



THE CITY OF CALGARY'S ENVIROSYSTEM ANNUAL REPORT 2003



2004-0001

EnviroSystem

The City of Calgary's
Environmental Management System



THE CITY OF
CALGARY



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I am pleased to present The City of Calgary's first EnviroSystem Annual Report showcasing our 2003 achievements, summarizing our results to date and setting the foundation for continual improvement in the future. The past year has been an impressive one in terms of the magnitude and quality of initiatives that have occurred throughout the Corporation.

EnviroSystem is the City of Calgary's ISO 14001 registered Environmental Management System. EnviroSystem establishes accountability for actions and creates a chain of information to be used in making informed decisions in the future. The City uses the system to manage the environmental impact of our activities through rigorous documented processes to reduce our environmental liabilities and risk, and to ensure compliance with all applicable legislation. Our environmental performance is measured through an extensive monitoring and audit process.

The Environmental Network, comprised of business unit representatives, provides an effective corporate-wide forum to communicate and report environmental issues. This group sets the framework for environmental initiatives across all City business units.

The EnviroSystem Annual Report 2003 is the factual record of countless hours of effort from managers and many individuals within business units, who embraced the vision of a corporate-wide registration and made it a reality. Collectively, they raised the awareness and profile of the ISO registration process, generated numerous successes and achievements, and shared stories of green initiatives with other employees.

For their contribution to EnviroSystem and the completion of this report, I acknowledge the exceptional contributions by Environmental Management staff and the Environmental Network representatives who led the registration process to successful completion. Together with literally hundreds of City employees, we have achieved a significant milestone on the road towards environmental sustainability and we are setting the bar high for continual improvement.

The challenges for 2004 and beyond remain considerable as the full scope of our ISO 14001 system is rolled out by the Policy and Administrative business units, and at the level of Council reports. Several key Civic Partners will be brought under the EnviroSystem umbrella this year and we will identify others to pursue ISO 14001 registration.

Most significantly, the completion of the ISO 14001 registration process allows The City to reach beyond Corporation boundaries as we challenge residents and businesses to participate and lead in pursuing a high quality of environment and life for our citizens.

Regards,

Dave Day
Director, Environmental Management



Introduction

Executive Summary

The City of Calgary is committed to becoming a truly sustainable city, balancing its economic, environmental and social dimensions. The path toward sustainability began with the development of EnviroSystem, The City of Calgary's environmental management system. Largely attributed to the ongoing commitment of the Mayor, Council and Administration this system has been implemented across the Corporation in accordance with ISO 14001, the highest international standard an environmental management system can meet. Beginning in 1998, State of the Environment Reports have communicated the environmental condition of our community. In contrast, this first EnviroSystem Annual Report looks internally, reporting on the performance, development and continual improvement of city operations.

ISO 14001 – After three years of concentrated effort, The City of Calgary's EnviroSystem achieved corporate-wide registration to ISO 14001. The EnviroSystem is comprised of 13 separate registrations: individual operating business unit registrations and an overall Corporate registration. The Corporate registration, managed by Environmental Management, was developed to encompass all the Policy and Administrative business units and to build connectivity with the operating business unit registrations. It allows for effective management of environmental aspects spanning multiple business units.

EnviroSystem coordinators have been assigned roles and responsibilities within each business unit for the implementation and maintenance of EnviroSystem with support from their managers. Environmental Management provides overall guidance and expertise to ensure EnviroSystem continues to meet ISO 14001 requirements.

Achievements – Throughout 2003, significant success was achieved in establishing performance targets in a number of key areas. Mature registrations have a larger number of set targets achieved over systems recently registered where setting targets has just begun. Business units with recent registrations will be able to showcase more of their achievements in the 2004 Annual Report. As part of the cycle of continual improvement, new targets will be set as old ones are achieved, moving The City towards sustainability. A complete listing of completed corporate-wide targets is contained in Appendix B.

Some of the highlights in terms of key environmental initiatives include the areas of emergency response, improved water quality and fuel handling, and green furniture procurement, to name a few. In addition, 2003 saw the approval of the Contaminated Sites Management Plan and the Wetland Conservation Plan. A Contractor Management Program with three interrelated initiatives was undertaken to improve the environmental performance of The City's contractors.

The City achieved recognition and awards at both the provincial and national level for the Roads' EnviroSmart Streetlight Retrofit Program. Waste and Recycling Services' Landfill Gas Feasibility Assessment Project won the Showcase Award from the Consulting Engineers of Alberta. The City received Gold Champion Level Reporter status from



Canada's Climate Change - Voluntary Challenge and Registry. The City of Calgary Fire Department received an Award of Excellence from Alberta Environment for their Air Monitoring Vehicle.

Monitoring - Regulatory Status and Audit Results - Environmental Management oversees The City's internal environmental audit program. Internal audits are designed to assess and verify conformance to the ISO 14001 standard, as well as the status of compliance with applicable federal, provincial and municipal legislation, standards/guidelines and internal policies/procedures.

The majority of audits were lead by a Certified Environmental Auditor from Environmental Management, with audit teams comprised of experienced City employees. This model is effective as a cross-business unit learning tool and as a means to identify and relay consistent best practices across the Corporation. Significant cost savings were realized by leveraging existing resources. The audit results and the fact that no environmental fines were incurred confirmed the effectiveness of EnviroSystem.

Moving Forward - Sustainability demands integration of social, economic and environmental considerations into all City decision-making processes. As well, it is vital that public and stakeholder input be included in this process. The City's EnviroSystem is a solid platform upon which to build a number of exciting environmental and sustainability programs. Several key initiatives for 2004 include:

- Reviewing The City's environmentally focused policies to identify gaps requiring new policy development, eliminate obsolete policies and, to ensure approved policies are implemented
- Increasing awareness through public involvement and stakeholder consultation through avenues like the Mayor's Environment Expo, the external website and public polling
- Developing sustainability models and performance indicators
- Addressing climate change through green fleet initiatives, automated computer tracking of greenhouse gas emissions, and increasing our commitment to use renewable energy sources
- Expanding land assessment activities to identify and manage risk and liabilities
- Developing new corporate-wide programs for environmental activities affecting all business units.

Continual improvement and development of EnviroSystem will ensure that Council and the Administration have the tools and information needed to effectively conserve, protect and improve the environment for the benefit of Calgarians and the regional community.

Additional details are included in the appendices.



What is EnviroSystem?

EnviroSystem is the internal name for The City of Calgary's environmental management system. In 1999, The City of Calgary began implementing an organization-wide environmental management system based on the ISO 14001 internationally recognized standard. The driver for implementing EnviroSystem was the need for improved environmental performance by The City of Calgary. Environmental legislation was changing and being enforced, but The City lacked a systematic approach to manage its environmental impacts and risks. An environmental management system provided the structure The City needed to manage these liabilities and risks.

Risk is managed through activities that identify, prioritize and address environmental aspects and impacts. Examples of potential risks include:

- Health risk – employee or community illness from exposure to harmful agents in air, groundwater, surface water, soil or plants, or through the consumption of contaminated food sources
- Environmental risk – destruction of habitat or decrease in biodiversity
- Financial risk – contamination liabilities, unplanned capital expenditures, spill mitigation, fines, third-party compensation.

EnviroSystem requires the development of programs (control measures) to minimize the likelihood of significant environmental impacts. Annually, business units review the priority ranking of environmental aspects to address changes because the significance of an environmental impact can change by:

- Implementation of effective abatement or control
- New or revised legislation or industry standards/guidelines
- Council priorities, corporate policies and business plans
- Public risk perception
- New technical or scientific information
- Modification or addition of facilities, processes or equipment

Besides risk analysis, EnviroSystem provides a system-wide approach to risk management through various system elements:

- Assigning roles and responsibilities
- Documenting processes and procedures
- Emergency response planning
- Monitoring and measuring targets
- Communication
- Performance indicators
- Awareness and training
- Audit program

EnviroSystem provides a comprehensive framework to address regulatory compliance and the environmental impact of City operations. It integrates environmental considerations into decision-making processes and creates consistency in practices throughout the Corporation.

EnviroSystem is a tool to manage the environmental impact of our activities and set a standard for continual improvement.



EnviroSystem is designed to:

- Identify roles and accountabilities
- Foster and facilitate environmental compliance
- Reduce environmental impacts and their associated liabilities
- Reduce consumption of natural resources and input costs
- Improve practices to prevent pollution
- Reduce redundancies and improve efficiencies
- Improve communication internally and externally
- Provide a context for staff and public awareness and participation
- Provide a framework for measuring and reporting on environmental performance.

What is ISO 14001?

ISO 14001 is an international standard for environmental management systems developed by the International Organization for Standardization. This standard provides the framework for effective environmental management systems to help organizations achieve environmental goals. The standard specifies requirements for:

- Establishing an environmental policy
- Determining environmental aspects and impacts of activities and services
- Planning environmental objectives and measurable targets
- Implementation and operation of programs to meet objectives and targets
- Checking and corrective action
- Management review

In order to meet the requirements of the standard, business units are audited annually by a team lead by Environmental Management as well as periodic verification audits conducted by external, third-party auditors.

ISO 14001 Registration Achieved

The year began with eight ISO 14001 registered business units. By the end of 2003, five additional registrations resulted in The City of Calgary achieving corporate-wide registration. This milestone was reached with the final and 13th registration for the Corporate EnviroSystem, which encompasses the 19 Policy and Administrative business units.

This world-class achievement reflects the ongoing commitment of the Mayor, Council and Administration to build environmental considerations and accountability into City operations. EnviroSystem supports their vision to create a triple-bottom-line decision-making process and an environmentally sustainable community.



Corporate-wide Structure of EnviroSystem

Coined EnviroSystem, the Corporate environmental management system was designed to provide a management framework for the Policy and Administrative business units and to create a link with the ISO registered environmental management systems of the individual operating business units. The operating business unit registrations belong to:

- Calgary Fire Department
- Calgary Transit
- Corporate Properties
- Fleet and Supply Management
- Golf Courses
- Parks
- Recreation
- Roads
- Wastewater
- Waste & Recycling Services
- Waterworks (2 separate registrations)

The following policy and administrative business units are included in the Corporate registration:

- Aldermanic Office
- Assessment
- City Auditor's Office
- City Clerk's Office
- Community and Neighbourhood Services
- Community Strategies
- Corporate Engineering
- Corporate Strategy and Economics
- Customer Service and Communications
- Development & Building Approvals
- Emergency Medical Services
- Engineering Services
- Environmental Management
- Executive Office
- Finance
- Human Resources
- Information Technology Services
- Law Department
- Planning & Transportation Policy

Typically, organizations have limited the scope of ISO 14001 to their operations. The City of Calgary's Corporate ISO 14001 registration is unique in its structure and scope, because it not only applies to its operations but its policy and administrative functions as well. By implementing EnviroSystem into the entire corporation, it has provided the tool to identify, prioritize and address environmental aspects that are corporate-wide affecting most business units. These corporate-wide environmental aspects include:

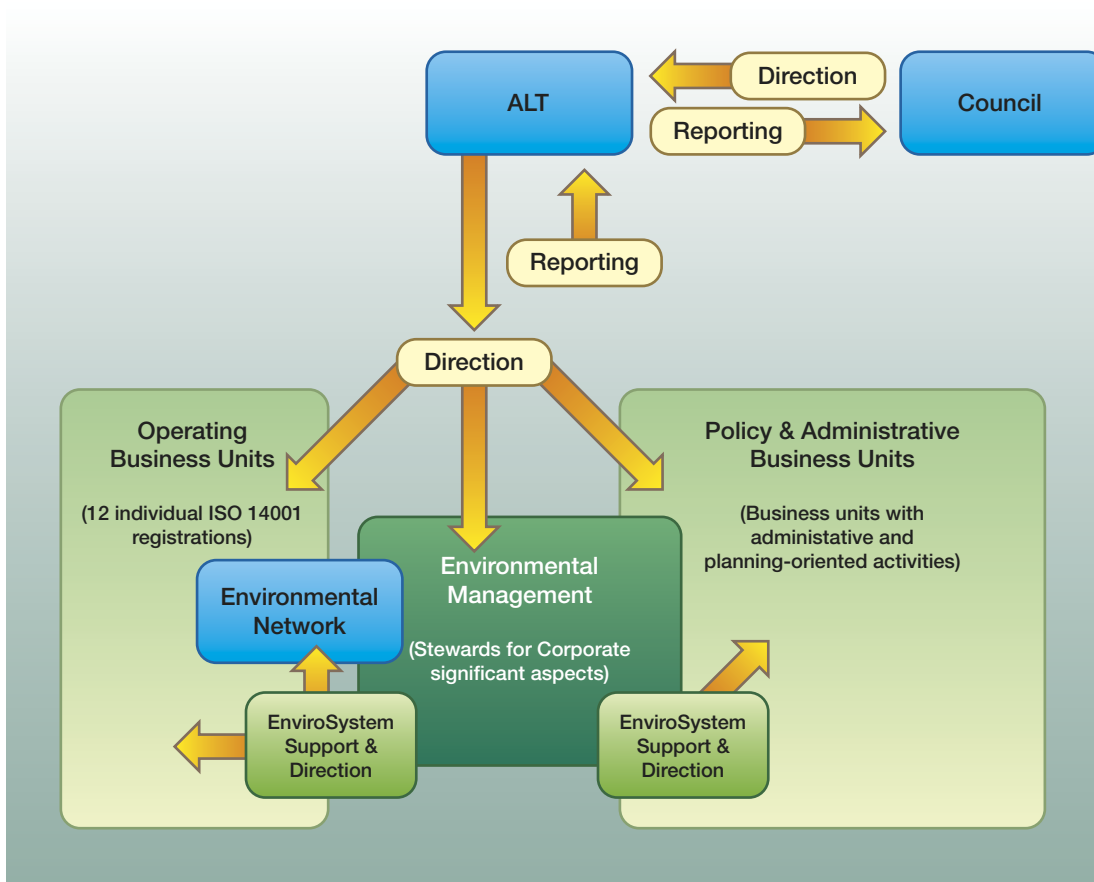
- Maintenance of ISO 14001 corporate registration
- Incorporation of environmental considerations when developing policy and strategic plans
- Rate of climate change
- Consumption of water
- Quality of water
- Adverse effects of construction on land, water and air
- Resource consumption, environmental considerations in purchasing, and the 3Rs (reduce, reuse, recycle)
- Hazardous materials and waste management



Besides identifying corporate aspects, EnviroSystem identifies key roles and responsibilities. Within business units, EnviroSystem Coordinators have been given the responsibility for the implementation and maintenance of EnviroSystem with support from their managers. Environmental Management provides overall guidance and expertise to ensure EnviroSystem continues to meet ISO 14001 requirements (Appendix A).

The structure of EnviroSystem facilitates communication and awareness at all levels within the Corporation (Figure 1). It allows for direction on environmental performance goals from the Administrative Leadership Team (ALT) and Council to all business units. The operating, policy and administrative business units, via Environmental Management, report on environmental performance on a monthly and quarterly basis to the ALT and on an annual basis to ALT and Council.

Figure 1: Corporate-wide Structure of EnviroSystem





The Benefits of EnviroSystem

By having an ISO-registered environmental management system, The City has committed to the highest international standard for pollution prevention and continual environmental improvement. The City is working toward a high level of due diligence and regulatory compliance, reducing our liability and risk of non-performance. There is an increased emphasis on measurable goals, monitoring and reporting environmental performance.

The Corporate EnviroSystem has improved communication significantly. It provides a strong link across all business units through the Environmental Network and other communication tools. The accountability framework provides direct-line reporting to the CEO and all levels of the Corporation are involved and accountable.

As well, within the Corporation, EnviroSystem has proven an effective method to prioritize environmental components of budgets and plans. It is a capital investment that appreciates over time and is achieving fiscal resource efficiency through, among other things, cost avoidance of regulatory fines that can run in the hundreds of thousands of dollars per day.

Our environmental management system is having a positive impact on the environment itself. EnviroSystem has created a culture of environmental caring and an understanding of the importance of protecting our watershed, preserving natural areas and green space, and protecting the air we breathe. It is one of the key tools available to protect the environment and the quality of life in our City.

EnviroSystem provides the foundation for moving beyond compliance and liability issues to achieving environmental goals, capturing Council priorities, and engaging all employees. The focus is shifting to one of environmental leadership. This is demonstrated through incorporating triple-bottom-line in Corporate and Council processes, monitoring and reporting environmental performance and the City's vision for urban sustainability. The benefits extend to the community by improving citizen perception of The City as an environmental leader; attracting industry, people and business that want to associate with and live in a city that cares about its environment and assures health and safety and a high quality of life.

EnviroSystem Internal Awareness Campaign

Promotion to increase comprehension of the environmental policy was continued in 2003 through using posters outlining the 3Cs of the policy: comply, conserve and continually improve. The 3Cs are a simple way to help employees remember and understand the intent of the policy. Additional visual elements of the internal EnviroSystem awareness campaign included a banner hung in the Atrium during the month of October, and a series of display boards and tent cards on cafeteria and coffee areas highlighting green initiatives in November. The EnviroSystem Intranet website <http://envirosystem> continues

“There is an increased emphasis on measurable goals, monitoring, and reporting environmental performance.”



to be updated with current information. Throughout the year, a number of informational and educational initiatives within operating business units were undertaken including EnviroSystem poster board updates and articles in newsletters.

External Outreach and Recognition

Calgary has become recognized as a leader in environmental management. Since the registration of the corporate EnviroSystem, the City of Calgary has drawn interest from several other municipalities such as Edmonton, Toronto, Montreal, and Medicine Hat in the area of ISO 14001. Alberta Environment requested a presentation on EnviroSystem, as well as local educational institutions such as SAIT and Bow Valley College. Most recently, Dave Day, Director, Environmental Management presented “Sustainable Processes: Links and Opportunities, The City of Calgary and ISO 14001” at the Federation of Canadian Municipalities (FCM) Sustainable Communities conference in Ottawa, February 2004.

Internal Recognition

In January 2004, at a Telus Convention Centre Luncheon, members of Council and senior management celebrated the contribution key staff members from all business units had made towards achieving total corporate registration to ISO 14001.

“Calgary has become recognized as a leader in environmental management.”



Zennon Zalusky
Acting GM, UEP



Mayor Dave Bronconnier
and Dave Day, Director,
Environmental Management



EnviroSystem senior management team
and coordinators



Part B: Achievements

Achievements

EnviroSystem includes a process to identify The City's significant environmental aspects based on an array of criteria such as Council priorities, legal requirements and degree of environmental impact. Once these significant environmental aspects are identified, objectives and targets are established to mitigate their potential liabilities and environmental impacts.

This section highlights examples of targets achieved through EnviroSystem in 2003 and green initiatives undertaken.

Achieved Target Highlights

Coordinate Emergency Response on Multi-Tenant Site

A cross-functional team was formed to develop the first consistent and coordinated emergency response planning effort for the Manchester Yard multi-tenant site. Their main objective was to ensure safety of employees and minimization of impacts to assets/environment in an emergency. Contact lists and hazardous material inventories from all on-site business units were consolidated into a single site plan by Corporate Properties using site maps and building floor plans. Corporate procedures will be established to identify roles and responsibilities between business units, tenants and owners to meet legal requirements.

Green Furniture Procurement

Corporate Properties set the objective to support the purchase of products and services with less negative impact. Environmental considerations built into the Office Furniture Request for Proposal for a multi-year contract was the main target and represents The City's first green tender. This proposal was spearheaded by Corporate Properties, through Supply Management with support from Environmental Management. Integrating environmental criteria for evaluating vendors involved research, reworking of the Request for Proposal and a break from traditional thinking. The impetus for including green criteria in this proposal was the approval of the Green Procurement Policy and the Sustainable Building Policy by City Council.

Improving Water Quality from Saw Cutting Operations

The Operations Environmental Improvement Cross-Functional Team (CFT) developed best management practices for saw cutting operations to preserve and protect stormwater quality. Major targets achieved included the completion of the documented practices and a Zero Discharge Policy for saw cutting slurry issued in April 2003.

Reducing Spill Potential through Improved Fuel Handling

Calgary Fire Department, Parks, Golf Courses and Recreation set specific objectives around improving fuel handling to reduce spill potential. Targets of zero reportable releases and compliance with legal requirements were reached mainly through the efforts of developing and communicating procedures. Several business units purchased



Green Furniture
Procurement



equipment to reduce the potential of leaks and unauthorized access to fuel storage such as installing double-walled aboveground storage tanks, locking pump mechanisms and special nozzles on portable dispensing containers.

Green Initiative Highlights

Contaminated Sites Management Plan

In 2003, Council approved the Contaminated Sites Management Plan. Environmental Management undertook several initiatives to more effectively manage contaminated land including a discovery protocol to outline a coordinated approach when City crews discover contamination during excavations. This approach focuses on quick response, job completion and contamination delineation involving Fire Department HazMat, Wastewater, Waste & Recycling Services, Joint Labs and Environmental Management.

Projects are actively prescreened for soil management issues and third-party contamination that may be encountered. Information is gathered to verify if contamination is present (via drilling); and agreements are developed with identified polluters allocating responsibility and costs for remediation. The results are large cost savings and minimized project delays.

Environmental Management is now actively involved in projects where third-party contamination has affected City and private property, advocating the notification of affected residents and conducting investigation to address their concerns.

Wetland Conservation Plan

The City of Calgary is home to some of the most significant wetland areas in North America. It is estimated that 90% of the pre-settlement wetlands in Calgary have been lost to development. Along with the assistance of a key stakeholder advisory committee comprised of representatives from several business units and the Alberta Government, Parks has drafted a Wetland Conservation Plan that includes policies and procedures for the timely identification of Calgary wetlands and their associated environmental significance. This plan ensures their conservation and/or mitigation within the development approval process from the community plan stage through to construction plan stage. Guidelines have also been established for the implementation of a monitoring program that will continually evaluate the success of implementing the policies and procedures. As well, criteria have been established for the development of management plans that will address the efficient and effective operations and maintenance of the City's wetlands.

Contractor Management

Three major initiatives were undertaken to improve the environmental performance of The City's contractors. The Environmental Section of The City's Standard General Conditions was significantly amended to encompass a broad range of activities and related environmental issues from legal compliance requirements and waste management to spill prevention and vehicle idling reduction. Developing a contractor's environmental responsibilities package was another initiative to educate contractors about The City's environmental



Part B: Achievements

policy and the impact their work has on The City's environmental performance. The third initiative was the development of a voluntary ECO Plan for major construction projects. The ECO Plan, a guidance document created to help contractors establish environmental management plans, was prepared for 14 projects initiated by the Transportation Project Office, Waterworks, Wastewater and Roads prior to the commencement of work in 2003. These plans consist of written procedures and environmental protection measures that the Contractor will undertake to comply with all applicable legislation, regulations, approvals and best practices during the course of construction.

Environmental Awards

The following awards have been received in 2003, exemplifying a high level of achievement in The City's environmental programs:

- Roads' EnviroSmart Streetlight retrofit program won the following awards:
 - Responsible Lighting Award from the Royal Astronomical Society of Canada - Calgary for reducing light pollution
 - Light Pollution Abatement Award - Royal Astronomical Society of Canada, National Office, for reducing glare for drivers, sky glow over Calgary, and for energy efficiency
 - International Lighting Award - International Dark-Sky Association, for exceptional energy conservation in using flat lens streetlight fixtures and reduction wattage
 - Environmental Achievement Award - The City of Calgary, for reducing electricity consumption, light pollution and significant reduction in greenhouse gas emissions, contributing to the City's Corporate and Community Climate Change Strategy
 - Technical Innovation (Transportation) Award – American Public Works Association – Alberta Chapter
 - Emerald Awards - Climate Change Category finalist
- Waste and Recycling Services' Landfill Gas Feasibility Assessment Project won the Showcase Award from the Consulting Engineers of Alberta
- The City received Gold Champion Level Reporter status from Canada's Climate Change - Voluntary Challenge and Registry
- Calgary Fire Department received Canada's Energy Efficiency Award from Natural Resources Canada for their fire station Energy Challenge
- Calgary Fire Department received an Award of Excellence from Alberta Environment for their Air Monitoring Vehicle

Additional Achievements

A comprehensive list of completed targets and green initiatives can be found in Appendix B and Appendix C respectively, organized under the following subject areas:

General Environmental Management includes improving the effectiveness and efficiency of EnviroSystem processes and programs. Improvements include project planning and construction, emergency response planning, training and communications.



Energy and Atmosphere includes reductions in energy consumption and air emissions. The combustion of fossil fuels for energy and operations using volatile compounds releases materials into the atmosphere. These pollutants create air quality concerns including ozone layer depletion, photochemical smog and acid rain. EnviroSystem identifies significant activities impacting air quality and climate change, providing focus for reducing emissions and ensuring air quality continues to be a priority in order to protect the health of Calgarians, our economy and natural environment.

Water Management is essential to manage precious water resources. Although three-fourths of the Earth's surface is covered in water, only a fraction of one percent is readily available for human use. Several EnviroSystem programs focus on water conservation and preserving water quality.

Land Management includes activities related to the protection of soil, groundwater and natural habitats. Contamination can reduce property value and impact human and ecosystem health. It is often difficult and expensive to restore natural habitat after disturbance. EnviroSystem provides a proactive approach to land development, restoration, preservation and reclamation.

Hazardous Materials Management encompasses the significant aspects related to the life cycle of hazardous materials including transportation, storage, use and disposal. Mismanaged hazardous materials can result in excessive consumption, health effects from exposure, and property and groundwater contamination. When handling hazardous wastes, EnviroSystem programs ensured effective collection followed by reuse, recycling and disposal options as well as meeting legal requirements.

Materials and Resource Management involves incorporating environmental considerations in the acquisition of materials and services. The aim is to reduce energy, water, toxic substances and raw material inputs when the products The City purchases are manufactured. This also insures that, once used, materials are properly recycled or disposed.



Monitoring Regulatory Status and Audit

Environmental Management oversees The City's internal environmental audit program. Internal audits are designed to assess and verify conformance to the ISO 14001 standard, as well as the status of compliance with applicable federal, provincial and municipal legislation, standards/guidelines and internal policies/procedures.

The majority of audits were lead by a Certified Environmental Auditor from Environmental Management, with audit teams comprised of experienced City employees. This model is effective as a cross-business unit learning tool and means to identify and relay consistent best practices across the Corporation. Significant cost savings were realized by leveraging existing resources.

Highlights of the 2003 audit program include:

- 9 major non-conformances and 77 minor non-conformances were identified during internal and external EnviroSystem audits
- 24% of non-conformances were related to documentation and document control issues, reflecting the challenges of integrating existing systems and document control practices
- 10% of non-conformances were related to Emergency Preparedness and Response. Inconsistencies and inadequate procedures are currently being addressed through Cross-Functional Teams and training and awareness programs
- 98% of the regulatory compliance findings were ranked low to medium risk (risk of incurring additional liability)
- Over 85% of the compliance audit findings were related to hazardous materials management (e.g. storage, labeling, procedures for use, disposal, etc.)
- Corrective and preventive action plans were developed for the audit findings, and root cause analyses were performed as appropriate
- No environmental charges were laid by either federal or provincial regulators during 2003



“No environmental charges were laid during 2003.”



Monitoring Regulatory Status and Audit Results

Sustainability demands integration of social, economic and environmental considerations into all City decision-making processes. The City's EnviroSystem is a solid platform upon which to build a number of other exciting environmental and sustainability programs. Following are a number of key initiatives that are planned in 2004.

Reviewing Environmental Policies

A comprehensive policy review is being undertaken in order to consolidate the broad range of existing environmental policies (e.g. policies in the Calgary Plan and the Calgary Transportation Plan) to identify gaps, and to prioritize policy development needs. This analysis includes the significant corporate-wide environmental aspects identified through EnviroSystem. Ensuring we have the necessary environmental policies in place lays the groundwork for making decisions using the triple-bottom-line model.

Public Involvement & Stakeholder Consultation

A number of initiatives are planned to engage the public and stakeholder groups to enhance awareness and communication of environmental issues, and to identify opportunities and City initiatives. The purpose is to listen, learn and consult with stakeholders for input on environmental issues.

Major elements include developing an environmental communications plan. The focus will be on:

- Raising awareness and support among the general public and key stakeholders on the environmental management and stewardship activities of The City
- Incorporating the following major outreach opportunities:
 - Public polling to understand citizen environmental perceptions and action priorities
 - Environmental Summit to convene a dialogue with interested Calgarians, Aldermen, key environmental stakeholders, and City staff on preferred Calgary environmental future action strategies
 - Enhanced Environment Week activities to promote awareness and dialogue on Calgary environmental issues and City initiatives. The events offered will include the Mayor's Environmental Expo and a Seminar Speakers series
 - Website development to provide tools for educational and communication opportunities for the public and stakeholders
 - Outreach inventory to understand the breadth of outreach done by all business units. Establishing an inventory will help us streamline our outreach programs for maximum benefit



Public forums provide outreach opportunities

External Promotion and Networking

Community sustainability is a consolidated effort of The City, its citizens and businesses. The achievements of EnviroSystem will be promoted to external audiences to foster



Part D: Moving Forward

environmental stewardship, showcase the benefits of an environmental management system and set a framework for others to follow.

External outreach will extend to other municipalities as a means of building networks and benchmarking against our peers. It will provide a learning opportunity through sharing best practices, policies and sustainability planning models.

The City of Calgary plans to participate in the +30 Network Sustainability Initiative sponsored by the International Centre for Sustainable Cities in Vancouver. The +30 Network Initiative will be composed of 30 cities (15 from within Canada and 15 international) willing to share long-term planning processes, technologies and implementation strategies. The purpose is to catalyze action and advance thinking and practice around sustainability planning models. The initiative is slated to begin in February 2004.

EnviroSystem Continual Improvement

To ensure the long-term sustainability and continual improvement of EnviroSystem, various initiatives will be undertaken including refinement to standards and strategy, internal consultation on objectives and targets, enhanced performance reporting, staff training, and integration with other Corporate initiatives. Focus areas will include:

- Development of measurable performance indicators with comparability, consistency and utility. This will allow reliable, quantitative environmental reporting to be blended with economic and social performance as part of the triple-bottom-line elements of sustainability reporting
- Improvement of internal audit programs to increase efficiency by integrating, where feasible, Health & Safety, Transportation of Dangerous Goods (TDG), and Workplace Hazardous Material Information System (WHMIS) audit/assessment tools into the EnviroSystem and compliance audits
- Employment of a new environmental aspect ranking system to standardize the methodology used by all business units to create a set of corporate-wide significant aspects
- Development of a corporate wide program to address the handling, use and disposal of hazardous materials to improve efficiency and savings related to product substitution, safe storage practices and consolidated waste disposal
- Consolidation of Recreation and Golf Course EnviroSystem into one registered system.

Addressing environmental issues impacting Calgary as a community including:

- Council decisions
- Developing external policy
- Authority to create bylaw
- Urban land use and development
- Transportation planning
- Retention and attraction of industry



Climate Change Activities

Through the coordinated efforts of several business units and Environmental Management, numerous climate change projects and policy initiatives will be launched:

- A new computer automated greenhouse gas emission monitoring and reporting system, called HEAT (GreenHouse Emissions Abatement & Tracking) will effectively and efficiently monitor and report greenhouse gas emissions levels corporate-wide
- The Corporate Vehicle Idle Reduction Policy will be implemented and communicated to staff
- The City will launch an initiative to “green” its vehicle fleet. Fleet Services will be leading a multi-business unit Green Fleet program that will work towards making The City’s vehicle fleet more environmentally friendly
- A multi-business unit Green Power team has been formed to facilitate The City’s commitment to use electricity produced from renewable energy sources, such as wind
- A new corporate Climate Change Action Plan will be developed to guide The City’s climate change program toward achieving its target greenhouse gas emission reduction level of 6% below the 1990 level by 2012
- A biodiesel demonstration project will be launched. The Calgary Fire Department and Waste & Recycling Services will trial biodiesel to fuel vehicles with the objective of identifying the potential for wider scale applications

Construction Management Activities

- The Development Review Policy and the Land Use By-Law will be undergoing revisions to incorporate more environmental considerations. These reviews will involve consultation with industry and developers. Environmental considerations include:
- Conducting environmental impact assessments to identify risk and liabilities when planning
- Including zero discharge requirements into construction activities to minimize impact
- Incorporating sustainability concepts into designs such as energy efficiency and Green Building standards



Senior Administration and Operating Business Unit Management Structure

CEO	GM	Director	EnviroSystem Coordinators	ISO Registration Achieved
Owen Tobert A/CEO	Jim Vennard GM – Transportation	John Hubbell Director Calgary Transit	Ben Murphy Michel Reinberg	Calgary Transit
		Arne Andreasen Director Roads	Paula Magdich	Roads
	Brad Stevens GM – Asset Mgt & Capital Works	Sharon Purvis A/Director Corporate Properties & Buildings	Tracey Moll	Corporate Properties & Buildings
		Bernie Trahan Director Fleet Services	Ron Chapman	Fleet & Supply Management
	Erika Hargesheimer GM – Community & Protective Services	Wayne Morris Chief	Jerad Nadin	Calgary Fire Department
		Dave Breckon Director Parks	Con O’Keefe	Parks
		Rob Pritchard Director Recreation	Greg Shymanski	Golf Courses
			Kevin Murray	Recreation
	Zennon Zalusky A/GM – Utilities & Environmental Protection	Dave Griffiths Director Waste & Recycling Services	John Leszkowicz	Waste & Recycling Services
		Allyn Humber A/Director Waterworks	Bob McNeil Maureen Sparrow	Waterworks (Production & Process) (Remainder of Operations)
		Wolf Keller A/Director Wastewater	Barry Kobryn Russell Koehler	Wastewater
		Dave Day Director Environmental Mgt	Carolyn Bowen Amanda Brownlie	Corporate Policy/Administrative

Environmental Management

EnviroSystem & Corporate Services (ECS) Division

The ECS division is managed by Richard Binder and reports to Dave Day, Director, Environmental Management. This division administers all facets of the corporate registration; provides guidance and technical assistance to operating business units; and organizes the audit program and performance reporting of EnviroSystem.

The scope of Environmental Management’s support includes:

- Provision of advice and technical expertise to business units
- Development of Cross-Functional Teams to address corporate-wide environmental issues
- Leadership and maintenance of the Environmental Network



- Development and delivery of the Internal Audit program
- Corporate environmental performance reporting
- Coordination of public/stakeholder input and Corporate EnviroSystem communications
- Corporate environmental training programs
- Development and maintenance of the EnviroSystem Intranet website
- Evolution of EnviroTracker database software to store EnviroSystem documentation

Environmental Network

The Network is chaired and administered by the Corporate EnviroSystem Coordinator. The Network is comprised of representatives from the Environmental Management business unit, the EnviroSystem coordinators from the operating business units and some representatives from policy and administrative business units.

The Network has been a key success to achieving corporate-wide ISO 14001 registration. Originally, The Network was established to share EnviroSystem implementation information, but has evolved into a mechanism to create corporate consistency between the business unit registrations and the Corporate EnviroSystem. The Network accomplishes this task by providing a consistent approach for identifying and managing significant environmental aspects spanning outside of the individual business units across the entire Corporation. The Network has implemented corporate policies through the development of corporate-wide programs. The Network also provides a vital communication link to the senior management of their business units on the progress of the Corporate EnviroSystem.

“The Network has been a key success to achieving corporate-wide ISO 14001 registration.”

A list of participants can be found on the EnviroSystem Intranet website at <http://envirosystem>.

Cross-Functional Teams

Cross-Functional Teams (CFTs) are a management approach to address significant corporate environmental aspects that span multiple business units. Significant environmental aspects include top ranked aspects, Corporate and Council priorities, corporate non-conformances identified via auditing and stakeholder consultation. Teams are responsible for developing and implementing the policy and/or programs they design to address specific aspects. Several EnviroSystem Network representatives participate on CFTs. Environmental Management is responsible for the coordination of the CFTs, ensuring teams are established to address corporate environmental aspects and to ensure that team targets and obligations are met. The following teams were formed in 2003:

- Manchester Yards Emergency Response Plan CFT
- Operations Environmental Improvement CFT
- Contractor Pre-Qualification CFT
- Contamination Discovery CFT

A list of CFTs and their programs can be found on the EnviroSystem Intranet website at <http://envirosystem>.



EnviroSystem Objectives and Targets Achieved

Mature registrations have a larger number of set targets achieved over systems recently registered where setting targets has just begun. Business units with recent registrations will be able to showcase more of their achievements in the 2004 Annual Report. As part the cycle of continual improvement, new targets will be set as old ones are achieved, moving The City towards sustainability. All 90 completed targets across the Corporation are contained in the contents of these tables.

1. General Environmental Management

1.1 Management Review & Commitment

Objectives	Targets
Corporate – provide timely and appropriate environmental performance information to senior management and Council	<ul style="list-style-type: none"> Internal reporting system place in Sept 2003 Accountability framework, CEO monthly report format, communication & marketing plan, conducted mgt review
Corporate – to provide effective management for consistency, continual improvement and environmental performance	<ul style="list-style-type: none"> Continual improvement plan in place Dec 2003 Developed an Environmental Plan Terms of Reference; developed Corporate recognition plan; developed a communication & marketing plan; established 3 CFTs for significant aspects

1.2 Construction & Planning

Objectives	Targets
Contractor Environmental Prequalification CFT – incorporate environmental criteria for construction contractors	<ul style="list-style-type: none"> Environmental criteria incorporated into the existing process drafted and submitted to the Steering Committee Nov 2003 Ensures contractors know their role and responsibilities in regard to environmental requirements
Corporate Properties – implement sustainable/green building principles where applicable in new/existing buildings	<ul style="list-style-type: none"> Incorporated green building principles in the Manchester Affordable Housing Project and Nose Creek Sport and Recreation Centre
Corporate Properties – pilot the Sustainable Building Policy with the design of two buildings	<ul style="list-style-type: none"> Initiated design of the Country Hills Multi Services Centre and the Water Centre to meet LEED™ Silver Level Rating
Roads - comply with applicable legislation & requirements. Minimize environmental impacts	<ul style="list-style-type: none"> Implemented ECO plans (site-specific environmental management plans) on targeted construction projects



1.3 Operational Controls

Objectives	Targets
Manchester Yards Coordinated Emergency Response Plan CFT - consistent and co-ordinated emergency response planning at multi-tenant sites to ensure safety of employees and minimization of impacts to assets/ environment in an emergency	<ul style="list-style-type: none"> On-site business units prepared contact lists for yard employees and identified hazardous material inventories and locations using site maps and building floor plans Business unit information was consolidated into a single site plan by Corporate Properties
Roads - minimize environmental impacts from bridge maintenance	<ul style="list-style-type: none"> Best management practice (BMP) for environmental aspects of bridge maintenance
Roads - ensure compliance with applicable environmental regulations and Standard Operation Procedures (SOP)	<ul style="list-style-type: none"> Developed SOP in Traffic Field Operations

1.4 Training & Awareness

Objectives	Targets
Recreation - increase health, safety & environmental awareness of contractor management in outdoor pools	<ul style="list-style-type: none"> Trained pool operators in Spill Release Reporting and EnviroSystem
Waterworks - include required environmental training related to existing/ new operations	<ul style="list-style-type: none"> Completed training modules for PACL (chemical which replaced alum at Glenmore), Managing Runoff, Working with Hazardous Chemicals and Sodium Bisulphite and Potassium Permanganate completed. Training planned in early 2004

2. Energy & Atmosphere

2.1 Energy Conservation

Objectives	Targets
Recreation - improve fuel efficiency at Glenmore Reservoir	<ul style="list-style-type: none"> Minimize fuel consumption from patrol operations by tracking fuel consumption More efficient motors for Glenmore Reservoir boats
Recreation - energy conservation in pools, leisure & art centres, and arenas	<ul style="list-style-type: none"> Established baseline info and graphed usage patterns for electricity use to determine trends and targets Retrofitted lighting during renovations and upgrades and increased energy awareness at Southland Leisure Centre Lighting retrofit plan developed for Village Square Leisure Centre



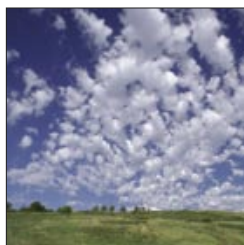
Appendix B: Objectives and Achieved Targets

2.1 Energy Conservation (continued)

Objectives	Targets
Roads – reduce energy consumption	<ul style="list-style-type: none"> Reduce energy use by 35% by 2005 for residential streetlights. Completed 55% of retrofits by end of 2003 Reduce consumption of traffic signal lights by 80% by Dec 2005. Replaced incandescent fixtures with light emitting diodes (LED). One third of the traffic signals retrofitted
Roads – reduce energy consumption	<ul style="list-style-type: none"> Reduce energy use by 35% by 2005 for residential streetlights. Completed 55% of retrofits by end of 2003 Reduce consumption of traffic signal lights by 80% by Dec 2005. Replaced incandescent fixtures with light emitting diodes (LED). One third of the traffic signals retrofitted

2.2 Air Emissions

Objectives	Targets
Calgary Transit – minimize impact of harmful emission to employees and the environment	<ul style="list-style-type: none"> Established baseline for engine emissions by Dec 2003, in partnership with Environment Canada
Corporate Properties – develop ozone depleting substance management plan	<ul style="list-style-type: none"> Conducted an inventory to identify equipment that uses chlorofluorocarbon (CFC) refrigerants and adopted a management (or replacement) schedule for these refrigerants Converted CFCs in four large chillers from CFC-11 (R-11) and CFC-12 (R-12) to HFC-134a (R-134a) and HFC-123 (R-123)
Fire – reduce release of toxic and flammable gases to the environment from emergency scenes involving pressurized vessels	<ul style="list-style-type: none"> Established through training requirements, conducted training, produced a scene management checklist and obtained air-monitoring equipment
Fire – reduce amount of fuel and foam used during fire training exercises (resultant fugitive emissions)	<ul style="list-style-type: none"> Maintain or reduce 2002 usage ratio Achieved by using clean fuel only, combing fire training exercises and handrail apparatus to minimize usage and establishing live fire guidelines
Recreation – prevent air emissions from ice rinks	<ul style="list-style-type: none"> Management strategy on reporting releases Improved reporting structure and conducted training to ensure release reporting in a timely manner
Recreation – prevent air emissions from flat water and Leisure Centre pools	<ul style="list-style-type: none"> Minimized chlorine releases through use of checklists, commissioning a pool chlorination study on alternative disinfection methods and improving maintenance procedures
Roads – minimize vehicle idling by employees	<ul style="list-style-type: none"> Educated staff on Anti-Idling Policy by Dec 2003 through an anti-idling contest and distribution of revised Fleet Operators Handbook
Wastewater – reduce chlorine emissions to the atmosphere from the Bonnybrook / Fish Creek treatment plants	<ul style="list-style-type: none"> Zero incidences of chlorine emissions with EnviroSystem Placard Program Program ensures compliance with industry standards, manufacturer's specifications and legislation, including environmental and OH&S
Waterworks/Wastewater Joint Labs – minimize emissions from City vehicles	<ul style="list-style-type: none"> Educated Construction Services staff on the Anti-Idling Policy (certification and re-certification)



Reducing harmful emissions improves air quality



3. Water Management

3.1 Water Conservation

Objectives	Targets
Golf Courses – optimize water use in operation and maintenance of golf courses	<ul style="list-style-type: none"> • Pilot program to optimize the use of water for irrigation at Richmond Green and Lakeview golf courses • Monitored program to verify baseline use. Data used to modify watering requirements during high stress or water restriction periods • Permits for direct source irrigation water collected and updated as required
Parks – optimize water use park operation and maintenance	<ul style="list-style-type: none"> • Water management strategy; conversion of 335 sites to central control
Recreation – water conservation at pools and leisure centres	<ul style="list-style-type: none"> • Established baseline on water use to identify areas of focus for water conservation in 2003-2004 • Completed static tests of facilities including inspections of basins during maintenance shutdowns greater than one month
Waterworks – maximize the lifespan of buried infrastructure by preventing corrosion	<ul style="list-style-type: none"> • Determined optimal amount of main replacement to substitute with anode retrofit to extend life of water mains

3.2 Water Quality

Objectives	Targets
Operations Environmental Improvement CFT – BMP for saw cutting operations	<ul style="list-style-type: none"> • BMP for saw cutting finalized in March 2003 (communication plan will be developed in early 2004) • Zero Discharge Policy for saw cutting slurry issued by Bylaw and Environmental Mgt April 2003
Fire – minimize releases of chlorinated water during training activities and hydrant maintenance through dechlorination operations	<ul style="list-style-type: none"> • Releases treated using sodium sulfite pucks at catch basins when flowing hydrant/extinguishing water for training or maintenance • Hydrant inspection manual developed
Fleet & Supply – eliminate potential for surface water contamination from spills at Mayland Heights	<ul style="list-style-type: none"> • Target of zero releases into the storm water sewer with new self-contained sump to mitigate releases
Golf Courses – optimize water quality flowing to storm sewers and improve turf health at Mecca Lake Golf Course	<ul style="list-style-type: none"> • Reduced watering and decompaction requirements. Soils and water testing, cultural management program, and installation and use of integrated weather station to increase turf health in target areas and general locations. Major focus on water conservation. Program devised for growing conditions, water quality and management
Golf Courses – eliminate Winter Hydrant Watering and protect water quality	<ul style="list-style-type: none"> • Certified Richmond equipment for bulk water station use. All courses retrofitted to meet backflow prevention requirements
Recreation – prevent release of whitening agent to storm sewer	<ul style="list-style-type: none"> • Zero releases through procedural control. Formalized procedures for disposal of whitening for consistency across all arenas



Appendix B: Objectives and Achieved Targets

3.2 Water Quality (continued)

Objectives	Targets
Roads - ensure public safety and minimize adverse effects on the environment from deicing agents	<ul style="list-style-type: none"> Developed a salt management plan and provided salt management training to foremen and managers
Roads - minimize adverse environmental impacts from disposal of street sweepings	<ul style="list-style-type: none"> Tested street sweepings for parameters of concern
Roads - prevent releases of saw cutting slurry to the storm water system	<ul style="list-style-type: none"> BMP for managing and containing saw cutting slurry implemented
Waste & Recycling Services – maintain adequate stormwater management (SWM) at landfill sites	<ul style="list-style-type: none"> Reviewed existing SWM practices at active and inactive landfill sites and determined appropriate practices at active sites to ensure compliance with SWM regulations
Waste & Recycling Services - ensure adequate leachate management at all City of Calgary landfill sites to minimize releases to the environment	<ul style="list-style-type: none"> Reviewed the leachate monitoring programs at all active sites to ensure existing landfill cells are adequately monitored.
Waterworks - monitor and produce an annual report documenting Disinfection-By-Product levels in the distribution system	<ul style="list-style-type: none"> Maintained chlorine residual levels above 0.1 mg/L and below 0.9 mg/L, and turbidity levels below 1 NTU
Waterworks – investigate options for reducing overall cost of controlling sediment and erosion	<ul style="list-style-type: none"> Baseline costs for each option determined in 2003 Cost comparison and implementation of the best option in 2004
Waterworks - SOP for installing temporary water service is in place, and meets safety and environmental standards	<ul style="list-style-type: none"> All relevant Distribution Control field employees trained to the SOP in addition to two new water quality courses by Oct 2003
Waterworks - establish a SOP for release of potable waters from leaks and to determine the impact of releases from water main breaks and leaks	<ul style="list-style-type: none"> SOP completed Mar 2003 to shut the water main down to reduce property and environmental damage in emergency situations. Procedure includes use of dechlorination pucks and sedimentation bags
Waterworks - establish procedures for identifying and reporting existing or potential cross connections	<ul style="list-style-type: none"> Cross connection training program by Dec 2003 in addition to two new water quality courses
Waterworks - investigate, develop and test a lockout device that can be used with the distribution system	<ul style="list-style-type: none"> Implemented a SOP by Oct 2003 Identified a locking device for the different sizes of top boxes



Maintaining water quality is a priority

4. Land Management

4.1 Wildlife Habitat Protection

Objectives	Targets
Parks - increase integrated pest management (IPM) and education among other BU staff	<ul style="list-style-type: none"> Obtained commitment from other BUs to use Parks for their external pesticide spraying Ensured consistent signage used
Parks - manage geese on highly valued and used areas	<ul style="list-style-type: none"> Minimized young at six areas resulting in 85% less adults using goose demographic data and discouraging adults from breeding on site



4.1 Wildlife Habitat Protection (continued)

Objectives	Targets
Parks - reduce beaver impact on high-use parks	<ul style="list-style-type: none"> • Developed Beaver Management Plan. Cull or annual removal of 2% of beaver population to address 90% of the problem • Collection of beaver demographic data, and target selection of high-density lodges

5. Hazardous Materials Management

5.1 Chemical Usage

Objectives	Targets
Corporate Properties - adhere to The City of Calgary's Integrated Pest Management Program	<ul style="list-style-type: none"> • Transferred control of pesticide application from external contractor to Parks business unit
Roads - Minimize negative environmental impacts from treating forms	<ul style="list-style-type: none"> • Investigated, tested and selected alternative form oils for concrete forms
Recreation - develop fertilizer management program, with consideration for fertilizer storage, purchasing efficiency, field needs, and IPM	<ul style="list-style-type: none"> • Obtained baseline info on field fertilizer needs • Procedure for effective storage and purchasing to reduce storage time and eliminate potential for spills. Translated principles of IPM into Athletic Park Operations through specific procedures
Waterworks – effective SOP for the use of hazardous chemicals for chlorinating and dechlorinating water mains complete	<ul style="list-style-type: none"> • SOP established and employees trained June 2003 • Summary SOP revised by Distribution Control supervisors and employees trained to the revised SOP by Dec 2003

5.2 Fuel Handling

Objectives	Targets
Fire – reduce the possibility for spills at storage sites and when transferring fuel	<ul style="list-style-type: none"> • Zero reportable releases • Installed above ground double-walled fuel tank, performed weekly level reconciliation and visual inspections of the tank • Locks on the pump mechanism to prevent/control unauthorized usage • Procedure changed to prohibit the general storage of hazardous materials at training academy
Golf Courses – minimize the possibility of fuel release	<ul style="list-style-type: none"> • No spills occurred since fuel stations and fuel transfer procedures reviewed and updated
Parks – minimize the potential of fuel release from aboveground storage tanks (AST) and fuel dispensing	<ul style="list-style-type: none"> • Full compliance with federal and provincial AST requirements. Implementation of fuel management and handling procedures/training • Fuel tracking methodology created for cemeteries • Installation of special nozzles on jerry cans
Recreation - reduce accidental fuel releases at Glenmore Reservoir	<ul style="list-style-type: none"> • Minimized fuel releases during boat fueling by reinforcing proper fuelling procedures through training



Appendix B: Objectives and Achieved Targets

5.3 Health Protection

Objectives	Targets
Calgary Transit – protect paint booth staff from potentially carcinogenic substances and meet HSE legislative requirements	<ul style="list-style-type: none"> Trained paint booth staff on the proper use of isocyanate paints April 2003
Calgary Transit – reduce exposure of vehicle emissions to maintenance staff	<ul style="list-style-type: none"> Installed engine exhaust drops hoods at each stall on all garage facilities Dec 2003
Calgary Transit – minimize potential exposure of employees to hazardous activities and materials	<ul style="list-style-type: none"> Identify training needs and implement training program Feb 2003, for biohazardous waste left on Transit vehicles
Corporate Properties - reduce potential over exposure issue from impact to asbestos during retrofits	<ul style="list-style-type: none"> Developed written procedures and flow-charts for dealing with asbestos removal that were distributed to all individuals involved with retrofits

5.4 Hazardous Waste



Waste management ensures proper disposal

Objectives	Targets
Corporate Properties - dispose of on-going generation of waste fluorescent tubes through a certified recycler	<ul style="list-style-type: none"> Disposed of 6332 spent fluorescent bulbs through a recycler
Fleet & Supply – ensure hazardous waste disposal at Street Light Repair shop meets or surpasses regulatory requirements	<ul style="list-style-type: none"> 100% of hazardous waste sent to a licensed waste facility through implementation of waste disposal procedures. Approved hazardous waste recycler has been selected and contracted for waste disposal
Waterworks - promote environmental stewardship by increased used oil recycling	<ul style="list-style-type: none"> Created an SOP on oil recycling storage facility use EnviroSystem Placard Program encourages employees to recycle used oil from home and communicates spill procedures
Waste & Recycling Services - minimize collection and disposal of prohibited waste	<ul style="list-style-type: none"> Implemented programs and conducted training of staff to ensure prohibited household hazardous waste (HHW) to keep the amount of HHW in the residential waste stream at or below levels measured in 1999 waste composition study

5.5 Spill Prevention

Objectives	Targets
Calgary Transit - meet environmental legislative requirements; work towards zero leaks and spills	<ul style="list-style-type: none"> Developed an inspection schedule for transformers used on the C-Train System Dec 2003
Fire - reduce the risk of contaminants being released to storm sewer and/or ground during burn pan training exercises or fire training exercises	<ul style="list-style-type: none"> No spills at training academy in 2003 Procedural changes and spill prevention devices used Reviewed procedures and Hazardous Materials Manual with external clients



5.5 Spill Prevention (continued)

Objectives	Targets
Fire – reduce possibility of release of hazardous materials to storm sewer and ground from run off when responding to emergencies or during decontamination	<ul style="list-style-type: none"> Reduced potential impacts through diligent scene management, checklists and training
Fire – reduce possibility of fluids releases vehicles to ground/storm sewer	<ul style="list-style-type: none"> Zero reportable releases for 2003 Improved preventative maintenance program, implemented maintenance checklists and provided vehicle spill kits
Roads – minimize the impact of spills and releases	<ul style="list-style-type: none"> Developed spill kit procedure to address where kits are required, inspection and replenishment
Roads - minimize the potential for spills or releases to environmentally-sensitive areas	<ul style="list-style-type: none"> Developed criteria for establishing dangerous goods truck routes
Recreation - reduce accidental spills related to arena maintenance	<ul style="list-style-type: none"> Established baseline data Refresher training provided in spill response and release reporting Conducted chemical inventory and investigated chemical storage methods storage options at each site
Recreation - reduce spill potential for cooking oil/grease.	<ul style="list-style-type: none"> Zero releases of cooking oils to storm sewer through secondary containment and procedural control
Recreation - increase HSE awareness of outdoor pool operators/spill prevention	<ul style="list-style-type: none"> Trained pool operators in Spill Release Reporting and EnviroSystem Employed spill kits and secondary containment
Recreation - reduce spills related to fuel filling in Athletic Parks	<ul style="list-style-type: none"> Monitored fuel consumption and obtained baseline fuel quantities through fuel handling audit. Inventory of spill kit and secondary containment ensured requirements met
Recreation - ensure reporting of accidental chemical/fuel spills to HazMat	<ul style="list-style-type: none"> Established baseline for reported spill incidents Trained all staff on release reporting

6. Material and Resource Management

6.1 Procurement

Objectives	Targets
Corporate Properties - support the purchase of products and services that have a less negative impact on the environment	<ul style="list-style-type: none"> Included environmental considerations in Office Furniture Request for Proposal



EnviroSystem Green Initiatives

In addition to the several objectives and targets achieved, many initiatives have developed. This appendix highlights additional success stories. Many of the stories expand on achieved targets contained in Appendix B.

★ Denotes award-winning endeavour listed under Environmental Awards in Part B.

1. General Environmental Management

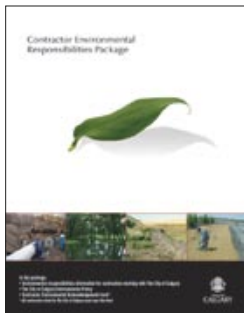
Construction & Planning

Environmental Section in Standard General Conditions

Environmental Management (EM) and the Law Department significantly improved the Environmental Section of The City's Standard General Conditions. They are the result of cumulative expertise from multiple city business units including Fire, Parks, Recreation, Golf Courses, Roads, Waterworks, Wastewater, Waste & Recycling Services and Corporate Properties, along with the Transportation Project Office. This document is the standard contractual agreement issued to all construction contractors.

Activities and related environmental issues covered are:

- Compliance with Legislation
- Environmental Responsibilities
- Subcontractor Management
- Erosion and Sediment Control
- Site Drainage During Construction
- Dust Control
- Soil Conservation and Stockpiles
- Tree and Plant Protection
- Offsite Disposal of Excavated Soil or Material
- Waste Management
- Fuelling
- Spill Prevention
- Release Reporting and Cleanup
- Contaminated Ground
- Recycled and Imported Material
- Vehicle Idling Reduction
- Site Management



Contractors' Environmental Responsibilities Package

Contractors' Environmental Responsibilities Package

Environmental Management and Fleet & Supply Management developed a new Contractor Environmental Responsibilities Package. The package educates contractors about The City's environmental policy and the impact their work has on The City's environmental performance. The package communicates important environmental considerations such as requirements of the tree by-law and spill/release reporting procedures. Contractors sign an environmental agreement included in the package.

ECO Plan Guide

The ECO Plan is a guidance document for Contractors to help them establish environmental management plans for major construction projects. In 2003, ECO Plans were prepared for 14 projects initiated by the Transportation Project Office, Waterworks, Wastewater and Roads prior to the commencement of work. These plans consist of written procedures and environmental



protection measures that the Contractor will undertake to comply with all applicable legislation, regulations, approvals and best practices during the course of construction.

Sustainable Buildings

City Council approved the pilot of the Sustainable Building Vision and Policy in February 2003. Calgary is the first municipality in Canada to establish such a policy. The policy commits The City to implementing sustainable building principles in all new and existing buildings to yield economic, social, and environmental benefits to building owners and society. As well, new buildings over 500m² will be developed to the LEED Silver Level Rating as a minimum.

LEED (Leadership in Energy and Environmental Design) is a rating system developed by the U.S. Green Building Council to assess the environmental sustainability of building designs. Used as a tool for green design, LEED helps teams determine green project goals, identify green design strategies, measure and monitor progress, and document success. It is the most recognized green building rating system in North America.

Recent buildings incorporating sustainable principles include the Crowfoot Public Library, the Nose Creek Recreation & Library Complex and the Manchester Affordable Housing Project. The following will be piloted under the new policy: Country Hills Multi-Services Building, Water Centre, Pine Creek Wastewater Treatment Facility and Oliver Bowen LRT Transit Maintenance Facility and substantial retrofits to our water treatment facilities.

Emergency Response

Emergency personnel or hazardous materials crews can now find crucial information when responding to emergencies at Waste & Recycling Services facilities. Weatherproof emergency pre-plan tubes were fabricated, erected and mounted at conspicuous points outside buildings to store relevant building and site plans, maps to gas and water shut-offs, and after-hours contact information.

Pollution Prevention Support

In June 2003, Fleet and Supply Management hosted a workshop and site tour for The Canadian Center for Pollution Prevention (C2P2) during their national roundtable discussions. C2P2 encourages actions that avoid or minimize the creation of pollution and waste to foster a healthier environment and a sustainable society. The City is a member of C2P2, whose services include education, planning strategy support, research, and training.

2. Energy & Atmosphere

Climate Change & Air Emissions

Voluntary Challenge Registry ★

The City of Calgary received Gold Champion Level Reporter status from Canada's Climate Change - Voluntary Challenge and Registry. The City of Calgary achieved this highest level



Appendix C: EnviroSystem Green Initiatives

of recognition though implementing a voluntary corporate and community-wide climate change program aimed at introducing or encouraging ways to reduce energy consumption thereby reducing greenhouse gas (GHG) emissions.

Staff Commuter Challenge

The Staff Commuter Challenge, managed by Transportation Planning, is a year round web-based, friendly competition among City employees to see who can commute the most using active and sustainable transportation methods. Employees record the ways they alternatively travel to and from their place of work, including walking, jogging, cycling, public transit, and carpooling, as well as flex time, compressed work week and telecommuting.

Participation has grown from 66 to 688 employees from 2002 to 2003. Participants have recorded 28,433 days and 763,505 km of alternative travel. This effort represents a potential reduction of 115,000 kg of CO₂ and 7,900 kg of pollutants from entering the atmosphere when compared to driving alone to work during peak periods.

Energy Retrofits At Calgary Transit

SOLARWALL[®] (made of perforated metal cladding) uses solar energy to heat buildings and has been installed on the vast expanse of exterior walls at the Victoria Park, Anderson and Spring Gardens Transit garages. The dark-coloured metal cladding installed on south-facing walls of the buildings is heated by solar radiation. Outside air is drawn through specially designed tiny holes, extracting heat from the metal panels in the process. This warm fresh air is then distributed throughout the building.



Using solar energy to heat buildings

Car Heaven

Calgary Transit partnered with Climate Change Central and the Clean Air Foundation for the Car Heaven Alberta campaign. Drivers turn in their older vehicles for scrapping and recycling for a six-month transit pass to reduce smog and greenhouse gas emissions. Since October 2003, 110 vehicles have been scrapped and another 350 are projected for 2004.

The Transit maintenance pits, which allow the mechanics access to the underside of buses, have been retrofitted with “light pipes”. The lights are brighter and more energy efficient than the pot lights they replaced. LRT platforms are being retrofitted with light pipes or fluorescents, replacing less energy efficient light bulbs.

New rapid doors have been installed in high traffic areas where they open and close in seconds versus the minutes required for the conventional doors to reduce the amount of heat loss.

EnviroSmart Streetlights ★

Calgary is the first city in North America to embark on an extensive program to retrofit residential streetlights with new, lower-wattage, flat lens fixtures. The award-winning retrofit program is saving energy and money, reducing light pollution and greenhouse gas emissions. When the project is complete, the new fixtures will save The City \$2M a year and reduce carbon dioxide emissions by 16,000 tonnes annually.



From Waste to Watts ★

The Waste & Recycling Services, ENMAX, and PanCanadian (EnCana) formed a joint-funded partnership to examine the recovery and utilization of landfill gas from the City's three active landfill sites (Spyhill, East Calgary, Shepard). The project looked at generating energy from the completed and closed areas of the sites and the development of renewable energy sources. The study showed the use of microturbines for small-scale power generation is viable based on recovered gas quantities at two of the sites. Infrastructure Canada Alberta Program (ICAP) has provided \$6M dollars in funding to install landfill gas collection and utilization infrastructure at the East Calgary and Shepard landfills to be constructed in 2004. Each system will generate a minimum of one to two megawatts.

Energy Challenge Is Fired Up ★

To conserve energy, save money and reduce the environmental impact of heating, lighting, cooling and refrigeration activities within The City's 30 fire stations, the Calgary Fire Department challenged the competitive spirit of its 1,076 firefighters through the Energy Challenge initiative. This initiative resulting in energy savings of \$22,000 and 300 tonnes of greenhouse gas emissions. This Energy Challenge is the result of a partnership between the Fire Department and VESTAR, an energy performance contracting company.

Traffic Light Signals Savings

Roads is retrofitting green, red and pedestrian traffic signal displays with new light-emitting diode (LED) technology to save money, improve traffic safety and reduce greenhouse gas emissions. The LEDs use 80 per cent less energy compared to conventional incandescent bulbs and result in an equivalent reduction in CO₂ emissions. The pay back for the investment of \$4.65M over the three-year retrofit project is only five years. One-third of The City's 730 traffic displays were retrofitted in 2003.



LED technology uses less energy

Monitor Energy Use

Liquid crystal display (LCD) flatscreen monitors became the corporate standard over cathode ray tube (CRT) monitors. The LCD monitors provide a 6-7 year lifespan compared to 4-5 years for CRT monitors and use 30% less energy. Since the program began late summer 2003, 600 monitors have been installed.

Prevention of Harmful Emissions from Dechlorination

Waterworks replaced the gaseous sulphur dioxide dechlorination system at the Glenmore Plant with liquid sodium bisulphite. While both systems dechlorinate the water returned to the Elbow River, the sodium bisulphite system is more environmentally friendly. The design of the system was completed, and construction started in September 2003. The system will be commissioned in January 2004. The new system is safer for the public, employees and the environment because it eliminates the possibility of a large toxic gas release. This significantly reduces the potential impact of the dechlorination process on the atmosphere.

Air Monitoring Vehicle Earns Award of Excellence ★

The Calgary Fire Department, in partnership with Alberta Environment, developed an innovative Air Monitoring Vehicle (AMV) to monitor air quality at major incidents to



Appendix C: EnviroSystem Green Initiatives

help protect the health and safety of emergency personnel, Calgarians and citizens in surrounding areas. A number of significant industrial fires confirmed the need for air monitoring. The AMV assesses the contents of a hazardous materials release or smoke plume resulting from a fire. The unit will help determine if and where the release or smoke is expected to spread, and whether safety warnings or evacuations are necessary to ensure citizen safety.

3. Water Management

Water Conservation

Parks Wetland Conservation Plan

The City of Calgary is home to some of the most significant wetland areas in North America. In 1981, it was estimated that 78% of the pre-settlement wetlands in Calgary had been lost to development; today, the estimate is closer to 90%. Parks, along with the assistance of a key stakeholder advisory committee, has drafted a Wetland Conservation Plan that includes policies and procedures for the timely identification of Calgary Wetlands and their associated environmental significance in order to ensure their conservation and/or mitigation within the development approval process (i.e community plan stage through to construction plan stage). Guidelines have also been established for the implementation of a monitoring program that will continually evaluate the success of implementing the policies and procedures. As well, criteria have been established for the development of management plans that will address the efficient and effective operations and maintenance of the City's wetlands. Parks is hosting two public houses in March 2004 in order to provide information and receive public comments on the draft plan.



Protecting wetlands maintains bio-diversity

Bus Wash Water Recycling

When a need for a new bus washing system at Calgary Transit was identified, the word went out that the City was looking for a new system that uses less water – a lot less water. The City's 700 buses, all subject to Calgary's Chinooks and challenging weather conditions, are washed regularly and it takes many litres of potable water to keep them clean. An innovative bus washing system that recycles 95 per cent of the wastewater from Westmatic of Sweden was installed. The new system saves the City 2.2 million litres of water every year by using a centrifuge to remove solids from the wastewater so it can be used again and again.

Key environmental initiatives implemented by Calgary Transit as a result of effective environmental management, like the bus wash, were featured in an article published in a United States bus publication BUSRide in September 2003.

Water Conservation Public Outreach

Over the past few years, the value of water resources has become more apparent with ongoing drought on the prairies. It makes sense to better manage the use of this resource. In 2003, Waterworks continued the installation of water meters throughout the City. As a result of the universal water metering strategy, an additional 20,790 water meters were installed on



homes throughout Calgary. Approximately 12,500 of these meters were installed on homes that were previously charged a flat rate for their water, and an additional 8290 meters were installed in new homes.

As part of the indoor water conservation program, the toilet rebate program was developed and launched in 2003. Citizens replaced their old toilets with flush volumes of 20 litres or more with new approved six-litre models and received a \$50 rebate from The City. In 2003, 280 toilets were replaced for a saving of about 50,000 litres of water per day.

To help Calgarians use water wisely a Waterworks team hit the road in the summer of 2003 in a hybrid-electric Toyota Prius. Team Water Wise provided free outdoor water assessments and provided information on programming irrigation systems and plant species requiring less watering. Data gathered indicated the team helped conserve almost 3,000m³ of water per month. Team Water Wise also performed irrigation audits at several City Park sites. As a result, Waterworks is now working with the Parks business unit to improve the management of irrigation water resources.

Water Management Strategies

Parks established the goal of finding a sustainable model for water management that promotes water and soil conservation, guides decision-making on future direction for water usage in parks, while continuing to meet the needs of plants growing in parks, open spaces, recreational sites and landscaped areas. A draft plan has been shared with interested or related business units such as Roads, Waterworks, Recreation as well as recognized experts in water management within North America. The finalized strategy will help to make Parks a good water steward.

Water Quality

Bridge Over Untroubled Waters

New initiatives for bridge construction work and maintenance aim to keep chlorine and debris out of rivers and storm sewers. Best practice specifications are included in bridge construction contracts requiring the collection and treatment of hydrodemolition water before being discharged.

Best management practices also apply to bridge maintenance activities such as bridge washing, sandblasting and painting operations. Roads began dechlorinating wash water using a device in which water passes over chemicals to reduce residual chlorine.

The use of a wet sandblast system eliminates the dust plume that normally results from dry blasting. The debris falls directly to the bridge deck and is swept up. This system is used in environmentally sensitive areas such as over wetlands or water bodies. Painting of bridge railings on site where over spray is difficult to control has been greatly reduced by temporarily removing railings and taking them offsite for galvanizing, wherever possible.



Protecting Waterways from Saw Cutting Slurry

A corporate Zero Discharge Policy for saw cutting slurry was adopted in 2003. A best management practice for saw cutting operations was developed to identify ways to keep saw cutting slurry out of the stormwater system. Roads Signals Loop crews implemented the policy by containing the slurry and collecting it using a vacuum system. Roads Concrete Construction's saw cutting contractor implemented a similar system. The Concrete Construction crew also implemented other additional measures such as containment socks around catch basins and filter fabric placed under catch basin grates to keep concrete debris out of the storm system.

The Zero Discharge Policy for saw cutting was included in the 2004 Standard General Conditions, clause 4.35.4 to be followed by all City contractors.

Integrated Stormwater Management

The City of Calgary is adopting an integrated approach to stormwater management, beginning at the watershed level and extending to the subdivision/site level with emphasis on stormwater quality and best management practices. Stormwater ponds and constructed wetlands are key elements of this integrated approach. These facilities help the City of Calgary achieve the Alberta Environment regulation for a minimum 80% removal of stormwater sediments in new developments.



Swim diapers help reduce contamination

Pool Initiative

Recreation has a new program that requires all children under 35 months to wear a special swim diaper and plastic pants when using The City's aquatic facilities. The use of these swim diapers reduces water contamination, in turn decreasing the number of pool closures and reducing the financial impact to facilities. The key to success is to spend lots of time doing public education with the customer so that they understand the environmental and health risks associated with pool water contamination.

Backwash Residual Treatment System

Waterworks made substantial progress in the design of a new backwash residual treatment system. Construction starts at Bearspaw Water Treatment Plant in spring 2004. Once operational, this system will prevent the release of suspended solids (sediment), and chlorinated water to the Bow River. This will minimize the impact of the Bearspaw plant on the Bow River and exceed Alberta Environment Water Treatment Approval requirements.

Water Treatment Filterbed Upgrade

Waterworks has initiated work on the multi-year project to upgrade filterbeds at both Glenmore and Bearspaw plants. At Glenmore, Filterbeds 5 and 12 have been retrofitted with a stainless steel underdrain and new filter media. These filters are the first two filters converted that use air scour instead of surface wash, which will lead to more effective backwashing. At Bearspaw, Filterbed 3 was rebuilt. The filter's false floor was removed and replaced with a stainless steel underdrain, which has led to greatly improved flow distribution during backwashing. New filter media (silica sand and anthracite) was also



installed. These filter upgrades will improve drinking water quality and reliability, and help ensure continued excellence in water quality.

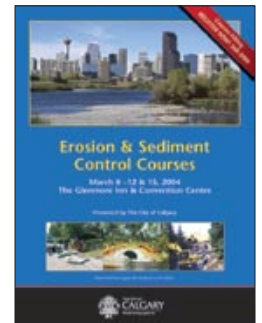
Managing Road Salt

The environmental goal is to ensure the best use of salt on the roads while keeping Calgary’s motorists safe. The solution involves applying the right amount of salt, in the right place at the right time. Roads has accomplished this through several key initiatives including: a Salt Management Plan, electronic controls on all City sanding and salting equipment, and making sanding and salting decisions based on sophisticated weather information. New measures are now in place to cover products containing chlorides to prevent release to the environment.

Environmental Management–Environmental Assessment and Liabilities division hosted a full day conference on salt remediation and management strategies. Participants from the City of Edmonton, Alberta Environment (AENV), Environment Canada, British Columbia’s Ministry of the Environment, Alberta Infrastructure and Alberta Transportation attended. The event was very positive and the first in Canada that focused on remediation strategies for road salt.

Erosion and Sediment Control Education

There was a huge response to a series of courses on erosion and sediment control offered by the City in 2003. More than 500 participants attended over the six-day event, including City of Calgary employees, Calgary area contractors and developers, representatives from The Calgary Homebuilders Association and representatives from other local municipalities including Airdrie, Okotoks, Edmonton, Banff and Cochrane. Wastewater, along with Urban Development and Environmental Management have combined their efforts and formed an Erosion & Sediment Control Education Committee to develop new courses in this area.



Providing education on erosion and sediment control

4. Land Management

Land Quality & Contamination

Contaminated Sites Management Plan

In 2003, Council approved the Contaminated Sites Management Plan. Environmental Management undertook several initiatives to more effectively manage contaminated land including a discovery protocol to outline a coordinated approach when City crews discover contamination during excavations. This approach focuses on quick response, job completion and contamination delineation involving the Fire Department HazMat, Wastewater, Waste & Recycling Services, Joint Labs and Environmental Management.

Projects are actively prescreened for soil management issues and third-party contamination that may be encountered. Information is gathered to verify if contamination is present (via drilling); and agreements are developed with identified polluters allocating responsibility and costs for remediation. The result is large cost savings and minimized project delays.



Appendix C: EnviroSystem Green Initiatives

Environmental Management is now actively involved in projects where third-party contamination has affected City and private property, advocating the notification of affected residents and conducting investigations to address their concerns.

Buried Utilities and Hydrocarbon Impact – A Working Partnership

Environmental Management worked a discussion document and hosted a full day seminar on impacts of hydrocarbons on buried utilities. Environmental Management collaborated with Alberta Environment, City of Edmonton, ENMAX, TELUS, other major utilities and the major oil companies to create adequate investigation protocols and criteria for protection of buried utilities (along with health and safety protocols for workers, standard mitigation measures and cost recovery protocols). This work could address a key missing aspect of provincial legislation (Alberta Environmental Protection and Enhancement Act) and lead to contamination costs being paid by polluters rather than taxpayers or other affected parties.

Grease Mats

Calgary Transit's Track Maintenance crew put their minds to solving an environmental problem identified in an environmental audit as needing quick attention. Grease is applied to the wheels of a C-Train before it enters curves on the track system to reduce wear on wheels and rails and reduce noise. Some of this grease spins off the track into the surrounding area. Transit staff looked at the problem and researched possible solutions before settling on buying special mats that allow water to pass through while capturing the grease.

Habitat Preservation

Protecting Calgary's Trees

New measures have been proposed to protect Calgary's public trees. Calgary's trees represent a significant investment and are highly valued by Calgarians. The new Tree Protection Bylaw and changes to the Streets Bylaw will help preserve and protect trees on public land from damage resulting from development and construction.

Model Forest Project

The objectives of the Community Model Forest Project are to create a proactive, community-based urban forest management plan; address community urban forest concerns and identify gaps between community goals and City programs. The goals of the new project are to involve the community by facilitating public education and awareness of urban forestry issues and gather community input, to create a management plan to address issues of urban forest sustainability and to promote partnerships to reach environmental targets.

5. Hazardous Materials Management

Vegetable Oil Replaces Mineral Oil

The hydrocarbons formerly used in the Transit garages' hydraulic bus lifts have been replaced with a vegetable oil-based product. Calgary Transit began this process eight years ago and has replaced 20 to 25 hydraulic lifts. Within the next two years, all of the hydraulic lifts will be replaced with the newer vegetable oil-based units as part of a current EnviroSystem objective.



Trees improve air quality



Household Hazardous Waste

In early September every year, The City sponsors a household chemical clean-up day. Calgarians are urged to drop off paints, antifreeze, car batteries, garden chemicals, used oil and filters and propane tanks at any City landfill or residential fire station. This service is also available year-round at the landfills and at five dedicated fire stations. Last year 584 tonnes of paint and chemicals were diverted from landfills.

Spill Protection Improved

Wastewater's hazardous materials storage and spill response equipment has improved throughout the Bonnybrook and Fish Creek Treatment Plants. Through EnviroSystem, spill potential was properly identified and new equipment was purchased to contain spills and properly dispose of contaminated materials in an environmentally responsible manner. Spill response materials are now available in portable tote bags and larger drum overpacks. Leaks from containers and drums can now be contained at the source by storing materials on pallets and dollies with secondary containment built into their design. Additional spill containment equipment, including drain seals, drain plugs and berms made from chemically resistant polyurethane, prevents liquids from entering the storm and sanitary systems when spills occur outside of secondary containment.

6. Materials & Resource Management

Reduce, Reuse, Recycling

Livelink® Greens the Office Environment

Introduced in 2000, Livelink® is a document management system with the ability to store, retrieve and share all types of electronic documents across The City. While the main tangible benefits of Livelink® are realized in increasing document management effectiveness and in improving customer service, the use of Livelink® has positive implications from an environmental perspective as well.

Currently there are approximately 1,250,000 documents stored in Livelink®. Since these documents are managed in an electronic environment, a print copy for storage is not required, thus saving over 4,000,000 sheets of paper along with associated printer ink and energy savings. Staff can easily share files electronically eliminating the need to print off copies for future reference. In 2003, over 475,000 documents were accessed in Livelink®. Though it is impossible to track, 750,000 sheets of paper would potentially be saved if only half of these documents were not printed.

Other environmentally friendly benefits of the Livelink initiative include reduced office space requirements through file storage room elimination, and its potential role in facilitating telecommuting as a work alternative. Livelink will increase in significance as an environmentally friendly technology as more business units adopt the system and staff becomes more proficient working in an electronic environment.



Appendix C: EnviroSystem Green Initiatives

Paper

Distribution & Record Services within IT oversee the corporate recycling and shredding requirements to comply with the Corporate Records Management By-law 53M99. In 2003, over 13,000 boxes of paper were recycled, saving over 2,890 trees.

To reduce paper consumption, Printing Services orders at least 100,000 multi-use internal envelopes per year and provides guidance to staff on printing duplex or multiple images on a page.

Asphalt

During roadwork, old asphalt is planed off roadways. Roads collects and reuses the material rather than consuming two non-renewable resources, oil and aggregate. Hence, the asphalt is diverted from the landfill and The City saves money using the recovered product.

Electronics

The City of Calgary, Waste & Recycling Services held The City's first electronics recycling round up in May 2003. Residents dropped off approximately 220,000 kg of electronics equipment. The City partnered with Maxus Technology Inc. to set a new record in North America for the most successful one-day electronics recycling roundup. A&B Sound also participated by promoting the event.

Information Technology Services replaces approximately 1,500 personal computers and monitors per year as part of a lifecycle replacement program. The used computer equipment is redistributed to the public for home applications.

Plastic Bottles

The Waterworks & Wastewater Shared Laboratory Services at Glenmore Water Quality lab began recycling their high-density polyethylene (HDPE) Bacti bottles in the fall of 2001. To date 16,630 HDPE bottles have been diverted from landfill sites.

Green Procurement

Furniture

The impetus for including green criteria in a Request for Proposal for office furniture was the approval of the Green Procurement Policy and the Sustainable Building Policy by The City in 2002. The first green tender to buy work surfaces, file cabinets, chairs and panels for various business units was spearheaded by Corporate Properties, through Supply Management with support from Environmental Management. Furniture purchased under the contract is constructed with low emitting materials according to strict manufacturing standards, which provides the benefit of minimizing the release of indoor air contaminants. The result is improved comfort and well being of employees.



Acronyms & Abbreviations

The Waterworks & Wastewater Shared Laboratory Services at Glenmore Water Quality lab began recycling their high-density polyethylene (HDPE) Bacti bottles in the fall of 2001. To date 16,630 HDPE bottles have been diverted from landfill sites.

Appendix D: Acronyms & Abbreviations	
AST	Aboveground Storage Tank
BMP	Best Management Practice
CFC	Chlorofluorocarbon
CFT	Cross-Functional Team
HDPE	High-Density Polyethylene
HSE	Health, Safety & Environment
IPM	Integrated Pest Management
LEED	Leadership in Energy and Environmental Design
NTU	Nephelometric Turbidity Unit
SOP	Standard Operating Procedure
SWM	Stormwater Management
3Rs	Reduce, Reuse, Recycle