Claude “Bud” Lewis Carlsbad Desalination Plant Intake & Discharge System Modifications

Board of Directors
December 15, 2022

Sandy Kerl, General Manager
Dan Denham, Deputy General Manager
Kelley Gage, Director of Water Resources
Jeremy Crutchfield, Water Resources Manager
**Action Items**

Claude “Bud” Lewis Carlsbad Desalination Plant

a. Water Purchase Agreement Contract Administration Memorandum Regarding Final Phase of Intake and Discharge System Modifications (Action)

b. Supporting Documents for Poseidon’s 2023 Financing (Action)
Presentation Agenda

Claude “Bud” Lewis Carlsbad Desalination Plant

a. Water Purchase Agreement Contract Administration Memorandum Regarding Final Phase of Intake and Discharge System Modifications (Action)

1. Background and Project Drivers
2. Permanent Intake Modifications (subject of action)
3. Key Areas
   1. Risk Transfer
   2. Capital and Operating Costs
   3. Financing
   4. Unit Price Adjustment
4. Impact to Water Authority Rates

b. Supporting Documents for Poseidon’s 2023 Financing (Action)
Seawater Desalination – Planning History
Started Preparing in Early 1990’s

Companies cringe at 50 percent cut in water
Firms offer conservation plans to mayor; some say cutbacks could cripple growth

State to Shut Off
Water Delivery
to Southland

By VIRGINIA ELLIS
and TED ROHRICH
TIMES STAFF WRITERS

SACRAMENTO – Gov. Pete
Wilson on Monday announced
new and unprecedented cutbacks
of state water deliveries so
drastic that Southern California
will be cut off from this
traditional source of water by
mid-March.

Wilson said that heightened
drought conditions had forced the
state to notify cities and industry

Water Dependence Bodes a Dry San Diego Future

■ Drought: A twisted history of
water politics has left the county at the
vulnerable end of the supply pipeline.

50% Water-Delivery Cut
Will Be Blow to San Diego

■ Drought: Metropolitan Water District directors also
vote a 90% cut in allocation for agricultural users.

Grim water
outlook
is getting
even worse

State Water Project cuts off water to farms; urban slash expected
Seawater Desalination – Planning History (cont’d)

2003 Water Facilities Master Plan - Seawater desalination was first analyzed as a potential component of the Water Authority’s supply diversification strategy.


2010 UWMP – Recognizes Carlsbad Desalination Plant at 56 TAF.

1999-2009 – Poseidon worked on project development and permitting.

Master Plan Supply Alternatives:
- Supply from the North
  Expand Supply and Conveyance from MWD
- Supply from the West
  Seawater Desalination
- Supply from the East
  Colorado River Conveyance Facility
Why Ocean Desalination?

• Identified need for new supply
• New, local water supply
• Reduces need for imported water
• Drought-proof supply
• Improved water quality
• Recognized by the SWRCB as a drought-resilient supply
• While more expensive than existing imported supplies, cost on par with development of other new, local water supplies
• Enhances regional supply reliability and local control
• Strong public support
• Complements water recycling
Getting to a Business Deal

• Poseidon had secured the Encina property and the permits for a regional project

• Board initially approved a term-sheet with Poseidon in 2010 as basis for negotiations

• Focus on risk transfer to the private sector
  • Water Authority had never built/operated a seawater desalination facility
Getting to a Business Deal (cont’d)

• Negotiation of a Water Purchase Agreement (WPA)
  • Establishes risk transfer to private developer
  • WPA outlines commercial and financial terms for production and delivery of water
  • Water Authority conducted comprehensive project and financial due diligence effort prior to approval of the WPA
  • Water Authority Board approved WPA on Nov 29, 2012
Carlsbad Desalination Project Components

- Desal Conveyance Pipeline
  - 10-miles of new 54-inch pipe

- Pipeline 3 Relining
  - (27,100 feet)

- TOVWTP Improvements

- Desalination Plant

- Aqueduct Connection Facilities
Status of Plant Operations

• Began commercial operations on December 23, 2015
• Over 100 billion gallons of desalinated ocean water produced to date
• Revised NPDES Permit for standalone operations adopted by the San Diego Water Board on May 8, 2019 and amended on August 4, 2022
• Currently operating under Interim Operations
Original Operation (Dec. 2015)
Transition to Stand-Alone Operations

- **Drivers**
  - Closure of Encina Power Station requires new, permanent stand-alone intake for the CDP (Closure)
  - 2015 Ocean Plan Amendment (OPA)

- **Contemplated and addressed in the Water Purchase Agreement**
  - Both Closure and OPA are considered Change In Law in WPA
    - Water Authority responsible for incremental cost
    - WPA provided a cap for closure related costs

- **Implemented through 3 operational phases**
  - Five-year time frame to come into full compliance with the OPA
How did we get here?

State Water Resources Control Board adopted the Ocean Plan Amendment in May 2015

- Water Authority and Poseidon worked extensively with State Board to address unique configuration of the already under construction Carlsbad project
- Key Requirement for Carlsbad is 1 mm screens with 0.5 ft/s approach velocity
21 22 alternatives later...

May 2019: Regional Board approves NPDES permit

August 2022: Regional Board amends NPDES permit for current project

Alternative 21

Alternative 22
Original Phasing Schedule for Intake Mods.

December 11, 2018
Encina Power Station ceases power generation

December 12, 2018 thru June 2020
Temporary Stand-Alone Operations Period (TSOP)

June 2020 thru December 2023
Interim Operations Period (IOP)

December 2023 thru WPA Completion
Permanent Operations Period (POP)
Temporary Standalone Operations
Interim and Permanent Operations

- Pacific Ocean
- Discharge
- Intake
- Power Plant Discharge
- Up to 249 MGD (up to 43 ppt)
- Agua Hedionda Lagoon (35.5 ppt)

Key:
- MGD = million gallons per day
- ppt = parts per thousand

San Diego County Water Authority and Its 24 Member Agencies
Permanent Modifications

• Includes installing new intake screens and access deck in front of the existing intake structure

• Multiple workshops conducted with Poseidon to review four Key Areas:

  1. Risk Transfer
  2. Capital and O&M Costs
  3. Financing
  4. Unit Price Adjustment

Validation of terms and costs thoroughly reviewed by Water Authority staff with technical, financial and legal support
Permanent Modifications

- New Intake Screens and Access Deck
- New Intake Pipeline Connection
- Exist. Intake Structure/Channels
- New Floating Boom
# Key Area 1 – Continued Risk Transfer

<table>
<thead>
<tr>
<th>Risk Description</th>
<th>Poseidon</th>
<th>SDCWA</th>
</tr>
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<tbody>
<tr>
<td>Permitting</td>
<td>🌊</td>
<td></td>
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<tr>
<td>Financing</td>
<td>🌊</td>
<td></td>
</tr>
<tr>
<td>Interest Rate</td>
<td>🌊</td>
<td>🌊</td>
</tr>
<tr>
<td>Construction/Uncontrollable Circumstances</td>
<td>🌊</td>
<td>🌊</td>
</tr>
<tr>
<td>Technology</td>
<td>🌊</td>
<td></td>
</tr>
<tr>
<td>Operating Performance</td>
<td>🌊</td>
<td></td>
</tr>
<tr>
<td>OPA Compliance Risk</td>
<td>🌊</td>
<td>🌊</td>
</tr>
<tr>
<td>Electricity</td>
<td>🌊</td>
<td>🌊 (Consumption)</td>
</tr>
<tr>
<td>Water Demand</td>
<td>🌊</td>
<td>🌊</td>
</tr>
<tr>
<td>Regulation</td>
<td>🌊</td>
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</table>
OPA Compliance Risk – Need for Extension

• Poseidon’s NPDES permit requires compliance with the OPA by **December 11, 2023**
  - Project will not be completed by this time due to many factors

• OPA includes relief provisions that are applicable to this project

• Based on meetings and correspondence with staff from both the Regional and State Water Board, staff is optimistic relief will be granted

• Should the plant be forced into stand-by mode by the State, the Water Authority plans to pre-purchase water by paying fixed costs and an O&M fee during the forced shutdown for a future water delivery
## Key Area 2 - Capital and Operating Costs

<table>
<thead>
<tr>
<th>Permanent Modifications Costs</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preliminary Design, Design and Construction</td>
<td>$205,622,000</td>
</tr>
<tr>
<td>Permitting and Studies</td>
<td>$7,549,000</td>
</tr>
<tr>
<td>Construction Risk Allowance and Contingency</td>
<td>$20,458,000</td>
</tr>
<tr>
<td>Capitalized Interest</td>
<td>$10,494,000</td>
</tr>
<tr>
<td>Transactional Costs</td>
<td>$15,674,000</td>
</tr>
<tr>
<td>Debt Service Reserve</td>
<td>$13,120,000</td>
</tr>
<tr>
<td><strong>Total Capital Cost</strong></td>
<td><strong>$272,916,000</strong></td>
</tr>
<tr>
<td><strong>Operating Charges (fixed and variable)</strong></td>
<td><strong>$5,100,000/year</strong></td>
</tr>
<tr>
<td><strong>Electricity Charges (fixed and variable)</strong></td>
<td><strong>$500,000/year</strong></td>
</tr>
</tbody>
</table>
Construction Risk Allowance & Contingency

<table>
<thead>
<tr>
<th>Allowance/Reserve Fund</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uncontrollable Circumstance Reserve Allowance</td>
<td>$13,458,000</td>
</tr>
<tr>
<td>Design-Build Contingency Shared Savings</td>
<td>$4,000,000</td>
</tr>
<tr>
<td>Poseidon Contingency Fixed</td>
<td>$3,000,000</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>$20,458,000</strong></td>
</tr>
</tbody>
</table>

- **Uncontrollable Circumstance Reserve**
  - Funding mechanism to cover Uncontrollable Circumstances encountered during construction
  - Any unused funds will be returned to Water Authority

- **Design Build Contingency**
  - Risk items identified by the Design-Builders outside of the base contract
  - Water Authority to receive 60% of unused funds

- **Poseidon Contingency**
  - Mirrors risk-based contingency assigned for construction of the plant
Aggressive Cost Mitigation

- Water Authority staff and consultant-team reviewed all aspects of capital, operating and financing costs and participated in value engineering to bring costs down.
- These efforts resulted in significant reductions as highlighted below:

<table>
<thead>
<tr>
<th>Component</th>
<th>Reduction (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capital Costs</td>
<td>8%</td>
</tr>
<tr>
<td>Transaction Costs</td>
<td>17%</td>
</tr>
<tr>
<td>Operating Costs</td>
<td>35%</td>
</tr>
</tbody>
</table>

- The result was a decrease in the calculated unit price of about $177/AF
Key Area 3 - Poseidon Financing

- Water Purchase Agreement requires Poseidon to secure financing for capital improvements
- Plan of Finance includes the following sources:
  - Water Furnishing Revenue Bonds through the California Pollution Control Financing Authority
  - WIFIA low-interest loan
  - Equity
### Key Area 4 - Unit Price Adjustment

<table>
<thead>
<tr>
<th></th>
<th>Fiscal Year</th>
<th>Unit Price (estimate)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Unit Price – IOP</td>
<td>FY 2023</td>
<td>$2,891/AF</td>
</tr>
<tr>
<td>IOP after 2023 Financial Close</td>
<td>FY 2023 (Jan.)</td>
<td>$2,966/AF</td>
</tr>
<tr>
<td>IOP</td>
<td>FY 2024</td>
<td>$3,101/AF</td>
</tr>
<tr>
<td>IOP</td>
<td>FY 2025</td>
<td>$3,186/AF</td>
</tr>
<tr>
<td>Beginning of POP</td>
<td>FY 2025 (Sept.)</td>
<td>$3,423/AF</td>
</tr>
<tr>
<td>POP</td>
<td>FY 2026</td>
<td>$3,736/AF</td>
</tr>
</tbody>
</table>

**Cumulative Increase in Unit Price During Phase-In**

- **IOP Refi**: 0
- **IOP FY2024**: 236
- **IOP FY2025**: 236
- **POP Begins**: 609
- **POP FY2026**: 609

- **Normal Unit Price Escalation**
- **Intake Modification**
Cap Provisions in the WPA

• Water Purchase Agreement contains two separate cost cap provisions relevant to the Permanent Modifications that limit increases to the Baseline Unit Price
  1. 10% annual cap
  2. 30% cumulative

• Neither the 10% annual or 30% cumulative caps were exceeded as a result of the Permanent Modifications
  • Cumulative unit price adjustment following the Permanent Modifications is 21%
## Estimated Impact to SDCWA Rates

- Desal’s current Unit Price increases are adjusted multiple times through POP Commencement.
- Current estimates include all associated IOP/POP adjustments, including factors for O&M and energy escalation.

<table>
<thead>
<tr>
<th></th>
<th>CY 2023</th>
<th>CY 2024</th>
<th>CY 2025</th>
<th>CY 2026</th>
<th>CY 2027</th>
<th>CY 2028</th>
</tr>
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<tbody>
<tr>
<td>Projected Increase*</td>
<td>$4.51M</td>
<td>$6.05M</td>
<td>$11.67M</td>
<td>$8.01M</td>
<td>$3.77M</td>
<td>$3.89M</td>
</tr>
<tr>
<td>(Using 42,000 AF)</td>
<td></td>
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<tr>
<td>Rate Increase</td>
<td>$11.98</td>
<td>$16.92</td>
<td>$34.52</td>
<td>$24.10</td>
<td>$11.20</td>
<td>$11.29</td>
</tr>
<tr>
<td>($/M&amp;I Sales)</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Percentage Increase</td>
<td>0.6%</td>
<td>0.8%</td>
<td>1.5%</td>
<td>1.0%</td>
<td>0.4%</td>
<td>0.4%</td>
</tr>
<tr>
<td>(All-In Treated Rate)</td>
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* Current estimates based on 12.14.22 Water Unit Pricing Model (DRAFT)
Recommendation

Authorize the General Manager to execute a Water Purchase Agreement Contract Administration Memorandum (CAM) between the Water Authority and Poseidon Resources (Channelside) LP (Poseidon) for the Final Phase of Intake and Discharge System Modifications at the Lewis Carlsbad Desalination Plant.
Agenda

Claude “Bud” Lewis Carlsbad Desalination Plant

a. Water Purchase Agreement Contract Administration Memorandum Regarding Final Phase of Intake and Discharge System Modifications (Action)

b. Supporting Documents for Poseidon’s 2023 Financing (Action)
Recommendation

Adopt Resolution No. _____ approving the execution and delivery of a Letter of Representation and a Water Authority Continuing Disclosure Agreement relating to Poseidon Resources (Channelside) LP’s financing through the California Pollution Control Financing Authority and approving such other documents and agreements necessary to support said financing.