Honolulu

WATER SYSTEM ANALYSIS

BWS Water Master Plan

Stakeholder Advisory Group Meeting No. 6



BWS Supply Planning Principles

Operate within sustainable yields.

Move water from where it is to where it's needed, take only what we need, without causing harm, and don't waste it.

Develop new groundwater sources for growth and reliability.

Plan for sufficient water for agricultural uses.

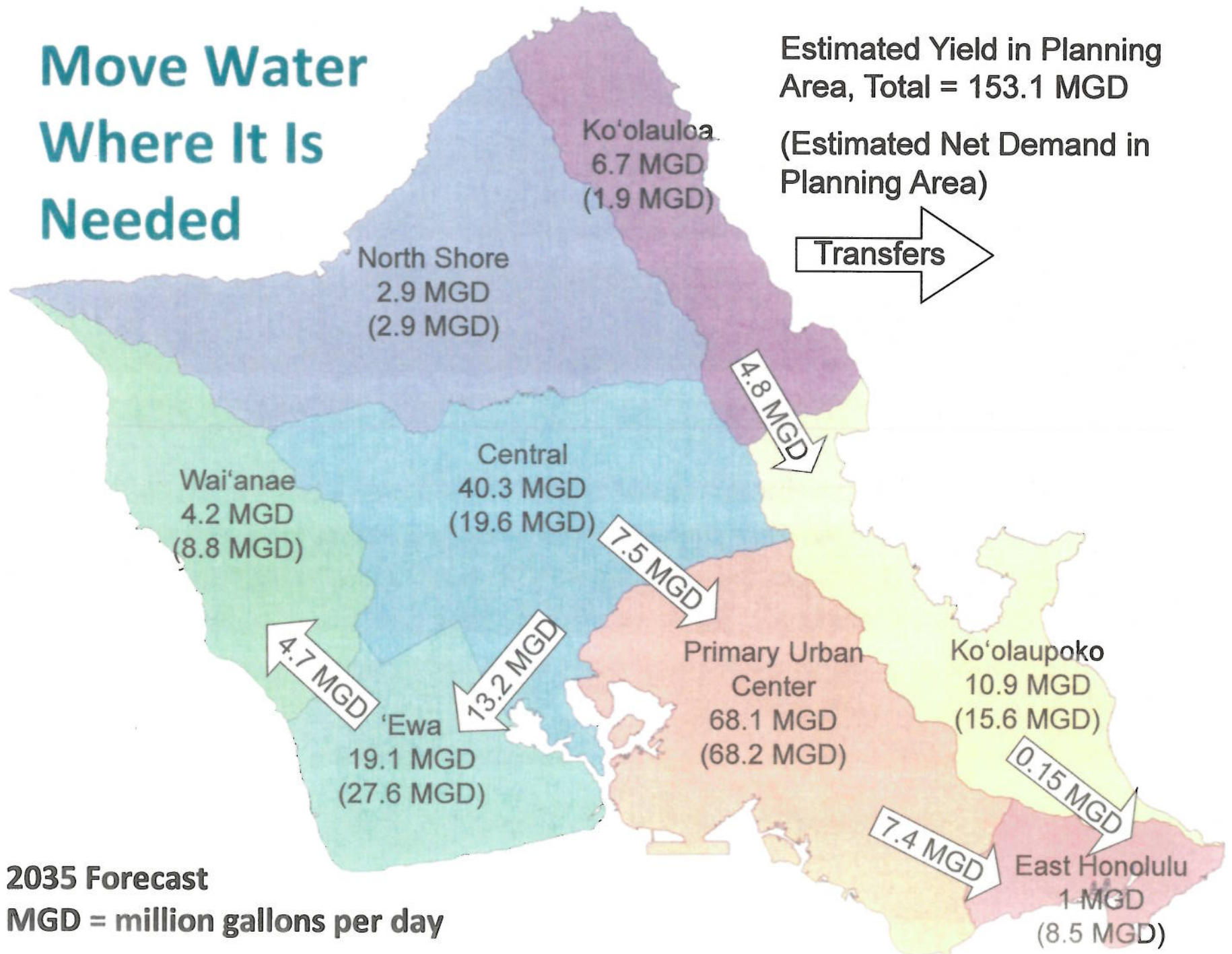
Diversify supply to address uncertainty.

Monitor trends and adjust as necessary.

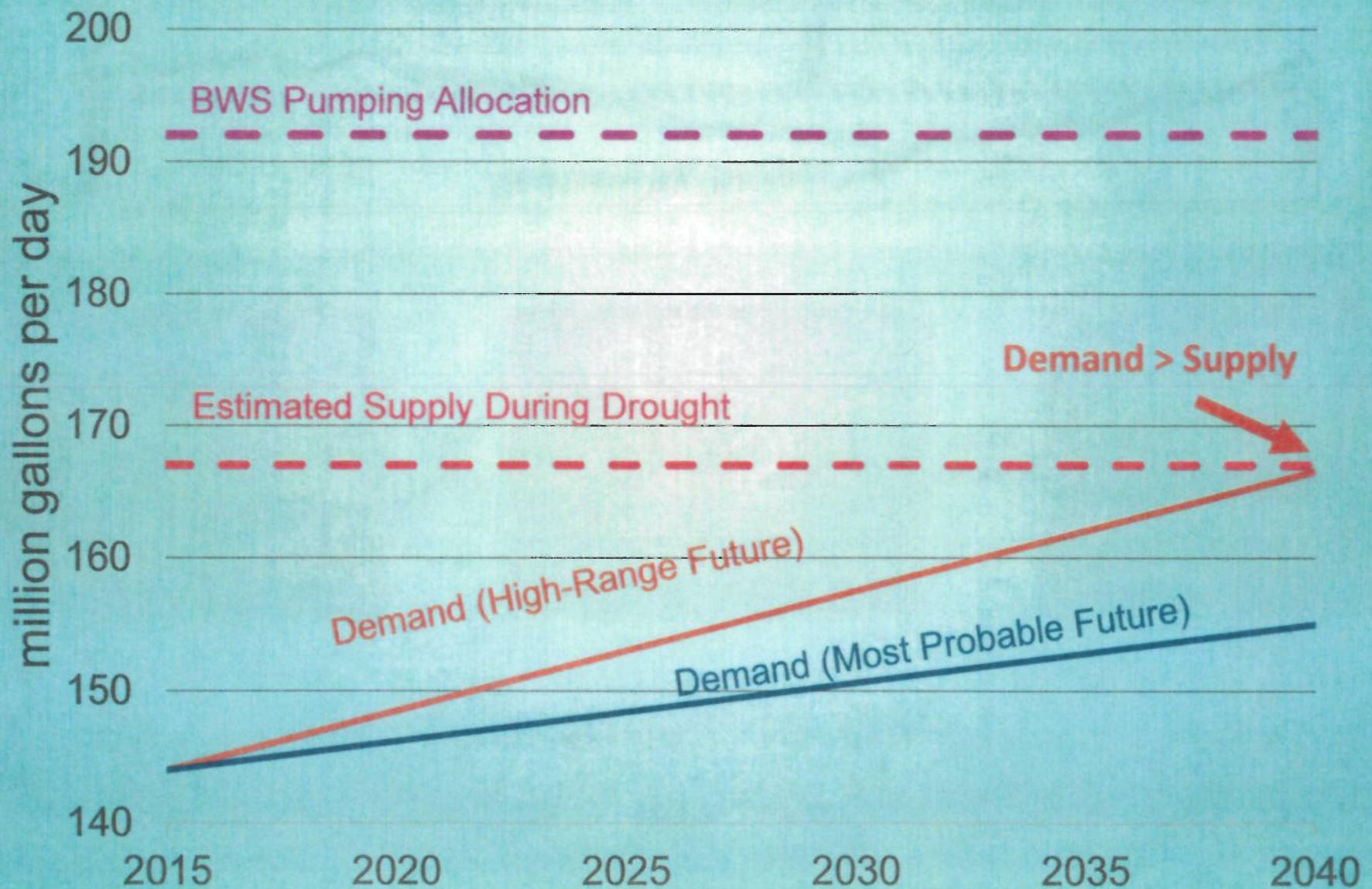
Move Water Where It Is Needed

Estimated Yield in Planning
Area, Total = 153.1 MGD
(Estimated Net Demand in
Planning Area)

Transfers



Average Day Supply and Demand



We Also Consider Water Demands On a Hot Summer Day

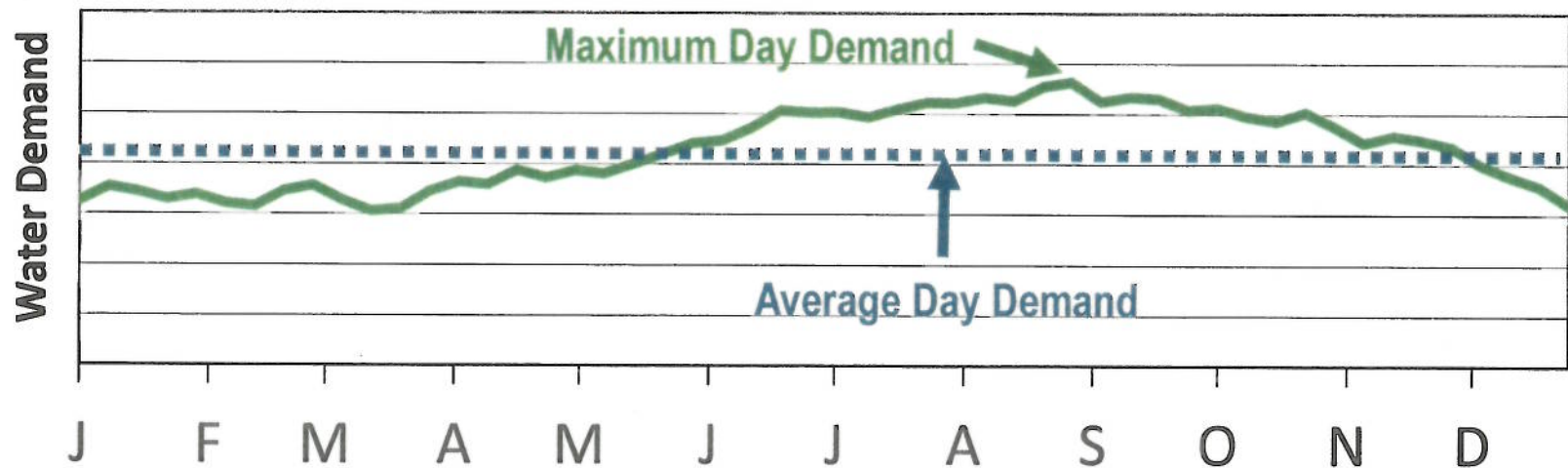
Average Day
Demand

X

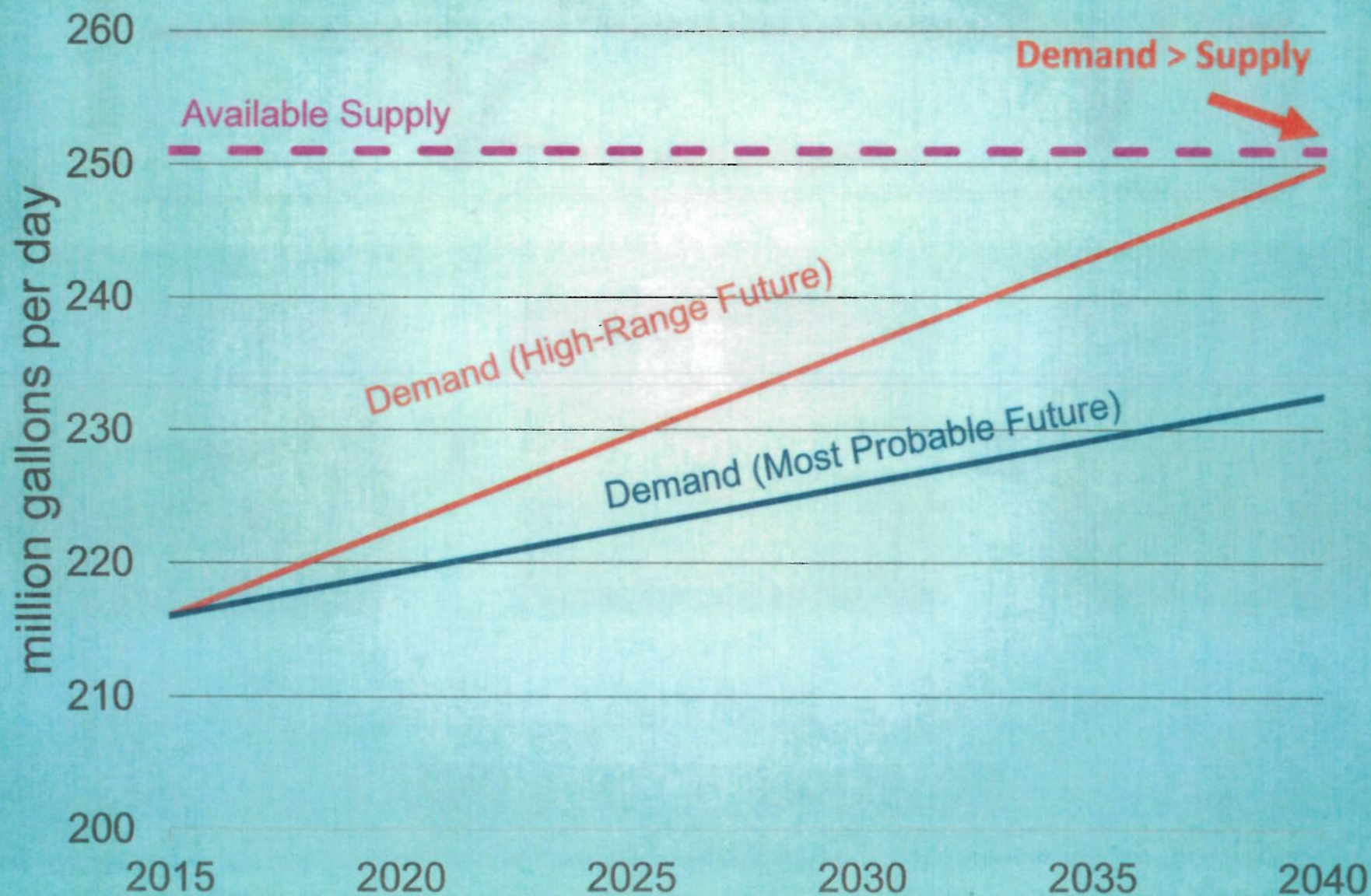
1.5

=

Maximum
Day
Demand



Maximum Day Supply and Demand



Peak Hour Demand

Highest Hour of Demand in the Entire Year

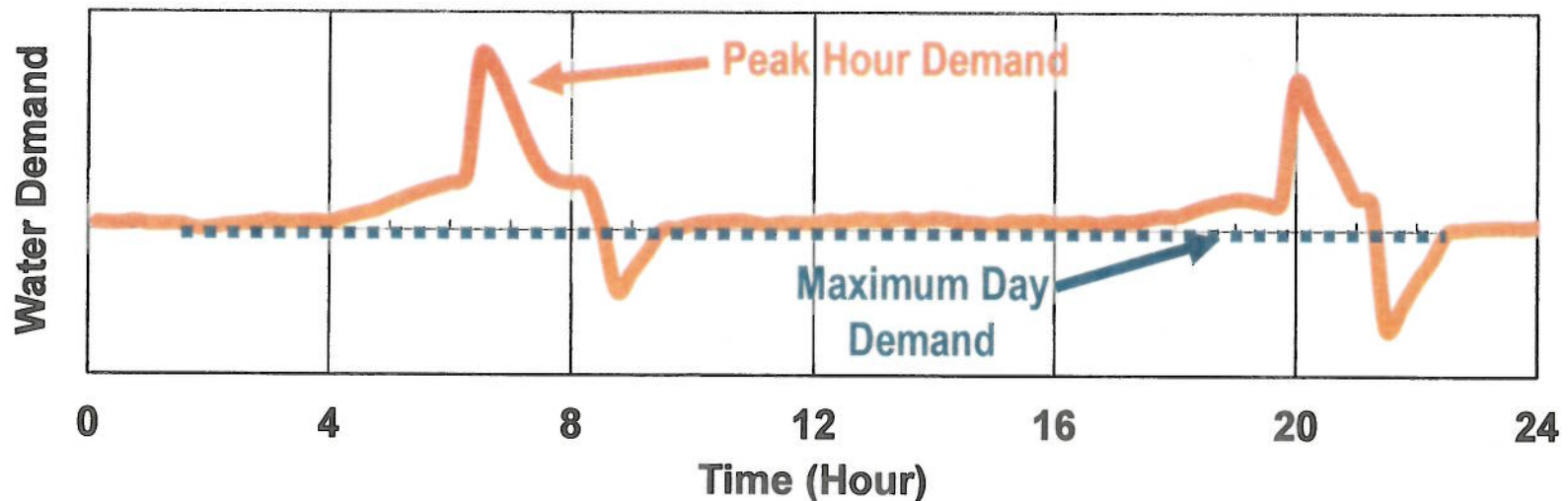
Max Day
Demand

X

Peaking Factor

=

Peak Hour
Demand



Hydraulic Analysis with Computer Model

Build computer models

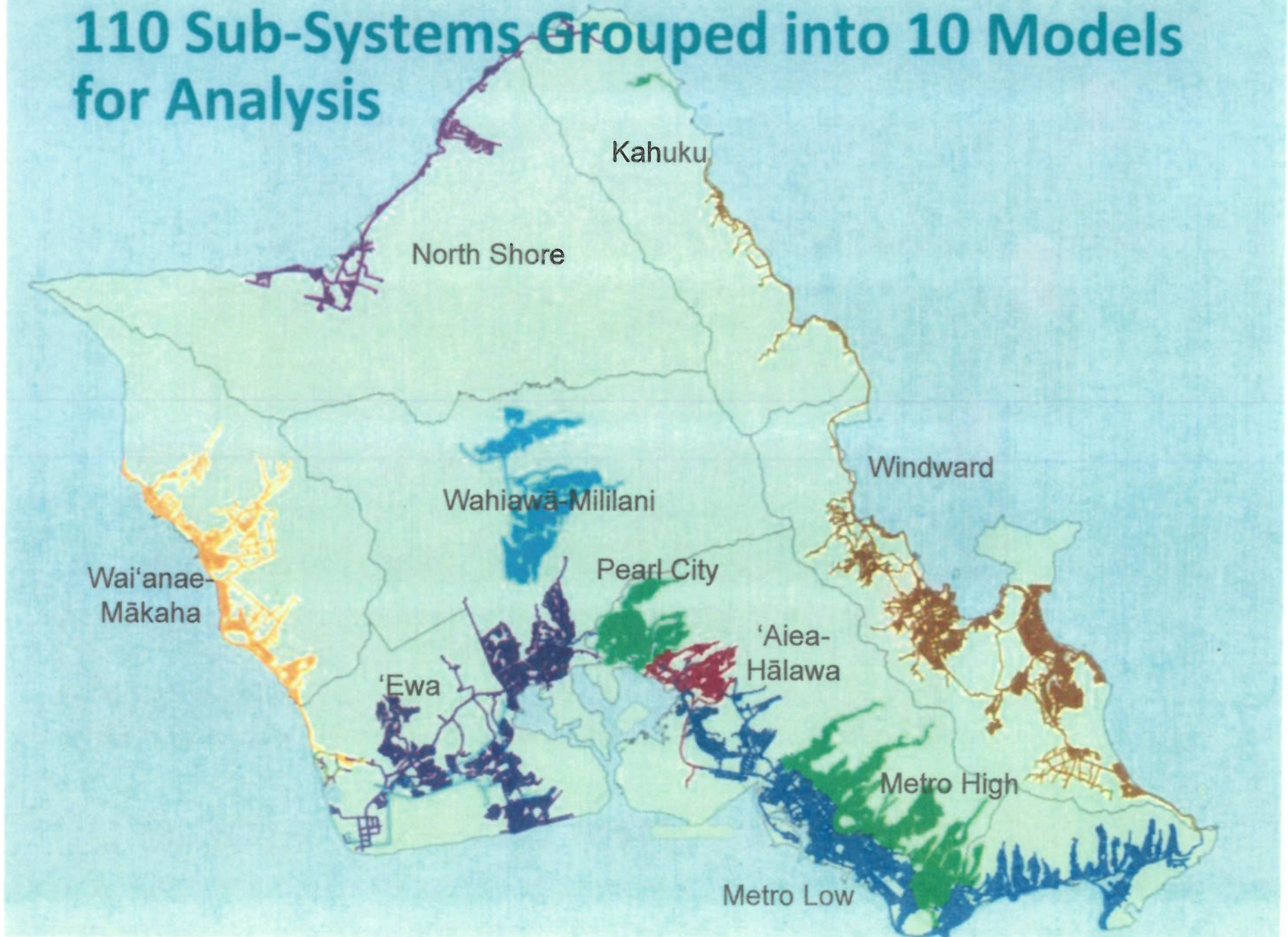
Verify models against actual system performance data to increase accuracy

Estimate future water demands

Evaluate system performance under existing and future conditions

Recommend capital projects to improve performance

110 Sub-Systems Grouped into 10 Models for Analysis



Hydraulic Models Simulate How a Water System Works

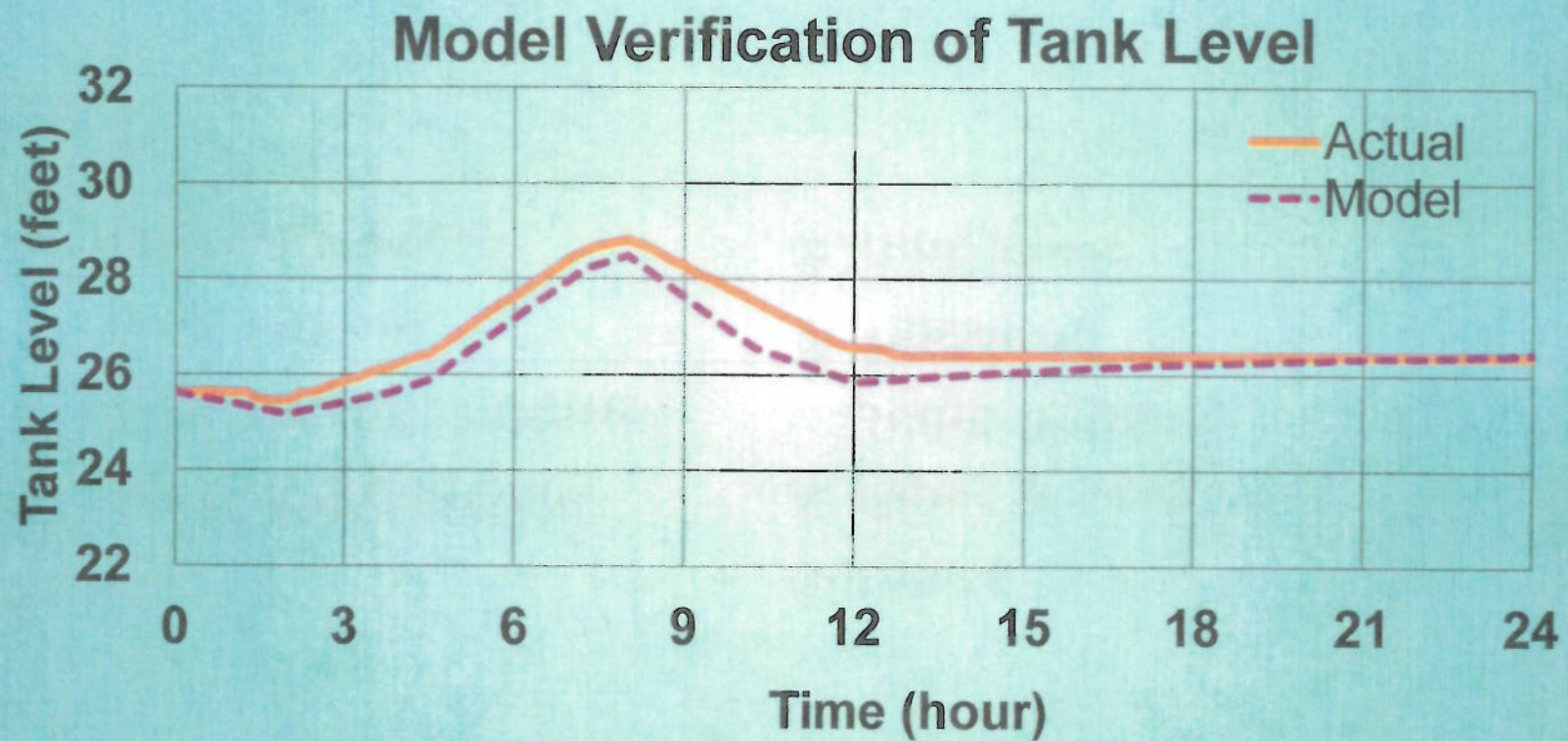
Inputs:

- ◆ Base water demands
- ◆ Daily demand patterns
- ◆ Pump settings
- ◆ Initial tank levels

Outputs:

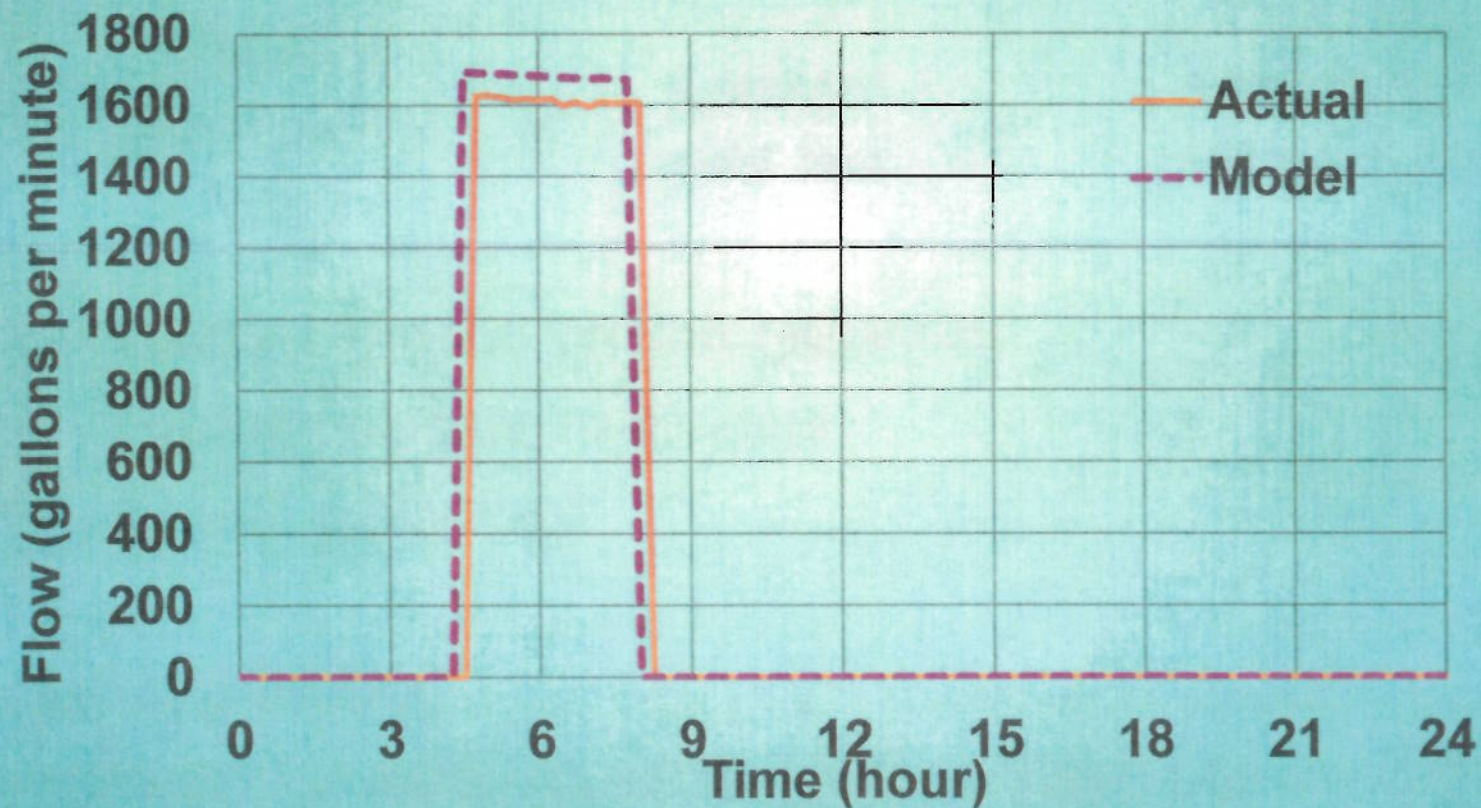
- ◆ Flows at wells, pump stations
- ◆ Pressures
- ◆ Tank levels

Check Accuracy of Model Simulation



Check Accuracy of Model Simulation

Model Verification of Pump Station Flow

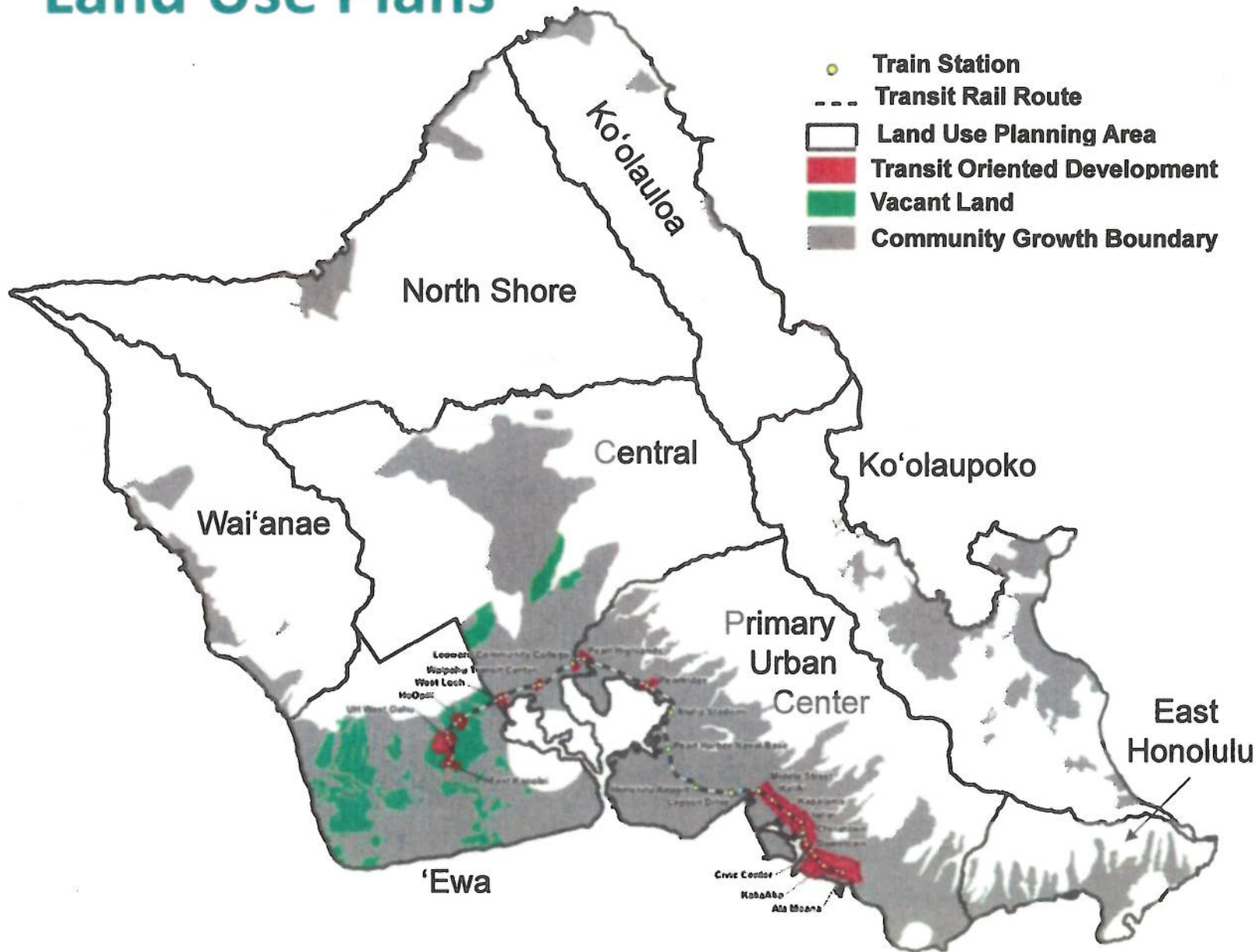


Water Demand Is a Key Input to the Models

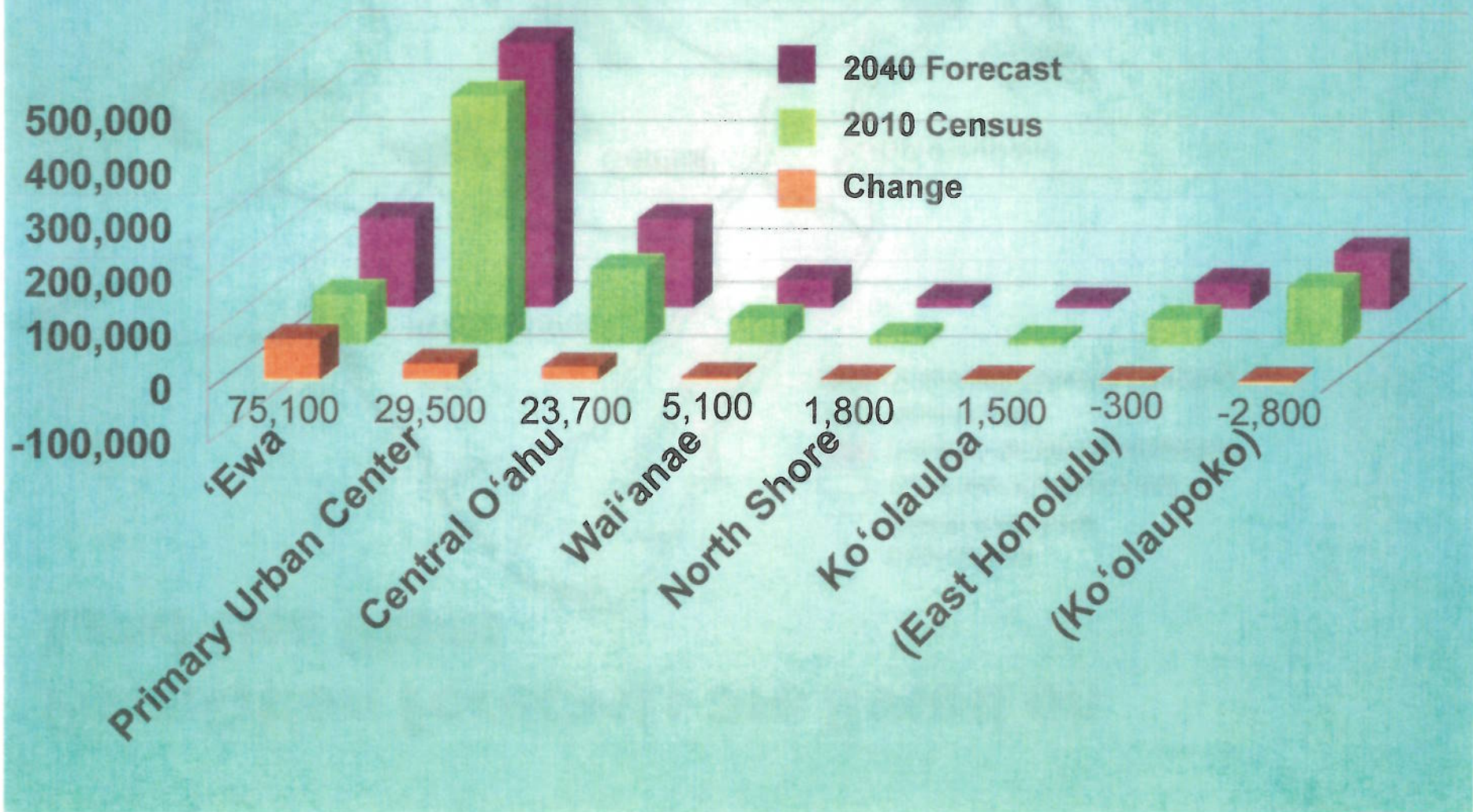
- 💧 Existing Demands
 - Based on actual usage data
- 💧 Forecast Future Water Demand

$$\begin{array}{ccccc} \text{BWS} & & & & \\ \text{Population} & \times & \text{Use per} & = & \text{Total Water} \\ \text{Served} & & \text{Person} & & \text{Demand} \end{array}$$

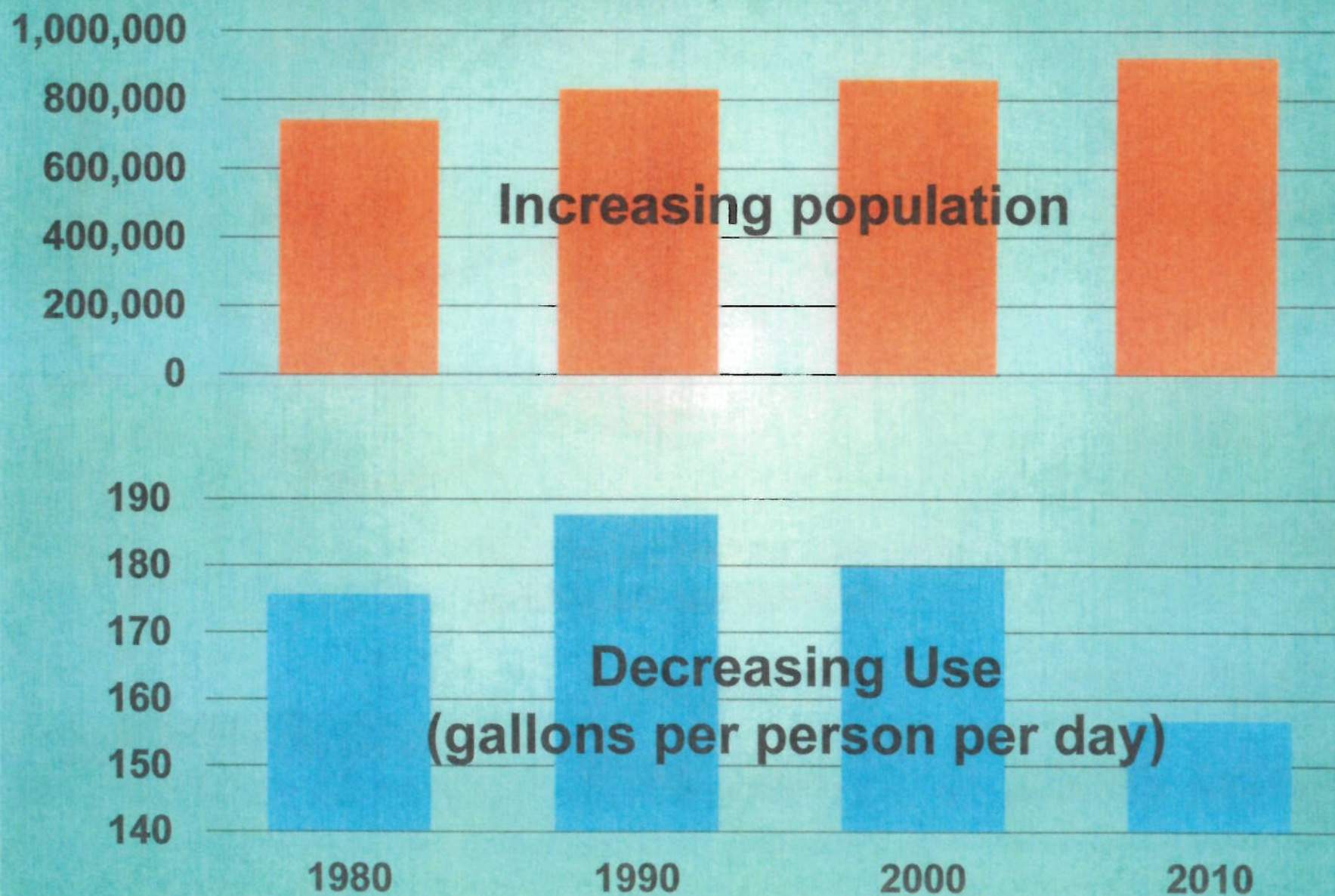
Population Forecasts are Based on Land Use Plans



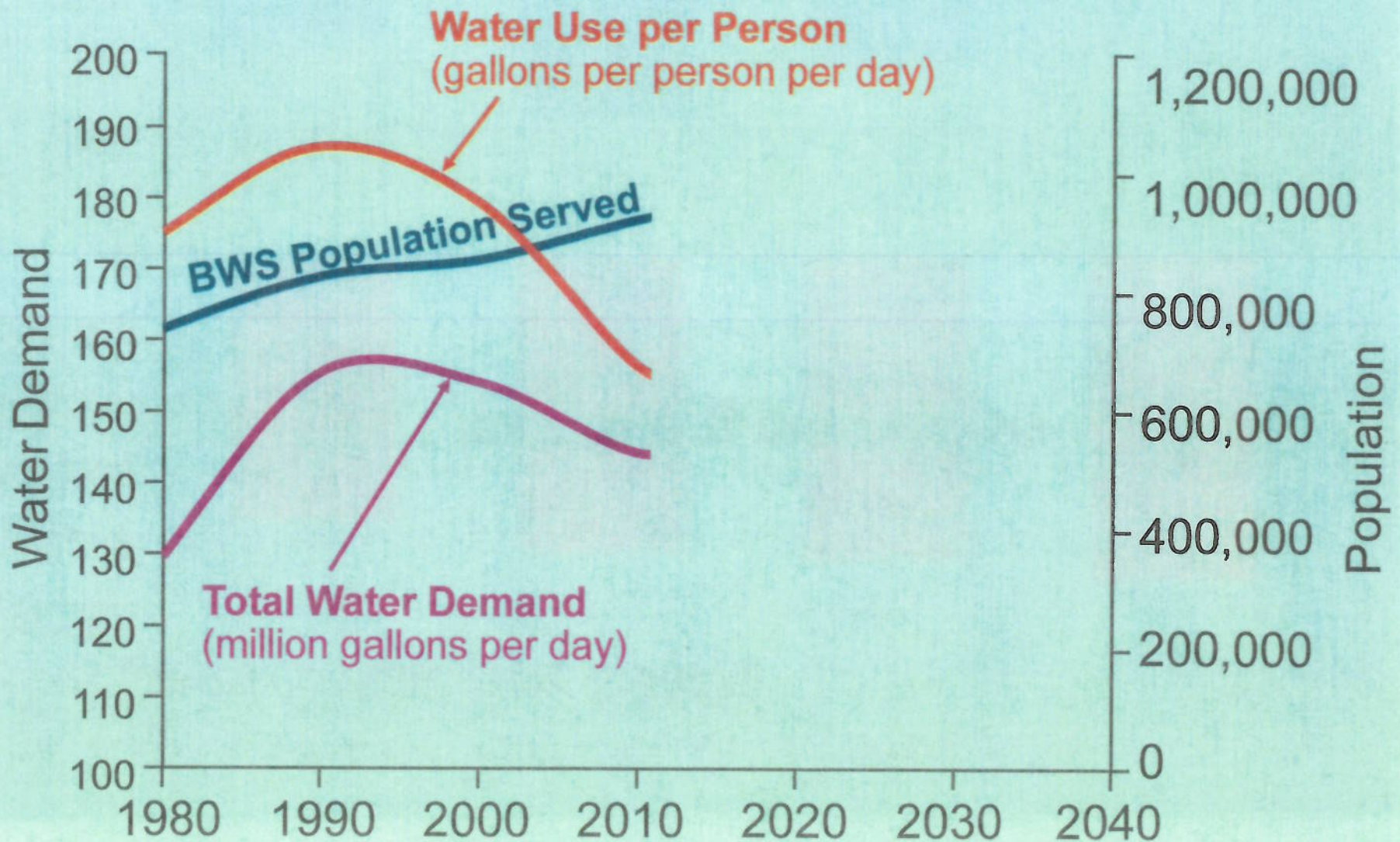
Changes in BWS Population Served Vary by Land Use Planning Area



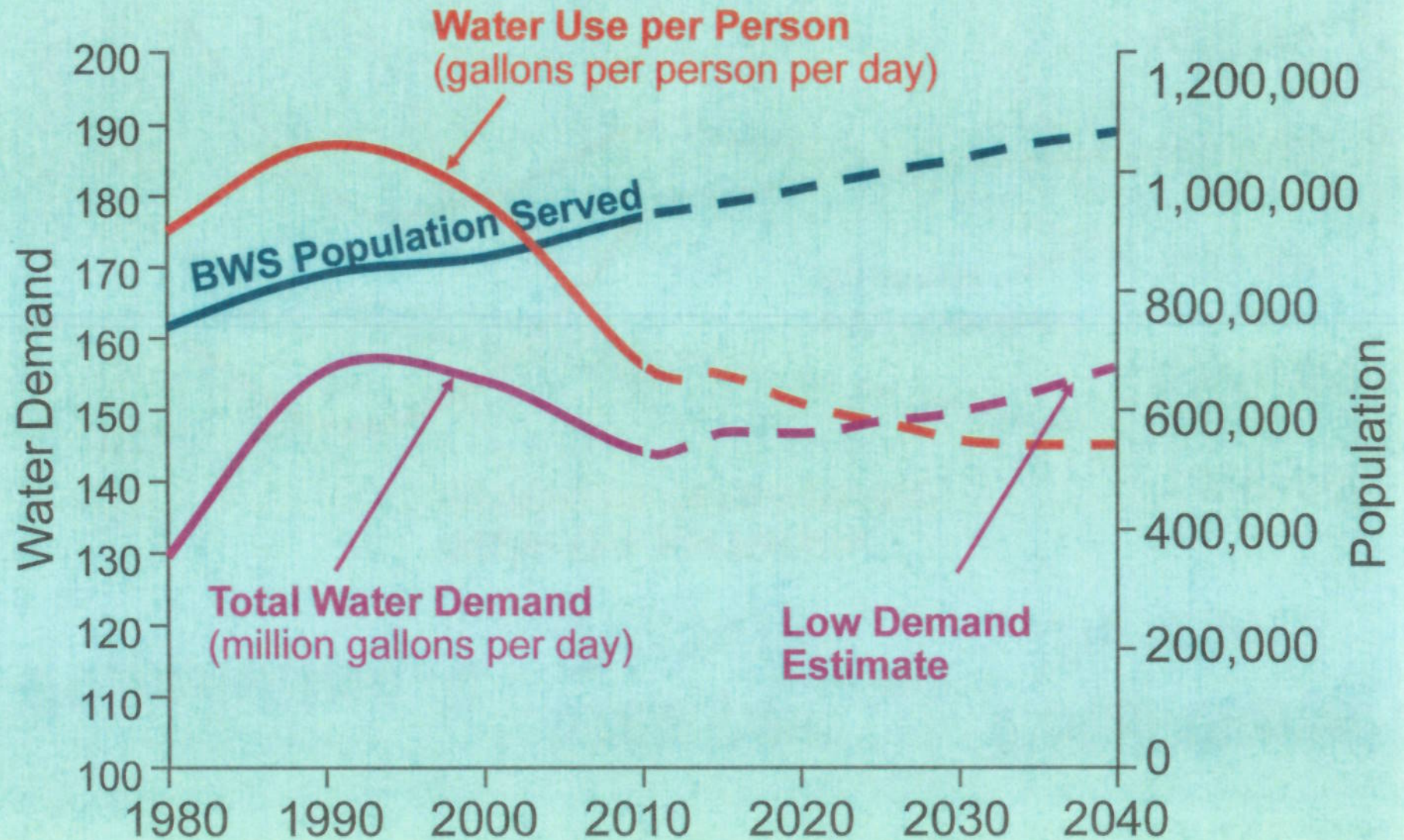
Water Use per Person on O'ahu Has Declined Since the 1990s



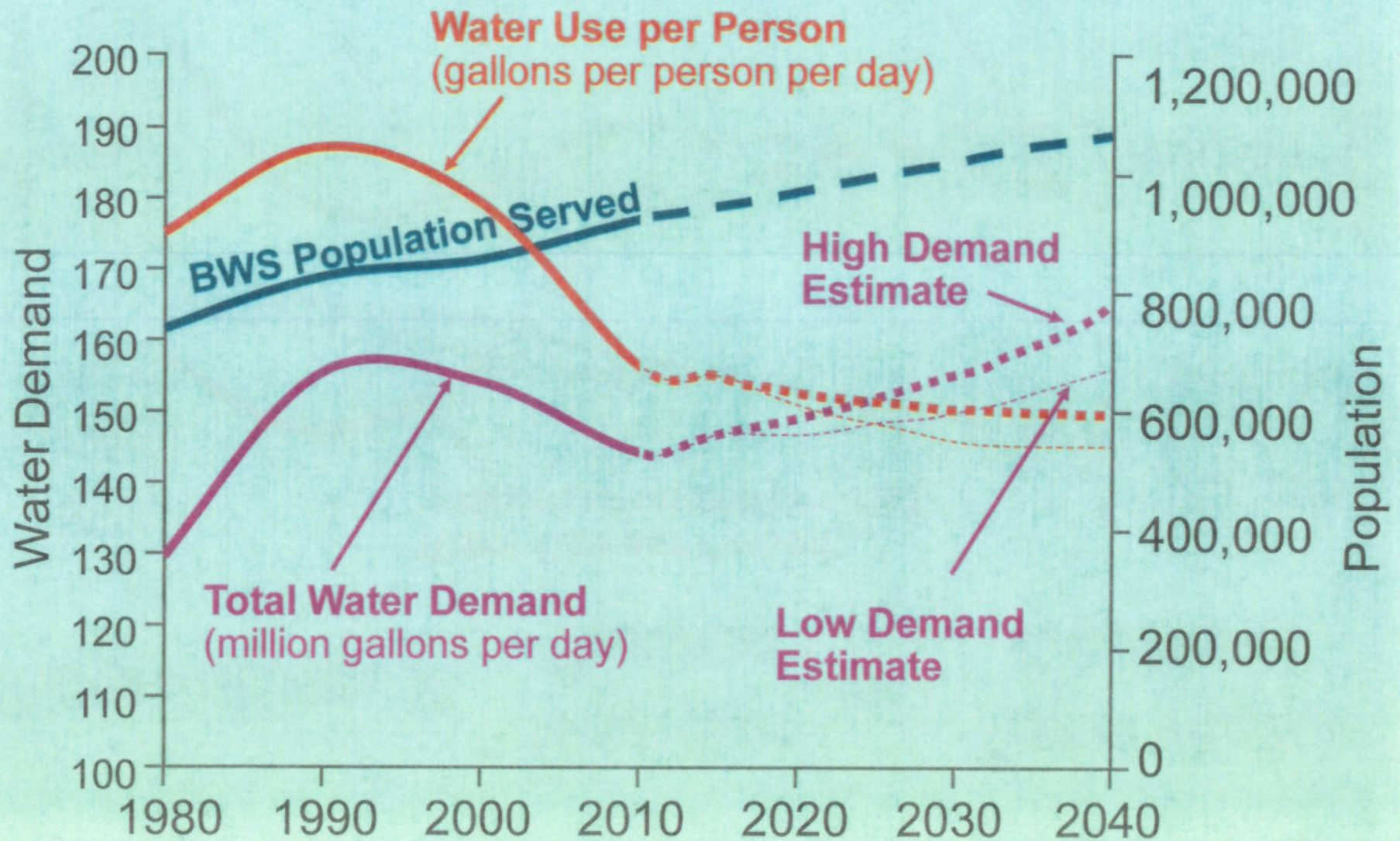
$$\text{Population} \times \text{Use per Person} = \text{Total Water Demand}$$



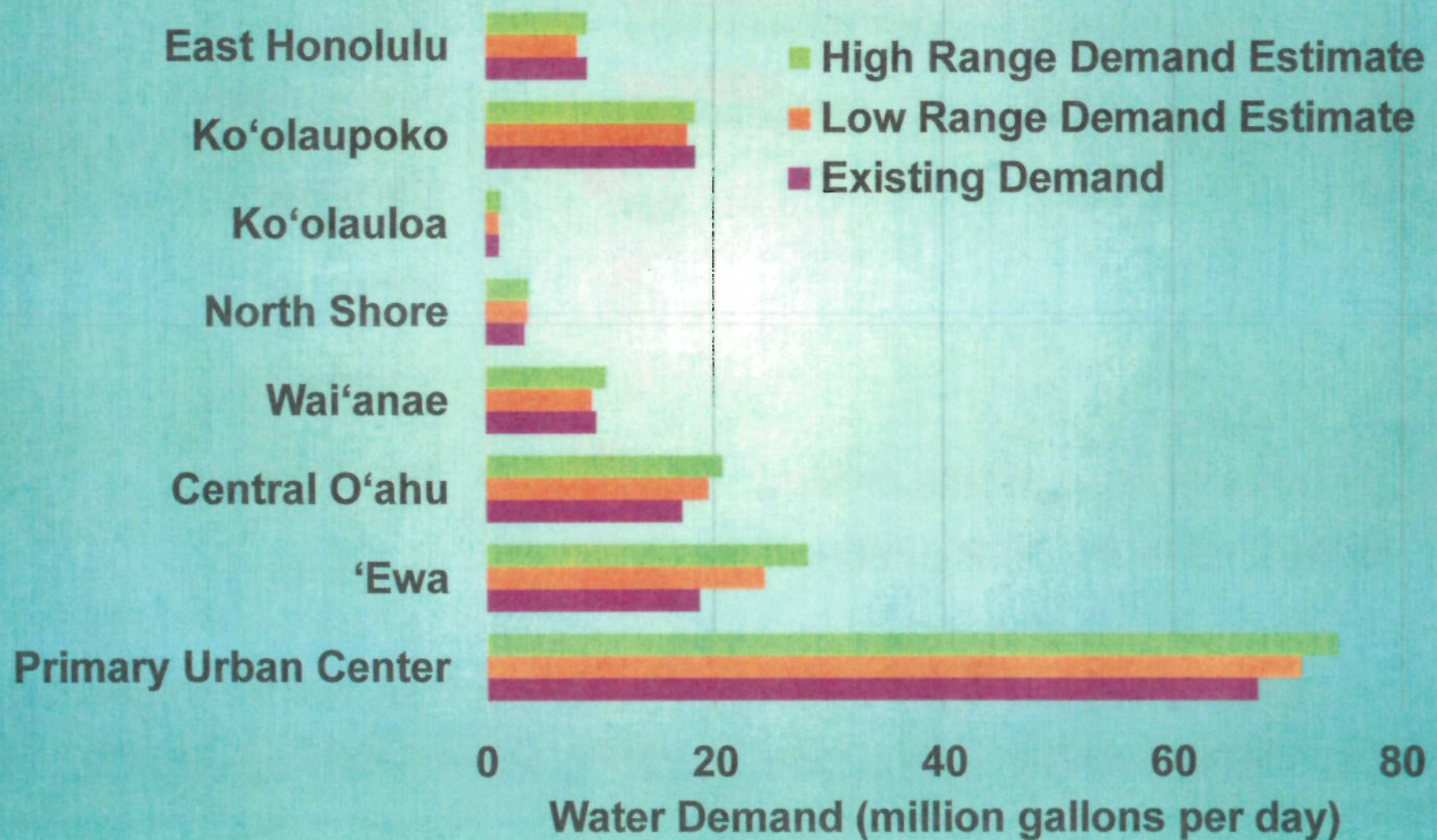
$$\text{Population} \times \text{Use per Person} = \text{Total Water Demand}$$



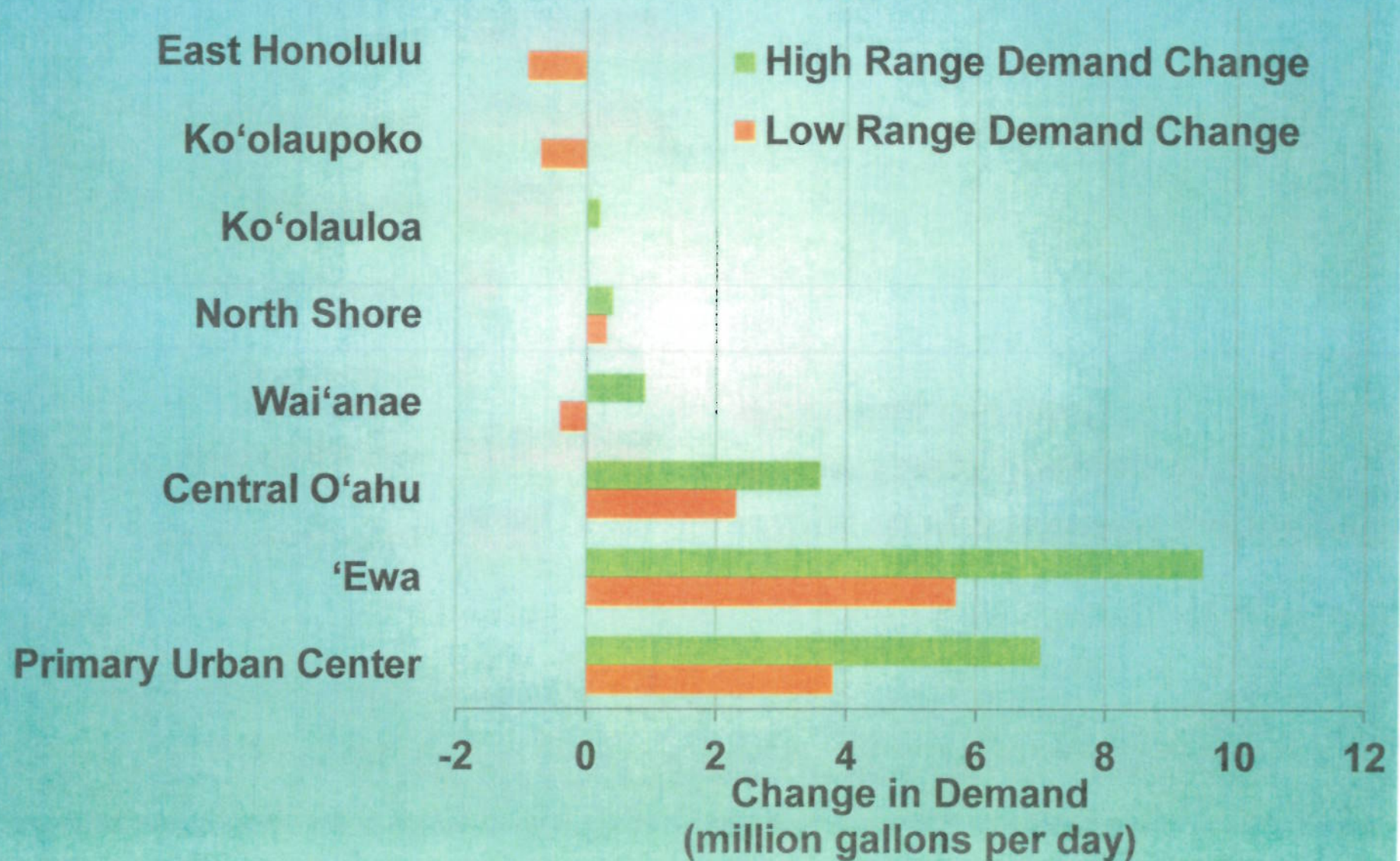
$$\text{Population} \times \text{Use per Person} = \text{Total Water Demand}$$



2040 Low and High Demand Estimates by Land Use Planning Area



2040 Change in Low and High Demand Estimates by Land Use Planning Area



Use the Models to Analyze 3 Key Parameters

Reservoir
Capacity

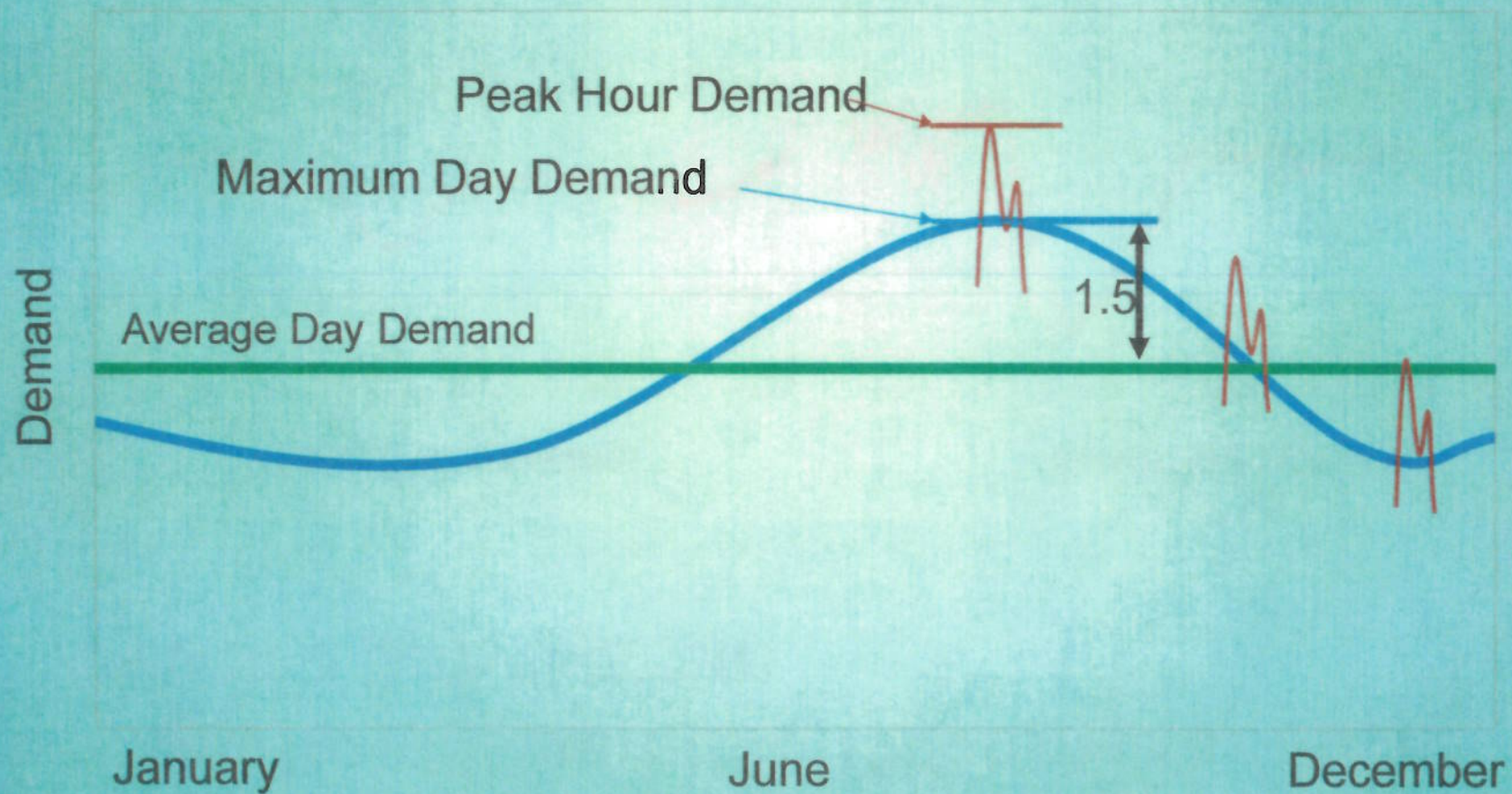
Pump
Capacity

Pipeline
Capacity

Use Maximum Day Demand Simulation to Evaluate Pipelines and Reservoirs

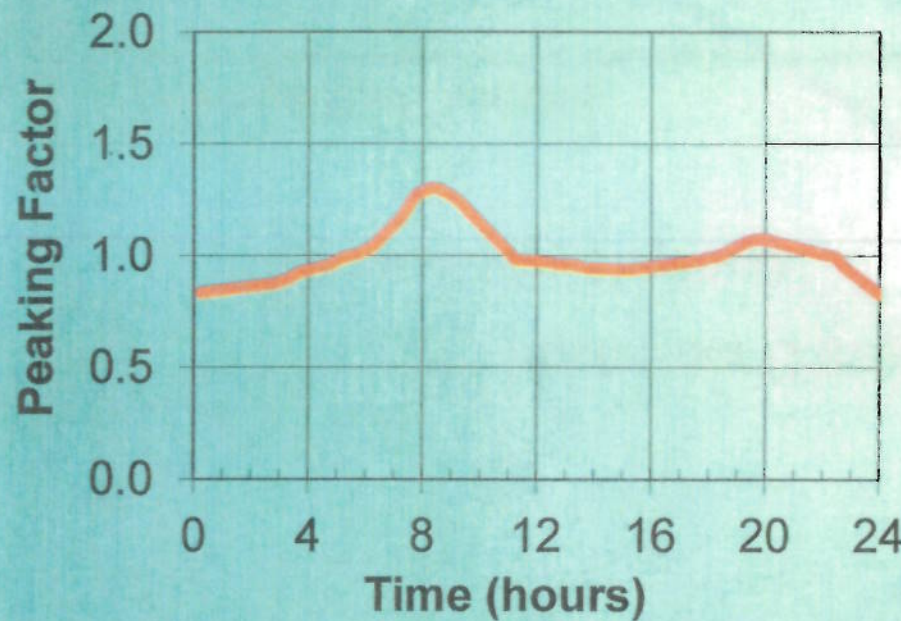
- 💧 Identify pipelines that are too small or new pipelines needed to move water from the source to the reservoir
- 💧 Simulation confirms that
 - All 171 reservoirs can refill within 24 hours
 - Wells are pumping within limits

Peak Hour Demand Is the Highest Single Hour of Demand on a Maximum Day

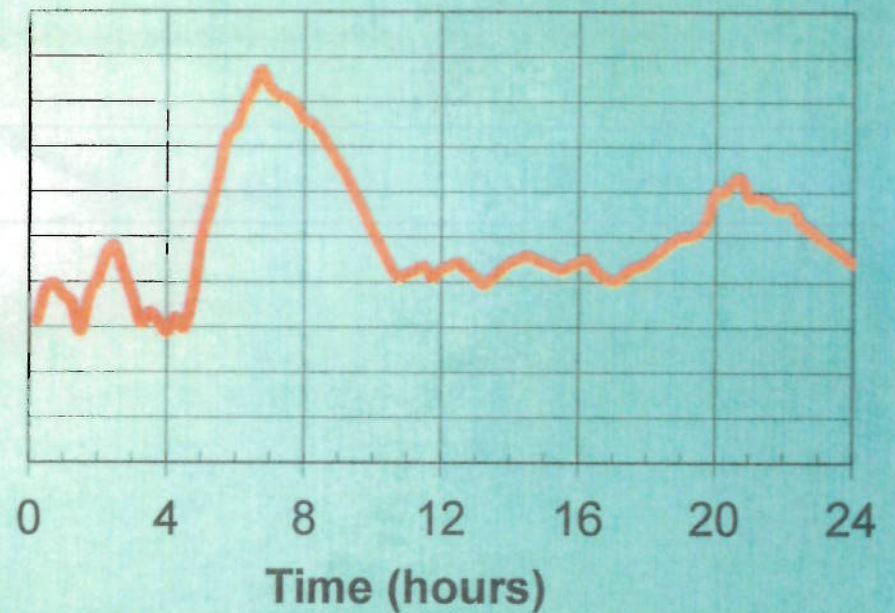


Used Actual Demand Patterns for Each Specific Sub-System

Large Sub-system



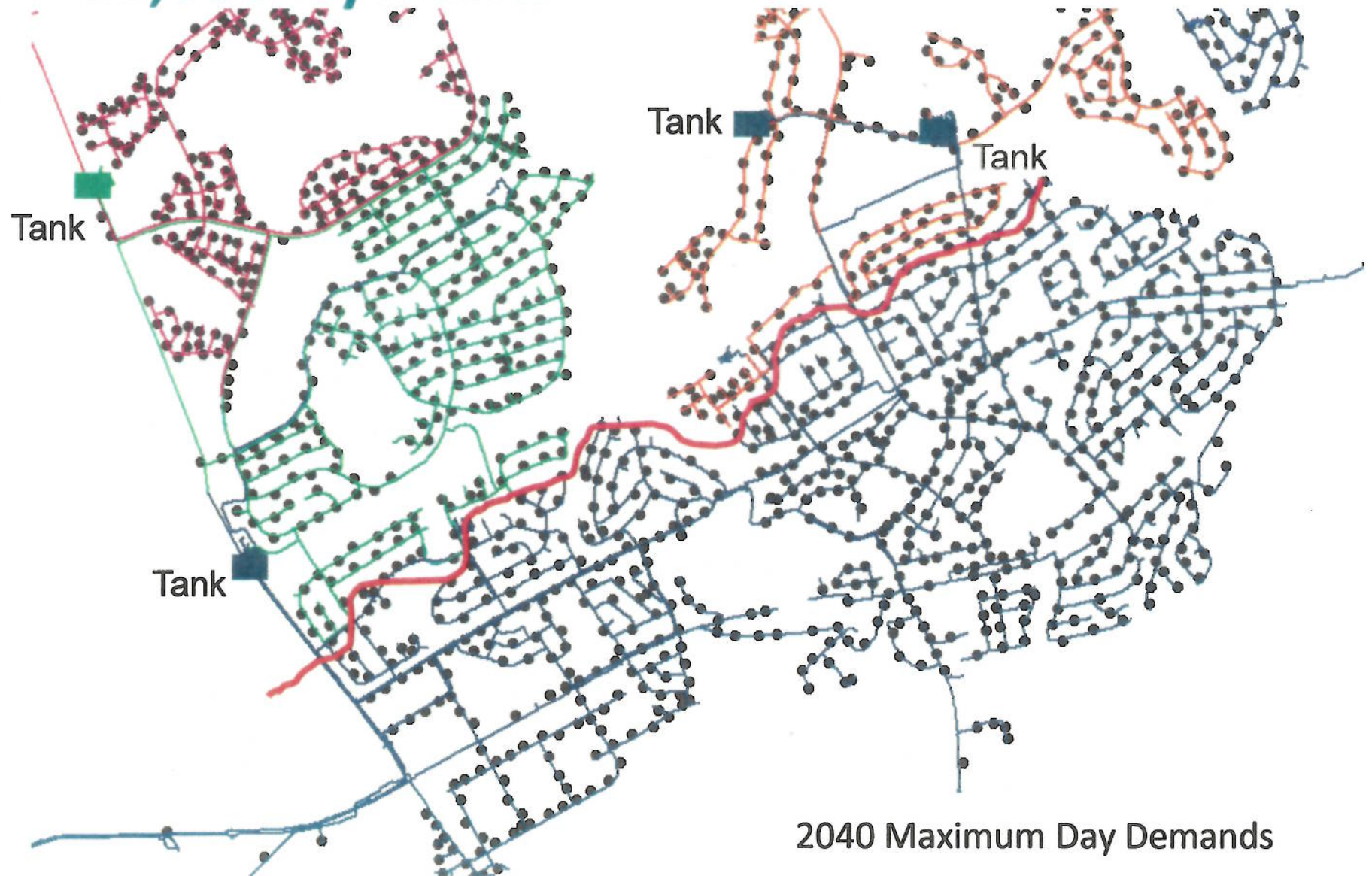
Small Sub-system



Peak Hour Demand Simulation Identifies Pipeline Limitations

- ◆ Areas where water pressures drop
- ◆ Areas where the speed of water moving through pipes is too high
- ◆ Opportunities for operational adjustments and system reconfiguration to provide higher water pressure
- ◆ Areas where larger pipes may be needed

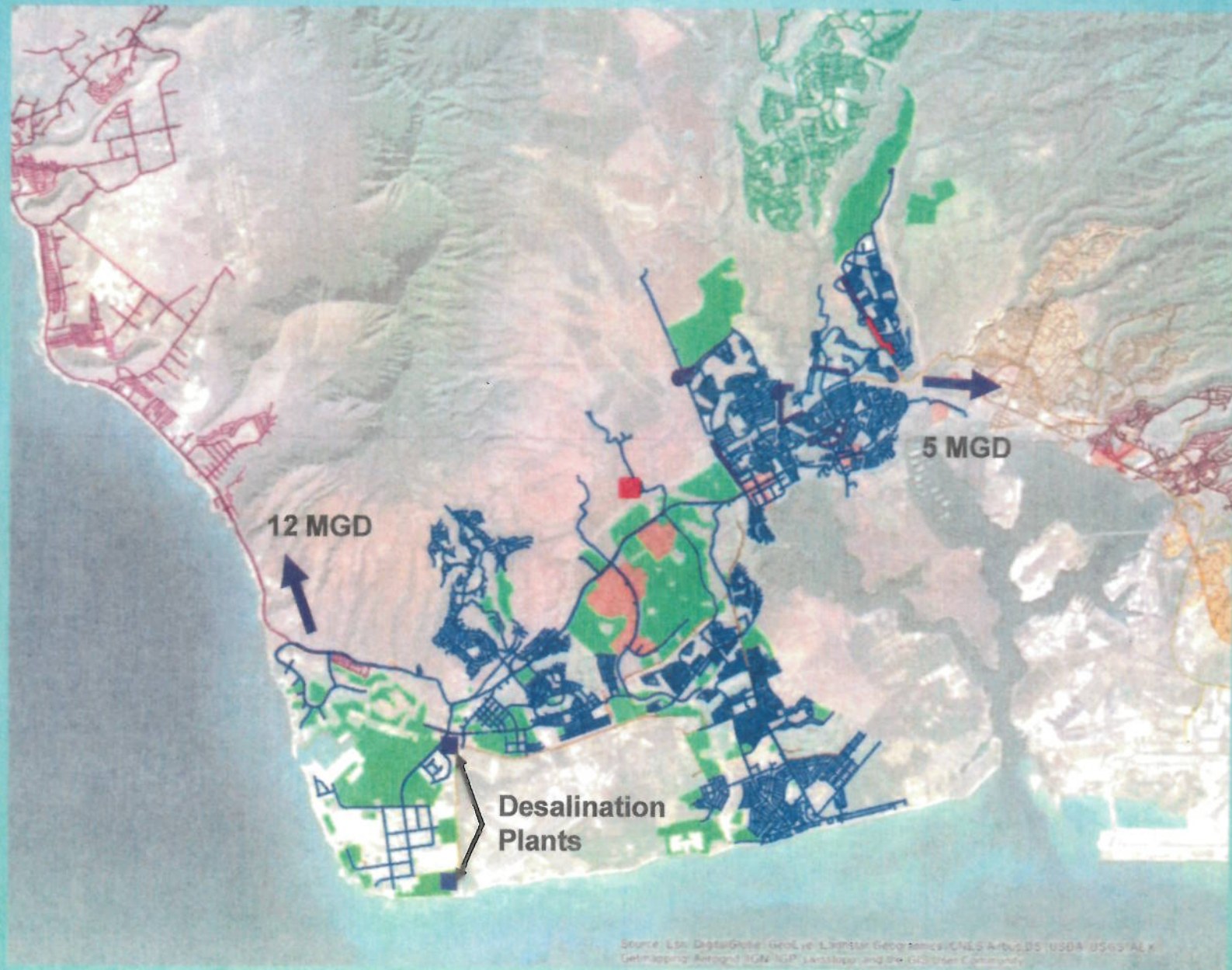
Evaluated Fire Flows at Each of 21,000 Hydrants



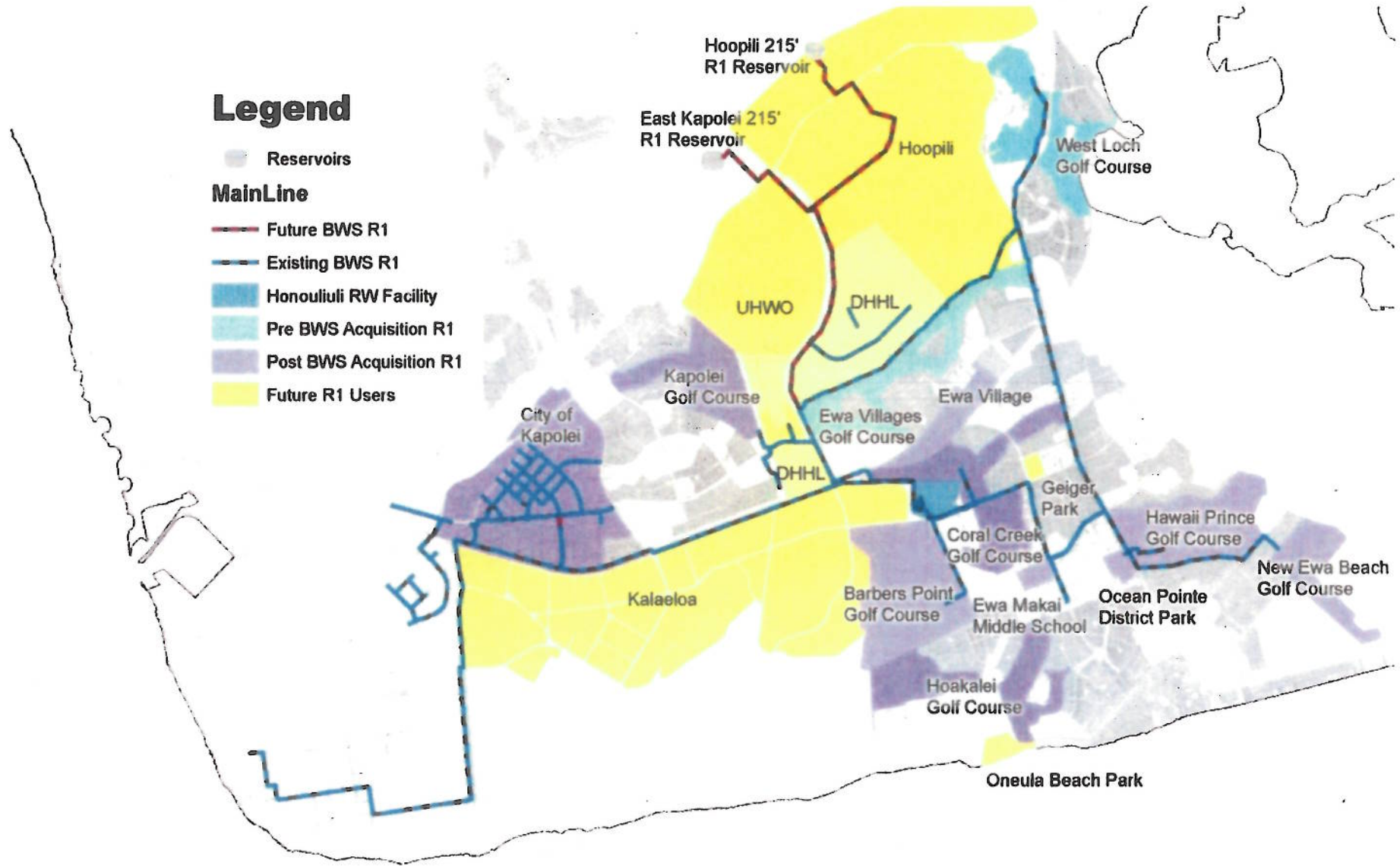
Fire Flow Criteria for O'ahu

| Land Use Category | Flow (gallons per minute) |
|--------------------------|--|
| Single Family | 1,000 |
| Multi-Family | 1,500 |
| Commercial | 2,000 |
| Industrial | 4,000 |
| | Pressure (pounds per square inch) |
| All Categories | 20 |

Recommended Water System Projects in 'Ewa



Planned Recycled Water Projects in 'Ewa



Preview of Metro Low Results

💧 Current

- System provides adequate, reliable water service

💧 Future

- Need for significant additional supplies
- Need for significant additional reservoir storage

Planning for 27 Million Gallons per Day of Additional Supply for Metro Low

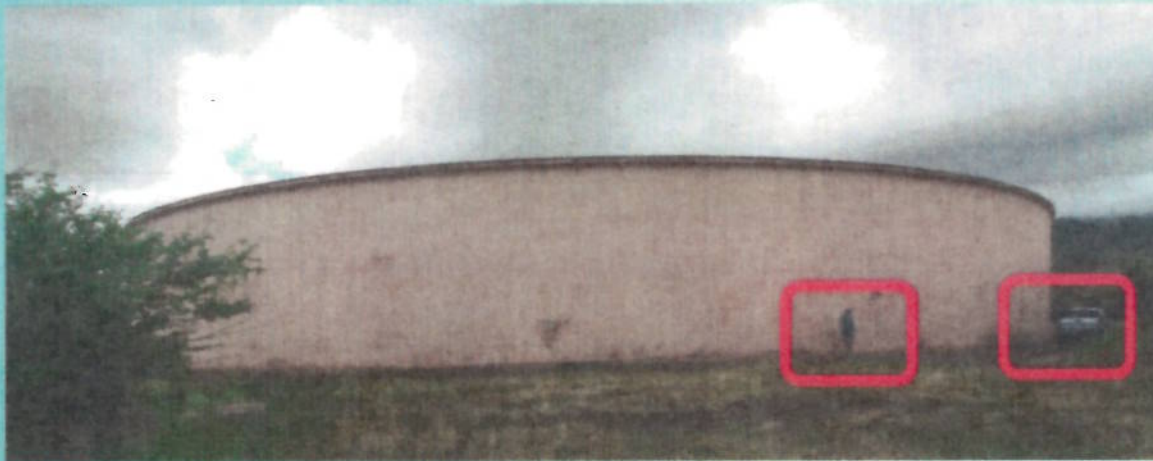
💧 Drivers

- Growth
- Used Maximum Day Demand = $1.5 \times \text{Average Day Demand}$ for planning purposes
- Protection of freshwater lens

💧 Potential solutions

- New groundwater sources in Metro Low
- Increase transfers
- More aggressive conservation
- Diversify supplies

Standards Call for Additional 60 Million Gallons of Storage



X 12

Honouliuli 228 Reservoir
5 Million Gallons

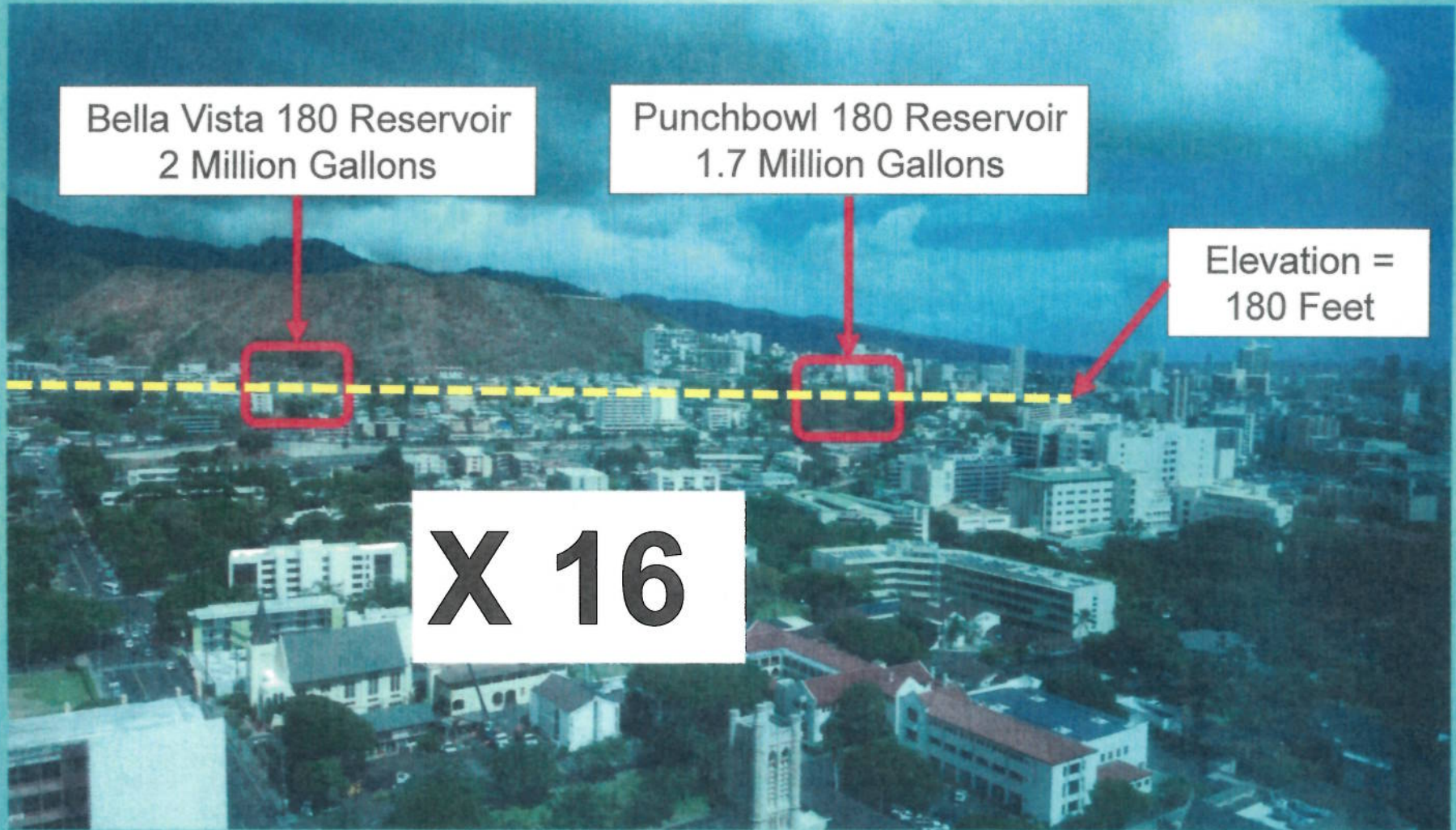
Standards Call for Additional 60 Million Gallons of Storage

Bella Vista 180 Reservoir
2 Million Gallons

Punchbowl 180 Reservoir
1.7 Million Gallons

Elevation =
180 Feet

X 16



Other Solutions are Possible

- 💧 Use pumping to meet peak hour demands
 - Wells with standby power
 - New tank and pumping with standby power
- 💧 Locations could vary (e.g. in-town, Central O'ahu)
- 💧 Combination

2040 Baseline Solution

New 'Ewa 228 Res (10 MG) and
In-Line Booster

27 MGD

needed from
Waipahu or
other sources

36" Stadium Pipeline

42" New Pipeline
Kalāwahine wells

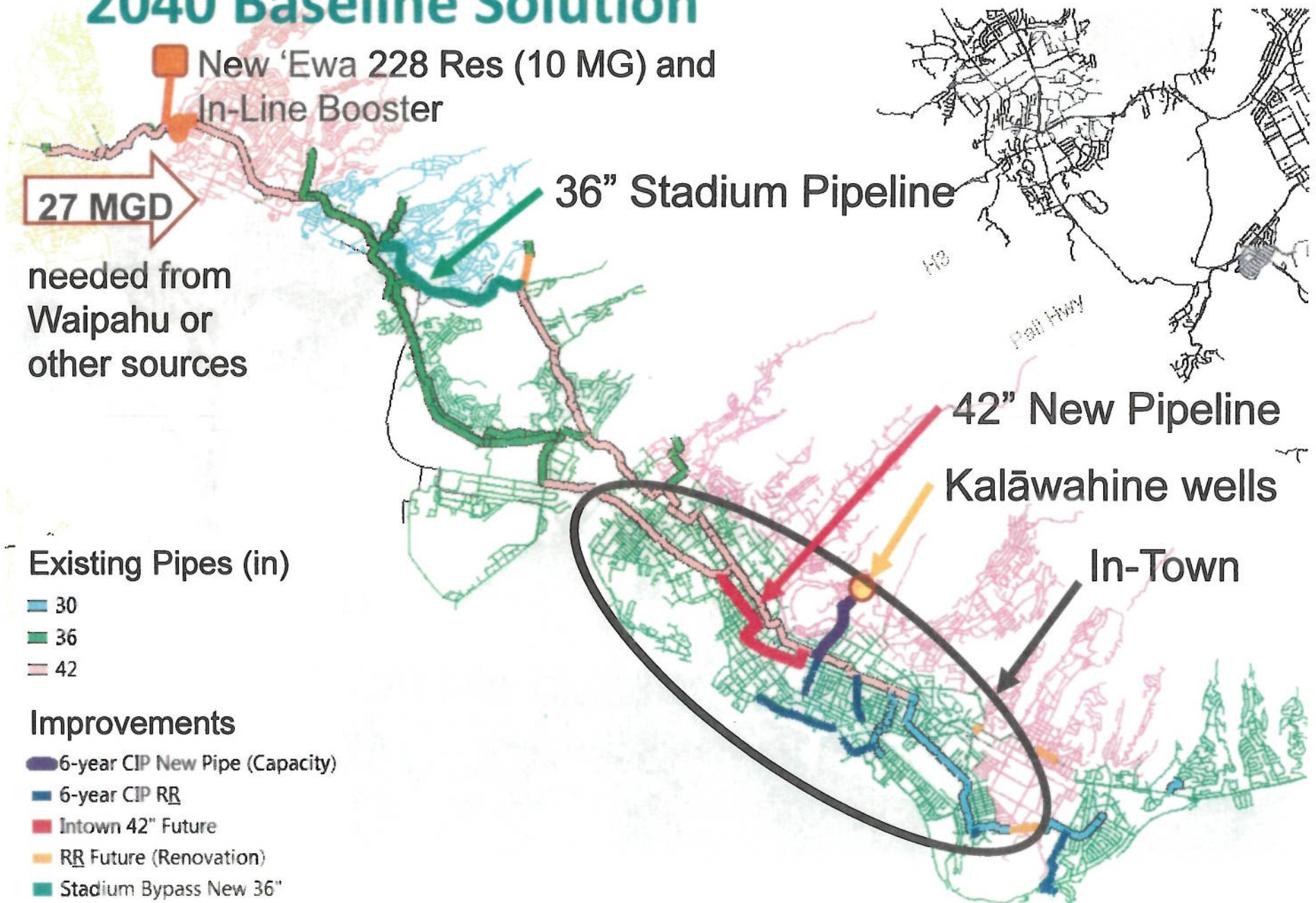
In-Town

Existing Pipes (in)

- 30
- 36
- 42

Improvements

- 6-year CIP New Pipe (Capacity)
- 6-year CIP RR
- Intown 42" Future
- RR Future (Renovation)
- Stadium Bypass New 36"



2030 Blueprint Strategies are Opportunities to Address Some of these Issues



Conservation



Recharge



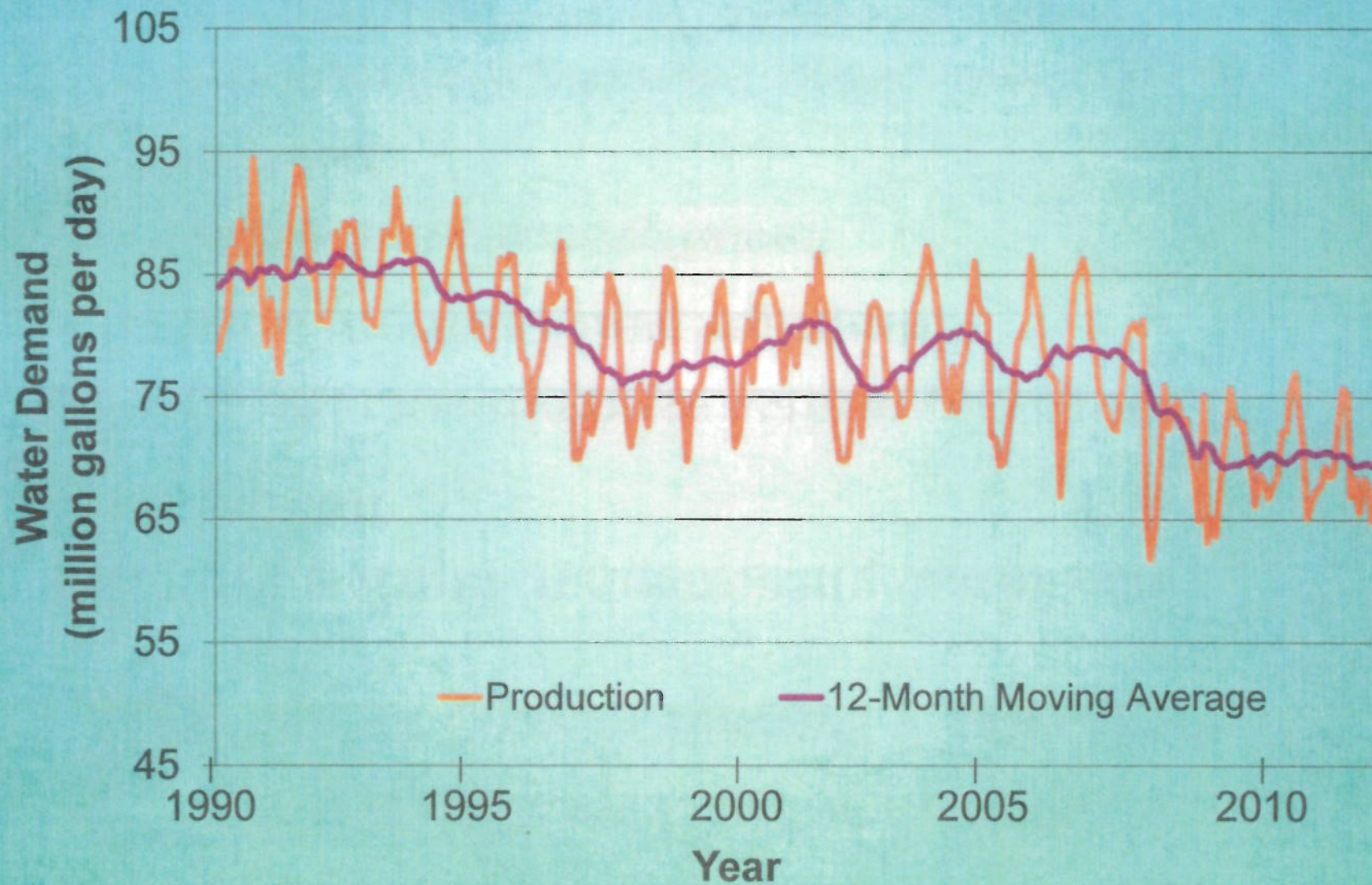
Reuse



More Water Conservation can Defer Costly System Expansion

- ◆ Continue trend in decreasing water use per person
- ◆ Focus advanced conservation measures in Transit Oriented Developments
 - High efficiency plumbing fixtures
 - Sub meters
 - Alternatives for irrigation and cooling tower make-up water (rain catchment, A/C condensate recovery, gray water reuse)
 - Should these measures be voluntary or mandatory?

Conservation Has Already Had an Impact in Metro Low





Increasing Recharge Could Sustain the Freshwater Lens

💧 Watershed Partnerships

- Ko'olau & Wai'anae Mountains, Waihe'e Ahupua'a Initiative, Mohala I Ka Wai
- Department of Land and Natural Resources and O'ahu Invasive Species Committee

💧 Capture storm water at Nu'uaniu Dams for aquifer recharge through injection wells

💧 Nu'uaniu Lower Aerator Microfiltration Facility captures alluvial groundwater recharged by Nu'uaniu Dams

Capture Storm Water at Nu'uanu Dams for Aquifer Recharge





Local Water Reuse Opportunities Could Augment Centralized Systems

- ◆ Distributed Water Reuse
at Ala Wai Golf Course
- ◆ Gray water reuse for
onsite irrigation

GUIDELINES FOR THE REUSE OF GRAY WATER



Prepared by

Hawaii State Department of Health
Wastewater Branch
June 22, 2009

Ala Wai Golf Course Membrane Bioreactor

- ◆ Inter-Agency funding commitment (BWS-ENV-DES)
- ◆ Public-Private Partnership with Rockefeller RE.invest Green Infrastructure Initiative
- ◆ Cost incentive for golf course



Adaptive Management Allows BWS to Time Investments with Needs

- Monitor trends
 - Population
 - Climate change
 - Maximum Day Demands
 - Groundwater quality
 - Other uncertainties
- Annually adjust 6-year CIP based on current data
- Periodically update 30-year CIP

WATER FOR LIFE

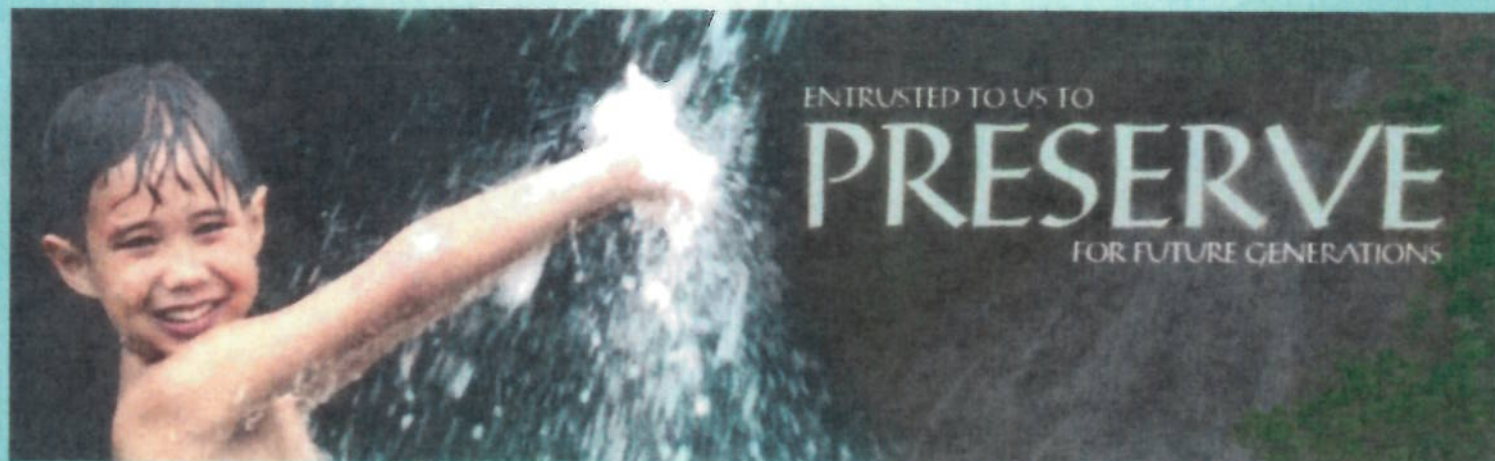
Safe, dependable, and affordable water now and into the future



Board of Water Supply
City and County of Honolulu

Mahalo!

Questions & Answers



ITEM FOR INFORMATION NO. 4

"April 25, 2016

GROUNDWATER
LEVELS

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

Chair and Members:

Subject: Status Update of Groundwater Levels at All Index
Stations

There were no aquifer index wells within low groundwater status for the production month of March 2016. The monthly production average for March 2016 was 143.14 million gallons per day.

The Board of Water Supply rainfall index for the month of March 2016 was 18 percent of normal; with a 5-month moving average of 65 percent. As of April 12, 2016, the Hawaii Drought Monitor shows abnormally dry conditions for Windward and Northern areas of Oahu and moderate drought conditions for Leeward and Southern Oahu.

Per the National Weather Service, there is a modest prediction of below normal rainfall for April, May and June 2016, and above normal rainfall for August, September and October 2016. Climate models indicate El Niño conditions may transition to neutral conditions by summer.

Most index monitor wells continue to exhibit relatively level or slightly increasing trends, except for the Windward and North Shore areas, which show slightly decreasing trends. We expect head levels to start decreasing as the summer approaches.

Respectfully submitted,

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

Attachments"

The foregoing was for information only.

DISCUSSION:

Barry Usagawa, Water Resources Division Program Administrator, gave the report. He explained to the Board that they changed the format of the attachment, "Production, Head, and Rainfall Report", to a more accurate and easier to read format. There were no comments or discussion.

**PRODUCTION, HEAD, AND RAINFALL REPORT
MARCH 2016**

POTABLE

| STATION | MGD |
|-------------------|-------|
| HONOLULU (1) | |
| KULIOUOU | 0.15 |
| WAILUPE | 0.14 |
| AINA KOA | 0.42 |
| AINA KOA II | 1.02 |
| MANOA II | 0.00 |
| PALOLO | 1.33 |
| KAIMUKI HIGH | 3.10 |
| KAIMUKI LOW | 1.57 |
| WILDER | 7.09 |
| BERETANIA HIGH | 4.24 |
| BERETANIA LOW | 1.23 |
| KALIHI HIGH | 2.51 |
| KALIHI LOW | 1.96 |
| KAPALAMA | 0.38 |
| KALIHI SHAFT | 8.28 |
| MOANALUA | 1.20 |
| HALAWA SHAFT | 9.46 |
| KAAMILO | 0.00 |
| KALAUAO | 9.38 |
| PUNANANI | 11.98 |
| KAHUMANU | 0.84 |
| HECO WAIU | 0.00 |
| MANANA | 0.48 |
| WELLS SUBTOTAL: | 66.78 |
| MANOA TUNNEL | 0.17 |
| PALOLO TUNNEL | 0.23 |
| GRAVITY SUBTOTAL: | 0.40 |
| HONO. SUBTOTAL: | 67.18 |

| STATION | MGD |
|----------------------|-------|
| WINDWARD (2) | |
| WAIMANALO II | 0.34 |
| WAIMANALO III | 0.42 |
| KUOU I | 0.64 |
| KUOU II | 0.20 |
| KUOU III | 0.17 |
| LULUKU | 1.02 |
| HAIKU | 0.40 |
| IOLEKAA | 0.00 |
| KAHALUU | 0.86 |
| KAHANA | 0.82 |
| PUNALUU I | 0.00 |
| PUNALUU II | 2.14 |
| PUNALUU III | 1.42 |
| KALUANUI | 0.00 |
| MAAKUA | 0.38 |
| HAUULA | 0.00 |
| WELLS SUBTOTAL: | 8.79 |
| WAIM. TUNNELS I & II | 0.00 |
| WAIM. TUNNELS III&IV | 0.19 |
| WAIHEE INCL. WELLS | 0.96 |
| WAIHEE TUNNEL | 4.95 |
| LULUKU TUNNEL | 0.07 |
| HAIKU TUNNEL | 0.00 |
| KAHALUU TUNNEL | 1.96 |
| GRAVITY SUBTOTAL: | 8.13 |
| WIND. SUBTOTAL: | 16.92 |

| STATION | MGD |
|--------------------|------|
| NORTH SHORE (3) | |
| KAHUKU | 0.28 |
| OPANA | 1.02 |
| WAIALEE I | 0.00 |
| WAIALEE II | 0.00 |
| HALEIWA | 0.00 |
| WAIALUA | 2.16 |
| N. SHORE SUBTOTAL: | 3.47 |

| STATION | MGD |
|--------------------|------|
| MILILANI (4) | |
| MILILANI I | 2.98 |
| MILILANI II | 0.00 |
| MILILANI III | 0.52 |
| MILILANI IV | 1.18 |
| MILILANI SUBTOTAL: | 4.67 |

| STATION | MGD |
|-------------------|------|
| WAIHAWA (5) | |
| WAIHAWA | 1.94 |
| WAIHAWA II | 1.22 |
| WAIHAWA SUBTOTAL: | 3.16 |

| STATION | MGD |
|-----------------------------|------|
| PEARL CITY-HALAWA (6) | |
| HALAWA 277 | 0.54 |
| HALAWA 550 | 0.00 |
| AIEA | 1.35 |
| AIEA GULCH 497 | 0.16 |
| AIEA GULCH 550 | 0.24 |
| KAONOHI I | 1.28 |
| WAIMALU I | 0.00 |
| NEWTOWN | 1.02 |
| WAIU | 0.86 |
| PEARL CITY I | 0.51 |
| PEARL CITY II | 1.02 |
| PEARL CITY III | 0.48 |
| PEARL CITY SHAFT | 0.93 |
| PEARL CITY-HALAWA SUBTOTAL: | 8.39 |

| STATION | MGD |
|-----------------------|-------|
| WAIPAHU-EWA (7) | |
| WAIPIO HTS. | 0.14 |
| WAIPIO HTS. I | 0.27 |
| WAIPIO HTS. II | 0.39 |
| WAIPIO HTS. III | 1.29 |
| WAIPAHU | 2.81 |
| WAIPAHU II | 1.07 |
| WAIPAHU III | 1.53 |
| WAIPAHU IV | 3.17 |
| KUNIA I | 5.49 |
| KUNIA II | 2.06 |
| KUNIA III | 1.42 |
| HOAEAE | 6.70 |
| HONOULIULI I | 0.28 |
| HONOULIULI II | 5.72 |
| MAKAKILO | 0.22 |
| WAIPAHU-EWA SUBTOTAL: | 32.57 |

| STATION | MGD |
|---------------------|------|
| WAIANAE (8) | |
| MAKAHA I | 0.87 |
| MAKAHA II | 0.08 |
| MAKAHA III | 0.92 |
| MAKAHA V | 0.17 |
| MAKAHA VI | 0.00 |
| MAKAHA SHAFT | 0.00 |
| KAMAILE | 0.07 |
| WAIANAE I | 0.19 |
| WAIANAE II | 0.53 |
| WAIANAE III | 0.38 |
| WELLS SUBTOTAL: | 3.21 |
| WAI. C&C TUNNEL | 1.40 |
| WAI. PLANT. TUNNELS | 0.16 |
| GRAVITY SUBTOTAL: | 1.56 |
| WAIANAE SUBTOTAL: | 4.77 |

NONPOTABLE

| NONPOTABLE | MGD |
|--------------------|------|
| KALAUAO SPRINGS | 0.75 |
| BARBERS POINT WELL | 0.86 |
| GLOVER TUNNEL NP | 0.46 |
| NONPOTABLE TOTAL: | 2.07 |

RECYCLED WATER (February 2016)

| RECYCLED WATER | MGD |
|-----------------------|------|
| HONOULIULI WRF R-1 | 6.83 |
| HONOULIULI WRF RO | 1.27 |
| RECYCLED WATER TOTAL: | 8.10 |

**PRODUCTION, HEAD, AND RAINFALL REPORT
MARCH 2016**

PRODUCTION SUMMARIES

| TOTAL WATER | MGD |
|----------------|--------|
| PUMPAGE | 131.05 |
| GRAVITY | 10.09 |
| POTABLE TOTAL: | 141.14 |
| NONPOTABLE | 2.07 |
| RECYCLED WATER | 8.10 |
| TOTAL WATER: | 151.31 |

**CWRM PERMITTED USE AND BWS ASSESSED YIELDS FOR BWS
POTABLE SOURCES**

| WATER USE DISTRICTS | | A | B | C |
|---------------------|-------------------|--------------------------------|-------------|-------------|
| | | PERMITTED USE / BWS YLDS | MAR 2016 | DIFF A-B |
| 1 | HONOLULU | 82.93 | 67.18 | 15.75 |
| 2 | WINDWARD | 25.02 | 16.92 | 8.10 |
| 3 | NORTH SHORE | 4.74 | 3.47 | 1.27 |
| 4 | MILILANI | 7.53 | 4.67 | 2.86 |
| 5 | WAIHAWA | 4.27 | 3.16 | 1.11 |
| 6 | PEARL CITY-HALAWA | 12.25 | 8.39 | 3.86 |
| 7 | WAIPAHU-EWA | 50.63 | 32.57 | 18.06 |
| 8 | WAIANAE | 4.34 | 4.77 | -0.43 |
| TOTAL: | | 191.71 | 141.14 | 50.57 |

**CWRM PERMITTED USE FOR BWS
NONPOTABLE SOURCES**

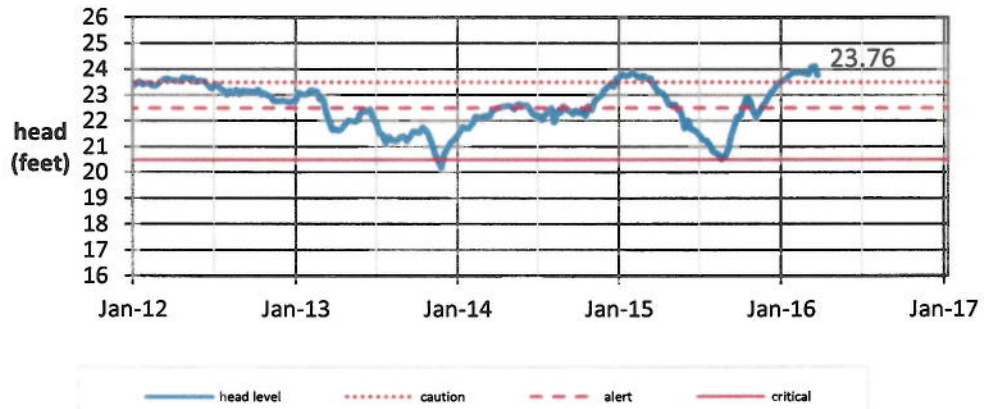
| WATER USE DISTRICTS | | A | B | C |
|---------------------|--------------------------------|------------------|-------------|--------------|
| | | PERMITTED USE | MAR 2016 | DIFF. A-B |
| 7 | EWA (BARBERS POINT NP WELL) | 1.00 | 0.86 | 0.14 |
| TOTAL: | | 1.00 | 0.86 | 0.14 |

EFFECTIVE WATER DEMAND PER DISTRICT

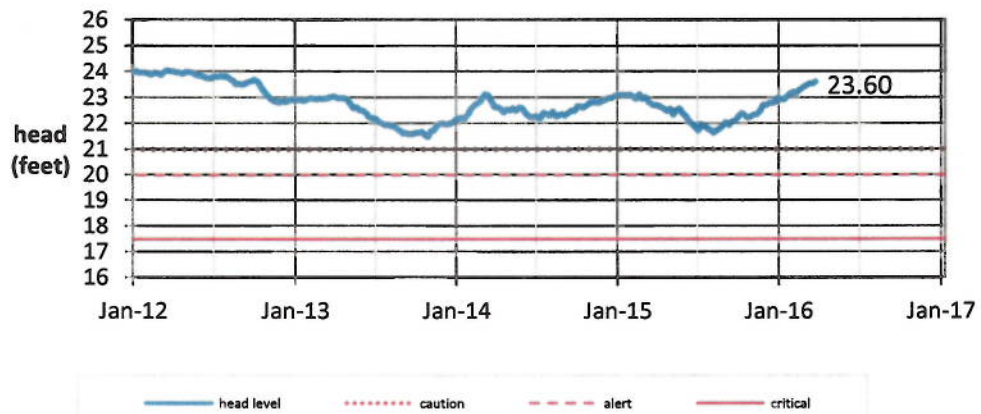
| IMPORT/EXPORT BETWEEN WATER USE DISTRICTS | | | |
|---|----|-----------------|------|
| FROM | TO | | MGD |
| 2 | 1 | WINDWARD EXPORT | 0.14 |
| 7 | 8 | BARBERS PT LB | 4.98 |

| WATER USE DISTRICTS | | SUBTOTAL | IMPORT | EXPORT | EFFECTIVE WATER DEMAND |
|---------------------|-------------------|----------|--------|--------|------------------------------|
| 1 | HONOLULU | 67.18 | 0.14 | - | 67.32 |
| 2 | WINDWARD | 16.92 | - | 0.14 | 16.78 |
| 3 | NORTH SHORE | 3.47 | - | - | 3.47 |
| 4 | MILILANI | 4.67 | - | - | 4.67 |
| 5 | WAIHAWA | 3.16 | - | - | 3.16 |
| 6 | PEARL CITY-HALAWA | 8.39 | - | - | 8.39 |
| 7 | WAIPAHU-EWA | 32.57 | - | 4.98 | 27.59 |
| 8 | WAIANAE | 4.77 | 4.98 | - | 9.75 |
| TOTAL: | | 141.14 | 5.12 | 5.12 | 141.14 |

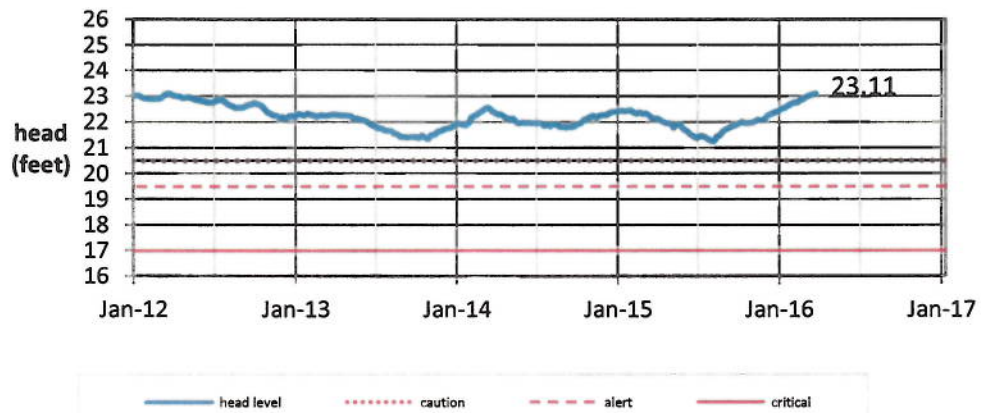
Kaimuki 03/27/16



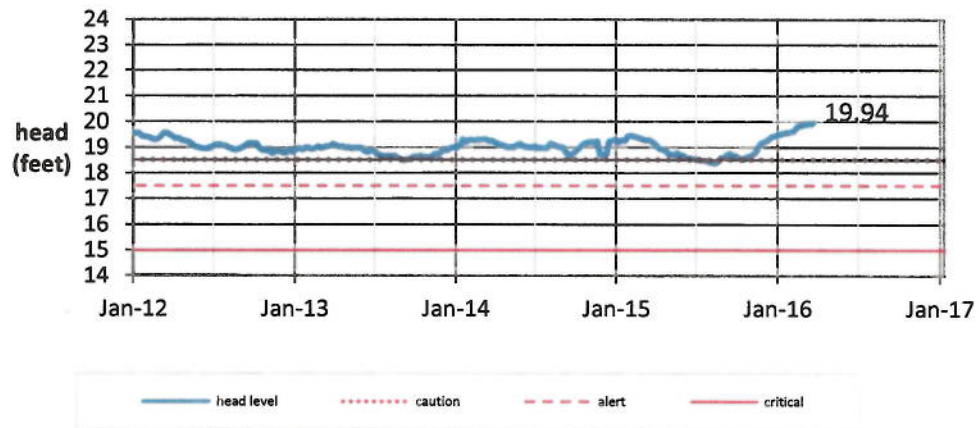
Beretania 03/27/16



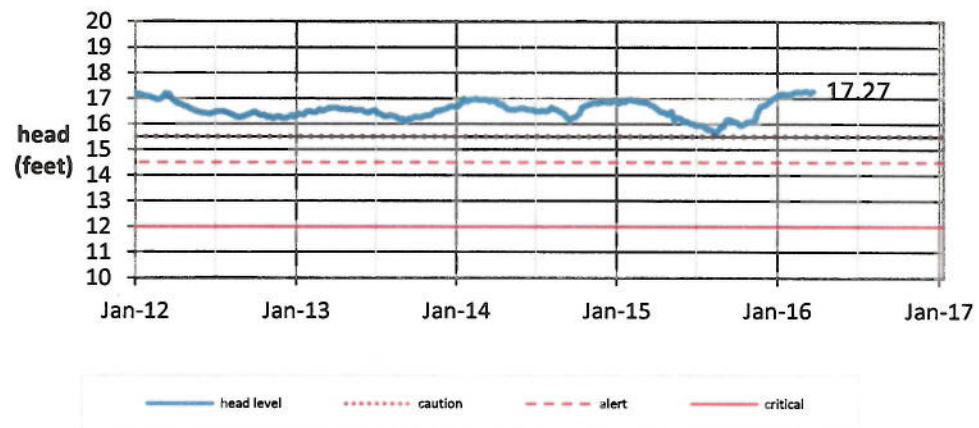
Kalihi 03/27/16



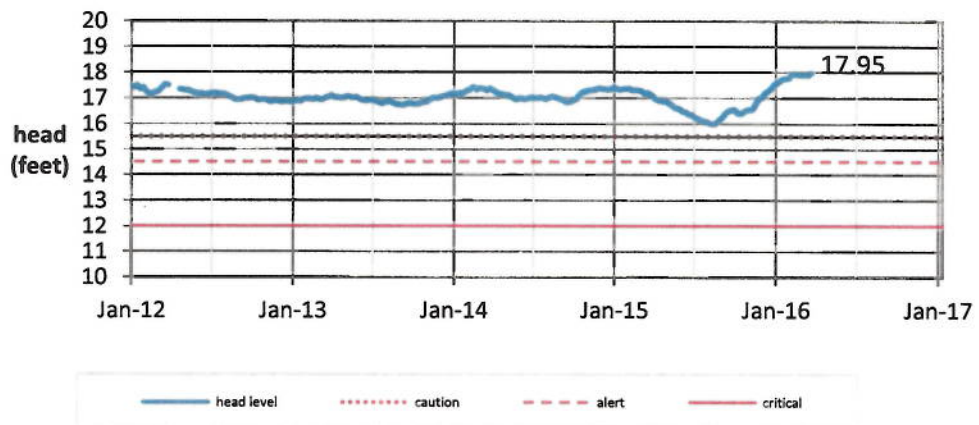
Moanalua 03/27/16



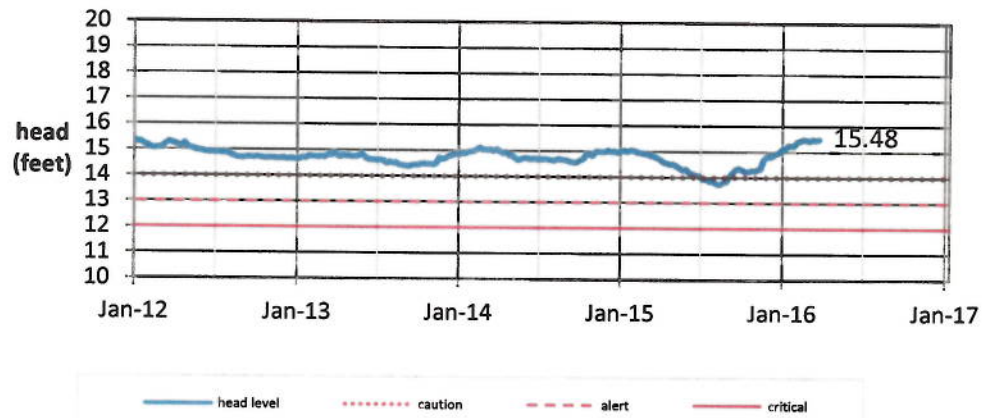
Halawa 03/27/16



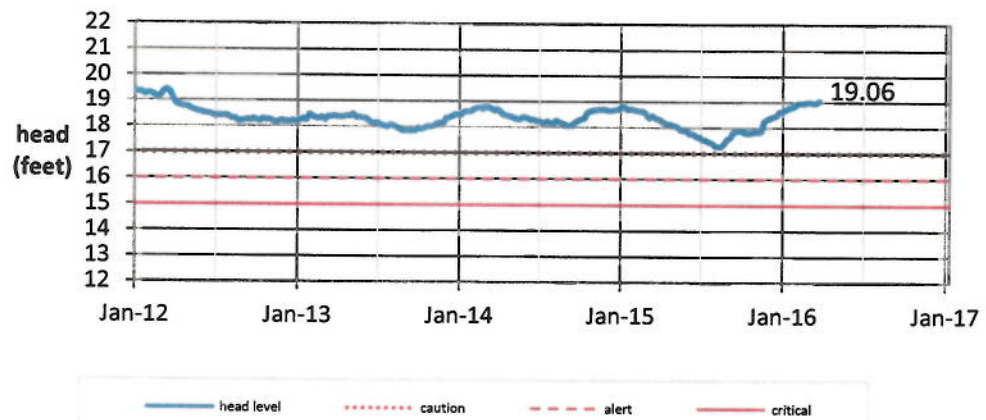
Kalauao 03/27/16



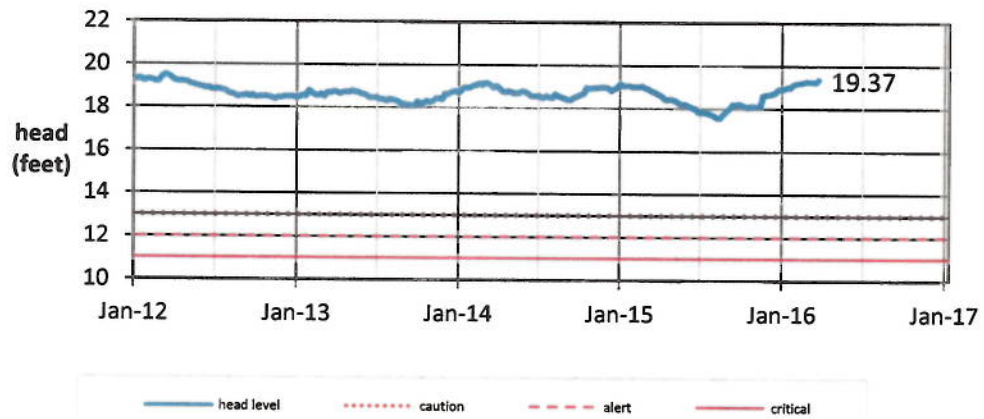
Pearl City 03/27/16



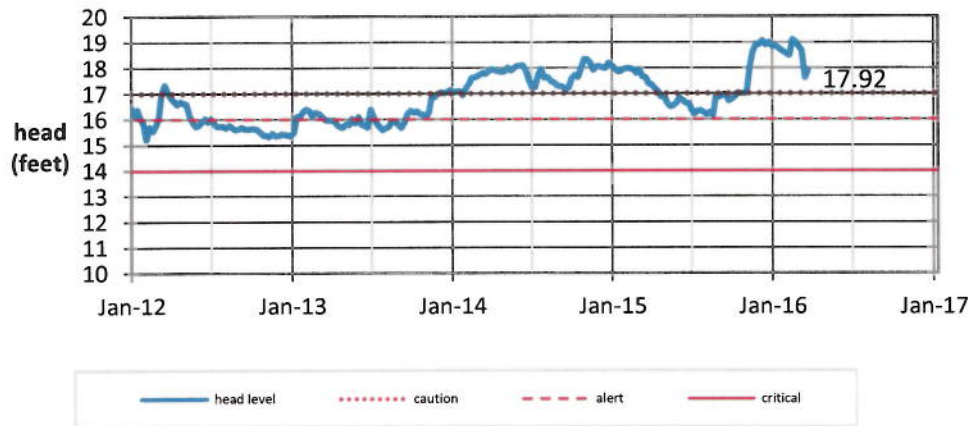
Waipahu 03/27/16



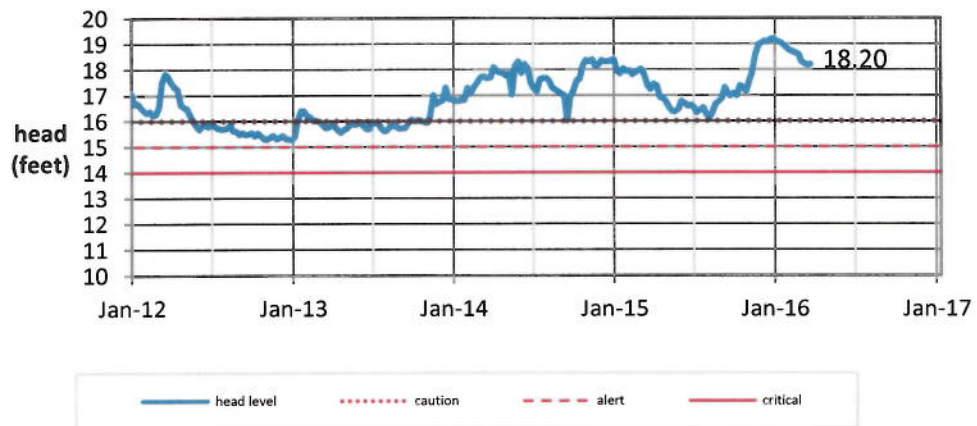
Hoeaee-Kunia 03/27/16



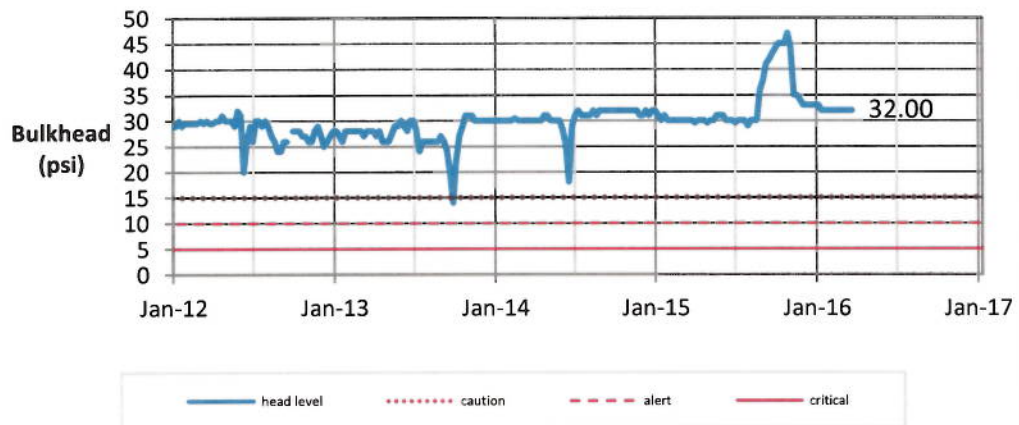
Punaluu 03/27/16



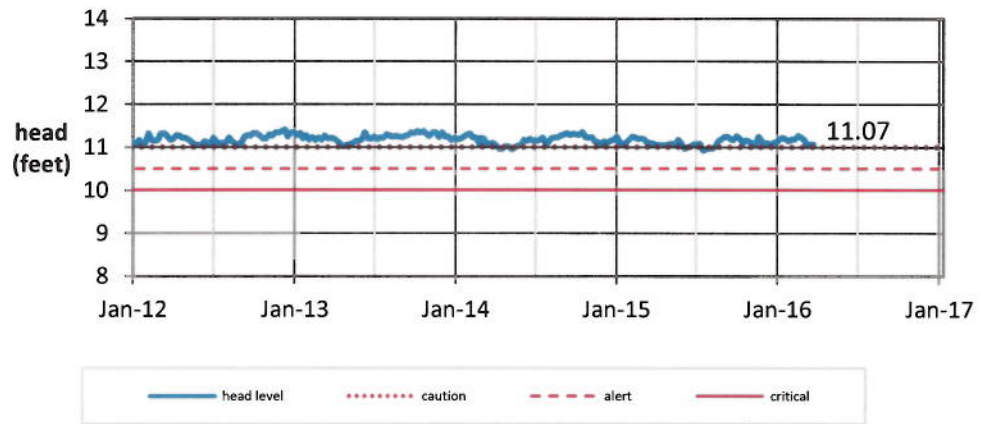
Kaluanui 03/27/16

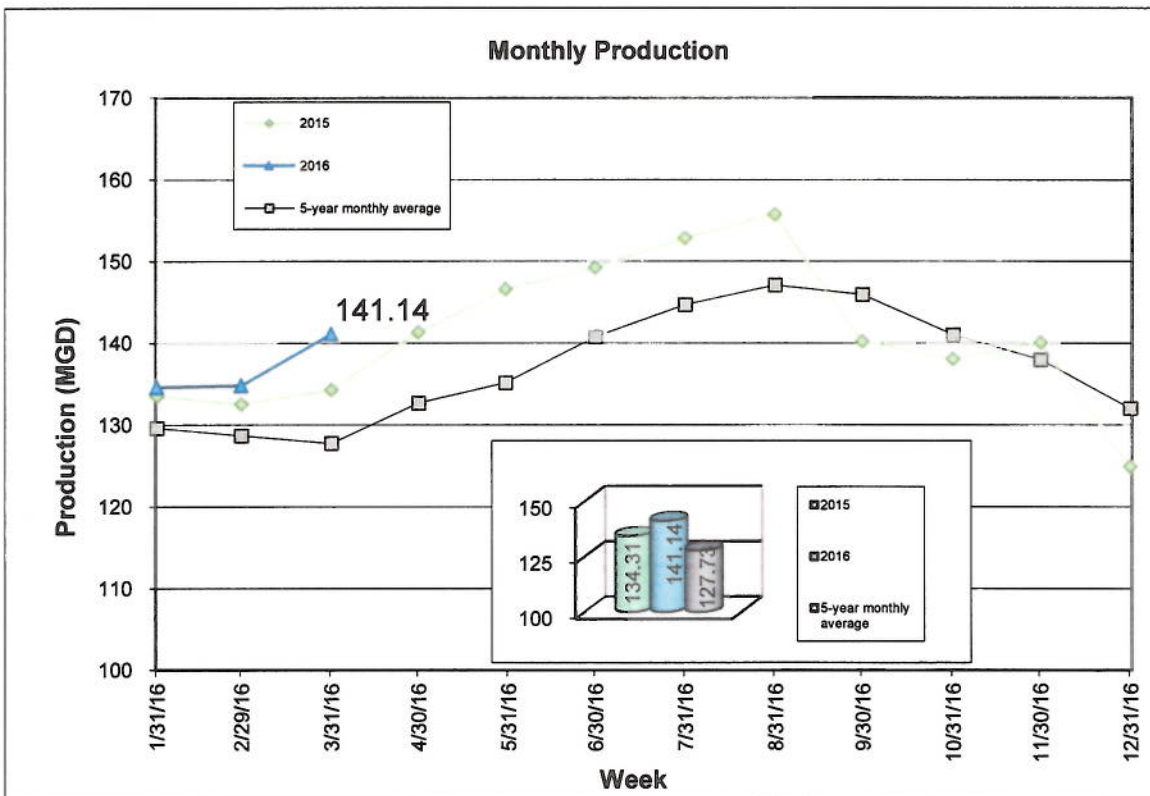
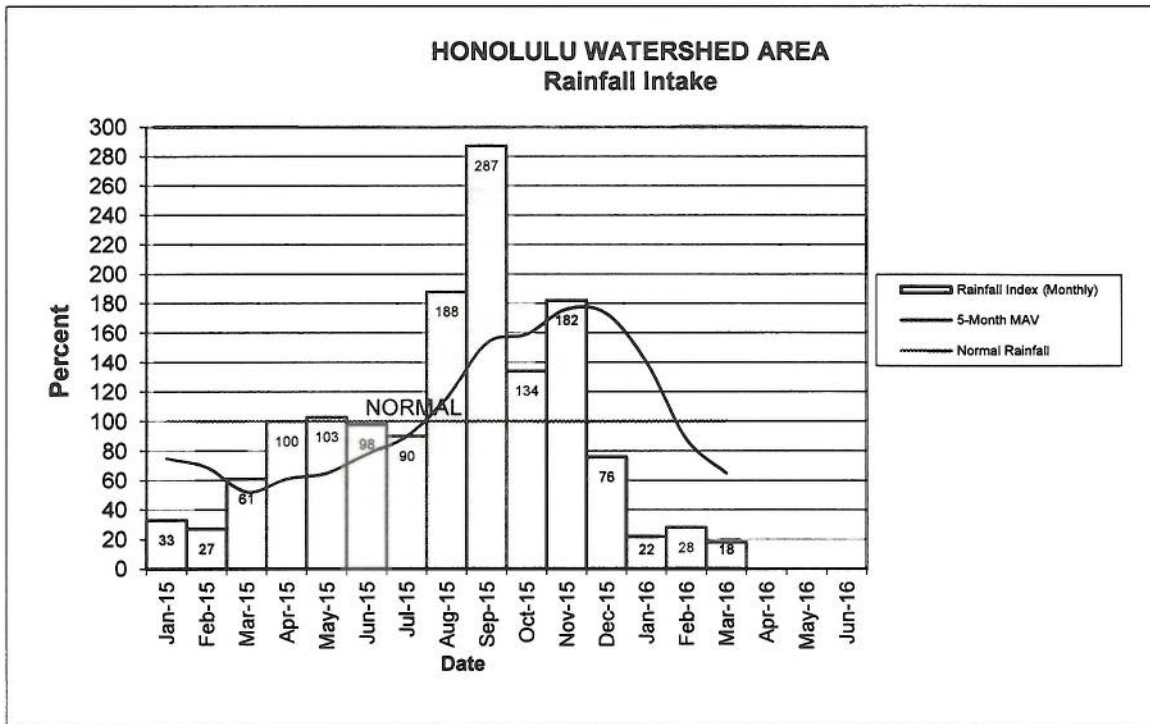


Waihee Tunnel 03/27/16



Waialua 03/27/16



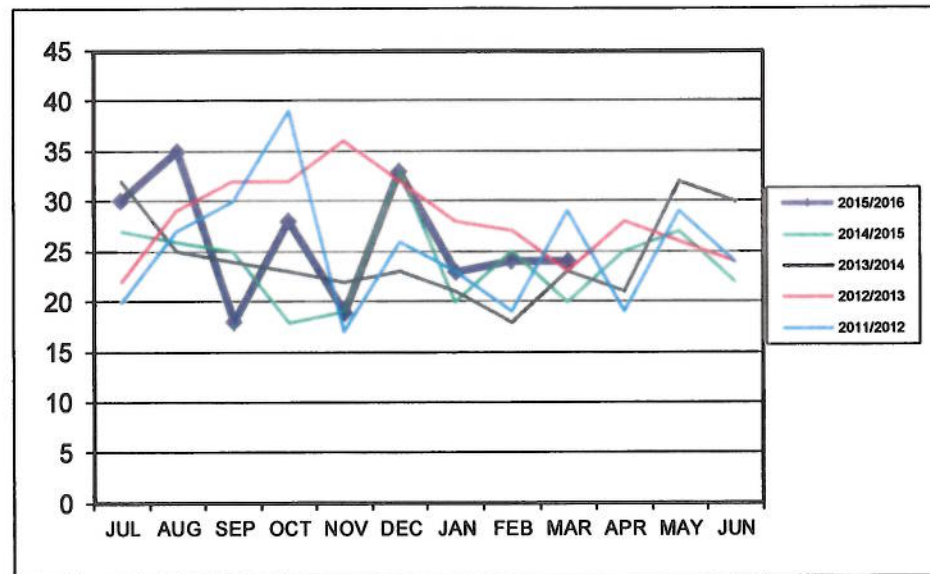


ITEM FOR INFORMATION NO. 5

WATER MAIN REPAIR REPORT for March 2016

| | JUL | AUG | SEP | OCT | NOV | DEC | JAN | FEB | MAR | APR | MAY | JUN | Total |
|-----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-------|
| 2015/2016 | 30 | 35 | 18 | 28 | 19 | 33 | 23 | 24 | 24 | | | | 234 |
| 2014/2015 | 27 | 26 | 25 | 18 | 19 | 33 | 20 | 25 | 20 | 25 | 27 | 22 | 287 |
| 2013/2014 | 32 | 25 | 24 | 23 | 22 | 23 | 21 | 18 | 23 | 21 | 32 | 30 | 294 |
| 2012/2013 | 22 | 29 | 32 | 32 | 36 | 32 | 28 | 27 | 23 | 28 | 26 | 24 | 339 |
| 2011/2012 | 20 | 27 | 30 | 39 | 17 | 26 | 23 | 19 | 29 | 19 | 29 | 24 | 302 |

| Date | Address | Size |
|------|---------------------------|-----------|
| 2/16 | 91-1023 Waihua Pl. | 8" D.I. |
| 3/2 | 2354 Aumakua St. | 8" C.I. |
| 3/3 | 4837 Sierra Dr. | 8" C.I. |
| 3/4 | 89-1085 Puawiliwili Pl. | 8" C.I. |
| 3/8 | 94-512 Anakahi Pl. | 4" C.I. |
| 3/8 | 3960 Sierra Dr. | 6" C.I. |
| 3/11 | 47-350 Ahuimanu Rd. | 6" C.I. |
| 3/11 | 2845 Waiālae Ave. | 8" C.I. |
| 3/11 | 1658 Kealia Dr. | 6" C.I. |
| 3/12 | 86-151 Kuwale Rd. | 8" C.I. |
| 3/12 | 54-187 Kawaeku St. | 8" C.I. |
| 3/13 | 2818 Kinohou Pl. | 4" C.I. |
| 3/13 | 86-115 Kuwale Rd. | 8" C.I. |
| 3/13 | 97 Dowsett Ave. | 8" P.V.C. |
| 3/15 | 1543 Amelia St. | 6" C.I. |
| 3/16 | 94-1036 Lumipolu St. | 8" C.I. |
| 3/16 | 85-116 Alawa Pl. | 4" C.I. |
| 3/20 | 2116 Puna St. | 6" C.I. |
| 3/22 | 41-202 Kalanianaʻole Hwy. | 30" C.C. |
| 3/23 | 4731 Kahala Ave. | 6" C.I. |
| 3/24 | 41-608 Hihimanu St. | 20" C.C. |
| 3/26 | 5304 Kalanianaʻole Hwy. | 12" C.I. |
| 3/28 | 3317 Ala Lehua Pl. | 4" C.I. |
| 3/28 | 41-164 Nalu St. | 12" D.I. |



Bold * - Pro-active Leak Repair

46.61 miles of pipelines were surveyed by the Leak Detection Team in the month of March.

DISCUSSION

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

**MOTION TO
RECESS INTO
EXECUTIVE
SESSION**

Upon unanimously approved motion, the Board recessed into Executive Session Pursuant to [HRS §92-5(a)(2)] at 2:57 PM to Consider Issues Pertaining to Matters Posted for Discussion at an Executive Session

DISCUSSION

Before going into Executive Session, Mr. Lau recognized Mr. Alex Ubiadas from BWS's Security Office, who will be leaving BWS in early May to take on a new position in the mainland. Mr. Ubiadas thanked everyone for the opportunity to serve at BWS. He appreciates the experience, advice, and support over the years. Mr. Miyashiro and Mr. Lau thanked Mr. Ubiadas for his service and wished him well.

**OPEN
SESSION**

The Board reconvened in Open Session at 3:06 PM

**MOTION TO
ADJOURN**

There being no further business Chair Miyashiro at 3:06 PM called for a motion to adjourn the Open Session. Bryan Andaya so moved; seconded by Ross Sasamura and unanimously carried.

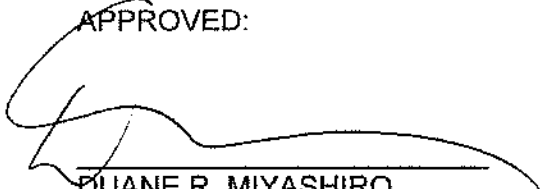
Respectfully submitted,

| THE MINUTES OF THE REGULAR SESSION BOARD MEETING ON APRIL 25, 2016 WERE APPROVED AT THE MAY 23, 2016 BOARD MEETING | | | |
|--|-----|----|---------|
| | AYE | NO | COMMENT |
| DUANE R. MIYASHIRO | X | | |
| ADAM C. WONG | X | | |
| DAVID C. HULIHEE | | | ABSENT |
| KAPUA SPROAT | | | ABSENT |
| BRYAN P. ANDAYA | X | | |
| ROSS S. SASAMURA | X | | |
| FORD N. FUCHIGAMI | | | ABSENT |



LISA K. KIM

APPROVED:



DUANE R. MIYASHIRO
Chair of the Board

MAY 23 2016

Date