Davis-Woodland Water Supply Project (DWWSP)

Report of
National Water Research Institute
Independent Advisory Panel

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Panel Chair

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NWRI Independent Advisory Panels

- NWRI – 501c3 nonprofit research institute
- Independent Advisory Panels:
  - Provide third-party scientific and technical review
  - Conducted over 15 panels since 1996
  - Cover a variety of topics and issues related to water supply, wastewater, and water resources
NWRI Panel Members

- 8 Members (pp. 18-21 of Report)
  - 4 Professional Engineers
  - 2 Hydrologists / Hydro-Geologists
  - 1 Planner
  - 1 Public Policy Expert
Overall Objectives of Panel

• Provide independent review of DWWSP:
  ▪ Evaluation of alternatives
  ▪ Groundwater uses and limitations
  ▪ Timing of improvements
Panel Activities

• Conference call with Project Partners (PP)
• 2–day meeting with PP in June
• Site visit to proposed intake and water treatment plant locations
• Review of various reports
• Panel deliberations
• Prepared “Panel Report”
Overall Assessment of DWWSP

- The Panel *unanimously* concluded that the DWWSP meets the stated project objectives:
  - Provides reliable present and future water supplies
  - Improves quality of drinking water supply
  - improves quality of wastewater effluents
Why Now? Why Not Wait?

- Loss of water rights to withdraw Sacramento River water
- Loss of ability to purchase summer water
- Loss of funding opportunities
- Additional costs due to inflation
ENR Construction Cost Index

The chart above shows the ENR Construction Cost Index from 1910 to 2010. The index is expressed relative to 1913=100. The chart illustrates a significant increase in construction costs over the period.
Why Not Wait? (cont.)

- Increased costs to rewrite CEQA documents
- Failure to comply with future NPDES permits
  - Possible fines and litigation
Alternatives Considered

- The Panel considered all project alternatives:
  - Only the proposed DWWSP alternative was determined to meet the project objectives
  - No other alternative was identified that was capable of meeting the project objectives other than those considered by the PP:
    - Groundwater with well-head treatment
    - Groundwater with centralized treatment
    - Deep groundwater without demineralization
Groundwater with Well-Head Treatment

- **Advantages**
  - Can design treatment processes specific to individual wells

- **Fraught With Difficulties**
  - Space constraints
  - Cost of brine disposal – these costs alone rule out the feasibility of this alternative.
Groundwater with Centralized Treatment

- **Advantages**
  - Consistency in water quality
  - Less maintenance than well-head treatment
  - Ability to modify treatment processes to address changing requirements

- **Disadvantages**
  - Cost of brine disposal – these costs alone rule out the feasibility of this alternative.
Use of Groundwater Without Demineralization

- Does not require brine disposal
  - Therefore, carefully considered by Panel
- Best possibility of meeting project objectives
- Capital costs savings:
  - Moderate compared to other options (Table 1, Appendix D)
- Disadvantage:
  - Wastewater effluent quality objective would not be met:
    *Could result in fines and litigation to comply with NPDES permit*
Use of Groundwater Without Demineralization – Continued

- Uncertainty regarding sustainable yield of deep aquifer
  - Possible subsidence
  - Increased energy costs
  - Possibility of interference with U.C. Davis wells
  - Quality of groundwater will deteriorate with time

- The Panel concluded:
  - This alternative appears infeasible and less attractive than the alternative proposed for the DWWSP
Other Recommendations: Maximizing Conservation and Reuse

- **Conservation:**
  - Important in a balanced portfolio
  - Current Assembly Bill 2175 will require a 20 percent reduction in water usage by 2021
  - Encourage conservation and reuse to ensure a stable water supply during years of drought

- **Water Recycling:**
  - DWWSP will greatly expand reuse potential of effluent due to improvement in water quality
  - Higher water quality yields more reuse options and greater benefits
Benefits of Water Recycling

- Improvement in regional water supply portfolio
- Agricultural irrigation water reliability
- Potential for other uses in lieu of using ground or surface water.
Other Recommendations, Cont.

- A balanced water portfolio for the DWWSP requires:
  - Groundwater
  - Surface water
  - Plus maximizing conservation and reuse
Sustainable Water Supply Portfolio
Other Recommendations

• Water Rates:
  - The PP have benefited from some of the lowest water rates in California.
  - If the decision is made to proceed with the DWWSP, the new rates will be comparable to rates throughout the State.

• Public Outreach Program:
  - The PP are encouraged to develop an effective public outreach program that identifies the benefits the DWWSP will provide to the public.
Final Conclusions of Panel

- Water Resources Association and the PPs have shown exemplary foresight in developing a regional plan and in submitting an application to SWRCB for Water Rights to withdraw water from the Sacramento River.

- Without this foresight, the PP would have had a much more difficult time in developing the proposed DWWSP, which fully meets the three stated project objectives.
## Davis-Woodland Water Supply Project
### Greenhouse Calculations

<table>
<thead>
<tr>
<th>Project Alternative</th>
<th>Energy Cost per Year, thousands of dollars</th>
<th>$CO_2$ Equivalents, metric tons/year</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Project</td>
<td>1,586</td>
<td>4,522</td>
</tr>
<tr>
<td>Surface Water</td>
<td>916</td>
<td>2,611</td>
</tr>
<tr>
<td>Treated Groundwater</td>
<td>3,027</td>
<td>8,629</td>
</tr>
</tbody>
</table>
Project Costs

• Document the cost of doing nothing
  ▪ Include impact on water rights, summer water purchasing, meeting discharge requirements, relying upon aging infrastructure, and others.

• Examine all viable means to cost-effectively design and implement DWWSP
  ▪ Look at incorporating public-private partnerships that do not sacrifice reliability, stability, and public health.

• Pursue grants, loans, and bonds to offset costs minimize increases to water rates