

Customized Direct Lithium Extraction Pilot Achieves 95% Iron and TSS Removal and 90% Lithium and Magnesium Removal

A major midstream company in Texas sought a more effective method for extracting metal from its produce water. The client contacted CTP Environment to run a fully functional pilot that enabled in-depth trials, comparisons, and validation of the final process.

The Challenge

Our customer needed a comprehensive unit capable of extracting lithium from production water at a rate of 22 gpm while operating daily. Direct Lithium Extraction requires a robust pre-treatment. CTP analyzed the scenario and proposed a custom package to address the customer's complex challenge.



The Solution

We designed a pilot unit capable of executing various stages, including oxidation, precipitation, physical-chemical treatment, filtration, post-treatment, and sludge dewatering. Each stage of this custom pilot was meticulously designed to ensure efficient lithium extraction and metal recovery from the production water.

Our pilot involved multiple solutions, including Aeromobil®. This modular, automated, dissolved air flotation unit can be deployed anytime, anywhere. Aeromobil® separated the suspended matter and hydrocarbons through coagulation, flocculation, and flotation.

To facilitate a seamless end-to-end extraction process, our custom pilot solution also included the installation of ion exchange containers, as well as the associated piping and electrical connections.



The Results

The pilot project yielded proven results, including pH neutralization, a 95% iron removal rate, a 90% magnesium removal rate, and the ability to remove 95% of total suspended solids (TSS). The pilot also recovered lithium at an exceptional 90% rate — exceeding the customer's expectations and showcasing our solution's viability over the four-month pilot duration.

Our successful pilot demonstrated the reliability and efficiency of our innovative approach to metal extraction and water treatment. It also paved the way for potential long-term implementation across multiple plants, which would equip our customer with proven metal recovery technology.

CTP's integrated approach is proven to optimize production processes and maximize resource recovery. Learn more about our leading-edge solutions, including [Aeromobil®](#).