

State Opportunities & Historical Recycled Water Development

SOCWA ENGINEERING COMMITTEE | JANUARY 12, 2023

AGENDA ITEM 5

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Drivers & Purpose

Drivers:

CASA Regulatory Workgroup Priority Item

Governor Newsom's California Water Supply Strategy

Purpose:

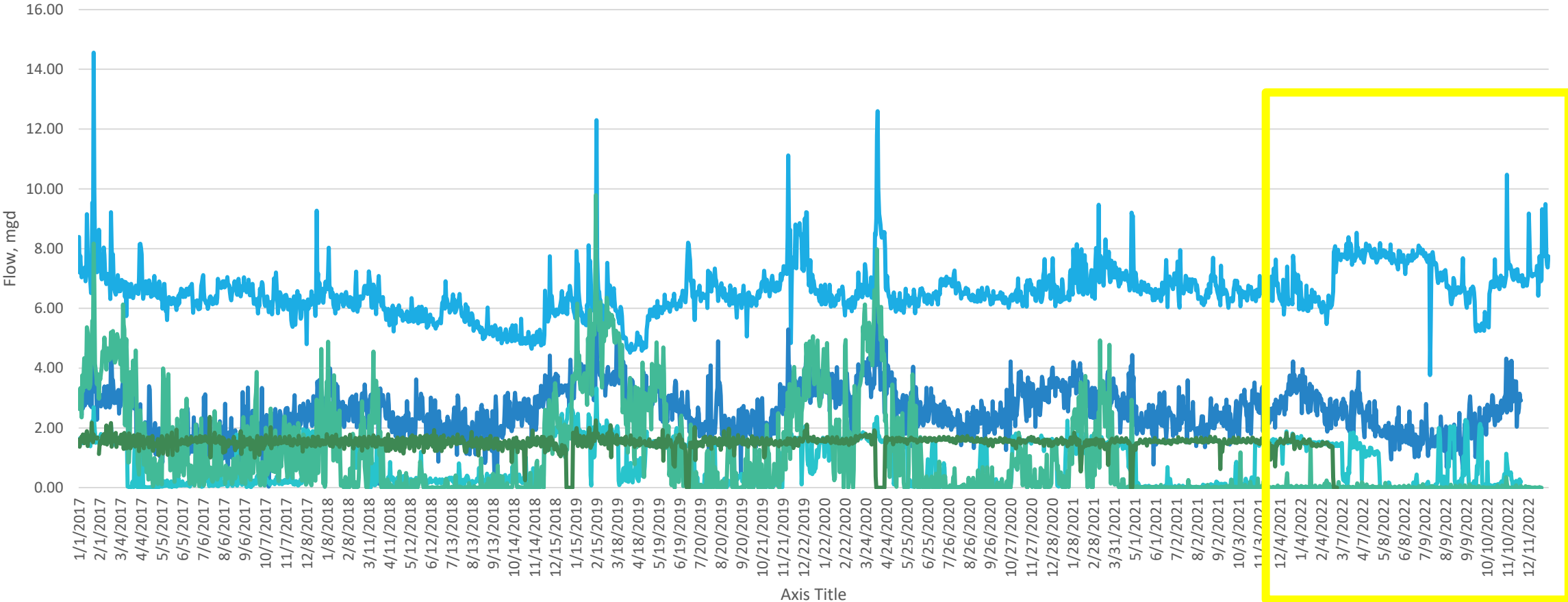
Assist agencies in permit streamlining through regional focus

Maximize beneficial uses at each outfall

Water Supply Task Force

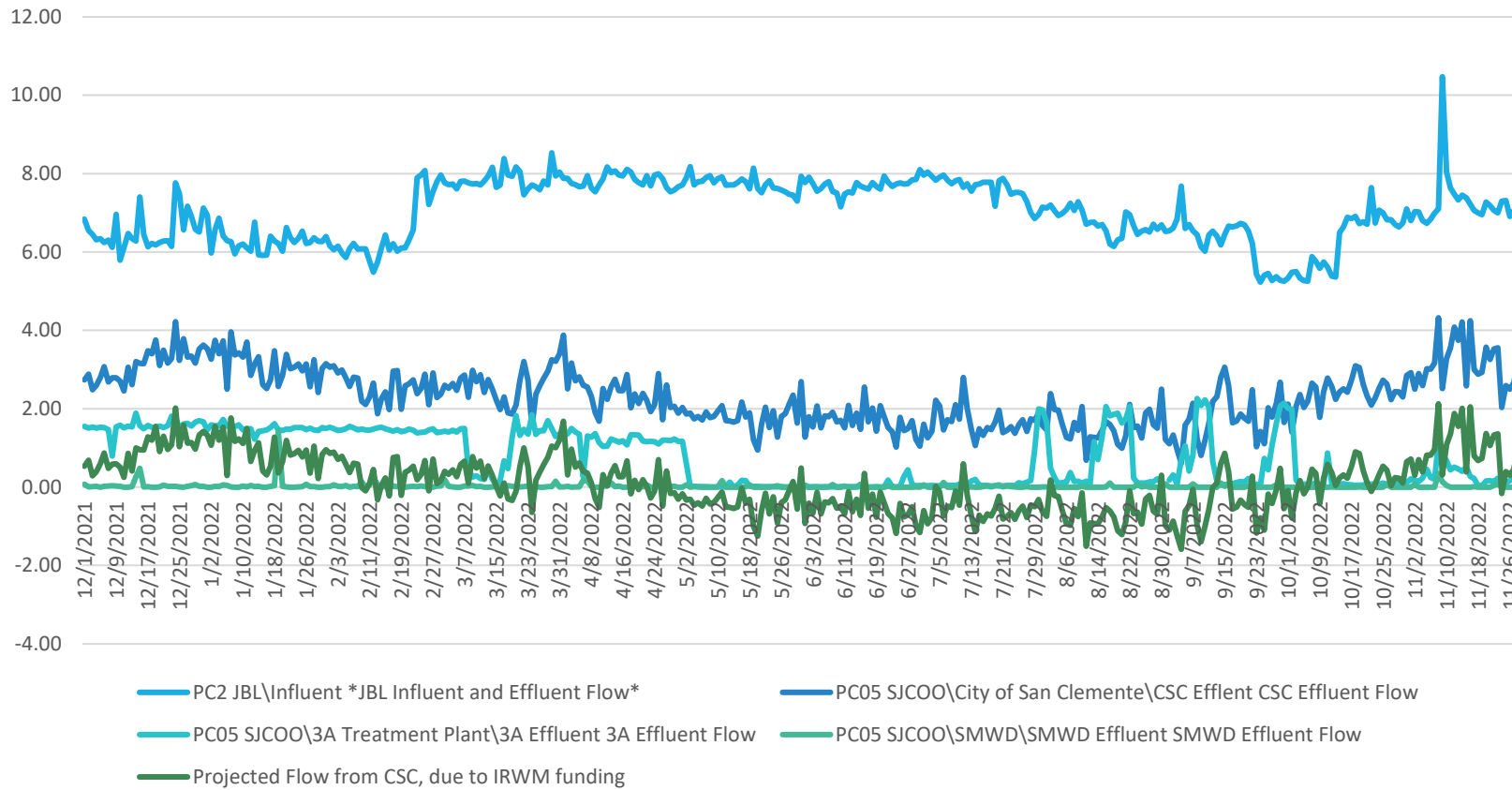
1. Assist the agencies who are currently executing projects to be operational in next 7 years to ensure no short term/imminent **permitting or funding** issues disrupt their timeline.
2. Assess opportunities for more recycling in consideration of a suite of obstacles including brine management, rates, land for siting, and the need to recapitalize existing infrastructure.

Available Effluent Flow to SJCOO 2017 to 2022



- 10533 PC2 JBL\Influent *JBL Influent and Effluent Flow*
- 10341 PC05 SJCOO\City of San Clemente\CSC Effluent CSC Effluent Flow
- 10335 PC05 SJCOO\3A Treatment Plant\3A Effluent 3A Effluent Flow
- 10342 PC05 SJCOO\SMWD\SMWD Effluent SMWD Effluent Flow
- 40360 Recycle\SMWD - OSO WRP Flow Oso Creek WRP

SJCOO 12 Month Effluent and Projected Flows



	JBL	CSC	3A	CWRP	Projected CSC due to IRWM
MG (Sum)	2570.89	844.75	274.46	8.18	41.75
AFY	7890	2592	842	25	128

Total available, estimated flow, based on permitted reports and IRWM funding.

2017 Carollo Recommendations

- Pilot test testing of cloth and media pressurized membranes performed in 2008.
- Cloth filters did not perform well.
- 2017 Recommendation of 6.2 mgd with microfiltration.
- **Goal** of 900mg/l chosen and Reverse osmosis selected as the technology to achieve goal, not regulatory requirement.
- **User** requirements to determine recycled water goal.

5.2.2 Previous Work

Several studies have been performed for SOCWA in regards to Title 22 treatment, beginning with CGVL Engineers in 2000. This work effort was ended when secondary effluent quality was deemed too poor and inconsistent for conventional processes to produce Title 22 effluent.

In 2006, CH2M HILL performed a study on technologies for advanced water treatment (AWT) and evaluated membrane bioreactors, cloth media filters, and pressurized membrane filters as potential technologies for producing Title 22 effluent. The study concluded that MBR technology would be too costly to implement at JBLTP and was not evaluated further. Both cloth media filtration and pressurized membrane filters were further evaluated due to similar cost and relatively small footprint. This study noted that little information existed at the time on how cloth media filters would perform at a facility operating under non-nitrifying solids retention times (SRTs). Subsequently, CH2M HILL recommended that pilot testing of cloth media and pressurized membrane filters be done at JBLTP.

Pilot tests were performed in 2008 and showed definitively that cloth media filters did not perform well at JBLTP. However, pressurized membranes worked well during pilot testing, which led to a second technical memo where CH2M HILL updated their 2006 study based on pilot testing results. This 2009 memo further investigated the feasibility of producing Title 22 effluent with pressurized membrane filters (microfiltration) with low-pressure, high-intensity ultraviolet (UV) disinfection. This effort was eventually ended due to projected costs.

5.2.3 Salt Issues

Previous work related to Title 22 effluent has not addressed the high total dissolved solids (TDS) in JBLTP's secondary effluent. Per SOCWA at the Effluent Management Meeting, Plant 1 typically produces secondary effluent with 1,000 mg/L to 1,100 mg/L TDS, and Plant 2 normally produces 2,000 mg/L TDS. For the purpose of this evaluation, SOCWA advised that a non-potable effluent goal of 900 mg/L TDS should be used for process evaluation. This goal necessitates the use of microfiltration/ultrafiltration (MF/UF) with side-stream reverse osmosis (RO) to reduce overall TDS in Title 22 effluent to 900 mg/L. Previous work by CH2M HILL, at JBLTP, has shown that cloth media filters perform poorly at JBLTP and were therefore excluded from possible Title 22 treatment trains. Sand filters are also excluded from consideration at JBLTP due to their large footprint.

5.3 TREATMENT REGULATIONS

Any future water reuse project must meet the applicable public health criteria for either non-potable and potable water reuse, depending on the selected reuse application. Further, any new water reuse project must not cause exceedances in the JBLTP's discharge permit.

NON-POTABLE TREATMENT TRAINS

Treatment Train	Cost	Performance	Notes
Cloth Filtration with Hypochlorite	Lowest cost, ~\$1M-\$2M/mgd	Needs high water quality feed to cloth filtration. Ammonia impacts performance	UV can be substituted for hypo for better disinfection at a similar cost
Deep Bed Filtration with UV	~\$1.5M-\$2.5M/mgd	Can handle wide range of water quality and meet permit	
Membrane Filtration with Ozone	\$2.5M-\$3.5M/mgd	Extremely robust, handles pathogens and trace pollutants	UV can be substituted for ozone, reducing cost but also reducing pollutant removal
Any Filtration with Pasteurization	Cost varies depending upon cost of power and availability of waste heat	Extremely robust for pathogens	

Design/Production Phase Cost

- \$2.5M-\$3.5M/mgd cost estimate in 2017.
- ~\$17.6M-24.6M for immediate production of recycled water.
- Engineering Cost estimate would need to be updated.

Projects for Discussion with Task Force

Ask of the Committee:

1. Learning curve big projects

JB Latham AWT Design & Funding History

2000 CGvL Preliminary Design

2001 CH2MHill AWT Advanced Wastewater Treatment Facilities Final Design

2006 CH2MHill Preliminary Design

2007 MND/EIR for AWT

2008 CH2MHill J.B. Latham Treatment Plant AWT Pilot Study

2008 J.B. Latham Treatment Plant AWT Facility State Revolving Fund Application Assistance

2009 Bid Package – Membrane System for the J.B. Latham Treatment Plant Advanced Wastewater Treatment Facility

2009 Bid Package – UV Disinfection System for the J.B. Latham Treatment Plant Advanced Wastewater Treatment Facility

2013 Facility Improvement Plan TM-7 Section 6.0 Advanced Water Treatment Plan

2017 JBLTP Package B Planning Technical Memorandum No. 1 Liquid Treatment Train Analysis

Thank you!

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