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NEWS RELEASE

For immediate release

RECLAMATION OF WASTEWATER FOR GROWING WILLOWS AT
WASTE MANAGEMENT SAINTE-SOPHIE SITE:

PhytoVaLix, an innovative circular economy and phytotechnology pilot project

Sainte-Sophie, Lower Laurentians, Aug. 29, 2019 – The collaborators of PhytoVaLix – Waste Management Québec (WM Québec), Ramea phytotechnologies, the Montreal Botanical Garden’s Institut de recherche en biologie végétale and Polytechnique Montréal – announced their innovative circular economy and phytotechnology pilot project at WM Québec’s engineered landfill in Sainte-Sophie.

Phytotechnologies are technologies that use plants to generate environmental solutions. Wastewater (leachate or leachate waters) results from the percolation of precipitation through decomposing waste. The water, which is mainly composed of organic matter, is captured using a collection system installed at the base of the watertight landfill cells, before the wastewater is treated.

The PhytoVaLix project (“*phytotraitement et valorisation de lixiviat*”) provides a new alternative to leachate treatment consisting in bio-filtration through fast-growing willows. The process, which was developed by Ramea phytotechnologies in conjunction with Institut de recherche en biologie végétale and Polytechnique Montréal, reclaims leachate nutrients and reduces leachate volume. Willows absorb the nutrients and most of the wastewater used to irrigate them. The willows are then reclaimed by manufacturing bioproducts. The willow stems, which can reach over six metres in height after three years of growth, will be harvested by Ramea phytotechnologies to build fences and anti-noise walls, and to make ramial chipped wood mulch, thus completing the circular economy loop.

SCIENCE IN ACTION

The scientific aspect of PhytoVaLix is backed by a team of about 20 researchers and students involved in wastewater treatment and plant biology, and the Ramea phytotechnologies technical team. The aim of the research is to validate the technology’s performance and determine optimal conditions for leachate treatment, willow growth and wood quality. Eight willow varieties will be irrigated to determine which species best meet growing criteria.

The scientific team is led by Yves Comeau, P.Eng., Ph.D., IWA Fellow and Professor at Polytechnique Montréal’s Department of Civil, Geological and Mining Engineering, and Michel Labrecque, Ph.D., head of the scientific research and development division at the Montreal Botanical Garden, researcher at Institut de recherche en biologie végétale, and Associate Professor at Université de Montréal, assisted by Frédéric Pitre, Associate Professor in Université de Montréal’s

Department of Biological Sciences and researcher-botanist at the Botanical Garden. The Ramea phytotechnologies team is led by Xavier Lachapelle-T., head of technological research and development.

PROJECT MANAGEMENT

Close to 160,000 willows have already been planted on nine hectares in the closed-off areas of the landfill, with 13% being part of the PhytoVaLix project. Ramea phytotechnologies, which specializes in the development of vegetated technologies and the production and marketing of fast-growing willows, will be responsible for planting and process management, while WM Québec's team will be in charge of environmental control.

FUNDING

This \$1.2 million project is funded by the Natural Sciences and Engineering Research Council (NSERC), the Consortium de recherche et innovations en bioprocédés industriels au Québec (CRIBIQ), Ramea phytotechnologies and WM Québec.

STATEMENTS

“Our aim is to return the site to its initial agricultural use,” states **Ghislain Lacombe, head of engineering and environment at WM Québec**. “Ramea phytotechnologies’ agro-environmental vision enables us to reduce our environmental footprint while contributing to the growth of a highly promising regional company. This technology could potentially create significant environmental benefits outside of Québec.”

According to **wastewater treatment specialist Yves Comeau**, “Water and the organic and inorganic matter resulting from waste have real nutrient value for plants. Phytotechnology processes have the potential to make an efficient and cost-effective contribution to the treatment of leachate. Rich in nitrogen and minerals, leachate water has shown until now that it could double the natural growth of willows.”

“This collaboration will enable us to further our understanding of the biological mechanisms involved in the phytoremediation of soil and water,” notes **Michel Labrecque, a plant biology specialist**. “Furthermore, PhytoVaLix fits in with one of the NSERC and CRIBIQ’s priorities, which is to train students with a deep interest in plant biology. PhytoVaLix could serve as a model, both here and elsewhere.”

According to **Francis Allard, President of Ramea phytotechnologies**: “PhytoVaLix is a remarkable example of circular economy, with multiple benefits in a single project. We reclaim wastewater, favour fast-growing willows, which contribute to biodiversity on WM’s property, to ultimately create environmentally friendly products. The stems are formed into panels to build anti-noise walls (Green Screens) that are a green and sustainable alternative to anti-noise walls made of concrete. The stems that are less suitable for manufacturing panels are transformed into horticultural mulch.”

Photos and videos describing the PhytoVaLix project, along with a data sheet on the Sainte-Sophie engineered landfill, can be found online at <https://www.wm-sainte-sophie.org/medias>

ABOUT US

Waste Management, based in Houston, Texas, is the leading provider of comprehensive waste management services in North America. Through its subsidiaries, the company provides collection, transfer, recycling and resource recovery, and disposal services. It is also a leading developer, operator and owner of landfill gas-to-energy facilities in the United States. The company's customers include residential, commercial, industrial, and municipal customers throughout North America. In Quebec, WM employs some 300 skilled workers and qualified professionals, including about 75 at the Sainte-Sophie site.

Polytechnique Montréal, a technological university, is one of the largest engineering schools in Canada both in terms of enrolment and research activities. The Department of Civil, Geological and Mining Engineering is internationally renowned. Its graduates export their knowledge around the world and actively take part in the community's technological and socio-economic development.

The Institut de recherche en biologie végétale (IRBV), part of the Montreal Botanical Garden and the result of a partnership between Université de Montréal and the City of Montréal (Espace pour la vie Montréal), is a centre of excellence for research and teaching. IRBV brings together 21 researchers in plant sciences, including genomics, functional biodiversity, phytotechnology, biological control and ecological design, through basic and applied studies. IRBV has over 300 staff members consisting of researchers, students, postdoctoral fellows, along with research and administrative personnel.

Ramea phytotechnologies is a Quebec agricultural SME located in Saint-Roch-de-l'Achigan that specializes in fast-growing willows and the development of environmental vegetated technologies. Its mission is to solve environmental problems using vegetated technologies within the context of a circular economy. Its willow filtration process allows for the bulk reclamation, treatment and reduction of wastewater effluent. The willows grown by the company are harvested and then transformed into high value added products such as green anti-noise walls and Ramea ramial chipped wood mulch.

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