San Diego County Water Authority

Period Ending
July 31, 2018
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SECTION 1

Economic Update
U.S. payrolls rose by 157,000 in July, below the consensus forecast of 193,000. May and June payrolls were revised up by a net total of 59,000. On a trailing 3-month and 6-month basis payrolls increased by an average of 224,000 and 221,000 per month, respectively, more than enough to absorb new entrants into the labor market. The unemployment rate dipped back to 3.9% in July from 4.0% in June. The labor participation rate was unchanged at 62.9%. A broader measure of unemployment called the U-6, which includes those who are marginally attached to the labor force and employed part time for economic reasons, declined to 7.5% in July from 7.8% in June. Wages rose 0.3% in July on a month-over-month basis, in line with expectations. Wages were up 2.7% on a year-over-year basis in July, unchanged from June. The average workweek declined slightly to 34.5 hours from 34.6 hours. Overall, the July employment report was solid even though payrolls were less robust than expected.
Regional Unemployment Rate

Source: US Department of Labor
Source: US Department of Labor
The Consumer Price Index (CPI) was up 2.9% year-over-year in July, unchanged on a year-over-year basis from June. Core CPI (CPI less food and energy) was up 2.4% year-over-year in July, up from 2.3% year-over-year in June. The Personal Consumption Expenditures (PCE) index was up 2.2% year-over-year in June, unchanged from May. Core PCE (excluding food and energy) was up 1.9% on a year-over-year basis in June, also unchanged from May. Notably, both headline and core inflation in May were revised down slightly. As such, core PCE inflation has yet to reach the Fed's 2.0% target.
On a year-over-year basis, the Treasury yield curve has flattened. The spread between 2-Year and 10-year Treasury yields has narrowed from 95 basis points to 29 basis points, year-over-year. Rate hikes by the Federal Reserve have put upward pressure on shorter-term rates, while supply and demand imbalances, technical factors, and subdued inflation expectations have kept longer rates relatively contained.
SECTION 2

Account Profile
Objectives

Consolidated Investment Objectives

The investment policies and practices of the Board of Directors and the Treasurer for the San Diego County Water Authority are based upon limitations placed on it by governing legislative bodies. These policies have three primary goals:

1. To assure compliance with all Federal, State and Local laws governing the investment of monies under the control of the Treasurer.
2. To protect the principal monies entrusted to this organization.
3. To generate the maximum amount of investment income within the parameters of this Annual Statement of Investment Policy.

These goals are enhanced by the following objectives in order of importance:

- Safety
- Liquidity
- Return on Investments
- Public Trust

Chandler Asset Management Performance Objectives

The performance objective for the accounts is to achieve a rate of return over a market cycle that equals or exceeds the return on a market index of similar duration and sector allocation.

Strategy

In order to achieve these objectives, the portfolio invests in high quality fixed income securities consistent with the investment policy and California Government Code.
### Compliance

**San Diego County Water Authority Consolidated**

**July 31, 2018**

#### COMPLIANCE WITH INVESTMENT POLICY

Assets managed by Chandler Asset Management are in full compliance with state law and the Investment Policy.

<table>
<thead>
<tr>
<th>Category</th>
<th>Standard</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treasury Issues</td>
<td>No Limit</td>
<td>Complies</td>
</tr>
<tr>
<td>Agency Issues</td>
<td>20% max for Agency callable securities</td>
<td>Complies</td>
</tr>
<tr>
<td>Supranational Securities</td>
<td>&quot;AA&quot; rated or better by Moody's, S&amp;P, or Fitch; 10% maximum; 5% max per issuer; USD denominated senior unsecured unsubordinated obligations issued or unconditionally guaranteed by IBRD, IFC, or IADB</td>
<td>Complies</td>
</tr>
<tr>
<td>Municipal Securities</td>
<td>&quot;A&quot; rated or better by a NRSRO; 30% maximum; 5% max per issuer</td>
<td>Complies</td>
</tr>
<tr>
<td>Corporate/ Medium Term Notes</td>
<td>&quot;A&quot; rated or better by a NRSRO; 30% maximum; 5% max per issuer; Issuer is a corporation organized and operating within the U.S. or by depository institutions licensed by the U.S. or any state and operating within the U.S.</td>
<td>Complies</td>
</tr>
<tr>
<td>Banker’s Acceptances</td>
<td>&quot;A-1&quot; rated or better by a NRSRO; 40% maximum; 5% max per issuer; 180 days max maturity</td>
<td>Complies</td>
</tr>
<tr>
<td>Commercial Paper</td>
<td>&quot;A-1&quot; rated or better by a NRSRO; &quot;A&quot; rated issuer or better by a NRSRO; if any long-term debt; 25% maximum; 5% max per issuer; 270 days max maturity; Issued by general corporations organized and operating within the U.S. and have total assets &gt;$500 million</td>
<td>Complies</td>
</tr>
<tr>
<td>Certificates of Deposit/ Time Deposit</td>
<td>30% maximum (combined all CDs/TDs including NCDs/CDARs), 20% maximum (combination of FDIC and Collateralized CDs/TDs); 5% max per issuer</td>
<td>Complies</td>
</tr>
<tr>
<td>Negotiable CDs</td>
<td>No rating required if amount of the NCD is covered by FDIC insured limit; If above FDIC insured limit, requires &quot;A-1&quot; short-term or better by a NRSRO or &quot;A&quot; long-term rated issuer or better by a NRSRO; 30% maximum (combined with CDs/CDARs); 5% max per issuer; Issued by nationally or state-chartered bank, a savings assoc. or a federal assoc., a state or federal credit union, or by a federally licensed or state-licensed branch of a foreign bank.</td>
<td>Complies</td>
</tr>
<tr>
<td>Asset-Backed (ABS), Mortgage-Backed Securities; Pass-Throughs; CMOs</td>
<td>&quot;AA&quot; rated or better by a NRSRO; &quot;A&quot; rated long-term debt issuer by a NRSRO; 20% max (combined ABS, MBS, MPTs, CMOs); 5% max per issuer; No issuer limitation on any mortgage security where the issuer is the US Treasury or Federal Agency/GSE.</td>
<td>Complies</td>
</tr>
<tr>
<td>Money Market Mutual Funds and Mutual Funds</td>
<td>Highest rating or &quot;AAA&quot; rated by two NRSROs; SEC registered adviser with AUM &gt;$500 million and experience greater than 5 years; 10% per one Mutual Fund; 20% maximum per Money Market Mutual Funds; 20% maximum combined of total portfolio in these securities</td>
<td>Complies</td>
</tr>
<tr>
<td>Repurchase Agreements</td>
<td>&quot;A&quot; rated long term debt issuer or better by a NRSRO; 20% maximum; 1 year max maturity; Not used by IA</td>
<td>Complies</td>
</tr>
<tr>
<td>Guaranteed Investment Contracts (GICs)</td>
<td>CGC</td>
<td>Complies</td>
</tr>
<tr>
<td>LAIF</td>
<td>Max permitted by State Law; Not used by IA</td>
<td>Complies</td>
</tr>
<tr>
<td>LGIP</td>
<td>AAA or higher by a NRSRO; 25% maximum; 25% max per issuer; Not used by IA</td>
<td>Complies</td>
</tr>
<tr>
<td>Prohibited</td>
<td>Inverse floaters, Range notes, Mortgaged derived interest-only strips; Zero interest accrual securities; Selling on margin; Reverse Repurchase Agreements; Foreign currency denominated securities</td>
<td>Complies</td>
</tr>
<tr>
<td>Maximum Maturity</td>
<td>5 years maximum maturity</td>
<td>Complies</td>
</tr>
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</table>

*GIC- managed by client*
## Portfolio Characteristics

### SDCWATER Chandler

<table>
<thead>
<tr>
<th></th>
<th>Benchmark*</th>
<th>Portfolio</th>
<th>Portfolio</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>7/31/2018</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average Maturity (yrs)</td>
<td>2.66</td>
<td>2.20</td>
<td>2.19</td>
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<tr>
<td>Modified Duration</td>
<td>2.53</td>
<td>2.10</td>
<td>2.10</td>
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<tr>
<td>Average Purchase Yield</td>
<td>n/a</td>
<td>1.99%</td>
<td>1.82%</td>
</tr>
<tr>
<td>Average Market Yield</td>
<td>2.71%</td>
<td>2.78%</td>
<td>2.42%</td>
</tr>
<tr>
<td>Average Quality**</td>
<td>AAA</td>
<td>AA/Aa1</td>
<td>AA+/Aa1</td>
</tr>
<tr>
<td><strong>2/28/2018</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average Maturity (yrs)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Modified Duration</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average Purchase Yield</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average Market Yield</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average Quality**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Market Value</td>
<td>124,201,715</td>
<td>113,630,573</td>
<td></td>
</tr>
</tbody>
</table>

*ICE BAML 1-5 Yr US Treasury/Agency Index

**Benchmark is a blended rating of S&P, Moody’s, and Fitch. Portfolio is S&P and Moody’s respectively.
Sector Distribution

SDCWATER Chandler

July 31, 2018

- US Treasury: 26.4%
- Agency: 38.1%
- US Corporate: 29.1%
- Supranational: 6.3%
- Money Market Fund F1: 0.2%

February 28, 2018

- US Treasury: 24.9%
- Agency: 40.0%
- US Corporate: 29.8%
- Supranational: 5.1%
- Money Market Fund F1: 0.2%
## Issuers

**SDC WATER Chandler – Account #10569**

<table>
<thead>
<tr>
<th>Issue Name</th>
<th>Investment Type</th>
<th>% Portfolio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government of United States</td>
<td>US Treasury</td>
<td>26.35%</td>
</tr>
<tr>
<td>Federal Home Loan Mortgage Corp</td>
<td>Agency</td>
<td>25.31%</td>
</tr>
<tr>
<td>Federal National Mortgage Association</td>
<td>Agency</td>
<td>11.15%</td>
</tr>
<tr>
<td>US Bancorp</td>
<td>US Corporate</td>
<td>3.21%</td>
</tr>
<tr>
<td>Intl Bank Recon and Development</td>
<td>Supranational</td>
<td>3.17%</td>
</tr>
<tr>
<td>JP Morgan Chase &amp; Co</td>
<td>US Corporate</td>
<td>1.62%</td>
</tr>
<tr>
<td>Berkshire Hathaway</td>
<td>US Corporate</td>
<td>1.62%</td>
</tr>
<tr>
<td>Exxon Mobil Corp</td>
<td>US Corporate</td>
<td>1.61%</td>
</tr>
<tr>
<td>Wal-Mart Stores</td>
<td>US Corporate</td>
<td>1.61%</td>
</tr>
<tr>
<td>ChevronTexaco Corp</td>
<td>US Corporate</td>
<td>1.61%</td>
</tr>
<tr>
<td>Federal Home Loan Bank</td>
<td>Agency</td>
<td>1.61%</td>
</tr>
<tr>
<td>Microsoft</td>
<td>US Corporate</td>
<td>1.61%</td>
</tr>
<tr>
<td>Procter &amp; Gamble Company</td>
<td>US Corporate</td>
<td>1.60%</td>
</tr>
<tr>
<td>Bank of New York</td>
<td>US Corporate</td>
<td>1.59%</td>
</tr>
<tr>
<td>PNC Financial Services Group</td>
<td>US Corporate</td>
<td>1.59%</td>
</tr>
<tr>
<td>Eli Lilly &amp; Co</td>
<td>US Corporate</td>
<td>1.58%</td>
</tr>
<tr>
<td>Apple Inc</td>
<td>US Corporate</td>
<td>1.57%</td>
</tr>
<tr>
<td>Chubb Corporation</td>
<td>US Corporate</td>
<td>1.57%</td>
</tr>
<tr>
<td>Deere &amp; Company</td>
<td>US Corporate</td>
<td>1.57%</td>
</tr>
<tr>
<td>Toyota Motor Corp</td>
<td>US Corporate</td>
<td>1.57%</td>
</tr>
<tr>
<td>International Finance Corp</td>
<td>Supranational</td>
<td>1.56%</td>
</tr>
<tr>
<td>Inter-American Dev Bank</td>
<td>Supranational</td>
<td>1.54%</td>
</tr>
<tr>
<td>Honda Motor Corporation</td>
<td>US Corporate</td>
<td>1.21%</td>
</tr>
<tr>
<td>IBM Corp</td>
<td>US Corporate</td>
<td>1.21%</td>
</tr>
<tr>
<td>Charles Schwab Corp/The</td>
<td>US Corporate</td>
<td>1.17%</td>
</tr>
<tr>
<td>Blackrock Liquidity Funds T-Fund Portfolio</td>
<td>Money Market Fund FI</td>
<td>0.20%</td>
</tr>
</tbody>
</table>

**Total**                                      |                  | **100.00%**   |
Total rate of return: A measure of a portfolio’s performance over time. It is the internal rate of return, which equates the beginning value of the portfolio with the ending value; it includes interest earnings, realized and unrealized gains and losses in the portfolio.
## Portfolio Characteristics

### SDCWA Internally Managed

<table>
<thead>
<tr>
<th></th>
<th>7/31/2018</th>
<th>2/28/2018</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Portfolio</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average Maturity (yrs)</td>
<td>0.23</td>
<td>0.32</td>
</tr>
<tr>
<td>Modified Duration</td>
<td>0.22</td>
<td>0.32</td>
</tr>
<tr>
<td>Average Purchase Yield</td>
<td>1.34%</td>
<td>1.23%</td>
</tr>
<tr>
<td>Average Market Yield</td>
<td>1.98%</td>
<td>1.85%</td>
</tr>
<tr>
<td>Average Quality</td>
<td>AAA/TSY</td>
<td>AAA/TSY</td>
</tr>
<tr>
<td>Total Market Value</td>
<td>230,100,839</td>
<td>276,995,405</td>
</tr>
</tbody>
</table>
Sector Distribution

SDCWA Internally Managed

July 31, 2018

- Agency: 22.1%
- Cash: 16.8%
- Commercial Paper: 3.9%
- Guaranteed Inv. Contract: 5.3%
- LAIF: 6.4%
- Local Gov Investment Pool: 29.4%
- US Treasury: 16.0%

February 28, 2018

- Agency: 37.9%
- Cash: 0.2%
- Commercial Paper: 7.2%
- Guaranteed Inv. Contract: 4.4%
- LAIF: 11.7%
- Local Gov Investment Pool: 26.0%
- US Treasury: 12.6%
Consolidated Information
## Portfolio Characteristics

### San Diego County Water Authority Consolidated

<table>
<thead>
<tr>
<th></th>
<th>7/31/2018</th>
<th>2/28/2018</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Portfolio</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average Maturity (yrs)</td>
<td>0.92</td>
<td>0.86</td>
</tr>
<tr>
<td>Modified Duration</td>
<td>0.88</td>
<td>0.84</td>
</tr>
<tr>
<td>Average Purchase Yield</td>
<td>1.57%</td>
<td>1.40%</td>
</tr>
<tr>
<td>Average Market Yield</td>
<td>2.26%</td>
<td>2.01%</td>
</tr>
<tr>
<td>Average Quality</td>
<td>AA+/Aaa</td>
<td>AA+/Aaa</td>
</tr>
<tr>
<td>Total Market Value</td>
<td>354,302,553</td>
<td>390,625,978</td>
</tr>
</tbody>
</table>
San Diego County Water Authority Consolidated

**July 31, 2018**

- Agency: 27.7%
- Cash: 10.9%
- Commercial Paper: 2.5%
- Guaranteed Inv. Contract: 3.5%
- LAIF: 4.2%
- Local Gov Investment Pool: 19.1%
- Money Market Fund FI: 2.5%
- US Corporate: 10.2%
- Supranational: 2.2%
- US Treasury: 19.7%

**February 28, 2018**

- Agency: 38.5%
- Cash: 0.2%
- Commercial Paper: 5.1%
- Guaranteed Inv. Contract: 3.1%
- LAIF: 8.3%
- Local Gov Investment Pool: 18.4%
- Money Market Fund FI: 0.1%
- Supranational: 1.5%
- US Corporate: 8.7%
- US Treasury: 16.2%
Water Authority Pension Plan Funding Strategy Discussion

Administrative and Finance Committee
August 23, 2018

Presented by: Lisa Marie Harris, Finance Director
and Christopher Woidzik, Controller
Pension Funding Discussion

Board Meetings:

November 14, 2017 - Audit Committee recommendation

February 22, 2018 - Initial discussion, recap Water Authority liability & funding status and presentation from CalPERS actuary

March 22, 2018 - Presented a range of funding options and had a presentation from 115 Trust provider PFM Asset Management, LLC

August 23, 2018 - Follow up discussion on Funding Options and impact on Unfunded Actuarial Liability and Rates

October 25, 2018 - Board decision on Funding Policy
Pension Payment is comprised of two components:

- **Normal Cost** - actuarial present value of benefits for employee service performed during the current year. (This is expressed as a percentage of payroll, presently 10.267%).

- **Unfunded Actuarial Liability (UAL)** - the liability for all prior service costs. UAL is affected by mortality changes, rates of return, discount rate changes and other factors. (This is paid monthly or may be paid at the beginning of each fiscal year.)
Water Authority Pension Plan - What we have done...

History:

- Inception to present day - have always made the actuarial determined pension plan payments to CalPERS.

- Recently started making supplemental payments:
  - May 2017 (FY2017) - Contributed $9.6M supplemental payment
    - $6.3M future interest expense savings
  - July 2017 (FY2018) - Completed $1.1M budgetary pension excess payment
    - $2.9M future interest expense savings
  - July 2018 (FY2019) - Completed $828K budgetary pension excess payment
    - $1M future interest expense savings
Water Authority Pension Plan - Key Data

Measurement Date - June 30, 2017

Total Pension Liability $246 million

Total Plan Assets 176 million

Net Pension Liability (UAL) $70 million

(UAL payoff is set at 30 years)

Percent Funded Ratio 71.55%

(67.84% previously; increase aided by 11.2% FY2017 return & May 2017 supp. payment)

FY2018-19 UAL Payment $3.9 million

(saved $400K by prepaying in July, otherwise payment would have been $4.3M)

Rate effect: $1M = $2.40 per acre foot
Water Authority Pension Plan & CalPERS Pension System Funded Ratios

Since 2009 the Plan has operated in a narrow band of 71% or less.

Sources: CalPERS Annual Valuation Report and CalPERS CAFR. MVA utilized beginning in 2003.
Pension liability has been steadily increasing*

*UAL has been increasing due to mortality changes, rates of return variability, discount rate changes and other factors not under the control of the Water Authority.

Sources: CalPERS Annual Valuation Report and CalPERS CAFR. MVA utilized beginning in 2003.
## Water Authority Projected Pension Payments

### Normal Cost and Unfunded Actuarial Liability

<table>
<thead>
<tr>
<th>FISCAL YEAR</th>
<th>REQUIRED CONTRIBUTION 2019-20</th>
<th>PROJECTED FUTURE EMPLOYER CONTRIBUTIONS (ASSUMES 7.25% RETURN FOR FY 2017-18)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>10.76%</td>
<td>11.30% 11.30% 11.30% 11.30% 11.30%</td>
</tr>
<tr>
<td>Base CalPERS Contribution % (NORMAL COST)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UAL PAYMENT</td>
<td>$4,526,954</td>
<td>$4,928,000 $5,435,000 $5,832,000 $5,998,000 $6,262,000</td>
</tr>
<tr>
<td>TOTAL AS A % OF PAYROLL</td>
<td>26.20%</td>
<td>27.80% 29.00% 29.70% 29.80% 30.10%</td>
</tr>
<tr>
<td>PROJECTED PAYROLL</td>
<td>$29,291,000</td>
<td>$30,023,000 $30,849,000 $31,967,000 $32,568,000 $33,464,000</td>
</tr>
</tbody>
</table>

Source: Projected payroll information provided in CalPERS June 30, 2017 Actuarial Valuation Funding Report.
Options for Unfunded Actuarial Liability (UAL)*:

1. Pay based on CalPERS annual actuarial analysis.
2. Reduce amortization period from 30 years to 20 or 15 years.
3. Create and fund a Section 115 Pension Trust.
4. Issue Debt to fund CIP and use proceeds or existing reserves to reduce UAL balance.
5. Create a pension reserve with annual or periodic deposits to soften employer pension rate ramp increases.
6. Make supplemental payments to CalPERS (i.e. discretionary payments).

*More than one option can be utilized.
Option I: Pay based on CalPERS actuarial analysis

Pros:
- Higher cash balances viewed favorably by rating agencies
- Preserves cash to pay for other unforeseen expenses and CIP
- Offers flexibility for years with challenging budgets

Cons:
- Pension costs continue to increase each year
- Current contributions not tied to set Funded Ratio
- Will be paying more in total to pay off the pension liability
Option I: Water Authority Projected Pension Payments

Normal Cost and Unfunded Actuarial Liability

<table>
<thead>
<tr>
<th>FISCAL YEAR</th>
<th>REQUIRED CONTRIBUTION 2019-20</th>
<th>PROJECTED FUTURE EMPLOYER CONTRIBUTIONS (ASSUMES 7.25% RETURN FOR FY 2017-18)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Base CalPERS Contribution % (NORMAL COST)</td>
<td>2020-21</td>
</tr>
<tr>
<td></td>
<td>10.76%</td>
<td>11.30%</td>
</tr>
<tr>
<td></td>
<td>UAL PAYMENT</td>
<td>$4,526,954</td>
</tr>
<tr>
<td></td>
<td>TOTAL AS A % OF PAYROLL</td>
<td>26.20%</td>
</tr>
<tr>
<td></td>
<td>PROJECTED PAYROLL</td>
<td>$29,291,000</td>
</tr>
</tbody>
</table>

Source: Projected payroll information provided in CalPERS June 30, 2017 Actuarial Valuation Funding Report.

UAL payment set to increase by $1.5M in five years
Option II: Reduce amortization period from 30 years to 20 or 15 years

Pros:
- Payments would be made on a regular basis, lowering the risk of investing a lump sum at the market peak
- Pays off liability in 20 or 15 years instead of 30

Cons:
- Lack of flexibility for years with challenging budgets
- Increases pension costs in the near term
### Option II: Amortization Period Change Effect

#### Amortization Period Options (Fresh Start)

<table>
<thead>
<tr>
<th></th>
<th>30 Years (current)</th>
<th></th>
<th>20 Years</th>
<th></th>
<th>15 Years</th>
<th></th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Balance</td>
<td>Payment</td>
<td>Balance</td>
<td>Payment</td>
<td>Balance</td>
<td>Payment</td>
</tr>
<tr>
<td>June 2019*</td>
<td>$ 65.1</td>
<td>$ 4.5</td>
<td>$ 65.1</td>
<td>$ 4.9</td>
<td>$ 65.1</td>
<td>$ 5.9</td>
</tr>
<tr>
<td>June 2020</td>
<td>65.1</td>
<td>4.9</td>
<td>64.8</td>
<td>5.0</td>
<td>63.7</td>
<td>6.1</td>
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<tr>
<td>June 2021</td>
<td>64.8</td>
<td>5.4</td>
<td>64.3</td>
<td>5.1</td>
<td>62.0</td>
<td>6.3</td>
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<tr>
<td>June 2022</td>
<td>63.9</td>
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<td>63.6</td>
<td>5.3</td>
<td>60.0</td>
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<td>June 2023</td>
<td>62.7</td>
<td>5.9</td>
<td>62.8</td>
<td>5.4</td>
<td>57.7</td>
<td>6.6</td>
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<tr>
<td>June 2024 - 2028</td>
<td>52.8</td>
<td>30.7</td>
<td>54.6</td>
<td>29.7</td>
<td>40.0</td>
<td>36.1</td>
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<tr>
<td>June 2029 - 2033</td>
<td>36.5</td>
<td>30.8</td>
<td>37.9</td>
<td>34.2</td>
<td>-</td>
<td>41.6</td>
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<tr>
<td>June 2034 - 2038</td>
<td>22.1</td>
<td>23.6</td>
<td>-</td>
<td>39.4</td>
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<tr>
<td>June 2039 - 2043</td>
<td>4.9</td>
<td>22.1</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<tr>
<td>June 2044 - 2045</td>
<td>-</td>
<td>0.6</td>
<td>-</td>
<td>-</td>
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<tr>
<td><strong>Totals</strong></td>
<td>$ 134.5</td>
<td></td>
<td>$ 129.1</td>
<td></td>
<td>$ 109.1</td>
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<tr>
<td><strong>Interest Costs</strong></td>
<td>$ 69.4</td>
<td></td>
<td>$ 64.0</td>
<td></td>
<td>$ 44.0</td>
<td></td>
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<tr>
<td><strong>Estimated Savings</strong></td>
<td></td>
<td></td>
<td><strong>$ 5.4</strong></td>
<td></td>
<td><strong>$ 25.4</strong></td>
<td></td>
</tr>
</tbody>
</table>

*This begins with the PROJECTED June 30, 2019 ending Unfunded Actuarial Liability balance. The Water Authority can make a one-time election to reset its amortization period to pay off the UAL quicker, but it will result in higher annual UAL payments as noted.*

*Source: CalPERS June 30, 2017 Actuarial Valuation Funding report*
Option III: Create and Fund a Section 115 Pension Trust

A Section 115 Pension Trust is a vehicle for segregating agency funds from general assets for the purpose of funding a pension. These funds are held by a trust provider and may be invested, but are irrevocably committed to the pension obligation.

Pros:
- Hedges CalPERS exposure and allows for greater investment flexibility/risk diversification
- Allows portfolio customization and a rapid response to changing market conditions
- Assets in the trust will offset unfunded pension liabilities (no claw back)

Cons:
- Does not lower the CalPERS reported unfunded pension liability per governmental accounting rules
- Additional expenses and staff time involved to set up and administer
- Same exposure to market volatility as CalPERS
A Section 115 Trust increases the rate of return on Plan assets while also reducing volatility. Professional money manager assistance would be required.
Option IV: Issue Debt to fund CIP, use bond proceeds & reserves to reduce UAL

Pros:

- Immediate reduction or elimination of Unfunded Pension Liability
- Deploys cash to earn CalPERS investment return rather than expected lower LAIF/portfolio return
- Debt financing of CIP will match payments for future capital improvements to period of benefit
- Fixed cost of debt financing can be incorporated in rate base

Cons:

- Reduces liquidity and may impact ability to undertake future borrowing for operations
- Converts a “soft” (pension) liability to a “hard” (debt) liability with fixed payment terms
Option IV: CalPERS Payments vs Bond Issuance in Thousands

$70M UAL liability converted to a fixed $4.3M annual payment. Savings noted below.

Amortized CalPERS payments assume 7.00% to 7.25% returns

Bond assumes 4.32% interest rate (current projection)
### Option IV: Total Amortized CalPERS Payments vs. $70M Bond Issuance, in Millions

<table>
<thead>
<tr>
<th></th>
<th>Existing CalPERS Payments</th>
<th>$70M Bond Costs</th>
<th>Nominal Savings</th>
<th>Present Value Savings</th>
<th>% Nominal Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>15 Year</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>$120.9</td>
<td>$95.0</td>
<td>$25.9</td>
<td>$19.3</td>
<td>21.4%</td>
</tr>
<tr>
<td>Avg. Annual</td>
<td>$8.1</td>
<td>$6.3</td>
<td>$1.7</td>
<td>$1.3</td>
<td>21.4%</td>
</tr>
<tr>
<td><strong>30 Year</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Total</td>
<td>$161.7</td>
<td>$128.3</td>
<td>$33.4</td>
<td>$26.7</td>
<td>20.7%</td>
</tr>
<tr>
<td>Avg. Annual</td>
<td>$5.4</td>
<td>$4.3</td>
<td>$1.1</td>
<td>$0.9</td>
<td>20.7%</td>
</tr>
</tbody>
</table>

Source: CalPERS June 30, 2016 Actuarial Valuation

1. Amortized CalPERS payments assume 7.00% to 7.25% returns
2. Present value calculation assumes 3% annual inflation
3. Bond assumes 4.32% interest rate
Option V: Create a reserve with annual or periodic deposits to soften employer pension rate ramp increases

Pros:
- If anything happens to CalPERS, the monies placed in reserves would not be sacrificed
- Public/member agency/employee/rating agency favorable perceptions

Cons:
- Does not lower the CalPERS reported unfunded pension liability
- Assets in the reserve could be drawn for unforeseen expenses by Board decision
- Limited investment selections and inhouse experience
Option VI: Supplemental payments to CalPERS (i.e. discretionary payments)

Pros:
- Can make payments when funds are available
- Can select how to apply payment (i.e., annual payment reduction, interest savings or both)

Cons:
- If anything happens to CalPERS, the additional funded amounts could be sacrificed
- Public/member agency perception, is there a better use for monies
Option VI: Supplemental Payments to CalPERS (discretionary amounts)

Pension Funding Framework

1. Set a target percentage would like to be at (i.e., 70%, 75%, 80% 85%)

2. Determine number of years to achieve target (i.e., 5, 10, 15, 20 years)

3. Develop methodology to achieve and maintain target

4. Potential funding sources:
   - Apply annual budgetary savings
   - Specifically budget extra payment annually
   - Earmark 1x revenues received
   - Apply annual debt service savings when available
   - Can do more than one option
Option VI - Target Funded Ratio & Years

Estimated **Additional** UAL Payments to Improve Current 71.55% Funding Ratio in Thousands

<table>
<thead>
<tr>
<th>Funded Ratio</th>
<th>Years</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>5</td>
</tr>
<tr>
<td>75%</td>
<td>$ 1,879</td>
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<tr>
<td>80%</td>
<td>$ 4,600</td>
</tr>
<tr>
<td>85%</td>
<td>$ 7,322</td>
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</table>

Above amount in addition to approx. $3-4M estimated annual base UAL payment.
Next Steps

- September 6 - MAFO meeting and discussion on pension funding options
- October 25 - Board decision
Sacramento Update

Legislation and Public Outreach Committee
August 23, 2018

Glenn Farrel
Government Relations Manager
Legislature

- 9 calendar days remaining in 2017-2018 legislative session
- August 31: Final recess begins at midnight
- Governor will have 30 days to act on all bills sent to him during final weeks of legislative session
- Newly-constituted Legislature will convene on December 3
Sponsored Bills: AB 2064 (Gloria)

- AB 2064 is intended to fully address cashflow issues for non-profit organizations and DACs participating in IRWM programs
- AB 2064 is jointly authored by Assemblymembers Todd Gloria and Shirley Weber
- Pending consideration on Senate Floor
Sponsored Bills: AB 2371 (Carrillo)

- Co-sponsored with NRDC to advance several Independent Technical Panel (ITP) recommendations to improve landscape irrigation efficiency

- Key provisions
  - Landscape contractors examination
  - WUCOLS updates
  - Home inspections
  - Consumer information working group

- Pending consideration on Senate Floor
Sponsored Bills: SB 1277/SB 1365 (Hueso)

- SB 1277 was introduced as a vehicle to create a governance and administrative structure to implement the 10-year Salton Sea Management Program
  - SB 1277 failed to meet legislative deadlines and is now inactive
- The concept behind introduction of SB 1277 continues to be advanced by Senator Hueso through recent amendments to SB 1365
  - Immediate direction for the state to enter into a design-build arrangement for Salton Sea restoration
  - Establishment of a framework/foundation for a Salton Sea restoration governance structure
Safe and Affordable Drinking Water Program

- August 16: SB 844 (Monning) and SB 845 (Monning) were amended to enact the Administration’s Safe and Affordable Drinking Water Program

- SB 844
  - Production agricultural taxes
    - Fertilizers
    - Milk production
    - Confined animal feeding operations
  - 2/3 vote measure

- SB 845
  - Drinking water “voluntary remittance” program
  - Customers may opt-out of payment on retail water bill
  - Majority vote measure
Beginning July 1, 2019, each retail water customer shall be provided an opportunity to provide a “voluntary remittance” as part of the water bill.

Voluntary remittance structure follows same as water tax proposals - begins with $0.95/household per month.
- Anticipated to generate approximately $130 M annually.

Retail water bill shall clearly include a line item on the bill: "Voluntary remittance to provide safe drinking water to disadvantaged communities."

Retail customer may opt-out of voluntary remittance payment - pay less - pay more.

Two times per year, retail water agency transfers all voluntary remittances to the SWRCB.
Safe Drinking Water - Agricultural Taxes

- SB 844 - production agricultural taxes
  - Fertilizer safe drinking water fee
  - Dairy safe drinking water fee
  - Nondairy confined animal facility drinking water fee
- Anticipated to generate $30 M annually
- Requires 2/3 vote of the Legislature
- Fees/taxes would be lowered after 15 years of program operation
- Legislation also includes a “safe harbor” from enforcement for an agricultural operation causing or contributing to an exceedance of a water quality objective for nitrates in groundwater
Water Tax Proponents
Safe and Affordable Drinking Water - Next Steps

- SB 844 and SB 845 have been referred to Assembly Budget Committee

- Both bills include “contingent enactment” language
  - Neither bill can proceed unless both bills are passed by the Legislature

- Large coalition of water, business, and community interests joined in opposing SB 845

- Environmental justice and production agricultural groups support both measures and are actively engaged in advocacy

- Nothing is over until midnight on August 31
AB 2787 (Quirk) - Pumped Hydro Storage

- Would require the CA ISO to procure up to 2,000 MW of long-duration energy storage projects as transmission assets
  - Improve transmission grid reliability
  - Address excessive curtailment of renewables production
- Currently pending in the Senate Rules Committee
  - Would need to overcome procedural hurdles to advance during 2018 legislative session
- Water Authority and City of San Diego working closely to be supportive of advancing AB 2787
Key Measures Remaining in 2018 Legislative Session

- **AB 2050 (Caballero)**
  - Small system water authority act
  - Addresses structural deficiencies in service delivery by failing/non-compliant water systems
  - Senate Floor
  - Water Authority Board position: Support

- **SB 998 (Dodd)**
  - Water service shut-offs
  - Prescribes new processes and standards relative to retail water service shut-off authority
  - Assembly Floor
  - Water Authority Board position: Oppose Unless Amended
Key Issues Remaining in 2018 Legislative Session

- Wildfire prevention and response
  - Conference committee convened on July 25

- State water contract amendments
  - Statute requires hearing of Joint Legislative Budget Committee for contract extension
  - WaterFix-related amendments are NOT included in the package before the Legislature

- Carlsbad desalination intake facility - Proposition 1 grant eligibility
  - End-of-session effort to ensure eligibility for P3 projects
Agenda

- Getting to 2003
- Early Years of Implementation
- Colorado River Issues Update - Parts 2 and 3
Late 1970s - Salton Sea
Approximately 1 million AF of Colorado River water entered the Salton Sea as agricultural return flow

1984 - SWB Decision 1600
Water loss prevented through reasonable conservation measures
IID developed comprehensive water conservation plan

1988 - SWB WRO 88-20
Set 367,900 AF Long-term conservation goal
Endorsed IID/MWD conserved water transfer
Acknowledged unavoidable impacts to the Salton Sea - no required mitigation
Getting to 2003

1990s - California’s Growing Water Needs

Colorado River Apportionments
(million acre-feet)

February 1991
Getting to 2003
1995 -1998 - Water Authority Seeks Reliability

- MWD declines IID additional transfer
- IID finds economic value in San Diego transfer
- Secretary of the Interior requires California to stay within its 4.4 MAF

- Initial MOU transitions to a 300K AF agreement
- IID/WA begin State Water Board process
- MWD and CVWD file court actions in protest

- Parties dismiss protest when IID makes 100K AF available to them
- IID/WA petition State Water Board for transfer
- MWD/WA reach “exchange” agreement with conditions
Phase 1 - Water
- Approved for a “change in point of diversion” and “change in place of use and purpose” of IID water

Phase 2 - Environmental
- Resulted in extensive environmental mitigation plan
- State Water Board has continuing authority on mitigation measures
- “Who pays” issue stalls QSA negotiations
Getting to 2003

2002 & 2003 - Environmental Compliance and QSA Legislation

- Required extensive “mitigation” for QSA transfers
- Established cost sharing agreement and QSA JPA
- Identified QSA JPA Parties’ financial contributions
- Recognized State’s Salton Sea “restoration” as separate and apart from QSA transfers
Set of 30+ legal agreements that:

- Quantified certain water rights on the Colorado River
- Balanced CA’s Colorado River supplies
- Settled long-standing water rights disputes
- Established new ag-to-urban transfers
- Identified a pathway for State’s Salton Sea efforts
Early Years of Implementation

Challenges and Opportunities

**Canal Lining**
- Canal lining completed
- Ongoing environmental mitigation and O&M

**QSA Litigation**
- Several legal challenges arose
- QSA validated by courts

**Land Fallowing**
- Land fallowing allowed for first 15 years
- Socioeconomic mitigation program

**Price Reset**
- Amendment reset price for conserved water transfer
  - Now indexed to GDP Implicit Price Deflator

**QSA JPA**
- Mitigation water to Salton Sea ended 2017
- Air Quality projects now focus of program
Colorado River Issues Update

Parts 2 and 3

- Colorado River Basin Hydrology Update
- Review of:
  - Colorado River Water Priority Rights
  - 2007 Interim Guidelines
- Drought Contingency Planning Update
- Salton Sea Issues
MWD Meter Workgroup

- **Purpose**
  - Address low flow concerns
  - Technical analysis
  - Develop alternative processes
Technical Analysis

- Industry Survey
- Review MWD’s Administrative Code and technical standards
- Discuss Member Agency standards
Alternate Processes

- Existing Service Connections
  - Shift flow range
  - Increase flow range
- New Service Connections
- Alternate meter lifecycle cost
MWD Meter Workgroup

- MWD approved Administrative Codes changes at April 10, 2018 meeting
  - Expanded flow ranges
  - Alternate meter replacement cost responsibility
Agenda

- Contract Year 2017/2018 Plant Operation and Performance
  - Water Delivery
  - Water Quality
  - Regulatory Compliance
  - Costs
- Poseidon Presentation
Lewis Carlsbad Desalination Plant

- **Public-Private Partnership (P3)**
  - Risk Transfer to private sector
  - Commercial operation began on December 23, 2015
  - Produced over 35 billion gallons of water

- **Water Purchase Agreement (WPA) between Water Authority and Poseidon**
  - Commercial and financial terms for production and delivery of water
  - Water Authority agreed to purchase entire output from plant, with a minimum commitment of 48,000 AF/year
    - Purchase contracts with Carlsbad and Vallecitos (6,000 AF/year)
  - Poseidon committed to supply up to 56,000 AF/year
  - Just completed second full contract year (July 1, 2017-June 30, 2018)
**Water Delivery**

**Water Authority Order Requirements:**
- Monthly Minimum Demand Commitments
- Annual Minimum Demand Commitment

**Poseidon Supply Requirements:**
- Delivered Water (40,892 AF)
- Supply Shortfalls
  - Excused (7,094 AF)
  - Unexcused (2,156 AF)
- Unscheduled Outage (1,630 AF)

**Performance Challenges**
- Algal bloom in Agua Hedionda Lagoon
- Mechanical failure on reverse osmosis piping system
- Source water temperature swings
Water Quality/Regulatory Compliance

- Water Quality
  - Met all state and federal drinking water requirements

- Regulatory Compliance
  - Three primary permits
    - NPDES (San Diego Water Board)
    - Wastewater Discharge Permit (Encina WW Authority)
    - Domestic Water Supply Permit (Division of Drinking Water)
  - Corrective action taken on four notices of minor infractions, with no enforcement actions taken by the permitting agencies
  - No remaining outstanding issues
Costs

WPA Risk Transfer Performed as Advertised

<p>| | |</p>
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<tbody>
<tr>
<td>Water Purchase Cost</td>
<td>$98.0 M</td>
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<tr>
<td>Conveyance Pipeline Cost</td>
<td>$10.0 M</td>
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<tr>
<td><strong>SubTotal</strong></td>
<td><strong>$108.0 M</strong></td>
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<tr>
<td>Poseidon Penalties (estimate)</td>
<td>($5.4 M)</td>
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<tr>
<td><strong>Total 2016/2017 Cost</strong></td>
<td><strong>$102.6 M</strong></td>
</tr>
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</table>

- Actual 2017/2018 Unit Cost $2,511/AF
  - Electricity costs increased 10 percent
- Projected 2018/2019 Unit Cost $2,559/AF
Water Deliveries (July 2017 - June 2018)

![Bar chart showing water deliveries by month from July 2017 to June 2018, with actual deliveries and firm demand represented by different colors.](chart.png)
Water Deliveries (June 2017 - June 2018)

Water Authority Delivery Requests 51,772 AF

- Actual Delivery 40,892 AF
- Delivery Shortfall 10,880 AF
  - 7,094 AF Excused Shortfall
  - 2,156 AF Unexcused Shortfall
  - 1,630 Unscheduled Outage Units
Shortfall Analysis (July 2017 - June 2018)

Delivery Shortfall 10,880 AF

2017 - 2018 Total Shortfall by Category (%)

- Mechanical Failure 72%
  - Inspection, repair & replacement
  - Revised O&M protocols

- Regulatory Constraints 17%
  - Revised DDW alarm protocol
  - Amending NPDES Permit to increase discharge flow

- Warranty Repairs and Plant Improvements 6%
  - Completed warranty inspection and repair (baffle curtain and various pumps)
  - Ongoing O&M Improvements

- Electrical Utility Outages 3%
  - Improved Communication/Coordination with SDG&E

- Challenging Source Water Conditions 2%
  - Increased Monitoring and treatment capabilities
  - Modified Operating Protocols
Overall Performance

July 2017 – June 2018

• Shortfalls experienced in the past year are not unusual for large, complex water treatment facilities
• Poseidon and its partners have taken appropriate steps to address these challenges and improve the resiliency of plant operations
• As a result of these corrective actions, the CDP met over 94% of the Water Authority’s demand since October 2017 with one RO train out of service
• RO Train 5 will resume operation November 2018

Since Start of Operations

• 32 months of successful operations
• Delivered 35 billion gallons (107,000 AF) of high-quality, drought-proof water
• Largest source of local water
• Supplied 9% of regional water demand
• Insulated region from statewide water use restrictions
• Enhanced the quality of the Water Authority’s treated water supply
• Improved water quality benefits to local residents and business and helps local water recycling projects
MWD and Water Authority Conservation Program Updates

Water Planning Committee
August 23, 2018

Carlos Michelon
Principal Water Resources Specialist
Overview

MWD water conservation programs changes adopted April 2018

1. Landscape Transformation Program (LTP)
2. Water efficiency education programs
3. Member Agency Administered Program (MAAP)
Operating adjustments to Water Authority’s Water Conservation Program to leverage MWD benefits

- New MWD programs are compatible with Water Authority initiatives
1. MWD Landscape Transformation Program

- Incentive to upgrade turf areas
- Similar to Water Authority’s Sustainable Landscape Incentives
- Improvements since turf replacement program
  - Higher standards
  - Financial controls
- Opened July 9, 2018
- Pays $1/square foot plus local agency $
SDCWA Operating Adjustments (SLP to LTP)

➢ Phasing out Sustainable Landscape Incentives

• LTP standards are generally compatible with SLP

• Benefits:
  • Increased ratepayer benefits (streamlining & stacked incentives)
  • Administrative efficiency (vendor & staff costs)

• Supplemental funding:
  • Proposition 84 (at $1.75/square foot rate)
2. MWD Water Efficiency Education Programs

➢ Qualified Water Efficient Landscaper Program
➢ Model Water Efficient Landscape Ordinance Workshops
3. **MWD Member Agency Administered Program (MAAP)**

- Reinstated Water Authority access (due to Court Decision)
- $2.4 million allocated to Water Authority for 3 years through June 2020 (includes 2017 roll-over funds)
- New Flexible category allows up to 25% of funds to be used for programs with hard-to-quantify water savings (e.g., education, demonstration gardens)
MAAP Funding

MAAP Funding Allocated and Available

- Surveys & audits
- Agricultural audits
- Low-income (DAC) program
- Innovative pilot programs
- Commercial kitchens
- Demonstration gardens

Approved
Available

$1,441,000
$968,000

$1,441,000
$968,000
Condition Assessment Technology Showcase

Engineering & Operations Committee
August 23, 2018

Martin Coghill
Senior Water Resources Specialist
Condition Assessments

People

Pipelines
Pipeline Condition Assessment - A Quick Recap

- Remote Field Eddy Current - baseline wire break count in Prestressed Concrete Cylinder Pipe (PCCP)
- Continuous acoustic monitoring (AFO) of unlined PCCP
Pipeline Condition Assessment - A Quick Recap

▪ Remote Field Eddy Current - baseline wire break count in Prestressed Concrete Cylinder Pipe (PCCP)
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- Continuous acoustic monitoring (AFO) of unlined PCCP

- Magnetic Flux Leakage (MFL)
  - 40 miles of Welded Steel Pipe
Pipeline Condition Assessment - A Quick Recap

▪ Remote Field Eddy Current (baseline wire break count in Prestressed Concrete Cylinder Pipe (PCCP))
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▪ 40 miles of Welded Steel Pipe
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- Continuous acoustic monitoring (AFO) of unlined PCCP

- Magnetic Flux Leakage (MFL)
  - 40 miles of Welded Steel Pipe

- Remote Field Technology (RFT)
  - 5 miles of Bar-Wrapped Pipe
  - 5 miles of 30-year-old Steel Relined PCCP
Pipeline Condition Assessment - A Quick Recap
Water Authority’s Influence - Past 5 Years

- 2014 & 2016 - Improvements to MFL equipment using contractual leverage - **Cost and Schedule Reduction**

- 2017 - Developed own tools to perform tasks in-house - **Cost and Schedule Reduction**

- 2017 - Pioneered the concept of ‘blind verification’ during RFT projects - **Increased Confidence**
Water Authority’s Influence - Past 5 Years

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- TODAY - we have the flexibility to choose from a portfolio of tools, knowledge and capabilities
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Driven Visionary Pioneering Agile
Electromagnetics Demonstration - CAUTION

- Neodymium magnets can affect medical implants
- The strong forces can pinch fingers
- Magnets are brittle and can shatter
- Phones and credit cards can be damaged

Our Region’s Trusted Water Leader
San Diego County Water Authority
Asset Management - Technology Showcase

6”, 8”, 12”, 18”, 24”, 36”...48”...96”
Asset Management - Technology Showcase

6”, 8”, 12”, 18”, 24”, 36”…48”…72”
Asset Management - Technology Showcase
Asset Management - Technology Showcase

No-Dig Verification
Asset Management - Technology Showcase
Asset Management - Technology Showcase