ARRC Alberta Resource Recovery Centre | Sturgeon County, AB

SUMMARY

The ARRC is a water-based innovation platform to advance community sustainability & economic diversification.

Sited on a 90ha urban greenfield site along the Sturgeon River, the ARRC is lead by UAlberta, NAIT & a diverse stakeholder team to develop & demonstrate community-scale integration of new & emerging innovations in water, energy & nutrient management within a sustainable community.

Benefits include optimizing finite water-related infrastructure funding, community empowerment tools to advance local sustainable growth aspirations, & positioning Alberta as a leader in the global water sector.

ARRC-derived solutions will be instrumental to creating net zero communities and ideally suited to rural and Indigenous communities, which form an integral part of our economy and social fabric.

DRIVERS

- **Fiscal**: Current water-related service delivery is suboptimal from a fiscal and environmental protection perspective. The resulting near-term repair/replace infrastructure deficit is **$172 Billion** (Canada) & **$1.2 Trillion** (USA).
- **Energy Efficiency**: Current water-related infrastructure comprises up to 40% of municipal power consumption.
- **Resiliency**: Climate change volatility is increasingly impacting treatment reliability & source capacity *(e.g., longer drought periods, rising sea levels, surcharging sewers, and extreme storm flow events)*.
- **Systemic Change**: Global shift from conventional, centralized water services to alternative decentralized strategies based on circular economy principles (e.g., water reuse, resource efficiency, containing emerging contaminants)
  - Integrated management of innovative potable, sanitary & storm water solutions.

STAKEHOLDERS

- **Government**: Alberta Innovates, AEP, Municipal Affairs, Seniors & Housing
- **Academia**: UAlberta, NAIT, Wageningen U
- **Community**: Sturgeon County, Edmonton, Calgary, Okotoks, Devon
- **Industry**: EPCOR, Capital Region Sewage Commission & growing list of Clean-Tech SMEs

80% less* **Potable Water**

40% less* **GHG Emissions**

50% less* **Life Cycle Costs**

TARGETED OUTCOMES

- Enhanced fiscal sustainability, resilience & environmental stewardship *
- Create sustainable, resilient and integrated infrastructure & planning solutions for urban, rural & Indigenous communities.
- Community empowerment through municipal outreach and training programs *(e.g., Fit-For-Purpose options)*.
- Cross-sector collaboration targeting rapidly expanding global water industry & low carbon economy.
- Advance 'complete communities' model (thriving local economies, community vitality & healthy ecosystems).
- Create & support HSP (*highly skilled personnel*) training to facilitate trust and knowledge transfer.

MILESTONES

Regulatory: *'Alberta Water Reuse Guidelines', 'USA Non-Potable Reuse Standards, 'Canada/USA Stormwater Standards'*
Advocacy & Outreach: Province-wide stakeholder engagement; YEG public consultation re: greywater reuse - underway
Lab Research: 20% efficiency gain over 'best in class' European-based technology
Pilot Demonstrations: blackwater – completed; greywater reuse - underway
Community-Scale Demonstrations: North American 1st Neighbourhood Resource Recovery Centre – underway

CONTACT

Prof. Nicholas Ashbolt, PhD
Academic Lead
University of Alberta
Alberta Innovates – Health Solutions
Translational Chair in Water
t. 780.492.5227 ashbolt@ualberta.ca

Prof. Yang Liu, PhD, PEng
Research Lead
University of Alberta
NSERC IRC in Sustainable Urban Water Development
t. 780.492.5115 liu14@ualberta.ca

Ken Pacholok, MSc, PEng
Industry Sponsor
WaterWerx Renewables & Bellerose Farms
54303 Bellerose Dr, Sturgeon County, AB T8T 0J1
t. 780.903.9320 bellerose@telus.net