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Western Unit Alternative 1 Addendum

DATE: August 5, 2025
PROJECT: Halchita Well Alternative
PROJECT NO: 2211-012
RE: SCIC-UT Navajo Water Settlement Planning

Introduction

Halchita's water system is currently supplied by water trucks hauling water to the tank site. Hauling water is costly and unreliable in the long term. Minimum sizing requirements have been determined using the Utah Administrative Code (UAC) R309-510. This alternative was analyzed after the conclusion of the SCIC – UT Navajo Water Settlement Planning Report was finalized; this memo serves as an addendum to that report.

Description of Work

This alternative would include the drilling of either three new shallow wells to collect water near the San Juan River, or one singular lateral well drilled underneath the river. This method of collecting water is the same method that Mexican Hat currently employs and it functions reliably. Once the water is pumped from the wells, it would need to receive full surface water level treatment. The pre-packaged Newterra Reverse Osmosis system (can be a standalone system, or a skid) would be well suited to accomplish full treatment of the required flow of water. More details on this RO skid/plant are shown in Appendix 2. Once the water has been treated, the water would need to be pumped to the existing storage tanks. The current transmission line has aged, and would need to be replaced as part of this project. A total of approximately 100 GPM is needed to supply Halchita during any peak events and to ensure redundancy. A detailed cost estimate is provided in Appendix 1.

Recommendations

This project would qualify as an emergency project to deliver water to Halchita. Being that this project is a high priority for the Navajo Tribal Utility Authority (NTUA), the following schedule is recommended to complete the project as soon as possible.

HDPE pipes are recommended to replace the ductile iron pipeline for long term durability and resistance to corrosion. A pump station capable of 100 GPM and 250 feet of head would be required. An RO skid that produces 100 GPM would also be required. See the appendix for the cost estimate of this alternative, as well as more information about the RO skid that is recommended.

It is recommended that NTUA first drill test wells along the bank of the San Juan River to understand what flow is available. Once the test wells are drilled, and if they produce enough water, the design process will begin.

Conclusion

This alternative, drawing from shallow wells along the San Juan River or a lateral well beneath it, offers a practical, proven solution to Halchita's ongoing water challenges. By following the example of Mexican Hat, the community can move away from the costly and unreliable dependence on trucked water and instead secure a permanent, high-quality source of drinking water. The use of a pre-packaged Newterra Reverse Osmosis treatment system ensures the water meets all health and safety standards, while replacing the aging transmission line with durable HDPE pipe strengthens the system for decades to come. With the capacity to deliver 100 GPM, this project not only meets immediate needs but also builds long-term resilience. It represents a meaningful investment in Halchita's future.

Appendix 1

SCIC - UT Navajo Water Settlement Planning
Halchita Well
August 5, 2025
By: Hunter Cornelius

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PRELIMINARY OPINION OF PROBABLE COST - Halchita Well

	ITEM	QUANTITY	UNIT	UNIT PRICE	COST
1	Mobilization	1	LUMP	$ 547,000.00	$ 547,000.00
2	8" HDPE	11350	L.F.	$ 115.00	$ 1,305,000.00
3	Rock Saw	4000	C.Y.	$ 85.00	$ 340,000.00
4	Pump Station	1	LUMP	$ 275,000.00	$ 275,000.00
5	Back up Generator & Enclosure	1	LUMP	$ 50,000.00	$ 50,000.00
6	Newterra RO System	1	LUMP	$ 500,000.00	$ 500,000.00
7	Building to house Pumps, Treatment, Well Equipment	1	LUMP	$ 1,250,000.00	$ 1,250,000.00
8	Horizontal Well, Well Equipping	1	LUMP	$ 800,000.00	$ 800,000.00
9	SCADA System	1	LUMP	$ 35,000.00	$ 35,000.00
	TOTAL PROBABLE CONSTRUCTION COST (30% Contingency)				**$ 6,633,000.00**
	Professional Services				
1	Preconstruction Engineering	1	LUMP	$ 585,000.00	$ 585,000.00
2	Environmental Services	1	LUMP	$ 60,000.00	$ 60,000.00
3	Geotechnical Report	1	LUMP	$ 45,000.00	$ 45,000.00
4	Material Testing, Survey, & Construction Engineering	1	LUMP	$ 575,000.00	$ 575,000.00
	TOTAL PROBABLE PROJECT COST				**$ 7,898,000.00**

In providing estimates of probable construction cost, the Client understands that the Consultant has no control over the cost or availability of labor, equipment or materials, or over market conditions or the Contractor's method of pricing, and that the Consultant's estimates of probable construction costs are made on the basis of the Consultant's professional judgment and experience. The Consultant makes no warranty, express or implied, that the bids or the negotiated cost of the Work will not vary from the Consultant's estimate of probable construction cost.

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PRELIMINARY OPINION OF PROBABLE COST - Halchita Well

	ITEM	QUANTITY	UNIT	UNIT PRICE	COST
1	Mobilization	1	LUMP	$ 552,000.00	$ 552,000.00
2	8" HDPE	11350	L.F.	$ 115.00	$ 1,305,000.00
3	Rock Saw	4000	C.Y.	$ 85.00	$ 340,000.00
4	Pump Station	1	LUMP	$ 275,000.00	$ 275,000.00
5	Back up Generator & Enclosure	1	LUMP	$ 50,000.00	$ 50,000.00
6	Newterra RO System	1	LUMP	$ 500,000.00	$ 500,000.00
7	Building to house Pumps, Treatment, Well Equipment	1	LUMP	$ 1,250,000.00	$ 1,250,000.00
8	Shallow Wells, Equipping	3	EACH	$ 275,000.00	$ 825,000.00
9	SCADA System	1	LUMP	$ 55,000.00	$ 55,000.00
	TOTAL PROBABLE CONSTRUCTION COST (30% Contingency)				**$ 6,698,000.00**
	Professional Services				
1	Preconstruction Engineering	1	LUMP	$ 595,000.00	$ 595,000.00
2	Environmental Services	1	LUMP	$ 80,000.00	$ 80,000.00
3	Geotechnical Report/Hydrogeologic Study	1	LUMP	$ 75,000.00	$ 75,000.00
4	Material Testing, Survey, & Construction Engineering	1	LUMP	$ 575,000.00	$ 575,000.00
	TOTAL PROBABLE PROJECT COST				**$ 8,023,000.00**

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Appendix 2

EPRO™ LMF Reverse Osmosis Systems for Industrial & Commercial Applications

EPRO™ LMF Series are engineered our from the ground up to provide maximum treatment efficiency in a compact, skidded package. This series of RO systems removes impurities, such as bacteria and dissolved solids, from source water, including brackish water. Available configurations deliver permeate flow rates of **20 to 120 GPM** (30,000 to 175,00 GPD) to address the diverse requirements of light industrial applications and commercial users.

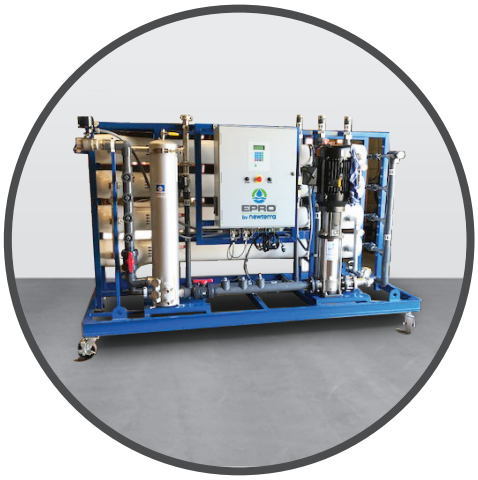
The EPRO LMF Series systems include a state of the **art controller** designed specifically for commercial and industrial reverse osmosis systems. The EPRO LMF microprocessor-controlled system can monitor multiple pressure sensors and/or pressure switches. A feed and permeate TDS/Conductivity monitor/controller with programmable setpoints is an integral part of the LMF controller. The EPRO LMF controller is available with an optional MODBUS interface for remote monitoring. EPRO LMF Series ROs are also equipped with a Variable Frequency Drive (VFD) to allow automated process control and consistent permeate output.

FACTORY TESTED

EPRO LMF 80 Series

80-120 GPM of Permeate Flow

(115,000 to 175,000 Gallons Per Day)



EPRO LMF 40 Series

20-60 GPM of Permeate Flow

(30,000 to 86,400 Gallons Per Day)

EPRO™ by newterra

eprowater.com

800.828.2447 | 941.480.9101

Standard Features

- Flow Meters: Digital Concentrate & Permeate and Analog Recycle
- Grundfos CR-Series 316 SS Pump w/TEFC Motor
- Membranes: 8"x40", TFC Brackish Water
- FRP Side-ported, 300 psi Pressure Vessels
- Low Pressure Switch
- Voltage: 460V/60Hz/3 Phase
- Prefilter Housing: 316SS w/ 5 micron cartridges
- Pressure Gauges: 2.5" Dia., 316SS, Pre- & Post-Filter, First Array Feed, Concentrate, Permeate & Interstage
- Variable Frequency Drive (VFD)
- Automatic Inlet Feedwater Valve
- 316SS High Pressure Valves (Concentrate, Recycle)
- 2" Inlet Size
- 2" Permeate Size
- 20 psi Inlet Pressure Required
- Automatic Fast Flush
- TDS Monitor
- Concentrate Recycle Loop
- Sample Valves
- Cleaning Ports
- High Pressure Piping: 316 SS

Options

- 380V/50Hz/208-240V 60Hz 3P
- Anti-Scalant Dosing System
- De-Chlorination Dosing System
- Acid Dosing System
- pH Elevation Dosing System
- pH Monitor/Controller
- ORP Monitor/Controller
- “Cold Water” Membranes
- Recycle Flow Transmitter Digital
- Nanofiltration Membranes are Available
- High Pressure Switch
- Fully Crated for Shipping

EPRO™ LMF Industrial Reverse Osmosis Systems Specifications

	Flow GPM	Number of Elements	Number of Vessels	Pipe Size	Motor Size	Recovey With Recycle	Expected TDS*	Weights** (lbs/kg)
LMF20	20	4	2	2"	10 Hp	70%	<6 ppm	2300/1043
LMF30	30	6	3	2"	15 Hp	70%	<6 ppm	2450/1111
LMF40	40	8	4	2"	15 Hp	70%	<6 ppm	2600/1179
LMF50	50	10	5	2"	20 Hp	70%	<6 ppm	2750/1247
LMF60	60	12	6	2"	20 Hp	70%	<6 ppm	2900/1315
LMF80	80	16	8	2"	30 Hp	70%	<6 ppm	3050/1383
LMF100	100	20	10	3"	40 Hp	70%	<6 ppm	3200/1451
LMF120	120	24	12	3"	50 Hp	70%	<6 ppm	3350/1519

**Based on feedwater of 1,000 ppm @ 25 °C. **Weights may vary.*

Dimensions
(Optional Features may increase dimensions)

System	Length (in/cm)	Width (in/cm)	Height (in/cm)
LMF 20-40	110/279	48/122	65/165
LMF 50-60	110/279	45/114	85/216
LMF 80-120	110	67	85

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