



**WASTEWATER  
WETLAND SOLUTIONS  
FOR ECONOMIC  
DEVELOPMENT**

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NABOC, DECEMBER 2022



*MAGNA's office is located on the traditional territories of the peoples of the Treaty 7 region in Southern Alberta, which includes the Blackfoot First Nation tribes of Siksika, the Piikani, the Kainai, the Stoney Nakoda First Nations tribes of Chiniki, Bearspaw, and Wesley and the Tsuut'ina First Nation. The City of Calgary is also homeland of the historic Northwest Métis and to Métis Nation of Alberta, Region 3.*

# ••• OBJECTIVES

ECONOMIC INDEPENDENCE

WASTEWATER TREATMENT FOR  
NEW DEVELOPMENT

CAPACITY FOR FUTURE  
DEVELOPMENT

REDUCED WWTF FOOTPRINT

# •••NATURE-BASED SOLUTION FOR WW TREATMENT

**Client Driver**  
Simplicity (O&M)

Lagoon

Engineered  
Wetland

MBR/MBBR/  
SBR

Wetland

**Must-have**  
Treatment

**Value-Add**  
Eco-benefits



*Lagoon*

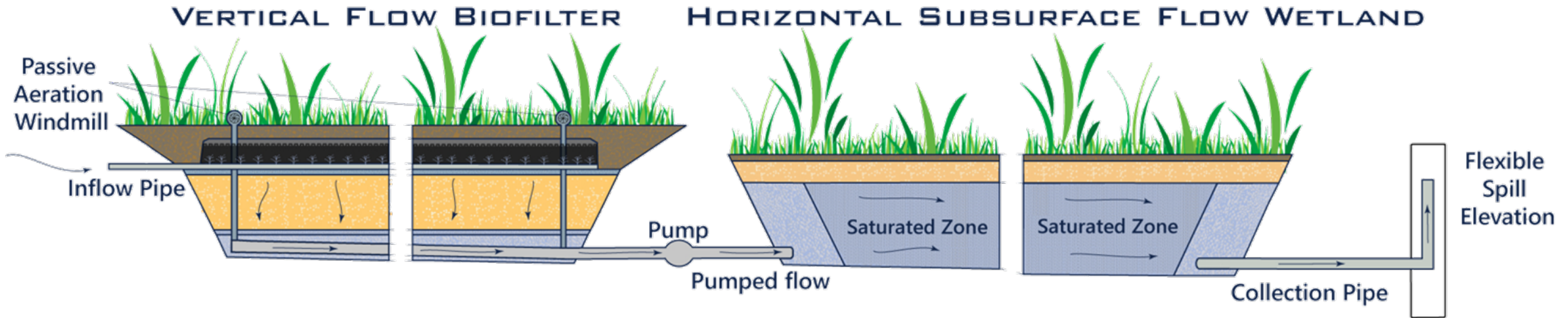


*Mechanical  
Treatment (MBR,  
MBBR, SBR)*

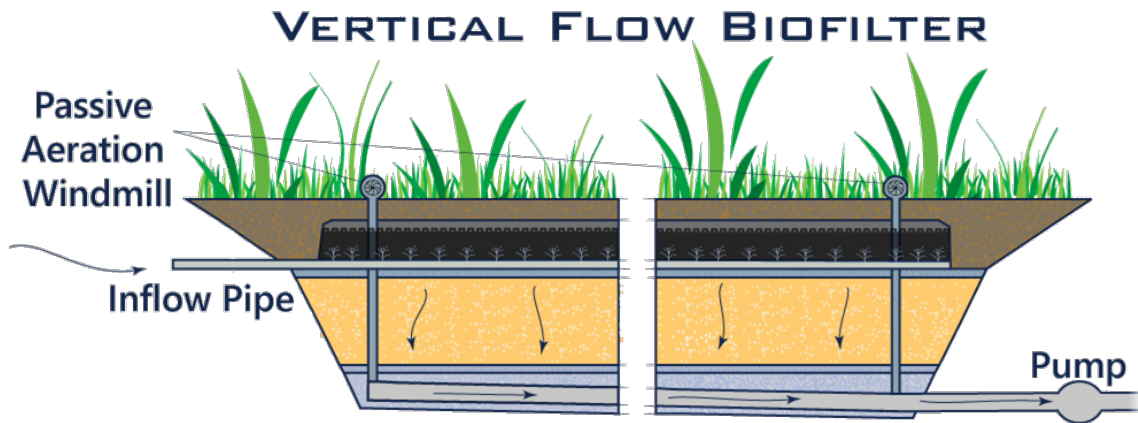


*Wetland  
Solution for  
Wastewater*

# •••TREATMENT WETLAND TRAIN



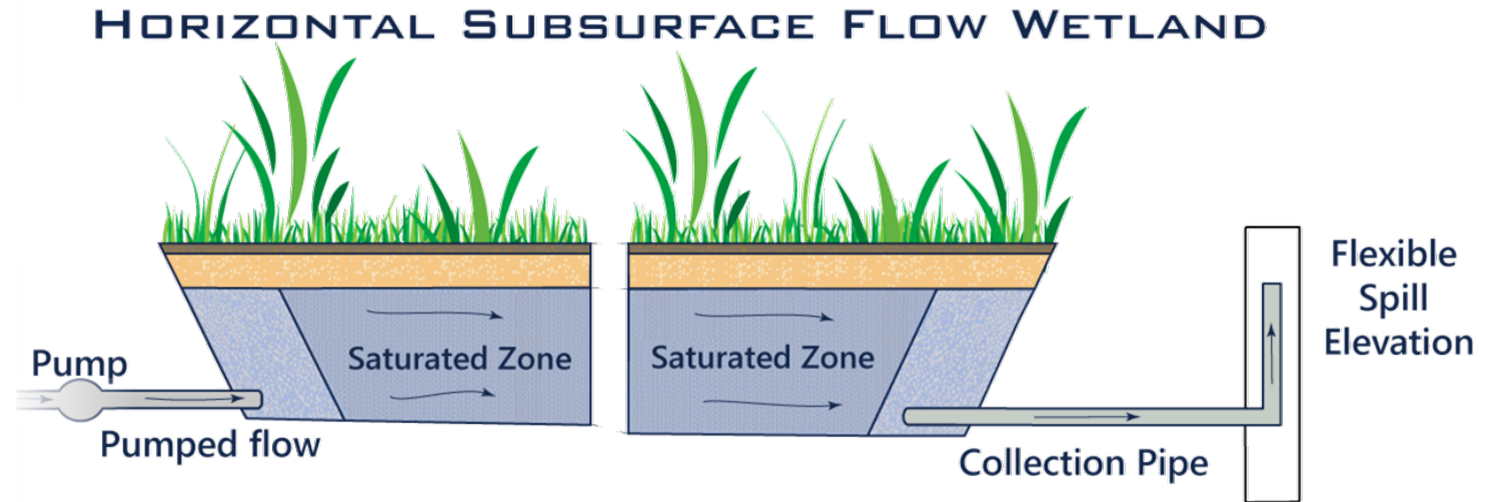
# ••• VERTICAL FLOW WETLAND



- Subsurface biological treatment.
- No exposed standing water.
- Enhanced nutrient treatment.
- Aerobic.
- Equipped with view ports for easy inspection and O&M.
- No chemical dosing required.

# ••• HORIZONTAL SUBSURFACE FLOW WETLANDS

- Subsurface biological treatment no exposed standing water
- Nutrient treatment and polishing
- Anaerobic
- Equipped with view ports for easy inspection and O&M
- No chemical dosing required



# DISCHARGE OPTIONS

## SURFACE WATER AND REUSE



## GROUND





# WHY NATURE?

- Fully scalable;
- Low O&M costs for long-term cost sustainability;
- Low energy, no chemicals;
- Environmental stewardship;
- Low-complexity operator requirements; and
- Unique to your community or project!

SUSTAINABLE

EASY-TO-OPERATE

COST-EFFECTIVE

FLEXIBLE

## •••ECONOMIC BENEFITS



- Lower operator class requirement;
- Reduced O&M requirements;
- No chemicals required;
- Potential to eliminate some major mechanical parts; and
- Self regulating.

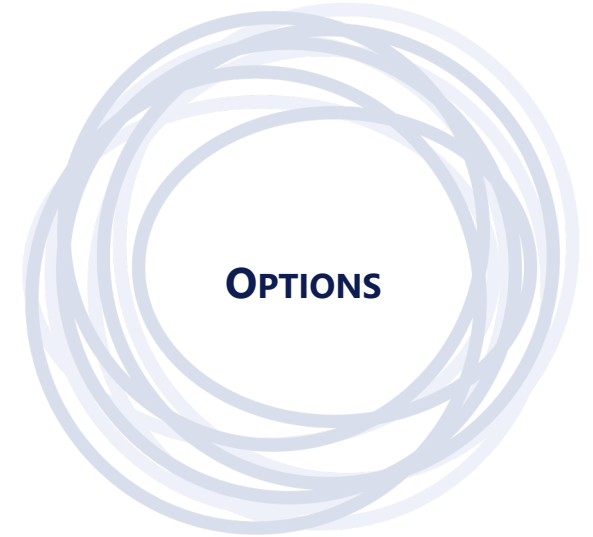
# •••FUNDING OPPORTUNITIES



We apply for you!



Eligible for feasibility studies, design,  
and capital costs!



Opportunities under First Nation  
Nation Building, Environmental  
Protection, and Wastewater  
Infrastructure.

# •••NEXT STEPS



**Grant** opportunities to fund feasibility studies or pilot projects.



**Design** a fit for purpose system and work with the village and project team.




**Build and Operate** MAGNA will help you manage the construction and operation of the facility.



## QUESTIONS?

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# CASE STUDIES

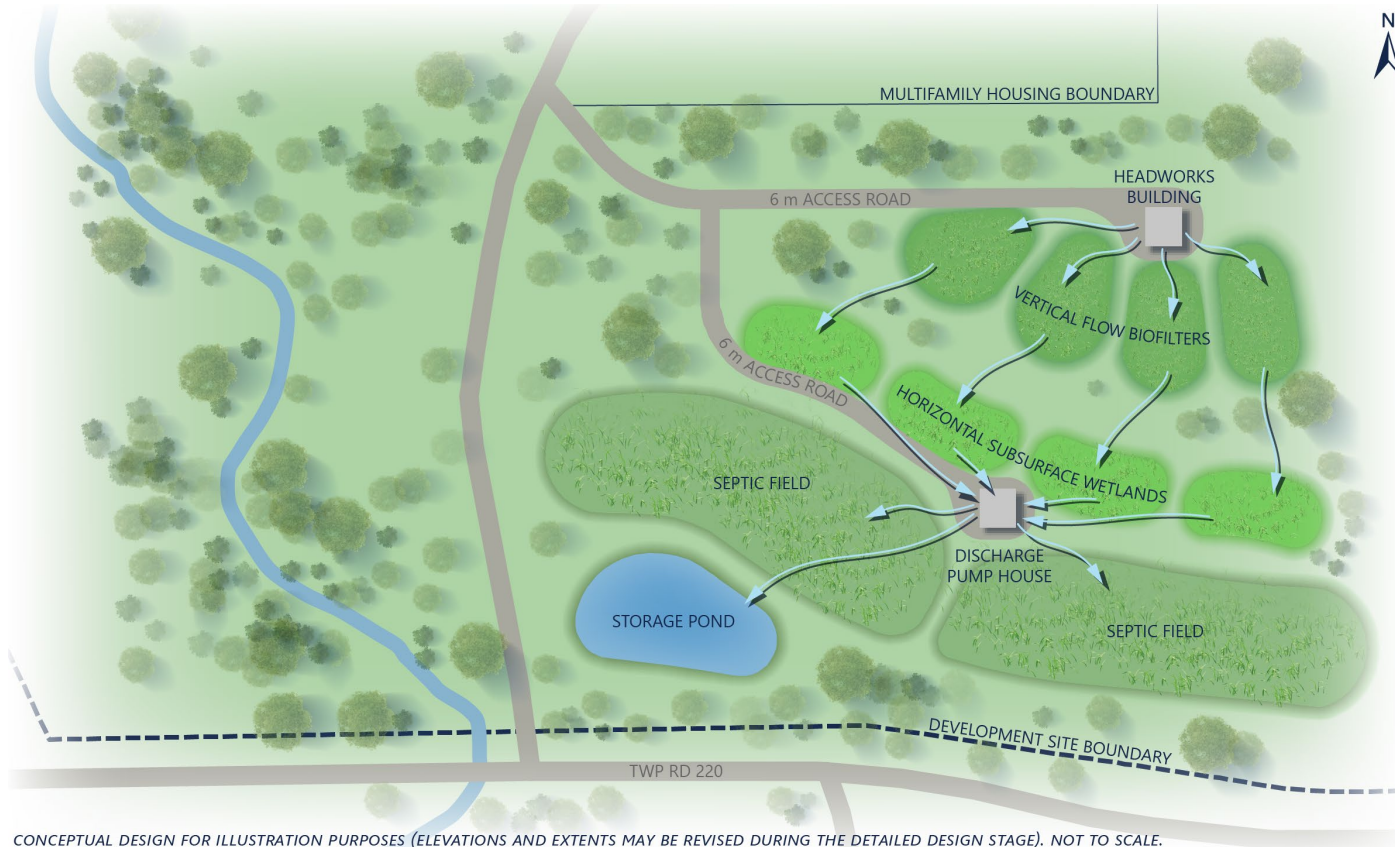
# ••• CLEARWATER COUNTY, AB



- Facility services 3 hamlets and septage receiving for County
- Seasonal discharge requirements
- Subsurface vertical and horizontal flow wetlands
- Currently in construction



# CHARA SENIORS DEVELOPMENT, AB



- Private, on-site facility
- Priorities:
  - Environmental stewardship
  - Consideration for adjacent landowners
- The conceptual design allows flexibility and risk mitigation:
  - Phased system
  - Water reuse / irrigation
  - Emerging contaminant treatment

# ••• PRINCE RUPERT, BC



- Municipal wastewater treatment
- MOP saves \$200M (avoid separation of sanitary and storm sewers)
- Priorities:
  - Simplified O&M
  - Distributed Approach
- FCM feasibility study and pilot funding successful
- Construction 2023