



LEVERAGED MUNICIPAL INNOVATION FUND (LMIF) PROJECTS

Wastewater Treatment Plant Sludge and Biosolids - Beneficial Practice and Appropriate Technology Guide

Municipal Sponsors: City of Prince Albert - www.citypa.ca
& City of Regina - www.regina.ca

Principal Investigator: Enviseng - www.enviseng.ca

Project end date: September 30, 2012

CT Commitment: \$ 49,109
Total Project Cost: \$ 69,109

Overview:

The objective of this project was to explore best practices and emerging technology to improve, augment or replace current technology and practices for treatment, processing and use of wastewater treatment plant sludge and biosolids.

The main solid constituents of wastewater sludge are organic materials. The most common practices for disposal of wastewater treatment plant sludge and biosolids are landfilling and use of biosolids for fertilizer or as fuel for an energy recovery facility. The recovery and reuse of biosolids from wastewater treatment plants offers some opportunities for municipalities to generate income to offset the costs of processing and treatment of sludge.

Develop Improved Roadway Pavement Materials, Equipment and Work Practices for Pothole Repairs

Municipal Sponsors: City of Saskatoon – www.saskatoon.ca
& City of Prince Albert – www.citypa.ca

Principal Investigator: Clifton Associates Ltd. – www.clifton.ca

Project end date: September 30, 2012

CT Commitment: \$ 30,666
Total Project Cost: \$ 50,666

Overview:

There is a wide variance in practices within the major Saskatchewan municipalities with respect to the process and application of pothole maintenance and repair. CT identified an opportunity to formulate and provide a comprehensive best practice guidelines and recommendations that will provide Saskatchewan municipalities with improved service and practices for their pothole patching programs which results in lower lifecycle costs and better public satisfaction.

The scope of this project included preventative maintenance, materials, equipment, program management, costs and communications.

This objective was achieved by conducting competitive technology intelligence studies of the current and emerging technologies at both the local and global level in regions of similar climatic conditions. The study also identified gaps/opportunities for potential future research/development projects within this focus area.

Develop Useable Guidelines for Cities/Towns to Utilize Recycled Asphalt in Cold Mixes and Cold In-Place Recycling Processes

Municipal Sponsors: City of Saskatoon – www.saskatoon.ca
& City of Moose Jaw – www.moosejaw.ca

Principal Investigator: Clifton Associates Ltd. – www.clifton.ca

Project end date: September 30, 2012

CT Commitment: \$ 31,511

Total Project Cost: \$ 51,511

Overview:

There is a need to improve and expand the types of treatments and materials currently utilized in rehabilitating our pavement structures. Using the optimum treatment and materials to treat the right pavement condition will improve performance and lower the life cycle costs. There are proven technologies available from other geographic areas that could be adapted to local conditions.

The objective of this project was to develop best practice processes to enable Saskatchewan municipalities to utilize recycled asphalt mixes and warm asphalt mixes to treat the appropriate pavement conditions in their communities. The scope of this project included developing best practice processes, standards and specifications, and testing and equipment requirements for recycled asphalt mixes and warm asphalt mixes.

Standardized Winter Sanding Guidelines

Municipal Sponsors: City of Saskatoon – www.saskatoon.ca
& City of Regina – www.regina.ca

Principal Investigator: Stantec Consulting Ltd. – www.stantec.com

Project end date: September 30, 2012

CT Commitment: \$ 20,505

Total Project Cost: \$ 40,505

Overview:

The purpose of the project was to formulate a comprehensive and universal set of specifications for winter sanding materials for Saskatchewan municipalities. The recommended specifications allows Saskatchewan municipalities to purchase effective and identical materials for winter salt/sand operations, providing the opportunity to bulk purchase, and ideally reducing the unit price for all participating.

The project examined all current practices and types of salt/sand materials used, explored available and alternative applications, researched cost benefits analysis, identified performance metrics used, and identified best practices. The findings were presented to the municipalities as a set of recommended guidelines for sand/salt mix applications.

Municipal Snow Dump Management Guidelines

Municipal Sponsors: City of North Battleford – www.cityofnb.ca
& City of Yorkton – www.yorkton.ca

Principal Investigator: Associated Engineering – www.ae.ca

Project end date: September 30, 2012

CT Commitment: \$ 23,067

Total Project Cost: \$ 43,067

Overview:

The purpose of the project was to establish a set of general guidelines to effectively manage municipal snow dump sites. The guidelines covered procedures for mitigating soil contamination at the dump site, as well as recommendations for long term remediation plans; and the management and control of the melt water runoff, including dealing with containment and management of the inherent contaminants within the melt water.

The project identified best practices, potential need and support, performed an assessment of current remediation practices, and provided recommendations for alternative remediation practices and/or technologies.

Innovative Procurement

Municipal Sponsors: City of Saskatoon – www.saskatoon.ca
& City of Humboldt – www.humboldt.ca

Principal Investigator: Midgard Project Management Ltd. – www.midgardpm.com
McNair Business Development Inc. – www.mcnair.ca

Project end date: September 30, 2012

CT Commitment: \$ 45,000

Total Project Cost: \$ 65,000

Overview:

The objective of this project was to develop a business case for a combined municipal procurement system, with an approach that will drive innovation.

Trenchless Technologies Review and Assessment

Municipal Sponsors: City of Estevan – www.estevan.ca
& City of Regina – www.regina.ca

Principal Investigator: Pinter & Associates Ltd. – www.pinter.ca

Project end date: September 30, 2012

CT Commitment: \$ 57,000

Total Project Cost: \$ **77,000**

Overview:

The objective of this project was to undertake a thorough literature review of the current underground asset management techniques and options related to underground pipe relining and replacing, as well as new installations, and to develop a comprehensive report detailing these techniques and processes (pipe bursting, pipe relining and horizontal boring).

The scope of this project involved a review of current and emerging technologies and practices, evaluating information collected, and developing a beneficial practices guideline document relevant to trenchless pipe rehabilitation or replacement materials, equipment and work processes specific to Saskatchewan applications.

Trench Reinstatement Improvement Practices

Municipal Sponsors: City of Humboldt – www.humboldt.ca
& City of Swift Current – www.swiftcurrent.ca

Principal Investigator: Clifton Associates Ltd. – www.clifton.ca

Project end date: September 30, 2012

CT Commitment: \$ 33,000

Total Project Cost: \$ **53,000**

Overview:

The objective of this project was to develop a comprehensive beneficial practices document that would improve the level of service provided by our current municipal trench reinstatement programs at a feasible cost.

The scope of this project involved a review of current and emerging technologies and practices for municipal trench reinstatement, evaluating information collected, and developing a beneficial practice guideline document relevant to trench reinstatement materials, equipment and work processes.

Improved Asphalt Crack Sealing Processes and Practices

Municipal Sponsors: City of Yorkton – www.yorkton.ca
& City of Regina – www.regina.ca

Principal Investigator: Stantec Consulting Ltd. – www.stantec.com

Project end date: September 30, 2012

CT Commitment: \$ 34,000

Total Project Cost: \$ 54,000

Overview:

The objective of this project was to develop a beneficial practices document that would improve the level of service provided by our current municipal crack sealing programs at a lower lifecycle cost. The project also examined alternative preservation treatments that provide crack sealing benefits.

The scope of this project involved a review of current and emerging technologies and practices, evaluating information collected, and developing a beneficial practices guideline document relevant to crack sealing materials, equipment and work processes.

Wastewater Treatment Plant Sludge and Biosolids Beneficial Practice and Appropriate Technology Guide – Phase 2

Municipal Sponsors: City of North Battleford – www.cityofnb.ca
& City of Prince Albert – www.citypa.ca

Principal Investigator: Enviseng - www.enviseng.ca

Project end date: September 30, 2012

CT Commitment: \$ 45,000

Total Project Cost: \$ 65,000

Overview:

The main solid constituents of wastewater sludge are organic materials. The most common practices for disposal of wastewater treatment plant sludge and biosolids are landfilling and use of biosolids for fertilizer or as fuel for an energy recovery facility. The recovery and reuse of biosolids from wastewater treatment plants offers some opportunities for municipalities to generate income to offset the costs of processing and treatment of sludge.

The objectives of Phase 2 were to research and evaluate current knowledge, technologies, equipment and practices relating to the mechanical processes involved in treatment, processing and disposal of wastewater sludge and biosolids; and author a “Beneficial Practices and Appropriate Technology Guide” for the mechanical processing, handling and disposal treatment of wastewater sludge and biosolids.

Bridge Project

Principal Investigator: Jim Zacaruk, Zacaruk Consulting Inc.

Project end date: September 15, 2012

CT Commitment: \$ 20,000

Total Project Cost: \$ **20,000**

Overview:

The objective of this project was to do a feasibility study for identifying opportunities for collaboration between various bridge owners in the province of Saskatchewan. The purpose was to interview the bridge owners within the province and identify opportunities where Communities of Tomorrow could collaborate with improving the delivery of their services.

MUNICIPAL INFRASTRUCTURE INNOVATION FUND (MIIF) **PROJECTS**

Trenchless Sewer Pipe Replacement

Principal Investigator: Denise Stilling, University of Regina (STUDENT PROJECT) – www.uregina.ca

Project end date: December 31, 2009

CT Commitment: \$1,250

Total Project Cost: **\$1,250**

Overview:

The purpose of this project was for removing damaged sewer pipe by a “plug pull” system when trenching from the resident to the municipal line is impossible or undesirable due to structural additions, landscaping or other underground conduits. Various options for removal of damaged sewer lines were evaluated and an innovative prototype to improve the effectiveness and safety with “plug pull” systems was constructed and evaluated. The design was for a plate that can grip and re-grip grade 80 chain that can be easily attached and removed from mid-range backhoe units. Regardless of the location of the chain in the narrow trench (approximately 28’ wide), the attachment was able to grab/re-grab the chain so that the pull sweep of the bucket is effective in removing damaged sewer pipe. The ability to re-grab the chain after each bucket sweep enables the entire sewer to be removed and then the new sewer line installed.

Effluent Irrigated Wood Lots

Principal Investigator: Shahid Khan, SaskWater – www.saskwater.com

Project end date: December 31, 2012

CT Commitment: \$ 40,000

Total Project Cost: **\$417,600**

Overview:

The demonstration project determined the feasibility of using fast growing hybrid poplar trees for disposal of secondary/tertiary treated municipal wastewater effluent. An effluent irrigated woodlot is well suited for disposal of community wastewater as poplar trees are capable of up-taking large quantities of water and nutrient.

The project’s objectives were to quantify the minimum and maximum effluent and nutrient uptake by the hybrid poplar trees and to compute the sustainable agronomic rate with minimum leaching to potential underlying aquifers. The project also assisted SaskWater to develop design parameters and determine capital cost and operations & maintenance costs for effluent irrigated woodlots.

The results of this project opened up another option to qualified Saskatchewan communities who are looking for an economic solution to their wastewater disposal problem with “zero” discharge to water bodies (stream/river/lake).

Chemical Free Potable Water Treatment

Principal Investigator: Lanna Sigfusson, University of Regina (STUDENT PROJECT) – www.uregina.ca

CT Commitment: \$1,705

Total Project Cost: \$6,705

Project end date: April 30, 2010

Overview:

The project involved conducting experiments using biological sand filtration under a variety of environmental conditions. Surface water from Edenwold, SK was run through columns of sand in specific environments. These environments included presence of air, presence of food, presence of air and food, and no induced food or air. The project also included a special case which incorporated enriched manganese-metabolizing bacteria into the sand filter to directly respond to and more efficiently reduce the manganese content in the water. These bacteria were cultured by the proponent in collaboration with the Biology Department and the U of R in attempt to grow specific bacteria from the water samples that grow in a manganese-rich environment and are capable of metabolizing it as a nutrient and/or energy source.

Detecting Underground Water Leaks

Principal Investigator: Evan Morris, EcoTech Research Ltd. – www.ecotechresearch.com

Project end date: April 15, 2011

CT Commitment: \$13,300

Total Project Cost: \$49,595

Overview:

This project worked to develop a quick and inexpensive method to detect leaks from underground water pipelines. The project used three electromagnetic (EM) instruments to detect water leaks, as EM instruments are extremely effective in detecting near-surface water. The research project determined which instrument or combination of instruments was best for detecting leaks.

This project resulted in the belief that the general method of finding water leaks with electromagnetic instruments is sound. They successfully tested the computer program developed to capture conductivity data and the GPS location of instruments. This allows for the ability to retrieve detailed information on how conductivity changes with depth.

Validation/Refinement of Launched Soil Nail Design Guidelines

Principal Investigator: Marty Wilfong, Morksy HySpeed Soil Nailing Ltd. – www.morsky.ca

Project end date: September 30, 2011

CT Contribution: \$100,000

Total Project Cost: \$480,000

Overview:

Facilities located on or around soils with slopes were often designed with outdated guidelines or no guidelines at all, as geotechnical engineering and soil mechanics is relatively new compared with other engineering disciplines. Even solidly designed soil structures can weaken with changing moisture conditions, leading to very fast failures that need quick remediation. Launched soil nailing provides this solution, and there is considerable interest from the engineering community in this cost-effective technique.

The engineering community in Canada needed up-to-date, robust, field-tested and proven design guidelines that will allow for modeling of the interaction between the nails and various soil types and failure planes. This provides the confidence that engineers, consulting to owners of infrastructure, need to recommend launched soil nailing on a larger scale, and provide detailed recommendations, stamped with their professional engineering stamp.

Transit Tracker (Phase 2)

Principal Investigator: Dr. Raman Paranjape, TRILabs - www.trtech.ca

Project end date: January 1, 2010

CT Commitment: \$15,800

Total Project Cost: \$15,800

Overview:

The purpose of this project was to develop new technology to provide accurate and timely bus location information to transit users and the general public on a continuous basis through an on-board GPS system, cellular phone technology and Web based technology. This information is extremely useful for transit users as it will allow them to plan their arrival at bus stops precisely to coincide with the arrival of their bus. In cold Saskatchewan winters, the value of this should be self-evident. The system tracks the movement of all the buses on several bus routes and provides both a web site interface and a cell phone interface as a mechanism for knowing the next bus's current location at all times. Benefits include: convenience to transit users, an increase transit rider-ship, decrease in private vehicular traffic, decreased traffic congestion, reduction in vehicular pollution, reduced usage of non-renewable resources such as fuel, etc., thus providing a more sustainable transportation system with respect to roads, the environment and energy consumption.

Transit Live

Principal Investigator: Dr. Raman Paranjape, 101150419 Saskatchewan Ltd./CRL Engineering Ltd. – www.crlengineering.com

Project end date: April 30, 2011

CT Commitment: \$ 69,200

Total Project Cost: \$165,000

Overview:

The purpose of this project was to continue the development new technology to provide accurate and timely bus location information to transit users and the general public on a continuous basis through an on-board GPS system, cellular phone technology and Web based technology, including implementing a pilot test.

Pilot Test of Membrane-Bioreactor (MBR) - Greywater

Principal Investigator: Dr. Stephanie Young, University of Regina – www.uregina.ca

Project end date: April 30, 2011

CT Commitment: \$ 75,000

Total Project Cost: **\$507,400**

Overview:

The research for this project was pilot testing of five pilot plants for on-site greywater reclamation and non-potable reuse in small community applications. Five pilot plants were designed and built, of which three were designed and built using the proponent's self-designed and built membrane modules and membrane bioreactors; the other two were designed and built using the best commercially available membrane module or membrane bioreactor. The first three MBR pilot plants with the proponent's self-designed and built membrane modules and bioreactors were on-site pilot-tested in parallel to determine the best one. The best one was then on-site pilot-tested in parallel to the other two pilot plants made from a commercial membrane module or membrane bioreactor. This allowed for the comparison of the effectiveness of the greywater reclamation system to achieve the goal of commercialization of their products.

Pilot testing of seven different greywater reclamation technologies was completed and selection of two of the pilot tests was made for implementation and commercialization – the twisted IMBR and a chemical DAF system. The quality of reclaimed water exceeded the Canadian Guidelines for Domestic Reclaimed Water for Use in Toilet and Urinal Flushing.

Mid-Scale Batch Coagulation

Principal Investigator: Bill Kidd, Tec-Water Supplies Inc. – www.tecwater.ca

Project end date: March 31, 2011

CT Commitment: \$120,000

Total Project Cost: **\$294,000**

Overview:

Tec-Water Supplies Inc. utilized a novel variation of its patented *Floc System 100™*, a batch coagulation system, to create an efficient community-scale drinking water system treatment train at a project site near Lumsden, Saskatchewan. The significant modifications scale up their current system to cost-effectively utilize surface water to produce a potable water supply that meets Saskatchewan Energy and Resource Management (SERM) guidelines for drinking water. This is an ideal solution for small communities, resorts, First Nations, flood areas, industry and remote locations with available surface water. As water quality decreases and groundwater sources are depleted, communities are looking to abundant surface water sources.

The Sun Dale development team was confident in the usability and market potential of the Tec-Water pre-treatment technology, a harsh water treatment solution, and continued to work towards achieving a fully operational water treatment facility in their Sun Dale community. The remainder of this project completed the scale up and testing to verify that the treatment train will meet the needs of the Sun Dale community and can be adapted to also fit the needs of other small communities.

Design and Development of an Optical Laser Scanning Devise

Principal Investigator: Dr. Mehran Mehrandezh, University of Regina – www.uregina.ca

Project end date: January 31, 2012

CT Commitment: \$ 50,000

Total Project Cost: \$115,000

Overview:

The focal point of this project was the design and development of an optical laser scanning system for inspecting water pipes. This system can be also used for inspecting pipes used in the oil/gas industry and also the Quality Control (QC) of manufacturing/installation of the pipe infrastructure.

This research focused on developing non-destructive/non-intrusive pipe inspection tools to be carried inside a pipe by a robotic platform designed and developed at the University of Regina under the applicant's supervision called Regina Pipe Crawler (RPC) with the objective to produce an automated inspection, assessment, and reporting system which is highly consistent. The proposed system would be able to do the non-destructive inspection of in-service water/sewer/gas pipes; and semi-automated Quality Control (QC) on pipes in different diameters of varying materials and conditions.

A lab-scale test bed for vision-based laser scanning was developed. A set of different imaging tools and illumination techniques for QC purposes were tested in the lab. A software user interface was developed for detecting defects, classifying them based on their size and position-referencing them inside the pipe.

Processing, Evaluating & Implementing Millings

Principal Investigator: Curtis Berthelot, PSI Technologies Inc – www.psistechnologies.ca

Project end date: June 30, 2011

CT Commitment: \$ 40,000

Total Project Cost: \$ 800,000

Overview:

The goal of the proposed project was to develop the specifications and protocols to increase the value of asphalt millings. Under this research, the Proponent processed asphalt millings into a number of aggregate products using state-of-the-art crushing and screening technology. The produced materials were tested and characterized mechanistically, to validate their performance. Specifications and testing protocols were developed to enable road agencies to publically tender the reprocessing of asphalt millings into high value materials.

Based on the findings of this project, processed and crushed asphalt millings showed significant potential for numerous road material applications. In particular, this project investigated applications of recycled asphalt millings in road material application where the intrinsic value of the residual asphalt cement of the material could be exploited and employed in road structure applications in both the base layer and the HMAC surfacing layer.

Development of an Innovative Non-Destructive Culvert Condition Diagnostic System

Principal Investigator: Curtis Berthelot, PSI Technologies Inc – www.psitechnologies.ca

Project end date: September 30, 2011

CT Commitment: \$ 40,000

Total Project Cost: \$ 410,000

Overview:

The goal of this project was to develop a Culvert Structural Condition Diagnostic System and a Culvert Asset Database. This research employed an advanced non-destructive testing, and continuous video logging to determine the structural condition of a culvert. A Ground Penetrating Radar (GPR) as well as Heavy Falling Weight Deflection (HWD) testing was used to investigate structural weakness around a culvert in order to identify culverts at a high risk of failure. A condition rating system and failure risk factor was developed to supplement continuous video logging in an asset management database format. The project also documented and presented specifications for an innovative culvert lining process that significantly reduces the costs associated with rehabilitating failing culverts.

Treatment of Micro-Pollutants in Water Using Catalytic Ozonation

Principal Investigator: Dr. Jafar Soltan Mohammadzadeh, University of Saskatchewan – www.usask.ca

Project end date: August 31, 2011

CT Commitment: \$ 15,000

Total Project Cost: \$ 25,000

Overview:

This project was about developing a water treatment technology to eliminate micro-pollutants in drinking water and treated wastewater. Ozone treatment is one of the established technologies in conventional drinking water treatment facilities. The proponent developed catalysts that enhance activity of ozone (O₃) in destruction of harmful compounds in water. The proponent can optimize properties of our solid catalysts and test their effectiveness in removing typical micro-pollutants in water. Based on the results of the experimental work they can evaluate feasibility of application of catalytic ozonation in removing micropollutants in water.

Feasibility of Using Nanoparticles for Enhancing the Treatment Efficiency of R2S Sewage Treatment Technology for Small Communities

Principal Investigator: Dr. G. Lakshman, System Ecotechnologies Inc. – www.systemecotechnologies.com

Project end date: September 15, 2010

CT Commitment: \$20,000

Total Project Cost: \$42,000

Overview:

System Ecotechnologies Inc (SEI) has developed a patented process (the R2S Technology) which provides advanced treatment for raw municipal sewage, eliminates the production of all greenhouse gases and produces recyclable water. It is targeted to small communities to enable them to meet stringent environmental discharge standards. The technology uses two non-hazardous and soil-friendly chemicals in the treatment process.

Nanotechnology is a cutting edge technology dealing with enhanced properties of ultra-small sizes. This feasibility study determined that exposure to ultrasonics can create nanoparticle chemicals which have enormous reaction potential. The data from this project indicates that ultrasonics treatment is a viable option for producing nanoparticles for the chemical used in the R2S Treatment technology.

Incorporating the Simulated Earthworm Gut into Site Specific Remedial Objectives

Principal Investigator: Steve Siciliano, University of Saskatchewan – www.usask.ca

Project end date: May 1, 2012

CT Commitment: \$ 77,000

Total Project Cost: \$ 204,300

Overview:

Site specific remedial objectives are the chemical targets that remediation programs must meet for a brownfield to be considered available for commercial development. To develop site specific remedial objectives, a battery of toxicity tests are used. The Simulated Earthworm Gut (SEG) is a new technology that can be used to augment this battery of tests and is much faster and cheaper. Stantec in association with the Proponent developed the basic science underlying SEG. The purpose of this project was to apply the SEG to two different sites, one in Saskatchewan and one in Alberta that are undergoing soil risk assessment and incorporate the SEG results into the risk assessment process. This tested if the SEG offers substantial added value to the brownfield restoration process and developed the risk assessment protocols necessary to incorporate the SEG into the restoration framework.

Vacuum Enhanced Electrocoagulation Technology (EPT)

Principal Investigator: Sean Frisky, Ground Effects Environmental Services Inc. – www.groundeffects.org

Project end date: September 30, 2010

CT Commitment: \$ 50,000

Total Project Cost: \$489,000

Overview:

Electrocoagulation has been in existence for over 100 years, however has yet to become a reliable, commercial technology. GEE believes that this is due to the lack of a systematic approach to design and operation. Technology has greatly improved processes; however without the key knowledge of the foundation technologies behind electrocoagulation, results vary greatly. GEE has based the vacuum enhanced electrocoagulation technology around three key elements; electrochemistry, coagulation and flotation. By understanding the complex interactions between the three elements and designing the

treatment system and operating parameters in association with each, the EPT becomes an economical, low maintenance option for pollutant removal and treatment.

The Vacuum Enhanced Electrocoagulation Technology has the ability to efficiently remove a wide range of contaminants simultaneously including but not limited to heavy metals, greatly reduce TDS and colloidal solids, break emulsions, remove hydrocarbons and complex organics as well as eliminate bacteria, viruses and cysts. GEE has taken vast steps to further develop the technology, as well as enhance and optimize the overall system, whereby increasing the technologies ability to “clean” the waste, dramatically increasing removal rates, while lower capital and operating costs.

Uranium Project Benchscale

Principal Investigator: Mainstream Water Solutions Inc. – www.mainstreamwater.com

Project end date: December 31, 2010

CT Commitment: \$22,500

Total Project Cost: **\$81,000**

Overview:

The purpose of the project was to investigate a simple, inexpensive and chemical-free method for removing uranium from drinking water suitable for small-scale rural utilities. It involved examining a potential modification to the existing Mainstream BioFiltration water treatment system to increase its efficiency at removing uranium from potable water.

The Mainstream system is advantageous for small communities because it is a simple and reliable technology that is economical to operate. The system requires minimal inputs, as it is gravity based and requires no chemical addition. The only maintenance requirement is occasional backwashing of the filters. This translates into cost savings and ease-of-operation.

Expansion & Commercialization of In-Vitro Screening Assays for the Detection and Assessment of Endocrine Disrupting Potentials of Chemicals, Waste- and Drinking-Water

Principal Investigator: Markus Hecker, PhD, Toxicology Centre, University of Saskatchewan – www.usask.ca

Project end date: June 30, 2012

CT Commitment: \$ 30,000

Total Project Cost: **\$ 275,449**

Overview:

In vitro tests shall characterize the potential of a chemical or environmental sample to affect the production of endogenous sex hormones (steroidogenesis) or to act as a hormone-like substance. The Proponent developed and validated one of the 4 *in vitro* tests (steroidogenesis) of the required EDSP and OECD testing batteries. In addition, the Proponent established technologies and protocols for the remaining 3 *in vitro* tests at the bench scale. With this project the proponent continued the further development of these additional 3 *in vitro* assays for their commercial application.

Small Scale Wastewater System Design

Principal Investigator: Jason Tratch, CEO, EcoLibra Systems Inc. – www.ecolibrasystems.com

Project end date: April 30, 2011

CT Commitment: \$ 40,000
Total Project Cost: \$ 277,000

Overview:

This project leveraged an existing wastewater treatment and recovery process utilized by a technology called the Resource Recovery System (R2S). The R2S Technology is recognized globally as a highly innovative packaged municipal wastewater treatment plant process that recovers clean, bacteria free, odourless water and nutrients. It is environmentally superior and lower cost than the standard competitor product (lagoon).

This project fulfills an urgent need for communities across SK and Canada that have small populations (less than 1000 people). The savings from this project for communities that purchase a small wastewater treatment plant is expected to be 30-50% less than the competing technology (lagoons). The R2S effluent will be far superior (over 10 times cleaner) than treated water from lagoons. The performance of this small scale system will easily meet future environmental discharge requirements whereas lagoons are facing tremendous challenges to meet future requirements. In addition the technology process produces zero greenhouse gases whereas a lagoon releases 1000s of tonnes of greenhouse gases annually.

Service Connector Project

Principal Investigator: Conroy Ross – www.conroyross.com

Project end date: September 30, 2011

CT Commitment: \$ 38,970
Total Project Cost: \$198,970

Overview:

A team including Conroy Ross and 7 municipalities, along with other cluster stakeholders was tasked with finding an innovative solution to the challenges associated with the repair and replacement of municipal water service connections. The group was split into project teams with one concentrating on the excavation and installation of water service lines, and the other focusing on the curb stop valve at the property line. They proposed a new design for an excavation cage and pipe winching system, and a re-design of the standard curb stop valve, to make it easier to locate and manipulate from above ground.

In just under 100 days the two teams were able to provide recommendations for new designs, conceptual drawings for the required products, and estimated capital budgets to develop and build the new systems. The team reports indicated that municipalities could potentially save up to 50% of the current per-installation cost for water service connection replacement.

CT undertook to move the project forward from conceptual to practical demonstration activities.

Service Connector Project

Principal Investigator: Saskatchewan Research Council – www.src.sk.ca

Project end date: April 30, 2011

CT Commitment: \$ 17,938
Total Project Cost: \$ 22,938

Overview:

The Communities of Tomorrow team developed a concept for the replacement of water service lines in municipality water distribution systems. The main challenge to replacing aging water lines is the cost involved in trenching an 8 to 12 foot hole from the corporate stop to the curb stop to the residence. The development team, composed primarily of municipal representatives and other organizations, arrived at a cage and winch system that could reduce the costs and minimize the damage to property during water line replacement.

A “Shoring” system was pursued and work went ahead on the required design work with the goal of having an assembled system ready for testing.

Evaluation of Contaminant Transport and Gas Generation at the Regina Landfill Using Electrical Resistivity Imaging Technique

Principal Investigator: Dr. Yee-Chung Jin, University of Regina – www.uregina.ca

Project end date: June 15, 2012

CT Commitment: \$ 20,000
Total Project Cost: \$ 25,000

Overview:

The key objective of this work was to conduct a full-scale field study on the generation, storage, and migration of leachate and landfill gas at the Regina landfill using Electrical Resistivity Imaging – Induced Polarization (ERI-IP) technique. Applications of ERI-IP for geophysical survey were studied extensively and reported by a number of researchers. However, most previous studies have failed to address its applications in environmental issues. This study was conducted in response to an increased awareness of environmental protection of solid waste disposal facilities and the need for fast, reliable and non-destructive examination techniques of in-situ/water contamination at landfill sites.

The Regina landfill receives 420,000 tonnes of waste annually and it is constructed on native soil without neither a liner system nor a gas management system. Recent study indicated that water quality of the upper aquifer underneath the landfill was noticeably deteriorated. Another study estimated that about 9,000 tonnes of methane and 34,000 tonnes of carbon dioxide were generated from the landfill annually.

The development of the said technique is of great potential value for approaching a reliable and economical management tool for the Regina landfill. The results are useful to the policy-makers, engineers and research communities in other cities and towns.

A standard procedure was established for the ERI measurement at the solid waste disposal landfill sites. Optimal operational parameters for the ERI equipment at the Regina landfill under local climatic condition were also determined. Calibration and sampling techniques were developed.

This technology will be of great practical value for the management of landfills and solid waste disposal sites.

Geotechnical Information Management System (GIMS)

Principal Investigator: Rupi Panesar, M.C.A., I.S.P., Panorama IT Consulting Inc –
www.panoramaitc.com

Project end date: December 31, 2011

CT Commitment: \$ 40,000

Total Project Cost: \$ 127,800

Overview:

Geotechnical Information Management System (GIMS) is a web-based geotechnical data management software; developed to address the issues and challenges faced by organizations that deal with high volumes of geotechnical data. The large amount of data that is collected during site investigations is not stored in any standard format and generally gets restricted to one project only. Also there is currently no Laboratory Information Management System (LIMS) that will satisfy the needs of a geotechnical market.

GIMS stores all the geological and geophysical logs, instrumentation completion details, manual and remote data acquisition, sample testing details and laboratory testing results in a standard format and at one centralized location. With its querying capabilities, GIMS allows fast and easy access to stored data and generates the required reports and logs within no time. It also significantly helps in analysis and manipulation of such data for the generation of final recommendations and design. Additionally, GIMS fills the gaps by incorporating LIMS for the geotechnical market.

Enhanced Electrocoagulation for Municipal Applications

Principal Investigator: Sean Frisky, President & CEO, Ground Effects Environmental Services –
www.groundeffects.org

Project end date: January 31, 2012

CT Commitment: \$ 40,000

Total Project Cost: \$ 240,000

Overview:

This project attempted to improve the wastewater treatment effluent in a targeted manner which would ultimately lead to the reduction of fresh water use for a variety of industrial applications. The fundamental individual treatment processes which make up the industrial wastewater treatment train are cumulatively based on a century of science. Optimization advancement and commercialization of these individual processes into a flexible treatment regime sets this treatment train apart. The primary treatment component within the train is electrocoagulation, which through the application of a direct current produces a variety of electrochemical outcomes that can effectively and efficiently treat a diverse range of contaminants. Through the development of a specified treatment train, the applied technology, Electro Pure Treatment (EPT) restores that quality required for industry reuse, meeting or exceeding established standards.

Nanotechnology Based Enhancement of R2S Sewage Treatment Technology for Improved Efficiency and Expansion of Scope to Large Municipalities

Principal Investigator: Dr. G. Lakshman, System Ecotechnologies Inc – www.systemecotechnologies.com

Project end date: September 30, 2012

CT Commitment: \$ 100,000

Total Project Cost: \$ 630,000

Overview:

This project was in place to design and evaluate large scale operation of R2S Treatment system using nanoparticles produced by ultrasonics irradiation of chemical #1. The data from the feasibility study formed the basis of the initial trials.

Nanosized particles of chemical #1 used in the R2S sewage treatment process can be produced using ultrasonics. The use of nano chemical produces more rapid elevation of pH in the sewage being treated compared to mechanically mixed chemical. Approximately 27% less nano chemical is required to complete the first treatment reaction and reach the target pH than mechanically mixed chemical.

Service Connector Build

Principal Investigator: Saskatchewan Research Council – www.src.sk.ca

Project end date: October 31, 2011

CT Commitment: \$ 142,702

Total Project Cost: \$ 202,167

Overview:

The project created and tested a prototype of the new Water Service Connection System created by the Communities of Tomorrow design team, based on the City of Regina's "Super Winch" system. The project systematized an ad hoc innovation, and created a potentially commercially viable tool and system that can be deployed by multiple municipalities. The project included: build prototype including detailed engineering blueprints; test and refine prototype; complete procedures and process improvement study for system; report results to CT and Municipal Partners.

The proposed replacement process represents a significant improvement in replacement productivity when using the winch cage system, while respecting the practical realities of service connection replacements in challenging and often unpredictable operating conditions.

Water Quality Monitoring of Wastewater Treatment by Windmill Aeration

Principal Investigator: Alan Goode, Koenders Water Solutions Inc –
www.koenderswatersolutions.com

Project end date: October 31, 2012

CT Commitment: \$ 42,500

Total Project Cost: \$ 84,340

Overview:

With the installation of windmill-powered aeration systems into a primary lagoon cell, the added aeration substantially increased the level of dissolved oxygen in the wastewater in the lagoon, enhancing microbial activity and improving the efficiency of the wastewater and sludge treatment. Increased aeration caused the bacterial community structure to shift from anaerobic and facultative communities to aerobic groups. These aerobic microorganisms sped up the treatment process, reducing the BOD, TSS and nutrient levels, and reduce the loading of potential contaminants to the environment. Treatment efficiencies were monitored through comparison of water quality changes in an aeration-treated and a control cell.

Aeration is expected to facilitate wastewater treatment in the anaerobic lagoon by changing the environmental bacterial structure, which in turn, should speed up the process of reduction of BOD and turbidity, and possibly the nutrient elements, particularly the ammonia. Windmills are an approved technique for improving aeration (dissolved oxygen levels), but have not been used for wastewater treatment applications. Through this project, Koenders demonstrated that increased aeration will change bacteria from an anaerobic/facultative community to an aerobic/facultative community.

Global Technology Project

Principal Investigator: Leah Nelson Guay, SmartStart Strategic

Project end date: July 31, 2011

CT Commitment: \$ 4,305

Total Project Cost: \$ 4,305

Overview:

The purpose of the project was to determine the feasibility to research, collect, maintain and manage a data base of current and available technologies that could be applied in the infrastructure domain, and through which municipalities and other “purchasers” could access this data to review the details of each for application(s) within their realm(s) to address particular and/or specific needs. The data base would include technologies, services, products, etc. currently being used in jurisdictions outside Saskatchewan (global) technologies currently available and technologies, potential need and support, perform an assessment of alternative options for procurement delivery and an indication of the scope of procurement activities to be included.

Innovation Platform

Principal Investigator: Canada West Foundation – www.cwf.ca

Project end date: July 15, 2012

CT Commitment: \$ 97,000
Total Project Cost: \$ 97,000

Overview:

Communities of Tomorrow and Canada West Foundation collaborated to create and maintain a web-based and social media platform to gather, communicate, advance, and promote innovative and sustainable solutions to municipal infrastructure and finance issues. The platform had its own website, and was highly interactive through blogging to draw out relevant and interesting stories, facilitate discussion among professionals, policy-makers and the public, and created opportunities to share ideas and new approaches. The title was “Let’s TOC”. “TOC” is the acronym for Transforming Our Communities”.

The purpose of this project was to stimulate new and innovative ideas, enable them to take shape, and then to communicate them widely among leaders and practitioners. It gathered existing thoughts and research and practical on the ground infrastructure experience, and disseminated the material widely.

International Public Works Convention & Exposition – Denver CO

Principal Investigator: Municipal/Industry Consortium

Project end date: September 30 2011

CT Commitment: \$ 13,361
Total Project Cost: \$ 13,361

Overview:

Partnering with STEP, Communities of Tomorrow sent key personnel and representatives from Saskatchewan municipalities to attend the IPW Convention and Expo in Denver CO. Showcased were the latest innovations, applications and technologies for our communities. Daily topnotch motivational speakers and education sessions took place. There were numerous opportunities for networking with peers and developing new relationships. It was an opportunity for our municipal leaders to learn more about new innovative technologies and to work hand in hand with Saskatchewan companies to develop and deliver new innovative technologies

Membrane Filtration Opportunity Assessment

Principal Investigator: Dr. David Callele, Business Development Manager, TRILabs – www.trtech.ca

Project end date: January 1, 2012

CT Commitment: \$ 20,000
Total Project Cost: \$ 45,050

Overview:

The purpose of this project was to develop an innovative technology that would help municipalities filter (waste) water in a more efficient way. The goal was to create an innovative filtration technology to reduce operations, maintenance and renewal costs.

Sufficient evidence was shown through analysis of the economic feasibility and potential for strong return on investment to strongly consider proceeding further. The recommendation was that the proposed technology be presented to a panel of experts for their critical review, assessment of technical viability, and recommendations for next steps.

Engineering Design Competition for Municipal Problem Solving

Principal Investigator: Dr. Dena McMartin, University of Regina, Engineering – www.uregina.ca

Project end date: June 30, 2012

CT Commitment: \$ 5,600

Total Project Cost: \$ 15,600

Overview:

The project was an ongoing design competition for senior undergraduate students in the Faculty of Engineering and Applied Science at the University of Regina. It began with a pilot study conducted using engineering design and optimization principles for a municipal client, City of Yorkton. The annually selected projects were scoped by the client and course professor and comprised a portion of the required learning and design work. Students completed an evaluation of recycling in Saskatchewan that included analyses of both the market and business case for recycling as well as the technical and life-cycle case (including carbon footprinting) while taking into consideration the low-population-density challenges and realities in Saskatchewan.

InnovationLOGIK – North Battleford

Principal Investigator: InnovationLOGIK – www.innovationone.org

Project end date: September 30, 2012

CT Commitment: \$ 7,688

Total Project Cost: \$ 22,688

Overview:

Project work included developing the roadmap of innovative change activities, providing innovation counsel on executing the roadmap and working towards creating templates and processes that could be used by the City of North Battleford, as well as duplicated and leveraged by other municipalities. Final deliverable included a comprehensive approach and project plan to execute an Innovation Roadmap for the City of North Battleford. The roadmap included the InnovationOne survey results and tangible value-added recommendations to enhance innovation orientation.

InnovationLOGIK – Yorkton

Principal Investigator: InnovationLOGIK – www.innovationone.org

Project end date: September 30, 2012

CT Commitment: \$ 7,688
Total Project Cost: \$ 22,688

Overview:

Project work included developing the roadmap of 'innovative change activities, providing innovation counsel on executing the roadmap and working towards creating templates and processes that would be used by the City of Yorkton, as well as duplicated and leveraged by other municipalities.

Final deliverable included a comprehensive approach and project plan to execute an Innovation Roadmap for the City of Yorkton. The roadmap included the InnovationOne survey results and tangible value-added recommendations to enhance innovation orientation.

SRC Robotics

Principal Investigator: Kim Young, SRC – www.src.sk.ca

Project end date: March 31, 2012

CT Commitment: \$ 41,000
Total Project Cost: \$ 136,000

Overview:

The purpose of the overall project was to develop an underground robotic pipe fitting system for use in municipal water line upgrades. The objectives included reducing costs for water line replacement in water distribution systems; reducing the amount of excavation required for a water line replacement (directly impacting costs); improving operator safety; and developing an advanced technology product that will have significant market potential.

2D/3D Analysis of Slope Stability for Setback Calculations and Tieback Anchor Back-Analysis

Principal Investigator: Murray Fredlund, SoilVision Systems Ltd. – www.soilvision.com

Project end date: August 31, 2012

CT Commitment: \$ 40,000
Total Project Cost: \$ 93,020

Overview:

This project involved analyzing a theoretical municipal design setting in both 2-D and 3-D such that appropriate setback distances were determined for housing and other construction projects. This analysis was performed by extending the functionality of existing SVSlope software developed by the Proponent. The ability to slice 3-D numerical models at any plane and create subsequent 2-D numerical models was completed. Software allowed determination of reasonable slope force to keep the factor of safety at a certain level.

Innovative Procurement

Principal Investigator: Centre for Management Development, University of Regina – www.uregina.ca

Project end date: August 31, 2012

CT Commitment: \$ 3,750
Total Project Cost: \$ 3,750

Overview:

The purpose of the overall project was to gain knowledge in the area of procurement practices to stimulate innovation, to understand whether procurement practices could be designed to stimulate the development of innovative solutions in private sector suppliers and, more specifically, examine this approach towards the challenges and barriers in the provincial and municipal infrastructure sectors in Saskatchewan.

Pre-Engineering and Feasibility Study – Demonstration Project for Sustainable Landfill with Passive Leachate Biofiltration

Principal Investigator: Dr. I. R. Fleming, University of Saskatchewan, Civil and Geological Engineering – www.usask.ca

Project end date: August 31, 2012

CT Commitment: \$ 23,543
Total Project Cost: \$ 73,543

Overview:

All landfills produce leachate, even if water monitoring has not detected migration of leachate-derived contaminants in water at significantly elevated levels. Thus leachate from landfill sites represents (at best) a diffuse “non-point-source” of environmental impact. At some landfills in the province, there is demonstrably a “point source”, given that leachate-contaminated groundwater is currently intercepted and collected for treatment. As the Saskatchewan Ministry of Environment moves toward a new regulatory framework, it is expected that when compared to the present, many more landfills will be required to collect – and therefore to treat – their leachate. With the exception of small or very small landfills located in secure low-vulnerability settings, leachate collection (and therefore treatment) will become a requirement.

National Infrastructure Summit 2012

Principal Investigator: Communities of Tomorrow

Project end date: September 30 2012

CT Commitment: \$ 11,538
Total Project Cost: \$ 11,538

Overview:

CT hosted an Innovation Showcase at the Summit. This Showcase provided a platform to exhibit innovative products and services and bring together ideas from across the country that deal with infrastructure. A number of clients that CT had been working with were involved in the Showcase. It was

an opportunity for clients/entrepreneurs to connect municipal decision makers to leading examples of sustainable development; launch new products/technologies; promote training opportunities; cultivate new clients and generate leads; and generate awareness. CT had a key role with the organizing committee in the planning of this event.

International Public Works Convention & Exposition – Anaheim CA

Principal Investigator: Municipal/Industry Consortium

Project end date: September 30 2012

CT Commitment: \$ 10,909

Total Project Cost: \$ **10,909**

Overview:

Communities of Tomorrow partnered with STEP and municipalities to send Communities of Tomorrow key personnel and representatives from Saskatchewan municipalities and industry to attend the IPW Convention and Expo in Anaheim, CA. Showcased were the latest innovations, applications and technologies for our communities. Daily topnotch motivational speakers and education sessions were held. There were numerous opportunities for networking with peers and developing new relationships.

Service Connector – Sewer Replacement

Principal Investigator: Saskatchewan Research Council – www.src.sk.ca & Communities of Tomorrow

Project end date: September 30, 2012

CT Commitment: \$ 9,458

Total Project Cost: \$ **34,458**

Overview:

City of North Battleford tested the Pull Forces of the Service Connector for sewers and a summary report was compiled. This document outlined the refinements required for the unit, how to manufacture it and how to use it. This was distributed to municipalities by CT.

Innovative Technologies / Smart Solutions

Principal Investigator: Midgard Project Management Ltd – www.midgardpm.com

Project end date: September 30, 2012

CT Commitment: \$ 27,200

Total Project Cost: \$ **27,200**

Overview:

This project provided a research list of top technologies and narrowed down the top 2 or 3 technologies applicable and beneficial to municipalities. The final report includes a discussion on each technology

researched and a detailed analysis on the short listed technologies. A 'brochure' was included for each of the short listed technologies which was provided to municipalities.

Short listing of two technologies, resin based pavement and robotic pipe inspection, could be used immediately by municipalities to deal with maintenance issues. The products are proven and are available in the local market place.

Clear Water Clarification – Demonstration Centre for Excellence in Advanced Clarification

Principal Investigator: Leroy Starkes, Clear Water Clarification Technologies Inc. – www.clearwaterclarification.com

Project end date: October 31, 2012

CT Commitment: \$ 35,000
Total Project Cost: \$ 112,000

Overview:

The main purpose of this project was to conduct a full-scale demonstration and test the performance of *The CWC Clarifier* as a pre-lagoon treatment for municipal wastewater in a real operating environment. The second purpose was to establish a temporary CWC Demonstration Center. The project was located at the Village of Grand Coulee. An independent, third party was chosen jointly by CWC and Grand Coulee for selected monitoring and testing.

The project demonstrated the practicality of *The CWC Clarifier* in terms of capital costs, service and ongoing maintenance, placement opportunities due to elimination of ambient odors, expandability and much more. Built-in remote monitoring provides a community with here-to-fore unavailable systems security while the CWC modular unit approach accommodates future development when and if it is required.

Clear Water Clarification – SpringBoard West Innovations Inc. Marketing Strategy

Principal Investigator: SpringBoard – www.springboardwest.ca

Project end date: October 31, 2012

CT Commitment: \$ 15,375
Total Project Cost: \$ 15,375

Overview:

This project provided assessment, strategic advice, and direction to solidify a marketing strategy and plan for Clear Water Clarification's "Clarifier" technology.

Micro-Scale Mechanical Fluid Filtration (MMFF) –Prototype Development Plan

Principal Investigator: Dr. David Callele, TRTech – www.trtech.ca

Project end date: October 15, 2012

CT Commitment: \$ 20,000

Total Project Cost: \$ 43,650

Overview:

The SyLMAND beam line at the Canadian Light Source is capable of constructing mechanical devices at the microscopic level. There could be a significant opportunity to use the SyLMAND beam line to create key components of the proposed fluid filtration systems, particularly in the domain of membrane filtration systems. This project created the Prototype Development plan for this innovative technology, a technology that will help municipalities treat water more efficiently, reducing operational, maintenance and renewal costs.

Passive Liquid Waste Volume Reduction

Principal Investigator: Brian Peever, Enviro Green – Environmental Innovations

Project end date: November 15, 2012

CT Commitment: \$ 19,700

Total Project Cost: \$ 39,700

Overview:

This innovation is an environmentally sustainable, low maintenance, and versatile method for passively reducing the volume of liquid and semi-liquid waste in a variety of situations. This is accomplished by increasing the natural rate of evaporation through an increase in the surface area of the exposed solution.

The innovation provides municipalities with an economic and sustainable option for the evaporation of liquid waste, by reducing the land and volume requirements of the storage pond. The results of this pilot study clearly demonstrate that the technology can significantly enhance the rate of evaporation of an open water body.

Developing a Soil Conductivity Probe to Be Used in Water Pipeline Leak Detection

Principal Investigator: Evan Morris, Eco Tech Research Ltd – www.ecotechresearch.com

Project end date: September 30, 2012

CT Commitment: \$ 18,100

Total Project Cost: \$ 65,200

Overview:

This innovation is a specialized hand-operated soil probe that measures soil electrical conductivity. The electromagnetic signature of a water pipeline leak varies with changes in soil moisture conditions due to floods, snowmelt and chlorine levels.

A successful soil probe allows the Proponent to quickly take conductivity readings in trenches when repairing broken water mains. The readings, when combined with surface electromagnetic measurements from the survey instrument, allows the Proponent to calibrate the survey instrument so that water pipeline leaks under different soil moisture and soil texture conditions can be accurately detected. Using information from the probe will help to develop a new water pipeline leak detection technology.

Leveraging Technology for Better Outcomes

Principal Investigator: George Barnhart, TiCE Consulting Inc – www.tice.ca

Project end date: September 30, 2012

CT Commitment: \$ 29,469

Total Project Cost: \$ 29,469

Overview:

The objective was to explore leveraging technology for local governments in the province of Saskatchewan. Research was done to determine whether it is possible to improve the effectiveness and efficiency of local government through the innovative use of technology. The needs of local governments were addressed, the desired outcomes to address these needs and the impact technology could play to realize these outcomes.

Downstream Use Study of the Village of Climax Reject Water

Principal Investigator: Rodger McDonald, KGS Group – www.kgsgroup.com

Project end date: December 31, 2012

CT Commitment: \$ 20,000

Total Project Cost: \$ 30,000

Overview:

The purpose of this project was to investigate the downstream impacts of the discharge of the reject water stream from a reverse osmosis plant into a receiving stream. The study was needed to assess the acceptability of discharging the reject water as an interim measure pending a decision on a permanent solution, however, it also assessed the health and environmental implications of long term discharge of reject water to a natural water body (e.g. vegetative metal uptake) and explored alternative technologies to enhance evaporation from evaporation ponds.

Results concluded that a collaborative model for oversight and enablement of infrastructure is more effective and efficient than current practices; that maintaining current structure and accountabilities by complimenting the capacity and capability of local governments; and leveraging the resources of the entire community to address the significant infrastructure challenges were necessary.

Service Connection –Lite Roll Out (Pipe Replacement Service)

Principal Investigator: Saskatchewan Research Council – www.src.ca

Project end date: September 30, 2012

CT Commitment: \$ 45,000
Total Project Cost: \$ 65,000

Overview:

This project incorporated the design, manufacture, testing and documentation (post testing design/manufacturing modifications) of the second prototype of the Service Connector for the purpose of replacing poly B lines. It also included a study of the concentration of demand for PRRS and RPF and the potential manufacturing market; understood the needs and preferences of pipe replacement operations; and determined the best way to promote technology and how to enter the market.

Service Connection – Robotics Phase II

Principal Investigator: Saskatchewan Research Council – www.src.ca

Project end date: September 30, 2012

CT Commitment: \$ 40,000
Total Project Cost: \$ 80,000

Overview:

The project included compilation of specs and requirements; selection of the best concepts; proof of concept testing; preliminary design of robotic unmanned pipe replacement system; market survey; and prepared drawing for 1st prototype of Robotic Pipe Fitter.

Technical Bridge Advisory Committee

Principal Investigator: McNair Business Development Inc – www.mcnair.ca

Project end date: May 15, 2013

CT Commitment: \$ 18,500
Total Project Cost: \$ 18,500

Overview:

This project documented the concept for a Technical Bridge Advisory Committee in Saskatchewan and provided recommendations on actionable next steps to move the concept forward in the short-term by engaging stakeholders to confirm interest, purpose and objectives of this Committee; confirming priorities this Committee should focus on in the short-term for quick wins; providing preliminary options for governance; defining recommendations for advancing this concept forward, including a high-level implementation plan with timelines; and determining the appropriate organization to “own” and champion the project moving forward.