

CLEARWATER MBWS

➤ **CLEARWATER
COUNTY
(2020 - PRESENT)**

➤ **LESLIEVILLE, AB**

“The MBWS does not include any chemical additions. Not only does this reduce consumables and operational costs, it also provides environmental resiliency with naturalized based treatment without harmful by-products.”

**MAGNA ENGINEERING
SERVICES INC.**

PROJECT CONTEXT

In common with many small rural communities, Clearwater County faced wastewater infrastructure challenges due to population growth and stricter effluent standards. The lagoon system was insufficient and didn't meet the required design standards. With 3,000 residents, serving several municipalities, and anticipating future growth, the County also needed to address rural septage receiving issues.

Previous engineering reports suggested that meeting design and effluent quality standards and accommodating population growth would require costly mechanical treatment systems. However, such a solution was financially impractical for the County due to high capital costs and ongoing maintenance expenses. As a result, the County sought the assistance of MAGNA to explore more affordable treatment options to fulfill its wastewater treatment needs.

MAGNA'S SOLUTION

MAGNA completed a feasibility study comparing the proposed mechanical treatment option, a moving bed biofilm reactor (MBBR) to a naturalized treatment facility, the MAGNA Biofilter Wetland System (MBWS). The MBWS facility consists of:

- A micro-screening unit for solids removal, facultative lagoon for waste storage, and biofilter treatment wetlands for wastewater cleaning.
- Biofilter treatment wetlands that have layered media and plants supporting microbial growth.
- Microbes that play an active role in treating contaminants in the incoming wastewater.
- Treatment that is achieved through a passive, nature-based process.

COMMUNITY OUTCOME

This facility was established through extensive community engagement due to its innovative nature. After obtaining the necessary approvals, construction began in autumn 2022. MBWS design reduces capital costs by \$15 million compared to MBBR and provides substantial long-term savings in operations and maintenance expenses. Furthermore, MBWS implementation improves staffing without significant operator level increase.

