

Chromium-6

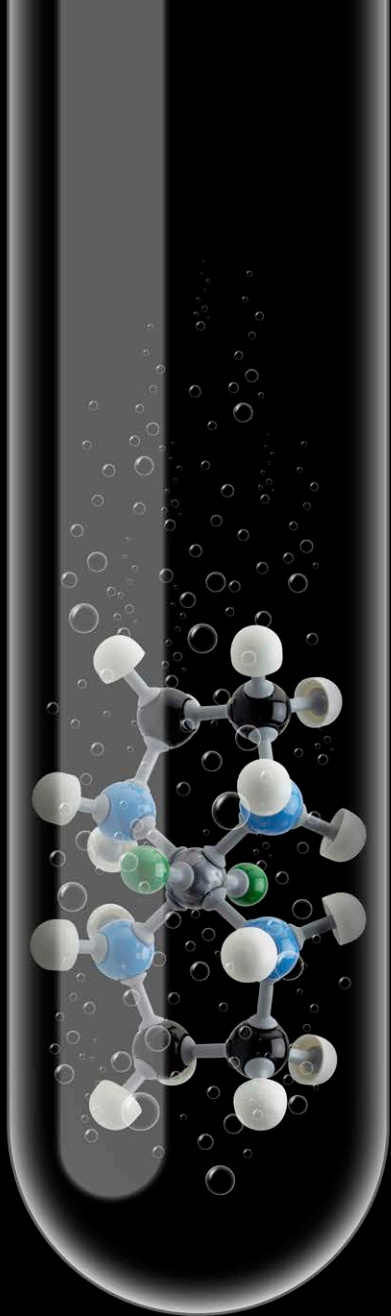
Treatment - Case Study

Tarrah Henrie
CWA Spring Conference
May 20, 2014



Other Impacted Systems

- Glendale
- Soquel Creek
- Watsonville
- Coachella Valley Water District
- Los Banos
- Woodland
- Davis



Compliance timeline

- Final July 1st
- First sample before the end of December, 2013
- Grandfather data ~ 370 wells
- Sample ~ 180 wells
- Total chromium sampling
- Treatment early in 2015



Timeline for compliance

	Q1 Dec. 2014	Q2 Mar. 2015	Q3 Jun. 2015	Q4 Sept. 2015
System A	8			
System B	10	11	11	12
System C	15	16	14	
System D	22	21		



PUC treatment

- Memorandum account
- Effective when the MCL is final



Willows ~ A Case Study

- Exclusively groundwater
- All active wells over draft MCL
- About 7,000 people
- 7 active wells
- Wells are distributed, small mains
- About 550 to 675 gpm
- Newest well drilled in 1980



Willows ~ A Case Study

Chromium-6 (ug/L)			
Year Tested	Draft MCL	Range	Average
2011-12	10	14-18	16

Total Chromium (ug/L)			
Year Tested	MCL	Range	Average
2012	50	13-30	24



Options Evaluation

- Switch to surface water
- Treat with strong-base IX
- Treat with weak-base IX
- Treat with reduction coagulation filtration





Practical considerations

- Small sites
- Hard water
- Nitrate peaking
- Need for operator friendly technology
- Wastewater plant salt issues
- Waste disposal
- Cost



Required Treatment

Strong Base Anion Exchange

CR-6 Treatment Costs for Willows

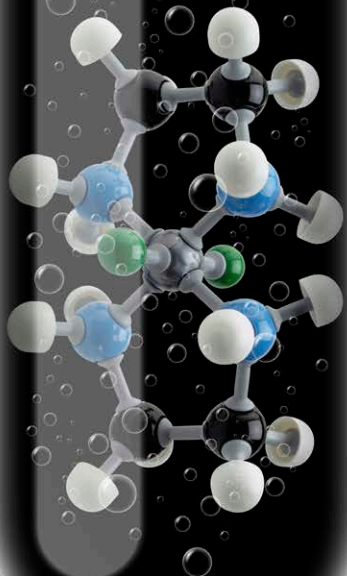
	Range	
Capital	\$8.6 million	\$17.3 million
O&M/yr	\$360,000	\$254,000



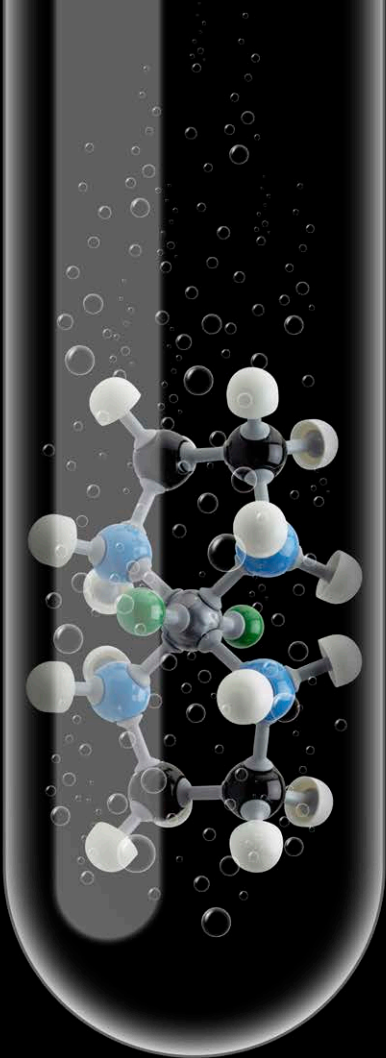
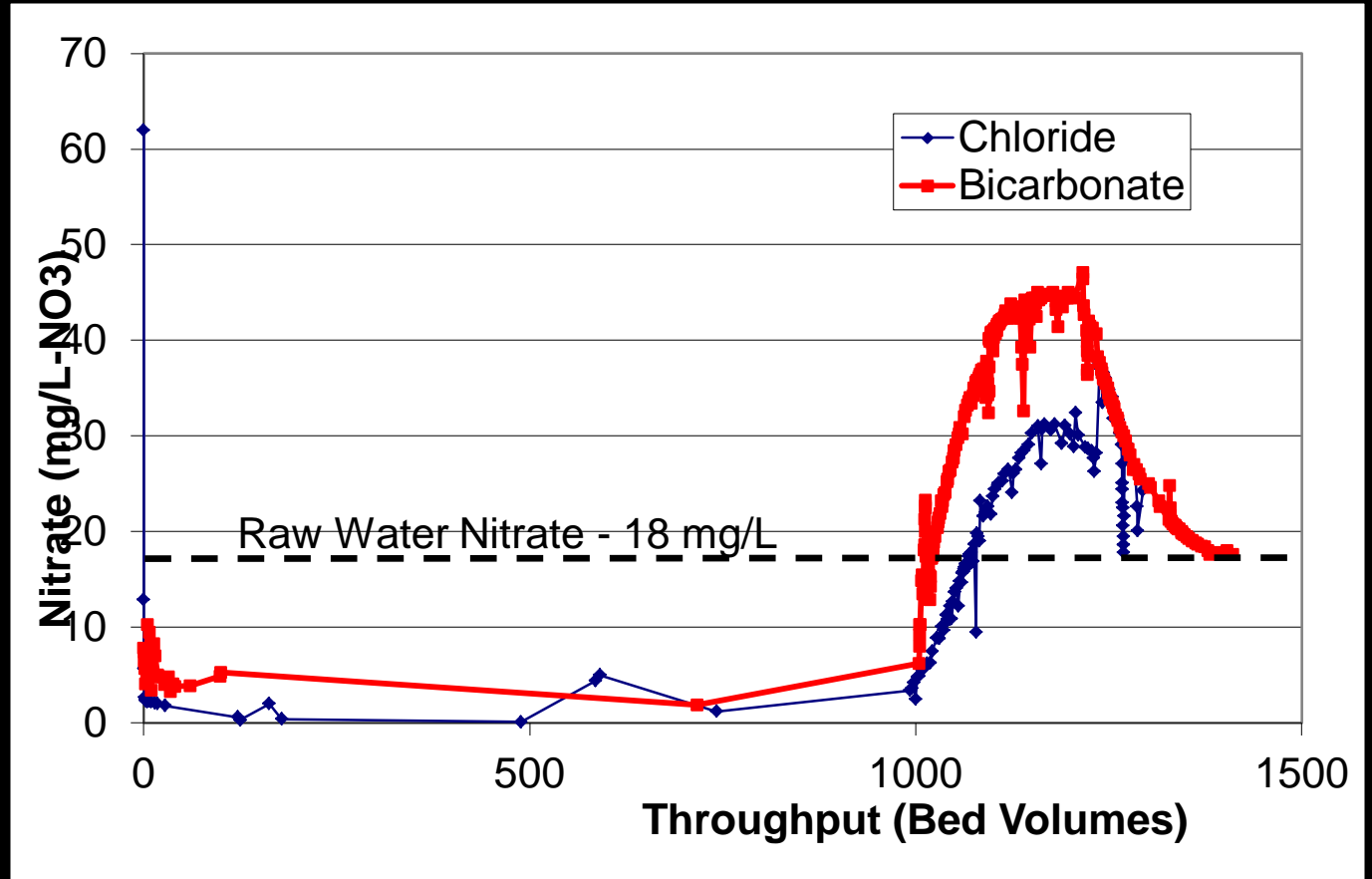
Rate Impact

CR-6 Rate Impact for Willows

	Range	
Annual	\$755	\$1,326
Monthly	\$63	\$111

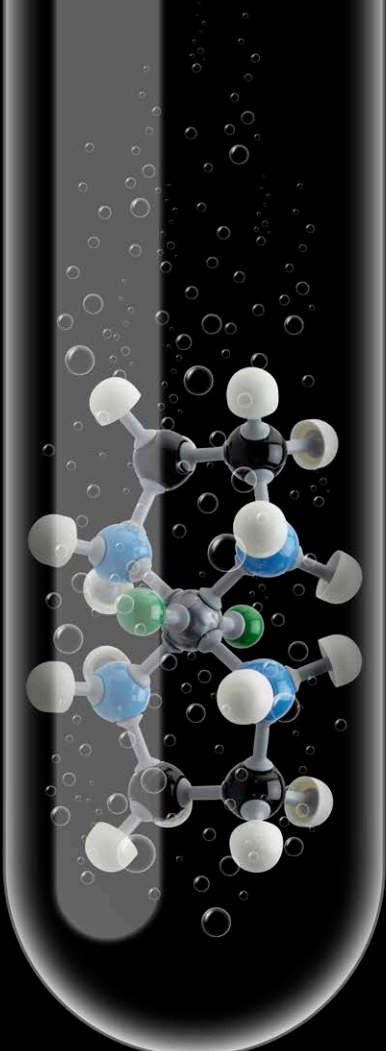
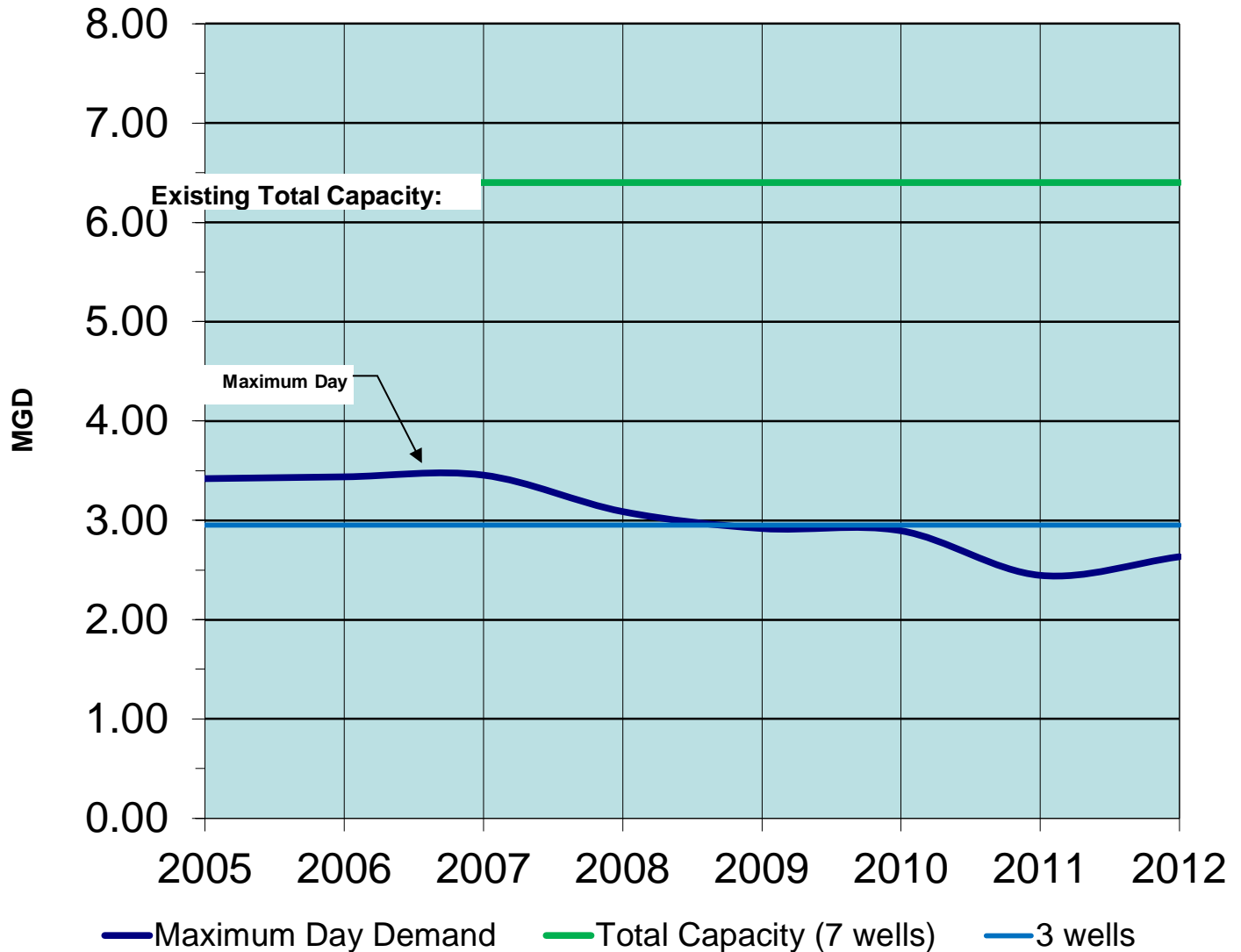


Nitrate Peaking



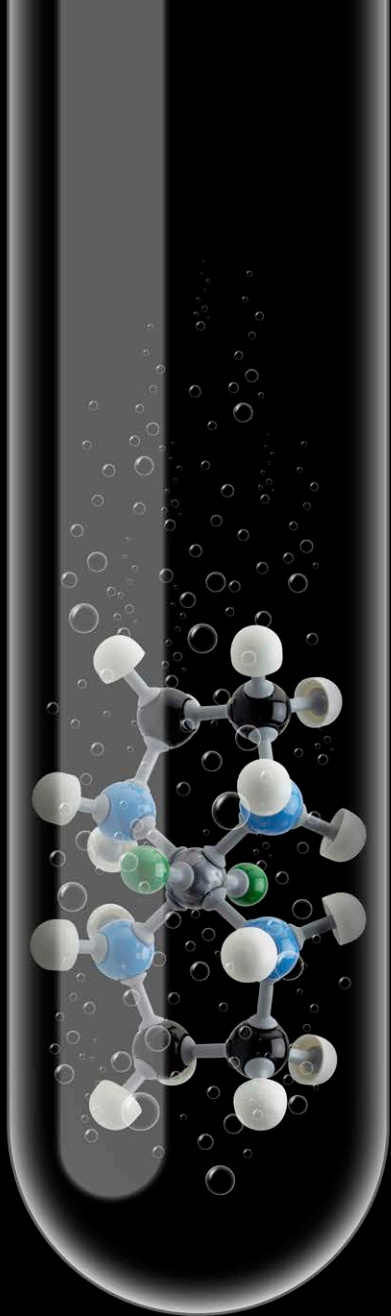
Risk Tolerance

Max Day Demand vs. Production Capacity - Willows 2005 through 2012



Acknowledgements

- Jim Simunovich
- Chad Seidel and Craig Gorman
with Jacobs Engineering



Questions?

