Nitrate Treatment Options

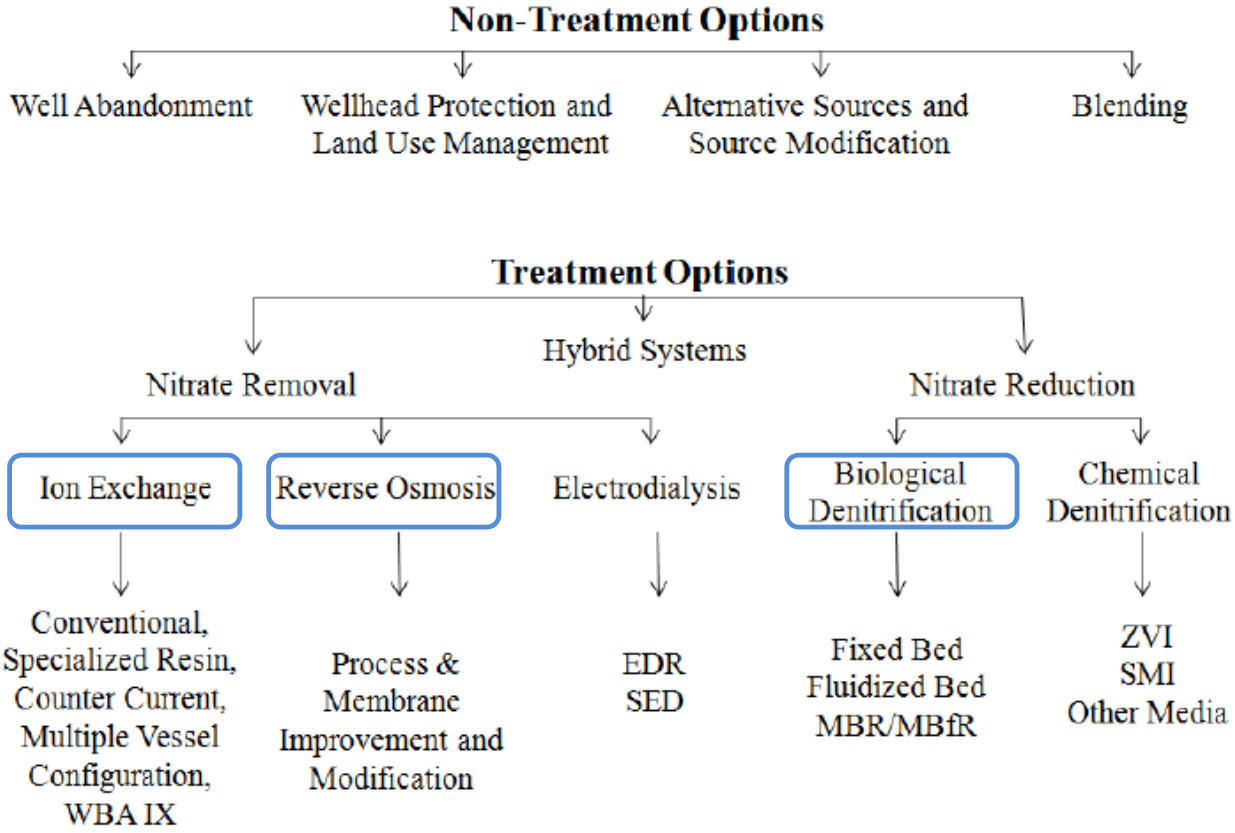

Figure S.1. Summary of nitrate management options.[4]

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

http://groundwaternitrate.ucdavis.edu/ SWRCB SBX2 1 Report

Technology Comparisons

	Biological	Ion Exchange	RO Point-of-Use
Full-Scale Use	3 in progress	Multiple	Interim / Small WS
Residuals	Sludge/Biosolids/ Washwater	Waste Brine	Concentrate* (Very low strength)
Water Recovery	Near 100%	97% Optimized: 99.7%	Varies 3:1 ratio
Advantages	• No brine waste • Multi-contaminant	• Proven technology • Multi-contaminant • Package plants avail.	• Quick deployment • Multi-contaminant • TDS reduction • Targeted treatment
Disadvantages	• Complex Treatment T3 • Multiple chemicals (4) • Risk of nitrite formation • Post-treatment reqmnts • Risk of treatment upset • Large Foot-print	• Brine waste disposal • Chloride loading • Complex System T2	• Reject water is wasted • Require access to inside of customers homes • Increased liability
Large PWS	Yes – TMF capable (O&M?)	Yes	Too Difficult to Manage
Small PWS	Maybe – TMF, Operator No – sole source / no storage	Yes (O&M?)	Yes - <200 SC with Community Buy-In
Individual homes	No – lack TMF / high risk	Maybe – ineffective ops / brine disposal in septic	Yes – with proper O&M, education and testing

For discussion purposes only. TMF = Technical, Managerial, Financial Capacity

Item 21 Presentation
March 17-18, 2016
Handout