

The Desal Solution

For Remote Site Temporary Potable Water Supply



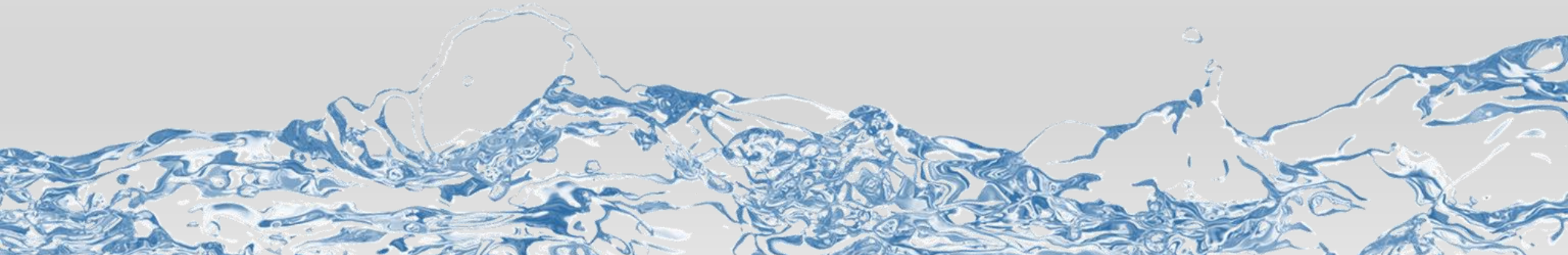
The Problem

- Oilfield workers camps – historically non-potable water supply
- Typically water hauled in or use untreated and untested onsite well water
- Water often stored in unsanitary tanks
- Safety showers connected to non-potable water
- Camps relocate frequently and rapidly



The Result

- **Unhappy personnel, unhealthy water supply**
- **HSE and OSHA issues related to use of non-potable water**
- **Trucks on the road to haul water in and sewage out. Bottled water and ice also hauled in.**
- **High cost for sub-par services**



The Solution

- **Create a Highly Mobile Water Treatment System**
 - Trailer contained – easy pull
 - Rapid Start up Capability
- **A Complete Water Processing System**
 - Requirement – Verifiable Potable Water from varied sources
 - Thorough Pre-treatment
 - *Reverse Osmosis – Key treatment*
 - Automated ozone & chlorine mgmt. system
- **A Complete Package**
 - Provide all potable water needs
 - Ice, water filling station, safety shower/eyewash
 - Full pressurized delivery system to all house camps
- **Easy to Use by customers**
 - Service model managed



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The Solution

- **A Complete Water Processing System**

- Requirement – Verifiable Potable Water from varied sources
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- *Reverse Osmosis – Key treatment*
- Fully automated ozone & chlorine mgmt. system
- Robust and redundant



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System Capability

- **Brackish Capability**

- Modeled 17,000 TDS capability
- Dissolved contaminant removal below MCL/SCL
- Pertinent EPA and WHO requirements met

- **TSS Removal**

- Ozone oxidation
- Multiple step pre-filtration
- RO

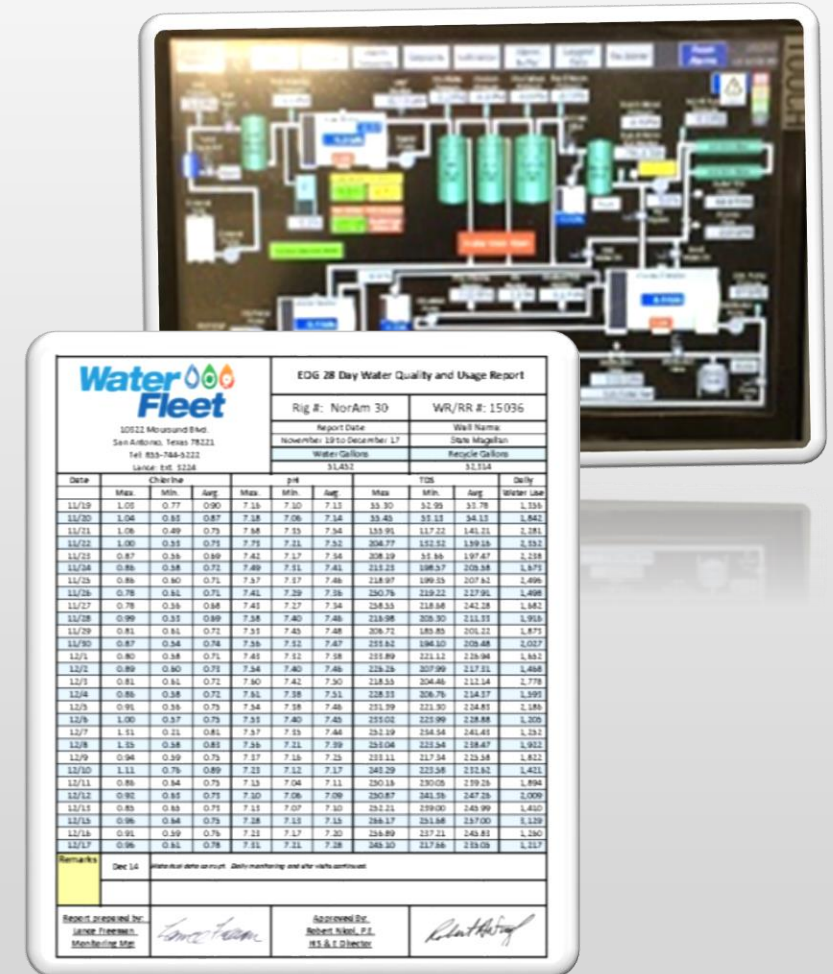
- **Biological Elimination**

- Pre-treat Ozone oxidation
- RO
- Final 4 log using managed chlorine addition system
- 1 micron absolute final filtration (fail-safe insurance)



System Management

- **Fully Automated Control System**
 - Reliable PLC Control System
 - Allows for Autonomous Operation
 - Self Monitoring
- **Remote Monitoring and Control**
 - VPN private connection through site Wi Fi or Hot Spot
 - Automated monitoring for alarms or shut downs
- **Data Logging and Reporting**
 - Key treated water quality metrics recorded hourly
 - Total gallons delivered and recycled recorded
 - Monthly reports provided to client's HSE
 - 3rd party lab testing performed as confirmation

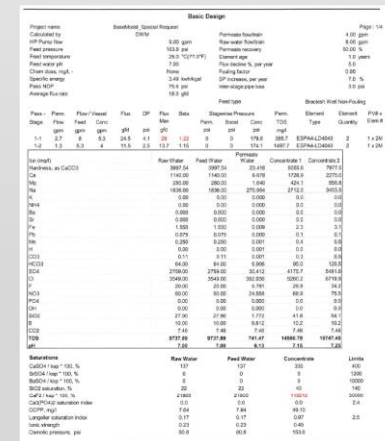


Regulatory Considerations

- **Sites can exceed 25 people/60 continuous days**
 - Qualifies site as a “transient/non-community” PWS location
- **Sites’ wells, no regulatory approvals, often brackish**
 - Non-PWS well construction for O&G drill site use
- **Detailed source quality is unknown at site start-up**
 - Must deliver safe and compliant water with minimal initial chemistry knowledge of site’s well water, thus **redundant and robust treatment design**
- **93 active sites and over 100 sites operating by YE 2017**
 - Testing and Reporting Burden if not automated



- **Extensive real time data from operations**
 - Over 60 million gallons high quality water to date
 - Verified: continuous, in-house and 3rd party testing
 - Hundreds of NELAP confirmation lab results
- **RO modeling**
 - Worst case modeling on key MCL's and SCL's
 - Compared against actual
 - Baseline conductivity
- **Risk reduction strategy**
 - Multi step risk reduction

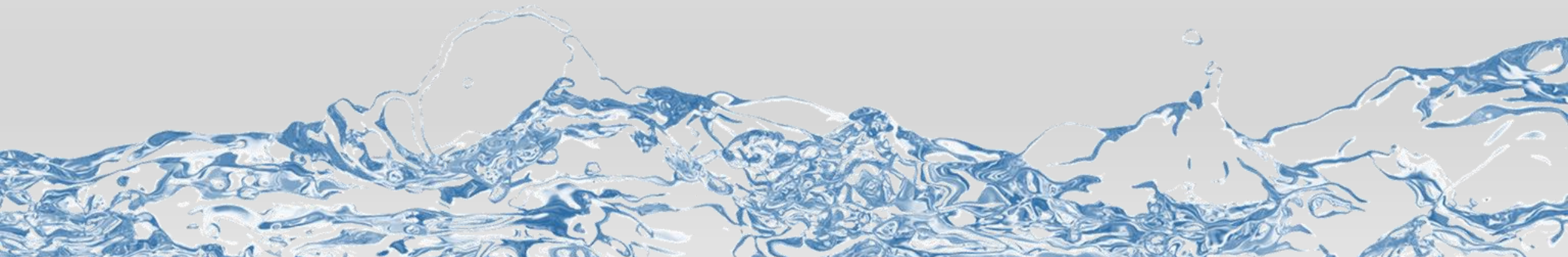


Proven Capability

- 100% compliant water at over 900 separate site sources in 3 years
- Over 60 million gallons produced to “better than regulatory standards”
- More than 2 million truck miles eliminated by replacing water haulers (reduces road wear, improves road safety, fewer truck air emissions)

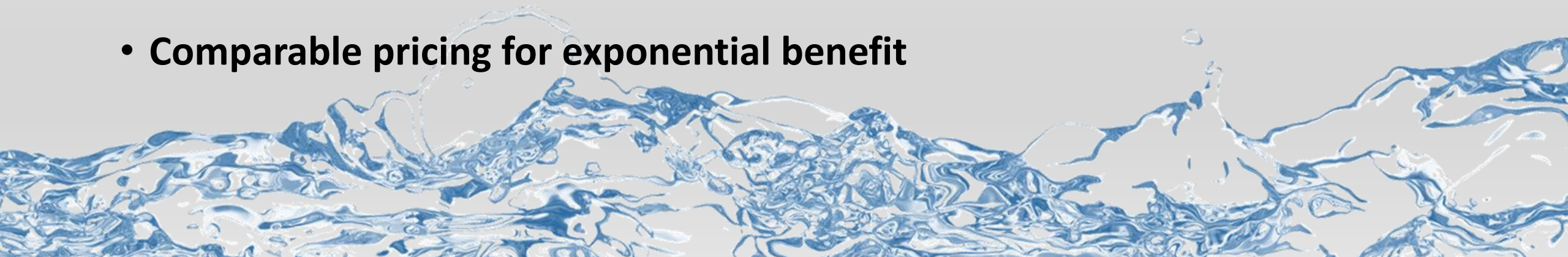
Additional Service Opportunities

- Large remote construction sites
- Emergency response events
- Displaced populations
- Boil water notice situations



Summary

- **Offers workers safer & improved, living and working conditions**
- **Desal technology solves this unique problem**
- **Eliminates extensive truck traffic issues**
- **Provides verifiable water quality data for compliance**
- **Comparable pricing for exponential benefit**



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