Carpinteria Valley Water District

Water Supply in the Face of Drought and a Changing Environment

Robert Mc Donald
General Manager
CVWD
TODAY'S DISCUSSION

❖ ABOUT THE DISTRICT
❖ WATER SUPPLY & DEMAND
❖ WATER SECURITY CHALLENGES
❖ DISTRICT WATER SUPPLY STRATEGIES
ABOUT THE DISTRICT

Carpinteria Valley
ABOUT THE DISTRICT

❖ APPROXIMATELY 4,500 CUSTOMERS, SERVING 4,200 AF OF WATER ANNUALLY

❖ CUSTOMER CLASSES AGRICULTURE, RESIDENTIAL, COMMERCIAL, INDUSTRIAL & INSTITUTIONAL

❖ SERVICE AREA COVERING 11,100 ACRES WITHIN THE CITY AND UNINCORPORATED COUNTY WITH A POPULATION OF 16,200

❖ SERVICE 3000 ACRE OF IRRIGATE AGRICULTURE

❖ THREE PRIMARY WATER SUPPLIES; LOCAL GROUNDWATER, CACHUMA PROJECT AND THE STATE WATER PROJECT
WATER SUPPLY

Normal Year Water Supplies

- Cachuma Project  2813 AF
- *State Water Project  1320 AF
- Local Groundwater  1300 AF
- Losses  -150 AF

Total: 5283 AF

*Assumes 60% SWP allocation

Average Ann Demand  4200 AF
Surplus Water  1083 AF
WATER SECURITY CHALLENGES

❖ Drought

❖ Environmental Competition

❖ Emergency and Disaster Management
UNPRECEDENTED DROUGHT!

WATER SECURITY CHALLENGES

U.S. Drought Monitor
California

January 10, 2017
(Released Thursday, Jan. 12, 2017)
Valid 7 a.m. EST

Drought Conditions (Percent Area)

<table>
<thead>
<tr>
<th></th>
<th>D0</th>
<th>D1</th>
<th>D2</th>
<th>D3</th>
<th>D4</th>
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<tbody>
<tr>
<td>Current</td>
<td>34.02</td>
<td>65.38</td>
<td>0.62</td>
<td>0.22</td>
<td>0.00</td>
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<tr>
<td>Last Week</td>
<td>18.07</td>
<td>81.83</td>
<td>67.61</td>
<td>54.02</td>
<td>36.17</td>
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<tr>
<td>3 Months Ago</td>
<td>0.00</td>
<td>100.00</td>
<td>83.59</td>
<td>42.27</td>
<td>42.00</td>
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<tr>
<td>Start of Calenda Year</td>
<td>1/1/2017</td>
<td>18.07</td>
<td>81.83</td>
<td>67.61</td>
<td>54.02</td>
</tr>
<tr>
<td>Start of Water Year</td>
<td>1/1/2016</td>
<td>0.00</td>
<td>100.00</td>
<td>83.59</td>
<td>42.27</td>
</tr>
<tr>
<td>One Year Ago</td>
<td>0.00</td>
<td>100.00</td>
<td>67.33</td>
<td>67.66</td>
<td>69.07</td>
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Intensity:
- D0: Abnormally Dry
- D1: Moderate Drought
- D2: Severe Drought
- D3: Extreme Drought
- D4: Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:
David Miskus
NOAA/NWS/NCEP/CPC

http://droughtmonitor.unl.edu/
NEW DROUGHT OF RECORD

UNPRECEDENTED DROUGHT!

Diagram: Driest Consecutive Years - Gibraltar Reservoir
99 Years of Rainfall (1920-2018)
(through August 31, 2018)
UNPRECEDEDENTED DROUGHT!
UNPRECEDENTED DROUGHT!

LAKE CACHUMA
LAKE CACHUMA DROUGHT IMPACTS

❖ Resulted in the first ever zero allocation from the Cachuma Project
❖ Resulted in multiple years of reduced allocation
❖ Required floating pumping system to be installed to bring water into the intake
❖ Required importation of State Water and supplemental water at a higher rate than ever before on the Santa Barbara South Coast.
❖ Storage was as low as 15,000 AF or 8%

UNPRECEDENTED DROUGHT!
LAKE CACHUMA ENVIRONMENTAL CONFLICTS

❖ Southern California Steelhead Trout listed under Federal ESA as Endangered in 1997
❖ Santa Ynez River listed as Critical Habitat for Steelhead in 2000
❖ National Marine Fisheries Service (NMFS) Issued a Biologic Opinion to the USBR Stating the Project was not expected to put in jeopardy Steelhead recovery by its proposed operations in 2000.
❖ However more recently a new BO and Water Rights Order are in draft form and are expected to impact annual yields at Cachuma and likely change operations.
CVWD Allotment of 2200 AF per Year

<table>
<thead>
<tr>
<th>Year</th>
<th>% Delivery</th>
<th>AF Delivery</th>
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<tr>
<td>2012</td>
<td>65%</td>
<td>1430 AF</td>
</tr>
<tr>
<td>2013</td>
<td>35%</td>
<td>770 AF</td>
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<td>2014</td>
<td>5%</td>
<td>110 AF</td>
</tr>
<tr>
<td>2015</td>
<td>20%</td>
<td>440 AF</td>
</tr>
<tr>
<td>2016</td>
<td>60%</td>
<td>1320 AF</td>
</tr>
<tr>
<td>2017*</td>
<td>85%</td>
<td>1870 AF</td>
</tr>
<tr>
<td>2018</td>
<td>30%</td>
<td>660 AF</td>
</tr>
<tr>
<td>2019*</td>
<td>75%</td>
<td>1650 AF</td>
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*San Luis Reservoir Spill
Debris flows occurred at eight location along the South Coast Conduit after the Thomas Fire. Some damage occurred to above ground SCC Facility. Both Montecito and Carpinteria experienced pipeline damage during the debris flow event. Fortunately no pipeline ruptures occurred on this critical transmission facility. These events illuminated CVWDs conveyance vulnerability.
Carpinteria Groundwater

- Used extensively during the drought for water supply
- Groundwater levels dropped below sea level during the drought
- Concerns about seawater intrusion
- GSA formation under SGMA underway
CGB WATER LEVELS – KEY WELL LOCATION MAP
CGB WATER LEVELS

4N/25W-19F4
Groundwater Depth Below Land Surface Datum
Land Surface Altitude - 106 Feet Above Mean Sea Level

Depth in feet

-100.00
-105.00
-110.00
-115.00
-120.00
-125.00
-130.00

Date

Mean Sea Level
CGB WATER LEVELS
Summary of Water Security Challenges
❖ New Regional drought of record
❖ Revised BO for Steelhead in Santa Ynez River may reduce Cachuma Yield
❖ Post Fire Siltation at Lake Cachuma
❖ State Water Project Delta Conveyance and reliability uncertainty
❖ Declining water supplies
❖ Seawater intrusion risk in Carpinteria Groundwater Basin
❖ Groundwater Management Challenges under SGMA
❖ South Coast Conduit vulnerability to natural disasters
Solutions?

- Water Supply Reliability
  - Proposed Recycle Water Project (IPR) - CAPP
  - Water Conservation
  - Groundwater banking

- Groundwater Management
  - Sustainable Groundwater Management Act (SGMA)
  - Proposed Sentry Wells (seawater intrusion monitoring)
  - Aquifer storage and recovery (ASR)

- Emergency Preparedness
  - Power Reliability Projects (Backup generators)
  - SCADA and Communications upgrades
  - Proposed Casitas Intertie
In partnership with Carpinteria Sanitary District
Reuse of wastewater that currently flows to ocean ~ 1100 AFY
Proposed Treatment = Advanced Water Treatment (AWT)
Storage of purified water in Carpinteria Groundwater Basin
Capital Cost projected at ~$24M Operational Costs at ~$1200/AF
FEMA HMGP applications submitted for 75% capital funding
Seeking CWSRF funding and Title 16 funding as well
WATER SECURITY STRATEGIES
CARPINTERIA ADVANCED PURIFICATION PROJECT (CAPP)
WATER SECURITY STRATEGIES
CARPINTERIA ADVANCED PURIFICATION PROJECT (CAPP)

- Advanced Water Purification Facility (AWPF)
- Booster Pump Station
- Ocean Outfall Modifications
- 1.3 miles of Conveyance Pipelines
- Two Injection Wells
- Four Monitoring Wells
WATER SECURITY STRATEGIES
CARPINTERIA ADVANCED PURIFICATION PROJECT (CAPP)
WATER SECURITY STRATEGIES
SEAWATER SENTRY WELLS
WATER SECURITY STRATEGIES
SEAWATER SENTRY WELLS

- Three Clustered Zone Specific Wells
- Project Cost at ~$750K
- Completed in July 2019
- Baseline Sample Completed
- Monitoring program to be implemented
WATER SECURITY STRATEGIES
SEAWATER SENTRY WELLS
WATER SECURITY STRATEGIES
CASITAS INTERTIE PROJECT

❖ 1.5 Mile Large Capacity Bi-Direction Pipeline Intertie
❖ Preliminary Design And CEQA Completed
❖ Project Capital Cost Estimated at $20M
❖ FEMA Grant Application Submitted to fund 75% of costs
❖ Casitas evaluating a number of Water Supply Projects
WATER SECURITY STRATEGIES
CASITAS INTERTIE PROJECT

Coastal Branch & CCWA Pipeline

Lake Cachuma
WATER SECURITY STRATEGIES
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CASITAS INTERTIE PROJECT
CARPINTERIA VALLEY WATER DISTRICT

CARPINTERIA’S WATER SUPPLY IN THE FACE OF DROUGHT AND A CHANGING ENVIRONMENT

Thank You!

Questions?

Robert Mc Donald
General Manager
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