



DESIGN



DEVELOP



DELIVER

Proposal for Softening System

City of Franklin

Franklin, OH

May 9, 2022

Loprest Representative Contact

Peter Herlihy - Pelton Environmental

Email: PHerlihy@Peltonenv.com

Phone: 513-476-5600

Loprest Contact

Daryl Bond, National Sales Manager

Email: dbond@wrtnet.com

Phone: 610-568-6742

Quote Number 22-058



Water Treatment Solutions Since 1928

loprest.com

901 W. 116th Ave., Suite 400 • Westminster, CO 80234 • 303-424-5355



Softening System

PROCESS DESCRIPTION

The Loprest Ion Exchange Softening System includes 4 vessels in parallel to remove calcium and magnesium. Three vessels remain in service while one is regenerated. The full treated flow can be processed with three vessels online.



MANUAL BLENDING

As raw water hardness varies over time, the blend ratio can be manually adjusted to achieve the desired blended effluent hardness concentration.

About Loprest

LOPREST'S CAPABILITIES

- Design and manufacturing of treatment systems: 10 to 10,000 GPM
- Process design for the removal of numerous contaminants
- Pressure filters, ion exchange systems, activated carbon systems
- Controls design, manufacturing, and programming
- Onsite filter inspection, evaluation, and maintenance



EFFICIENT Energy- and water-efficient designs to meet client needs

ECONOMICAL Design choices such as multi-cell horizontal filters and stainless steel underdrains reduce cost of ownership

PROVEN Thousands of treatment systems, over 90 years of experience

Complete System



This proposal includes a complete system for hardness removal:

- ASME Pressure Vessels and Internals
- Media
- Brine Generators and Pumping Systems
- System Valving and Piping
- PLC-based Controls for fully automated regeneration cycle
- System commissioning on-site



Design Parameters



Each treatment system shall be specifically designed to remove calcium and magnesium hardness from the groundwater supply. All components and media in contact with water are NSF-61 compliant for potable water consumption. The treatment systems shall be designed based on the following parameters:

INFLUENT WATER QUALITY

Total Iron	0.22 PPM
Total Manganese	0.12 PPM
Total Hardness as CaCO ₃	430 PPM

EFFLUENT WATER QUALITY

Total Iron	< 0.22 PPM
Total Manganese	< 0.12 PPM
Total Hardness as CaCO ₃ (blended effluent)	150 PPM

DESIGN PARAMETERS

Max Design Pressure	100 PSI
System Design Flow Rate	5,555 GPM
Typical Treated Flow Rate	3,000 GPM
Typical Bypass Flow Rate	2,555 GPM
Number of IX Vessels	4
Softening Media Volume, Per Vessel	589 CU FT
Resin Bed Depth	66 IN
Maximum Vessel Design Flow Rate	1,000 GPM
Maximum Waste Flow Rate	750 GPM
Regeneration Cycle Duration (per vessel)	< 120 MINUTES

SOFTENING SYSTEM OPTIMIZATION

Salt Dose	5	7	10	LBS/CF
Softening Capacity (with 10% engineering factor)	18,450	20,250	24,300	GRAINS/CF
Service Cycle (per vessel)	571,000	627,000	753,000	GALLONS
Runtime (max system flow, all vessels online)	12.7	13.9	16.7	HOURS
Waste Volume per million gallons blended effluent	29,000	27,500	24,000	GALLONS
NaCl Salt required per million gallons blended effluent	1.4	1.8	2.1	TONS



Scope of Supply

Engineering	Engineering including submittals, calculations, and installation instructions
Vessels	Four (4) ASME Code vertical vessels, 144" diam x 72" sideshell Internal: epoxy lined per NSF-61/NSF-600 External: epoxy primed, no topcoat
Internals	Upper: full-length perforated header, SS316 Middle: brine header and laterals, SS316 Lower: drop pipe underdrain design with 116 collection points, SS316
IX Media	2,360 CU FT high-purity strong acid cation exchange resin
Control Valves	(23) Electrically actuated butterfly valves, with modulating actuators as needed for flow control
Other Valves	(4) Air release valves Manual butterfly valves and check valves as needed for isolation
Face Piping	Carbon steel spools with ductile iron fittings, NSF-61 epoxy lined with external prime, no topcoat. Bolt-up kits provided for furnished pipe.
Brine Piping	PVC Sch80 flanged piping with SS316 bolt-up kits
Instrumentation	(6) Flow meters: vessel effluent, system bypass, and waste (1) Effluent online hardness analyzer (2) Pressure transmitters (10) Pressure gauges with sample taps
Brine Generators	(2) Brine generators: food-grade FRP vessels with gravel underlayment and appurtenances, each with 75 tons salt storage capacity.
Dilution Pump skid	Duty-standby pump skid with (2) pumps, (1) flow meter, and valves
Brine Pump Skid	Duty-standby pump skid with (2) pumps, (1) flow meter, and valves
Control Panel	Control panel, NEMA 4, with Allen Bradley PLC and Automation Direct OIT, Panel is factory wired and tested. PLC is factory programmed and tested.
Start-up and Commissioning	Electrical Check Rinse to Quality Operation Training Operation and Maintenance Manual



Budgetary Pricing



Softening System

as described above

\$ 1,750,000

PAYMENT TERMS

- 15% upon submitted drawings
- 35% upon release for fabrication
- 40% upon delivery to site
- 10% upon system commissioning

Payment of invoices is due in full within 30 days of the date of the invoice.

DELIVERY

- 6-8 weeks for submittals after execution of purchase order
- 20-24 weeks for delivery after approval of submitted drawings

NOTES

- This proposal is based upon today's costs and is valid for a period of 30 days.
- System manifold and bypass piping not included
- System shipped as vessels, media, valves, piping, and appurtenances loose for field assembly by Contractor.
- Freeze protection not included for brine generators.
- No offloading, setting, or installation.
- Taxes, bonding, and permitting not included.
- Pricing is based on Loprest standard terms and conditions.
- Pricing includes freight to site.



Standard Terms and Conditions

- 1. Payment.** Unless otherwise agreed by the parties in writing, payment for all products purchased pursuant to this Agreement shall be made within 30 day of Seller's invoice. Any amount not paid as agreed shall be subject to an interest charge of 1% per month, compounded monthly. Buyer will be liable for all of Buyer's costs to collect amounts due under this agreement, including reasonable attorney's fees, whether or not any collection action is commenced.
- 2. Limited Warranty.** Seller warrants the products sold to the Buyer to be free of defects in materials and workmanship for a period of one year after the products are delivered to Buyer. In the event of any such defect in the products during the warranty period, Seller will provide all parts and labor necessary to correct such defect.
- 3. Disclaimer Of Implied Warranties; Limitation Of Remedies.** THE BUYER'S SOLE AND EXCLUSIVE REMEDY UNDER THE LIMITED WARRANTY PROVIDED HEREIN SHALL BE THE PARTS AND LABOR AS PROVIDED IN THIS AGREEMENT. ALL IMPLIED WARRANTIES, INCLUDING THOSE OF MERCHANTABILITY AND OF FITNESS FOR A PARTICULAR PURPOSE ARE EXCLUDED. SELLER SHALL NOT BE RESPONSIBLE OR LIABLE FOR ANY CONSEQUENTIAL OR INCIDENTAL DAMAGES ARISING FROM THE BREACH OF ANY WARRANTIES WITH RESPECT TO THE PRODUCTS PURCHASED PURSUANT TO THIS AGREEMENT.
- 4. Waiver of and Indemnification for Claims.** BUYER HEREBY AGREES TO WAIVE, RELEASE, DISCHARGE, INDEMNIFY AND HOLD SELLER HARMLESS FOR ANY AND ALL CLAIMS FOR DAMAGES FOR DEATH, PERSONAL INJURY OR PROPERTY DAMAGE WHICH IT OR THIRD PARTIES MAY HAVE OR WHICH MAY HEREAFTER ACCRUE AS A RESULT OF THE BUYERS' USE OF THE PRODUCTS SOLD PURSUANT TO THIS AGREEMENT.
- 5. Intellectual Property.** To the extent the products sold pursuant to this Agreement contain, reflect or consist of the Seller's intellectual property, the sale does not include a sale of such intellectual property or of a license to use such intellectual property beyond the use by the Buyer of the products sold.
- 6. Assignment.** In the event that Buyer assigns its rights and obligations under this Agreement any assignment of its payment obligation will be ineffective and Seller will remain jointly and severally liable, with its assignee, to pay all amounts due pursuant to this Agreement.
- 7. Non-Reliance on Written or Oral Statements.** Buyer has relied on its own investigation about the qualities and performance of the products purchased pursuant to this Agreement and has not relied upon the written or oral statements of Seller or its representatives in entering into this Agreement.
- 8. Only Agreement.** This is the only Agreement between the Buyer and Seller relating to the products purchased pursuant to this Agreement, and no oral or other statements, not contained herein, shall be binding on either the Buyer or the Seller.
- 9. Modification.** The terms of this Agreement may not be modified, except in a writing signed by the party to be bound.
- 10. Non-Waiver; Severability.** Waiver by either party hereto of non-performance of any term, provision, covenant, obligation or condition of this Agreement shall not be considered a waiver of any subsequent nonperformance, nor as waiver of the term, provision, covenant, obligation or condition itself. If any provision of this Agreement is found to be prohibited, invalid or unenforceable, such finding will not invalidate or render unenforceable any remaining provisions of this Agreement.
- 11. Arbitration.** Any disputes arising in any way in connection with this Agreement or the products sold by the Seller shall be resolved by binding arbitration under the Colorado Uniform Arbitration Act (C.R.S. § 13-22-201 *et seq.*) (the "Act"). The parties agree that the District Court of Jefferson County, Colorado shall have jurisdiction over them for the purposes of applying the provisions of the Act. All arbitration proceedings shall take place within the greater metropolitan area of Denver, Colorado. Buyer will reimburse Seller for all attorney's fees incurred by Seller in any arbitration (for collection or otherwise) in which Seller prevails.
- 12. Governing Law.** This Agreement and any disputes or claims arising from it shall be governed by and construed according to the laws of the State of Colorado.



Water Treatment Solutions Since 1928
loprest.com



Clean water. Clean earth. That's our promise.®

WRT is the parent company of Loprest. For more information about our services,
call 303.424.5355 or visit wrt.net.

Corporate Offices: 901 W. 116th Ave., Suite 400 • Westminster, CO 80234