Colorado River Issues

Special Imported Water Committee Meeting
April 11, 2019

Gary Croucher, Colorado River Work Group Chair
Dan Denham, Assistant General Manager
Kelly Rodgers, Director of the Colorado River Program
Colorado River Work Group

- Established in late 2018
- Objective: Provide guidance on Colorado River issues and make recommendations for Board consideration

- Members
  - Gary Croucher - Chair
  - Jerry Butkiewicz
  - Christy Guerin
  - Mike Hogan
  - Jim Madaffer
  - Mark Watton
  - Doug Wilson

- Meetings in February and March
- MWD delegates attended
Agenda

- Drought Contingency Plan
- Lake Mead Storage
- Salton Sea
- Regional Conveyance System Study
Drought Contingency Plan

- Basin States signed letter to Congress
- Bills identified to carry proposed legislation
- Bills passed senate and House and now with President
- Implementation of DCP documents
- Notice to Mexico by April 22
- August hydrology update/2020 operations
- Hydrology update April 25 IWC
Lake Mead Storage

- Water Authority investments offer benefits
- Region could store ~400,000 acre-feet in Lake Mead
  - San Diego would leave some portion of QSA water in Lake Mead during wet years like 2019
- Other storage options possible
- Lake Mead water deposits by San Diego could raise reservoir level up to 4 feet
  - Local protection for future dry years; immediate and future benefits for Southwest
- Potential partnerships could maximize regional storage

How Much is 400,000 Acre-Feet of Storage?

- Loveland Reservoir
  - 25,000 acre-feet
- Olivenhain Reservoir
  - 25,000 acre-feet
- Lower Otay Reservoir
  - 47,000 acre-feet
- Lake Morena
  - 51,000 acre-feet
- San Vicente Reservoir
  - 249,000 acre-feet
Lake Mead Storage

There is plenty of room in Lake Mead.
## Lake Mead Storage

<table>
<thead>
<tr>
<th>Steps for Water Authority Storage in Lake Mead</th>
</tr>
</thead>
<tbody>
<tr>
<td>River Contractor Status</td>
</tr>
<tr>
<td>✔️ Approved Projects for Lake Mead Storage</td>
</tr>
<tr>
<td>✔️ Environmental Approval</td>
</tr>
<tr>
<td>✔️ ICS Account from MWD or Bureau of Reclamation</td>
</tr>
</tbody>
</table>

In Discussions
State Salton Sea Management Program

- State’s phased approach to restoration led by CNRA
- Phase I plan covers first 10 years - over $300M available
- Three State Water Board workshops since 2017 revised Water Order approval
- March 2019 update - State behind schedule - easement, staffing, and implementation issues

**Water Order 2017-0134 (Nov. 2017)**

- Established annual acreage milestones
  - 30,000 total acres in first 10 years
  - 500 acres in 2018
  - 1,300 acres in 2019
- State Water Board maintains continuing jurisdiction over restoration
- Long-term plan required by 2021
State Salton Sea Management Program

- New leadership
  - E. Joaquin Esquivel appointed new chair
  - Governor Newsom has expressed support
  - CNRA Director Crowfoot is engaged
- State addressing issue through:
  - Easement resolution with IID by May
  - Additional staffing
  - New processes - design-build
- June workshop - update on recovery plan; clear progress expected
- Water Authority remains engaged through stakeholder committees and Water Board
Regional Conveyance System Study
CR Work Group/MWD Delegates Recommendations

- Take regional approach
- Explore shared benefits through strategic partnerships
- Engage potential partners with compatible needs
- Evaluate partnership structures that reduce risk to the Water Authority and our member agencies
- Pursue funding opportunities
- Incrementally build upon past studies
- Budget request for FY 2020-21
QSA Transportation Costs without Water Fix

2019 – 2047

$453/AF @ 3%

$5.7 Billion
Member Agency Managers’ Meeting

- March 29 special meeting
- Presentation on Colorado River Regional Conveyance System
- Staff requested comments
- Received comments in April 5 letter
  - Financial Implications
  - Interagency Dealings and Legal
  - Environmental and Permitting
## Member Agency Manager Comments

<table>
<thead>
<tr>
<th>FINANCIAL IMPLICATIONS</th>
<th>Originally Included in Phase A</th>
<th>Moved From Phase B to Phase A</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Consider impacts of project in light of demand/sales forecasts</td>
<td>✅</td>
<td></td>
</tr>
<tr>
<td>2. Update project costs to facilitate “apples to apples” comparison with MWD rates</td>
<td>✅</td>
<td></td>
</tr>
<tr>
<td>3. Confirm demand for QSA supplies and system integration requirements</td>
<td>✅</td>
<td></td>
</tr>
<tr>
<td>4. Confirm blending/treatment requirements and associated costs</td>
<td></td>
<td>✅</td>
</tr>
<tr>
<td>5. Update MWD future transportation rates due to WaterFix single tunnel</td>
<td></td>
<td>✅</td>
</tr>
</tbody>
</table>
## Member Agency Manager Comments

<table>
<thead>
<tr>
<th>INTERAGENCY DEALINGS AND LEGAL</th>
<th>Originally Included in Phase A</th>
<th>Moved From Phase B to Phase A</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Outreach to stakeholders to determine perspectives on project</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>2. Identify QSA and IID Transfer Agreement terms that would be subject to renegotiation</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>3. Analyze legal considerations and associated costs/schedule impacts</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>4. Confirm brine disposal requirements and associated costs</td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>
### Member Agency Manager Comments

<table>
<thead>
<tr>
<th>ENVIRONMENTAL AND PERMITTING</th>
<th>Originally Included in Phase A</th>
<th>Moved From Phase B to Phase A</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Analyze CEQA/NEPA project requirements vs. existing alternative (i.e. Goals/Objectives, GHG, power supply, etc.)</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>2. Prepare risk matrix for required permits (cost/schedule impacts)</td>
<td></td>
<td>✓</td>
</tr>
</tbody>
</table>
Agenda

Colorado River Regional Conveyance System Study

1. What is a regional conveyance system?
2. Why are we studying it?
3. What were the results of past studies?
4. What was the original plan?
5. What is the revised plan?
6. What is the cost?
7. What are the elements of a conveyance decision?
8. Why study this now?
9. What are the next steps?
What is a regional conveyance system?

- 1940’s Bureau of Reclamation conveyance studies
  - Pipeline from Imperial Valley to San Diego
  - Connection to All-American Canal
- Conveyance Routes from the 1951 Memoirs of “Colonel” Ed Fletcher
What is a regional conveyance system?

- Water Authority does not have a pipeline or aqueduct to the Colorado River
- Water Authority pays MWD to transport all QSA water supplies
- QSA supplies currently diverted at Lake Havasu on Colorado River Aqueduct and delivered to San Diego
- Studying possibility of delivery options for several decades
Why are we studying it?

Control Current and Future Costs
- 280,000 acre-feet at full ramp up
- Transfer water for up to 75 years or longer
- Canal lining water for 110 years
- $5.7 B in transportation costs through 2047

Provide Delivery Options
- MWD exchange agreement allows for alternate conveyance with 5-years notice
- Currently no provision for extension beyond 2047 for transfer water

Yield Regional Benefits
- Potential for multiuse of conveyance system
What were the results of past studies?

<table>
<thead>
<tr>
<th>Year</th>
<th>Studied</th>
<th>Results</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>1996</td>
<td>5 US options + 3 transfer volumes</td>
<td>2 preferred US options</td>
<td>Add to Master Plan</td>
</tr>
<tr>
<td>2001</td>
<td>Geotech for 2 US options</td>
<td>Tunneling viable for 1 option</td>
<td>Conduct additional studies</td>
</tr>
</tbody>
</table>
What were the results of past studies?

2003 through 2013

QSA Finalized

Revised
Demand Forecast

Power Market Changes

Water Authority Projects

Other Agency Projects

Construction Costs
What were the results of past studies?

<table>
<thead>
<tr>
<th>Year</th>
<th>Studied</th>
<th>Results</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>2013</td>
<td>Update 2 US options</td>
<td>No fatal technical flaws</td>
<td>Maintain 2 US options in 2013 MP</td>
</tr>
<tr>
<td>2017</td>
<td>Update 2017 costs + explore volume increase</td>
<td>Maintain transfer volume</td>
<td>Align exchange with transfer but maintain 2 US options</td>
</tr>
</tbody>
</table>
What were the results of past studies?

- Two U.S. alignments identified as preferred
- Sufficient capacity exists in All-American Canal but a transportation agreement with IID would be needed
- Blending in San Vicente Reservoir would reduce treatment costs
- Major project risks have been identified as manageable - No fatal technical flaws
What were the results of past studies?

San Vicente Reservoir

Corridor 5A - “Tunnel”

Corridor 5C - “Pipeline”

All American Canal
What were the results of past studies?

<table>
<thead>
<tr>
<th>Item</th>
<th>Corridor 5A Tunnel</th>
<th>Corridor 5C Pipeline</th>
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</thead>
<tbody>
<tr>
<td>Estimated Capital Cost ($2017)</td>
<td>$2.4 B</td>
<td>$2.8 B</td>
</tr>
<tr>
<td>Planning through completion</td>
<td>Approx. 20 Years</td>
<td>Approx. 20 Years</td>
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<tr>
<td>Pipeline Diameter</td>
<td>96 inches</td>
<td>96 inches</td>
</tr>
<tr>
<td>Pipeline Capacity</td>
<td>280,200 AF</td>
<td>280,200 AF</td>
</tr>
<tr>
<td>Pipeline Length</td>
<td>84 miles</td>
<td>92 miles</td>
</tr>
<tr>
<td>Pump Stations</td>
<td>2 Each</td>
<td>5 Each</td>
</tr>
<tr>
<td>Pressure Control Facilities</td>
<td>0</td>
<td>2 Each</td>
</tr>
<tr>
<td>Power Generating Facilities</td>
<td>0</td>
<td>3 Each</td>
</tr>
<tr>
<td>Electrical Transmission Lines/Substations</td>
<td>23.8 Miles/1 Each</td>
<td>39.6/4 Each</td>
</tr>
<tr>
<td>Property Acquisition</td>
<td>1,100 Acres</td>
<td>1,650 Acres</td>
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</table>
### What was the original plan? - Phase A

<table>
<thead>
<tr>
<th>Scope Item</th>
<th>Past Studies Feasibility Level</th>
<th>Phase A Conceptual Level</th>
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</thead>
<tbody>
<tr>
<td>Enviro./Permits</td>
<td>![Progress]</td>
<td>![Progress]</td>
</tr>
<tr>
<td>Geotechnical</td>
<td>![Progress]</td>
<td></td>
</tr>
<tr>
<td>Land Acquisition</td>
<td>![Progress]</td>
<td></td>
</tr>
<tr>
<td>Treatment/Blending</td>
<td>![Progress]</td>
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<tr>
<td>Brine Disposal</td>
<td>![Progress]</td>
<td>![Progress]</td>
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<tr>
<td>Power Supply</td>
<td>![Progress]</td>
<td>![Progress]</td>
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<tr>
<td>Risk Analysis</td>
<td>![Progress]</td>
<td>![Progress]</td>
</tr>
<tr>
<td>Demands</td>
<td>![Progress]</td>
<td>![Progress]</td>
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<tr>
<td>Capital Cost</td>
<td>![Progress]</td>
<td>![Progress]</td>
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<tr>
<td>Syst. Integration</td>
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<td>![Progress]</td>
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<td>Agreements</td>
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<tr>
<td>Project Delivery</td>
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<tr>
<td>Partner. Struct.</td>
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</table>

Board approval would be required to proceed to Phase B

=? = Off-ramp
## What was the original plan? - Phase B

<table>
<thead>
<tr>
<th>Scope Item</th>
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<th>Phase A Conceptual Level</th>
<th>Phase B Pre-design Level</th>
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<tbody>
<tr>
<td>Enviro./Permits</td>
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What is the revised plan?

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<tr>
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<th>Phase B Pre-design Level</th>
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<tbody>
<tr>
<td>Enviro./Permits</td>
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<tr>
<td>Demands</td>
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<td></td>
<td></td>
<td>🔧</td>
</tr>
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</table>

Public outreach, legal and preliminary economic analysis will begin in Phase A.
### What is the cost?

<table>
<thead>
<tr>
<th>Scope</th>
<th>Cost</th>
<th>Completion</th>
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</thead>
<tbody>
<tr>
<td>Phase A</td>
<td>$1.6M</td>
<td>9-12 months</td>
</tr>
<tr>
<td>Phase B</td>
<td>$2.3M</td>
<td>9-12 months</td>
</tr>
<tr>
<td>Total</td>
<td>$3.9M</td>
<td>18-24 months</td>
</tr>
</tbody>
</table>

- **Note: Some Phase B costs would shift to Phase A as a result of revised plan**

- First Offramp - Board consideration of proposed budget
- Next Offramp - Board consideration of proceeding to Phase B
What are the elements of a conveyance decision?

2021
Scope Study Results

2030
Transfer Agreement Extension

2017 – 2030
Ongoing Regional Economic Analysis

This is what we are looking at now (Phases A and B)
What are the elements of a conveyance decision?

QSA Extension

- Water Authority - IID Transfer Agreement
  - Existing term through 2047
  - Parties must mutually agree to extend 75 years, beyond 2047
  - Mutual Renewal to 2077
- Canal water through 2117-2119
- Extension of various contracts with state and federal parties
- No existing provision for exchange agreement extension for transfer water
What are the elements of a conveyance decision?

**Project Specific Cost Factors**
- System integration
- Treatment/blending
- Brine disposal
- Environmental/permits/power
- Legal requirements
- Construction methods/technology
- Land acquisition
- Risk mitigation
- Project delivery methods (i.e. design-build)
- Partnership structures (i.e. P3)
What are the elements of a conveyance decision?

External Cost Factors

- Single-tunnel WaterFix
- Delay in WaterFix EIR
- LA SAN project updates
- MWD cost allocation (supply, fixed, transportation)
- Water Authority demands/sales
- Market-based QSA cost estimate (1998 agreement)
What are the elements of a conveyance decision?

QSA supplies are cost effective

More diverse supplies have both increased the Authority’s flexibility and helped to stabilize water cost increases. Water from the Quantification Settlement Agreement (QSA), for example, is now SDCWA’s cheapest source of untreated water at $877/AF, which accounted for 22% of supplies in calendar year 2018. In comparison, costs for untreated water supplied from MWD, including fixed charges, equaled $921/AF in 2018. Additionally, rate increases from MWD are expected to exceed those of QSA supplies, with increases of close to 10% annually through 2020. Future increases in MWD costs are also anticipated when accounting for potential project costs associated with the California WaterFix.
Why study this now?

2020  2021  2030  2040  2047

**Ongoing Regional Economic Analysis**

**QSA Negotiations and Transfer Extension**

- Environmental
- Project Design
- Land Acquisition

10 to 12 Year Construction Period

Notice to Extend Transfer to 2077

5-Year Notice due to MWD

Exchange Agreement Expires

Phase A

Phase B

= Off-ramp

Our Region’s Trusted Water Leader
San Diego County Water Authority
What are the next steps?

May 2019
Colorado River Work Group Meeting
Objective: Formulate Recommendation

June 2019
Board Consideration of Proposed FY20/21 Budget - New CIP - $3.9M

= Off-ramp