



THIRD ISSUE 2004 NUMBER 54

Message from the Chairman of Golder Associates' Sustainability Council



Business management philosophies tend to be cyclical. In the 1960s, successful companies optimized production. In the 1970s, learning organizations developed and applied analytical tools to improve their returns to shareholders. In the 1980s and early 1990s, the key to success was to enhance human potential through creating the right environment to foster ownership and creativity.

Today we have a new challenge: to become a member of the global society in which we operate. But what does this mean? To some enterprises, it is building better community relations, to others it means investing in business sustainability, and to others the challenge involves managing economic, social and environmental risks. Whichever way we define the challenge, we must start with understanding what we need to do to foster the sustainable development of the world's resources and, ultimately, what we must do to make a positive contribution to our communities. To understand, we need to become more aware of the impact we have on our environment, to become more sensitive to the needs of the communities within our influence and to

learn how to contribute to improving the quality of life for all stakeholders.

We can start by recognizing what actions we need to take in our homes and offices, like saving power and reducing waste. Beyond this, we can also refine the way in which we approach our projects so that we think and apply sustainability measures. In addition, we can also help our clients by offering services that assist them in achieving their long-term objectives. This is the challenge we all need to embrace to keep us all on the path of economic, social and environmental sustainability.

To this end, we devote this issue of Technically Speaking to the theme of "Solutions we can all live with." The articles featured are a sampling of projects that Golder Associates professionals have worked on throughout the world that have clear "win-win" attributes for the environment, our clients, our communities and other key stakeholders.



John A. Wates

Pr. Eng, MSc Eng, MBA, FSAICE, MSA ConSE, MASCE

Rebuilding Kosovo's infrastructure and economy

The Province of Kosovo, once part of Yugoslavia and devastated by a recent war, is getting back on its feet thanks to an initiative that has helped deal with war damage, rebuild infrastructure and bolster the economy.

When peace returned in 1999, as part of its foreign aid program, the Government of Denmark asked a Danish firm,



that is now part of Golder, to help evaluate what might be done regarding waste management and war-damaged buildings, and then to take steps to deal with these issues.

Upon evaluating the situation, Golder embarked on a four-year program to establish an organization staffed by local employees. This entity would demolish unsalvageable buildings and, where possible, recycle the materials. This included processing some of the rubble through crushers to provide gravel for rebuilding roads in the area. These services were provided free to the international non-government organizations (NGOs), UN agencies and Kosovo's public sector reconstruction departments.

Now completed, this assignment has resulted in a viable, self-sustaining, locally owned business that provides ongoing employment, tax revenue and services so necessary to rebuild a war-torn part of the world and provides an economic foundation to help sustain Kosovo.

From water rights to watershed management

LONG-STANDING ATTITUDES ON WATER USE IN THE WESTERN UNITED STATES ARE SHIFTING FROM EXERCISING WATER RIGHTS WITHOUT REGARD FOR THEIR EFFECT ON OTHERS (E.G., "YOU CAN HAVE MY WATER RIGHT AFTER YOU PRY IT FROM MY DRY DUSTY BONES."), TO A COLLABORATIVE PROCESS THAT MANAGES WATER AS A RESOURCE FOR A VARIETY OF STAKEHOLDERS, INCLUDING THE NATURAL ENVIRONMENT.



Population growth, increased demand for water for industry and agriculture, a growing understanding of the needs of salmon and other species and climate change were the impetuses behind Washington State's funding and initiating a new way for the state's 62 watersheds to manage water. One challenge: watersheds do not usually follow political boundaries, so any decision on water use inevitably involves many stakeholders who have diverse interests and urgent needs for more water.

A case in point is the Nisqually Watershed, 720 square miles (18,600 hectares), which originates in Mt. Rainier National Park. In 1998, discussions began that eventually included a Native American tribe, three counties, five cities and towns, a military base, the park and the oldest River Council in Washington.

Golder helped guide this Planning Unit through a process that included collecting data, conducting technical assessments and helping the group develop a plan for the best possible

use of available water resources. The final plan includes developing a regional groundwater supply to accommodate future growth while protecting freshwater habitat for salmon.

The Nisqually Watershed Management Plan was adopted in April 2004, marking the state's first approved plan. Golder is now helping the group to implement this landmark along the road to managing the state's water resources in a way that suits the community and sustains their lifestyle.

Towards a greener sustainable Adelaide!

ADELAIDE, SOUTH AUSTRALIA HAS EMBARKED ON AN AMBITIOUS PLAN TO IMPROVE THE CITY'S SUSTAINABILITY AND LESSEN ITS ENVIRONMENTAL IMPACTS. ADELAIDE HAS A HISTORY OF PROTECTING ITS GREEN SPACES, AND THE ADELAIDE "GREEN CITY" PROGRAM AIMS TO BUILD ON THIS REPUTATION.

The Green City program will transform the city center through environmental and sustainability initiatives in partnership with government, universities and the private sector. One of the goals is for Adelaide to have zero net greenhouse gas emissions by 2012 in buildings and by 2020 in transportation.

The Central West pilot project aims to develop a showcase of sustainable energy, waste and water management practices from which other communities can learn. This urban Precinct is diverse and multi-cultural, incorporating a wide range of business types and residents.

The project involves increasing awareness of waste, water and energy issues, and encouraging behavioral changes. As a result of the project, the area will reduce and eventually eliminate plastic bags, increase waste recycling to include oil, food and plastics, implement energy upgrades, and collect rainwater and incorporate more efficient water practices.

The project operates at a local level wherever possible, engaging the many active Precinct business groups and the multi-cultural community that makes up much of the area.

This is an example of an environmental loop in which waste products are re-used and water and energy efficiencies combine to reduce the overall use of natural resources. This is quite a challenge in an urban environment that has high concentrations of people, buildings and vehicles.

The Central West project will allow future generations of South Australians to live in a way that preserves the environment and enhances sustainable practices.

More information about the Green City Program can be found at the following web sites: www.capcity.adelaide.sa.gov.au and www.capcity.adelaide.sa.gov.au/html/projects.html.



Building and sustaining business north of the 60th parallel

TEAMING WITH THE INDIGENOUS PEOPLE OF NORTHERN CANADA THROUGH MUTUALLY BENEFICIAL LONG-TERM BUSINESS RELATIONSHIPS MEANS THAT GOLDER ASSOCIATES CAN BETTER SERVE CLIENTS AND SUPPORT SUSTAINABILITY IN THE COMMUNITIES.

Development of long-term sustainable business in Northern Canada is enhanced through an understanding of indigenous cultures and northern political arenas, including Indian and Inuit land claims.

In 2001, Golder Associates created IMG – Golder Corporation, a company in which the majority shareholders are Inuit people. In 2003, a second company, West Delta – Golder Corporation, was created with the majority shareholders being two Gwich'in Indian business development corporations. The creation of these companies is based on a desire to foster long-term relationships with Northern Canadian communities and build bridges between local people, regulators and our clients. Key to this relationship is our commitment to four primary community objectives: 1) increased local employment; 2) capacity building of local people through training and education; 3) profit sharing with



South African farmers gain control of their future

LOW-INCOME FARMERS IN LIMPOPO PROVINCE OF SOUTH AFRICA HAVE THE CHANCE TO BUILD LONG-LASTING SUCCESS THANKS TO AN IRRIGATION PROJECT THAT PUTS CONTROL OF WATER RESOURCES INTO THEIR HANDS.

The former national government had developed extensive irrigation schemes throughout the area. However, the work was done with little sensitivity to the many farmers with small land holdings. As a result, the investment in infrastructure did little to change the farmers' situations, which often involved economic poverty, lack of a secure food supply and few opportunities for young people.

To deal with this situation, Golder reasoned that, while the technical challenges of rehabilitating and maintaining the irrigation system were relatively straightforward, success would lie in addressing the human issues and building people's ability to deal with these issues themselves.

This includes empowering groups of farmers to take ownership of their schemes and to develop agreements on sharing the available water.

Local contractors, suppliers and labour are used to rehabilitate the irrigation system, through repairing canals and improving capacity. On-site, outcome-based training is used to assist farmers understand how they can improve crop yields for their own consumption and for sale. Farmers' groups are helped to negotiate better pricing and services from suppliers of fertilizers and other inputs.

As a result, the smallholder irrigation farmers of Limpopo are better able to meet their own food needs on an ongoing basis, and also to raise their cash income so that they can continue to support themselves and their families and to pass this capability on from one generation to the next.

shareholders through increased revenues; and 4) sustainable development of traditional lands.

These businesses offer consistent, reliable, locally based services to clients with projects in Canada's Arctic. Clients benefit from the advantages of supporting local enterprises, while maintaining access to recognized professional expertise, for both ongoing projects as well as the entry of new clients into remote northern areas.

Golder Associates believes in the objective of enhanced service to clients in Canada's north through locally based businesses. A long-time horizon enables us to contribute meaningfully to capacity building and the protection of the land in an environmentally sound manner.

Sustainability of local communities includes engagement, understanding, diversity and economic security — a business solution we can all live with.



Valuing ecological resources – How much is a bird worth?

A NEW APPROACH TO PUTTING A VALUE ON UNDEVELOPED LAND IS HELPING TO PRESERVE NATURAL HABITAT FOR FUTURE GENERATIONS.



In traditional valuations of real estate focusing on the land's possible commercial and residential uses, its value as ecological habitat is often overlooked. This means that in many cases, land that is "high value" in its natural state is not considered in a valuation.

What is "high value" from an ecological point of view? Enter the "ecological appraisal", which determines the ecological value of the land in monetary terms by combining habitat assessment, wildlife present and how animals use the land, together with natural resource economics.

Often, these appraisals consider the direct and indirect value to the local community through birding, boating, fishing, hiking, camping and other recreational activities that are enjoyed because of the land's natural state.

Why does this matter? From a company's point of view, once a value is established for the natural land it owns, other options for the disposition of the land may become apparent. For example, the ecological value of the land could demonstrate the financial value if the land were donated or sold to non-profit groups or the government. This helps the company gain full public credit for its donation. Setting the ecological value may also guide choices regarding remediation and restoration of the property.

As a result of ecological appraisals, we may see a higher value placed on natural habitat — helping to preserve land that is valuable, both financially and ecologically, for the enjoyment and enhancement of the quality of life for future generations.



Determining the effectiveness of social management spending

PEOPLE AFFECTED BY RESOURCE EXTRACTION ACTIVITY MAY HAVE A BETTER CHANCE OF RECEIVING SUSTAINABLE RESULTS FROM THE COMPANIES' ACTIONS, THANKS TO A NEW TREND IN MONITORING SOCIAL MANAGEMENT MEASURES.

Many resource companies try to enhance social benefits and mitigate negative social impacts caused by their exploration work, mines, mills and pipelines. While governments expect that the resource companies' activities will provide local residents with better futures through employment, training and business opportunities, the results of resource extraction projects may also include such negative impacts as increased substance abuse, crime and cultural loss.

Recently, the imperative to create sustainable local benefits and limit nega-

tive impacts has increased because of government regulation, activist organizations and shareholder pressure. However, despite the money that companies spend on education, job training and community health, the question remains: "Is this investment actually producing the desired long-term results?"

More comprehensive monitoring methods are helping to provide answers. Some companies used to focus their attention on verifying that the sums earmarked for social management measures were actually spent for these

purposes. Today, monitoring is increasingly looking at sustainable outcomes, determining if the company's expenditures are actually having a positive effect. Determining what would have happened if social spending had not been made, and what has happened as a result of the spending, is a trend in the field today.

As a result of effective monitoring and incorporating lessons learned into social management spending decisions, people living close to resource companies' operations are more likely to have a better situation both in the short term and well into the future.

For more information about the projects featured in this newsletter please contact us at: solutions@golder.com. Electronic versions of the newsletter are available at www.golder.com. Just follow the links to our "Library" and "Newsletters".

LEAD AUTHORS:

Martin Petersen, Copenhagen, Denmark/KOSOVO

Lisa Dally Wilson, Seattle, Washington, USA | WATERSHED

Alex Blood, Adelaide, South Australia | GREENER ADELAIDE

Rebecca Balcom and Derek Melton, Calgary, Alberta, Canada | ARCTIC BUSINESS

Jon Rutherford, Johannesburg, South Africa | IRRIGATION FARMING

Steven Friant, Gainesville, Florida, USA | VALUING ECO RESOURCES

Susan I. Ross, Calgary, Alberta, Canada | SOCIAL MANAGEMENT SPENDING

Karen Clarke-Whistler, London, England, U.K. | CSR MEASURES

Corporate Social Responsibility – What can be measured, can be managed

Corporations are under pressure from shareholders, governments and activist organizations to report on their performance on sustainable development.

European-based companies, spurred by corporate governance reforms, the Global Reporting Initiative (GRI) and European Union directives, are at the forefront in what is becoming a global movement.

Sustainable development reporting starts with identifying either negative impacts or positive benefits and then developing ways to measure progress. While many environment, health and safety impacts are easily quantifiable, intangibles relating to social, ethical and reputational consequences are not.

Best practice is rapidly evolving and Golder is helping clients measure their performance using the following tools:

1 Identifying indicators and performance targets: Companies measure performance in areas, such as their total carbon emissions, compared to a target volume or percentage reduction.

2 Performance metrics: This is a more process-based approach that measures sustainable development performance against business parameters such as production volume or financial performance. For example, volume of water used per tonne of product produced.

3 Sustainable development risk/opportunity assessment: A modification of risk assessment methodology, this integrates hazards relating to environment, health and safety, social, ethical and reputational issues. Opportunities, such as improved supply chain management or community health, are rated on likelihood and potential contribution.

Measuring sustainability performance gives companies an advantage with customers, investors and other key stakeholders. It is good business, it reduces risk and can be part of core business strategy.

www.golder.com | solutions@golder.com

Africa: + 27 11 254 4800

Asia: + 852 2562 3658

Australia and New Zealand: + 61 7 3721 5400

Europe: + 44 1628 586 213

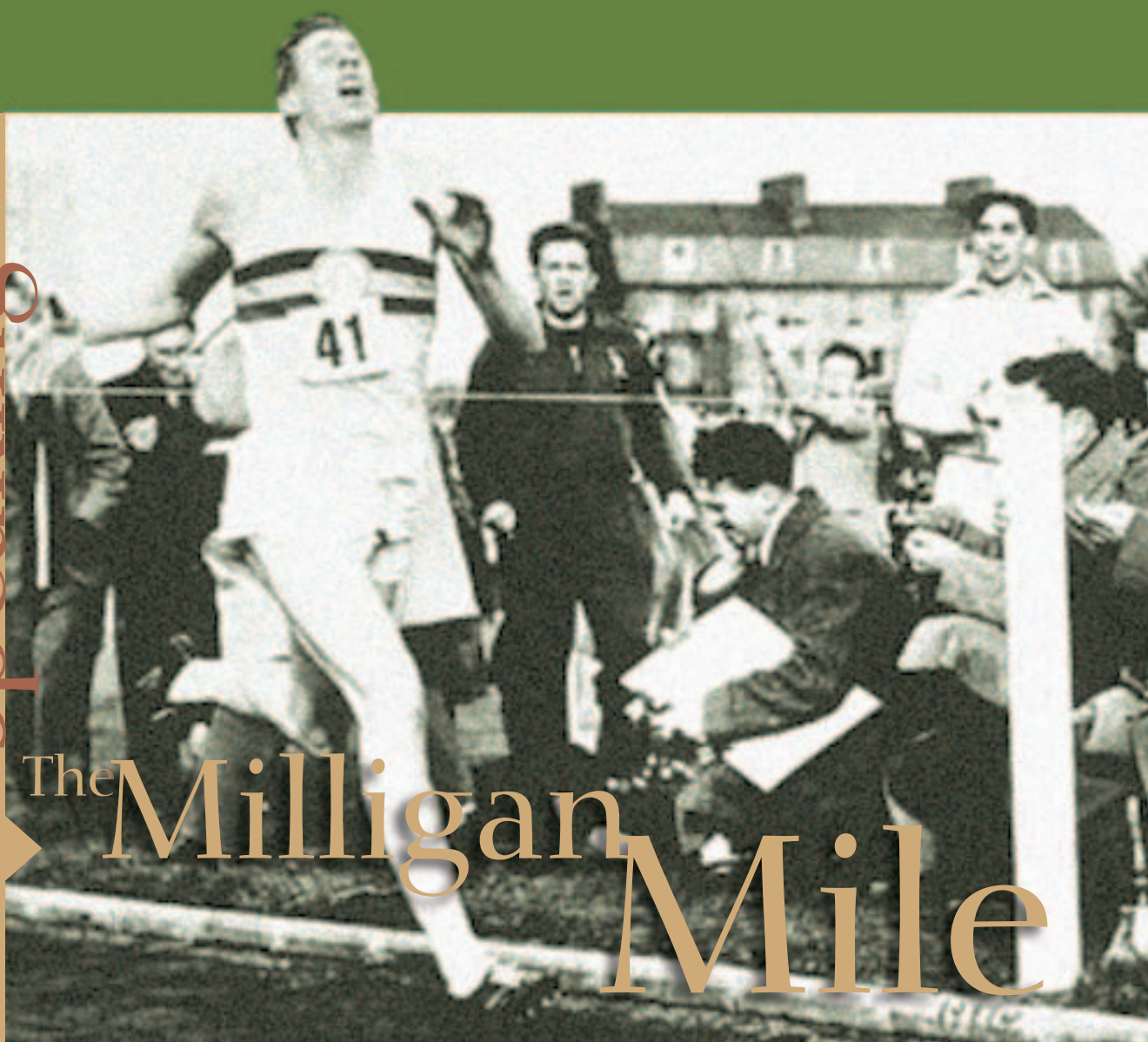
North America: + 1 800 275 3281

South America: + 55 21 3084 3490



Technically Speaking is published for valued clients and employees of Golder Associates. This quarterly newsletter includes articles showcasing innovative and technically challenging projects that Golder professionals have worked on throughout the world. We value your opinions. Please contact Gregory A. Beckstrom, Managing Editor, at + 1 651 697 9737 or greg_beckstrom@golder.com if you have any questions or comments.

This paper is recycled and recyclable.



The Milligan Mile

Fifty years ago, on May 6, 1954, England's Roger Bannister ran a mile in less than 4 minutes. The feat was one that some experts at the time believed was an impossible human achievement. However, Bannister's 3:59.4 time was surpassed 46 days later by Australia's John Landy, who ran the distance in 3:57.9 on a track in Finland. While rivals in the press, the two had never faced each other in a race until the 1954 British Empire Games in Vancouver, British Columbia. This was to provide the stage for what came to be known as "The Miracle Mile", when the 'racer' and the 'runner' would meet for the first time and, for the first time in history, the 4-minute barrier would be broken in competition.

In addition to Bannister and Landy, the Miracle Mile featured Canadian Rich Ferguson and 'Miler Milligan' from Northern Ireland. Bannister beat Landy with a winning time of 3:58.8. Landy's time was 3:59.6. Ferguson finished third with a time of 4:04.6. VICTOR MILLIGAN finished fourth, with a personal best time of 4:05 and set a record for Northern Ireland that stood for 20 years.

Not long after this remarkable event, the key participants retired from competitive running and continued with very productive lives. Roger Bannister finished his medical studies at Oxford and became a Neurologist. John Landy became a Botanist, a scholar, a senior



manager at Shell and ultimately became the Governor of Victoria in Australia. Rich Ferguson became the President of Adidas Canada. VICTOR MILLIGAN finished his engineering studies at Purdue University and in 1960, at the urging of their friend Larry Soderman, co-founded Golder Associates Ltd. with Dr. Hugh Golder.

The 50th anniversary of the Miracle Mile was August 7, 2004. This provided Golder Associates with an opportunity to recall a remarkable and historic

In addition to Bannister and Landy, the Miracle Mile featured Canadian Rich Ferguson and the champion from Northern Ireland — VICTOR MILLIGAN, who finished fourth with a time of 4:05.

human achievement and to celebrate the participation of our company's co-founder. Each office in Golder Associates worldwide was encouraged to organize their own running of "The Milligan Mile". All staff were invited to participate and bring family, friends and clients. In addition, employees were encouraged to support a charity as part of their Milligan Mile event. Each running of The Milligan Mile was constrained only by the innovation and enthusiasm at each office. And so The Milligan Mile was run along a beach in Brazil, along a tailings dam in Ontario, on the sidewalks of Minneapolis — wherever Golder folk live, work and play.

Golder Associates, the company, owes much of its success to Milligan, the man. When asked recently in conversation to reflect on the meaning of success, Victor suggested that "Success is like a moving target that you can never quite achieve. The journey is the most important. It's a small world. Live with passion. Do the best you can in all you do. Measure yourself against the best. Be on a constant search for excellence."

Victor is a great believer in the apprentice and mentor model, and was an enthusiastic apprentice to his mentor, Hugh Golder, whose "intellectual honesty" formed the basis of excellence. Their approach to clients was always simple and pragmatic: "If they could do it themselves, they wouldn't hire us. Treat them like people first and clients second."

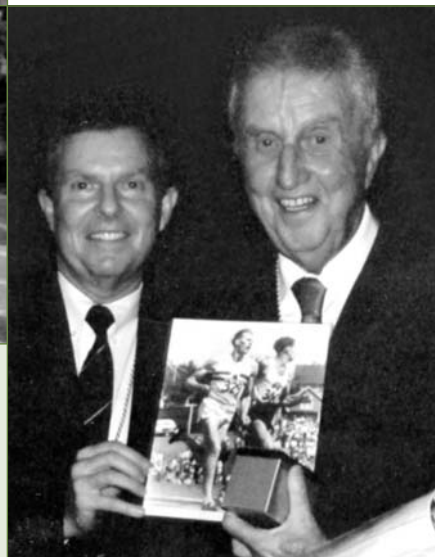
Victor's ideals shaped our company and continue to influence our culture, our relationships with our employees, clients and business partners and our standing in our communities.

Thank you Dr. Milligan.

The employees of Golder Associates



PHOTOGRAPH COURTESY OF THE HARRY JEROME TRACK CLASSIC



More information about the history of the Miracle Mile can be found at the following web site: www.harryjerome.com