

## Sustainability Project Fund Application Form

**Project Title: Water Resource Management Intern**

**Budget Requested: \$ 6,300**

**Applicant/Project Leader: Denis Mondou, Eng.**  
Faculty/Department: Utilities & Energy Management  
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**Project Team:**

Jerome Conraud, Jr. Eng., Energy Manager  
François Turcotte, Project Manager

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### I. Project Overview

**Project summary:**

Echoing the Ministry of Education's mandate to reduce on campus water consumption by 20% by 2017, McGill has recently committed to reducing water consumption on campus. One of the most important challenges McGill will have to deal with is that there is very little information on water consumption on campus, which makes it hard to estimate the impact of any potential water conservation incentives.

Utilities & Energy Management will lead this dossier and is seeking student cooperation to 1) establish a water consumption baseline for the downtown campus and 2) develop a water conservation strategy for the University. McGill has very limited information in regard to water resource management at the moment and a student could help build this knowledge, using the tools provided by the *Centre de technologie sur l'eau*, the Ministry of Education, and the US Environmental Protection Agency.

**Project eligibility:**

There is no water meter on campus; hence, we have no idea how much water we use. Very preliminary estimates based on comparable universities in Canada and the US range McGill's annual water usage over 1.5 billion litres, that is, the equivalent of 720 Olympic size swimming pools. More than a mandate set by the Ministry, it is our responsibility as an institution and as a good citizen to use commons in a sustainable way, which is clearly not the case when it comes to water.

Utilities & Energy Management's plan is to establish a consumption baseline as soon as possible. Along with this baseline, a breakdown of water consumption per type of usage is necessary to draft a solid water conservation strategy and prioritize interventions and investment.

While Utilities & Energy Management will work toward reducing the water consumption of mechanical equipment and other fixtures, we also need to work towards raising awareness on water conservation. Several initiatives are already under way on campus ("Water is Life" exhibit, water refill stations, policy on bottled water, etc.). Other initiatives can be put in place to tackle water used in labs, for landscaping, to clean the buildings, for other processes, at the power house, etc. The strategy could also identify areas of interventions more fit to grass root initiatives (water conservation in labs for example) and areas of intervention where other bodies on campus can do something.

### **Timeframe/Milestones:**

The student will work full time from May to August.

The tasks will include:

- Assessing on campus water consumption (fixtures and equipment)
- Auditing the most water consuming equipments and helping to identify water conservation initiatives
- Assessing the need for metering to refine the consumption baseline, and if need be, helping in the selection of meters
- Helping to categorize on campus water usage by type of use (heating/cooling, potable water, domestic hot water, landscaping, research, and other usage)
- Helping to determine McGill's baseline consumption based on collected data
- Drafting a communications campaign towards reducing water consumption on campus
- Producing a final report to guide McGill's water reduction strategy
- Filling out Ministry of Education Water Usage Surveys for the main campus buildings

Performance indicators:

- Number of buildings "audited" (or % of campus area audited)
- Whether all these items are completed or not

Sharing the outcomes with the community:

The report will be made public and posted on the McGill website. We suggest it be presented during one of the sustainabilityXchanges. We hope to outline a strategy that will identify areas of interventions for each body on campus (e.g., grass root initiatives student groups could investigate, specific measures for Building Operations, specific measures for lab technicians, specific measures for animal labs, etc.)

### **Stakeholders:**

**Facilities Operations and Development Sustainability Work Group:** the group has a mandate to work on sustainable initiatives within each unit of FOD.

**All Facilities Operations and Development Units:** Help and cooperation will be needed from all the different units and the report will be presented to the work group so that the different units can investigate measures identified in the report. FOD will pay for the purchase and installation of water meters as well as their future maintenance.

**Athletics, Food and Dining Services, Residences:** though these units have not been contacted yet, they probably use a fair amount of water. Their buildings will be audited and the findings will be shared with them.

**Office of Sustainability:** for two reasons: 1) to inform them of the findings of the project and 2) to use their web of contact on campus to share the findings and seed grass root projects.

## II. Project Implementation

### Tasks and Responsibilities:

Type of Activity – Task	Estimated Time Required	Group Member in Charge
Assess campus water consumption (fixtures & equipment)	90 to 105 hours	J. Conraud
Fill out Ministry of Education Water Usage Surveys for main campus buildings	30 to 35 hours	
Determine McGill's consumption baseline based on collected data	60 to 70 hours	J. Conraud/F. Turcotte
Audit most water-consuming equipment and assess need for refined metering	90 to 105 hours	F. Turcotte
Identify water conservation initiatives	60 to 70 hours	All
Draft water conservation communications campaign	30 to 35 hours	J. Conraud/D. Mondou
Categorize water usage per type of use	60 to 70 hours	J. Conraud
Produce final report	30 to 35 hours	J. Conraud
<b>Project Total</b>	<b>450 to 525 hours</b>	

## III. Financials

Critical date: first half of April to recruit an intern.

### Detailed expenses:

Expense Description	Estimated Cost
Intern @ \$12/hour, 30 to 35	\$5,400 to \$6,300

hours per week, 15 weeks	
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**Detailed revenues:**

<b>Revenue Source</b>	<b>Amount Requested</b>	<b>Confirmed?</b>
Sustainability Projects Fund	\$6,300	No

**IV. Additional information:**

Exhibit 1 below shows references to estimate McGill's annual water consumption.

## Exhibit 1 – Estimating Water Consumption at McGill

Using different references, McGill’s water consumption could range somewhere between 1,200 and 2,700 million litres per year (with an average consumption estimate of 1,800 million litres per year, i.e., the equivalent of 720 Olympic size swimming pools).

Reference/University	Gross Area (m <sup>2</sup> )	Reference	Reference (L/year/m <sup>2</sup> )	Extrapolation for McGill (millions L/year)	Data used to extrapolate
U Laval	422,616 <sup>1</sup>	823 million L/year <sup>2</sup>	1,947	1,260	646,839 m <sup>2</sup> <sup>1</sup>
UBC at Okanagan	46,000 <sup>3</sup>	121 million L/year <sup>3</sup>	2,630	2,161	821,585 m <sup>2</sup> <sup>9</sup>
U Ottawa	407,150 <sup>4</sup>	622 million L/year <sup>5</sup>	1,527	1,255	821,585 m <sup>2</sup> <sup>9</sup>
Ohio Department of Natural Resources <sup>6</sup>		45 US gal / employee / day	--	2,700	43,000 “campus users”
Natural Resources Canada <sup>7</sup>		0.1001 to 0.1500 m <sup>3</sup> / day / person	--	1,571 to 2,354	43,000 “campus users”
North Carolina State University <sup>8</sup>		34.98 US gal / gross sq ft / year	--	1,171	8,843,467 gross sq ft <sup>9</sup>

### References:

<sup>1</sup> Rapport du MELS 2009-2010

<sup>2</sup> <http://www.natura-sciences.com/Eau/Une-eau-excellente-pour-l-universite-laval.htm>

<sup>3</sup> A. Clarke, *Water Management at UBC Okanagan – Part 1: An Overview of Water Use*, UBC Okanagan, May 2009.

<sup>4</sup> Report *Ontario Universities’ Facilities Condition Assessment*

<sup>5</sup> <http://www.sustainable.uottawa.ca/index.php?module=CMS&id=17&newlang=eng>

<sup>6</sup> Ohio Department of Natural Resources, Division of Water [http://ohioline.osu.edu/b910/b910\\_5.html](http://ohioline.osu.edu/b910/b910_5.html)

<sup>7</sup> Natural Resources Canada, *The Atlas of Canada – Commercial and Institutional Water Consumption 1999*:

<http://atlas.nrcan.gc.ca/site/english/maps/freshwater/consumption/commercial>

<sup>8</sup> [http://www.ncsu.edu/energy/2008/water\\_use.php](http://www.ncsu.edu/energy/2008/water_use.php)

<sup>9</sup> 2009-2010 SILU Report (Total Gross Square Footage)