Indirect Potable Reuse

Northern Nevada Water Reuse: Issues, Trends & Successes

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Reclaimed Water Can Become Our Community's "New" Sustainable Water Resource

A Recent Case Study: The North Valleys Initiative

- Evaluation of numerous wastewater disposal and water reuse strategies
- New water supplies are needed to augment unsustainable groundwater pumping for municipal and domestic well uses

Regional Water Balance Key Findings
Reno Stead / Lemmon Valley

Water Balance

1,300 af Perennial yield

2,028 af Existing municipal groundwater pumping

2,177 af Future domestic well conversion potential

2,905 af Needed to meet deficit

Wastewater Balance

497 af Reclaimed water for irrigation

490 af Minimum disposal to Swan Lake

2,240 af Maximum disposal to Swan Lake due to flooding issues

Disposal Options have Similar Costs, but Different Challenges

- **Long Valley Creek discharge to California**
  - Known regulatory requirements, lost opportunity to reuse water
- **Expanded water reuse, residential irrigation**
  - Dual systems, difficult monitoring and enforcement, still need a winter disposal option
- **Groundwater recharge / Indirect potable reuse**
  - Investment in water quality, significant regulatory and public perception challenges

Conclusion: Maximize the Water Resource Benefits

If the same investment is necessary, focus on the alternative that yields the greatest water resource benefits

- **Indirect Potable Reuse via aquifer storage and recovery provides:**
  - the highest water quality
  - a drought proof, reliable water supply
  - a potential solution to the local groundwater over-drafting problem

Groundwater Recharge and Indirect Potable Reuse Regulations are Needed in Nevada

- **Example: CA Draft Regulations (September 2007)**

  Emerging contaminants of concern:

  – Endocrine Disrupting Compounds (EDCs), Pharmaceuticals Personal Care Products (PPCPs), Nitrosodimethylamine (NDMA), and Others

- **Regulatory Development Process, Plan and Timeline**

  What will the Regulations consider?

  Treatment requirements?

  Monitoring requirements?

- **Public Acceptance**

MF-RO with UV-Peroxide is the Currently Accepted Technology

- Most suitable for Coastal Communities
- RO removes salinity
  - TDS reduction may not be needed (500 mg/l)
  - Increases the corrosivity of the water
- RO concentrates the contaminants
  - No good location for concentrate disposal
- MF-RO-UV process is energy intensive and results in 10-20% loss of water resource

Reno Pilot Test: MF-Ozone-BAC-UV Process May be Viable Option to RO

Category	MF-Ozone-BAC-UV	MF-RO-UV-Peroxide
EDCs and PPCPs	Degraded	Concentrated (side stream)
Energy	Substantial Advantage	
Reject/Side Streams	None	Some
Salinity	Unchanged	Decreased
Corrosivity	Unchanged	Increased
Net TOC Removal		Slight Advantage

Indirect Potable Reuse is a Technically Viable Option

- Reclaimed water is multiple products, where water quality is tailored to the specific use
- Indirect Potable Reuse will not replace non-potable uses of reclaimed water
- Regulatory / public health / public perception challenges
- Indirect Potable Reuse can help address the competing needs for the region's limited water resources to help meet commitments to water supply, water quality, instream flows and environmental enhancement