SACRAMENTO SUBURBAN WATER DISTRICT

Agenda Item: 1

Date: February 21, 2014

Subject: Review of Wholesale Wheeling and Conjunctive Use Water Rates

Staff Contact: Dan York, Assistant General Manager
John E. Valdes, Engineering Manager

Recommended Board Action:

Review draft report on "Review of Wholesale Wheeling and Conjunctive Use Water Rates" as prepared by HDR and direct staff as appropriate. Direct the General Manager to submit a non-binding commitment to assist Rio Linda/Elverta Community Water District (RLECWD) meet county requirements for sustainable water supply for new development with the following criteria:

- Volume of banked groundwater offered for sale: 2,500 Acre Feet (AF) per year, for 20 years,
- Cost per acre-foot for volume of banked groundwater: $398.45/AF. The price will be adjusted annually with pass-through costs being passed through and other costs inflated by the Consumer Price Index.

Discussion:

A presentation on this same topic was made to the Ad Hoc Water Banking and Transfer Committee with Directors Robison and Schild at their meeting held on February 12, 2014. The committee and staff engaged in a detailed discussion of the updated wheeling and conjunctive use water rates and options for making an offer to RLECWD access to SSWD groundwater banking capabilities. Because of the many complex and technical issues, the Committee recommended a special Board Workshop be conducted with the full Board.

At the Ad Hoc Water Banking and Transfer Committee meeting, Director Schild indicated the District should not consider transferring to RLECWD banking credits for water the District previously banked, but the use of District facilities to bank future water on behalf of RLECWD was an option. Mr. Schild also suggested the option of wheeling surface water directly to RLECWD, when available, and having them establish their own groundwater "bank account". Because surface water is not available in dry years, they would need to contract sufficient capacity when surface water was available to reach the average goal desired. PCWA water is only available in years when unimpaired inflow to Folsom lake is projected to exceed. 1.6 AF, which is roughly 60% of the year types.

As previously reported, the District has been approached by RLECWD to potentially provide water supply for their Elverta Specific Plan (ESP) development project. The project is subject to Sacramento County planning requirement PF8, which requires that the development result in no net increase in long-term groundwater pumping within the groundwater basin. RLECWD is investigating a water supply alternative that provides groundwater supply for initial growth and then implements a conjunctive use strategy with surface water as development progresses. The total projected demand of the ESP development is 2,500 AF per year.

In 2008, the Board approved setting Wholesale Wheeling and Conjunctive Use Water Rates as developed by The Reed Group, Inc. The wheeling and conjunctive use water unit cost analysis included consideration of different surface water costs available in the North Service Area (NSA) and South Service Area (SSA), groundwater production costs, and transmission and distribution costs that may be applicable to any particular water wheeling or transfer situation. Because of the pending request from RLECWD, staff hired HDR Engineering, Inc. (HDR) to update the Wholesale Wheeling and Conjunctive Use Rates to current values. HDR was most familiar with current District costs having completed a full rate study in 2013.

A draft final report has now been prepared by HDR titled "Review of Wholesale Wheeling and Conjunctive Use Water Rates" (see attached). This report reviews and updates costs from the 2008 report by The Reed Group. While the immediate need is to submit a proposal to RLECWD, which is due on February 27, 2014, the report provides sufficient cost information to allow the District to review/evaluate other alternatives that may arise in the future.

The updated study examines various scenarios which may be used to provide water supply and/or wheeling services. The rates are stated in $/AF and range from approximately $212 per AF to $456 per AF, depending upon the assumed source of water supply, treatment and the delivery of water. HDR used the same methodology as the 2008 study and, with assistance from District staff, updated per unit costs and other relevant data and information. Note that the rates from the 2008 study ranged from $207 per AF to $339 per AF. As part of their efforts, HDR has also prepared a spreadsheet/template that can be used by District staff to update these costs in subsequent years.

RLECWD has asked the District for a non-binding commitment letter to include: 1) Volume of banked groundwater offered for sale; and 2) Cost per acre-foot for volume of banked groundwater. The non-binding commitment volume and price are expected to be valid for 18 months, or until a signed contract has been established. Before making any offer, there are a number of issues which the District should carefully consider. First, the District's supply, treatment and wheeling costs can and will vary from year to year. Some costs are pass-through costs which the District incurs from another agency or organization and simply passes through, while other costs may vary based more on inflation. At the same time, with any type of contractual arrangement, there are certain administrative and overhead costs which are realized whether the party purchases any banked groundwater in a certain year or not. Finally, there is the perspective of the "cost" of the water versus the "value" of the water. Banked groundwater is a valuable resource for the District which likely exceeds the actual cost the District incurred to

bank that resource. "Value of service" pricing is a departure from traditional cost of service pricing and not widely used. However, it is important for the District to acknowledge that conjunctive use or banked groundwater is the District's "insurance" for purposes of reliability, and as such, it has significant value to the District's customers.

As indicated in HDR's draft final report, there are a range of pricing methods that the District could use to price the water in making an offer to RLECWD. These include a direct cost approach, an avoided cost approach, and an incremental (replacement) cost approach. The challenge to the District is to make an offer for selling banked groundwater knowing the current cost of the water, but not the future cost. The direct cost approach results in the District wheeling water when hydrologically available at the applicable direct cost incurred by the District which is expected to change over time. In this case, surface water purchased from PCWA treated by San Juan Water District, and delivered through the District's NSA transmission and distribution system could be sold at the direct cost of that water supply/delivery (presently $212.30/AF). This would require extension of a transmission line from the Antelope T-main at Walerga into RLECWD.

Alternatively, the District could bank future purchased surface water on behalf of RLECWD, and RLECWD would extract the water banked by the District. The incremental cost in this case is presumed to be the highest cost resource (presently $398.45/AF), but more importantly, it assumes that the lowest cost water resource is reserved for District customers and the District is willing to sell any "excess" water which may be the higher cost (value) water.

The following alternatives could be considered:

1. Commit to bank and sell up to 2,500 AF/year of water at a present price of $398.45/AF (Scenario 3 shown in Exhibit 1 of the HDR report).
2. Commit to wheel up to 2,500 AF/year of PCWA surface water (on long term average; zero in "dry" years and roughly 4,200 AF in "wet" years, at the present direct cost of $212.30/AF. this is Scenario 1 shown in Exhibit 1 of the HDR report. An extension of time in the contract between PCWA and SSWD would be required to make a 20 year commitment requiring PCWA approval.

While on the surface, it would seem that the District would always prefer to sell water under Alternative 1, there is an important distinction between these two alternatives. Alternative 1 is a firm commitment to bank and sell an average of 2,500 AF/year. Alternative 2 is a commitment, subject to concurrence and action by PCWA, to wheel lower cost PCWA water, when it is available. RLECWD is requesting a firm commitment for the developers. To average 2,500 AF, roughly 4,200 AF would need to be wheeled when it is available.

Any transfer of banking credits would be subject to the accounting framework established by the Sacramento Groundwater Authority. A copy of the current accounting of banking credits is shown as Exhibit 2.

While the offer price of the water is important to RLECWD, the terms and conditions around which the District is willing to make this offer are just as important. The types of the items the District should consider within the offer include the following:

- **Term of the Agreement**: 20 years; firm commitment.
- **Volume of Water to Be Available:** 2,500 AF/year.
- **Minimum Annual Purchase Commitment:** Take or pay.
- **Pricing:** The price will be adjusted annually with pass-through costs being passed through and other costs inflated by the Consumer Price Index (CPI).
- **Use/Resale of Water:** Banked Water cannot be resold to another agency or development.

The General Manager of RLECWD and their consultant have been invited to attend the Workshop. Staff expects to provide a presention on the background and history of the District's conjunctive use and water banking activities.

Fiscal Impact:

Successful negotiations with RLECWD using the updated wheeling and conjunctive use rates could provide substantial benefits to existing District customers. Existing District infrastructure would be put to fuller use, with an outside revenue stream to partially offset maintenance, depreciation and debt service costs that are now fully paid by District Customers.

Strategic Plan Alignment:

Water Supply – 1.D. Manage the District's groundwater supply to ensure its quality and quantity. Updating of the unit rates for wheeling and conjunctive use water will provide staff with an important tool to further negotiations with interested partners.

Finance – 4.A. Monitor District operations to ensure cost effective and competitive performance. Successful negotiations that get other agencies to utilize District infrastructure investments will deflect costs to District rate payers.

Exhibit 1

DRAFT FINAL REPORT

Review of Wholesale Wheeling and Conjunctive Use Water Rates

February 2014

SACRAMENTO SUBURBAN WATER DISTRICT

HDR

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February 5, 2014

Mr. Daniel York
Assistant General Manager
Sacramento Suburban Water District
3701 Marconi Avenue, Suite 100
Sacramento, California 95821-5346

Subject: Review of Wholesale Wheeling and Conjunctive Use Water Rates

Dear Mr. York:

HDR Engineering, Inc. (HDR) was retained by the Sacramento Suburban Water District (District) to update the District's wholesale wheeling and conjunctive use water rates. This study is timely given that the District is in the process of making a decision on whether to sell banked groundwater to a neighboring utility. While this study will provide immediate benefit to respond to this specific request, this report is intended to provide the District with wholesale wheeling and conjunctive use water rates applicable to a variety of situations and conditions.

This report was developed based upon the District's existing methodology for establishing wholesale wheeling and conjunctive use rates. The report and analysis was developed based upon data and information provided by the District, along with other financial and cost information obtained from the District's most recent water rate and facility development (capacity) charge reports.

While this report provides for the development of wholesale wheeling and conjunctive use rates, in all cases, it does not provide a single, definitive rate. Rather, similar to the District's current wheeling and conjunctive use rates, it provides a range of costs (rates) and the final proposed rates for a specific transaction should be based upon the specific facilities or characteristics of that transaction. This is a function of the source of water supply, since costs vary by source, and the facilities being used to deliver the water, which also vary by service area.

HDR appreciates the opportunity to provide this additional technical analysis to the District. Should you have any questions about this report, please don't hesitate to contact me.

Sincerely,
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Vice President

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Review of Wholesale Wheeling and Conjunctive Use Water Rates

Introduction

The Sacramento Suburban Water District (District) has recently been approached by the Rio Linda/Elverta Community Water District (RLECWD) to provide water supply to serve the Elverta Specific Plan (ESP) development project. This development project is subject to Sacramento County planning requirement PF8 which requires the development to result in no net increase in long-term groundwater pumping within the groundwater basin. To meet this requirement, the RLECWD is exploring different supply alternatives to meet the overall 5,000 acre feet per year (AFY) required of this project. The RLECWD is investigating the use of groundwater supply for initial growth, and then implement a conjunctive use strategy with surface water as the development progresses. The RLECWD is discussing a possible water supply arrangement with the District, along with two other competing agencies. The RLECWD has requested from the District a commitment letter outlining the terms, conditions and rates (costs) for water supply and delivery.

The objective of this report is to review the possible costs/rates associated with the District's water supply and wheeling of water. While the District has been approached about a very specific circumstance, the objective of this report is to provide sufficient information to allow the District to review/evaluate other alternatives that may arise in the future.

Summary of the Results

The wholesale wheeling and conjunctive use rates developed herein has not provided a single rate. Rather, the study has examined various scenarios which may be used to provide water supply and/or wheeling services. The rates developed are stated in acre feet (AF) and range from approximately $212 per AF to $456 per AF. These rates vary based upon the assumed source of water supply and treatment and the delivery of water. More specifically, the scenarios developed and the corresponding rates included the following:

- Wholesale delivery of Placer County Water Agency water treated by the San Juan Water District with deliveries via the District's north service area transmission facilities - $212.30 per AF
- Wholesale delivery of American River water treated by the City of Sacramento with delivery via the District's south service area transmission facilities - $439.41 per AF
- Banking of surface water (cost depends upon supply mix) - $260.63 per AF to $398.45 per AF
- Previously banked water delivered to another agency by the District (must be preceded by banking of surface water) - $455.96 per AF

In developing this study, HDR used the District's 2008 methodology and updated the per unit costs and other relevant data and information. By way of comparison to the 2008 study, the rates in the District's 2008 study ranged from $207 per AF to $339 per AF. Provided below is a more detailed discussion of the current study.

Overview of the District and Its Water Supply

The District was formed on February 1, 2002 when the Arcade Water District and Northridge Water District consolidated into the Sacramento Suburban Water District. The District today serves a population of approximately 171,000 through approximately 46,000 service connections. The District's service area is fairly expansive and covers approximately 36 square miles.

The District obtains and supplies a portion of its water supply from 85 active groundwater wells. Historically, much of the District's water supply was obtained from groundwater. However, over time, and for a variety of reasons, the District has shifted away from groundwater and supplements their water supply with surface water. The District currently has contractual rights to 26,064 acre-feet from the City of Sacramento water entitlement; and a contract to purchase up to 29,000 acre-feet of surface water per year from Placer County Water Agency (PCWA). The water is delivered to the District's customers via approximately 700 miles of District owned and operated water mains.

The District's 2010 Urban Water Management Plan provides a more detailed discussion of the District's water supply, particular as it relates to groundwater. It notes the following:

> *The Sacramento Groundwater Authority (SGA), formerly the Sacramento North Area Groundwater Management Authority, was formed in 1999 to manage the groundwater basin north of the American River. SGA's goal is to protect the health of the groundwater basin within Sacramento County north of the American River. The JPA has delegated the powers necessary to protect and regulate the local groundwater basin to the overlying water purveyors.* ***One objective of SGA is to maintain the long-term sustainable yield of the groundwater basin north of the American River though conjunctive use practices*** *(emphasis added)."*[1]

This objective is important to understand for two reasons. First, by limiting the amount of groundwater which can be pumped, the District has relied more on surface water supplies. The most basic impact of this shift or change is that surface water supplies are more expensive than pumping groundwater. The second reason why this is important is the District has an in lieu pumping recharge program in place. This program involves the importation of surface water to offset groundwater usage, resulting in the local recovery of groundwater levels . . ."[2]

As a result of how the District was originally formed, delivery costs vary between the North Service Area (NSA) and South Service Area (SSA). At the same time, the cost of water supply varies between groundwater and surface water supplies. Understanding these differences and the costs associated with these different supplies and delivery areas is important for the District if it desires to sell water supply to a neighboring entity, or simply wheel (deliver) water through

[1] Sacramento Suburban Water District, 2010 Urban Water Management Plan, p. 4-4.
[2] Ibid. p. 4-5.

its service area.

As a result of the management of their water supply, the District has been "banking" groundwater which is available for transfer (sale) or exchange.[3] The District's Urban Water Management Plan notes that the District has "51 interconnections through which exchanges or transfers of water can occur with neighboring agencies."[4] The request from RLECWD to have the District provide water supply to serve the Elverta Specific Plan (ESP) development project is an example of this concept.

Overview of the Rio Linda/Elverta Community Water District Request

As noted above, the District has been approached by the Rio Linda/Elverta Community Water District (RLECWD) to provide water supply to serve the Elverta Specific Plan (ESP) development project. The RLECWD is exploring different supply alternatives to meet the overall 5,000 acre feet per year (AFY) required of this project. The RLECWD water supply for this project assumes the installation of wells to serve the first phase of the ESP. RLECWD would attempt to purchase banked groundwater credits from a partner agency. The RLECWD is discussing this possible water supply arrangement with the District and two other agencies.

At the present time, the District has banked 200,000 acre feet of water. By comparison, the RLECWD is also requesting offers from the Carmichael Water District and the City of Sacramento. In both cases, these utilities have banked 40,000 acre feet, or approximately 20% of the District's total volume of banked groundwater.

The District has no obligation to serve the ESP, and given that, the District needs to establish the terms and conditions under which it is willing to transfer or exchange. The volume of water to be included in the transaction, the length or term of the transaction (e.g. 20-years, etc.) and value or price/rate for the water are the District's most pressing and critical decisions.

The District initially analyzed this issue using the wheeling and conjunctive use rates from 2008 and determined there were a possible range of values based upon the assumptions used. The cost per acre foot, using the 2008 costs appeared to be in the range of $207 to $339/acre foot, depending upon the assumptions used for supply and delivery. Given the vintage of rates used in that analysis, it was determined by the District that it would be prudent to update the 2008 wholesale wheeling and conjunctive use water rate study.[5]

Development of the Wholesale Wheeling and Conjunctive Use Water Rates

The methodology to determine the wholesale wheeling and conjunctive use water rates is relatively simple and straight-forward. The approach or methodology considers the per unit

[3] The District currently has 200,000 acre feet of water banked
[4] Ibid. p. 4-8.
[5] The 2008 study was prepared by the Reed Group and was dated March 13, 2008.

costs for the District's water supply and treatment along with the cost of delivery (transmission). As noted above, there is not a single source of water supply and the District's conveyance system has a North Service Area (NSA) and South Service Area (SSA).

The methodology for determining the per unit costs, stated in $/acre foot is segregated between three main areas:

- Water Supply Production and Treatment
- Transmission and Distribution
- Administration and Regulatory

Each of these areas and their component costs are discussed in more detail below.

Water Supply Production and Treatment – The category of water supply production and treatment is designed to capture the costs associated with obtaining the water and treating it to potable standards. As discussed above, the District has both groundwater and surface water supplies. The surface water supply includes agreements with the Placer County Water Agency (PCWA), the City of Sacramento and occasional section 215 CVP water from the USBR.[6] The water from PCWA is raw and must be treated. The groundwater (well) production includes the well capacity costs, along with the treatment capacity and O&M costs.

Transmission and Distribution – While the above costs address the issue of water supply and treatment, the transmission and distribution component addresses the issue of wheeling water. There may be circumstances in which a utility simply wants to wheel water through the District's transmission and distribution facilities. The analysis of transmission and distribution costs is designed to isolate these costs, but more importantly, segregate costs between the North Service Area facilities and the South Service Area facilities. The costs associated with each service area consider both the capacity (capital) cost and the O&M costs.

Administrative and Regulatory – There are certain costs which reflect certain regulatory or overhead costs of the District. Regardless of the transaction, the District will incur at some level a certain amount of administrative and overhead costs. The intent of this component is to capture some portion of the administrative and regulatory costs. The District also has a fixed out-of-District charge. While the above cost calculations capture the costs associated with the transaction, the District has no obligation to serve an outside District customer. Therefore, in recognition of the risk undertaken to serve outside District customers a rate differential of 15% is assumed.

Given an overview of these broad categories of costs, HDR in association with District staff developed the specific unit costs for each of the areas. In developing these per unit costs, HDR and the District utilized the best available information and data. In some cases, the costs are simply a "pass-through" cost from another agency (e.g. Placer County Water Agency Raw

[6] 2010 Urban Water Management Plan, p. 4-1.

Water). In a number of instances, the costs were calculated based upon District specific data and information. In the discussion below, HDR has attempted to document the general approach used to establish the per unit cost and whether the cost was a pass-through or calculated/estimated from District data and information. Overall, the methodology used to review these costs is based upon the District's existing methodology.

Water Supply Production and Treatment

- **Placer County Water Agency (PCWA) Raw Water** – The agreement between the District and PCWA requires the District to pay $35.00 per acre-foot (AF) for up to 29,000 AF of water under PCWA's water rights. This raw water charge is written into the agreement with PCWA and is subject to changes as specified in the agreement. This cost is a direct pass-through cost and appropriate for inclusion in the cost of NSA surface water.
- **U.S. Bureau of Reclamation (USBR) Wheeling (Warren Act)** – The USBR charges the District for wheeling non-Central Valley Project (CVP) project water through Folsom Reservoir under terms specified in the Warren Act. The charge is currently $17.65 per AF and is subject to change each year. This is a direct pass-through charge appropriate for inclusion in the cost of NSA surface water.
- **Folsom Reservoir Diversion Power** – This is the estimated cost of pumping water from Folsom Reservoir to San Juan Water District's (SJWD) Peterson Water Treatment Plant. The cost of pumping is a direct cost associated with the District obtaining surface water for the NSA. The District requested this cost information from SJWD but did not receive a response in time for inclusion within this report. Given that, HDR and the District determined that a reasonable approach to estimate the cost was to escalate the cost from the 2008 study. The resulting charge after escalation from the 2008 cost is $5.12 per acre foot. Normally, this charge would be provided by SJWD staff and subject to change on an annual basis.
- **San Juan Water District Treatment** – The SJWD treatment charge is currently $59.71 per acre foot and was established by SJWD under terms of the agreement between the District and SJWD. The charge reflects the cost of heating water at the Peterson Water Treatment Plant. This charge is a direct pass-through charge appropriate for inclusion in the cost of the NSA surface water. The charge is typically updated annually by SJWD.
- **Regulatory Approval** – The District incurred about $1.26 million to secure agreements, permits, and approvals for using water under the PCWA water supply agreement. Previous wheeling water rate analyses performed for the District resulted in the amortization of this cost over a 20-year period at a cost of $3.30 per AF. This cost was used in the 2008 study and has been carried forward to this study. Including this cost in NSA surface water is an appropriate way for the District to recoup some of the investment made to secure this water.
- **City of Sacramento Raw Water** – This charge of $1.86 per AF reflects the cost of water supply under the agreement between the District and the City. It is a direct pass-through charge appropriate for inclusion in the SSA surface water.

- **City of Sacramento Treatment Capacity** – The District has purchased 20 million gallons per day (mgd) of capacity in the Fairbairn Water Treatment Plant. The cost of this capacity is incorporated into a capacity charge in the same manner that NSA and SSA transmission facilities are included in a capacity charge (discussed below). The cost of treatment capacity is not included in wheeling water rates because the City of Sacramento has indicated that it would desire such agencies to buy capacity in their facilities (rather than use the District's capacity). However, a treatment capacity charge is appropriate when considering the rates applicable for the banking of surface water. The cost of $42.19 per AF is based on the District's cost to acquire capacity from the City, and the approach developed for capacity charges used for transmission facilities. For purposes of this analysis, the cost has been amortized over a 30-year period at 4.5%.

- **City of Sacramento Treatment/Delivery** – This charge reflects the operating and maintenance cost of water treatment and delivery under the agreement between the District and the City. The charge is currently $276.77 per AF and is subject to change each year. It is a direct pass-through charge appropriate for inclusion in the cost of SSA surface water. This particular cost has increased significantly since the 2008 analysis. This cost has increased nearly $100/AF since the 2008 rate analysis.

- **Enterprise/Northrop Pumping** – This is the estimated cost of pumping surface water into the District's water distribution system at the Enterprise/Northup Pump Station. The $20.76 per AF cost of pumping is a direct cost associated with surface water obtained from the City. The estimated cost of this pumping was determined by District staff and should be reviewed and updated periodically.

- **Blended Supply and Treatment** – The banking of surface water may entail one or both of the District's surface water supply sources. The previous model developed provided the District with the ability to develop blended supply and treatment costs based on (1) the latest annual surface water supply blend, (2) a three-year surface water supply blend, or (3) a specific percentage allocation between the NSA and SSA surface water supplies. While HDR has developed a model independent from this prior analysis, HDR has retained this feature of the model. To maintain consistency with the District's prior methodology, a 50%/50% blend has been assumed. Exhibit 2 summarizes recent water production information. It should be noted that over the last three years, the blend has been about 61%/NSA and 39% SSA. A 50%/50% blended supply and treatment cost was calculated as $231.18 per AF.

  The blended supply and treatment cost of $231.18 per AF is used to illustrate the cost of the District's water banking with the 50%/50% blend, and reflects the estimated cost at the low end of a possible range of costs. Water banking of 100% water from the City of Sacramento represents the high end of the potential range.

- **Well Production and Treatment Capacity** – The District has a considerable investment made in groundwater production and treatment facilities. This cost of capacity was determined from the District's fixed asset records and reflect the depreciated replacement cost of existing well facilities. The capacity charge of $78.09 per AF is

based on the value of the capacity amortized over 30 years at 4.5% and spread over a well capacity of 38,000 AF per year. HDR assumed an interest rate of 4.5% based upon the current costs associated with a "AAA" and "AA" rated municipal bond. The assumption of 4.5% is slightly lower than the assumption used in the 2008 analysis.

- **Well Production and Treatment O&M** – This is the estimated cost of groundwater pumping and treatment at wells located throughout the District's service area. The O&M costs include labor, chemicals and electricity. The cost of $81.30 per AF is a direct cost associated with groundwater production. These costs are assumed to be directly proportional to the volume of groundwater produced. The estimated cost of groundwater pumping and treatment was determined by District staff and should be reviewed and updated periodically.
- **Well Production and Treatment O&M Credit** – When the District banks groundwater by using treated surface water it avoids groundwater well production and treatment costs by using the wells less than it would have otherwise. Given that, a credit of $81.30 per AF is intended to reflect these avoided costs in the development of water banking rates.

Transmission and Distribution

- **North Service Area (NSA) Transmission Capacity** – The calculation of this charge is shown on Exhibit 3 of the Technical Appendices. The charge is intended to reflect the District's investment in capital facilities associated with conveying NSA surface water into the service area. The approach for calculating this capacity charge is the same methodology used in prior analyses for wheeling water rates performed for the District. The transmission capacity charge for NSA facilities is estimated at $58.13 per AF.
- **North Service Area Transmission O&M** – The District owns capacity in the San Juan Cooperative Transmission Pipeline. Maintenance of the pipeline is performed by the San Juan Water District with costs charged to the District under terms of a CIP maintenance agreement. The District estimated the NSA transmission O&M at $2.76 per AF. This charge should be reviewed and updated periodically.
- **South Service Area Transmission Capacity** – The calculation of this charge is also shown in Exhibit 3 of the Technical Appendices. The charge is intended to reflect the District's investment in transmission facilities associated with conveying SSA surface water into the service area. The approach to calculating this charge is modeled on the approach developed previously for the NSA transmission capacity. The transmission capacity charge for SSA facilities is estimated at $75.02 per AF.
- **South Service Area Transmission O&M** – The cost associated with operating and maintaining the SSA transmission facilities has been estimated at $4.75 per AF. This cost estimate was developed by District staff, and should be reviewed and updated periodically.
- **Blended Transmission Capacity** – The banking of surface water may entail using one or

both of the District's surface water supply sources conveyed through NSA and SSA transmission facilities. To be consistent with the District's prior analysis, a 50%/50% blend of surface water imported via NSA and SSA facilities is assumed, resulting in a blended transmission capacity charge of $66.57 per AF.

- **Blended Transmission Maintenance** – The cost of maintaining transmission system facilities is also blended, as described above, and equals $3.76 per AF.
- **Distribution System Capacity** – The District has made a considerable investment in building a distribution system that enables groundwater supplies to be used throughout the service area. If another water agency wants the District to deliver banked water to a point of delivery, it would be appropriate to include costs associated with the District's distribution system. The cost of distribution capacity was determined from the District's fixed asset records and reflects the depreciated replacement cost of existing distribution main facilities. The capacity charge is based on the value of this capacity amortized over 30 years at 4.5 percent and spread over the aggregate water system capacity of 45,500 AF per year. The calculation results in a charge of $185.30 per AF.
- **Distribution System O&M** – The cost of distribution system operation and maintenance was determined using the District's current budget. Water distribution costs, excluding costs identified for service laterals and miscellaneous repairs, were divided by estimated annual water capacity of 45,500 AF to arrive at a cost per AF for distribution O&M of $41.82 per AF.

Administrative and Regulatory

- **Sacramento Groundwater Authority (SGA) Fees** – The Sacramento Groundwater Authority (SGA) charges $3.55 per AF of groundwater pumped as a means of funding their operations. By pumping less groundwater the District would reduce the amount to be paid to SGA. The SGA fee is a direct pass-through costs associated with pumping groundwater.
- **Water Banking Accounting** – The District will need to account for all additions to and withdraws from the water bank. An estimated cost of $3.49 per AF for water bank accounting was developed by District staff. This estimate should be periodically reviewed and updated.
- **Sacramento Suburban Water District (SSWD) Administration** – The District will incur administrative costs associated with negotiating and administering any water wheeling or conjunctive water use agreements with other agencies. District staff estimated this cost at $2.94 per AF. This estimated cost should be periodically reviewed and updated.
- **Out-of-District Charge** – The District has included an out-of-District charge of 15% of the total of other pertinent charges in previous wheeling water rate analyses as a means of compensating the District for the risks and firm obligations associated with pursuing, financing, and developing facilities and agreements necessary for the importation of surface water supplies and water banking.

Exhibit 1 of the Technical Appendix provides a summary of the costs developed above, along with the development of scenarios for water supply, treatment and conveyance. In summary form, four scenarios were developed. The rates range from approximately $212 per AF to $456 per AF. These rates vary based upon the assumed source of water supply and treatment and the delivery of water. The scenarios developed and the corresponding rates included the following:

- Wholesale delivery of Placer County Water Agency water treated by the San Juan Water District with deliveries via the District's north service area transmission facilities - $212.30 per AF
- Wholesale delivery of American River water treated by the City of Sacramento with delivery via the District's south service area transmission facilities - $439.41 per AF
- Banking of surface water (cost depends upon supply mix) - $260.63 per AF to $398.45 per AF
- Previously banked water delivered to another agency by the District (must be preceded by banking of surface water) - $455.96 per AF

In reviewing this analysis compared to the 2008 analysis, some costs have decreased slightly since 2008, while others have increased. As an example, the NSA and SSA transmission capacity costs have decreased by approximately $5 per AF since the 2008 analysis. This is a function of the depreciating value of those assets, but also of the assumed capital cost. As was noted, a slightly lower capitalization (rate of return) was assumed. However, in contrast, the vast majority of costs within this analysis increased, and in particular, the cost of the City of Sacramento treatment and delivery increased the greatest since 2008. It increased by approximately $100 per AF, which is why the scenario of previously banked water delivered to another agency by the District ($455.96 per AF) increased substantially since 2008. In 2008, this same scenario was $339 per AF.

Pricing for Other Utilities

In pricing services for Rio Linda/Elverta Community Water District (RLECWD), or any other potential customer for that matter, the District has a range of methods in which it could price the water. These could include:

- Direct Cost
- Avoided Cost
- Incremental (Replacement) Cost

The direct cost method simply implies that the District will sell water at the cost incurred by the District. For example, if water is purchased from the Placer County Water Agency and delivered through the North Service Area, that would imply a specific (direct) cost. Alternatively, the avoided cost approach may take the highest or last unit of production for pricing purposes which would mean that the lowest cost water is essentially reserved for the District's customers and the District is willing to sell "excess" water capacity they have rights to, which may be their

higher cost water. Banked water could certainly use this approach or logic since it is banked surface water which is more expensive than groundwater. Finally, an incremental method is somewhat different and would need to be carefully considered before being proposed[7]. If banked groundwater is being sold, the District will likely want to eventually replace that banked groundwater, and the price would be based upon future available water and the cost of that water. The use of a replacement cost method is far more complicated since it is not necessarily based upon the current costs being incurred and shown within this analysis.

Summary

This report has provided an update of the District's wholesale wheeling and conjunctive use water rates. This study has been timely given that the District is in the process of making a decision on whether to sell banked groundwater to a neighboring utility. This study is intended to provide a foundational cost-basis for the District's offer.

[7] It is unclear under a contractual situation the relevance of Proposition 218 and cost-based rates. HDR presumes under a contractual agreement two parties (i.e. the District and another utility or developer) can both willingly enter into an agreement and mutually determine an acceptable method of pricing for the services rendered. The District should confirm with their legal counsel the validity of pricing based upon an incremental or replacement cost approach.

Cost Elements	Cost ($/AF)	Scenario 1	Scenario 2	Scenario 3		Scenario 4	Type of Cost	Source of Unit Cost
	2014 Update	Buy PCWA Water Delivered by SSWD	Buy City of Sacramento Water Delivered by SSWD	Have SSWD Bank Surface Water in the Ground		Previously Banked Water Delivered by SSWD		
				Low	High			
Water Supply, Productions, and Treatment								
PCWA Raw Water	$35.00	$35.00					Passthrough	Table 1 , Line 1
USBR Wheeling (Warren Act)	17.65	17.65					Passthrough	Table 1 , Line 2
Folsom Reservoir Diversion Power	5.12	5.12					Calc/Est.	Table 2 , Line 1
SJWD Treatment	59.71	59.71					Passthrough	Table 1 , Line 3
Regulatory Approval	3.30	3.30					Calc/Est.	Table 2 , Line 2
City of Sacramento Raw Water	1.86		1.86		1.86		Passthrough	Table 1 , Line 4
City of Sacramento Trtmt. Capacity	42.19				42.19		Calc/Est.	Table 2 , Line 3
City of Sacramento Trtmt. & Delivery	276.77		276.77		276.77		Passthrough	Table 1 , Line 5
Enterprise/Northrop Pumping	20.76		20.76		20.76		Calc/Est.	Table 2 , Line 4
50/50 Blended Supply and Treatment	231.18			231.18			Calc/Est.	Table 2 , Line 5
Well Production & Treatment Capacity	78.09					78.09	Calc/Est.	Table 2 , Line 6
Well Production & Treatment O&M	81.30					81.30	Calc/Est.	Table 2 , Line 7
Well Production & Treatment Credit	(81.30)			(81.30)	(81.30)		Calc/Est.	Table 2 , Line 8
Transmission and Distribution								
NSA Transmission Capacity (Exh. 3)	$58.13	58.13					Calc/Est.	Table 2 , Line 9
NSA Transmission O&M	2.76	2.76					Calc/Est.	Table 2 , Line 10
SSA Transmission Capacity (Exh. 3)	75.02		75.02		75.02		Calc/Est.	Table 2 , Line 11
SSA Transmission O&M	4.75		4.75		4.75		Calc/Est.	Table 2 , Line 12
50/50 Blended Transmission Capacity	66.57			66.57			Calc/Est.	Table 2 , Line 13
50/50 Blended Transmission O&M	3.76			3.76			Calc/Est.	Table 2 , Line 14
Distribution System Capacity	185.30					185.30	Calc/Est.	Table 2 , Line 15
Distribution System O&M	41.82					41.82	Calc/Est.	Table 2 , Line 16
Administration and Regulatory								
SGA Fees	$3.55					3.55	Passthrough	Table 1 , Line 6
Water Banking Accounting	3.49			3.49	3.49	3.49	Calc/Est.	Table 2 , Line 17
SSWD Admininstration	2.94	2.94	2.94	2.94	2.94	2.94	Calc/Est.	Table 2 , Line 18
Out-of-District Charge	15%	27.69	57.31	34.00	51.97	59.47	Calc/Est.	Table 2 , Line 19
Total Rate ($/AF)		$212.30	$439.41	$260.63	$398.45	$455.96		

Exhibit 1

Exhibit 2

	Year	Goundwater		Surface Water				Surface Water Supply Mix			
				North Service Area		South Service Area		Annual		3 - Year Average	
		(AF)	(%)	(AF)	(%)	(AF)	(%)	NSA	SSA	NSA	SSA
	2004	33,261	68.3%	15,428	31.7%	0	0.0%	100.0%	0.0%		
	2005	26,829	65.1%	14,363	34.9%	0	0.0%	100.0%	0.0%		
	2006	26,632	67.1%	13,074	32.9%	0	0.0%	100.0%	0.0%	100.0%	0.0%
	2007	37,932	83.4%	3,842	8.4%	3,701	8.1%	50.9%	49.1%	89.4%	10.6%
N/A	**2008**									82.0%	18.0%
N/A	**2009**									50.9%	49.1%
	2010	20,178	53.1%	15,518	40.9%	2,289	6.0%	87.1%	12.9%	87.1%	12.9%
	2011	19,119	53.4%	12,626	35.2%	4,084	11.4%	75.6%	24.4%	81.5%	18.5%
	2012	24,401	70.8%	3,585	10.4%	6,463	18.8%	35.7%	64.3%	71.2%	28.8%
	2013	38,492	98.9%	409	1.1%	0	0.0%	100.0%	0.0%	61.2%	38.8%
Est.	**2014**	22,600	35.5%	36,000	56.6%	5,000	7.9%	87.8%	12.2%	77.7%	22.3%
Est.	**2015**	22,200	35.1%	36,000	57.0%	5,000	7.9%	87.8%	12.2%	87.9%	12.1%
Est.	**2016**	21,800	34.7%	36,000	57.3%	5,000	8.0%	87.8%	12.2%	87.8%	12.2%
Est.	**2017**	21,400	34.3%	36,000	57.7%	5,000	8.0%	87.8%	12.2%	87.8%	12.2%
Est.	**2018**	21,000	33.9%	36,000	58.1%	5,000	8.1%	87.8%	12.2%	87.8%	12.2%

Year	2013
Method	3

100%	0%	61%	39%

[1] Most recent annual surface water supply mix — ENTER > 50% NSA Allocation

[2] Most recent 3-year average surface water supply mix — ENTER > 50% SSA Allocation

[3] Manually specific allocation

Exhibit 3

Transmission Facilities	In Service Date	Total Original Project Cost	Annual Deprc. *[1]*	Plant in Service *[2]*
North Service Area				
Depreciation Exp. & In Service Value				
San Juan Cooperative Transmission Pipeline	1997	$8,462,397	$169,248	$5,754,430
Northridge Transmission Pipeline	1997	15,224,435	304,489	10,352,616
5 MG Antelope Reservoir	1998	5,816,678	116,334	4,071,675
Antelope North Pipeline Upsize	2006	1,049,225	20,985	902,334
3 MG Verner Reservoir (est. non-grant portion)	2010	1,875,000	37,500	1,762,500
		$32,427,735	$648,555	$22,843,554

Rate of Return Calculation	Cost of Capital *[3]*		Return *[4]*
	% of Total	Cost	
Conveyance Facility Fee Debt Portion	91.0%	4.0%	
Conveyance Facility Fee Equity Portion	9.0%	10.0%	
Weighted Cost of Capital (Rate of Return)		4.5%	$1,037,097
Depreciation Plus Return on Investment			1,685,652
Annual Conveyance Capacity			29,000 AF
Conveyance Facilities Capital Charge			$58.13 $/AF

Year	Lifetime
2013	50

South Service Area				
Depreciation Exp. & In Service Value				
Howe Avenue Transmission Main (Phase 1)	1993	$1,184,215	$23,684	$710,529
Arcade Transmission Mains (Phase 1)	2002	14,085,375	281,708	10,986,593
Arcade Transmission Mains (Phase 2)	2001	8,513,078	170,262	6,469,939
Howe Avenue Transmission Main (Phase 2)	2005	2,272,000	45,440	1,908,480
Enterprise/Northrop Reservoir	2006	4,687,700	93,754	4,031,422
		$30,742,368	$614,847	$24,106,963

Rate of Return Calculation	Cost of Capital *[3]*		Return *[4]*
	% of Total	Cost	
Conveyance Facility Fee Debt Portion	93.0%	4.0%	
Conveyance Facility Fee Equity Portion	7.0%	10.0%	
Weighted Cost of Capital (Rate of Return)		4.4%	$1,065,528
Depreciation Plus Return on Investment			1,680,375
Annual Conveyance Capacity (@20 mgd)			22,400 AF
Conveyance Facilities Capital Charge			$75.02 $/AF

[1] Based on 50-year life

[2] Original cost less accumulated depreciation as of 12/31/2013

[3] Outstanding debt is variable rate, and is assumed to be 4.0% for purposes herein. Return on equity is assumed at 10% for purposes herein

[4] Return on investment equals the plant in service times the weighted cost of capital (rate of return)

Basin Sustainability Goal | **Exchangeable Water**

Carmichael Water District	Total Demand	Target Pumping	Actual GW Pumped	Target minus Actual GW	Transfer of Credits	Basin Sustainability Balance	Surface Water Use	Water Transfer (out of basin)	Credits transferred	Net Banked Water	Exchangeable Water Balance
		6,646									40,049
2012	9,895		1,580	5,066	0	5,066	8,315	0	0	5,066	45,115
2013	10,400		2,031	4,615	0	9,681	8,369	0	0	4,615	49,730
2014											
2015											
2016											

City of Sacramento	Total Demand	Target Pumping	Actual GW Pumped	Target minus Actual GW	Transfer of Credits	Basin Sustainability Balance	Surface Water Use	Water Transfer (out of basin)	Credits transferred	Net Banked Water	Exchangeable Water Balance
		20,591									36,568
2012	38,084		13,554	7,037	0	7,037	24,530	0	0	7,037	43,605
2013	39,068		11,732	8,859	0	15,896	27,336	0	0	8,859	52,464
2014											
2015											
2016											

California American Water	Total Demand	Target Pumping	Actual GW Pumped	Target minus Actual GW	Transfer of Credits	Basin Sustainability Balance	Surface Water Use	Water Transfer (out of basin)	Credits transferred	Net Banked Water	Exchangeable Water Balance
		17,995									7,115
2012	14,186		13,595	4,400	0	4,400	591	0	0	591	7,706
2013	14,110		14,110	3,885	0	8,285	0	0	0	0	7,706
2014											
2015											
2016											

Del Paso Manor Water District	Total Demand	Target Pumping	Actual GW Pumped	Target minus Actual GW	Transfer of Credits	Basin Sustainability Balance	Surface Water Use	Water Transfer (out of basin)	Credits transferred	Net Banked Water	Exchangeable Water Balance
		1,465									0
2012	1,499		1,499	-34	0	-34	0	0	0	0	0
2013	1,571		1,571	-106	0	-140	0	0	0	0	0
2014											
2015											
2016											

Golden State Water Company	Total Demand	Target Pumping	Actual GW Pumped	Target minus Actual GW	Transfer of Credits	Basin Sustainability Balance	Surface Water Use	Water Transfer (out of basin)	Credits transferred	Net Banked Water	Exchangeable Water Balance
		1,098									0
2012	1,119		1,119	-21	0	-21	0	0	0	0	0
2013	1,184		1,184	-86	0	-107	0	0	0	0	0
2014											
2015											
2016											

Rio Linda / Elverta CSD	Total Demand	Target Pumping	Actual GW Pumped	Target minus Actual GW	Transfer of Credits	Basin Sustainability Balance	Surface Water Use	Water Transfer (out of basin)	Credits transferred	Net Banked Water	Exchangeable Water Balance
		2,882									109
2012	2,882		2,857	25	0	25	25	0	0	25	134
2013	3,052		3,052	-170	0	-145	0	0	0	0	134
2014											
2015											
2016											

Sacramento County WA	Total Demand	Target Pumping	Actual GW Pumped	Target minus Actual GW	Transfer of Credits	Basin Sustainability Balance	Surface Water Use	Water Transfer (out of basin)	Credits transferred	Net Banked Water	Exchangeable Water Balance
		4,288									0
2012	5,211		5,211	-923	0	-923	0	0	0	0	0
2013	5,316		5,316	-1,028	0	-1,951	0	0	0	0	0
2014											
2015											
2016											

Sacramento Suburban Water District	Total Demand	Target Pumping	Actual GW Pumped	Target minus Actual GW	Transfer of Credits	Basin Sustainability Balance	Surface Water Use	Water Transfer (out of basin)	Credits transferred	Net Banked Water	Exchangeable Water Balance
		35,035									183,034
2012	38,089		27,530	7,505	0	7,505	10,559	0	0	7,505	190,539
2013	38,891		38,482	-3,447	0	4,058	409	0	0	0	190,539
2014											
2015											
2016											