



TECHNICAL MEMORANDUM

MEMO No.: 15

SUBJECT: **Project Costs and Impact to JWCD Water Rates-** Zone B Lost Use Reverse Osmosis By-Product Disposal Alternatives Southwest Jordan Valley Groundwater Remediation Project Stakeholders Forum

TO: Mark Atencio and Stakeholder Forum Members

COPIES: David Ovard, JWCD
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FROM: Richard Bay, JWCD

DATE: April 13, 2004

EXECUTIVE SUMMARY

The cost of service basis for JWCD setting its wholesale water rates are explained in this memo. JWCD is a public agency, and no profit is involved in recovering its costs through water rates. Important criteria for determining additional JWCD funding participation in by-product disposal alternatives include:

- Maintain a reasonable annual unit cost of treated water
- Avoid adversely impacting JWCD's ten-year financial plan
- Avoid displacing the discounted price for Zone A delivered water

As a result, guidelines for JWCD include additional capital contributions not exceeding \$3.3 million, and the overall unit cost of treated water not exceeding \$210/AF.

BACKGROUND:

Mining activities in southwestern Salt Lake Valley have created groundwater contamination, with elevated sulfate concentrations. A 1995 federal Consent Decree negotiated by Jordan Valley Water Conservancy District (JVWCD), Kennecott Utah Copper Corporation (KUCC) and Utah Department of Environmental Quality (UDEQ), established a natural resource damage Trust Fund which was paid by KUCC. The Consent Decree established purposes for use of the Trust Fund as:

- remediating the aquifer
- containing the contamination plumes; and
- restoring the beneficial by producing municipal quality water through treatment.

Dr. Dianne R. Nielson, Executive Director of UDEQ, has been appointed as Trustee of the Trust Fund and of projects to accomplish the Consent Decree purposes.

JVWCD and KUCC have submitted a Joint Proposal project to the Trustee to accomplish the Consent Decree purposes. The Joint Proposal involves one reverse osmosis (RO) treatment plant and facilities to treat western Zone A deep groundwater; and one RO plant to treat eastern Zone B deep groundwater and Lost Use shallow groundwater. The Trustee held a public information and public comment period during August through November 2003.

As a result of the public comments, JVWCD withdrew its Zone B/Lost Use RO by-product water discharge permit to the Jordan River and renewed efforts to find a better disposal alternative. The Trustee established a Stakeholder Forum for southwest groundwater remediation issues in early 2004. JVWCD has sought input from the Stakeholders Forum as it considers various alternatives for disposal of Zone B/Lost Use RO by-product water.

Zone B/Lost Use by-product water is projected to have the following characteristics:

Component	Flow Rate	TDS Concentration	Selenium Concentration
	(cfs)	(mg/L)	(µg/L)
Zone B	1.24	8,300	25
Lost Use	0.51	8,200	47
Total	1.75		
Common Range		8,240	38 - 47

PURPOSE

This technical memo provides information on revenues requirements and water rates of JVVCD. It also provides analysis for JVVCD cost participation in the Southwest Groundwater Treatment/remediation Project and impacts to the JVVCD rate structure for various levels of cost participation.

CREDENTIALS, EXPERTISE AND EXPERIENCE OF AUTHOR

I am a registered professional engineer with in Utah. I have a BS degree in civil engineering from the University of Utah. I am employed at the JVVCD as Assistant General Manager and Chief Engineer.

I have been involved in pursuing a southwest groundwater extraction and treatment project since 1990, and co-authored the Joint Proposal submitted by JVVCD and KUCC to the State NRD Trustee. I participate in rate setting studies, presentations to the JVVCD Board of Trustees, and discussions with JVVCD member agencies, regarding water rates.

JVVCD WHOLESALE AND RETAIL WATER DELIVERIES

The Jordan Valley Water Conservancy District (JVVCD) is a public agency. It was created in 1951 under the enabling legislation known as the Utah Water Conservancy Act.

JVVCD delivers water on a wholesale basis to 19 member agencies. JVVCD also provides retail water deliveries in distribution systems to approximately 8,000 connections and accounts. JVVCD delivers approximately 85% of its deliveries to its wholesale member agencies, and 15% to its retail customers.

JVVCD REVENUES

JVVCD receives most of its revenues from wholesale and retail water rates. During the current JVVCD fiscal year July 01, 2003 through Jun 30, 2004, JVVCD revenues are projected to be:

Water Rates -	71%
Taxes –	23%
Other -	6%

JVWCD WHOLESALE WATER RATES

JVWCD delivers water to its whole member agencies under water purchase contracts. These contracts specify that the wholesale water rate for each agency will be established under the conceptual framework known as the American Water Works Association Base – Extra Capacity method. In this method, base costs for water supply and deliveries are shared prorata by all member agencies. Extra capacity cost components are calculated for peak day demand patterns and flow rates, peak hour demand patterns and flow rates, pumping charges, and flat meter charges. Therefore, each member agency has a different water rate, based upon its demand patterns and its pumping pressure zone.

For its fiscal year 2003 – 2004, the JVWCD Board of Trustees established a seasonal water conservation rate component to its wholesale water rates. In this conservation rate, summer period and winter period water rates are offset by 25%, with the summer period water rates being at the higher cost. This is to encourage water conservation efforts in outdoor water uses.

JVWCD retail water rates are calculated on the same basis as wholesale water rates. Specific distribution costs for storage, piping, and other costs, are then allocated to the retail water rate.

For its fiscal year 2003 – 2004, the weighted average JVWCD wholesale (non pumped) water rate is \$315.55 per acre foot (AF).

JVWCD maintains a ten-year rolling financial plan. This financial plan anticipates future capital expenditures, operation and maintenance costs, growth in water demands, and cost changes in other cost components. As a result, the current ten-year financial plan anticipates gradual water rate increases of 5% annually during the first five years, and 6% annual increases thereafter.

JVWCD WATER RATE COMPONENTS

Since JVWCD is a public agency, there is no profit involved in JVWCD water rates. Many cost components make up the total revenues to recover JVWCD costs of operation.

These include operation and maintenance expenses, personnel and administrative expenses, compliance and water conservation efforts, debt service and capital improvement funds.

A study of JWCD costs and water rates during 2003 identified the “unbundled components” of the JWCD water rates. The unbundled components are as follows:

- Water Supply
- Water Treatment
- Transmission
- Distribution
- Storage
- Capital
- Conservation
- Other

The cost components that correspond to water produced through the southwest groundwater remediation and treatment project are water supply and water treatment. The cost component for water supply and treatment in the JWCD 2003 – 2004 fiscal year are as follows:

Groundwater and streams -	\$63.22 per AF
Treated surface water -	\$178.29 per AF
Weighted average -	\$149.55 per AF

JWCD COST PARTICIPATION IN THE SOUTHWEST GROUNDWATER TREATMENT PROJECT

JWCD views its participation in the southwest groundwater treatment project as a means of providing a public water supply to its member agencies. It also considers its participation as a service to its member agencies in facilitating the containment and remediation of extensive groundwater contamination that could otherwise impact its member agencies' wells.

The Joint Proposal provides for project funding by JWCD and Kennecott Utah Copper Corporation (KUCC), in addition to the Trust Fund. The following table shows the proposed net present value funding, expressed in September 2003 dollars.

<u>Project Components</u>	Project Funding ^(a) (Millions)				
	<u>ILC(b)</u>	<u>Lost Use</u>	<u>KUCC</u>	<u>JVWCD</u>	<u>TOTALS</u>
Zone A	\$24.05	\$0	\$14.80	\$5.90	\$44.75
Zone B	\$24.05	\$0	\$4.50	\$11.10	\$39.65
Lost Use	<u>\$0</u>	<u>13.2^(c)</u>	<u>\$0</u>	<u>\$6.30</u>	<u>20.0</u>
TOTALS	\$48.1	\$13.2	\$19.3	\$23.3	\$103.9

(a) In October 2002 dollars. Includes both construction and O,M&R cost NPV for 40 years.

(b) Irrevocable letter of credit (September 2003 value).

(c) \$0.7 million to UDEQ for Trustee expenses.

As shown above, the proposed JVWCD project funding has a net present value of \$23.3 million. The JVWCD cost participation involves both capital funds and operation, maintenance and replacement (O,M&R) funds over the 40-year project life.

Table 9.0 in the Joint Proposal provides details on the capital and O,M&R costs of JVWCD, KUCC and the Trust Fund. The estimated breakdown of JVWCD capital cost participation is:

- Capital \$7.9 million
- O,M&R (40 years) – \$15.4 million
- **Total \$23.3 million**

JVWCD calculated its overall costs of participation in the Joint Proposal project in 2003. Its overall cost was calculated as \$175 per AF, expressed in September 2003 dollars. The Joint Proposal provides for JVWCD to discount the water rate it will charge for Zone A water to provide the full “subsidy” offered by the Trust Fund.

The portion of project capital of which is currently under consideration by the Stakeholder Forum is the discharge or disposal of reverse osmosis (RO) by-product water. In the Joint Proposal, the net present value of costs to JVWCD for RO by-product disposal is \$6.7 million. Of this amount, \$6.4 million is the capital cost.

FACTORS IMPORTANT IN DETERMINING JWCD'S LEVEL OF FUNDING BY-PRODUCT ALTERNATIVE

1. It is important that JWCD maintain a unit cost for delivered municipal water under the project within a reasonable proximity to its current cost components for water supply and treatment. Many public and private officials have submitted comments that JWCD should not shoulder the burden of groundwater cleanup, since it is not a responsible party. Instead, the mission of JWCD, as a public agency, is to provide the public with municipal quality water.
2. Additional capital requirements for a by-product disposal alternative must not adversely impact JWCD's ten-year financial plan.
3. Additional capital requirements should not displace the discount for Zone A water to the Affected Municipalities.

GUIDELINES FOR JWCD FUNDING

Factor 1 Unit Cost of Water Is Reasonable

The maximum unit cost that I am prepared to recommend to the JWCD Board of Trustees is \$210 per AF. This exceeds other pertinent thresholds by the following amounts:

a.	Joint Proposal Unit Cost (\$178/AF)	-	20%
b.	Average water supply and treatment unit cost (178.29/AF)	_	17%
c.	Average finished water unit cost (149.55/AF)		40%

This maximum unit cost for the overall JWCD participation in the southwest groundwater treatment project corresponds to a maximum net present value cost for RO by-product disposal/dischARGE of \$8.3 million.

Factor 2 Additional capital does not adversely impact 10 year financial plan.

In considering this factor, the additional capital requirement of any alternative which exceeds the original program capital of \$6.4 million will be examined. The important issue is to determine whether the generation of capital funds during the first ten years will adversely impact the District's 10 year financial plan.

In performing this evaluation, the following assumptions are made:

- The capital can be spread relatively evenly over ten years, during construction and through the blending of generated capital reserves with bond issues.
- One third of the additional capital will be funded through capital reserves generated from water rates during the first ten years.
- For the other two thirds of capital, assume that capital will result from bond issues with repayment at 5% interest over 20 years.
- 80,000 AF per year of total JVVCD deliveries are made
- The average JVVCD wholesale water rate is \$315 .55 per AF.

For the above assumptions, each \$1.0 million of excess capital will have an impact of \$1.15 per AF. This will create a 0.36% increase each year to the wholesale water rate.

I am not prepared to recommend greater than a 1.0% increase in impact to wholesale water rates over the first ten years, since this would be in addition to the 5% - 6% annual increases projected in the District's ten year financial plan. This limit would correspond to an additional capital contribution by JVVCD of \$3 million.

Factor 3 Additional Capital Does Not Displace the Zone A Rate Discount

The Joint Proposal includes a formula for discounting the wholesale water rate for Zone A treated water delivered to the four Affected Municipalities. Table 11.0.B in the Joint Proposal sets forth this discount formula. The formula removes average raw water supply and treatment components from JWCD's water rate methodology, and replaces them with amortized capital contributions from JWCD in the actual project.

An application of the Zone A price discount formula results in a 2004 wholesale rate of \$288.10 per AF. This is for water delivered in Pressure Zone D. The comparable wholesale water rates for the current fiscal year to West Jordan City, South Jordan City and Herriman City, with an additional pump lift (assumed as \$20.00 per AF) added to reflect Pressure Zone D deliveries, are shown below:

Herriman City	\$355.46/AF
South Jordan City	\$331.05/AF
West Jordan City	\$359.68/AF
Average	\$348.73/AF

The formula for discounting the Zone B wholesale price in 2004 would result in a discount of \$60.63/AF, or a 17.4% discount. Additional capital contributions required from JWCD would have the effect of decreasing the discounted price. Each \$1.0 million additional capital contribution would result in an increase of \$9.38/AF during fiscal year 2003 – 2004. Expressed a different way, an additional capital requirement of \$6.5 million would totally eliminate the Zone A price discount.

As a result of the above analysis, I would not recommend additional capital requirements substantially approaching \$6.5 million. This is because of the reliance the four Affected Municipalities have made on the discounted price for Zone A water.