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# **The Economic Challenge for Addressing TCP Groundwater Contamination**

TCP Webinar, Problem assessment, treatment strategies, financing options

American Groundwater Trust

January 14, 2021



# Scope of the Challenge

- Where is the groundwater contamination?
- What is the potential price tag?
- How should remediation projects be developed and funded, especially for economically disadvantaged communities?



# State Water Resource Control Board Regulation

- In 2017, SWRCB adopted a drinking water standard for the regulation of 1,2,3 Trichloropropane (TCP) at a maximum contaminant level of 5 parts per million (ppt)
- SWRCB requires more than 4,000 public water systems to begin quarterly testing.
- If a system's four-quarter average concentrations exceed 5 ppt, it must notify customers of the violation and take corrective action and avoid future violations



# Where is the Groundwater Contamination?

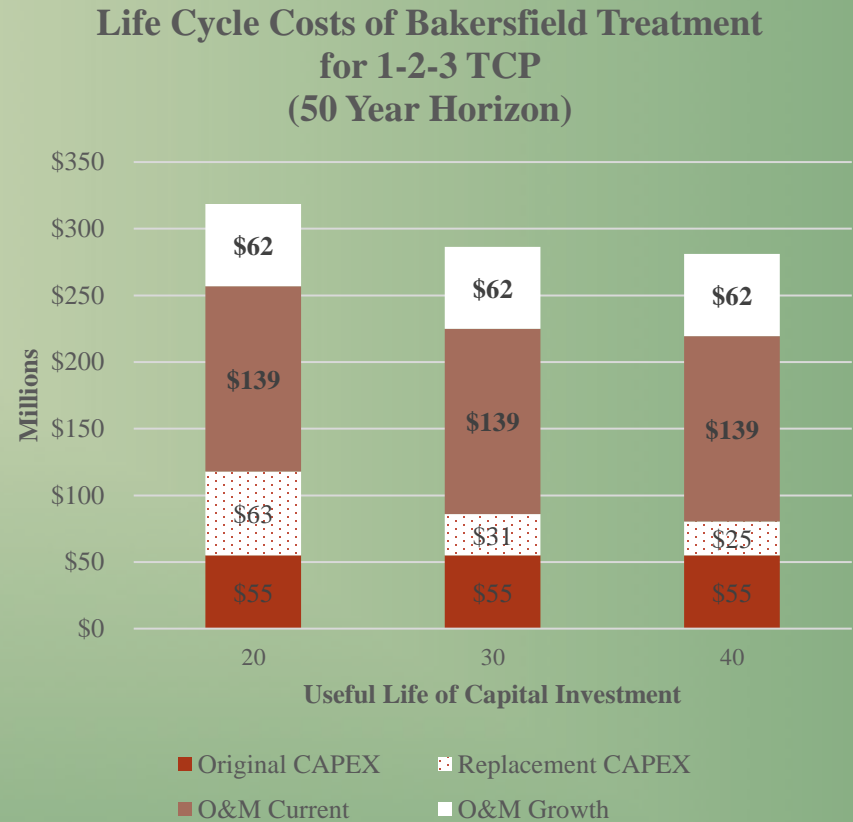
(SWRCB Data at Time of Standard Adoption)

Region	Number Water Sources Affected	>5 ppt to 50 ppt	>50 ppt to 500 ppt	>500 ppt	Number of Water Systems
Northern California	14	11	3	0	6
Central Valley	332	196	121	15	60
Central Coast	2	2	0	0	2
Southern California	214	140	28	46	26
Total	562	349	152	61	94



# City of Bakersfield Case Study

- Bakersfield approved a project to treat 41 of city's 64 wells that exceeded 5 ppt
- Capital investment cost \$55 million
- Annual O&M \$5 million
- Life Cycle costs include:
  - ❑ Initial capital investment
  - ❑ Annual O&M , subject to escalation
  - ❑ Periodic capital replacements
- Risk Assessment
  - ❑ Spread of contamination to other wells
  - ❑ Reliability of technology
  - ❑ System growth
  - ❑ Future prices for capital and O&M



# Potential Scope of the Groundwater Contamination Challenge

- Bakersfield Case Study suggests that life cycle costs exceed \$4 billion (2018)
  - ❑ Bakersfield treated 41 of the 562 designated water sources (7.3%)
  - ❑ Life cycle costs at \$295 million (average of three scenarios)
  - ❑  $\$4.05 \text{ billion} = \$295 \text{ million} / 7.3\%$
- Caveats
  - Extent of contamination problem in California differs from Bakersfield
  - Will required testing identify more water sources with concentrations above 5 ppt?



## Funding Alternatives: Rate-Payers

- Willingness to pay for solving contamination problems generated by use of TCP for industrial cleaning solvents and soil fumigate pesticides?
- Ability to pay for economically disadvantaged communities whose sources of drinking water contaminated by TCP



## Funding Alternatives: Litigation

- Upside: damages for addressing groundwater contamination
- Downside: risk, cost and delay of litigation
- Need to prepare a proposed solution to define remedy





# Funding Alternative: Grants especially for EDCs

<i>Challenge</i>	<i>Response</i>
Institutional capacity to develop, fund and operate project	Technical assistance
Defining funding gap eligible for grant funding	Ability to pay criteria



## Conceptual Solution for EDCs

- Develop a menu of proposed projects in consultation with local stakeholders and in consultation with potential project vendors
- Run competitive solicitations for identified projects
- Grants fill in difference between winning bids and local ability to pay

# Specific Steps for SWRCB

- Identify contaminated wells in EDCs
- Design SWRCB Program
- Develop White Paper for securing buy-in from EDCs with contamination problems
- Develop Request for Qualifications for firms interested in design, build, finance and operate projects
- Select qualified firms
- Develop project definitions and form contracts for each project in consultation with qualified firms
- Organize competitive solicitations as a combinatorial auction

# What is A Combinatorial Auction?

- Qualified bidders place bids on any combination of proposed projects in SWRCB program for EDCs
- A bid on a specific project can be made conditional on acceptance of bids for other projects
- The ability to combine bids allows qualified bidders to exploit economies of scale and scope across projects
- Winning bids represents the combination of vendors that address TCP contamination at the least cost
- Combinatorial auctions used in selling of radio frequencies by federal government, fishing rights in Australia and estate sales

# Policy Implementation

- Groundwater resource analysis
- Project definition
- Contractual design
- Economic assessment of alternative bids to select least cost combination
- Combinatorial auction design and implementation

# Conclusion

- TCP groundwater contamination has created a multi-billion problem for California's public water systems
- Initial capital investment represents less than 20% of life cycle project costs
- The financing challenge involves more than funding initial capital investments
- TCP contamination will especially challenge public water systems in EDCs, who lack scale, expertise and financial resources to address their challenges
- Proposed SWRCB program could develop, fund and operate comprehensive solutions to the challenge on an individual and regional basis
- The proposals provide a pathway for the private sector to address the challenges within the context of competitive solicitations
- The suite of projects can also provide the basis for remedies sought through litigation

