Brief Overview of Treatment Technologies & Introduction to Exhibitors

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June 19, 2015

Treatment Options

- Centralized Treatment – treating all water coming from a well

- Point-of-Entry Treatment – treating only water that enters a building and used for human consumption (maybe useful for businesses, schools (NTNC) or community water systems with a lot of outdoor water use)

- Point-of Use Treatment – treating only water that are used for drinking and cooking (maybe useful for small community water systems and NTNC)

Nitrate Treatment Options

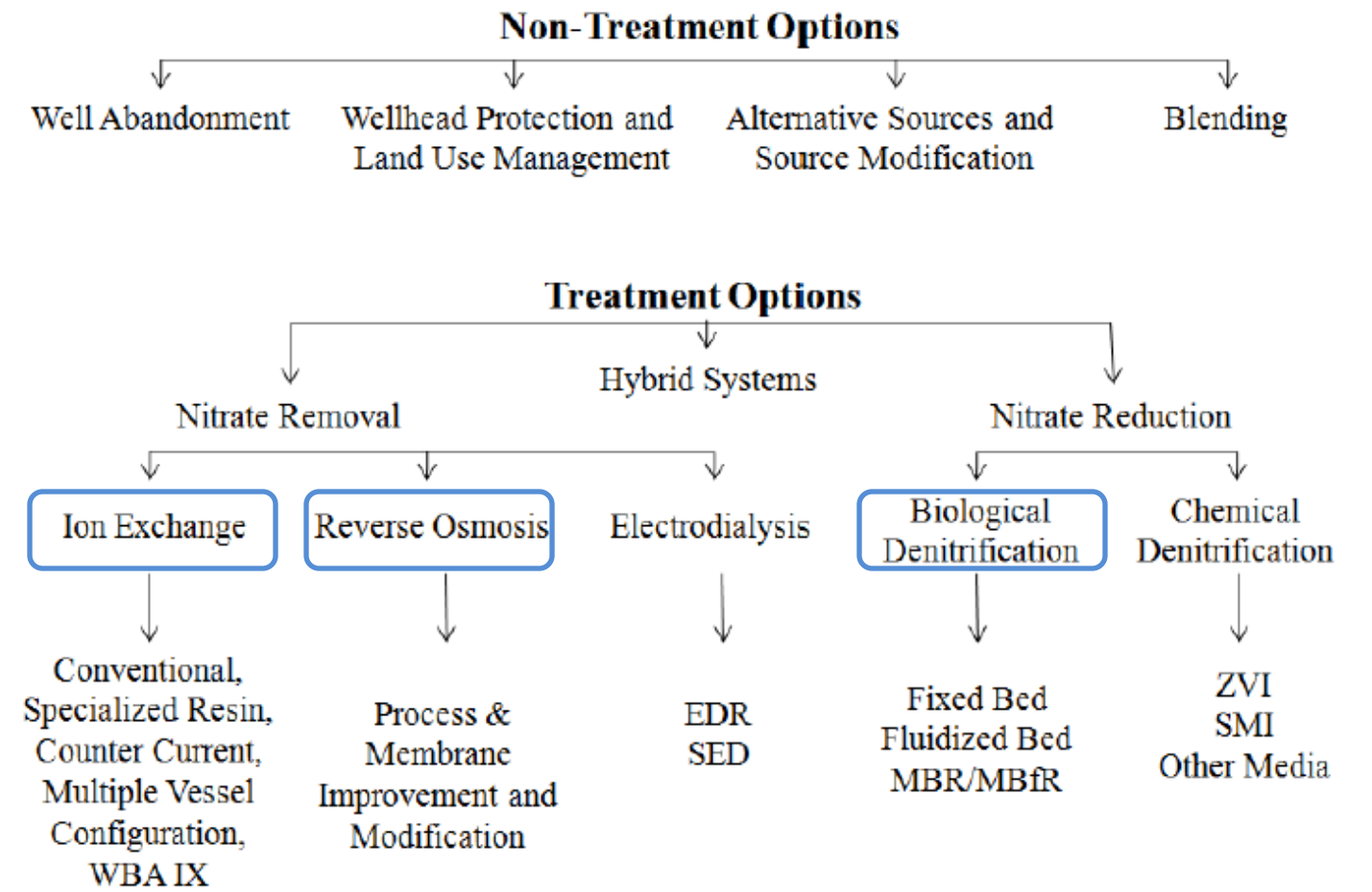

Figure S.1. Summary of nitrate management options.[4]

Source: Drinking Water Treatment for Nitrate, Technical Report 6 by UC Davis & Jacobs Engineering Group

Arsenic Treatment Options

Non-Treatment Options:

- Well Abandonment
- Alternative Sources and Source Modification
- Blending

Treatment Options:

- Anion Exchange
- Coagulation Filtration / Oxidation Filtration
- Reverse Osmosis
- Adsorptive Media
  - Activated Alumina
- Modified Lime Softening

Centralized Treatment vs POU

Central Treatment and Point-of-Use Units Compared

Central Treatment	Point-of-Use Units
All water treated	Treats water at the individual taps where the unit is installed
Less expensive for large communities	Can be less expensive for small communities
Capital costs very high, but equipment lasts a long time	Capital costs low, but media and membranes may require frequent replacement
Little customer involvement	Much customer involvement and support necessary
Does not require access to individual homes	Requires access to individual homes
Some technologies require a highly trained operator	Does not require a highly trained operator; maintenance can be contracted out
Waste disposal may be expensive	Waste disposal typically not a problem

<u>Key POU Considerations</u>

1. High customer acceptance with goal of full participation.
2. Routine water system personnel or contractor access to inside of customer homes for maintenance.
3. Annual monitoring of each treatment unit.

Point-of-Use devices must be installed and maintained by public water system. Routine maintenance may be contracted out.

Source: USEPA Complying with the Revised Drinking Water Standard for Arsenic: Small Entity Compliance Guidance

Treatment Selection

- BATs or “Best Available Technologies” are technologies that have been proven effective for water systems to use. However, source water quality may impact effectiveness of a BAT.

- Key Costs to consider:
  - Capital Costs
  - Operation and Maintenance Costs
    - Certified Treatment Operator, Increased Testing
  - Waste Disposal Costs – Liquid & Solid Treatment Residuals

Introduction to Exhibitors

- Department of Water Resources, Prop 50 and/or State Water Resources Control Board, Division of Financial Assistance have provided funding available to some pilot and demonstration scale treatment projects for arsenic, nitrate and other contaminants in drinking water.
- The exhibitors that will be presenting after lunch are participants in one of these State funded projects (not necessarily for nitrate or arsenic).
- These projects are designed to verify the performance of the various treatment systems in the field and determine the performance and actual O&M costs.
- Information tables are setup outside of the auditorium. Please visit the information tables for more detailed information about the projects.

Exhibitors / Treatment Technologies

- Ionex SG – Optimized Ion Exchange (Centralized)
- UCLA – Remotely Operated Reverse Osmosis Treatment (Centralized +)
- Carollo Engineers – Biological Nitrate Reduction (Centralized)
- AdEdge Water Technologies – Adsorptive Media for Arsenic (Point-of-Use +)

SWRCB / DWR Sponsored Projects

- Ion Exchange Treatment for Hexavalent Chromium at Cal Water Willows & Dixon
- Remotely Operated Reverse Osmosis Treatment – Planning Project for Central Valley and Salinas Valley
- Biological Nitrate Treatment at City of Delano
- POU Arsenic Treatment – Schools and other select locations at Arvin Community Services District

Questions

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