

ClearWater Farm presentation to LSRCA Board of Directors

Colin Dobell
Executive Director
Ontario Water Centre

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Reducing Potable Water Use in Agriculture by 35% at ClearWater Farm (while educating the community...)

Proposal to Green Municipal Fund from
Ontario Water Centre (an educational
charity partnered with Town of Georgina)

GREEN MUNICIPAL FUND

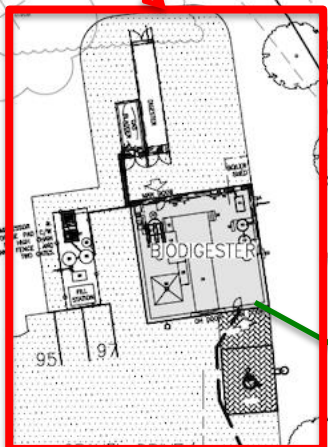
Capital project: Water conservation, community project

We fund capital projects of retrofit initiatives that reduce potable water use by at least 20% in a neighbourhood, facility or group of facilities. This funding helps Canadian cities and communities of all sizes promote...

WATER

- ClearWater Farm is a community-based educational and convening facility located on Town-owned land in Georgina; operated by Ontario Water Centre under 30-year lease and partnership agreement.
- Site currently hosts more than 2,500 visitors (to more than triple in 3 years), with ~ 10 residents, 15,000 s.f. of greenhouse, 3 acres of producing fields (growing to 8 acres), food wash facilities
- Site currently operates off of a single well, augmented from occasional lake draws, with a single septic bed. Clay soil produces stormwater run-off to be addressed in future site project.

**Pure Organic Foodwaste
High liquid content**



Digestate

**Mixing/
Distribution
Drip Irrigation
Apparatus**



**Underground
Cistern**

**Municipal
Water/Sewer**

**Produces renewable
natural gas for
greenhouses
and delivery vehicles**

**Water
Harvesting**

**Well
Septic**

**Result = reduction in potable water usage +
improved crop yields without chemical fertilizer.
"A solution for small farms across Ontario"**



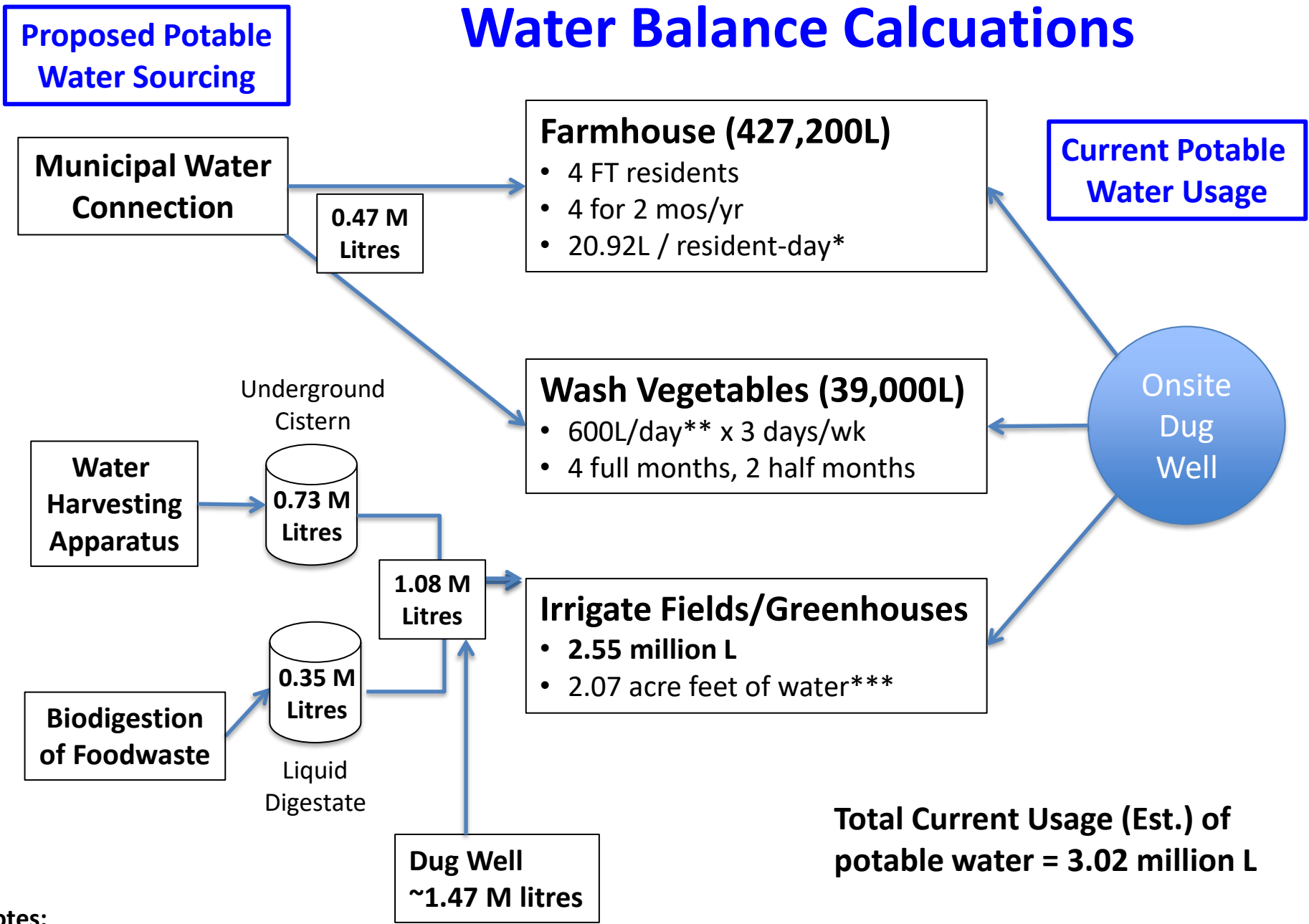
Proposed Project Components

- Connect site to municipal water/sewer to handle human water needs
 - Retire septic tank, isolate human potable water needs to be sourced from Town supply
- Water harvesting from roof (barn, garage, greenhouses); store in cistern
- Anaerobic biodigester “imports” water through pure organic foodwaste
- Run-off + liquid digestate used as irrigation/nutrient source for agriculture
 - Mixing/distribution/irrigation apparatus in/between greenhouses/garden
 - Secured partners to demonstrate efficacy (Cropquest, OMAFRA)

Environmental Benefits -- A model for farms across Ontario?

- Replaces >35% of site potable water used for irrigation – otherwise drawn from well
- Manages 0.73M litres of stormwater – preventing excessive run-off to lake
- Diverts 188 m³ of commercial foodwaste from landfill
- Local production of 13,160 litres of renewable natural gas
- Local production of solid compost for soil enhancement

Water Balance Calculations



Notes:

* Environment Canada estimate
 ** Estimate from farmworkers (to be validated this summer before project implementation). Also Vegetable and Fruit Washwater Treatment Manual (OMAFRA) p. 22.
 *** Estimate by Barr Engineering (to be validated this summer before project implementation). Can be cross-referenced with local crop consultant (Cropquest Inc.)

The Invisible Becomes a Visible Resource

Barr Engineering who is designing the Water Harvesting system at ClearWater Farm is a world leader in the design of green infrastructure technology. Their wisdom gained is powerfully informing the work at ClearWater Farm.

"In the past, engineers have tended to treat stormwater as a waste product. Traditional designs focus on getting it off of our landscapes as quickly as possible. Now, as we adapt to climate change, water conservation will be more important than ever, leading us to designs that will use stormwater as the resource that it is."

- Erin Anderson Wenz, ENV SP, PE, Vice President, Senior Water Resources Engineer, Barr Engineering

"The engagement of the public around water quality related issues, and particularly young people, is an extremely important aspect to creating those environmental stewards of the future. Lively and playful above ground features, such as a cistern or water reuse system, offer a unique canvas for such educational and outreach opportunities. Interactivity and visual playfulness can make a feature memorable and highly engaged with, potentially planting the seeds of environmental leadership"

- Matt Kumka, Senior Landscape Designer, Barr Engineering

*Educational Cistern at
Maplewood Mall,
Minneapolis, Minnesota
- Barr Engineering Co.*



Project Costs (for GMF)

- Project/proposal preparation - \$12,750
- Water/sewer brought onsite - \$643,000
- Water capture/storage infrastructure - \$229,260
- Modification to biodigester - \$27,000
- Mixing/distribution/irrigation apparatus - \$78,350
- Project manager/crop consultants - \$36,000
- Analysis/reporting/recommendations - \$17,050
- GMF-allowed lead applicant overhead – \$115,000
- Contingency (10% of project costs) - \$122,500
- **Total Project Cost: \$1,347,910**

OWC planning \$150,000 in additional educational components (with support from York Region)

Total of
\$1.5M

Proposed Funding Model

- Green Municipal Fund – Pilot: \$500,000
- Town of Georgina - \$650,000
- LSRCA - \$150,000
- OWC - \$200,000
- **Total Project Cost: \$1,500,000**

York Region committing to support educational components

Timing / Next Steps

- Secure Town approval for loan (September)
- Submit application to GMF (October)
- Installation of municipal infrastructure (Fall-Spring)
- Approval of pilot by GMF (January 2021)
- System installation (Spring-Summer-Fall 2021)
 - Benchmarking of “pre-system” water usage
- Operation of pilot - 2022
- Final reporting – end 2022