

ACCESS Saskatchewan

What's in your toolbox?

by Jean Collins, WD Communications, Saskatoon

A skilled and experienced tradesperson uses the right tools to efficiently complete projects. In comparison, the home handyman is often frustrated because he's using the wrong tool.

Economic development professionals have a new tool to improve their regional planning exercises. New mapping systems that utilize geographic information systems (GIS) can apply numerous layers of data to create a multi-dimensional map. For example, the GIS tool can identify a specific street address, the registered owner of the land title as well as the service connections, then integrate all of this information on a single map. Such detailed information is a useful tool for municipal planners managing infrastructure services.

Water Wolf Economic Development Inc., located in Outlook, is utilizing GIS technology to develop regional strategies that will encourage and sustain economic growth in west-central Saskatchewan. In partnership with the Mid-Sask Community Futures Development Corporation (CFDC), Water Wolf is piloting a GIS data collection system with surrounding

rural municipalities (RMs) to better coordinate regional economic development strategies.

Russ McPherson, project coordinator at Water Wolf, is working with RMs to demonstrate the uses of regional planning. "GIS uses information from several sources and the map is a three dimensional living thing," says McPherson. "It [the map] is only as good as the data from which it is

constructed. Good data leads to good evidence-based decisions."

McPherson admits the project is in its early stages, and that securing buy-in and building user-friendly computer systems to which RM staff can easily enter data are ongoing challenges. But the collection of data on municipal water, electrical, road, and other infrastructure services can be applied to improve the maintenance and management of sewer and water systems and road grader operations.

GIS mapping also enables economic development personnel and RM councils to obtain a different, much broader perspective when considering buffer zones surrounding controversial projects such as intensive livestock operations. There are also potential benefits that may be applied to dispatching rural emergency services and watershed management practices.

For more information on Water Wolf's GIS pilot project, contact Mid-Sask CFDC at (306) 867-9566.

Western Economic Diversification Canada (WD) provides funding to Saskatchewan's 13 Community Futures Development Corporations. For more information on WD or its partners, contact 1 888 338-9378 or visit www.wd.gc.ca. ■



The Town of Outlook pictured on a GIS map.



by Cameron Zimmer, WD Communications, Saskatoon

University's research leads to practical results

In early 2004, Western Economic Diversification Canada (WD) provided \$1.3 million to the University of Regina to fund 11 projects that use applied research with practical impacts on multimedia, health, energy, and the environment. Two of these projects are summarized below.

TERRA puts climate change research on the map

Skim a daily newspaper and you're bound to take in a bewildering array of statistics on crime, global warming, and the economy.



Eleven projects using applied research are being funded by WD at the University of Regina.

PHOTO COURTESY OF THE UNIVERSITY OF REGINA

CLARIFICATION: *Partners for a brighter southwest, Access Saskatchewan, Winter 2006, page 4*

Texts are often shortened in the editing process due to space constraints. The following paragraph is being reprinted in its entirety to eliminate potential misunderstanding:

For example, the Cypress Hills Regional College will look at adjustments to the program offerings to support educational skills and reduce skilled labour shortages within the region. Also, presentations will be conducted at high schools to address skilled labour shortages in the energy sector.

Two years ago, WD provided over \$127,000 to the University of Regina to set up a computer lab that can take research data from different fields and apply it to Saskatchewan's situation.

The Environmental Research and Response Applications Lab (TERRA) uses high-end Geographic Information Systems (GIS) on powerful computers to combine environmental, economic, and social data on a single map.

To date, 30 geography graduate students and faculty members have embarked on 19 different projects that cover everything from urban littering habits to

the effects of burrowing animals on the Saskatchewan Badlands.

The common thread among most of these research projects is an attempt to measure the effects of climate change in Saskatchewan. The lab's major triumph to date involves the use of satellite sensors to track the effects of the El Niño weather system on northern Saskatchewan's forests. This and other TERRA climate change projects have secured the University a Canada Research Chair in Geomatics and Sustainability. The Canada Research Chairs are central to a national strategy of making Canada one of the world's top five countries in research and development.

TERRA's growing reputation has also landed the University a partnership with a leading Canadian GIS company to deliver a course on crime mapping. Every summer, up to 50 police professionals and graduate students from across North America gather at the lab where they learn how to compile crime data and follow its patterns.

The opportunity to work with TERRA's industry-leading geomatics tools and to conduct leading research already has graduate students lining up to use the lab.

"Since the inception of TERRA, graduate student enrollment in the Department of Geography has doubled," says Dr. Joseph Piwowar, co-director of the TERRA lab.

Cleaner water coming for First Nations communities

Canadians were horrified last October when more than 1,000 people were airlifted from Kashechewan First Nation in northern Ontario because their water was polluted with E. coli bacteria.

University of Regina researcher Dr. Dena McMartin is doing her best to ensure that northern First Nations communities like Kashechewan have a practical treatment system that provides clean water at an affordable cost.

Using \$118,000 from WD and additional funding from Communities of Tomorrow in Regina, a centre of excellence in research, innovation, and economic value for sustainable communities, McMartin is working with two Master of Applied Science students and a Master of Engineering student to design a new water treatment system for First Nations.

"The goal is to try to exploit natural processes in the environment for treating water for human consumption," says McMartin. "The general idea is to grow natural bacteria already present in the water source."

McMartin also plans to test a second process called photochemistry, which exposes water to light that kills dangerous microbes such as E. coli. With these two systems in place, McMartin and her team are beginning on-site tests in collaboration with two Saskatchewan First Nations this year.

"First Nations people realize that to attract new citizens and industry, they need to have access to clean and safe water. Economics, environment, and social value are closely linked to water quality. The First Nations we're working with are very knowledgeable and practical about these needs," says McMartin. "It's been a pleasure to begin working with our First Nations colleagues and we look forward to a continued positive relationship."

For more updates on Dr. McMartin's research, visit the Communities of Tomorrow website at www.communitiesoftomorrow.ca. ■



Dr. Dena McMartin, professor of Engineering, is conducting water quality field tests in First Nations communities.

PHOTO COURTESY OF THE UNIVERSITY OF REGINA

by Heather Waldern-Hinds, WD Communications, Saskatoon

From junk to joules

What happens when organic material and heat mix? As anyone with a backyard composter knows, the organic matter is broken down into something useful.

The Prairie Agricultural Machinery Institute (PAMI), in Humboldt, built a pilot-scale biodigester that applies this compost principle on a larger scale. A biodigester uses heat to break down organic matter such as manure, waste products from intensive livestock operations and abattoirs, waste grain products and municipal wastes. Bacteria interact with the waste and break it down into processed organic matter, more specifically bio-gas and liquid fertilizer.

Biogas can power cogeneration units, which produce both heat and electricity. The heat can be used on-site for buildings and the electricity sold to the local power grid. The biogas can also be cleaned to meet natural gas standards, and then sold to local natural gas suppliers. The organic liquid fertilizer contains almost as many nutrients as raw manure and has significantly less odour. Depending on which waste products are biodigested, the amount and quality of the end product will always be different.

PAMI received \$93,069 from Western Economic Diversification Canada (WD) in 2005 to build the biodigester. The pilot plant can provide design information and test different waste product formulations for the 25 full-scale biodigester facilities expected to be built in Canada over the next few years.

“We have intensive livestock operations showing most of the interest in the

biodigester,” explains Patricia Lung, project leader at PAMI. “It makes sense because a biodigester can process raw manure waste to yield heat and “green” energy. Also, the liquid byproduct of the digester is less aromatic than the raw manure and can be used as a fertilizer supplement. In short, a biodigester is a waste management alternative to the traditional lagoon. It offers possible revenue as well as environmental savings that a lagoon doesn't.”

Clear-Green Environmental Inc. developed the province's first biogas plant in 2004. The plant heats a hog barn and, in co-operation with SaskPower, generates electricity. Ben Voss of Clear-

Green estimates the plant reduces the fossil fuel energy requirements of the hog barn by 75–90 per cent.

“There are many benefits for both large-scale and small farms,” says Voss. “Energy independence is a very important benefit. Odour reduction, reduced pathogens and environmental enhancement are significant reasons for a biodigester as well. The use of biodigested manure as fertilizer also provides significant benefit to farmers in terms of reducing the need for fertilizers derived from fossil fuel.”

For more information, visit www.pami.ca or call 1 800 567-PAMI (7264). ■



PAMI biodigester system with silver biodigester in the background.
PHOTO COURTESY OF PAMI