



A Vision for Recycled Water at Oro Loma

Jason Warner

WaterReuse Association Northern California Chapter Meeting

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Oro Loma Sanitary District



Agenda



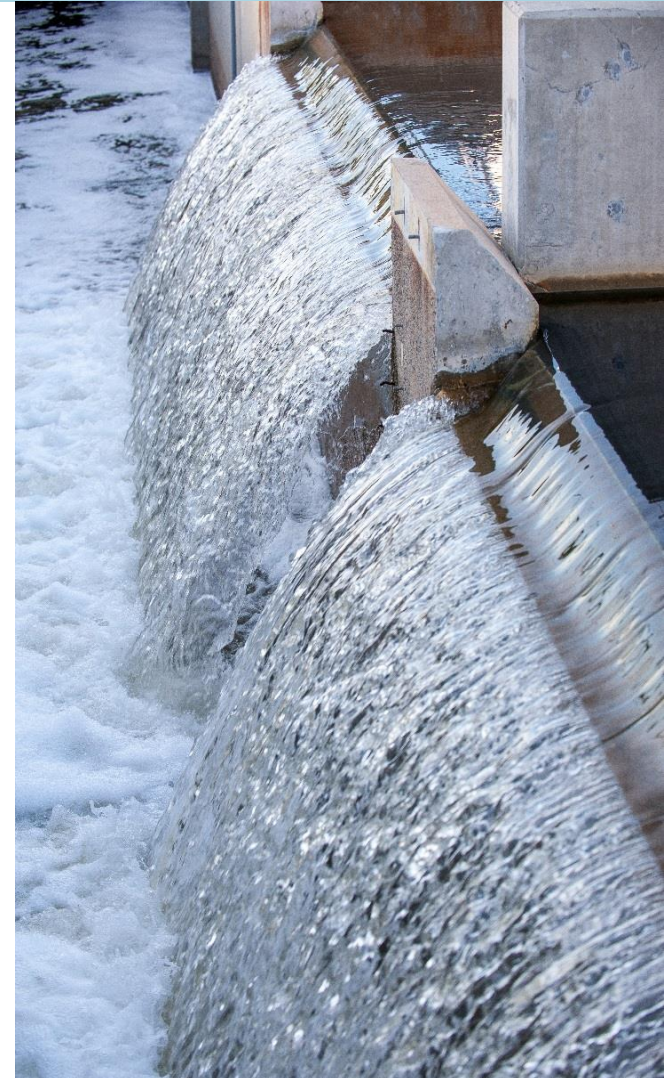
- A Big Thanks – Sara Rhodes
- Background
- Status of the Study
- Review of Leading Alternatives
- Next Steps
- We are hiring!



Background

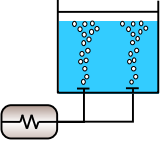
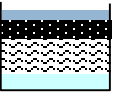


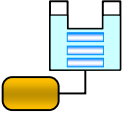


- GWR – Groundwater Recharge
- SWA – Surface Water Augmentation
- IPR/DPR – Indirect Potable Reuse vs. Direct Potable Reuse
- All likely scenarios require Full Advanced Treatment (FAT)



Full Advanced Treatment



	2° Effluent	Ozone	Bio Active Carbon Filter	MF	RO	UV-AOP	Total	Minimum
								
Virus	2	6	--	--	1-2	6	15-16	12 or 13
Crypto	1	2-4	--	4	1-2	6	14-17	10 or 11
Giardia	2	6	--	4	1-2	6	19-20	10 or 11
	Biological	Oxidation	Biological	Phys Rem		Phys Degradation		
	Adsorption	Chem Inactivation	Adsorption			Oxidation		
	Phys Rem		Phys Rem			Inactivation UV Light		

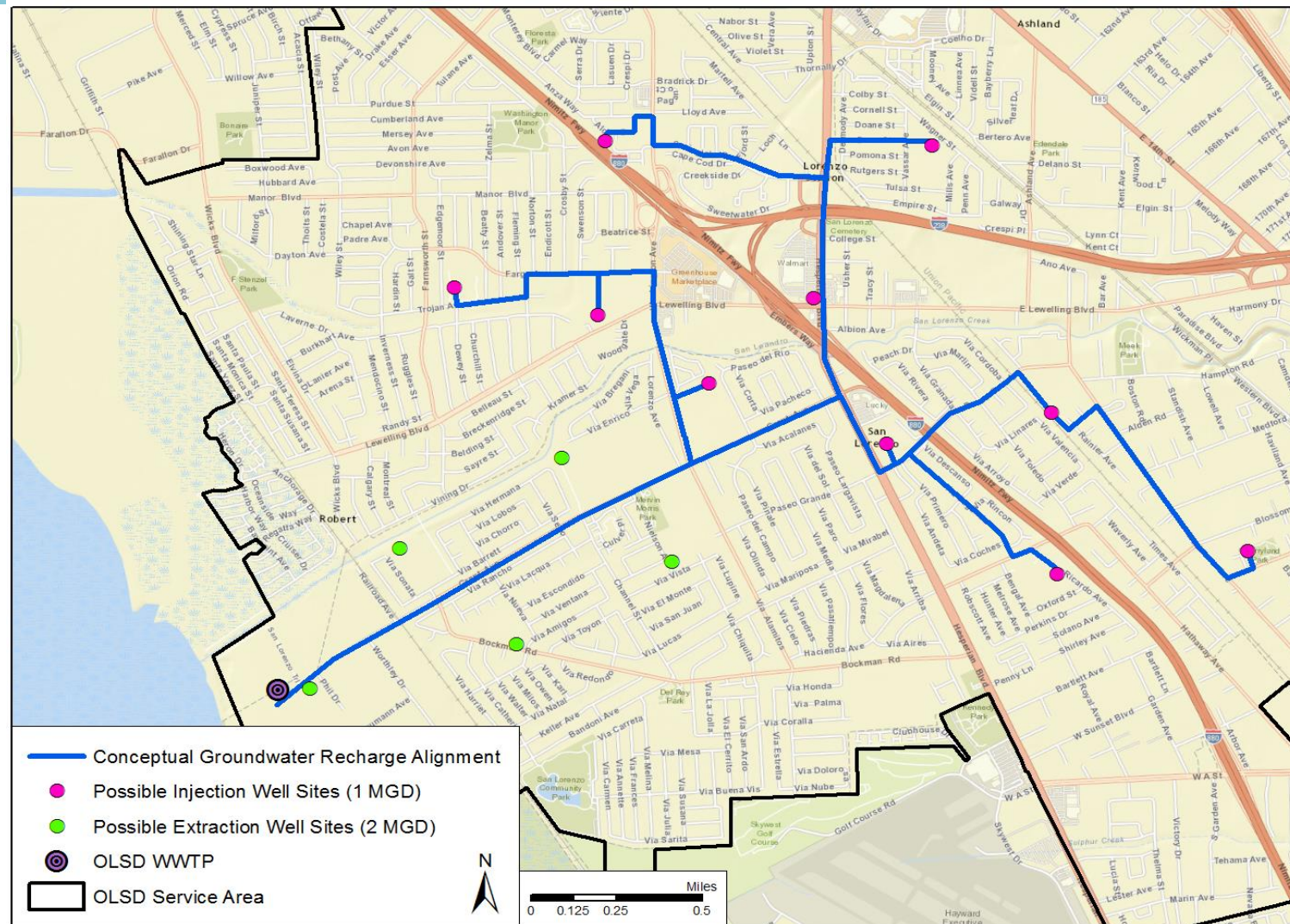
Adapted from Trussell et al., 2015

Groundwater Recharge (GWR)



- Subsurface injection in to the Southeast Bay Plain Groundwater Basin
 - Groundwater in basin moves east-west
 - Injection assumed east of OLSD WWTP
 - Preliminary travel time modeled in MODFLOW
 - 2 month modeled travel time (2 month actual) required
- Potential Project Capacity: 9 MGD
 - 10% loss to aquifer (per regulations)
 - Extraction well capacity: 2 MGD (per Bayside & ACWD wells)
 - Injection well capacity: 1 MGD (Typ ½ of extraction capacity)

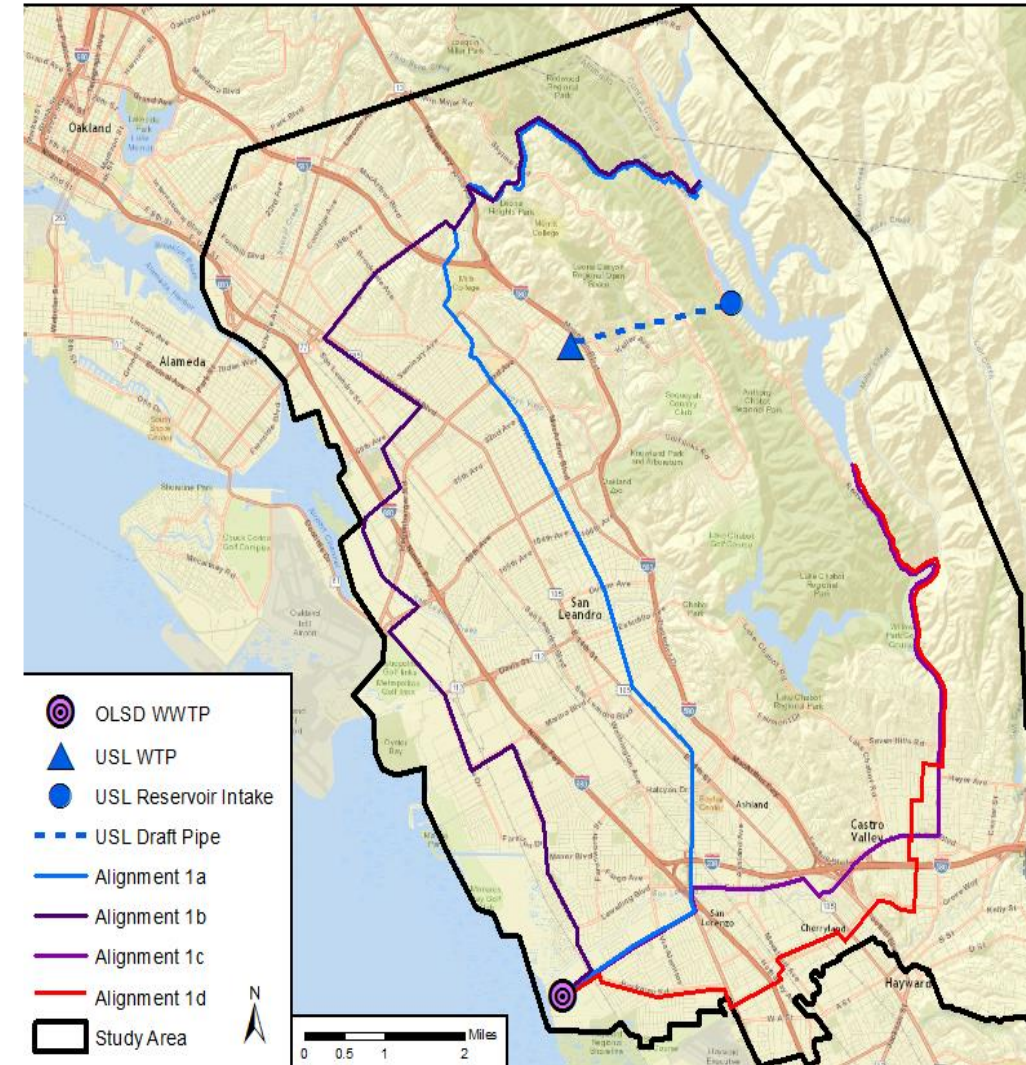
Conceptual Well Locations for GWR



Surface Water Augmentation (SWA)



- Piping water from OLSD WWTP to Upper San Leandro (USL)
 - 4 Conceptual alignments
 - 10-17 Miles 24" pipe
- Potential Project Capacity 5 MGD
 - Upper SL WTP capacity is 50 MGD
 - 1:10 Dilution





Preliminary Costs - GWR

Cost Element	Cost Range
Treatment	\$ 121 M
Conveyance	\$ 43 M
Wells	\$76 M
Total Capital Cost	\$214 M
Annual O&M Costs	\$11 M
Estimated Unit Cost (\$/AF)	\$2,200 - \$2,500

Notes:

- Potential to utilize full flow – also scalable at near linear treatment and well costs (1 MG = \$21M)
- Clear regulations exist
- 10 injection, 4 new extraction wells, & additional modeling required
- Existing marginal costs of EBMUD water are \$1,700/AF

Conclusions

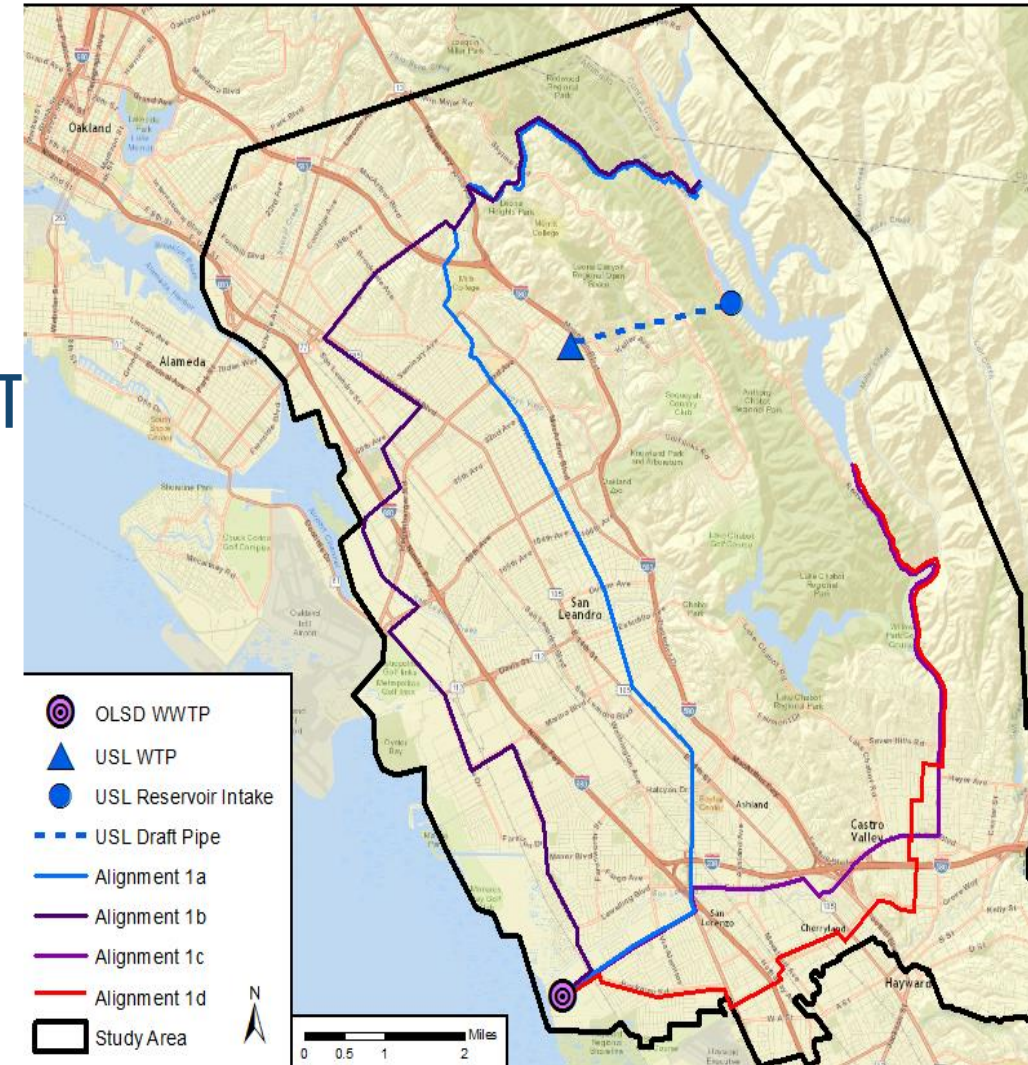


- Significant irrigation or industrial demands do not exist in the service area today.
- Recycled Water is not economically viable now. (50% over marginal EBMUD costs)
- Expectations are that this will change in 10-20 years. (see Hetch Hetchy – SFPUC)
- More stringent effluent limits may decrease the incremental cost to deliver Full Advanced Treatment.

New Developments



- Social Justice
- Changing Board
- Hampton Road SD – Ted Henifin - SWIFT
- Hertzberg: 95% diversion?
- Nutrient Optimization Project



Recommendations Considered But Not Put Forward



- Adopt policy to put recycled pipe in ground when sewer trench is open along likely alignment.
- Develop a “Vision 2040” for Recycled Water in Oro Loma. Begin communicating the vision through video and web outreach.
- Set goal of recycling 10% of effluent in 10 years.
- Join Western Water Coalition, support lobbying efforts for more RW funding, and seek grant funds for projects (Typically up to 35% available).
- Identify likely injection sites. Seek opportunities with San Lorenzo schools, Hayward Area Recreation District, Caltrans, or other partners to reserve land.

Recommendations



- Consider likely potential for reduced flow, brine, and UV systems in EBDA negotiations and Electrical System Master Planning.
- Partner with EBMUD to insure that recycled water is considered when evaluating potential new water sources.
- Create a simple brochure casting a potential vision for Recycled Water for Oro Loma. Create links to Recycle Water Education on our website.
- Invest in educating our staff and Board on recycled water and outreach issues.
- Wait until the economics of water recycling improves or when EBMUD wants the water.

Thank You!



This presentation represents the work of many.

Thank you for your interest.