Notice and Agenda of a Board Workshop

Tuesday, August 28, 2018 at 4:00 p.m.

MEETING LOCATION:	District Administration Building 12770 Second Street, Yucaipa
MEMBERS OF THE BOARD:	Director Chris Mann, Division 1 Director Bruce Granlund, Division 2 Director Jay Bogh, Division 3 Director Lonni Granlund, Division 4 Director Tom Shalhoub, Division 5

I. Call to Order

II. Public Comments At this time, members of the public may address the Board of Directors on matters within its jurisdiction; however, no action or significant discussion may take place on any item not on the meeting agenda.

III. Staff Report

IV. Presentations

A. Overview of the Proposed Monitoring Operations and Reporting Enhancement (MORE) Project [Workshop Memorandum No. 18-208 - Page 12 of 69]

B. Overview of Water Demands and Residential Gallons per Capita Consumption for the Yucaipa Valley Water District [Workshop Memorandum No. 18-209 - Page 20 of 69]

C. Overview of the Yucaipa Valley Regional Water Supply Renewal Project and Phase I of the Salinity and Groundwater Enhancement (SAGE) Project [Workshop Memorandum No. 18-210 - Page 22 of 69]

V. Operational Updates

A. Overview of WaterTrax Database Management System for Water Quality Data [Workshop Memorandum No. 18-211 - Page 28 of 69]

VI. Capital Improvement Projects

A. Status Report on the Construction of an 8-Inch Sewer Mainline in Yucaipa Boulevard [Workshop Memorandum No. 18-212 - Page 44 of 69]

Any person who requires accommodation to participate in this meeting should contact the District office at (909) 797-5117, at least 48 hours prior to the meeting to request a disability-related modification or accommodation.

Materials that are provided to the Board of Directors after the meeting packet is compiled and distributed will be made available for public review during normal business hours at the District office located at 12770 Second Street, Yucaipa. Meeting materials are also available on the District's website at www.yvwd.dst.ca.us

VII. Policy Issues

A. Discussion Regarding Updates to the Policy Related to Accessory Dwelling Units and Other Multiple Unit Developments [Workshop Memorandum No. 18-213 - Page 46 of 69]

VIII. Development Related Items

A. Overview of a Proposed Development Agreement with DR Horton for Tract No. 32702-1 and 32702-2 within the Summerwind Development - Calimesa [Workshop Memorandum No. 18-214 - Page 51 of 69]

B. Overview of a Proposed Development Agreement for Tract 15195 - Wayne Simmons [Workshop Memorandum No. 18-215 - Page 52 of 69]

C. Overview of a Proposed Development Agreement with Carl Brandstetter for Assessor Parcel Numbers 303-301-44 and 303-151-38 - Yucaipa [Workshop Memorandum No. 18-216 - Page 53 of 69]

IX. Administrative Items

A. Overview of the Imported Water Order for 2019 for the San Bernardino Valley Municipal Water District [Workshop Memorandum No. 18-217 - Page 55 of 69]

B. Overview of the Imported Water Order for 2019 for the San Gorgonio Pass Water Agency [Workshop Memorandum No. 18-218 - Page 57 of 69]

C. Discussion Regarding the Preparation of Information to Communicate with Customers, Regulators, and Stakeholders [Workshop Memorandum No. 18-219 - Page 58 of 69]

X. Director Comments

XI. Announcements

A. September 4, 2018 at 6:00 p.m. - Regular Board Meeting
B. September 11, 2018 at 4:00 p.m. - Board Workshop
C. September 18, 2018 at 6:00 p.m. - Regular Board Meeting
D. September 25, 2018 at 4:00 p.m. - Board Workshop
E. October 2, 2018 at 6:00 p.m. - Regular Board Meeting
F. October 9, 2018 at 4:00 p.m. - Board Workshop
G. October 16, 2018 at 6:00 p.m. - Regular Board Meeting
H. October 30, 2018 at 4:00 p.m. - Board Workshop
I. November 6, 2018 at 6:00 p.m. - Regular Board Meeting
J. November 13, 2018 at 4:00 p.m. - Board Workshop
K. November 20, 2018 at 6:00 p.m. - Regular Board Meeting
L. November 27, 2018 at 4:00 p.m. - Board Workshop
M. December 4, 2018 at 6:00 p.m. - Regular Board Meeting
N. December 11, 2018 at 4:00 p.m. - Board Workshop
O. December 18, 2018 at 6:00 p.m. - Regular Board Meeting
P. ~~December 25, 2018 at 4:00 p.m. - Board Workshop~~ Canceled
Q. ~~January 1, 2019 at 6:00 p.m. - Regular Board Meeting~~ Canceled
R. January 8, 2019 at 4:00 p.m. - Board Workshop
S. January 15, 2019 at 6:00 p.m. - Regular Board Meeting
T. January 29, 2019 at 4:00 p.m. - Board Workshop

XII. Closed Session

A. Conference with Real Property Negotiator(s) - Government Code 54956.8
Property: Assessor's Parcel Numbers: 413-380-001 - 009, and 013
Agency Negotiator: Joseph Zoba, General Manager
Negotiating Parties: Johnson Brothers Partnership
Under Negotiation: Terms of Payment and Price

B. Conference with Legal Counsel--Existing Litigation - Government Code 54956.9(d)
YVWD vs Hillcrest Mobile Home Park
San Bernardino Superior Court Case No. CIVDS 1808441

XIII. Adjournment

Staff Report

Yucaipa Valley Water District

August 2018

FAQs on Proposed, State-Mandated Extra Charge on Water Bills

There is a new twist on the proposed water tax issue. As part of a last-minute effort before the California Legislative Session ends on Aug. 31, a new proposal, SB 845 (Monning), would require more than 3,000 community water systems to add a state-mandated voluntary remittance with an opt-out feature to their water bills. This new item would go on the local water bills of California families and businesses.

Here are some frequently asked questions on the issue:

Q: What does the new bill propose?

A: SB 845, which was modeled after SB 623 and the 2018 budget trailer bill proposal, seeks to require local water agencies to place a voluntary remittance with an "opt-out" feature on drinking water bills paid by California families and businesses.

Residential water bills would have the option of paying $0.95/month tax, and business water bills would see up to a $10/month option. More than 3,000 local water agencies would be required to change their billing systems and manage the opt-out program, collect the funding and send all of the funds to Sacramento for distribution to communities in certain areas of California that have the problem.

Q: Why is ACWA and its coalition of businesses, cities water agencies and associations opposed to this proposal?

A: Local public water agencies are committed to providing safe and reliable water. They strongly agree that all Californians should have safe drinking water, but oppose mandates for locally implemented voluntary remittance payments with an opt-out feature on water bills for several reasons, including:

- This new proposal would require thousands of local water agencies and cities to manage the voluntary remittance payment collection with the opt-out feature and forward the funds to Sacramento. While well-intentioned, the administrative costs for thousands of water systems would make water less affordable.
- Effective funding solutions already exist for achieving this goal. In June, the legislative budget conference committee rejected the statewide water tax out of the state budget, instead setting aside $23.5 million in General Fund revenue to safe drinking water. Also in June, California voters approved Proposition 68 with $250 million for safe drinking water that is prioritized for disadvantaged communities. In November, California voters will be able to support Proposition 3 with another $500 million allocated for safe drinking water for disadvantaged communities.

Q: How will the money that's collected be used?

A: The money would be collected statewide to help the disadvantaged communities in California without access to safe drinking water. ACWA strongly supports this worthwhile cause, but the legislature and voters already acted with better funding solutions.

Q: What other funding alternatives exist?

A: In June, the Budget Conference Committee allocated $23.5 million from the state's General Fund for safe drinking water. Also in June, California voters approved Proposition 68 with $250 million for safe drinking water that is prioritized for disadvantaged communities. In November, California voters will be able to support Proposition 3 with another $750 million allocated for safe drinking water and wastewater for disadvantaged communities.

Q: Will the money I pay help my community?

A: It's possible, however, it is unlikely because the vast majority of Californians have access to safe drinking water. These communities would not receive any benefit. The money raised would go to Sacramento and the State Water Resources Control Board would distribute it to communities that do have the problem.

Q: What other solutions are being proposed?

A: ACWA and a large coalition of businesses, cities, water agencies and associations are advancing an idea that would not increase the cost of water.

The Legislature could more simply add a new voluntary contribution fund check off to the California Form 540 and have it efficiently collected at a much lower cost by one state agency (the Franchise Tax Board) instead of requiring more than 3,000 community water systems to develop new billing systems and hire new employees to bill and collect the funds and send them to Sacramento.

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Association of California Water Agencies
www.acwa.com/no-water-tax

WATER

The paradox of irrigation efficiency

Higher efficiency rarely reduces water consumption

By **R. Q. Grafton[1,2], J. Williams[1], C. J. Perry[3], F. Molle[4], C. Ringler[5], P. Steduto[6], B. Udall[7], S. A. Wheeler[8], Y. Wang[9], D. Garrick[10], R. G. Allen[11]**

Reconciling higher freshwater demands with finite freshwater resources remains one of the great policy dilemmas. Given that crop irrigation constitutes 70% of global water extractions, which contributes up to 40% of globally available calories (*1*), governments often support increases in irrigation efficiency (IE), promoting advanced technologies to improve the "crop per drop." This provides private benefits to irrigators and is justified, in part, on the premise that increases in IE "save" water for reallocation to other sectors, including cities and the environment. Yet substantial scientific evidence (*2*) has long shown that increased IE rarely delivers the presumed public-good benefits of increased water availability. Decision-makers typically have not known or understood the importance of basin-scale water accounting or of the behavioral responses of irrigators to subsidies to increase IE. We show that to mitigate global water scarcity, increases in IE must be accompanied by robust water accounting and measurements, a cap on extractions, an assessment of uncertainties, the valuation of trade-offs, and a better understanding of the incentives and behavior of irrigators.

LOGIC AND LIMITS

Field IE is the ratio of the volume of all irrigation water beneficially used on a farmer's field [predominantly, evapotranspiration (ET) by crops and salt removal to maintain soil productivity] to the total volume of irrigation water applied (adjusted for changes in water stored for irrigation in the soil) (*2*). Annually, governments spend billions of dollars subsidizing advanced irrigation technologies, such as sprinklers or drip systems (*3*). Sometimes their goal is to increase IE on the understanding that this will allow water to be reallocated from irrigation to cities (*4*), industry, or the environment, while maintaining or even increasing agricultural production.

But water saved at a farm scale typically does not reduce water consumption at a watershed or basin scale. Increases in IE for field crops are rarely associated with increased water availability at a larger scale (*5*), and an increase in IE that reduces water extractions may have a negligible effect on water consumption. This paradox, that an increase in IE at a farm scale fails to increase the water availability at a watershed and basin scale, is explained by the fact that previously nonconsumed water "losses" at a farm scale (for ex-

PHOTO: GRANT FAINT/GETTY IMAGES

Sprinkler irrigation supports grape vines in the Okanagan Basin, British Columbia.

ample, runoff) are frequently recovered and reused at a watershed and basin scale.

Advanced irrigation technologies that increase IE may even increase on-farm water consumption, groundwater extractions (*6*), and water consumption per hectare (*5*). At a farm scale, this can arise from a switch to more water-intensive crops and, with the same crop, may occur when there is a strong marginal yield response from additional water. Moreover, the absence of an increase in water consumption per hectare because of a higher IE does not necessarily mean that the water potentially available for reallocation and reuse (see supplementary materials) at a watershed or basin scale increases. Subsidies for drip irrigation may reduce the water applied per hectare and increase water extractions because a higher IE can induce increases in the irrigated area, as shown for the Lower Rio Grande, New Mexico (*7*).

Although the hydrology related to IE has been known for decades, it is often overlooked or ignored. For example, the United Nations (UN) High-Level Panel on Water, comprising 11 sitting heads of state or government, recommends "…incentives for water users, including irrigators, to use water efficiently" (*8*) but fails to explicitly recognize that this may increase, rather than decrease, water consumption. Similar to IE, there is also confusion in policy circles about the effects of an increase in efficiency or water productivity (the biophysical or monetary output per volume of water inputs) on basin-scale water availability (see supplementary materials). The UN Sustainable Development Goal (SDG) 6.4, for instance, seeks to increase water use efficiency, but this does not necessarily mean reduced water extractions.

There are reasons why this evidence may be overlooked by policy-makers: Evidence resides in a specialized literature; subsidies for IE can promote rent-seeking behavior by beneficiaries who lobby to continue subsidies; and comprehensive water accounting from the scale of the field to that of the watershed or basin is necessary but frequently absent. Such accounting quantifies field water applications; ET by crops and weeds; evaporation from soil and water surfaces; and, particularly, surface and subsurface water flows returned to the environment or utilized elsewhere at the watershed or basin scale.

RESPONDING TO THE PARADOX

We respond to the paradox (*2*, *9*) with two key insights and a research and policy agenda to deliver on SDG 6 ("ensure availability and sustainable management of water and sanitation for all"). First, irrigation systems are frequently managed to maximize irrigated crop production. This provides benefits but means more water is transpired locally and lost for other uses. Second, locally extracted, but not consumed, water flows to surface supplies and groundwater. Such volumes, perceived as losses to farmers and the irrigation system, do not disappear. They frequently have value and are typically recovered and reused elsewhere in a watershed or basin.

The figure visualizes the paradox within a watershed, showing three types of irrigation with different IEs: drip, sprinkler, and surface. Inflows are precipitation and interbasin transfers. Outflows are (i) beneficial water consumption from transpiration by crops; (ii) nonbeneficial water consumption through transpiration by weeds and evaporation from wet soil, foliage, and open water surfaces; (iii) locally recoverable return flows to surface water systems, from drains and surface runoff, and also to aquifers via subsurface recharge; and (iv) nonrecoverable flows to sinks, such as to saline groundwater and the ocean. Inflows less outflows over a given time period equals the change in water storage.

TOMORROW'S EARTH

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Conservation of mass requires that increased local beneficial water consumption, because of a higher IE, be fully offset by a decline in some combination of nonbeneficial water consumption, recoverable return flows (to surface or groundwater), and nonrecoverable flows to sinks. Thus, a higher IE (typically 90% for drip versus 50% for surface) is associated with lower rates of nonbeneficial water consumption, usually because of reduced soil evaporation (5% for drip and 20% for surface). These changes from a higher IE also result in a reduction in return flows, from 30% of water applied, in the case of surface irrigation, to 5%, for drip.

Studies in several locations confirm the effects of higher IE, including (i) Rajasthan, India, where subsidies for drip irrigation improved farm incomes but also increased the irrigated area and total volume of water applied by farmers (*10*); (ii) Snake River, Idaho, where farmers have increased their IE, but this has reduced groundwater recharge and led to a decline in the Eastern Snake Plain Aquifer by about 30% since the mid-1970s, despite increased precipitation (*11*); (iii) the Rio Grande in the United States, where subsidies for drip irrigation increase crop yields and irrigators' net income but can reduce downstream flows and the water potentially available for other purposes (*7*); and (iv) the Souss and Tensift Basins of Morocco, where the adoption of drip irrigation, supported by subsidies, reduced recoverable return flows, principally to overexploited aquifers. This led to increased water consumption and exacerbated groundwater overexploitation in Morocco because of crop intensification, especially denser tree plantations; increased irrigated area owing to improved control of water; and a greater area of crops with higher water-use requirements (*12*).

These four cases, and others (*5*), show that increases in IE are typically associated with a reduction in recoverable return flows and an increase in crop yields and in crop transpiration. Contrary to the policy intent, however, a higher IE is not usually associated with a decline in water consumption. Only when a commensurate decrease in some combination of nonbeneficial water consumption and nonrecoverable flows is observed is it possible to reallocate water to other uses at a watershed or basin scale after an increase in IE (see supplementary materials).

Scientific understanding of the paradox highlights the importance of a comprehensive evaluation of the public costs of subsidizing increases in IE. This, in turn, requires that the estimated benefits (such as higher yields and farm net incomes) be compared to the external costs from induced reductions in recoverable return flows (such as groundwater degradation, losses to aquatic ecosystems, reduced environmental water volumes, removal of salts from watersheds and basins, and other water uses).

POLICY AND RESEARCH IMPLICATIONS

If increases in IE are to mitigate the global water crisis, then decisive actions, some of which have previously been highlighted (*3*, *5*, *7*, *9*), are required. A key constraint to better decision-making is inadequate estimates of water inflows and outflows at watershed and basin scales. This analysis of water accounts is essential to demonstrate when IE policies are or are not in the public interest. Furthermore, successful integration of science into policy and practice requires several precon-

[1]Crawford School of Public Policy, The Australian National University, ACT 2601, Australia. [2]Groupe de Recherche en Économie Théorique et Appliquée (GREThA), UMR CNRS 5113, University of Bordeaux, 33608 Pessac, France. [3]Consultant, London NW8 8QX, UK. [4]Institut de Recherche pour le Développement (IRD) and G-Eau, University of Montpellier, 34196 Montpellier, France. [5]Environment and Production Technology Division, International Food Policy Research Institute, Washington, DC 20005-3915, USA. [6]Food and Agriculture Organization of the United Nations (FAO), Regional Office for the Near East and North Africa, 12311 Cairo, Egypt. [7]Colorado Water Institute, Colorado State University, Fort Collins, CO 80523-1033, USA. [8]Centre for Global Food and Resources, Faculty of Professions, University of Adelaide, Adelaide, SA 5001, Australia. [9]School of Public Policy and Management–Institute for Contemporary China Studies, Tsinghua University, 100084 Beijing, China. [10]Smith School of Enterprise and the Environment, University of Oxford, Oxford OX1 3QY, UK. [11]Kimberly Research and Extension Centre, University of Idaho, Kimberly, ID 83341, USA. Email: quentin.grafton@anu.edu.au

ditions. To avoid "regulatory capture," there must be transparent and independent auditing of policy processes and data provision. There also needs to be public interest in the issue such that there is a cost to policy-makers who fail to act for the public good. And alignment of public interest–seeking actors, supported by transparent data and evidence, mitigates water misuse and misallocation.

We outline five steps, centered on water accounting and research advances, that promote more effective policy actions. First, physical water accounts need to be developed from the farm-scale to the basin scale to make transparent "who gets what and where" to support decision-making in the public interest. This requires measurement or estimation of all inflows, water consumption, recoverable return flows, and nonrecoverable flows to sinks. Although a priority by the UN High-Level Panel on Water (*13*), robust and transparent water accounting is the exception. In some jurisdictions—such as Spain (*9*), Morocco (*12*), and the Murray-Darling Basin, Australia (*14*)—several billion U.S. dollars have been spent subsidizing IE, including canal lining and drip irrigation, without proper accounting of their effects on recoverable return flows, aquifers, and river ecology. Developments in remote sensing offer the possibility of estimates of water inflows and outflows at a much lower cost and a greater scale than previously available.

Second, reductions in water consumption are achievable by decreases in water extractions through a direct cap on water offtakes (*9*) or on the irrigated area. The need for such caps when promoting IE has been identified in the European Union and the western United States, where water rights have been denominated as net extractions that require the calculation of return flows. Water accounting in California, which includes ET, is providing decision-makers with the information needed to determine how much to reduce water consumption to ensure sustainable extractions. By contrast, in Australia, where water rights are denominated in gross extractions, actions to reduce extractions to reallocate water to the environment have, to date, been neither sufficient nor cost-effective (*14*). To meet environmental flow goals, incentives may be used to make irrigators account for return flows, such as water charges on the reductions in recoverable flows, or financial benefits to maintain such flows by reducing consumption. Incentive-based water reallocations, however, can be constrained by the funding needed to compensate users to facilitate transfers across competing water uses.

Third, to ensure desired outcomes are delivered, risk assessments are needed when evaluating the effects of increased IE, as are accurate measurements from on-the-ground monitoring of flows. Policy-makers must account for uncertainties in key water parameters when calculating water flows (*15*). Advances in decision-making under uncertainty, better data quality and quantity, user-friendly software, and increased computing power all facilitate greater consideration of risks in future water planning.

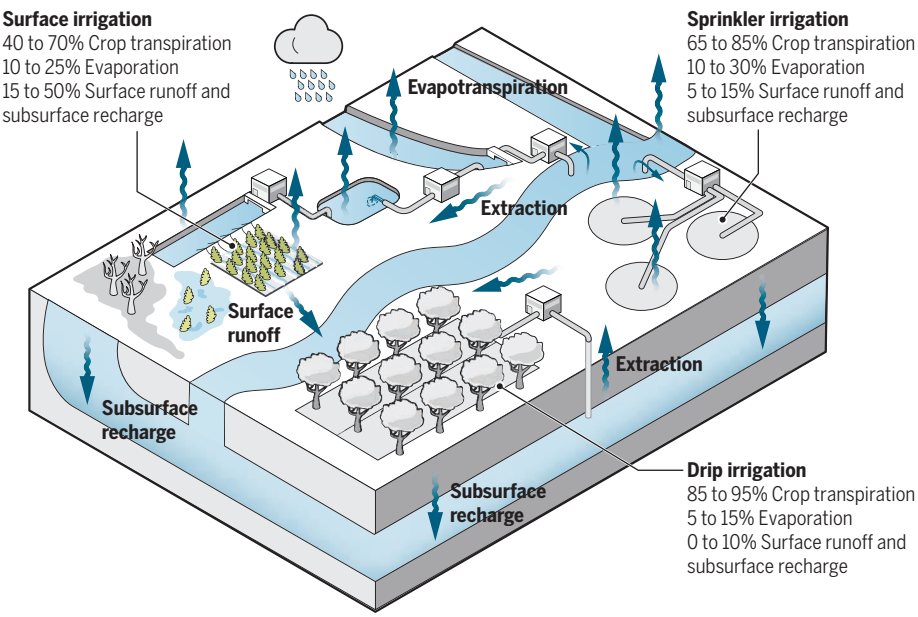
Fourth, although understanding water inflows and outflows is necessary, the payoff from subsidizing IE depends on whether the benefits exceed the costs, including those associated with reduced return flows. Comprehensive methods of valuation can make these trade-offs more explicit, as can advances in water accounting and measurements of changes in water quality.

Finally, the effects of policy actions (*5*) on the behavior of irrigators must be evaluated. Neither IE nor water extractions are constant: They vary by irrigator and differ by land and soil characteristics, crops grown, time of year, and weather conditions. Differences are more readily understood with developments in behavioral and experimental economics and by testing how irrigators' actions change as IE increases. Such methods identify incentives for irrigators to maintain agricultural production with less water extracted.

Overcoming misunderstandings about the paradox of IE is required if SDG *6* is to be achieved. Our five-step reform of the current IE policy agenda—centered on water accounting and reductions in irrigation water extractions which are informed by advances in water valuation, risk assessment, and behavioral economics—offers a pathway to improved global water security. ■

Accounting for water

The paradox of irrigation efficiency (surface, sprinkler, and drip) and the water inflows and outflows can be seen in a watershed example. Ranges of crop transpiration, evaporation, runoff, and recharge are authors' judgment of possible values. These values depend on crop and soil types, weather, and other factors.



GRAPHIC: N. DESAI/*SCIENCE*

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SUPPLEMENTARY MATERIALS

www.sciencemag.org/content/361/6404/page/suppl/DC1

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The paradox of irrigation efficiency

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Presentations

Yucaipa Valley Water District

Yucaipa Valley Water District

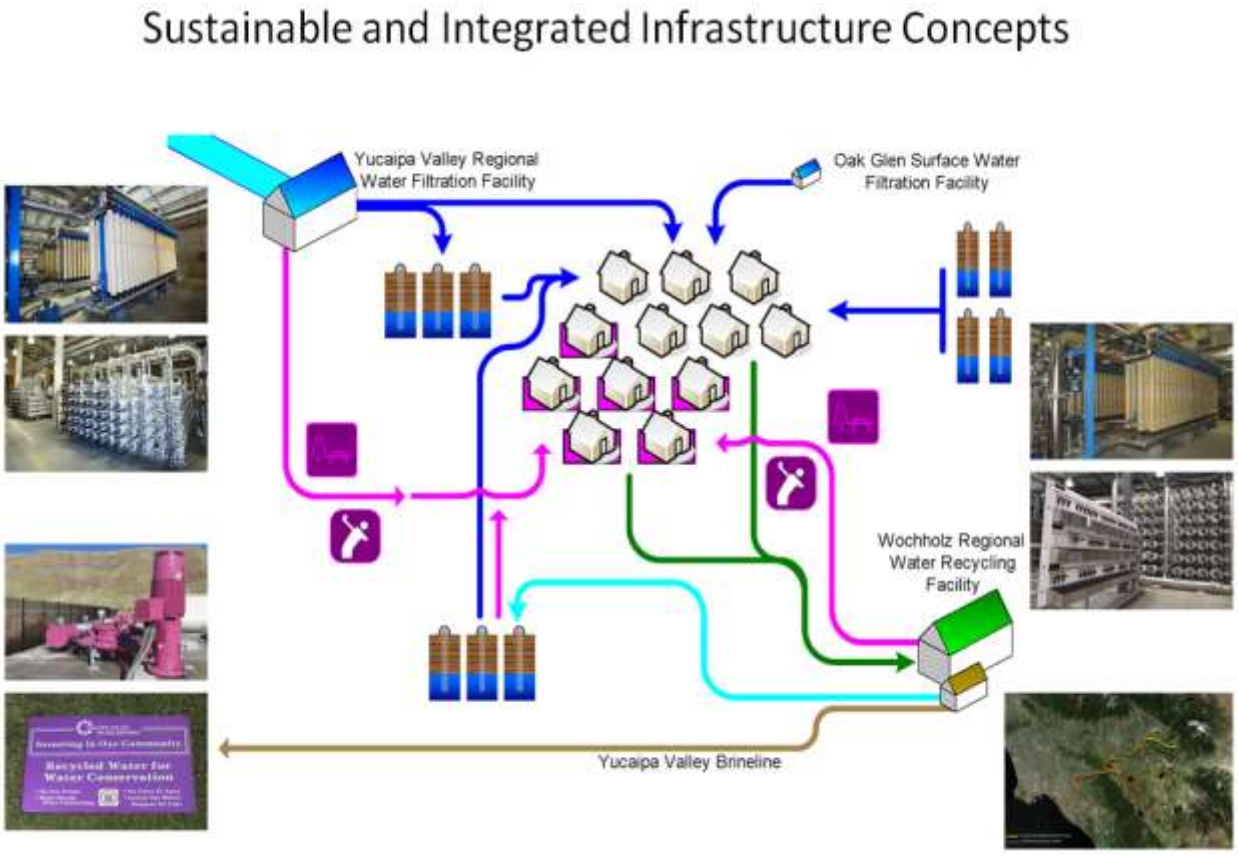
Workshop Memorandum 18-208

Date: August 28, 2018

From: Joseph Zoba, General Manager

Subject: Overview of the Proposed Monitoring Operations and Reporting Enhancement (MORE) Project

Over the past several decades, the Yucaipa Valley Water District has embarked on a series of capital improvement projects that have created fully integrated systems of drinking water, recycled water, sewer treatment, and brine disposal facilities. The integration of these facilities has set the Yucaipa Valley Water District on a course to sustainably maintain exceptionally pure and renewable water resources for future generations.



In preparation for the next decade of projects, the Board of Directors of the Yucaipa Valley Water District has embarked on a strategic planning process that set priorities for future capital improvement projects. These improvements will be structured to provide additional supplies of high quality water for future use within our community and make the District more sustainable and resilient.

Two of the most innovative projects that provides additional system integration is the Indirect Potable Reuse (IPR) Project and the Direct Potable Reuse (DPR) Project. Both of these strategically planned projects are described below:

- **Direct Potable Reuse** - Plan and evaluate the opportunities and constraints related to implementation of direct potable reuse facilities. This strategic goal will involve the Salinity and Groundwater Enhancement (SAGE) project at the Wochholz Regional Water Recycling Facility; the Salinity Concentrate Reduction and Minimization (SCRAM) Project at the Yucaipa Valley Regional Water Filtration Facility; and may include a new water filtration facility at the Wochholz Regional Water Recycling Facility. This strategic priority was established by the Board of Directors on March 8, 2018.

- **Indirect Potable Reuse** - Plan and evaluate the opportunities and constraints related to implementation of indirect potable reuse. This strategic goal will involve the recharge of recycled water at various locations throughout the District's service area which will also involve the development of recharge facilities. This strategic priority was established by the Board of Directors on March 8, 2018.

In anticipation of the proposed regulatory requirements, it is essential to collect data and develop specific workflows that recognize that the Wochholz Regional Water Recycling Facility will be treated as a drinking water treatment plant and will therefore need to maintain the typical monitoring requirements set by the Regional Water Quality Control Board plus the anticipated drinking water monitoring requirements required by the Division of Drinking Water. Instead of waiting for regulations and permits to be developed, the District staff recommends that we begin to develop workplans, collect data, and compile reports that enable us to predict the specific impacts of regulations as they are developed.

The purpose of this agenda item is to review and discuss the attached scope of services for the proposed Monitoring Operations and Reporting Enhancement (MORE) Project.

The Membrane Technology Consultants

Separation Processes, Inc.
3156 Lionshead Ave., Suite 2
Carlsbad, CA 92010
Tel: 760-400-3660
Fax: 760-400-3661
www.spi-engineering.com

August 8, 2018

Mr. Joe Zoba
General Manager
Yucaipa Valley Water District
12220 Second Street
Yucaipa CA 92399

Subject: Monitoring Operations and Reporting Enhancement (MORE) Project.

Dear Mr. Zoba:

Separation Processes, Inc. (SPI) is pleased to submit this Proposal for Engineering Services in support of your efforts. Five specific projects that have been discussed at various times, have been identified to form a single larger project, designated as the MORE Project. The Monitoring Operations and Reporting Enhancement (MORE) Project is being proposed to facilitate regulatory approval of future changes envisioned to your recycled water facility. The total estimated budget amount is $330,436 and is described in this proposal.

Project Approach

The Yucaipa Valley Water District currently operates the Wochholz Regional Water Reclamation Facility (WRWRF) for the production of recycled water. Recycled water is currently produced and permitted under Title 22 recycled water regulations. The facility will eventually produce water for groundwater replenishment under Article 5.1 Groundwater Replenishment - Surface Spreading (commonly known as Indirect Potable Reuse (IPR). In the future, the District envisions that it will become an Indirect Potable Reuse (IPR) facility permitted under Article 5.2 – Groundwater Replenishment – Subsurface Application which requires Advanced Treatment (IPR-AT) and eventually Direct Potable Reuse (DPR) Regulations.

Membrane Filtration (MF) is used to meet the filtration requirements for recycled water. In order to provide recycled water to its customers, and to satisfy the groundwater basin plan objectives, the District was required in install reverse osmosis (RO) to reduce the salinity of its water. The District is one of the few, facilities that operate MF/RO for the production of recycled water. It is also one of the few, if not the only facility in California that currently operates RO on wastewater effluent that is low in total nitrogen, a result of the nitrification/denitrification (NdN) process. NdN effluent has characteristics that are different from many facilities that used lower quality secondary effluent as a supply prior to MF/RO.

Moving to IPR-AT/DPR treatment scenarios will involve changes in how the facility is viewed and operated. In simple terms, recycled water facilities are operated to meet average treatment

requirements with modest reporting requirements. IPR-AT treatment involves additional monitoring and reporting requirements, and DPR regulations have yet to be developed. We can speculate that they will likely follow drinking water standards, but this remains to be seen.

Over the past few years, the District has collected data, for its own internal uses and to support the needs of specific projects. This data includes information on the occurrence and removal of Constituents of Emerging Concern, (pharmaceuticals, healthcare products and other unregulated chemicals) that can be found in typical wastewater effluent. The District has also performed virus testing of RO system, and the information was published in the August 2018 AWWA Journal.

Moving from recycled water to the IPR-AT/DPR framework will require additional effort in a variety of areas. There are additional requirements for monitoring and reporting, in IPR-AT, and the DPR framework has yet to be established. Because of the MF/RO system, Yucaipa is in a unique position to develop information that can affect its own future, as it in effect operates two of the key elements of an IPR-AT facility.

SPI has assisted the District with the oversight of its MF processes since installation in 2007, and the completion of the RO facility in 2013/2015. During that period of time we have observed that the facility produces water of high quality. The facility is very reliable and has consistently demonstrated the ability to meet its treatment objectives under current monitoring requirements.

Because IPR-AT and DPR involve the production of drinking water, implementation proceeds along a methodical path. Because the YVWD currently operates a facility that may satisfy the treatment requirements for an IPR-AT facility under current recycled water regulations, it is suggested that the District perform additional testing in order to demonstrate the reliability of the facility under current operating conditions using "enhanced" IPR guidelines and drinking water treatment standards as a basis for its performance. The rationale for the approach is as follows:

1. We can use the existing process to collect full scale operating data to avoid future piloting work, and demonstrate that an AT process can produce water that is compliant under drinking water monitoring standards.

2. We can familiarize The State Water Resources Control Board – Department of Drinking Water (SWRCB-DDW), with the water quality differences associated with NdN effluent prior to IPR-AT.

3. We can demonstrate that IPR-AT can be operated reliably by your staff is applicable and practical for use by smaller utilities. In essence there are technical, managerial and financial requirements (TMF) embedded into the IPR/DPR regulations that must be satisified.

4. We can use the facility as a full scale test bed for demonstration of issues that may be of technical, perception or public concern to build confidence with the regulatory authorities, public, and within the recycled water community.

This change in direction is necessary in order to enhance the District position within the recycled water community. Within the recycled water community, the engineering water quality issues associated with production of IPR-AT are essentially resolved. Yet, the move to DPR will remain methodical until confidence in the process is further established under new operating, monitoring and reporting criteria are established.

We suggest that the best way to approach this issue is to operate your recycled water treatment process as a drinking water facility, under drinking water compliance and monitoring requirements, and address the technical issues as they arise. This is a philosophical change that the YVWD is uniquely positioned to adopt, as it currently operates its own drinking water and water recycling facilities and has staff that is cross-trained. As a multi-disciplinary water agency that is involved in all aspects of water resource management, adoption of a drinking water compliance approach for its IPR-AT or DPR is something that it is positioned to implement, and is required .

The following tasks have been identified as action items. These items may be considered as self standing projects, within an overall program to improve and enhance the District's position with the SWRCB. There are outside costs involved regarding additional sampling, changes in programming and reports that have not been included. Normally, this work is contracted directly with the local water quality laboratory or with SCADA consultants. Assistance of your staff will be required for equipment installation and other work associated with this effort. A breakdown of the hour and budget estimate has been attached for your reference.

Task 1. Update and Publish Data on CEC's in Water, Wastewater Effluent and RO Effluent (Proposed Budget: $20,434)

Task 2. Update and Publish Data on Virus Removal by RO for a full scale system. (Proposed Budget:$19,440)

Task 3. Establish a parallel water quality monitoring plan for the MF/RO system and generate an annual operating report that is based on current IPR-AT and drinking water compliance standards. (Proposed Budget: $78,008)

Task 4. Initiate a program to establish the virus removal of MF using ultrafiltration and RO membranes over numerous sampling events. Publish the results. (Proposed Budget $118,577 including a $25,000 allowance for virus testing)

Task 5. Initiate a program to perform on-line continuous RO integrity monitoring using conductivity profiling using the statistical methods that will be published. SPI has included a $10,000 allowance for the purchase of hardware. A SCADA consultant would be responsible for the programming of the system. (Proposed Budget: $89,977 including $10,000 for the purchase of the hardware)

The total estimated budget for all tasks is $330,436. A breakdown of the budget and a schedule of activities is attached for your review.

Tasks 3 to 5 will involve coordination with the SWRCB-DDW in order to proceed, as we need to inform as well as communicate our findings in an official manner.

There are potential secondary benefits associated with this work. Under Section 60320.230 of the California Code of Regulations, an alternative treatment scenario may be proposed. The regulations identify oxidation as a requirement of AT, which includes RO and oxidation, normally in the form of Ultraviolet Advanced Oxidation Process (UV/AOP). Prior testing for NDMA suggests that because of the higher level of pretreatment offered by the NdN wastewater treatment, the (UV/AOP) will only provide process redundancy in terms of compliance. Test results from the City of San Diego using a similar NdN wastewater supply indicated the same. The results of compliance testing over an extended period of time may confirm that this is a predictable characteristic of the NdN process, that deserves consideration as part of the regulatory requirement, which currently does not differentiate between the type of wastewater that is supplied to the AT facility.

If it can be demonstrated, there may be the potential to reduce the treatment requirement from UV/AOP to UV which will require 1/3 to $1/10^{th}$ of the power to meet disinfection requirements. However, the best way to approach the issue of an alternative process is with caution (and compliance data in hand); as the existing framework has substantial additional requirements for projects involving alternative processes that would likely apply.

We believe that Projects 3, 4, and 5 may be eligible for funding from USBR, WateReuse and/or WE&RF Funding. SPI has applied for funding for the Automated Conductivity Profiling Apparatus described in Task 5. Any funding received for the work would be used for the project, although outside funding would require a reassessment of the budget to assure that the conditions associated with the funding were satisfied.

The Yucaipa Valley Water District should be aware that the IPR-AT approval process can be extensive. Although work performed by other agencies (OCWD, West Basin, WRD, One Monterey) has provided the groundwork for other projects, each project is individually permitted.

Separation Processes Capabilities

SPI is a consulting engineering firm specializing in the development and application of membrane processes, such as reverse osmosis, ultrafiltration and microfiltration. Should this proposal result in a notice to proceed, SPI would invoice monthly for actual services provided and expenses incurred. Payment of the invoice within 30 days would be appreciated. We appreciate the opportunity to support the Yucaipa Valley Water District and its efforts to be a provider of water, recycled water and Advanced Treated Water. If you should have any questions, please do not hesitate to contact me. We look forward to working with you on the project.

Sincerely,

James C. Vickers

James C. Vickers, PE
Vice President

Yucaipa Valley Water District - MORE Project
SPI Hour and & Budget Estimate

8/8/2018	SPI							
Hourly rates:	$225	$164	$122	$115		Labor	ODC	TOTAL
Task 1 - CEC Information	PM	PE	ENGR	CAD	TMH			
Prepare Paper for Publication	80			8	88	$ 18,920	$ 1,514	$ 20,434
TOTALS								**$ 20,434**
Task 2 - Virus Removal Study								
Prepare Paper for Publication	80				80	$ 18,000	$ 1,440	$ 19,440
TOTALS								**$ 19,440**
Task 3 - Enhanced Operational Report (1 year)								
Review Existing Information	16			8	24	$ 4,520	$ 362	$ 4,882
Develop Sampling Plan	12	40	40		92	$ 14,140	$ 1,131	$ 15,271
Review with DDW	12				12	$ 2,700	$ 216	$ 2,916
Modify and Develop New Reports	24	24			48	$ 9,336	$ 747	$ 10,083
Specify and Install Additional Equipment	8				8	$ 1,800	$ 144	$ 1,944
Perform Sampling	12				12	$ 2,700	$ 216	$ 2,916
Data Analysis	18		80		98	$ 13,810	$ 1,105	$ 14,915
Draft Report Preparation	12		80		92	$ 12,460	$ 997	$ 13,457
Review with DDW	12				12	$ 2,700	$ 216	$ 2,916
Final Report Preparation	16	16		16	48	$ 8,064	$ 645	$ 8,709
TOTALS	**142**	**80**	**200**	**24**	**446**	**$ 72,230**	**$ 5,778**	**$ 78,008**
Task 4 - MF/RO Virus Sampling (4 events)								
Develop Sampling Plan	12	40	40		92	$ 14,140	$ 1,131	$ 15,271
Review with DDW	12				12	$ 2,700	$ 216	$ 2,916
Prepare for Testing (4)	8	24			32	$ 5,736	$ 459	$ 6,195
Perform Testing (4)	40	80			120	$ 22,120	$ 25,000	$ 47,120
Data Analysis	16	16	40		72	$ 11,104	$ 888	$ 11,992
Draft Report Preparation	24	40	80		144	$ 21,720	$ 1,738	$ 23,458
Review with DDW	12				12	$ 2,700	$ 216	$ 2,916
Final Report Preparation	16	16		16	48	$ 8,064	$ 645	$ 8,709
TOTALS	**140**	**216**	**160**	**16**	**532**	**$ 88,284**	**$ 30,293**	**$118,577**
Task 5 - Automated Conductivity Sampling (1 year)								
Review Existing Information	8				8	$ 1,800	$ 144	$ 1,944
Develop Sampling Plan	12	24	40		76	$ 11,516	$ 921	$ 12,437
Review with DDW	12				12	$ 2,700	$ 216	$ 2,916
Purchase and Install Additional Equipment	16	16			32	$ 6,224	$ 10,498	$ 16,722
Perform Sampling (1 year)	24	48			72	$ 13,272	$ 1,062	$ 14,334
Data Analysis	12		80		92	$ 12,460	$ 997	$ 13,457
Draft Report Preparation	12	40	80		132	$ 19,020	$ 1,522	$ 20,542
Review with DDW	12				12	$ 2,700	$ 216	$ 2,916
Final Report Preparation	16	16		16	48	$ 8,064	$ 645	$ 8,709
TOTALS	**124**	**144**	**200**	**16**	**484**	**$ 77,756**	**$ 16,221**	**$ 93,977**
TOTAL of TASKS IDENTIFIED						**$275,190**	**$ 55,246**	**$330,436**

Notes:
1. Routine Outside Water Quality Analysis for compliance not included.
2. Virus sampling includes RO and UF membrane systems.
3. Modifications to PLC/HMI not included but coordinated with SCADA Integrator.

Yucaipa Valley Water District - MORE Project
Timeline of Activities

	Month/Year																	
Month	9/18	10/18	11/18	12/18	1/19	2/19	3/19	4/19	5/19	6/19	7/19	8/19	9/19	10/19	11/19	12/19	1/20	2/20	3/20
Task 1 - CEC Information																			
Organize																			
Prepare Paper for Publication																			
Submit and Respond																			
Task 2 - Virus Removal Study																			
Prepare Paper for Publication																			
Submit and Respond																			
Task 3 - Enhanced Operational Report (1 year)																			
Review Existing Information																			
Develop Sampling Plan																			
Review with DDW																			
Modify and Develop New Reports																			
Specify and Install Additional Equipment																			
Perform Sampling																			
Data Analysis																			
Draft Report Preparation																			
Review with DDW																			
Final Report Preparation																			
Task 4 - MF/RO Virus Sampling (4 events)																			
Develop Sampling Plan																			
Review with DDW																			
Prepare for Testing (4)																			
Perform Testing (4)																			
Data Analysis																			
Draft Report Preparation																			
Review with DDW																			
Final Report Preparation																			
Task 5 - Automated Conductivity Sampling (1 year)																			
Review Existing Information																			
Develop Sampling Plan																			
Review with DDW																			
Purchase and Install Additional Equipment																			
Perform Sampling (1 year)																			
Data Analysis																			
Draft Report Preparation																			
Review with DDW																			
Final Report Preparation																			

Yucaipa Valley Water District

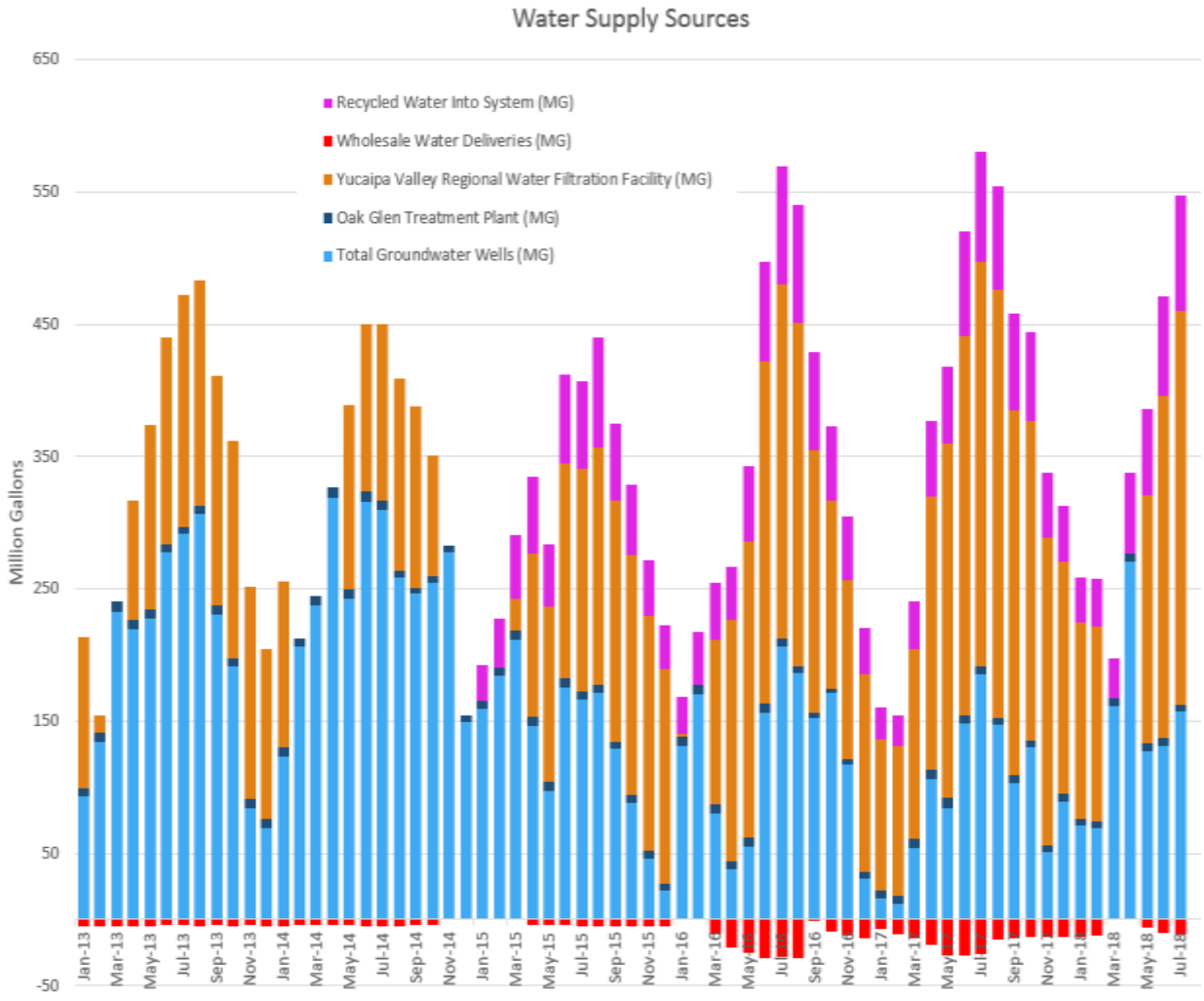
Workshop Memorandum 18-209

Date: August 28, 2018

From: Joseph Zoba, General Manager

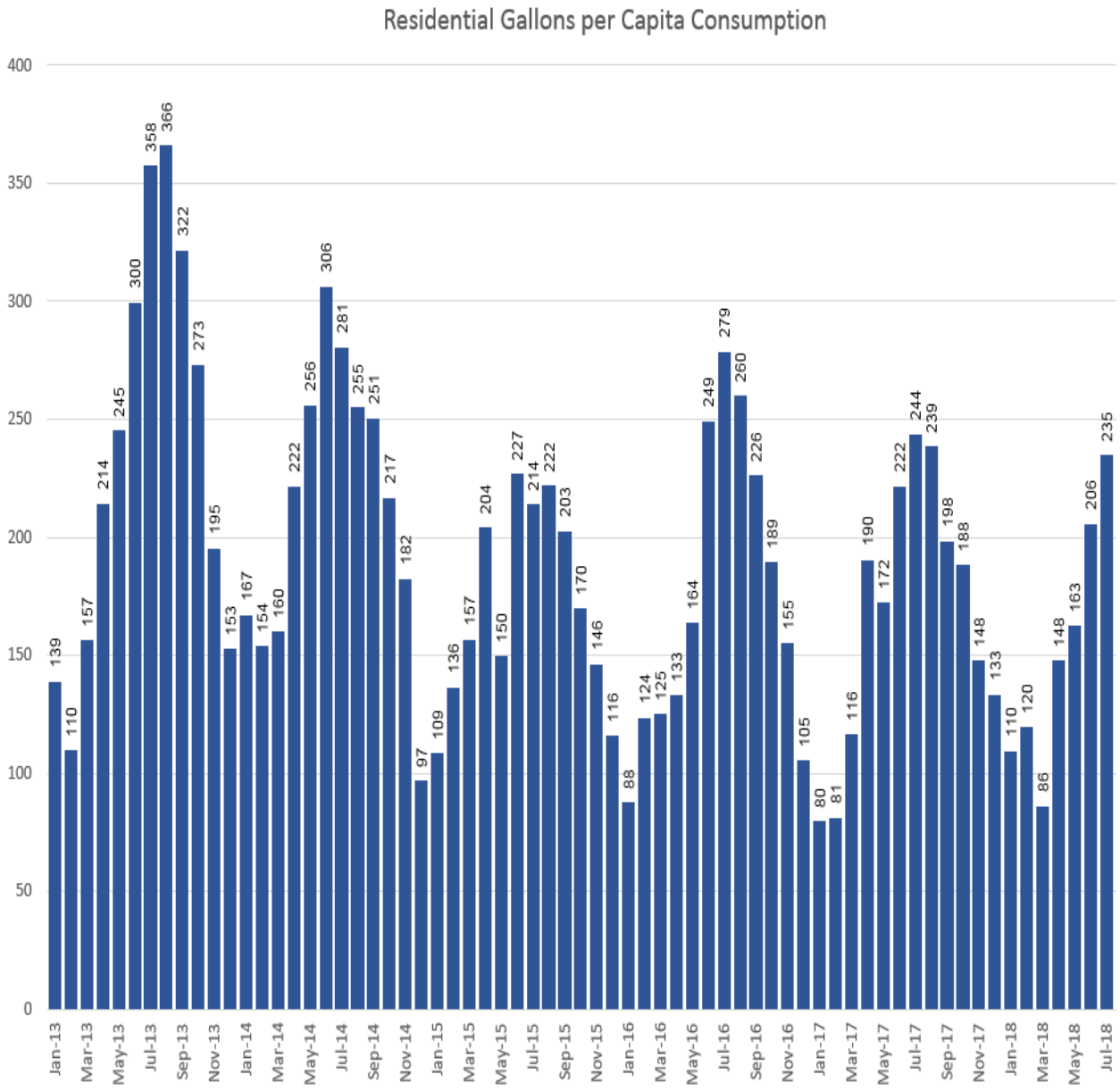
Subject: Overview of Water Demands and Residential Gallons per Capita Consumption for the Yucaipa Valley Water District

Over the past five years, the District has been modifying our water resources to adjust to drought conditions and changing water demands. The illustration below shows how our water sources have changed over the past couple of years.



Note: Recycled water supply sources prior to January 2015 are not shown.

Overall, the Residential Gallons per Capita Consumption continues to gradually decline from the peak in summery 2013.



Additional graphs and information will be provided at the board workshop.

Yucaipa Valley Water District

Workshop Memorandum 18-210

Date: August 27, 2018

From: Joseph Zoba, General Manager
Kathryn Hallberg, Implementation Manager

Subject: Overview of the Yucaipa Valley Regional Water Supply Renewal Project and Phase I of the Salinity and Groundwater Enhancement (SAGE) Project

Like most water agencies in the arid southwest, the Yucaipa Valley Water District is confronted with increased drinking water demands due to the increased population and limited local water supplies. Additionally, the Yucaipa Valley Water District also faces strict regulatory requirements that necessitate desalination of fresh water supplies to meet local groundwater requirements adopted pursuant to the 2004 Regional Water Quality Control Basin Plan for the Santa Ana Region.

To address a wide range of regional issues, the District has developed the Yucaipa Valley Regional Water Supply Renewal Project to accomplish the following objectives:

REGIONAL BENEFITS:

- Provides the Yucaipa Valley with a renewable water resource that will be a reliable water supply in the upper Santa Ana Watershed.
- Protects and enhances the regional groundwater quality by exporting concentrated salt brine that would normally accumulate through recycled water use.
- Reduces the critical overdraft of the Yucaipa and San Timoteo Watersheds by reducing the fresh water production from the local groundwater basins.
- Encourages economic and environmental growth of the region by balancing water demands.

WATERSHED BENEFITS:

- Utilizes a wastewater treatment facility with both tertiary treatment and reverse osmosis to achieve advanced fresh water as an unconditional renewable resource.
- Protects water quality in the lower Santa Ana Watershed by maintaining high quality water in the upper watershed as the water of the upper basins eventually flows to the downstream basins.
- Relies upon the extended Santa Ana Regional Interceptor ("SARI") pipeline, originally constructed by the Santa Ana Watershed Authority. The SARI Pipeline is now one of the longest brine disposal pipelines in the United States.

- The Yucaipa Valley Water District is capable of achieving a zero-discharge providing the ultimate protection of downstream water resources consistent with the goals of the Clean Water Act.

STATE OF CALIFORNIA BENEFITS:

- Reduces the need for water to be imported from northern California that would normally be required to meet future water demands.
- Desalting and treatment of brackish water will allow poor quality water to be recycled and used.
- Conservation, including efficiency water use and reclamation, is consistent in protecting the best interest of the State of California.

The Yucaipa Valley Regional Water Supply Renewal Project

The Yucaipa Valley Regional Water Supply Renewal Project is an innovative salinity control project that will effectively eliminate the buildup of minerals in the Yucaipa Valley that degrade drinking water supplies. The overall project also involves expanded reverse osmosis infrastructure at the Yucaipa Valley Regional Water Filtration Facility (Salinity Concentrate Reduction and Minimization (SCRAM) System); an expanded reverse osmosis and treatment infrastructure at the Wochholz Regional Water Recycling Facility (Salinity and Groundwater Enhancement (SAGE) Project); and a recharge facility at the Calimesa Lake and Spreading Basins. Coupled with the District's aggressive recycled water program, these projects will minimize the amount of water imported from the fragile ecosystem in northern California and allow for the maximum use of high-purity recycled water.

The Yucaipa Valley Regional Water Supply Renewal Project has an overall goal of increasing the reliability of the Yucaipa Valley Water District's (District) water supply by implementing recycled water service within the District while maintaining water quality in the upper watershed. By doing so, many other District objectives are met, all of which can also be considered local watershed, regional, or statewide benefits as presented above. The Yucaipa Valley Regional Water Supply Renewal Project utilizes the extended Inland Empire brineline, originally constructed by Santa Ana Watershed Project Authority, to the Yucaipa Valley. This will result in a brineline extending from the Pacific Ocean to the eastern boundary of the Santa Ana Watershed creating one of the longest brine disposal pipelines in the United States.

Salinity Concentrate Reduction and Minimization (SCRAM) System Component

The Yucaipa Valley Water District operates the Yucaipa Valley Regional Water Filtration Facility (YVRWFF) for production of drinking water. The current water treatment system consists of a 13.6 mgd of Microfiltration (MF) and 6.0 mgd of Nanofiltration (NF). The 6.0 mgd NF capacity system allows the District to provide up to 8.0 mgd of drinking water when blended with MF filtrate in a 75:25 NF:MF ratio, which is needed to minimize the formation of regulated DPB's. The District will be adding two more 3 mgd NF treatment trains to the existing facility, one of which (SCRAM train, concentrator) will receive concentrate from the other three primary trains. The SCRAM project will increase drinking water capacity and also reduce/eliminate the amount of water that is discharged to the Recycled Water system. This will increase the overall capacity of the facility from 8 mgd to 12 mgd (of which 12 mgd is NF filtrate and 1.46 mgd is MF filtrate bypass). The project will also eliminate about 1.45 mgd of concentrate flow to the Recycled Water System. The proposed addition of two 3 mgd NF trains has been given the acronym SCRAM (Salinity Concentrate Reduction and Minimization). "SCRAM" will refer to the project in general; the "SCRAM train" will refer to the NF train that receives concentrate from the other three trains.

Primary trains will refer to the three trains receiving MF filtrate only; the concentrator train (SCRAM train) will refer to the train that receives a mix of MF filtrate and NF concentrate.

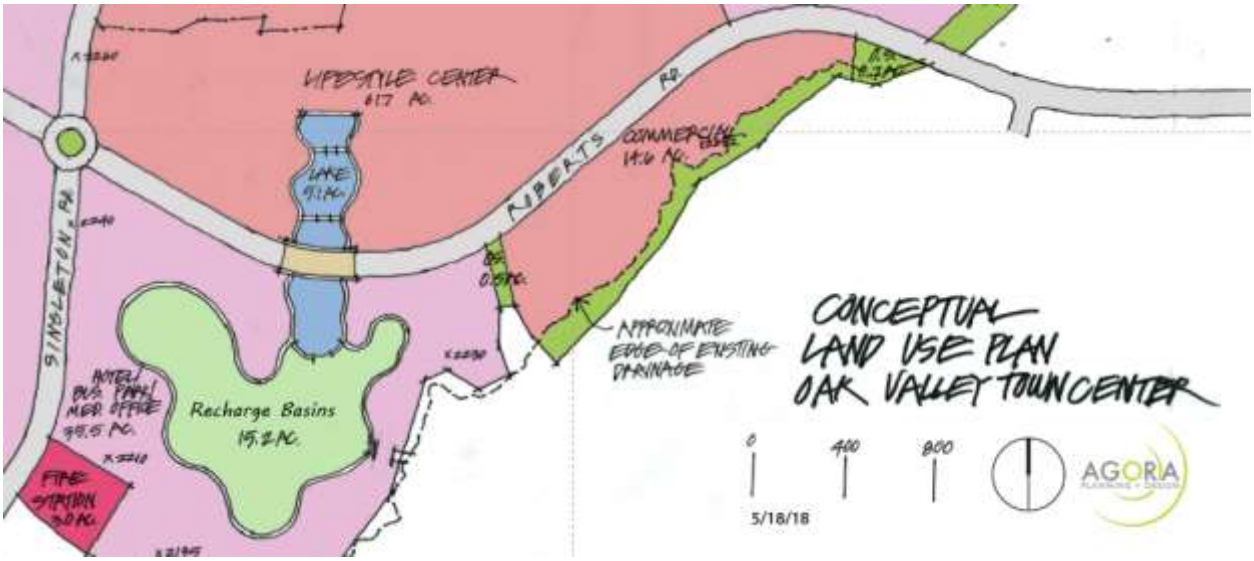
Salinity and Groundwater Enhancement (SAGE) Project

The Yucaipa Valley Water District will be modifying the existing Henry N. Wochholz Regional Water Reclamation Facility (WRWRF), in order to produce water for groundwater recharge in accordance with Article 5.2 of the State of California Groundwater Replenishment Regulations. The existing wastewater treatment plant produces Title 22 reclaim water using microfiltration with partial reverse osmosis to adjust salinity in order to comply with the Groundwater Basin Plan. The upgraded treatment facility will include Full Advanced Treatment, consisting of reverse osmosis and advanced oxidation in order to produce water that is suitable for direct injection into groundwater basins. Water produced from the facility will is compliant with all applicable drinking water regulations and other requirements that are associated with Indirect Potable Reuse Facilities.

The facility will be able to produce highly purified water for reuse, for groundwater replenishment, and will be designed to provide an opportunity for future direct potable reuse.

Calimesa Lake and Spreading Basins

The Yucaipa Valley Water District will be constructing a lake and spreading basins to provide groundwater recharge for the highly purified recycled water in the winter months. This project will be embedded into a commercial center / lifestyle center to secure an off-stream spreading location capable of achieving non-interference with regional stormwater capture and drainage infrastructure.



Regionally, the Yucaipa Valley Regional Water Supply Renewal Project provides the region with a renewable water resource that will be a reliable water supply in the upper Santa Ana Watershed, that protects and enhances the regional groundwater quality by exporting concentrated salt brine that would normally accumulate through recycled water usage, and that reduces the critical overdraft of the Yucaipa and San Timoteo Watersheds by reducing the fresh water production from the local groundwater basins.

The project also encourages economic and environmental growth of the region by balancing water demands, reducing the dependence on imported water, and facilitating dual plumbed communities in the cities of Yucaipa and Calimesa that will enhance the overall quality of life by establishing a drought tolerant water supply.

The project has an objective of conservation, including efficiency water use and water recycling, which is consistent in protecting the best interest of the State of California.

Downstream Brineline Conveyance and Treatment Capacity:	
2006 Brine Pipeline Capacity – 1.0 MGD	$3,750,000
2013 Brine Treatment / Disposal Capacity – 0.295 MGD	$1,342,835
2016 Brine Pipeline Capacity – 0.5 MGD	$1,875,000
2016 Brine Treatment / Disposal Capacity – 0.3 MGD	$1,337,643
2006 Brine Pipeline Capacity – 0.148 MGD	$555,000
Future Brine Treatment / Disposal Capacity – 1.155 MGD	$5,775,000
Subtotal	$14,635,479
SARI Brineline Pipeline Extension to YVWD:	
Phase 1, 2, and 3 Construction Cost	$16,552,025
Subtotal of SARI extension	$16,552,025
Salinity Concentrate Reduction and Minimization (SCRAM) Project:	
SCRAM – MF/RO Construction	$7,913,000
Subtotal for Reverse Osmosis System	$7,913,000
Salinity and Groundwater Enhancement (SAGE) System:	
SAGE Phase I Construction	$17,148,000
SAGE Phase II Construction	$10,064,000
Subtotal for Reverse Osmosis System	$27,212,000
Oak Glen Creek Stormwater Capture Basin:	
YVWD Contribution Cost to Project	$800,000
Subtotal for Stormwater Capture Basin	$800,000
Calimesa Lake and Spreading Basin:	
Acquisition/Construction – Lake and Spreading Basins	$7,913,000
Subtotal for Reverse Osmosis System	$7,913,000
TOTAL PROJECT COST (Rounded)	**$75,025,503**

Next Step - Phase I Salinity and Groundwater Enhancement (SAGE) Project

Yucaipa Valley Water District's Salinity and Groundwater Enhancement (SAGE) project involves expanded facilities at the Wochholz Regional Water Recycling Facility (WRWRF). The facility currently receives an estimated 4 million gallons per day (mgd) of wastewater, of that the facility has the capacity to produce 2.25 mgd of high quality tertiary treated recycled water. The SAGE project would add tertiary clarification and expand the reverse osmosis treatment system from 2.25 mgd to 7 mgd. The additional production of recycled water would be used for groundwater replenishment and irrigation purposes.

The District has applied for grant funding from the Bureau of Reclamation for a portion of the Phase I project cost, estimated to be $17,140,000. The grant would cover 25 percent with would be $4,287,000 of the cost of Phase I. If the District is awarded the Bureau of Reclamation grant the Phase I of the SAGE project must be completed by September 2020.

Operational Updates

Yucaipa Valley Water District

Yucaipa Valley Water District

Workshop Memorandum 18-211

Date: August 28, 2018

Prepared By: Ashley Gibson, Water Resource Project Supervisor
Timothy Mackamul, Senior Integrated Operator

Subject: Overview of WaterTrax Database Management System for Water Quality Data

All drinking water treatment plants and wastewater treatment plants are required to submit recurring reports to the California State Water Resource Control Board (SWRCB). The reports inform the SWRCB of the District's performance regarding compliance with their water quality permits and regulations. Failure to provide the reports in an accurate and timely manner results in negative consequences, such as fines.

Staff currently spends a large amount of time manually gathering data to submit to the SWRCB. Additionally, staff are hand entering lab result data, which poses a risk of transcription errors.

The WaterTrax software will empower staff to import data directly from the lab, maximizing the efficiency of how District staff spend their time. Alerts will be received by staff when a water quality result is out of compliance, so that it may be addressed and corrected. Routine tasks such as lab data entry are automated. The software will seamlessly integrate with the current development of the District's master database. The required reports for the SWRCB are produced with a few mouse clicks, and possible inaccuracies are reduced, improving water quality data management, refining staff efficiency, and protecting from negative findings during a SWRCB Audit/Inspection.

The attached contract includes: a onetime fee of $35,465, which includes data migration, implementation, and training both in person and remotely. The annual subscription cost is $21,875 for the WaterTrax software.

Financial Consideration

The cost of the new software is $21,875 per year with a one-time professional services fee of $35,465. The 2018-19 budget includes funding for $2,400 for a current software that will no longer be utilized. Funding for the new software will be split from the Water and Sewer Funds, Administrative Services Departments [GL Account #xx-5-06-54005]. The increased cost was not included in the 2018-19 approved budget and will be included in a future budget adjustment.

WaterTrax
2400 - 1111 West Georgia St
Vancouver BC V6E 4M3

Created Date 8/15/2018
Quote Number 00000928

PROPOSAL

Quotation Provided To:

Yucaipa Valley Water District

Ashley Gibson

12770 2nd Street
Yucaipa, CA 92399-0730
United States

Quotation Provided By:

David Stadelmann

(303) 962-0021

dave@linkotechnology.com

Core Product	Line Item Description	Total Price
Water Data Management	Annual subscription to Water Data Management software for streamlined compliance reporting and visibility of drinking water quality and compliance related data. Includes twenty (20) end user log-ins. All users have access to all WaterTrax software, pending permissions assigned by client administrator. End user log ins are transferable.	$7,600.00
Wastewater Data Management	Annual subscription to Wastewater Data Management software for streamlined compliance reporting and visibility of WWTP performance and compliance related data.	$6,825.00
Additional Users	Add ten (10) additional user subscriptions. This increases the number of end users from twenty (20) to thirty (30).	$2,000.00
Base Package Configuration	One time professional services fee for set up and configuration of WaterTrax Drinking Water and Wastewater modules. - System Hierarchy (Water & Wastewater Systems and Sample Locations) - End user permissions and work group settings - Administrator settings - Sampling locations, frequencies, parameter limits	$8,200.00
Electronic Report Templates	Build, test and implement five (5) state-required reports for Wastewater compliance reporting to the California Water Quality Control Board. Drinking water reports are standard WaterTrax outputs and will be configured and delivered during implementation. - Monthly SMR - Monthly DMR - Quarterly SMR - Quarterly DMR - Annual DMR	$8,160.00
Sampling Planner - Water	Annual subscription to Sampling Planner module for Drinking Water. - Meet requirements of unique sample schedules for each unique sampling location - Ensure all required parameters are sampled for. - Receive sampling reminders and alerts - Use pre-configured Chain of Custody (COC) and bottle labels	$1,600.00
Sampling Planner -	Annual subscription to Sampling Planner module for Wastewater. - Meet requirements of unique sample schedules for each unique sampling location	$1,600.00

WaterTrax
2400 - 1111 West Georgia St
Vancouver BC V6E 4M3

Created Date 8/15/2018
Quote Number 00000928

Wastewater	- Ensure all required parameters are sampled for. - Receive sampling reminders and alerts - Use pre-configured Chain of Custody (COC) and bottle labels	
Sample Planner Setup	One time fee for set up and configuration of Sampling Planner software to operate with both Drinking Water and Wastewater systems.	$4,100.00
WaterTrax Mobile	Annual subscription to the mobile data entry application for entering results and measurements in the field/plant using smartphones or tablets.	$3,000.00
WaterTrax Mobile Setup and Training	One time fee for set up and configuration of WaterTrax Mobile module. Includes enabling Mobile for operation with both Drinking Water and Wastewater modules.	$3,280.00
Complaint Management	Annual subscription to Complaint Management module for tracking and reporting customer complaints regarding water quality incidents.	$760.00
Initial Setup	One time fee for set up and configuration of Complaint Management module.	$815.00
Mapping Module	Annual subscription to mapping module for the display of water quality results and measurements in Google Maps. The geo-special display provides visibility into water statuses from a geographical perspective. (ie, water pressure throughout the distribution system.)	$0.00
Mapping Module Setup	One time fee for set up and configuration of Mapping module.	$1,640.00
Base Package Training	Provide training courses for all WaterTrax software purchased. Delivered with a combination of on-site training (8 hours) and remote sessions using GoToMeeting screen share software and a live instructor. Remote courses are typically two hours in length and can accommodate up to ten people. Courses to be delivered include: - WaterTrax 101, Getting started with the Basics - Using Sample Planner for sampling excellence - Make it Mobile - Using WaterTrax Mobile for field data entry - Making great decisions with the Mapping module - Complaints tracking and reporting. - Catch all, follow up session.	$3,280.00
Data Migration	Placeholder budget for historical data migration services. Actual cost to be invoiced at $205 per hour up to 40 hours. WaterTrax will attempt to import historical data (legacy data) through Clinical lab, Babcock lab and Eurofin lab EDD outputs. If effort for data migration exceeds total budget, a separate quote for services will be provided.	$8,200.00

Summary of Fees

Total Recurring Annual Fee	$21,875.00
One Time Professional Services Fee	$35,465.00
GRAND TOTAL	$57,340.00

WaterTrax USA, Inc.
Customer Service Agreement

Between:

Yucaipa Valley Water District 12770 2nd Street Yucaipa, CA 92399 USA	- and -	WaterTrax USA Inc. 1420 – 5th Ave, Suite 2200 Seattle, WA 98101 USA

WaterTrax USA, Inc. ("WaterTrax") provides its online data-management service for water quality and operating data presently located at www.watertrax.com ("the Service") to you ("Subscriber") upon the terms and conditions set out below. By using the Service, Subscriber agrees to abide by the terms of this Customer Service Agreement ("Agreement").

1. **Services and Payment.** WaterTrax hereby agrees to provide the Service and Subscriber agrees to pay the Subscription Fee (the "Fee"), all as outlined in Schedule A, and as provided in the proposal document dated 8/13/2018 provided to the Subscriber (the "Proposal"). The parties can agree from time to time to vary the Service offered or the Fee, provided that such agreement is in writing. In addition, WaterTrax will provide Technical Support Services ("Support") as outlined in Schedule C, and after sales service consisting of Implementation and Training Services as outlined in Schedule D.

2. **License.** WaterTrax grants Subscriber a non-exclusive, non-transferable, limited license (1) to access and use the Service and WaterTrax data ("WaterTrax Data") and (2) to post Subscriber's data ("Subscriber's Data") to the Service, and (3) to use the WaterTrax Data solely with respect to Subscriber's systems/facilities, as outlined in Schedule A. Subscriber's Data shall include all information provided through configuration of the Service, and laboratory and operational readings submitted by Subscriber, or by any party authorized by Subscriber to submit Subscriber's Data to the Service.

3. **Registered Users.** Subscriber's license to the Service entitles Subscriber to designate a limited number of Registered Users ("Users") to access the Service as listed in Schedule B. Each User shall be assigned a Login Identification, which will include a username and password. All Users of the Service are subject to all the terms and conditions of this Agreement. Subscriber is responsible for all access to the Service and use of the Data by Subscriber's personnel or designated Users, whether or not Subscriber has knowledge of or authorizes such use.##Subscriber shall assign to the Users one of the permissions levels as outlined in Schedule B. Subscriber is responsible for ensuring that all relevant contact information of the Users (such as legal names, email addresses, telephone numbers, etc.) is correctly set-up in the Service. WaterTrax shall have the right at all times to ensure that the number and identity of Users is limited to those specified in Schedule B. It is not permissible to share Login Identifications between individuals or transfer Login Identifications to other parties without prior written permission of WaterTrax.

4. **Lab Authorization.** If some or all of the Subscriber's Data will be posted to the Service by a third party Laboratory, then Subscriber agrees to forward and have each Laboratory sign Laboratory Authorization as per Schedule E. Subscriber shall forward a signed copy of each Lab Authorization by email to WaterTrax.

5. **Technical and Administrative Contacts.** The names of Subscriber's technical and administrative contacts (the "Subscriber's Representatives") for all communications between Subscriber and WaterTrax pertaining to this Agreement are set out in the attached Schedule B. Subscriber represents that the Subscriber's Representatives have the power to act on behalf of Subscriber with respect to this Agreement. Subscriber may change these contacts by providing written notice to WaterTrax.

6. **Subscriber's Internal Policies.** WaterTrax is not responsible for compliance with Subscriber's internal policies, regardless of whether it has notice of them.

7. **Term.** This term of this Agreement is detailed in Schedule A.

8. **Intellectual Property.** WaterTrax, the WaterTrax logo and other WaterTrax logos and product and service names are trademarks of WaterTrax (the "WaterTrax Marks"), whether or not registered. Without WaterTrax

WaterTrax USA, Inc.
Customer Service Agreement

prior permission, Subscriber agrees not to display or use, in any manner, the WaterTrax Marks.

Subscriber acknowledges and agrees that the Service, the interface to it (including without limitation data entry screens and reports generated by the Service) and all software used in connection with the Service contain proprietary and confidential information that is protected by applicable intellectual property and other laws. Subscriber agrees not to use such property, including without limitation trade-marks, patents and other intellectual property of WaterTrax except as expressly authorized by this Agreement. Except as expressly authorized by WaterTrax, Subscriber agrees not to modify, rent, lease, loan, sell, distribute or create derivative works or businesses based on the Service, in whole or in part.

9. **Prohibited Uses.** Subscriber agrees not to access the Service by any means other than through the interface that is provided by WaterTrax for use in accessing the Service. Subscriber shall not access the Service for the purpose of data mining or extracting content from the Service beyond Subscriber's end use. Subscriber shall not resell the WaterTrax Data or Service to third parties, in whole or in part. Without limiting the generality of the foregoing, Subscriber shall not use the Service except for its own Subscriber's Data. Subscriber may not use the Service or WaterTrax Data for any purpose not expressly provided for in this Agreement.

   The Service has been designed so that each Subscriber's Data can only be accessed by that Subscriber (including Subscriber's Users) so that each User can access only the information to which it is entitled as determined by Subscriber. Subscriber agrees that it will not attempt to access, download, copy or otherwise use any information provided by the Service that Subscriber is not authorized to access, and Subscriber agrees to ensure that each individual User authorized by Subscriber does not do so or attempt to do so. If, however, Subscriber or any User authorized by Subscriber does access, receive or otherwise obtain any such unauthorized information, then Subscriber agrees to treat such information as strictly confidential and promptly notify WaterTrax, and not to download, copy, transmit or otherwise use any of such unauthorized information, except as may be expressly authorized by WaterTrax.

10. **Privacy.** WaterTrax will at all times comply with the Privacy Policy as posted on its website at www.watertrax.com.

11. **Security.** WaterTrax will maintain the Service at a reputable third party Internet service provider and hosting facility, where commercially reasonable security precautions are taken to prevent unauthorized access to the Service. Subscriber acknowledges that, notwithstanding such security precautions, use of, or connection to the Internet provides the opportunity for unauthorized third parties to circumvent such precautions and illegally gain access to the Service and Subscriber's Data. ACCORDINGLY, WATERTRAX CANNOT AND DOES NOT GUARANTY THE PRIVACY, SECURITY, OR AUTHENTICITY OF ANY INFORMATION SO TRANSMITTED OR STORED IN ANY SYSTEM CONNECTED TO THE INTERNET.

12. **Rights in Data.** All property rights in the Subscriber's Data that is provided by Subscriber, or by any party authorized by Subscriber to submit data to the Service, including without limitation copyrights, are and shall continue to be the exclusive property of Subscriber. Subscriber acknowledges and agrees that WaterTrax may disclose Subscriber's Data if required to do so by law or with prior written consent of the Subscriber. WaterTrax may provide statistical information, using Subscriber's data, to third parties, but such information will not include personally identifying information. WaterTrax may access Subscriber's Data to respond to service or technical problems with the Service.

    WaterTrax shall retain Subscriber's Data for a period of thirty (30) days after expiration or termination of this Agreement. After thirty (30 days), WaterTrax may delete and destroy all Subscriber's Data without notice or further liability to the Subscriber.

    WaterTrax reserves the right to establish (and notify the Subscriber of) a maximum amount of memory or other computer storage and a maximum amount of Subscriber's Data that Subscriber may post, store, or transmit on or through the Service.

13. **Responsibility/Indemnity.** Subscriber will ensure that all information submitted to the Service by Subscriber, or by any party authorized by Subscriber to submit Subscriber's Data to the Service, complies with current data format requirements specified by WaterTrax, and that all parties having an interest in such information have consented to the information being submitted. Failure to comply with data formats may see data rejected, or improperly posted or acted upon. Subscriber shall, at all times, ensure that all appropriate user and default settings have been selected. Subscriber also acknowledges that WaterTrax does not check user

WaterTrax USA, Inc.
Customer Service Agreement

or default settings or Subscriber's Data posted to Subscriber's database for accuracy. Subscriber is responsible for all access to the Service and use of the Subscriber's Data by Subscriber's personnel or the use of Subscriber's account, whether or not Subscriber has knowledge of or authorizes such use. Subscriber and Users shall maintain the confidentiality of password and account log-in identification. Subscriber agrees to indemnify and hold harmless WaterTrax against any liability or claim of any person that relates to the use of the Service.

Subscriber acknowledges that WaterTrax has no control over the source, quality, format, nature, ownership or legality of information submitted to the Service by the Subscriber and that the Subscriber is responsible for any claims or liabilities that may arise from the Subscriber's actions in submitting information to the Service.

14. **Dealing with Third Parties.** Subscriber's correspondence or business dealings with third parties accessed through the Service, including payment and delivery of related goods or services, and any other terms, conditions, warranties or representations associated with such dealings, are solely between Subscriber and such third parties. Subscriber agrees that WaterTrax is not responsible or liable for any loss or damage of any sort incurred as the result of any such dealings.

The Service may provide, or third parties may provide, links to other World Wide Web sites or resources. Because WaterTrax has no control over such sites and resources, Subscriber acknowledges and agrees that WaterTrax is not responsible for the availability of such external sites or resources, and does not endorse and is not responsible or liable for any content, advertising, products, or other materials on or available from such sites or resources. Subscriber further acknowledges and agrees that WaterTrax shall not be responsible or liable, directly or indirectly, for any damage or loss caused or alleged to be caused by or in connection with use of or reliance on any such content, goods or services available on or through any such site or resource.

15. **Warranty.**

WaterTrax warrants that:

(I) It has the power, authority and capacity, and has received all necessary authorizations and approvals, to enter into this Agreement, (II) it owns or has all rights in and to the intellectual property rights in the Service necessary to grant the licenses granted in this Agreement, (III) the use of the Service in accordance with the terms of this Agreement does not , and will not infringe on the intellectual property rights of a third party, (IV) the Service will conform to the written descriptions that have been provided to the Subscriber as are set out in the Schedules to this Agreement and that are found at www.watertrax.com at the date of this Agreement, (V) WaterTrax will take all reasonable steps to ensure the Service will be free of viruses, malicious codes and spy-ware throughout the term of this Agreement, (VI) WaterTrax will undertake all reasonable efforts to correct any material errors in the service.

16. **Disclaimer and Limitation of Liability.**

EXCEPT AS PROVIDED IN THE WARRANTY ABOVE SUBSCRIBER EXPRESSLY UNDERSTANDS AND AGREES THAT:

SUBSCRIBER'S USE OF THE SERVICE IS AT SUBSCRIBER'S SOLE RISK. THE SERVICE IS PROVIDED ON AN "AS IS" AND "AS AVAILABLE" BASIS.

WATERTRAX MAKES NO REPRESENTATION OR WARRANTY THAT (I) THE SERVICE WILL MEET SUBSCRIBER'S REQUIREMENTS, (II) THE SERVICE WILL BE UNINTERRUPTED, TIMELY, SECURE, OR ERROR-FREE, (III) THE RESULTS THAT MAY BE OBTAINED FROM THE USE OF THE SERVICE WILL BE ACCURATE OR RELIABLE, (IV) THE PERFORMANCE OF THE INTERNET WILL BE UNINTERRUPTED OR PERFORM AT SPECIFIED RATES, (V) SUBSCRIBER'S INTERNET SERVICE PROVIDER WILL PROVIDE UNINTERRUPTED SERVICE OR PERFORM AT SPECIFIED RATES, AND (VI) SUBSCRIBER'S EMAIL SERVICE WILL PERFORM AS WARRANTED.

SUBSCRIBER EXPRESSLY UNDERSTANDS AND AGREES THAT WATERTRAX SHALL NOT BE LIABLE FOR ANY, INDIRECT, INCIDENTAL, SPECIAL, CONSEQUENTIAL OR EXEMPLARY DAMAGES, INCLUDING BUT NOT LIMITED TO, DAMAGES FOR LOSS OF REVENUES, PROFITS, GOODWILL, USE, SUBSCRIBER'S DATA, BODILY INJURY OR PROPERTY DAMAGE, FAILURE TO REALIZE EXPECTED SAVINGS, OR OTHER INTANGIBLE LOSSES (EVEN IF WATERTRAX HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES), RESULTING

WaterTrax USA, Inc.
Customer Service Agreement

FROM: (I) THE USE OR THE INABILITY TO USE THE SERVICE; (II) INVALID DESTINATIONS, TRANSMISSION ERRORS, OR UNAUTHORIZED ACCESS TO OR ALTERATION OF SUBSCRIBER'S TRANSMISSIONS OR SUBSCRIBER'S DATA.

NO CLAIM, REGARDLESS OF FORM, MAY BE MADE OR ACTION BROUGHT BY EITHER PARTY MORE THAN ONE YEAR AFTER THE BASIS FOR THE CLAIM BECOMES KNOWN TO THE PARTY ASSERTING IT.

WITHOUT LIMITING THE GENERALITY OF THE FOREGOING, WATERTRAX LIABILITY TO SUBSCRIBER PURSUANT TO THIS AGREEMENT, INCLUDING LEGAL FEES AND AWARDABLE COSTS, SHALL NEVER EXCEED THE AMOUNT PAID BY SUBSCRIBER TO WATERTRAX FOR THE USE OF THE SERVICE IN THE PREVIOUS TWELVE MONTHS.

17. **After Sales Service** – The after sales services as outlined in Schedule D will be performed as a condition of this contract. If after sales services are performed on-site at the Subscriber's place of business, due to staff availability, these services may be performed by professional staff employed by WaterTrax Inc., a related Canadian corporation offering the same services as WaterTrax USA Inc.

18. **Termination for Breach:** Upon the occurrence of any of the following events: (i) the other party materially breaches or defaults in any of the material terms or conditions of this Agreement, (ii) the other party makes any assignment for the benefit of creditors, is insolvent or unable to pay its debts as they mature in the ordinary course of business, or (iii) any proceedings are instituted by or against the other party in bankruptcy or under any insolvency laws or for reorganization, receivership or dissolution, then the non-defaulting party may give the other party written notice of such default and an opportunity to cure the default within thirty (30) days after receipt of such notice, failing which the non-defaulting party may cancel this Agreement without notice.

19. **Effect of Termination:** Notwithstanding the foregoing, upon termination WaterTrax shall provide reasonable assistance to Subscriber in the migration of its Subscriber's Data as reasonably requested by Subscriber. Subscriber agrees to pay in advance for all such services rendered to Subscriber (data migration fees shall not be assessed if WaterTrax is the party in breach). Subscriber shall pay WaterTrax all other accrued and unpaid fees concurrently with giving notice of termination.

20. **Publicity.** WaterTrax may use Subscriber's name as part of a general list of customers and may refer to Subscriber as a user of the Service in general advertising and marketing materials. Each party shall obtain the other's permission prior to using the other party's name for any other marketing or promotional purposes. The parties agree that any press release or other public comments issued by either party relating to this agreement will be prepared jointly between WaterTrax and the Subscriber.

21. **Force Majeure.** Neither party is liable for any delay, interruption or failure in the performance of its obligations if caused by acts of God, war (declared or undeclared), fire, flood, storm, slide, earthquake, power failure, inability to obtain equipment, supplies or other facilities not caused by a failure to pay, labour disputes, or other similar event beyond the control of the party affected which may prevent or delay such performance. If any such act or event occurs or is likely to occur, the party affected shall promptly notify the other, giving particulars of the event. The party so affected shall use reasonable efforts to eliminate or remedy the event.

22. **Notices.** All notices required to be given to WaterTrax shall be given to WaterTrax as set out in the Schedule B. Any notice required to be given by WaterTrax may be given by e-mail to the address of Subscriber's Technical and Administrative Contact.

23. **Counterparts/Email.** This agreement may be executed in two counterparts, each of which will be deemed to be an original, and both of which together shall constitute one agreement. This Agreement may be executed electronic copy and sent via email.

24. **Sole Agreement.** This Agreement constitutes the sole agreement between the parties, and without limiting the generality of the foregoing the Terms of Service contained on WaterTrax web-site www.watertrax.com, or any amendment or substitution of them, do not form part of any contract between Subscriber and WaterTrax.

25. **Governing Law.** The laws of the State of Washington govern this Agreement and all disputes arising out of it shall be submitted to a court of competent jurisdiction in Washington State.

26. **Assignment.** This Agreement may not be assigned by Subscriber without WaterTrax' consent, such consent not to be unreasonably withheld.

WaterTrax USA, Inc.
Customer Service Agreement

27. **General Provisions.** No waiver of any of the provisions of this Agreement shall be deemed to constitute a waiver of any other provision nor shall such a waiver constitute a continuing waiver unless otherwise expressly provided in writing duly executed by the party to be bound. This Agreement is binding upon the successors to and permitted assigns of the parties.

The signing officer of Subscriber who executes this Agreement acknowledges that he/she has read the entire Agreement, that he/she understands it and that Subscriber agrees to be bound by its terms and conditions.	An authorized signing officer of WaterTrax grants this Agreement only on its signed acceptance. No one is authorized to change, alter or amend the terms or conditions of this Agreement unless agreed to in writing by an officer of WaterTrax.
Accepted By:	Accepted By: James Griffiths
Title:	Title: Chief Financial Officer
Signed:	Signed: James Griffiths
(Authorized signing officer)	(Authorized signing officer)
Date:	Date: August 13, 2018

WaterTrax USA, Inc.
Customer Service Agreement

1. **Description.** WaterTrax Service - WaterTrax Service - providing online data management and/or maintenance management software to consolidate and report water, solids and air quality data and/or asset and maintenance data for your systems/facilities.

2. **Effective Date and Term.** This Agreement commences on the date that the account is activated and initial setup is complete and shall be considered the date the Service is available to the Subscriber. The Agreement continues for one (1) year, and thereafter renews automatically for successive one (1) year periods unless either party gives the other party 30 days written notice of its intent not to renew this Agreement prior to the expiration of the then current term.

3. **Payment Terms.** In consideration of the use of the Service, Subscriber shall pay WaterTrax the Annual Subscription Fee stated below on the Effective Date, and they shall pay the Annual Subscription Fee on or before the anniversary of the Effective Date each year thereafter. WaterTrax may amend its fees for any renewal term on 30 days notice to Subscriber given prior to the expiration of the current term. Any applicable taxes are not included in this fee.

4. **Annual Subscription Fee for Systems/Facilities under Agreement.** The Subscriber agrees to pay the annual fees for use of the WaterTrax software products and modules listed in the table below.

Module	Annual Subscription Fee
Drinking Water	$7,500
Wastewater	$5,625
Additional users (add 10 users for total of 30 users)	$2,000
Sampling Planner - Water	$1,500
Sampling Planner - Wastewater	$1,500
Mobile – Water & Wastewater	$3,000
Complaints	$750
Mapping	$0.00
Total Annual Subscription Fee	**$21,875**

Subscriber acknowledges that additional modules, additional systems/facilities being managed, or additional users to those listed in Schedule B may require adjustments in pricing. Subscriber certifies that the information is accurate and agrees to notify WaterTrax of any material change in the information.

5. **Late Fees.** If any payment due under this Agreement is more than 30 days overdue, WaterTrax may charge interest at the rate of 1.5% per month.

6. **Modifications.** WaterTrax may from time to time modify or enhance the Service. WaterTrax will endeavour to give Subscriber notice of this. Unless explicitly stated otherwise, any new features that augment or enhance the Service are subject to the terms of this Agreement. WaterTrax is not responsible for the installation, configuration or maintenance of the Subscriber's LAN or WAN or software associated with such networks, or any third party network or connection such as provided by Subscriber's internet service provider required in order to access and use the Service. WaterTrax reserves the right to interrupt access to the service from time to time for regular maintenance, and will endeavour to give Subscriber notice of such scheduled maintenance.

WaterTrax USA, Inc.
Customer Service Agreement

1. Registered Users

WaterTrax Data Management

Title	Number of Users	Functionality in the Service
Administrator	1	• Add/edit/delete Owners • Set/edit global database preferences • Everything below
Owner	4	• Add/edit/delete System Users, Data Users, and Viewers • Everything below
System User	25	• Modify database structure (Add/edit/delete systems, facilities, sampling point, and measurements) • Set/edit alert and criteria levels • Everything below
Data User		• Add/edit/delete data records • Everything below
Viewer		• View data • Receive email and onscreen alerts • Generate reports, exports and graphs

WaterTrax Mobile

Title	Number of Users	Functionality in the Service
Mobile	30	• Ability to enter, edit, delete data using a mobile device (smart phone, tablet or laptop) • Ability to enter data in online (connected to the internet) or offline (data is stored on the device for later submission when connected to the internet)

WaterTrax USA, Inc.
Customer Service Agreement

1. **Technical Support Services**. WaterTrax shall provide Technical Support Services as described below.

Support Service	Description	Price
Ongoing Annual Phone and Email Support for authorized users (A)	Telephone support available from 8:00 AM to 5:00 PM PST, Monday to Friday excluding holidays. P: 1 866 812 2233 (Ext 8593) Email: support@watertrax.com	Included

(A) Authorized users are those who have received appropriate training in the use of the Service by WaterTrax personnel or a User with equivalent experience

2. **Subscriber Technical and Administrative Contacts**

Name	Title	Contact Details
Ashley Gibson	Water Resource Project Supervisor	P: 909-790-3311 Email: agibson@yvwd.us

3. **WaterTrax Technical and Administrative Contacts**

Name	Contact Details
Technical Support	P: 1 866 812 2233 Email: support@watertrax.com
Administrative James Griffiths, Chief Financial Officer	P: 1 866 812 2233 Email: james.griffiths@watertrax.com

WaterTrax USA, Inc.
Customer Service Agreement

1. **Initial Setup and Training**. Upon completion of initial setup and training, WaterTrax shall invoice the Subscriber $35,465 for the following scope of work.

Project initiation / management.
Establishing and configuring your WaterTrax account
Training
Initial quality control audit of your lab data uploads
Sampling Planner setup and training
Complaint Management setup and training
Mapping setup and training.
WaterTrax Mobile setup and training
Historical data upload

Training includes all travel and expenses..

2. **Additional Training Services - Existing Users**. WaterTrax is available to provide specific training to existing Users of the Service at the request of the Subscriber. Such services will be charged based upon the requested scope of training services at the current WaterTrax Professional Services rates.

3. **Additional Training Services - New Users**. If new Users are added to the Subscription, they will require to be trained to have access to our Technical Support Services. WaterTrax is available to provide training to new Users of the Service and such training will be provided at the current WaterTrax Professional Services rates.

4. **Historical Data Upload** - WaterTrax is available to provide professional services to configure the upload file and upload historical data into your WaterTrax database at the request of the Subscriber. Such services will be charged based upon the requested scope of historical data upload at the current WaterTrax Professional Services rates.

5. **Custom Development** - WaterTrax can provide custom development services to enhance/modify the WaterTrax Service to meet the specific needs of the Subscriber at your request. Such services will be charged based upon the requested scope of Custom Development at the current WaterTrax Professional Services rates

6. **Account Audits / QC** – Following the initial quality control audit, WaterTrax is available to provide follow up audits of your account setup .and lab data uploads to ensure consistent database setup and data entry procedures are in place and being followed by your users. Such services will be charged based upon the requested scope and frequency of the audits at the current WaterTrax Professional Services rates.

WaterTrax USA, Inc.
Customer Service Agreement

Date: _____

To: _____

Re: WaterTrax Online Data Management Service located at www.watertrax.com (the "Service")

You are hereby requested to submit laboratory test reports in their entirety (i.e. analytical results for all analytes tested for all samples submitted) to the Service using the WaterTrax report file standard when test samples have been submitted to you and are identified with WaterTrax tracking information. The Undersigned hereby designates you as a User of the Service and you are hereby authorized to access and use the Service on our behalf solely for the purpose of posting our laboratory test data to the Service. You are authorized to make arrangements with WaterTrax with respect to the posting of our data, file formats, and other posting protocols and procedures. You are responsible for the accuracy and completeness of submitted reports to us through the Service.

You are hereby authorized to provide copies of our laboratory reports to WaterTrax in hardcopy or electronic form for purposes of data transfer quality control, upon the request of WaterTrax.

We have agreed with WaterTrax that the intellectual property in the Service belongs to WaterTrax and we will not use all or any part of it except as expressly authorized, and that if any information or Data is made available to us we will treat it as strictly confidential. By acting under this authorization, you agree to do the same. By requesting data transfer to WaterTrax, we are accepting certain methodologies and presentation formats (including analyte and unit names) that are used in the Service.

This authorization is not intended to change the terms of our relationship with you, and does not change any pre-existing reporting procedures that we have established with you, particularly with respect statutory obligations and to warnings that you may give us with respect to potentially hazardous conditions. If you have any questions about this, please contact us directly.

This authorization may be revoked at any time by notice in writing delivered to you.

You agree to indemnify and hold harmless WaterTrax against any liability or claim of any person that is attributable to the improper use of the Service by you.

The Service is provided on an "as is" and "as available" basis. WaterTrax liability to us (and you) is contractually limited.

Please sign and return a copy by mail or email to our attention.

"Subscriber"	**ACKNOWLEDGED by Laboratory**
_____	_____
Company	**Company**
_____	_____
Name	**Name**
_____	_____
Signature	**Signature**
_____	_____
Date	**Date**

WaterTrax USA, Inc.
Customer Service Agreement

DEFINITIONS

"Data" means information posted on the Service with respect to a Subscriber's systems/facilities.

"Subscriber" means a party that has contracted with WaterTrax to use the Service.

"User" means a registered user designated by Subscriber to access the Service.

"WaterTrax" means WaterTrax USA, Inc., a company incorporated in the State of Washington.

WaterTrax USA, Inc.
Customer Service Agreement

The WaterTrax Data Management software provides many features that are key to providing an effective business tool to automate and improve daily activities related to acquisition and storage of system monitoring information, compliance verification and reporting. The software includes:

Consolidated and structured database - WaterTrax employs an intuitive data management architecture that is configurable for consolidating all monitoring data collected by your organization. The database builds a history of the information at each sampling point and provides system-wide information that is easy to locate, share, and understand.

Electronic laboratory data transfer – The WaterTrax electronic data transfer format allows your internal and contract labs to upload laboratory test data directly into your WaterTrax database thus eliminating paper records and duplicate recording of results, providing real time alerting when lab test results exceed alert levels and providing immediate and simultaneous access to all laboratory test results by managers and other office staff.

Mobile field data entry - Tablet PCs or laptops with web access and any web-browser (Internet Explorer, Safari, Firefox, Chrome, or Opera) can be used in the field to directly enter field results (water levels, flow and pressure readings, chlorine residuals, etc.) into WaterTrax thus eliminating paper records and duplicate recording of results, providing real time alerting when field results exceed alert levels and providing immediate access to field data by managers and other office staff.

Automatic Alerting - WaterTrax provides an alerting mechanism for screening monitoring results. Data received from field technicians, entered by operators or transmitted from laboratories are automatically checked against your defined alerting criteria as soon as the data is entered into WaterTrax. Alert notifications are emailed to appropriate personnel if results exceed the alerting criteria.

Calculations – WaterTrax provides a formula builder tool that allows users to set up calculations based on their own defined formulas. A history of all calculated values for each formula are maintained in the database for reporting and graphing and alerting criteria can be set based on the calculated values.

Reports and Graphs –Users can define what data to include in reports or graphs using a set of criteria or filters (collection date range, sampling locations, analytes, etc.). These settings can be saved as templates for easy reproduction based on your specified frequency. Thousands of historical records can be exported into pdf or Excel spreadsheet or graphical format in a manner of seconds.

Secure data, complete maintenance, and backup - Watertrax provides all the IT services required to upgrade, maintain and monitor all the server hardware required to run the application and database and perform all the backups. Industry standard practices for data security and reliability are employed.

Client Services – WaterTrax client services team provide all your setup, training and ongoing support services in the day-to-day use of WaterTrax. Our friendly and responsive client services team will work directly with you to ensure that your WaterTrax experience is positive and provides maximum value to you and your organization.

Capital Improvement Projects

Yucaipa Valley Water District

Yucaipa Valley Water District

Workshop Memorandum 18-212

Date: August 28, 2018

From: Matthew Porras, Management Analyst

Subject: Status Report on the Construction of an 8-Inch Sewer Mainline in Yucaipa Boulevard

The City of Yucaipa is preparing to proceed with the Yucaipa Boulevard Widening Project that involves the widening and reconstruction of Yucaipa Boulevard from 18th Street to Avenue E/Hampton Road. In conjunction with this project, the District is preparing to proceed with sewer construction consisting of approximately 2,400 linear feet of 8-inch main line in Yucaipa Boulevard between 18th Street and Avenue E/Hampton Road as well as Ridgecrest Drive between Yucaipa Boulevard and Sierra Linda Street.

The sewer main project is categorically exempt from environmental review in accordance with the California Environmental Quality Act Guidelines Section 15301(C).

Public Policy

Yucaipa Valley Water District

Yucaipa Valley Water District

Workshop Memorandum 18-213

Date: August 28, 2018

From: Joseph Zoba, General Manager

Subject: Discussion Regarding Updates to the Policy Related to Accessory Dwelling Units and Other Multiple Unit Developments

On July 17, 2018, the Board of Directors adopted Resolution No. 2018-23 Setting Forth Policies and Practices Related to Accessory Dwelling Units and Multiple Unit Developments. Since this time, the District staff has been able to apply the policy to several projects.

The purpose of this agenda item will be to discuss potential changes and refinements to the adopted policy.

RESOLUTION NO. 2018-23

A RESOLUTION OF THE YUCAIPA VALLEY WATER DISTRICT SETTING FORTH POLICIES AND PRACTICES RELATED TO ACCESSORY DWELLING UNITS AND MULTIPLE UNIT DEVELOPMENTS

WHEREAS, the City of Calimesa and the City of Yucaipa currently regulate the establishment of Accessory Dwelling Units (ADUs); and

WHEREAS, the State of California amended state laws regarding ADUs, effective January 1, 2017, enacting legislation approved by Senate Bill 1069, Assembly Bill 2299, and Assembly Bill 2406; and

WHEREAS, the State of California now regulates ADUs pursuant to Government Code §§ 65852.2 and 65852.22, respectively; and

WHEREAS, the Yucaipa Valley Water District has adopted this Resolution to support the process, code and regulation set forth for the construction of Accessory Dwelling Units consistent with state law.

NOW THEREFORE, the Board of Directors of the Yucaipa Valley Water District does hereby resolve, determine and order as follows:

Section 1. For a parcel that adds an Accessory Dwelling Unit, the Yucaipa Valley Water District shall not charge a Facility Capacity Charge at the time of construction, but will charge an administrative processing fee and monthly drinking water, recycled water, and sewer charges as approved by the Board of Directors and set forth below:

A. An administrative processing fee of $150 shall be due payable at the time application materials are submitted to the District. This fee has been determined to represent the cost of providing a fire flow study plus a $25 administration fee.

B. A single residential unit with an Accessory Dwelling Unit (up to 1,200 square feet) on the same parcel shall be charged additional fixed fees for monthly drinking water and sewer charges. Fixed fees for recycled water service will not be impacted.

C. A single residential unit with an attached or detached Non-Accessory Dwelling Unit (e.g. casitas) with a sink, a toilet, and a kitchen will be charged additional fixed fees for monthly drinking water and sewer charges. Fixed fees for recycled water service will not be impacted.

D. The current variable, or consumptive rates for drinking water, recycled water, and/or sewer charges will be billed to the property owner each month.

E. All monthly drinking water, recycled water, and sewer charges may be assigned by the owner to a tenant but shall remain the ultimate responsibility of the property owner as a single monthly utility bill.

F. Utility billing for the fixed monthly drinking water and sewer charges associated with the Accessory Dwelling Unit shall commence to the property 120 days following the date written authorization and approval is provided to the property owner for the Accessory Dwelling Unit.

Section 2. For a parcel with two or more residential units, the Yucaipa Valley Water District shall charge the applicable Facility Capacity Charges at the time of construction, and the following monthly drinking water, recycled water, and sewer charges:

A. An administrative processing fee of $150 shall be due payable at the time application materials are submitted to the District. This fee has been determined to represent the cost of providing a fire flow study plus a $25 administration fee.

B. Multiple residential units shall be charged additional fixed fees for monthly drinking water and sewer charges. Fixed fees for recycled water service will not be impacted.

C. The current variable, or consumptive rates for drinking water, recycled water, and/or sewer charges in effect will be billed to the property each month.

D. The billing methodology identified above shall apply to any parcel with more than one water meter for service on the sample parcel, plus costs associated with the installation and maintenance of cross-connection prevention devices.

E. All monthly drinking water, recycled water, and sewer charges may be assigned by the owner to a tenant but shall remain the ultimate responsibility of the property owner as a single monthly utility bill.

Section 3. For apartments, condominiums, commercial, industrial, or institutional uses, the Yucaipa Valley Water District shall charge the applicable Facility Capacity Charges based on water and sewer fixture units and/or drainage units as calculated from the Uniform Plumbing Code. The fixed monthly drinking water, recycled water, and sewer charges shall be based on the fixture units and/or drainage units calculated. The current variable, or consumptive rates for drinking water, recycled water, and/or sewer charges in effect will be billed to the property each month.

A. An administrative processing fee of $150 shall be due payable at the time application materials are submitted to the District. This fee has been determined to represent the cost of providing a fire flow study plus a $25 administration fee.

B. The fixed monthly drinking water, recycled water, and sewer charges shall be based on the calculated fixture units, drainage units, or Maximum Applied Water Allowance. The current variable, or consumptive rates for drinking water, recycled water, and/or sewer charges in effect will be billed to the property each month.

C. All monthly drinking water, recycled water, and sewer charges may be assigned by the owner to a tenant but shall remain the ultimate responsibility of the property owner as a single monthly utility bill.

This Resolution is effective on adoption.

PASSED AND ADOPTED this 17th day of July 2018.

YUCAIPA VALLEY WATER DISTRICT

Jay Bogh, President Board of Directors

ATTEST:

Joseph B. Zoba, General Manager

Development Projects

Yucaipa Valley Water District

Yucaipa Valley Water District

Workshop Memorandum 18-214

Date: August 28, 2018

From: Joseph Zoba, General Manager

Subject: Overview of a Proposed Development Agreement with DR Horton for Tract No. 32702-1 and 320702-2 within the Summerwind Development - Calimesa

The District staff is in the process of finalizing this development agreement. A copy of the draft agreement will be distributed and discussed at the board workshop.

Yucaipa Valley Water District

Workshop Memorandum 18-215

Date: August 28, 2018

From: Joseph Zoba, General Manager

Subject: Overview of a Proposed Development Agreement for Tract 15195 - Wayne Simmons

The District staff is in the process of finalizing this development agreement. A copy of the draft agreement will be distributed and discussed at the board workshop.

Yucaipa Valley Water District

Workshop Memorandum 18-216

Date: August 28, 2018

From: Joseph Zoba, General Manager

Subject: Overview of a Proposed Development Agreement with Carl Brandstetter for Assessor Parcel Numbers 303-301-44 and 303-151-38 - Yucaipa

The District staff is in the process of finalizing this development agreement. A copy of the draft agreement will be distributed and discussed at the board workshop.

Administrative Items

Yucaipa Valley Water District

Yucaipa Valley Water District

Workshop Memorandum 18-217

Date: August 28, 2018

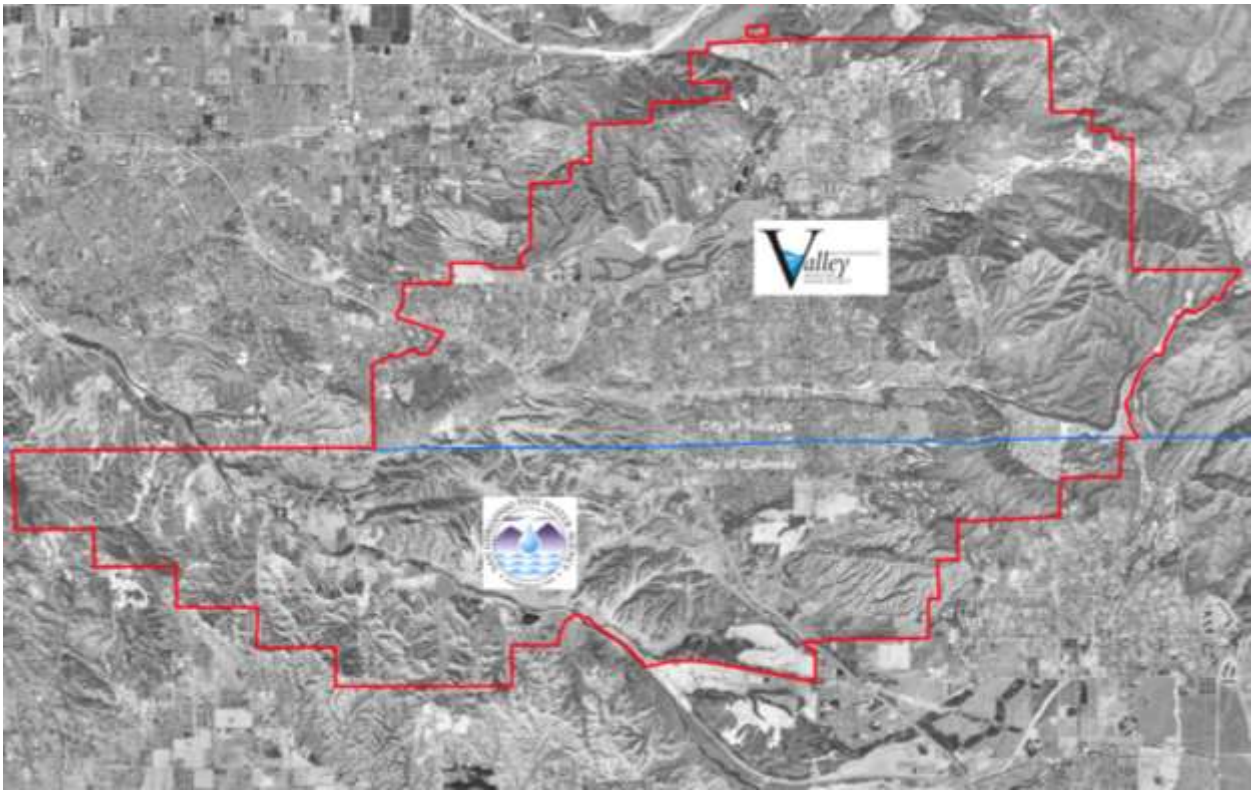
From: Joseph Zoba, General Manager

Subject: Overview of the Imported Water Order for 2019 for the San Bernardino Valley Municipal Water District

On November 18, 2002, the San Bernardino Valley Municipal Water District adopted Resolution No. 888 which describes the rules, regulations, and rates for the sale and delivery of supplemental water. The adopted water rates consist of a $108/AF energy charge and a $40/AF conveyance charge for a total base price of $148/AF. The following chart illustrates the discounts and surcharges that apply to water purchases.

	Criteria	Payment Method	Discount / Surcharge	Water Rate
Tier I Plan Ahead	Water ordered prior to December 31st for delivery in the following calendar year.	Option 1 - Payment for 1/12th of the water ordered due at the end of each month for the base price.	0% Discount of base water rate	$148/AF
		Option 2 - Payment in full by January 31st for discounted rate.	15% Discount of base water rate	$125.80/AF
Tier II Seasonal Storage	Water ordered for groundwater recharge prior to December 31st for delivery during January through May of the following year.	Option 1 - Payment for 1/5th of the water is due at the end of each Tier II month for the base price.	0% Discount of base water rate	$148/AF
		Option 2 - Payment in full by January 31st for discounted rate.	20% Discount of base water rate	$118.40/AF
Tier III Spot Market Purchase	Water ordered at any time during the calendar year for delivery in the same calendar year.	Payment method pursuant to Section 4.07 of the Rules and Regulations.	25% Surcharge of base water rate	$185/AF
Outside Water Rates	Water purchased from SBVMWD for use outside of the boundary of SBVMWD.	Payment method pursuant to Section 4.07 of the Rules and Regulations. Rate based on DWR Bulletin 132 Appendix B.	- -	$378.89/AF

Overall, SBVMWD offers very competitive water rates for planning ahead and paying for the requested water delivery within the first month of the year. However, there is no guarantee with respect to receiving water ordered and paid for at the beginning of the year. It is possible that operational issues with the State Water Project and/or lack of rainfall in northern California can result in less water being delivered than paid for by the Yucaipa Valley Water District.



Anticipated Water Delivery for 2019 - San Bernardino Valley Municipal Water District

The District staff recommends the purchase of 7,500 acre-feet for direct delivery to the Yucaipa Valley Regional Water Filtration Facility for Calendar Year 2019. At the current rate of $125.80 per acre foot, the total cost of the imported water from the San Bernardino Valley Municipal Water District will be $943,500 [GL Account #02-10315].

Changing Conditions and Uncertainty

The proposed water order identified above is a projection representing the maximum quantity expected based on current demands and a variety of other issues. If additional imported water is needed or made available, a separate recommendation will be presented for your consideration.

Yucaipa Valley Water District

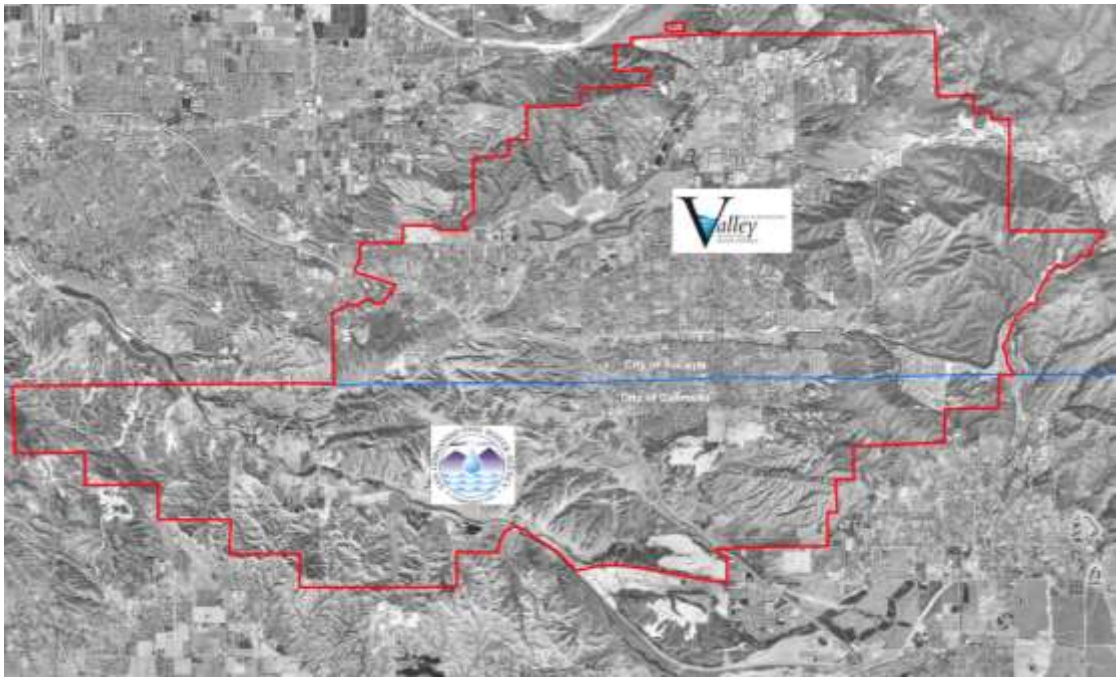
Workshop Memorandum 18-218

Date: August 28, 2018

From: Joseph Zoba, General Manager

Subject: Overview of the Imported Water Order for 2019 for the San Gorgonio Pass Water Agency

On February 17, 2009, the San Gorgonio Pass Water agency adopted Resolution No. 2009-3 which describes the rules, regulations, and rates for the sale and delivery of wholesale water. The adopted water rate applicable to Yucaipa Valley Water District is $309/Acre-foot.



Anticipated Water Delivery for 2019 - San Gorgonio Pass Water Agency

The District staff recommends the purchase of 1,150 acre-feet for direct delivery to the Yucaipa Valley Regional Water Filtration Facility for Calendar Year 2019. At the current rate of $309 per acre foot, the total cost of the imported water from the San Gorgonio Pass Water Agency will be $355,350 [GL Account #02-10316].

Changing Conditions and Uncertainty

The proposed water order identified above is a projection representing the maximum quantity expected based on current demands and a variety of other issues. If additional imported water is needed or made available, a separate recommendation will be presented for your consideration.

Yucaipa Valley Water District

Workshop Memorandum 18-219

Date: August 28, 2018

From: Joseph Zoba, General Manager

Subject: Discussion Regarding the Preparation of Information to Communicate with Customers, Regulators and Stakeholders

On March 8, 2018, the Board of Directors discussed the implementation of a public relations and outreach program that would include the following elements:

- **Public Relations and Outreach** - Plan and implement a program to gain and enhance the District's presence involving:
  - Social media;
  - Website refresh and upgrades;
  - Video clips;
  - Summary of the District's operations;
  - Historical information; and
  - Near real-time press releases.

On April 3, 2018, the Board of Directors authorized the preparation of a historical summary of the Yucaipa Valley Water District with Crider Public Relations. The material generated from the historical summary will be used to prepare videos and social media clips in the future.

On May 22, 2018, the District staff presented a concept of preparing a Request for Proposals for Digital Creative Services [WM 18-135]. This RFP would include the following scope of services:

- Develop and execute a Search Engine Optimization (SEO) strategy for the District.
- Develop and provide a 4-page monthly e-newsletter including design, content development, and photographs in native file formats approved by the District and as a PDF for distribution by the District.
- Develop a series of new customer on-boarding engagement email messages and content about the District services, meetings, and service options.
- Prepare, develop, and produce 3-minute videos about the following services and activities by the District:
  - Brine disposal;
  - Cross-connection needs and issues;
  - Dual-plumbing requirements for new homes;
  - Emergency preparedness;
  - Environmental protection;
  - General water issues;
  - Geographical Information Systems (GIS);
  - Operations and maintenance activities;
  - Recycled water fill station;
  - Recycled water recharge;
  - Recycled water;

    - Reverse osmosis needs and opportunities;
    - Science, technology, engineering, and math (STEM) in the water/sewer industry;
    - Sewer collection;
    - Sewer treatment;
    - State Water Project partners (SBVMWD and SGPWA);
    - Sustainability goals;
    - Water supply sources; and
    - Water/sewer operator certifications.
        - Videos to maintain the same theme, branding, color scheme in a raw and finished format.
- An additional five videos may be requested for assorted topics during the fiscal year.
- Develop ten video introductions (15 seconds) and ten video closings in a raw format that can be used to add titles in the future.
- Develop and implement a communication strategy, material, and videos for informing and training recycled water customers that purchase or rent dual-plumbed homes.

At this board workshop, the District staff interpreted the discussion to proceed with a dual-strategy that includes:

- Recruitment of a public relations firm to:
    - Develop and provide guidance for a communication strategy;
    - Develop and provide guidance for a social media campaign;
    - Develop various news releases;
    - Develop content to update the District website;
    - Develop recycled water user materials; and
    - Develop scripts for video content.
- Selection of a public relations firm or a video specialty firm to:
    - Develop short videos about drinking water, recycled water, and sewer service based on the topics discussed on May 22nd.

The District staff is in the process of preparing a revised Request for Proposals that will be presented at the board workshop.

Director Comments

Yucaipa Valley Water District

Adjournment

Yucaipa Valley Water District

Yucaipa Valley Water District

FACTS ABOUT THE YUCAIPA VALLEY WATER DISTRICT

Service Area Size: 40 square miles (sphere of influence is 68 square miles)

Elevation Change: 3,140 foot elevation change (from 2,044 to 5,184 feet)

Number of Employees:
5 elected board members
62 full time employees

Operating Budget:
Water Division - $13,397,500
Sewer Division - $11,820,000
Recycled Water Division - $537,250
Total Annual Budget - $25,754,750

Number of Services:
12,434 water connections serving 17,179 units
13,559 sewer connections serving 20,519 units
64 recycled water connections

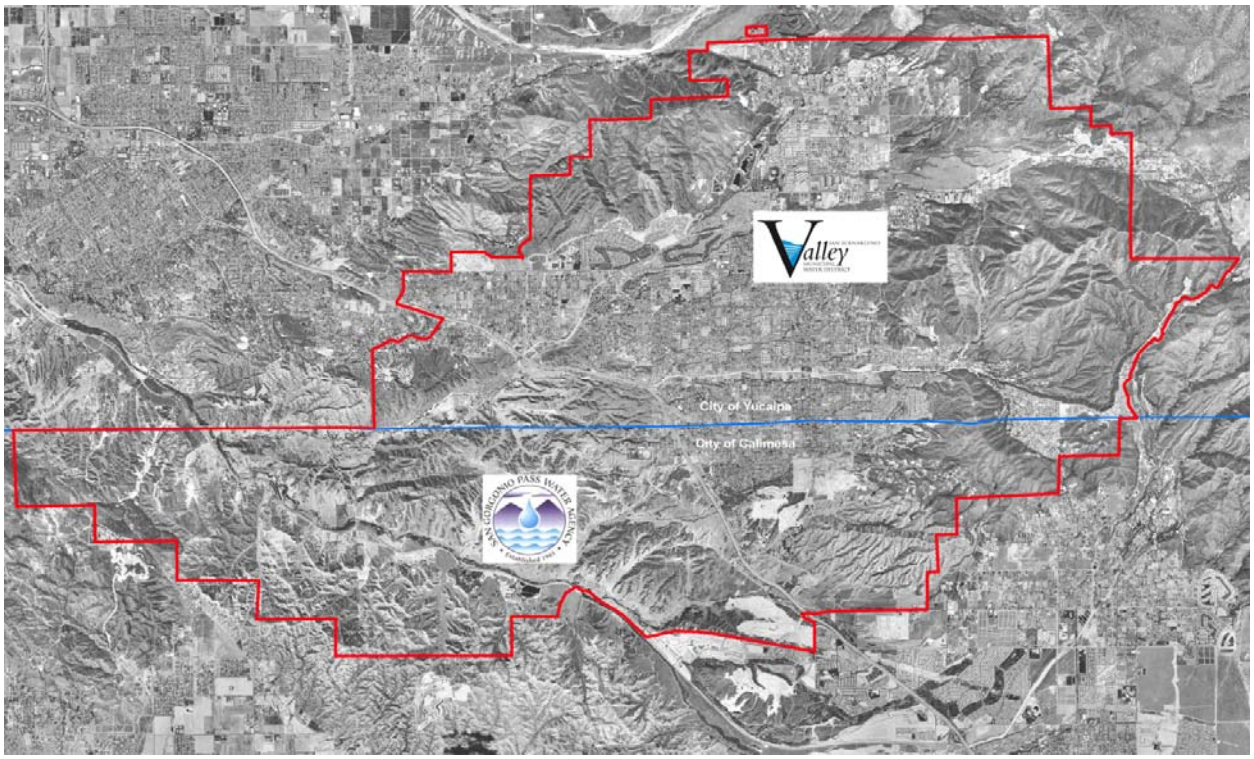
Water System:
215 miles of drinking water pipelines
27 reservoirs - 34 million gallons of storage capacity
18 pressure zones
12,000 ac-ft annual water demand (3.9 billion gallons)
Two water filtration facilities:
- 1 mgd at Oak Glen Surface Water Filtration Facility
- 12 mgd at Yucaipa Valley Regional Water Filtration Facility

Sewer System:
8.0 million gallon treatment capacity - current flow at 4.0 mgd
205 miles of sewer mainlines
5 sewer lift stations
4,500 ac-ft annual recycled water prod. (1.46 billion gallons)

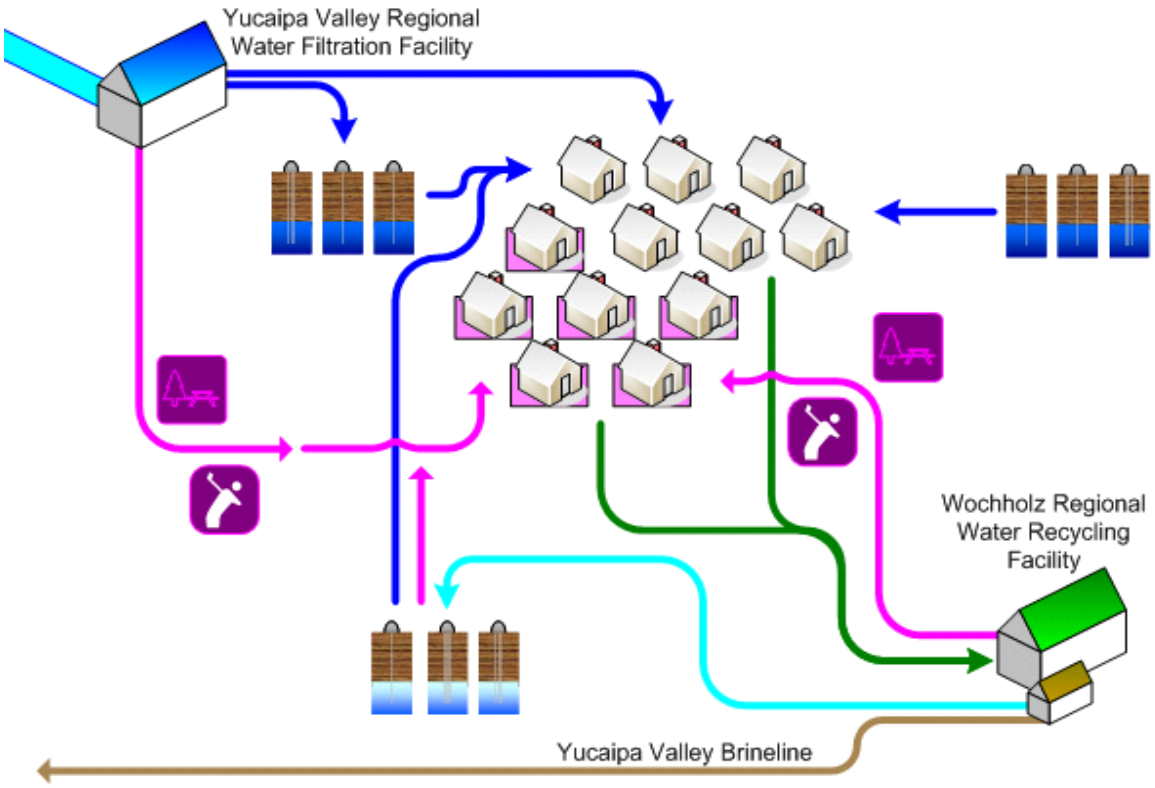
Recycled Water:
22 miles of recycled water pipelines
5 reservoirs - 12 million gallons of storage
1,200 ac-ft annual recycled demand (0.4 billion gallons)

Brine Disposal:
2.2 million gallon desalination facility at sewer treatment plant
1.108 million gallons of Inland Empire Brine Line capacity
0.295 million gallons of treatment capacity in Orange County

State Water Contractors: San Bernardino Valley Municipal Water District
San Gorgonio Pass Water Agency



Sustainability Plan: A Strategic Plan for a Sustainable Future: The Integration and Preservation of Resources, adopted on August 20, 2008.



Yucaipa Valley Water District

THE MEASUREMENT OF WATER PURITY

One part per hundred is generally represented by the percent (%).
This is equivalent to about fifteen minutes out of one day.

One part per thousand denotes one part per 1000 parts.
This is equivalent to about one and a half minutes out of one day.

One part per million (**ppm**) denotes one part per 1,000,000 parts.
This is equivalent to about 32 seconds out of a year.

One part per billion (**ppb**) denotes one part per 1,000,000,000 parts.
This is equivalent to about three seconds out of a century.

One part per trillion (**ppt**) denotes one part per 1,000,000,000,000 parts.
This is equivalent to about three seconds out of every hundred thousand years.

One part per quadrillion (**ppq**) denotes one part per 1,000,000,000,000,000 parts.
This is equivalent to about two and a half minutes out of the age of the Earth (4.5 billion years).

Yucaipa Valley Water District

GLOSSARY OF COMMONLY USED TERMS

Every profession has specialized terms which generally evolve to facilitate communication between individuals. The routine use of these terms tends to exclude those who are unfamiliar with the particular specialized language of the group. Sometimes jargon can create communication cause difficulties where professionals in related fields use different terms for the same phenomena.

Below are commonly used water terms and abbreviations with commonly used definitions. If there is any discrepancy in definitions, the District's Regulations Governing Water Service is the final and binding definition.

Acre Foot of Water - The volume of water (325,850 gallons, or 43,560 cubic feet) that would cover an area of one acre to a depth of 1 foot.

Activated Sludge Process – A secondary biological sewer treatment process where bacteria reproduce at a high rate with the introduction of excess air or oxygen, and consume dissolved nutrients in the wastewater.

Annual Water Quality Report - The document is prepared annually and provides information on water quality, constituents in the water, compliance with drinking water standards and educational material on tap water. It is also referred to as a Consumer Confidence Report (CCR).

Aquifer - The natural underground area with layers of porous, water-bearing materials (sand, gravel) capable of yielding a supply of water; see Groundwater basin.

Backflow - The reversal of water's normal direction of flow. When water passes through a water meter into a home or business it should not reverse flow back into the water mainline.

Best Management Practices (BMPs) - Methods or techniques found to be the most effective and practical means in achieving an objective. Often used in the context of water conservation.

Biochemical Oxygen Demand (BOD) – The amount of oxygen used when organic matter undergoes decomposition by microorganisms. Testing for BOD is done to assess the amount of organic matter in water.

Biosolids – Biosolids are nutrient rich organic and highly treated solid materials produced by the sewer treatment process. This high-quality product can be used as a soil amendment on farm land or further processed as an earth-like product for commercial and home gardens to improve and maintain fertile soil and stimulate plant growth.

Catch Basin – A chamber usually built at the curb line of a street, which conveys surface water for discharge into a storm sewer.

Capital Improvement Program (CIP) – Projects for repair, rehabilitation, and replacement of assets. Also includes treatment improvements, additional capacity, and projects for the support facilities.

Collector Sewer – The first element of a wastewater collection system used to collect and carry wastewater from one or more building sewer laterals to a main sewer.

Coliform Bacteria – A group of bacteria found in the intestines of humans and other animals, but also occasionally found elsewhere and is generally used as an indicator of sewage pollution.

Combined Sewer Overflow – The portion of flow from a combined sewer system, which discharges into a water body from an outfall located upstream of a wastewater treatment plant, usually during wet weather conditions.

Combined Sewer System– Generally older sewer systems designed to convey both sewage and storm water into one pipe to a wastewater treatment plant.

Conjunctive Use - The coordinated management of surface water and groundwater supplies to maximize the yield of the overall water resource. Active conjunctive use uses artificial recharge, where surface water is intentionally percolated or injected into aquifers for later use. Passive conjunctive use is to simply rely on surface water in wet years and use groundwater in dry years.

Consumer Confidence Report (CCR) - see Annual Water Quality Report.

Cross-Connection - The actual or potential connection between a potable water supply and a non-potable source, where it is possible for a contaminant to enter the drinking water supply.

Disinfection By-Products (DBPs) - The category of compounds formed when disinfectants in water systems react with natural organic matter present in the source water supplies. Different disinfectants produce different types or amounts of disinfection byproducts. Disinfection byproducts for which regulations have been established have been identified in drinking water, including trihalomethanes, haloacetic acids, bromate, and chlorite

Drought - a period of below average rainfall causing water supply shortages.

Dry Weather Flow – Flow in a sanitary sewer during periods of dry weather in which the sanitary sewer is under minimum influence of inflow and infiltration.

Fire Flow - The ability to have a sufficient quantity of water available to the distribution system to be delivered through fire hydrants or private fire sprinkler systems.

Gallons per Capita per Day (GPCD) - A measurement of the average number of gallons of water use by the number of people served each day in a water system. The calculation is made by dividing the total gallons of water used each day by the total number of people using the water system.

Groundwater Basin - An underground body of water or aquifer defined by physical boundaries.

Groundwater Recharge - The process of placing water in an aquifer. Can be a naturally occurring process or artificially enhanced.

Hard Water - Water having a high concentration of minerals, typically calcium and magnesium ions.

Hydrologic Cycle - The process of evaporation of water into the air and its return to earth in the form of precipitation (rain or snow). This process also includes transpiration from plants, percolation into the ground, groundwater movement, and runoff into rivers, streams and the ocean; see Water cycle.

Infiltration – Water other than sewage that enters a sewer system and/or building laterals from the ground through defective pipes, pipe joints, connections, or manholes. Infiltration does not include inflow. See *Inflow.*

Inflow - Water other than sewage that enters a sewer system and building sewer from sources such as roof vents, yard drains, area drains, foundation drains, drains from springs and swampy areas, manhole covers, cross connections between storm drains and sanitary sewers, catch basins, cooling towers, storm waters, surface runoff, street wash waters, or drainage. Inflow does not include infiltration. See *Infiltration*.

Inflow / Infiltration (I/I) – The total quantity of water from both inflow and infiltration.

Mains, Distribution - A network of pipelines that delivers water (drinking water or recycled water) from transmission mains to residential and commercial properties, usually pipe diameters of 4" to 16".

Mains, Transmission - A system of pipelines that deliver water (drinking water or recycled water) from a source of supply the distribution mains, usually pipe diameters of greater than 16".

Meter - A device capable of measuring, in either gallons or cubic feet, a quantity of water delivered by the District to a service connection.

Overdraft - The pumping of water from a groundwater basin or aquifer in excess of the supply flowing into the basin. This pumping results in a depletion of the groundwater in the basin which has a net effect of lowering the levels of water in the aquifer.

Peak Flow – The maximum flow that occurs over a specific length of time (e.g., daily, hourly, instantaneously).

Pipeline - Connected piping that carries water, oil or other liquids. See Mains, Distribution and Mains, Transmission.

Point of Responsibility, Metered Service - The connection point at the outlet side of a water meter where a landowner's responsibility for all conditions, maintenance, repairs, use and replacement of water service facilities begins, and the District's responsibility ends.

Potable Water - Water that is used for human consumption and regulated by the California Department of Public Health.

Pressure Reducing Valve - A device used to reduce the pressure in a domestic water system when the water pressure exceeds desirable levels.

Pump Station - A drinking water or recycled water facility where pumps are used to push water up to a higher elevation or different location.

Reservoir - A water storage facility where water is stored to be used at a later time for peak demands or emergencies such as fire suppression. Drinking water and recycled water systems will typically use concrete or steel reservoirs. The State Water Project system considers lakes, such as Shasta Lake and Folsom Lake to be water storage reservoirs.

Runoff - Water that travels downward over the earth's surface due to the force of gravity. It includes water running in streams as well as over land.

Sanitary Sewer System - Sewer collection system designed to carry sewage, consisting of domestic, commercial, and industrial wastewater. This type of system is not designed nor intended to carry water from rainfall, snowmelt, or groundwater sources. See *Combined Sewer System*.

Sanitary Sewer Overflow – Overflow from a sanitary sewer system caused when total wastewater flow exceeds the capacity of the system. See *Combined Sewer Overflow*.

Santa Ana River Interceptor (SARI) Line – A regional brine line designed to convey 30 million gallons per day of non-reclaimable wastewater from the upper Santa Ana River basin to the sewer treatment plant operated by Orange County Sanitation District.

Secondary Treatment – Biological sewer treatment, particularly the activated-sludge process, where bacteria and other microorganisms consume dissolved nutrients in wastewater.

Supervisory Control and Data Acquisition (SCADA) - A computerized system which provides the ability to remotely monitor and control water system facilities such as reservoirs, pumps and other elements of water delivery.

Service Connection - The water piping system connecting a customer's system with a District water main beginning at the outlet side of the point of responsibility, including all plumbing and equipment located on a parcel required for the District's provision of water service to that parcel.

Sludge – Untreated solid material created by the treatment of sewage.

Smart Irrigation Controller - A device that automatically adjusts the time and frequency which water is applied to landscaping based on real-time weather such as rainfall, wind, temperature and humidity.

Special District - A political subdivision of a state established to provide a public services, such as water supply or sanitation, within a specific geographic area.

Surface Water - Water found in lakes, streams, rivers, oceans or reservoirs behind dams.

Total Suspended Solids (TSS) – The amount of solids floating and in suspension in water or sewage.

Transpiration - The process by which water vapor is released into the atmosphere by living plants.

Trickling Filter – A biological secondary treatment process in which bacteria and other microorganisms, growing as slime on the surface of rocks or plastic media, consume nutrients in primary treated sewage as it trickles over them.

Underground Service Alert (USA) - A free service that notifies utilities such as water, telephone, cable and sewer companies of pending excavations within the area (dial 8-1-1 at least 2 working days before you dig).

Urban Runoff - Water from city streets and domestic properties that typically carries pollutants into the storm drains, rivers, lakes, and oceans.

Valve - A device that regulates, directs or controls the flow of water by opening, closing or partially obstructing various passageways.

Wastewater – Any water that enters the sanitary sewer.

Water Banking - The practice of actively storing or exchanging in-lieu surface water supplies in available groundwater basin storage space for later extraction and use by the storing party or for sale or exchange to a third party. Water may be banked as an independent operation or as part of a conjunctive use program.

Water cycle - The continuous movement water from the earth's surface to the atmosphere and back again; see Hydrologic cycle.

Water Pressure - Pressure created by the weight and elevation of water and/or generated by pumps that deliver water to the tap.

Water Service Line - The pipeline that delivers potable water to a residence or business from the District's water system. Typically the water service line is a 1" to 1½" diameter pipe for residential properties.

Watershed - A region or land area that contributes to the drainage or catchment area above a specific point on a stream or river.

Water Table - The upper surface of the zone of saturation of groundwater in an unconfined aquifer.

Water Transfer - A transaction, in which a holder of a water right or entitlement voluntarily sells/exchanges to a willing buyer the right to use all or a portion of the water under that water right or entitlement.

Water Well - A hole drilled into the ground to tap an underground water aquifer.

Wetlands - Lands which are fully saturated or under water at least part of the year, like seasonal vernal pools or swamps.

Wet Weather Flow – Dry weather flow combined with stormwater introduced into a combined sewer system, and dry weather flow combined with infiltration/inflow into a separate sewer system.

Yucaipa Valley Water District

COMMONLY USED ABBREVIATIONS

AQMD	Air Quality Management District
BOD	Biochemical Oxygen Demand
CARB	California Air Resources Board
CCTV	Closed Circuit Television
CWA	Clean Water Act
EIR	Environmental Impact Report
EPA	U.S. Environmental Protection Agency
FOG	Fats, Oils, and Grease
GPD	Gallons per day
MGD	Million gallons per day
O & M	Operations and Maintenance
OSHA	Occupational Safety and Health Administration
POTW	Publicly Owned Treatment Works
PPM	Parts per million
RWQCB	Regional Water Quality Control Board
SARI	Santa Ana River Inceptor
SAWPA	Santa Ana Watershed Project Authority
SBVMWD	San Bernardino Valley Municipal Water District
SCADA	Supervisory Control and Data Acquisition system
SSMP	Sanitary Sewer Management Plan
SSO	Sanitary Sewer Overflow
SWRCB	State Water Resources Control Board
TDS	Total Dissolved Solids
TMDL	Total Maximum Daily Load
TSS	Total Suspended Solids
WDR	Waste Discharge Requirements
YVWD	Yucaipa Valley Water District