Looking Back,
Moving Forward…
Advancing Windsor's Vision
Official Plan 5 Year Review

FINAL

LOOKING BACK SUMMARY REPORT: NATURAL ENVIRONMENT

January 2007

THE CITY OF WINDSOR

DILLON CONSULTING

in collaboration with
Next Ideas Inc.
EDP Consulting
Lapointe Consulting

Executive Summary

Windsor's Official Plan Update project is framed around the theme of, "Looking Back, Moving Forward, Advancing Windsor's Vision." The Looking Back phase of the work is characterized by a series of research and analysis that is intended to identify, describe and discuss the existing conditions, trends, and known challenges that face the City. This report presents a review of the current environmental aspects of the City of Windsor, from a policy perspective, to seek ways of addressing the future environmental needs of Windsor. The resulting discussion of issues will lead to policies in the Official Plan which will be supportive of a sustainable city-building for Windsor.

The following information was collected for this Looking Back Summary Report:

- Windsor Community Strategic Plan;
- Provincial Policy Statement;
- Windsor Official Plan;
- Environmental Master Plan;
- Turkey Creek and Little River Sub-watershed Study;
- Essex Groundwater Study;
- By-law to Protect Natural Environment Areas in the City of Windsor;
- City's Brownfield Strategy;
- Proposed Zoning Amendment – Wind Turbines; and,
- City of Windsor Annexed Master Plan Study (natural environment components).

In addition to planning issues identified through the review of the above information, the Environment Team which prepared this report has identified issues in other areas: use of EPA designations, passive solar gain, urban forest regeneration, light pollution, noise pollution, and climate change.

Generally, it was found that the majority of changes needed for the Official Plan are those which arise from the new Province-led planning system and the requirement for Windsor to "be consistent with" this framework. Beyond consistency with the PPS, there has been a heightened concern about safe management of water resources as a result of the Walkerton Tragedy. Current understanding of global warming and cost of energy has resulted in many initiatives aimed at achieving sustainable communities. These, and many other considerations about the environment, are addressed in this report.

A summary of issues identified through the review of the PPS, legislation, and other background reports is identified in the table below (refer to Section 3 of the report for a full

discussion of each policy issue). The table also identifies the key points to be addressed through the Official Plan Update.

Summary of Issues and Policy Gaps

Issue	Specific Concern / Policy Gap	Key Points to be Addressed through Official Plan Update
Natural Heritage	a. Strengthening the EER	OP to be revised to ensure Natural Heritage Features are protected in a manner that is consistent with the PPS and achieves the long term planning vision
	b. Protection of ecological function and biodiversity	OP to include policies that protects and where possible expands the existing greenway system for the purpose of creating ecologically functional habitats with high biodiversity and providing corridors between habitats
	c. Mitigating impacts to fish habitat	OP to include specific policies with the objective of creating a net gain of the productive capacity of fish habitat
	d. "No negative impact" and setbacks for development	OP requires policies addressing "no negative impact" and establishment of setbacks for lands adjacent to natural heritage features
	e. Agriculture permitted in natural heritage areas	OP to include a policy regarding agriculture in natural heritage areas
	f. Review use of EPA designations in Official Plan	EPA designations to be reviewed and protection at the systems level be adopted to be more consistent with PPS section 2.1.2
	g. Regeneration of urban forest	OP to clarify the Cities concept of urban forestry and identify specific targets to be reached
Water Resource Protection	a. Comprehensive water quality and quantity policies	OP to include policies ensuring long-term water quality; OP to include policies ensuring long-term water quantity
	b. Groundwater protection	OP to address protection of recharge/discharge areas; OP to address development and site alternative near sensitive features
Environmental Hazards to Public Health and Safety	a. Development prohibitions in flood plains	OP to clearly state where development and site alteration is not permitted; changes to Schedule 'C' to make flood plain planning approach understandable
	b. Candidate sites for Special Policy Area (SPA)	City to determine if there are candidate sites for SPA designation; City to liaise with appropriate agencies; OP to provide interim policies until SPA in effect
	b. Conditions for development in flood plains	OP to include policies addressing PPS conditions for development on lands subject to flooding
	c. Approach to contaminated lands	OP to include policies addressing range of issues to be mitigated for development adjacent to mining, oil, gas, and/or petroleum resource operations
	d. Mitigating noise pollution	OP to more clearly state sources of noise to be assessed; OP to more clearly state when a noise study is required; OP to suggest mitigative measures; OP to reference Ministry of Environment guidelines

Natural Resource Extraction	a. Protection from adverse impacts of resource extraction	OP needs policies addressing the full range of issues to be investigated/mitigated prior to the development or expansion of salt mines or brine wells
	b. Addressing petroleum resource	Not an issue; no significant petroleum resource areas in the City
	c. Addressing mineral extraction resources	OP to include specific policies addressing progressive and final rehabilitation of mineral extraction sites, promoting land use compatibility and taking into consideration surrounding land use and approved land use designations
Climate Change and Energy	a. Planning for climate change mitigation (i.e. GHG emission reduction) and energy efficiency	OP policies related to: the use of energy, air, water and land resources; addressing climate change and energy efficiency; the implications of permitting energy generation facilities in the municipality; and encouraging alternative and renewable energy systems.
	b. Subdivision design and energy efficiency	OP to include policies regarding: alternative energy sources and conservation and identify provincial/municipal property for the location of traditional energy generation facilities (e.g. nuclear). Built form and Transportation Reports to expand further on subdivision design.
	c. Outdoor Illumination and Energy Efficiency	OP to contain specific policies pertaining to light pollution, requiring lighting plan for development applications, consistent with Resolution 228 and illumination of road right of ways.
	d. Adaptation Strategies	OP to identify Open Space lands as opportunities for expanding the natural heritage system; abatement of the urban heat island effect through development standards (i.e. reflective roofing and paving, green roofs, shade and tree canopy coverage)

It has been noted that the following further studies need to be conducted in order to feed into the Official Plan Update project:

- A study identifying a complete natural heritage system, which integrates Environmental Policy Areas (e.g. CNHS), Open Space, riparian areas as well as other natural features unique to Windsor as deemed appropriate;
- A study identifying baseline urban forest (tree) coverage in the City of Windsor for the purpose of evaluating the success of reaching targets;
- A background assessment identifying how other municipalities have strengthened Environmental Evaluation Report criteria and the success of each;
- A study identifying development setbacks and appropriate buffers based on the type of natural feature being protected; and,
- A study of the flood prone areas of the City to determine if there are Special Policy Area candidate sites for designation.

The next step in the process will be to consolidate all the issues into a single ***Issues Synthesis Discussion Report***. This will complete the Looking Back phase of the work. The City will then proceed with the Moving Forward phase of work (aligning the City's approach to addressing the issues with the Community Strategic Plan, stakeholder consultation, and documenting specific changes to the City's Official Plan). Through the last stage, the Advancing Vision phase of work, the revised Official Plan will be prepared for Council adoption and approval by the Ministry of Municipal Affairs and Housing, with additional public consultation contemplated.

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1.0 Introduction

The City of Windsor is at a critical crossroads in planning for its future. The economy is changing. The environment is changing. The people are changing. The shape of development is changing. With change comes a degree of uncertainty but also, and more importantly, opportunity.

1.1 Official Plan Update

As the City changes, so must it's Official Plan, which is the primary document for managing change and guiding growth. The policies of the Official Plan direct the use of land, establish a framework for orderly development, stimulate revitalization, promote economic development, encourage efficient transportation and ensure a healthy environment, all in order to provide a high quality of life for current and future members of the Windsor community.

The Official Plan must be updated every five years as required by the *Planning Act* of Ontario. In the last five years, the Province of Ontario has revised the *Provincial Policy Statement* for land use planning and the City has advanced its Strategic Plan. These will be the key drivers for change in the City's Official Plan; however, major trends and current challenges of local significance will be considered, which will also help update the Official Plan. The Official Plan must also have regard for and integrate the work of other major exercises, such as the Environmental Master Plan, Transit Master Plan, Long-Range Transportation Plan, and Annexed Area Master Plan.

1.2 Official Plan "Looking Back Summary Reports"

Windsor's Official Plan Update project is framed around the theme of, "Looking Back, Moving Forward, Advancing Windsor's Vision."

The Looking Back phase of the work is characterized by a series of research and analysis that is intended to identify, describe and discuss the existing conditions, trends, and known challenges that face the City. This information is available chiefly through a variety of previous studies and a review of recent legislative changes, but will also be supplemented by discussions with stakeholders, statistical analysis, and field surveys, as needed.

The Looking Back phase of the work has been designed to culminate with the release of a series of reports covering key topics related to the current situation in the City of Windsor, the changes to which it must respond immediately, and longer term trends which must be addressed through planning. The preparation of each report has been undertaken by a team comprising both consultants and City representatives, focussed on specific topics. The topics and related reports are:

- *Looking Back Report – Legislation*, discusses the legislative changes by the Province, and addresses those broad legislative changes which are not specific to the individual topics listed here;
- *Looking Back Report – Social Conditions*, discusses demographics and social trends;
- *Looking Back Report – Economic Conditions*, discusses economic changes and trends, both locally and globally;
- *Looking Back Report – Environment*, discusses the natural environment, environmental stewardship and conservation;
- *Looking Back Report – Built Form*, discusses emerging trends and issues relative to built form, culture and heritage in light of new provincial policies and legislation;
- *Looking Back Report – Infrastructure*, discusses servicing needs and requirements from a policy perspective; and,
- *Looking Back Report – Transportation*, discusses automobile, pedestrian, cycling, and transit modes of travel, as well as the needs of the airport.

More about this specific Looking Back Summary Report is provided n Subsection 1.3 below.

Following the completion of the Looking Back phase of work, the City will proceed with the Moving Forward and Advancing Vision phases of work. These following phases of work include documenting specific changes to the City's Official Plan, public consultation, and preparing the revised Official Plan for Council adoption and approval by the Ministry of Municipal Affairs and Housing.

1.3 About the Environment Looking Back Summary Report

In 2004, the Provincial Government made changes to the *Planning Act* through the *Strong Communities (Planning Amendment) Act, 2004*. The *Planning Act,* as amended, requires that all decisions affecting land use planning matters "shall be consistent with" the *Provincial Policy Statement (2005)*. Beyond consistency with the PPS, there has been a heightened concern about safe management of water resources, since Walkerton. In addition, current understanding of global warming and cost of energy has resulted in many initiatives aimed at achieving

sustainable communities. This report identifies policy gaps with the PPS and reviews recent environmental work completed for the City of Windsor and discusses current environmental policy and direction. Based on the above, Official Plan policies are recommended for revision. Ultimately, recommendations lead to an Official Plan which is consistent with the PPS, strengthens environmental policy and moves in the direction of achieving a sustainable community.

2.0 Summary of Relevant Background Information

This section of the report comprises a review of relevant background information for this Looking Back Summary Report. A summary of each background document is provided and a list of key points is provided. This list of key points forms the basis for discussion of Official Plan issues in Section 3.

2.1 Linkages

There are two streams of key drivers for change which impact the Official Plan and both have a bearing on the nature of updates which will be contemplated for the Official Plan update. There is a substantial Provincial driver for change and a substantial municipal driver for change, the Planning Act / Provincial Policy Statement and Windsor Community Strategic Plan, respectively. This relationship is illustrated in the diagram below.

Provincial Driver for Official Plan Change	**Municipal Driver for Official Plan Change**
Planning Act (including two recent amendments)	Windsor Community Strategic Plan
↓	↓
New Provincial Policy Statement (2005)	Update of Windsor's Strategic Plan
↓	↓
Changes to Official Plan	**Changes to Official Plan**

The following information was collected for this Looking Back Summary Report:

- Windsor Community Strategic Plan;
- Provincial Policy Statement;
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- Environmental Master Plan;
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- Proposed Zoning Amendment – Wind Turbines; and,
- City of Windsor Annexed Master Plan Study (natural environment components).

The above are summarized and discussed in the following subsections of this report.

2.2 Windsor Community Strategic Plan

City Council has initiated a series of actions aimed at reviewing and updating the City's Community Strategic Plan (CSP). Council originally adopted the CSP in 1996 to plan for the future of the community. It established a community vision for the future along with objectives and actions for the City to follow in realizing this future. The City's commitment to the community vision was reflected in the strategic themes and corporate mission statement.

Council has agreed that a CSP remains a valuable tool to assist with informed decisions on the strategic issues facing the City in the future and has authorized the plan to be updated to coincide with the beginning of the 2006-2010 term of Council.

The formal review and updating of the CSP was authorized by City Council in June 2005. At that time, Council directed that the work program be incorporated into the five-year review of Windsor's Official Plan. In December 2005, the organizational review for the Official Plan project was approved including the theme *Looking Back, Moving Forward: Advancing Windsor's Vision*. Early in 2006, as part of the "Looking Back" phase of the review, City Council, senior staff members and community leaders attended workshops to review the CSP.

Three separate workshops (two in February and one in March) were conducted to gather comment on the 1996 Community Strategic Plan. At each session, participants were asked to identify key challenges facing Windsor that required the proactive planning of a CSP.

The proposed 2006 Community Strategic Plan vision and mission statement are, respectively:

> ***Vision*** *- Windsor – Dream, Dare, Do: Windsor is a desirable city full of history and potential, with a diverse culture, a durable economy, and a healthy environment, where citizens share a strong sense of belonging and a collective pride of place.*
>
> ***Mission*** *- Our City is built on relationships – between citizens and their government, businesses and public institutions, city and region – all interconnected, mutually supportive, and focused on the brightest future we can create together.*

The proposed 2006 updates to the themes and objectives in the Community Strategic Plan relevant to this report include:

- Create a community where citizens can pursue a healthy lifestyle and reach their full potential;
- Preserve and enhance the natural environment and our urban green spaces;
- Develop land efficiently, attractively, and in ways that protect the environment;
- Be an energy-efficient community;
- Improve the physical infrastructure, buildings, and public structures; and,
- Provide transportation systems that enhance physical mobility and better serve the economic and social needs of all citizens[1].

2.3 Provincial Policy Statement

In 2004, the Provincial Government introduced its Vision for Ontario's Land Use Planning System: to maintain strong communities, a clean and healthy environment and a strong economy to ensure the long term prosperity and social well being of Ontarians. To achieve that vision, the Provincial Government made changes to the *Planning Act* through the *Strong Communities (Planning Amendment) Act, 2004*. The *Planning Act,* as amended, requires that all decisions affecting land use planning matters "shall be consistent with" the *Provincial Policy Statement (2005)*.

The *Provincial Policy Statement* (PPS) provides policy direction on matters of provincial interest related to land use planning and development. As a key part of Ontario's policy-led planning system, the PPS sets the policy foundation for regulating the development and use of land. It also supports the provincial goal to enhance the quality of life for the citizens of Ontario.

The PPS provides for appropriate development while protecting resources of provincial interest, public health and safety, and the quality of the natural environment. The PPS supports improved land use planning and management, which contributes to a more effective and efficient land use planning system.

The policies of the PPS are complemented by, among other things, municipal official plans. As a result, the PPS and the City of Windsor Official Plan together provide a framework for comprehensive, integrated and long-term planning that supports and integrates the principles

[1] This relates to environmental benefits from transportation system improvements. A discussion of this is provided in the *Transportation Looking Back Summary Report*, available under separate cover.

of strong communities, a clean and healthy environment and economic growth, for the long term.

As part of the background analysis, Dillon conducted a Policy Audit to assess the level of "consistency" of the existing Official Plan with the PPS (refer to *Policy Audit of the Official Plan*, available under separate cover).

Findings from the Policy Audit relevant to this Looking Back Summary Report include:

- OP to include policies addressing climate change and energy efficiency;
- OP to include strengthened policies regarding Environmental Evaluation Report and mitigation of development adjacent to conservation lands;
- OP to include policies addressing a study of the implications of permitting energy generation facilities as-of-right in the municipality;
- OP to include policies encouraging alternative energy systems and renewable energy systems;
- OP to include policies addressing protection of the ecological function and biodiversity of the natural heritage system;
- OP to include specific policies addressing development and site alteration that may impact fish habitat;
- OP to include policies addressing "no negative impact" and establishment of setbacks for lands adjacent to natural heritage features identified in Section 2.1.3-2.1.5 of the PPS;
- OP to include a clear policy regarding agriculture in natural heritage areas;
- OP to include comprehensive policies regarding water quality and quantity;
- OP to include policies addressing groundwater recharge/discharge areas and development and site alteration in or near sensitive surface water features;
- If applicable, petroleum resource policies incorporated into the OP;
- OP to include policies addressing "public health, public safety or environmental impact" (as it relates to mineral mining and petroleum);
- If applicable, petroleum resource policies be incorporated into the OP addressing activities precluding or hindering use; public health, safety, etc.; and, criteria for addressing conditions under which development would be permitted on petroleum resource areas;
- OP to include policies addressing full scope of PPS policies related to mineral aggregate extraction operations;
- OP to include policies addressing progressive and final rehabilitation of sites;
- OP to include policies addressing rehabilitation taking into account surrounding land use and approved land use designations;

- OP to state where development and site alteration is not permitted in flood prone lands;
- Determine if there is a need/a candidate site for the Special Policy Area designation;
- If deemed appropriate, liaise with the approval agencies regarding the process and required technical work to get approval for the Special Policy Area designation and policies in the OP; provide interim policies for development until a Special Policy Area for development within the floodplain is established;
- OP to include policies addressing the PPS regarding conditions/criteria for permitting development on hazardous lands and hazardous sites (flood prone lands); and
- OP to include policies addressing full range of issues to be investigated/mitigated for development of adjacent lands to hazardous sites (contaminated or suspected contaminated lands).

2.4 Windsor Official Plan

The City of Windsor Official Plan was originally adopted by Council in November 1999 and approved in part by the Province in March 2000; the remainder was approved by an Ontario Municipal Board decision on November 1, 2002. The City has recently annexed lands from Tecumseh (former Township of Sandwich South) on January 1, 2003 to provide for its growth needs. The Official Plan of the former Sandwich South currently applies to these lands (it is recognized that the City has prepared a Master Plan for the development of the annexed lands).

With respect to matters of Natural Environment, these subjects are covered in a variety of sections in the Plan, including:

- Section 3, Strategic Direction;
- Section 4, Healthy Community;
- Section 5, Environment;
- Section 6, Land Use;
- Section 7, Infrastructure;
- Section 8, Civic Image; and
- Section 10, Procedures.

The Official Plan was evaluated through the Policy Audit noted in Section 2.2 above. Generally, it was found that the majority of changes needed for the Official Plan are those which arise from the new Province-led planning system and the requirement for Windsor to "be consistent with" this framework.

2.4.1 Existing and Planned Natural Environment System

The existing and planned natural environment of the City of Windsor is illustrated in the City's Official Plan, Schedule 'B'. This schedule illustrates Natural Heritage, waterfront Recreation, Community and Regional Parks, Waterway Corridors, Recreationways, and Linkages. Schedule 'C' illustrates development constraint areas associated with several different types of natural heritage or hazard lands. These include: Environmental Policy Area 'A' and 'B', Natural Heritage, Candidate Natural Heritage Sites, Mineral Mining Sites, Shoreline and Floodprone Areas, Floodplain Areas, Known or Suspected Former Waste Disposal Sites, and Aggregate Resources. Copies of these maps are included in this report as ***Figure 1*** and ***Figure 2***, respectively. The planned land uses, including areas to be retained in some form or another as natural heritage features are illustrated in ***Figure 3***. Together, the planned land use from the City's Official Plan represents the future land use for the entire City.

Observations from the review of the natural features/hazards mapping relevant to this report include:

- Many natural features to be retained in the urban fabric are or will be isolated from each other as a result of existing and/or planned development, especially residential development (Figure 3);
- Natural features as planned are not consistent with PPS Section 2.1.2;
- The existing and planned land uses illustrated in Schedule 'D' of the Official Plan illustrate that a majority of the city's lands are intended for residential and industrial uses; and
- Natural Heritage and Open Space land uses are fairly evenly distributed throughout the City.

2.5 Environmental Master Plan

The City of Windsor commissioned the Environmental Master Plan (EMP) in 2005 and was completed by DPRA Canada in July 2006. The EMP is intended to function as the guiding document for the City of Windsor with respect to improving environmental issues and demonstrate leadership through example.

Figure 1: Greenway System

Figure 2: Development Constraint Areas

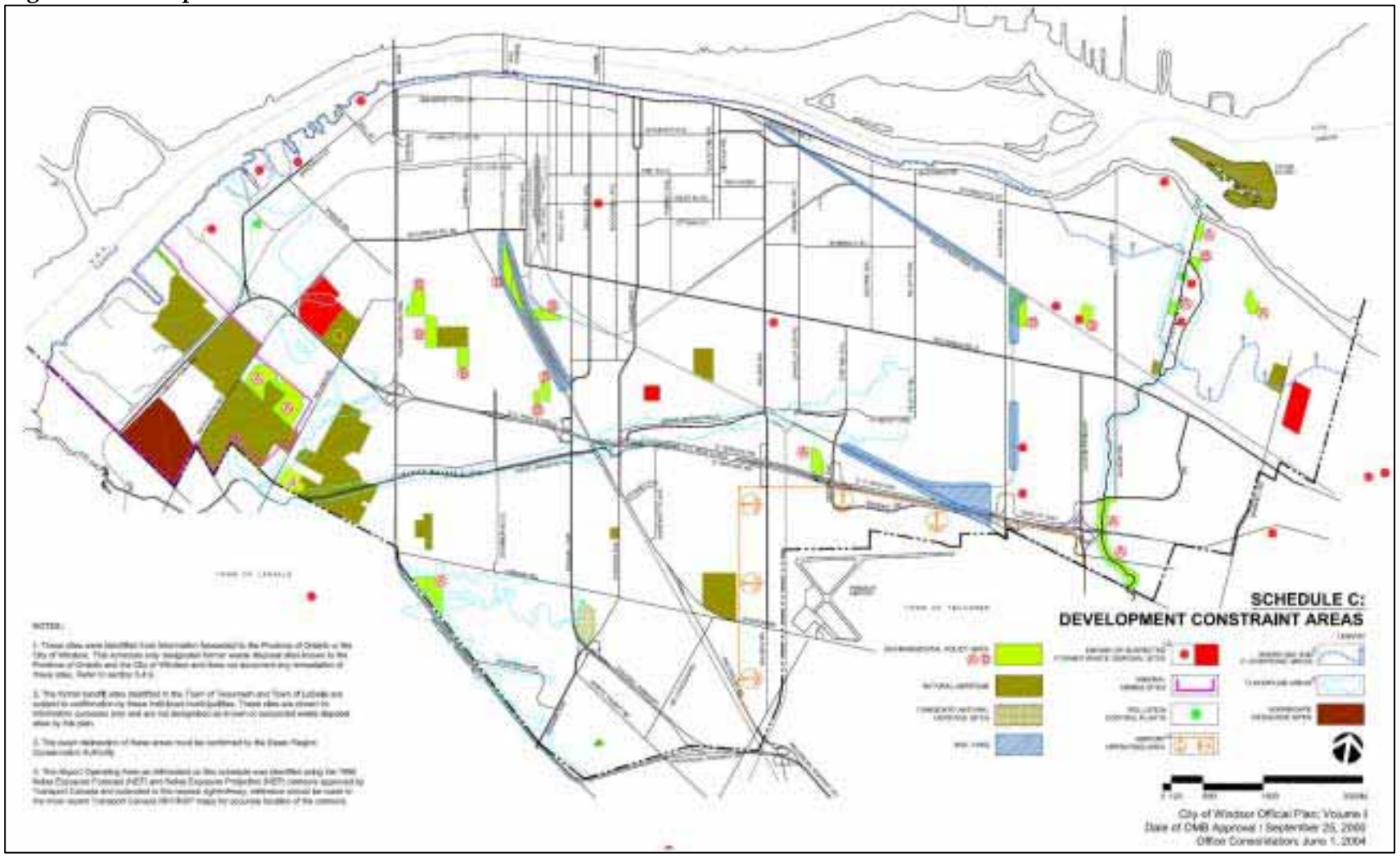
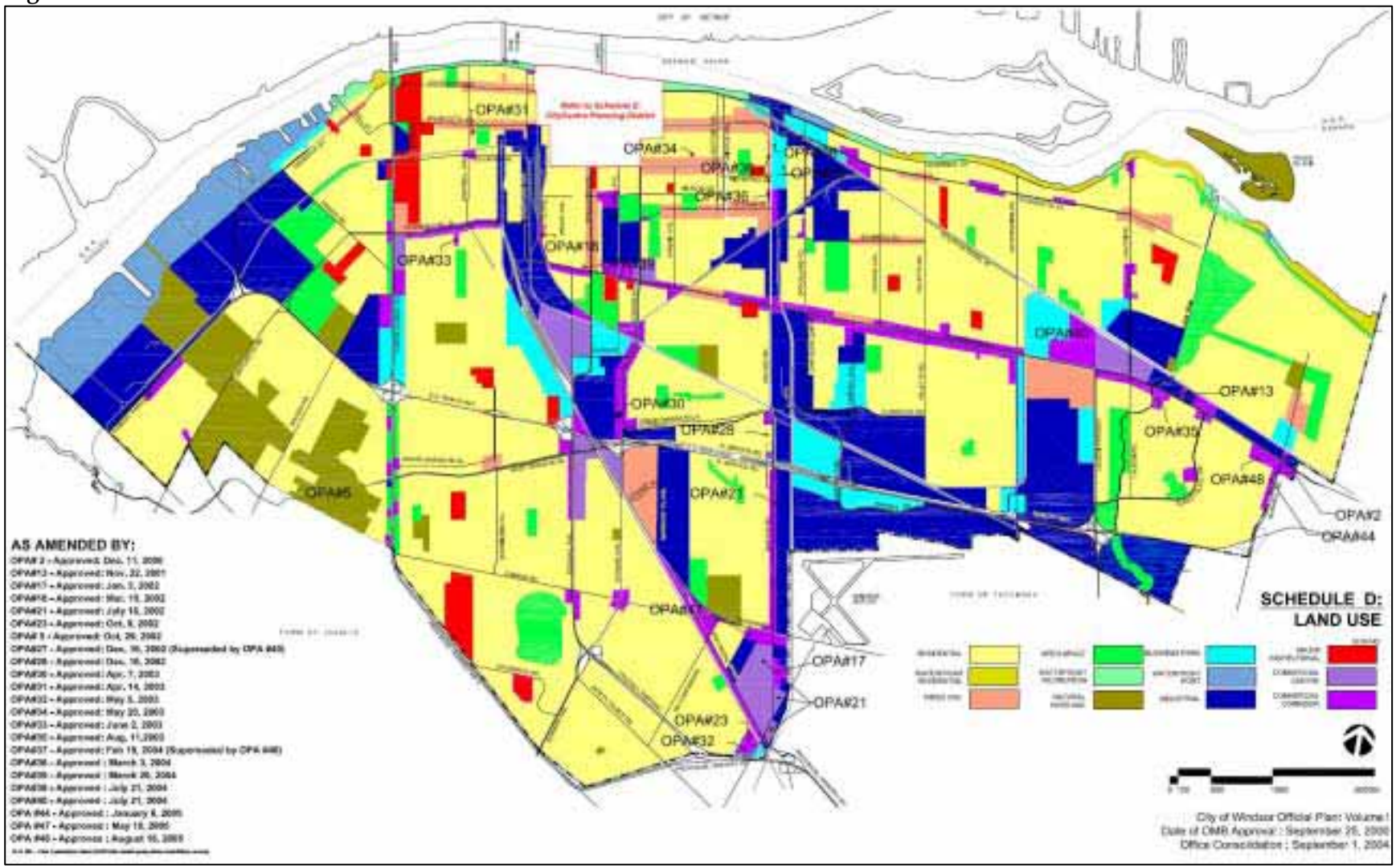


Figure 3: Land Use



The EMP process brings together environmental programs, policies and initiatives from across the City's operations-stating strategic direction, guiding principles, goals, objectives and suggests action plans to strengthen the City's environmental performance. **Appendix 'A'** identifies the 5 goals of the EMP, their objectives and associated action plans as presented in the EMP. Action plans typically identify specific quantitative and time sensitive actions to be undertaken in order to achieve the 5 main goals and objectives. Five main goals of the EMP are:

- Improve air and water quality;
- Create healthy communities;
- Green Windsor;
- Use resources efficiently; and
- Promote awareness.

2.5.1 Environmental Master Plan Implementation Plan

The action plans for the EMP touch on issues that affect every department in City; therefore it needs to be integrated into the existing management framework. As an integral part of the Environmental Master Plan, the City decided to create a detailed Implementation Plan to support the ideas included in the EMP and ensure that the EMP is implemented effectively. A draft EMP Implementation Plan has been prepared by DPRA but has not been endorsed by Council as of January 2007.

The Implementation Plan contains suggestions for the first year of implementation and includes specific references to other environmental City initiatives, oversight for the EMP, an indication of who will be involved, reporting, communication and funding. At the heart of the Implementation Plan are the individual tables that contain an indication of which actions certain departments and agencies will be responsible for.

2.6 Turkey Creek and Little River Sub-watershed Study

In 1996, the Essex Region Conservation Authority and the City of Windsor commissioned a study to assess the applicability of the sub-watershed planning process to the City's three main drainage areas, the Detroit River, the Little River and the Turkey Creek, as shown in ***Appendix 'B'***. The purpose of this study was to provide municipalities with additional information and guidance required to update their Official Plan documents and identify opportunities within the watersheds for both water management and the protection of the natural heritage system. This study was completed in June of 1998 and priority recommendations identified.

Local municipalities, including the City of Windsor, Town of LaSalle, and Township of Sandwich South, coordinated by the Essex Region Conservation Authority participated in this study process. The study followed the Provincial Sub-watershed Planning concept of balancing environmental protection, conservation and restoration with development and land use to ensure long-term ecological sustainability of the watershed and its significant natural features. Instead of determining land use in the planning area, this study established constraints, opportunities and approaches for input into land use planning and resource management decisions as related to water quantity and quality management and a linked natural heritage, park and recreation system. The goals of the Sub-watershed plans are:

- To minimize the threat to public health and property and natural resources from flooding and erosion and conserve natural flood plain hydrologic functions;
- To restore, protect and enhance water quality and associated resources; and
- To restore, protect and enhance ecological, cultural, recreational and visual amenities of natural areas.

The sub-watershed study identifies several key natural heritage and water quality/quantity problems and causes related to their existing conditions. Based on these issues and for the purpose of implementing the sub-watershed planning strategies, policy and regulations changes are suggested. A complete list of recommendations is provided in the main report. Priority recommendations relevant to this report include:

- Use Official Plan policies and land use designations to recognize and protect significant natural heritage features and ecological functions. Establish the level and form of environmental protection based on an evaluation of the site. Prohibit incompatible development in Provincially and Regionally significant areas, and limit development subject to conditions in other natural areas.
- Use Official Plan policies to support water quality/quantity remediation and natural corridor enhancement/restoration.
- Secure protection of significant natural areas and linkages in the Greenway System.
- Reduce or eliminate sources of waste water inflows to the watercourses that occur particularly during heavy rainfall flow conditions. Continue and strengthen programs to eliminate combined sewer overflows, treatment plant bypasses, septic tank overflows, and to undertake sewer separation and downspout disconnection programs. The ongoing Windsor Riverfront Pollution Control Planning Study should provide important guidance regarding sewage treatment priorities.
- Introduce retrofit, stormwater quality treatment for existing urban areas.

- Restore streamside and riparian vegetation and aquatic habitat and prepare a set of Stream Corridor Management Guidelines to protect and enhance the stream and its environment. A minimum buffer of 15m is recommended to protect fish and aquatic habitats.
- Encourage community and corporate involvement and public awareness programs.

In addition to the above, the following is a list of watershed specific recommendations:

Turkey Creek Watershed

- Prepare Master Drainage Plans for Marentette Drain and Cahill Drain tributary drainage areas.

Little River Watershed

- Promote land stewardship through preparation of Conservation Farm Plans and landowner initiatives to incorporate agriculture/rural Best Management Practices.
- Prepare Master Drainage Plans for Little Baseline Road area and 6th and 7th Concession Drain Subwatershed areas.
- Develop wetland/pond(s) in upper reaches for base flow and stormwater management.

Detroit River Watershed

- Where feasible, restore the altered natural physical structure along the shoreline to provide shallow, structurally diverse sheltered habitats important to fish spawning and nursery.

Based on discussions with staff, it appears that all of the relevant aspects of the Turkey Creek and Little River Subwatershed Plan were incorporated into the Official Plan during the 1999 update.

2.7 Candidate Natural Heritage Site Study

A biological inventory of 38 natural heritage sites was completed in 1992 and resulted in the existing natural heritage designations. This work is currently being updated by Essex Region Conservation Authority and a draft report is scheduled to be released in early 2007. This update will focus on evaluating 18 sites not currently under public ownership including 7 in the

Annexed lands. A map showing the location of the 18 sites to be evaluated is contained in **Appendix 'C'**.

2.8 Essex Groundwater Study

The Essex Region/Chatham-Kent (ECK) Regional Groundwater Study is presented in two volumes that describe both the groundwater resources of the regions, as well as management strategies. The project, as described in Volumes I and II, was commissioned by the Essex Region Conservation Authority in conjunction with the Municipality of Chatham-Kent in 2002. These two entities, along the Ministry of Environment (MOE) provided the funding in accordance with Terms of Reference for Provincial Groundwater Mapping Programs developed by the MOE. Additional assistance was provided by the County of Essex, the City of Windsor, and the Township of Pelee.

A key objective of the overall study was to develop a detailed understanding of the groundwater resources in the Essex Region/Chatham-Kent Study Area, which is comprehensively addressed in Volume I. A second key project objective was to identify strategies to protect groundwater resources for current and future generations. These resource protection strategies are reviewed and address in Volume II. To accomplish this review, Volume II contains three primary sections: 1) a description of the water management principles and context presently existing at the local, provincial, and federal levels, 2) the identification of existing groundwater management issues and measures in the Essex and Chatham-Kent regions, and 3) guidelines and examples for the development of future water management practices.

At the completion of this study, it is apparent that the future utilization of water resources in the region will increase substantially. As a result the culmination of the Essex Groundwater Study provides a series of recommendations for future groundwater activities. These recommendations focus on improving the "technical" understanding of the region's groundwater resources. Below a summary of relevant recommendations are provided to be consideration when adopting groundwater protection policies.

- Water Monitoring Network: There exists a preliminary groundwater monitor network, established and maintained primarily by the conservation authorities in the study area. This network should he expanded to develop dedicated monitoring stations in key groundwater regions as identified by this study.

- Groundwater/Surface Water Quality Improvement: The interconnection between the groundwater and surface water resources within the study area is repeatedly documented within this study. A program is recommended which will develop water quality improvement through the use of stream reconstruction, artificial wetlands, and groundwater recharge.

- Groundwater Recharge Enhancement Project: The areas identified within this study as having suitable groundwater recharge characteristics, should the target of special programs and projects to route surface water to them and enhance the direct recharge of the groundwater system.

The Aquifer Intrinsic Susceptibility map and the Potential Contaminant Source Inventory map from the study are provided as ***Figure 4*** and ***Figure 5***, respectively. It is interesting to note that while Windsor is situated in an area of low intrinsic susceptibility, it has the highest concentration of individual potential contaminant sources in the region.

2.9 By-law To Protect Natural Environment Areas in the City of Windsor

By-law number 231-2005, which was commissioned by the City of Windsor and passed on September 19th 2005, protects the destruction of trees or other natural vegetation in Natural Environment Areas unless authorized by a permit.

2.10 City's Brownfield Strategy

Currently the City of Windsor has applied for funding to complete a Brownfield Strategy. It is anticipated that this study will be initiated in early 2007.

Figure 4: Aquifer Intrinsic Susceptibility

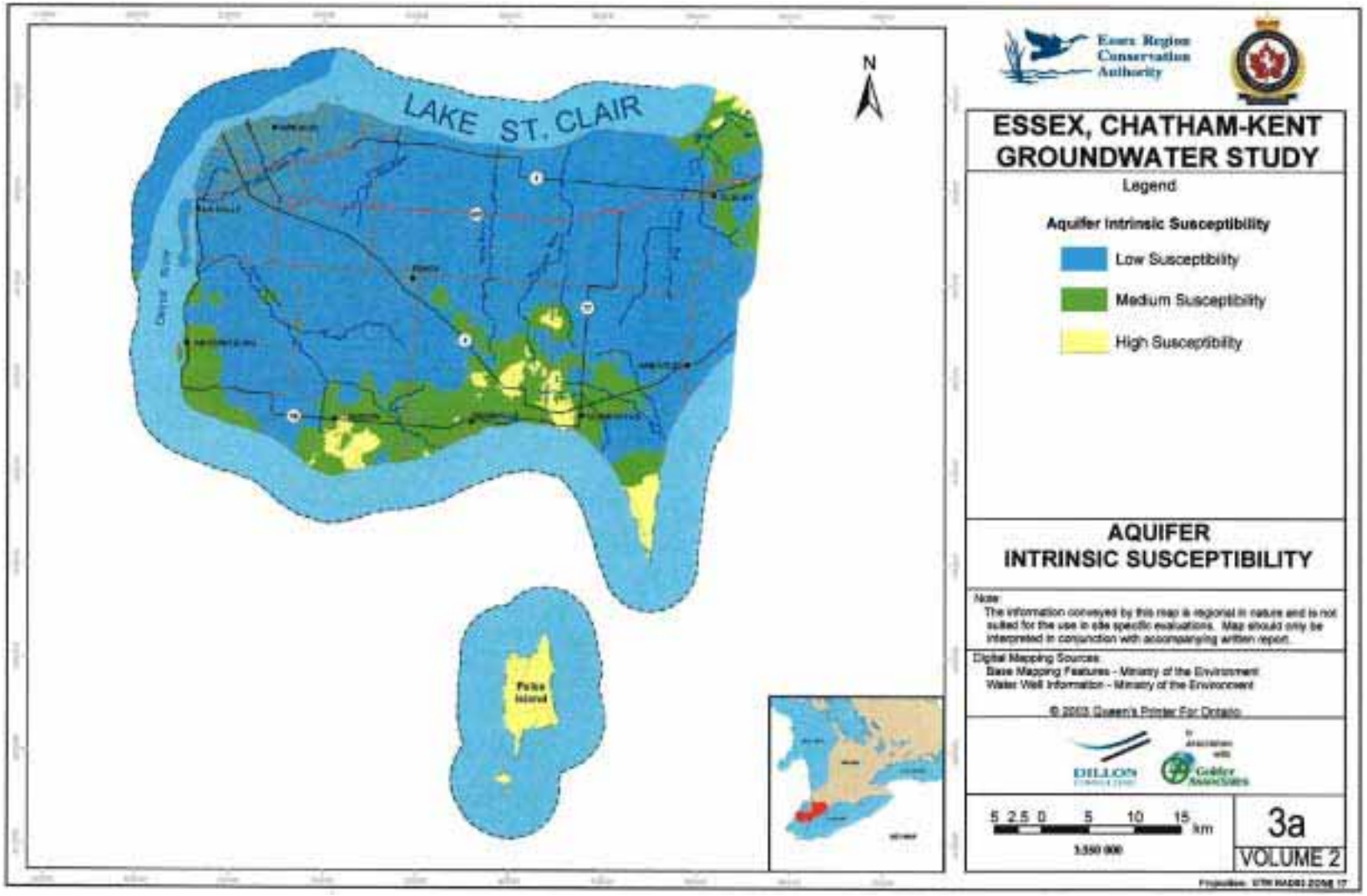
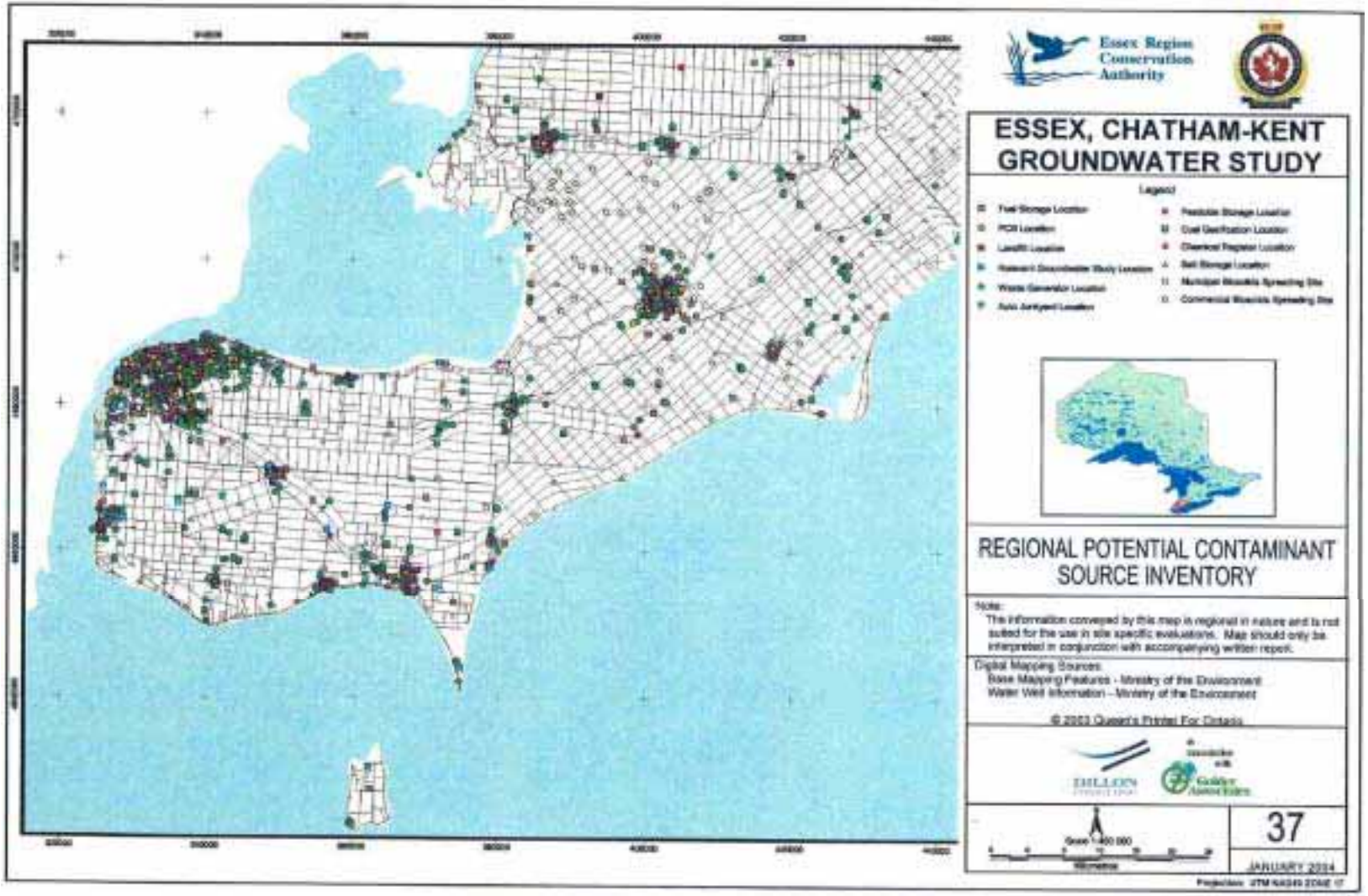


Figure 5: Potential Contaminant Source Inventory



2.11 Proposed Zoning Amendment – Wind Turbines

It was suggested that Zoning By-law 8600, cited as the "Windsor Core Area Zoning By-law", limited the installation of alternative energy sources such as wind and solar power. For wind power, turbines were restricted to certain zones, primarily industrial zones, and imposed restrictive height limits. Such restrictions made the use of wind turbines, as an alternative source of energy, either impractical or impossible. In the spring of 2006, a review of Zoning By-law 8600 was initiated to examine the potential for wider use of wind turbines in the City of Windsor. This review was undertaken by the City of Windsor Department of Building and Development and resulted in a draft Wind Turbine By-law.

Findings of the draft Wind Turbine By-law seek to further amend By-law number 8600 to encourage the use of wind turbines in the City of Windsor. The draft By-law adds definitions 4(a) and 137(a) and subsection 22. These additions allow small wind systems as an accessory use in any Zoning District in accordance with the following regulations:

- Maximum tower height - 30 meters, except as otherwise provided within the airport operating area; and

- The tower of the small wind system shall have a minimum separation distance from the nearest dwelling not located on the same lot, equal to 110% of the total height of the tower, from its base to the highest blade position. When the tower of the small wind system is secured to a wall of a building, the minimum separation distance from the nearest dwelling not located on the same lot, shall be equal to 110% of the total height of the tower, measured from the uppermost tower support to the highest blade position."

For solar power, maximum height and rear yard set-back requirements were found to be restrictive. As a result, several changes were proposed to Zoning By-law 8600, which are provided below.

II *That solar panels and their supporting structures be permitted under:*

(i) subsection 22(9), Permitted Encroachments into a Required Yard, in the required rear yard of a lot in a Residential District and in any required yard in a non-residential district.

(ii) subsection 23(3)(a), Exceptions to Maximum Height Regulations, ***BE AMENDED*** *by adding solar panels as a permitted exception.*

2.12 City of Windsor Annexed Lands Master Plan Study

The Annexed Lands Master Plan Study was commissioned by the City of Windsor and recently completed in August 2006 by Stantec Consulting Ltd. The purpose of the Annexed Lands Master Plan Study was to determine the land needs requirements to accommodate future growth in order to justify redesignating some or all of the annexed lands from agricultural designations to other uses appropriate for future development. The study process used an approach that considered future population, housing and employment needs in conjunction with the locational attributes, transportation corridors and existing uses of the area. The main objectives of the Windsor Annexed Lands Master Plan relevant to this report are:

- To provide a general framework for future development by identifying the general pattern and configuration of major land uses and natural areas; and,
- To protect, maintain and appropriately integrate the natural heritage features that exist into future development.

The primary natural features investigated for this study was the Airport Woodlands ESA #39 (also known as the Jefferson Woodlot, Shooting Range Woodlot, East Perimeter Woodlot and St. Louis Woodlot) located within and directly adjacent to the airport lands. Some investigation and consideration of Sundrop Bend ESA # 40 (Little River corridor) that runs from north to south in the eastern area of the annexed land was also undertaken. Key findings of the report include:

- The combined area of the woodlots, including the St. Louis Woodlot is approximately 43 hectares (106 acres). The three woodlots meet the minimum size for being considered significant by the Province, City of Windsor and Essex Region Conservation Authority;
- The woodlots are unusual in their current isolation and lack of disturbance;
- The woodlots act as a core natural area and are connected to one another by drainage ditches which provide linkages for the movement of amphibians, reptiles and other small animals;
- The woodlots function as a migratory stopover location for many neotropical migrants as well as raptors;
- The woodlots have limited representation in Canada, Ontario and Essex region based on their mixture of Carolinian and southern deciduous woody plants;
- The diversity of the woodlots is relatively low but when considered in conjunction with vegetation associated with the Little River corridor and connecting drainage ditches, there is a substantial diversity of plant communities overall; and

- Unconfirmed sightings of threatened species (Butler's Garter Snake) within the woodlot areas have been identified and detailed inventories should be undertaken to confirm their continued presence.

Opportunities and Constraints identified in the report include:

- Opportunities exist to improve the linkages between the three airport woodlots through reforestation and appropriate stormwater management / drainage corridor improvements;
- The woodlots are located in close proximity to the airport. Appropriate management and containment of birds and wildlife within and around the woodlot areas is important for airport safety;
- Protection / recreation of natural habitat on both sides of the Little River would help improve the habitats and hydrologic conditions in the watershed;
- Opportunities also exist to replace drainage ditches with restored stream channels within and adjacent to the study area; and
- The development of pedestrian and cycling trails (separated where possible) along the Little River corridor would allow for the extension and continuation of existing recreational trail systems in Windsor and facilitate the use of alternative modes of transportation.

Specific recommendations made by this study include:

- The airport woodlots should be designated as Natural Heritage Areas and protected in their entirety;
- There is a need to develop a management plan for the woodlots to address issues related to drainage and stormwater management, reforestation, trail management and recreational uses, non-native species control, buffer requirements, inventory and monitoring;
- A buffer width of 30 metres is proposed for all watercourses, consistent with the Essex Region Conservation Authority recommendations; and
- Provision should be made to integrate recreational trails in the preferred land use concept at a conceptual level of detail.

The Natural Heritage Network Concept Plan from the Annexed Lands Study is included as ***Figure 6***.

Figure 6: Annexed Lands' Natural Heritage Network Concept Plan

2.13 Additional Issues - Environment Team

To build on the range of issues identified through the review of background documents, the Environment Team held a meeting to identify trends and issues, as well as changes in legislation over the past five years that relate to Windsor's Official Plan policies in the matter of environment. In addition, the Environmental Planning Advisory Committee was consulted for their input, which was provided in the form of minutes from their November 27, 2006 meeting.

The Environment Team has identified other issues specific to Windsor's context, as follows:

- Review use of EPA 'A' and EPA 'B' designations in the Official Plan and update Greenway System to reflect emerging issues/trends;
- Passive gain of solar energy in subdivision design;
- Regeneration of urban forest;
- Light pollution and lighting plans requirements for development applications;
- Noise pollution and noise study requirements for development applications;
- Climate change policies to be summarized in Chapter 5 for the purpose of linking to other sections in the Official Plan where initiatives are expanded upon; and
- Urban Forestry issues need to be further explored and specific policies aimed at achieving the City's vision should be developed.

3.0 Issues Analysis and Policy Gaps

This section of the report organizes the issues identified in Section 2 and provides a discussion for each issue. Each issue discussed in this section of the report represents a policy gap in the Official Plan which needs to be addressed through the Official Plan Update project. An overview of the issues and the resulting policy gaps are summarized in ***Table 3-1: Summary of Issues and Policy Gaps***.

3.1 Natural Heritage Issues and Policy Gaps

3.1.1.1. *Strengthening the EER*

The Current scientific literature demonstrates that adjacent land uses, the surround landscape matrix and conversion of land adjacent to Natural Heritage Features to more intensive land use types (i.e. agriculture to residential) has both direct and indirect impacts on the environmental feature(s). It is well understood that ecological processes and functions of a particular Natural Heritage Feature is often supported by natural cycles (i.e. water), populations (i.e. corridors) and habitat (i.e. seasonal habitat needs) that may exist outside of the feature itself. Strengthening and updating Environmental Evaluation Report criteria will provide the City of Windsor with a useful tool to ensure existing Natural Heritage Features and their complex ecological associations are more appropriately evaluated and appropriate protection applied at the development stage. The OP should be revised to ensure that Natural Heritage Features are protected in a manner that is consistent with the Provincial Policy Statement (i.e. no negative impact) and achieves the long term vision for the natural environment in the planning area.

3.1.1.2. *Protection of ecological function and biodiversity*

In order to maintain a healthy environment the protection of ecological functions and biodiversity is paramount. Functioning natural systems are required to sustain biodiversity, and ecosystem functions. Habitats and their characteristic communities of flora and fauna rely on specific physical conditions and ecological processes for their survival. Changes in water flows, water chemistry, air quality, shading, or disturbance may result in a loss of species and a change in the nature of a habitat.

Processes such as succession, water uptake, nutrient recycling, predator-prey relationships are features of functioning ecological systems which if disrupted can also lead to alterations of

natural systems. An understanding of ecological function should therefore inform decisions when planning and designing for biodiversity.

The size and spatial relationships between habitat patches also influences biodiversity. The fragmentation of habitats by agriculture and urbanization has highlighted the need for habitat networks: continuous, linked areas of habitat. It is important to realize that urban form will influence a natural heritage systems size and extent. Pro active planning can sustain and where necessary create/rehabilitate opportunities for healthier natural systems for the long term. Therefore, the Official Plan should include appropriate policies that protect and where possible expand the existing greenway system for the purpose of creating ecologically functional habitats with high biodiversity.

3.1.1.3. Mitigating impacts to fish habitat

Under the Provincial Policy Statement, fish habitat, which includes spawning grounds and nursery, rearing, food supply and migration areas, are afford protection, based on provincial and federal requirements. The Official Plan should include specific policies with the objective of creating a net gain of the productive capacity of fish habitat, achieved through a variety of actions that allow works and undertakings in and around water.

3.1.1.4. "No negative impact" and setbacks for development

Negative impact, as defined in the PPS, specifically mentions degradation, harmful alteration, no net loss of productive capacity, disruption, destruction that threatens the health and integrity of water quality/quantity (surface or subsurface), fish habitat or natural heritage features. At the most basic level, development setbacks are established for a specific natural feature type (e.g. wetland) based on adjacent land use type to mitigate negative impacts to significant features in the a planning area. In addition to development setbacks, the protection and maintenance of ecologically significant features and functions often requires that areas of land, known as buffers, be established adjacent to features of interest based on site specific studies. In combination, development setbacks and buffers provide a transition zone protecting the natural feature and its functions. The OP requires policies addressing "no negative impact" and establishment of setbacks for lands adjacent to natural heritage features identified in Section 2.1.3-2.1.5 of the PPS.

3.1.1.5. Agriculture permitted in natural heritage areas

The PPS states that nothing in Policy 2.1 (Natural Heritage Features) is intended to limit the ability of existing agricultural uses to continue. This would include existing agricultural uses in natural heritage features. However, it is important that these uses and their interpretation conform to normal farming practices. To define normal farm practices the PPS relies on the *Farming and Food Production Protection Act*, 1998. The OP should include a clear policy regarding agriculture in natural heritage areas.

3.1.1.6. Review use of EPA designations in Official Plan

Municipalities are gradually moving away from tiered protection of the natural environment (i.e. Environmental Policy Areas 'A' and 'B') and moving towards a more holistic protection of the natural heritage system within the entire planning area as a whole. This type of protection strategy recognize that natural features are more than the sum of their parts and maintain interrelationships beyond their boundaries, which influence the quality of the environment as well as the social and economic fabric of a community. It is recommended that the EPA 'A' and EPA 'B' designations in the Official Plan be reviewed and protection at the systems level be adopted to be more consistent with PPS section 2.1.2.

3.1.1.7. Urban Forests

Urban forests can provide many important functions that help reduce the impacts of development on the local environment through expanded cover and more diverse habitat. Increased cover also helps establish corridors between urban habitats while mitigating both extreme cooling and heating of the local environment. Typical urban forests provide an important cooling effect they provide, which reduces the heat-island effect, incident UV rays and keeps pavement and parked cars cooler. During winter trees can shelter buildings from cooling winds. In addition, urban trees help reduce, runoff associated with hard surfaces, wind and traffic sounds as well as air pollution through sequestering carbon dioxide (CO2), which is the predominant greenhouse gas. Given current concerns about global climate change, energy conservation, and pollutants in our local environments, urban forests provide a way of reducing our ecological footprint, while improving the aesthetics of our local environment. This concept of an urban forest needs to be adapted to all land uses in City, including industrial areas and potential for rehabilitation efforts in open space areas. The OP should clarify the Cities concept of urban forestry and identify specific targets to be reached.

3.2 Water Resource Protection Issues and Policy Gaps

3.2.1.1. Comprehensive water quality and quantity policies

Since Walkerton, there has been a heightened concern about safe management of water resources. There are concerns about water quantity, with respect to the amount of water needed to support daily life and the needs of industry, as well as concerns about water quality, especially as it relates to a safe supply of drinking water. Urban development has an impact on water quality and quantity, and a combination of development practices, environmental management, and conservation are needed to ensure that Windsor will have a dependable, long-term supply of safe water. The Official Plan needs to include comprehensive policies regarding water quality and quantity.

3.2.1.2. Groundwater protection

Groundwater studies have been undertaken throughout Ontario in order to understand, at a regional scale, the nature of groundwater resources, recharge/discharge areas, areas of intrinsic susceptibility, and potential sources of contamination to groundwater resources. This work is extremely important since large areas of the Province rely on clean groundwater for human consumption and agricultural purposes. Southwest Ontario is a large and highly productive agricultural community and Windsor needs to ensure that its actions do not compromise the quality of groundwater for those who rely on it. The Official Plan must include policies addressing groundwater recharge/discharge areas and development and site alteration in or near sensitive surface water features.

3.3 Environmental Hazards to Public Heath and Safety Issues and Policy Gaps

3.3.1.1. Development prohibitions in flood plains

Flood plain planning in Ontario changed drastically with the impact of Hurricane Hazel in 1954. Development within flood-inundated lands is generally restricted for safety reasons; development within other lands susceptible to flooding is strictly controlled and must include flood proofing measures. The City of Windsor uses this "two zone" approach to planning for development within flood prone lands, however, the framework for flood plain planning in the

Official Plan is somewhat confusing. The OP should clearly state where development and site alteration is not permitted in flood prone lands. Graphical changes to Schedule 'C' in the Official Plan would also help make the two-zone flood plain planning approach easier to understand.

3.3.1.2. Candidate site(s) for Special Policy Area

Although development is generally restricted in flood zones, areas which are flood prone but contribute to the well-being of the municipality may be allowed to develop under a "Special Policy Area." This recognizes that the vitality of the municipality would be negatively impacted by the usual prohibition of development. Flood plains impact a large portion of the City of Windsor, although there are no Special Policy Area designations in the Official Plan. The City should determine if there are candidate lands for a Special Policy Area designation. If deemed appropriate, the City would need to liaise with the appropriate agencies regarding the process and required technical work to get approval for the Special Policy Area designation. The Official Plan could provide interim policies for development until a Special Policy Area for development within the floodplain is established.

3.3.1.3. Conditions for development in flood plains

The PPS provides for development in flood plains where the effects and risk to public safety are minor (these are usually lands on the fringe of the flood zone). However, development mush be carefully designed in the flood fringe areas to ensure that new hazards are not created or existing hazards are not worsened. Depending on the nature and location of the proposed development in the flood fringe, flood proofing may still be required, and safe access during flooding emergencies is necessary. The OP is to include policies addressing these PPS conditions/criteria for permitting development on hazardous lands and hazardous sites (flood prone lands).

3.3.1.4. Approach to contaminated lands

Extractive resource operations are valuable to local economies but also have environmental impacts which need to be addressed and mitigated. It is important that any lands developed adjacent to extractive resource operations have regard for potential health hazards. The current Official Plan addresses salt or salt solution mining issues and development adjacent to waste disposal sites, but does not address other mining, oil, gas, or petroleum resource operations. To

ensure that public health and safety is protected, the OP needs to include policies addressing the full range of issues to be investigated/mitigated for development of adjacent lands to hazardous sites (contaminated or suspected contaminated lands) related to resource extraction.

3.3.1.5. Mitigating noise pollution

An important aspect to the quality of life in an urban setting is the amount of ambient noise and individual peak sources of noise in the environment. With growing industry and increased traffic in all Canadian cities, it is important that people are protected from the impacts of noise.[2] The opportunity to consider the effects of noise in detail is at the time a secondary plan is being prepared or as part of a development approval application. The Official Plan should more clearly state the known sources of noise – traditionally these have included major roads, railway corridors, industrial development, etc. – and the circumstances under which noise studies will be required (e.g. within a specified distance of a certain land use or infrastructure; required for a plan of subdivision, site plan, etc.) The policies could also be strengthened by suggesting mitigative measures to noise such as fencing, landscaping, and building design. The policies could also make reference to the Ministry of Environment's Guidelines for Noise.

3.4 Natural Resource Extraction Issues and Policy Gaps

3.4.1.1. Protection from adverse impacts of resource extraction

Extractive resource operations, and the protection of these resources for the long term, have important implications to local economies. However, their development and protection need to be balanced with regard for public health and safety. The PPS directs municipalities to protect mineral mining and petroleum resources from development except under circumstances that would be incompatible for reasons of public health and safety. Although Windsor does not have the aggregate or petroleum resources (i.e., sand, gravel, natural gas) common to other municipalities in south western Ontario, it does have unique salt mine and brine well operations within its boundaries. To ensure public health and safety is protected from incompatible development of resource extraction operations the OP needs to include policies addressing the full range of issues to be investigated/mitigated prior to the development/ expansion of these resources.

[2] Mitigating noise for development in the vicinity of the Windsor airport is discussed in the Transportation Looking Back Summary Report.

3.4.1.2. Addressing petroleum resource

Currently the OP does not specifically mention policies for petroleum resources. Based on research conducted to-date, there does not appear to be significant petroleum resource areas within the City of Windsor and the plan does not need to provide specific/extensive policies regarding petroleum resources.

3.4.1.3. Addressing mineral extraction resources

Currently the OP does not include policies addressing the full scope of PPS policies related to mineral aggregate extraction operations. Policies contained in the OP should address the full scope of those identified in the PPS. The extraction of mineral resources can have a large impact on the physical appearance and environmental functionality of large areas of land. In addition the presence of the facilities and associated land use in the planning landscape is temporary. Therefore, at the end of their lifespan, these areas represent an opportunity to direct future land uses in a form that compliments those that surround it. In some cases, these lands provide an opportunity to create large green spaces or link isolated environments. In others, they serve as areas for industrial land use expansion. The OP should include specific policies addressing progressive and final rehabilitation of mineral extraction sites, promoting land use compatibility and taking into consideration surrounding land use and approved land use designations.

3.5 Climate Change and Energy Issues and Policy Gaps

3.5.1.1. Planning for climate change and energy efficiency

Although provincial and federal governments have introduced climate change and energy efficiency initiatives, municipalities must do their part as well, as they regulate the type and pattern of new development and deliver transit, municipal facilities and many other public services. The City of Windsor commissioned DPRA et al. to develop an Environmental Master Plan (EMP), which was completed in June 2006. The EMP suggests policy direction and goals for the sustainable and efficient use of our natural and energy resources for the long term.

In addition, the City has created an internal Energy Policy Discussion Paper for the Planning and advisory Committee, which identifies issues and actions. This discussion paper introduces

recommendations for energy conservation and alternative energy use related to municipal activities and land use.

Chapter 5 of the OP should be expanded to include a summary of specific climate change and energy efficiency policies. These policies should be expanded in discipline specific sections (i.e. transportation…). Both of the above documents should form the basis of the development of specific OP policies related to: the use of energy, air, water and land resources; addressing climate change and energy efficiency; the implications of permitting energy generation facilities as-of-right in the municipality; and encouraging alternative and renewable energy systems.

3.5.1.2. Subdivision design and energy efficiency

Sustainability has for along time been part of the vernacular terminology, identifying ways of successfully meshing social, economic and environmental perspectives in a manner that protects resources in perpetuity. From a municipal perspective, promoting innovative subdivision design and energy efficiency through the planning process through specific OP policies is a way to reduce local demand on resources. During the Environmental Team meeting several policy initiatives to be incorporated into the OP were discussed and include: orientation of buildings and roads as a method of utilizing solar energy; green roofs, alternative cooling and rainwater harvesting; promotion of and defining appropriate locations for alternative energy sources (e.g. cogeneration, wind power, geothermal, etc…); and identification of provincial/municipal property for the location of traditional energy generation facilities (e.g. nuclear).

3.5.1.3. Mitigation of light pollution

Light pollution can impact local neighbours, wildlife and directs much of the energy required to produce the light away from the desired target. On April 18, 2006 the City of Windsor Council adopted Resolution 228, which provide guiding principles for the lighting of private lands, subject to Site Plan Control approval and incorporation into the a Lighting Standards Manual. For the purposes of reducing light pollution the OP should contain specific policies pertaining to light pollution, requiring lighting plan for development applications. OP policies should be consistent with Resolution 228.

3.5.1.4. Targeting and Incorporating Open Space lands into Natural Heritage Features

More use should be made of existing parks and open space lands to expand the natural heritage system. Identified areas could be utilized for more progressive stewardship and recreation opportunities. To do this, it would be necessary to expand the role of parkland/open space in

the OP to identify these areas as 'opportunities' for expanding the natural heritage system through naturalization and/or habitat restoration. It would also be valuable to formally evaluate which areas are most appropriately targeted.

3.6 Summary of Issues and Policy Gaps

A summary of issues identified through Environmental Team meetings and background review of existing studies and the PPS are identified in Table 3.1.

Table 3.1: Summary of Issues and Policy Gaps

Issue	Specific Concern / Policy Gap	Key Points to be Addressed through Official Plan Update
Natural Heritage	a. Strengthening the EER	OP to be revised to ensure Natural Heritage Features are protected in a manner that is consistent with the PPS and achieves the long term planning vision
	b. Protection of ecological function and biodiversity	OP to include policies that protects and where possible expands the existing greenway system for the purpose of creating ecologically functional habitats with high biodiversity and providing corridors between habitats
	c. Mitigating impacts to fish habitat	OP to include specific policies with the objective of creating a net gain of the productive capacity of fish habitat
	d. "No negative impact" and setbacks for development	OP requires policies addressing "no negative impact" and establishment of setbacks for lands adjacent to natural heritage features
	e. Agriculture permitted in natural heritage areas	OP to include a policy regarding agriculture in natural heritage areas
	f. Review use of EPA designations in Official Plan	EPA designations to be reviewed and protection at the systems level be adopted to be more consistent with PPS section 2.1.2
	g. Regeneration of urban forest	OP to clarify the Cities concept of urban forestry and identify specific targets to be reached
Water Resource Protection	a. Comprehensive water quality and quantity policies	OP to include policies ensuring long-term water quality; OP to include policies ensuring long-term water quantity
	b. Groundwater protection	OP to address protection of recharge/discharge areas; OP to address development and site alternative near sensitive features
Environmental Hazards to Public Health and Safety	a. Development prohibitions in flood plains	OP to clearly state where development and site alteration is not permitted; changes to Schedule 'C' to make flood plain planning approach understandable
	b. Candidate sites for Special Policy Area (SPA)	City to determine if there are candidate sites for SPA designation; City to liaise with appropriate agencies; OP to provide interim policies until SPA in effect
	b. Conditions for development in flood plains	OP to include policies addressing PPS conditions for development on lands subject to flooding

	c. Approach to contaminated lands	OP to include policies addressing range of issues to be mitigated for development adjacent to mining, oil, gas, and/or petroleum resource operations
	d. Mitigating noise pollution	OP to more clearly state sources of noise to be assessed; OP to more clearly state when a noise study is required; OP to suggest mitigative measures; OP to reference Ministry of Environment guidelines
Natural Resource Extraction	d. Protection from adverse impacts of resource extraction	OP needs policies addressing the full range of issues to be investigated/mitigated prior to the development or expansion of salt mines or brine wells
	e. Addressing petroleum resource	Not an issue; no significant petroleum resource areas in the City
	f. Addressing mineral extraction resources	OP to include specific policies addressing progressive and final rehabilitation of mineral extraction sites, promoting land use compatibility and taking into consideration surrounding land use and approved land use designations
Climate Change and Energy	a. Planning for climate change mitigation (i.e. GHG emission reduction) and energy efficiency	OP policies related to: the use of energy, air, water and land resources; addressing climate change and energy efficiency; the implications of permitting energy generation facilities in the municipality; and encouraging alternative and renewable energy systems.
	b. Subdivision design and energy efficiency	OP to include policies regarding: alternative energy sources and conservation and identify provincial/municipal property for the location of traditional energy generation facilities (e.g. nuclear). Built form and Transportation Reports to expand further on subdivision design.
	c. Outdoor Illumination and Energy Efficiency	OP to contain specific policies pertaining to light pollution, requiring lighting plan for development applications, consistent with Resolution 228 and illumination of road right of ways.
	d. Adaptation strategies	OP to identify Open Space lands as opportunities for expanding the natural heritage system; abatement of the urban heat island effect through development standards (i.e. reflective roofing and paving, green roofs, shade and tree canopy coverage)

4.0 Next Steps

This report completes the Natural Environment issues review for the "Looking Back" phase of the Windsor Official Plan Update project. Other reports addressing a range of other issues have also been produced.

The next step in the process will be to consolidate all the issues into a single ***Issues Synthesis Discussion Report***. This will complete the Looking Back phase of the work.

The City will then proceed with the Moving Forward phase of work. This will involve a review of the issues, aligning the City's approach to addressing the issues with the Community Strategic Plan, stakeholder consultation, and documenting specific changes to the City's Official Plan.

It has been noted that the following further studies need to be conducted in order to feed into the Official Plan Update project:

- A **study identifying a complete natural heritage system**, which integrates Environmental Policy Areas (e.g. CNHS), Open Space, riparian areas as well as other natural features unique to Windsor as deemed appropriate;
- A **study identifying baseline urban forest (tree) coverage** in the City of Windsor for the purpose of evaluating the success of reaching targets;
- A **background assessment identifying how other municipalities have strengthened Environmental Evaluation Report criteria** and the success of each;
- A **study identifying development setbacks and appropriate buffers** based on the type of natural feature being protected; and,
- A **study of the flood prone areas of the City to determine if there are Special Policy Area** candidate sites for designation.

Through the last stage, the Advancing Vision phase of work, the revised Official Plan will be prepared for Council adoption and approval by the Ministry of Municipal Affairs and Housing, with additional public consultation contemplated.

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Appendix "A"

Environmental Master Plan: Goals, Objectives and Action Plans

3.5 ACTION PLANS

GOALS AND OBJECTIVES – A LIST OF ACTION PLANS

ACTION PLAN LEGEND

Goal	Goals are general statements of desired ends to be achieved over an unspecified period of time. Goals are a more specific articulation of the strategic direction and will chart the direction for the EMP; they are not expected to be measurable.
Objective	Objectives are more specific statements of the general goals. Each objective is associated with a detailed action plan.
Action	Typically, actions are quantifiable and time-sensitive; they must be taken to achieve the objective.
Step	The individual tasks that need to be taken to aptly achieve the action. There can be multiple steps for each action.
Indicator	A measure used to assess the degree of success in meeting the proposed actions. It is a single measurable feature.
Time Frame	Indication of the time period in which the step will be initiated: • "Quick hits": within one year (QH) of the EMP's initiation • Short-term: within one to two years (ST) • Medium-term: within two to five years (MT) • Long-term: beyond five years (LT) If a step is to be carried on indefinitely, this is identified with a "C" for continuous.
Responsibility	Identification of who would be involved in the implementation of each of the actions. An indication of "lead" or "assist" is provided: • B&D: Building & Development Department • CEH: Centre for Environmental Health • Comm: Communication • Council • DRCC: Detroit River Canadian Cleanup • EC: Environmental Coordinator* • EIC: EMP Implementation Committee ** • ERCA: Essex Region Conservation Authority • ES: Environmental Services • EWSWA: Essex-Windsor Solid Waste Authority • GLIER: Great Lakes Institute for Environmental Research • Facil: Facilities Management • L&E: Licensing and Enforcement • MMAH: Ministry of Municipal Affairs and Housing • MOE: Ministry of the Environment • MPIR: Ministry of Public Infrastructure and Renewal • Plan: Planning Department • RASC: Royal Astronomical Society of Canada • Res.: Residents • SEMCOG: The Southeast Michigan Council of Governments • S/H: Stakeholders • TC: Transport Canada • Trans: Transportation Planning and/or Traffic Operations (part of Public Works) • TW: Transit Windsor • WBC: Windsor Bicycling Committee • WECEC: Windsor Essex County Environment Committee • WECHU: Windsor Essex County Health Unit

**For purposes of this report, we have assumed an Environmental Coordinator staff position to manage the implementation of the EMP. Refer to Section 4 for further details.*

*** We have also assumed that the Environmental Coordinator will work with an EMP Implementation Committee – form and function to be determined. Refer to Section 4 for further details.*

Goal A: Improve Our Air and Water Quality

To be proactive by partnering with community groups, industry and other levels of governments to improve Windsor's air and water quality

Objective Aa: Develop strategies to reduce cross-border air and water pollution

Action	Steps	Indicators	Time Frame	Responsibility	
				Lead	Assist
Work with other levels of government and industry to develop strategies to reduce trans-border air pollution	• Form a City team to develop a campaign in Windsor to advocate for Windsor's local air quality issues at the regional, provincial, and federal levels in the United States and Canada and with industry representatives • Gather air quality baseline information for comparison purposes. Publish and track in the State of the Environment Report (Objective Ea). • Identify "key players" at each level of government in south-western Ontario and southeast Michigan • Secure funding sources • Identify partnerships with other agencies, governments and businesses • Liaise with the Ministry of the Environment to increase environmental testing and compliance within the City	• Number of times that: o carbon monoxide (CO) o fine particulate matter ($PM_{2,5}$) o ozone (O_3) o nitrogen dioxide (NO_2) o sulphur dioxide (SO_2) concentrations exceed Ministry of the Environment (MOE) criteria at Windsor's monitoring station • Number and length of smog advisories per year in Windsor	C	EIC	WECEC MOE EC USEPA SEMCOG Other gov'ts
Work with other levels of government to develop strategies to reduce trans-border water pollution	• Form a City team to develop a campaign in Windsor to advocate for Windsor's local water quality issues at the regional, provincial, and federal levels in the United States and Canada. Focus on a coordinated approach to Combined Sewer Overflow discharge systems in Canada and the USA • Gather water quality baseline information for comparison purposes. Publish and track in the State of the Environment Report (Objective Ea). • Identify "key players" at each level of government • Secure funding sources • Identify partnerships with other agencies, governments and businesses • Liaise with the Ministry of the Environment to increase environmental testing and compliance within the City • Support the binational Remedial Action Plan (RAP) to restore the Detroit River • Develop Source Water Protection Plans.	• Phosphorous, chloride, nitrate and E. coli concentrations in the City's watersheds (as described in Objective Ad)	C	EIC	WECEC DRCC ERCA MOE SEMCOG Other gov'ts
Support other City initiatives to create a solution for Windsor's border crossing in order to reduce local air pollution	• Be supportive of the process to identify solutions to minimize the impacts of truck traffic through the City of Windsor • Work with the Binational study team (DRIC) to reach as environmentally-friendly a solution as possible to Windsor's border crossing • Continue to exert municipal pressure on the province and federal government to make a decision as quickly as possible given the legislative context • Support The Green Corridor Project	• Presence of a border crossing • Traffic queues	C	Council	TC CN/CP Other gov'ts

Goal A: Improve Our Air and Water Quality

To be proactive by partnering with community groups, industry and other levels of governments to improve Windsor's air and water quality

Objective Ab: Reduce air emissions and water pollution discharges from City operations

Action	Steps	Indicators	Time Frame	Responsibility	
				Lead	Assist

Reduce air pollution caused by City activities	• Implement the milestones associated with the Federation of Canadian Municipalities' Partners for Climate Protection (PCP) program
	• PCP is based on the CCP Campaign of a five milestone framework used to guide municipalities to reduce greenhouse gas emissions. The five milestone process is a performance-based model. The five milestones are:
	  ○ Creating a greenhouse gas emissions inventory and forecast;
	  ○ Setting an emissions reductions target;
	  ○ Developing a local action plan;
	  ○ Implementing the local action plan or a set of activities; and
	  ○ Monitoring progress and reporting results.
	• Implement the Corporate Energy Management Plan (as described in Objective Dc)
	• As described in Objective Bc, "green" the City's fleet
		• Number of PCP milestones reached
		• Reduction in CO_2 and greenhouse gas emissions
			C	EC	ES
					EIC
					All staff

Reduce water pollution caused by City activities	• As described in Objective Da, buy and use product alternatives with lower toxic levels (for example, natural fertilizers, such as compost or peat) • As described in Objective Db, increase recycling in order to reduce waste going to landfills or waterways • Conserve treated water by installing low-flush toilets and water-efficient retrofits, as described in Objectives Ad and Dc	• Phosphorous, chloride, nitrate and E. coli concentrations in the City's watersheds (as described in Objective Ad)	MT	EC	ES EIC All staff

Goal A: Improve Our Air and Water Quality

To be proactive by partnering with community groups, industry and other levels of governments to improve Windsor's air and water quality

Objective Ac: Effectively manage stormwater run-off and Combined Sewer Overflows (CSOs)

Action	Steps	Indicators	Time Frame	Responsibility	
				Lead	Assist

Develop Combined Sewer Overflow implementation actions that have been recommended under the Windsor Pollution Prevention and Control Plan to reduce overflows in order to improve water quality	• Develop an education program for residents on what causes CSOs and how they can be avoided
	• Develop a program to administer the implementation actions recommended in the Windsor Pollution Prevention and Control Plan
	• Develop a stormwater management plan that:
	  ○ Reflects MOE's guidelines (2003)
	  ○ Addresses stormwater retrofits in developed areas
	  ○ Uses modeling and best practices (e.g. HSPF, LIFE models) to map and apply best stormwater management practices (e.g., source control, end of pipe, pollution prevention), and determine where cash-in-lieu can best be applied.
	  ○ Consider construction options to absorb rain water at the source such as installing green roofs to absorb water (as described in Objectives Bd and Dd) and advocating for underground parking or permeable pavement when constructing parking lots
	• Enhance and enforce Windsor's current Sewer Use By-Law
		• Number of overflows into rivers and lakes from Windsor's Water Pollution Control Plants
		• Quality of water
		• Existence of a stormwater management plan
			ST, C	ES	EC
					Plan.
					PW
					GLSF

Improve stormwater quality	• Continue to implement the City's soft separation program • Continue to upgrade the City's remaining "over/under" systems • Encourage downspout disconnection in older subdivisions • Continue to implement the Riverfront Pollution Control Plan	• Stormwater quality	C	ES	

Goal A: Improve Our Air and Water Quality

To be proactive by partnering with community groups, industry and other levels of governments to improve Windsor's air and water quality

Objective Ad: Collaborate with community groups, industry and other governments to enhance watershed management

Action	Steps	Indicators	Time Frame	Responsibility	
				Lead	Assist
To improve the health of the water in the City of Windsor's waterways	• Design and implement a program to educate residents on the hazards of oil, litter and chemical disposal down drains and sewers. Promote awareness of: o The City's Household Chemical Waste (HCW) Depot and Reuse Centre o The importance of downspout disconnections o Temporary programs such as the Mercury Take-Back Program and Corporate Fluorescent Light Take-Back • Coordinate and report on community-based monitoring of local waterways – track water quality as part of the proposed State of the Environment Report (Objective Ea) using the Provincial Water Quality Objectives (PWQO) and Canadian Water Quality Guidelines (CWQG). Consider partnering with the following groups for source water protection and monitoring: o Environment Canada/MOE o Detroit River Canadian Cleanup (DRCC) o Great Lakes Institute for Environmental Research (GLIER) o Essex Region Conservation Authority (ERCA) o Windsor Essex County Environment Committee (WECEC) o Little River Enhancement Group (Lil' Reg) o Friends of Turkey Creek • Continue Windsor's involvement in the Yellow Fish Road program	• Phosphorous, chloride, nitrate and E. coli concentrations in the City's watersheds	QH, C	ES	EC Res. WECEC ERCA DRCC
To reduce the per capita use of treated municipal water by 20% by 2011	• Continue to implement a water efficiency program that: o Reminds homeowners to water their lawns on alternate days, and not at all during droughts o Promotes water-efficient gardening o Provides free installation of low flow showerheads and early-closing toilet flappers • Maintain existing water distribution system to reduce water loss • Implement a rain barrel water collection program on select City properties to show water conservation techniques • Consider stocking and selling rain barrels at a discounted price – have them available at the Household Chemical Waste (HCW) Depot and Reuse Centre – to reduce the use of treated water for watering and lawn use.\	• Per capita use of treated municipal water	LT	ES	Comm. Res. WUC

Goal A: Improve Our Air and Water Quality

To be proactive by partnering with community groups, industry and other levels of governments to improve Windsor's air and water quality

Objective Ae: Transportation system enhancements to reduce air emissions

Action	Steps	Indicators	Time Frame	Responsibility	
				Lead	Assist
To improve the City's traffic flow to reduce vehicular emissions	• With the assistance and guidance from the All-Way Stop Committee, reduce unnecessary and unwarranted all-way stops; focus on transit and heavy trucking routes to reduce wait times. • Promote transit priorities to reduce transit delay and promote schedule adherence and service reliability • Reduce the number of at-grade crossings, work towards the rationalization of the rail system with railways and industry, and promote the re-use of abandoned rail routes as multi-modal urban transportation corridors, through the implementation of the Rail Rationalization Study.	• Number of all-way stops • Number of level crossings • Number of roundabouts	C	Trans. All-Way Stop Comm.	TC B&D Plan. Council
To upgrade transportation signage and signals to reduce greenhouse gas emissions	• Continue the conversion of all traffic signals and signage to Light Emitting Diodes (LEDs) to increase energy savings by 90% and labour costs associated with replacing conventional light bulbs. • Promote increased and smoother traffic flow, for all modes (including cyclists and pedestrians) by using Intelligent Transportation Systems (ITS), e.g., to improve signal coordination, provide priorities for transit and introduce electronic way-finding and transit route information. • Continue to upgrade existing and newly installed vehicle detectors (video technology and induction loops) to reduce vehicular idling	• Number of conversions from conventional lighting to LEDs • kWhs/year used for transportation signage and signals • Number of ITS applications installed • Change in 'level of service" at intersections (measured from A to F)	C	Trans.	

Goal B: Create Healthy Communities

To enhance the environment of our neighbourhoods by fostering healthy lifestyles and integrating environmentally friendly transportation systems

Objective Ba: Support the City's Transit Master Plan to reduce the dependence on automobiles by increasing transit use and sustainable transportation

Action	Steps	Indicators	Time Frame	Responsibility	
				Lead	Assist

Complement the City's Transit Master Plan (TMP) to increase transit ridership	• The Transit Master Plan (TMP) is a policy document to govern the future development of public transit services. The TMP will include a Ridership Growth Strategy; it will detail how transit services will be improved and ridership targets met.
	• Areas of study include:
	  ○ Transit oriented land use (TOD - Transit Oriented Development)
	  ○ Transportation Demand Management (TDM)
	  ○ Intelligent Transportation Systems (ITS)
	• Recommendations will include service and technical strategies to reduce the community's auto dependence, which will in turn reduce petroleum fuel consumption and thus greenhouse gas emissions.
	• The plan will address service planning policies, an operational plan, vehicle and infrastructure needs and requisite budget projections for the next 10 years (to 2016).
	• Once it is finalized, identify ways the EMP can support the TMP
		• Transit Windsor ridership (number of riders/route)	ST, C	TW	EC
					Res.

Reduce the number of single-occupancy vehicle trips of staff and residents	• The Windsor Area Long Range Transportation Study (WALTS) has goal to achieve 6% modal split for public transit by 2016
	• Create education campaigns to:
	  ○ Encourage staff and residents to get out of their cars for at least one day a week
	  ○ Promote "flexible hours" to allow for carpooling to work
	  ○ Promote benefits of a car-free life-style: better health, lower cost
	• City of Windsor to participate in International Car Free Day (September 22)
	• Recruit and identify sponsor funding to reinstitute free bus rides on smog days
	• Investigate partnerships with industry and surrounding municipalities for City car pool vans and parking (www.carpool.ca)
	• Continue to provide incentives to City staff to leave their cars at home such as discounted bus passes and end-of-use facilities
	• Support alternative work styles such as telecommuting, or working from home one day per week to reduce greenhouse gas emissions, by working with major and mid-sized employers to develop in-house ridesharing and telecommuting programmes.
		• Number of single-occupancy vehicle trips per household per day
		• Average vehicle occupancy
			ST, C	Trans.
				TW
					Parks
					HR
					Comm.
					WECEC
					All staff
					Council
					Res.

Goal B: Create Healthy Communities
To enhance the environment of our neighbourhoods by fostering healthy lifestyles and integrating environmentally friendly transportation systems

Objective Bb: Develop, expand and maintain a contiguous network of safe bicycle and walking facilities

Action	Steps	Indicators	Time Frame	Responsibility	
				Lead	Assist

Develop, expand and maintain a network of safe bicycling facilities according to the Bicycle Use Master Plan (BUMP)	• Amend the Bicycle Use Master Plan (BUMP) to the Official Plan and provide long-term committed funding to support the strategy of:
	  ○ Expanding Windsor's existing cycling network (as per the map on page 27 of BUMP);
	  ○ Promoting awareness;
	  ○ Providing safety awareness training to drivers and cyclists alike;
	  ○ Improving the cycling-transit link; and
	  ○ Providing end-of-trip facilities such as showers and bike racks, according to priority list.
	• Allow individuals or businesses to adopt-a-trail to maintain the quality of existing and new facilities
	• As discussed in Objective Bf, promote bicycling as a healthy alternative for residents and staff
		• Number of kilometres of bicycle trails, lanes and routes	MT	Trans.	EC Plan. WECH U WBC

Develop, expand and maintain a network of safe walking facilities	• Identify priority areas for connectivity among the City's walking facilities. • Seek increased funding for infrastructure improvements and upgrades. Consider a "sinking fund" for route maintenance. • Develop a work plan to expand the network in priority areas • Allow individuals or businesses to adopt-a-trail to maintain the quality of existing and new facilities • As discussed in Objective Bf, promote walking as a healthy alternative for residents and staff	• Number of kilometres of walking trails and sidewalks	MT	Parks PW	Plan.

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Goal B: Create Healthy Communities

To enhance the environment of our neighbourhoods by fostering healthy lifestyles and integrating environmentally friendly transportation systems

Objective Bc: Investigate alternatives to "green" the City's fleet

Action	Steps	Indicators	Time Frame	Responsibility	
				Lead	Assist

To reduce the air pollution created while operating the City's fleet of vehicles	• Develop and implement a Green Fleet Plan. The Plan will:
	  ○ Include an implementation schedule for replacing the City's fleet with vehicles and equipment that are less harmful to the environment. For example, the possibility of purchasing smaller buses for routes with low ridership.
	  ○ Suggest the use of proven technologies (vetted through, for example, Environmental Technology Verification (ETV Canada))
	  ○ Consider current fleet emissions, options for replacement, environmental benefits and life-cycle costs.
	  ○ Promote compliance of the anti-idling by-law
	  ○ Engage other levels of governments for grants and funding.
	• Continue to implement the Fleet Winter Maintenance Policy
	• When reconsidering job descriptions for employees that *require* a car, investigate the possibility of allowing them to rent a car on occasion or take a taxi to visit clients instead of requiring them to drive to work everyday.
	• When purchasing for fleet replacement, continue to include wording in the tenders with respect to "lower emitting vehicle" options and automatic shut-off for idling vehicles
	• Coordinate with the outcome of this Objective with Objective Da (Environmentally Purchasing Policy)
		• Air pollution created by the use by the City's fleet of vehicles (CO_2 and particulate matter)	C	PW	Purch. TW (Ops and Board)

Goal B: Create Healthy Communities

To enhance the environment of our neighbourhoods by fostering healthy lifestyles and integrating environmentally friendly transportation systems

Objective Bd: Incorporate sustainable development practices in the design of neighbourhoods, homes and businesses

Action	Steps	Indicators	Time Frame	Responsibility	
				Lead	Assist
To encourage in-fill and higher density in existing built areas	• In order to promote concentration, encourage adaptive reuse of buildings, especially heritage buildings, in core areas. These buildings already have infrastructure in place: streets, sewers, schools, transit. • Identify opportunities for higher density development to support alternatives to driving (transit, cycling, walking, etc) and highlight in the upcoming Official Plan Review • Examine current policies and by-laws; provide incentives for infill/higher density; set minimum density requirements • When implementing the Annexed Area Master Plan, promote transportation demand management (TDM). • Design commercial and residential land use to maximize access to public transit • Continue the implementation of community improvement plans to encourage investment in older neighbourhoods • Focus on beautification and renewal of existing built areas	• Density in the City of Windsor (units per hectare)	C	Plan B&D	EIC RASC TW Trans.
To encourage the construction of energy efficient homes and businesses in Windsor (i.e., R-2000, C-2000, Energy Star, LEED)	• City of Windsor to assess, as part of Objective Ea, the number of existing energy efficient homes and businesses in Windsor. • Based on the assessment, set a target percentage of new homes and businesses to be built to energy efficiency standards (i.e., C-2000, R-2000, Energy Star, LEED, etc.) • Work to create a education campaign for residents (to create demand) and builders (to create supply) about the environmental and financial benefits of energy efficient homes and businesses • Investigate the possibility of reducing development charges for developers of energy efficient homes and businesses.	• Number of energy efficient homes and businesses in Windsor	C	B&D	Plan. S/H Housing Adv. Comm.

Goal B: Create Healthy Communities

To enhance the environment of our neighbourhoods by fostering healthy lifestyles and integrating environmentally friendly transportation systems

Objective Bd: Incorporate sustainable development practices in the design of neighbourhoods, homes and businesses

Action	Steps	Indicators	Time Frame	Responsibility	
				Lead	Assist

To increase the number of sustainable design features in the development of neighbourhoods, homes and businesses	• Planning Department to develop a sustainability measure for Windsor and analyze potential developments for sustainability.
	• Advertise the sustainability measure to homeowners and developers, as legislation and building codes allow. The guide may include the consideration of:
	  ○ Green roofs
	  ○ Housing orientation
	  ○ Adequate insulation
	  ○ Underground parking
	  ○ Windows in office buildings which can be opened
	  ○ Improved temperature control systems
	  ○ Alternative energy sources
	  ○ Access to public transit
	  ○ Amount of light pollution from street lights and use full cut off street lights
	• Work with developers to encourage best practices and the integration of the ideas listed above. Create incentives for sustainable design by builders and demand for sustainable homes (and businesses) by residents (and business owners) through the development of an education campaign about the advantages of scoring high on the sustainability measure (i.e., energy and cost savings)
	• As part of the Official Plan review, work with small businesses to improve streetscapes and interactivity (encouraging local community development)
	• Identify and take advantage of provincial and federal programs for funding and best practices
	• Continue to implement the activities in "Windsor Seen", a municipal urban design agenda for the City.
	• Continue to apply the Urban Design Guidelines for municipal buildings and private development
		• Number of developments using sustainable practices
		• Number of building permits issued to sustainable buildings, as defined by the sustainability measure
			MT	Plan. B&D	Cont. S/H PW RASC

Goal B: Create Healthy Communities
To enhance the environment of our neighbourhoods by fostering healthy lifestyles and integrating environmentally friendly transportation systems

Objective Be: Develop collaborative approaches with other governments to manage regional growth

Action	Steps	Indicators	Time Frame	Responsibility	
				Lead	Assist

To develop and implement a Regional Growth Plan by 2011	• Based on the provincial context for well managed growth with regard to surrounding regions, continue to investigate "Regional Approach to Managing Growth" in Windsor/ Essex County
	• The benefits of such a growth management plan can include:
	  ○ Service and transportation efficiencies
	  ○ Coordinated approach to green space linkages
	  ○ Long term consideration of land use patterns
	  ○ Attenuating the adverse consequences of rapid growth on areas in the region that are rapidly expanding
	  ○ Managing population growth
	• A model/process is currently being developed in the form of a Discussion Paper
	• Continue discussions and plans and develop a Regional Growth Plan that targets regional trends, greenspace allocations, transportation planning and growth management
		• Presence of a Regional Growth Plan
		• Area of land covered by the Regional Growth Plan (km^2)
			MT	Planning	ERCA
					MMAH
					WECEC
					MPIR
					Trans.
					TW
					All seven county municipalities

Goal B: Create Healthy Communities

To enhance the environment of our neighbourhoods by fostering healthy lifestyles and integrating environmentally friendly transportation systems

Objective Bf: Support environmental health initiatives

Action	Steps	Indicators	Time Frame	Responsibility	
				Lead	Assist

Develop a campaign to get Windsorites active and enjoying their environment	• Develop and promote a campaign to get staff and residents active and outdoors. This may include:
	  ○ Encouraging students to discover healthy ways of getting to school, such as walking and biking, instead of being driven to school every day.
	  ○ Promoting walking and biking along trails as leisure activities for families and seniors
	• Include, in the Environmental Attitudes Survey (Objective Ea) a question related to outdoor activity levels.
		• Percentage of residents and staff who are regularly active outdoors	ST, C	Comm Parks EC	GLIER CEH ERCA S/H Res. Trans.

Increase use of environmentally-friendly products in City facilities	• Identify which "toxic products" the City is currently using and develop an implementation plan to gradually phase-out the purchase and use of toxic substances in favour of "environmentally-friendly products." A list of cleaning products used by the City has already been developed. • Define "environmentally friendly products" in a Windsor context. Seek alternatives to traditional pesticides, cleaning supplies, corrosives, paints and thinners, stains and finishes, bleach, used motor oil, etc. • Create linkages to the purchasing policy (Objective Da).	• Volume of environmentally-friendly products (as defined in the purchasing policy) purchased by the City of Windsor	ST	Purch	GLIER CEH Facil. EC
Support ongoing environmental health initiatives	• Support and promote ongoing environmental health initiatives within the City such as the Standing Water By-law • Work with the Centre for Environmental Health to strengthen linkages between ongoing research and integration into the City's initiatives.	• Number of environmental health initiatives that the City supports	MT	ES	GLIER CEH

Goal C: Green Windsor

To protect and enhance the City's Greenway System

(Greenway System: a network of natural environment and recreational elements including community and regional parks, recreation ways, natural heritage sites, waterfront recreation areas, street trees, the City's urban forest and other greenspaces and green infrastructure within the City limits)

Objective Ca: Expanding the Greenway System

Action	Steps	Indicators	Time Frame	Responsibility	
				Lead	Assist
Rehabilitate and naturalize derelict and underutilized lands to expand the Greenway System	• Support existing Greenway Policies in the Official Plan • Support the existing Brownfields Redevelopment Strategy and implement its work plan • Develop infill targets to protect the Greenway System • Naturalize sites to the extent possible • Monitor changes in the amount and proportion of Greenway System components acquired	• Amount of land acquired & rehabilitated	LT	Plan	EC B&D Parks ERCA
Acquire additional lands for integration into the Greenway System	• Support existing Greenway Policies in the Official Plan • Confirm the current extent and proportion of the various Greenway System components (i.e. natural heritage, waterway corridors, linkages) – may require inventory and analysis • Set acquisition targets for the Greenway System • Develop land acquisition strategies with regional partners to define how and when the City can achieve the targets • Source funding opportunities to secure lands • Monitor changes in the amount and proportion of Greenway System components acquired.	• Amount of land acquired (hectares)	LT	Plan	B&D Council ERCA WECEC S/H

Goal C: Green Windsor

To protect and enhance the City's Greenway System

(Greenway System: a network of natural environment and recreational elements including community and regional parks, recreation ways, natural heritage sites, waterfront recreation areas, street trees, the City's urban forest and other greenspaces and green infrastructure within the City limits)

Objective Cb: Enhancing the Greenway System

Action	Steps	Indicators	Time Frame	Responsibility	
				Lead	Assist

Enhance the quality and condition of the Greenway System	• Assess the quality and condition of the Greenway System components (This may require additional inventory and evaluation).
	• Take into special account the unique and rare ecosystems in Windsor: the Ojibway Prairie Complex; the Spring Garden ANSI; Peche Island and the Memorial Park rare Carolinian Oak Grove
	• Prepare Management Plans for Greenway System components and individual sites:
	  ○ Identify issues that are currently impairing the quality of the Greenway System (i.e. habitat fragmentation/degradation, invasive species, incompatible human uses, littering, vandalism, erosion, etc.)
	  ○ Identify strategies & actions to address the various issues and enhance the Greenway System
	• Implement Management Strategies & actions (i.e., actively managing tall grass prairie by planned burns)
	• Monitor the quality and condition of the Greenway System components (i.e. integrity, biodiversity, health, etc.)
		• Completion of an inventory & evaluation
		• Completion of Management Plans
		• Results of monitoring
			MT	EC	B&D Plan. ERCA WECEC

Increase tree cover in the City by 5% by 2011	• Assess the current proportion of tree cover on private and public land in the City through analysis of aerial photos
	• Continue to implement and support Urban Forestry practices, street tree planting and "One Million Trees" program
	• Create incentives for the planting of native, Carolinian species and the preservation of existing trees; for example:
	  ○ Provide a tax credit for new trees planted on private property
	  ○ Begin a City nursery to grow seedlings/saplings of Carolinian forest species; give away saplings at a nominal cost
	  ○ Encourage species diversification
	  ○ Launch a "tree drive" by encouraging companies to donate trees
	  ○ Communicate with developers who approach the City in order to preserve trees
	  ○ Promote the planting of "blossom trees" and consider sponsoring a "Blossom Festival"
		• Amount of tree cover (hectares)	QH-LT	Parks	B&D Plan. S/H Res. ERCA

Goal C: Green Windsor

To protect and enhance the City's Greenway System

(Greenway System: a network of natural environment and recreational elements including community and regional parks, recreation ways, natural heritage sites, waterfront recreation areas, street trees, the City's urban forest and other greenspaces and green infrastructure within the City limits)

Objective Cc: Linking the Greenway System

Action	Steps	Indicators	Time Frame	Responsibility	
				Lead	Assist

To increase connectivity within the Greenway System by 15% by the year 2011	• As part of the State of the Environment report (Objective Ea), conduct an assessment of the current state of Windsor's Greenway System Linkages by performing a Landscape Analysis. Include the number of hectares of green space that is "linked" to each other as a baseline.
	• Identify linkage improvement opportunities in the Greenway System and reflect these in Official Plan updates.
	• Develop strategies for acquiring these strategic lands through the following mechanisms:
	  ○ Development Applications
	  ○ Purchase
	  ○ Park Dedication
	  ○ Land Swap
	  ○ Conservation Easements
	  ○ Land Trust
	  ○ Voluntary property tax fund
	  ○ Land contribution by public agencies
	• As part of the five year review of the State of the Environment Report (Objective Ea), review state of linkages and adjust acquisition strategies, if necessary
	• Work with surrounding municipalities to plan for and strengthen linkages across municipal boundaries.
		• Connectedness of Greenway System
		• Number and extent of strengthened linkages
		• Number and extent of new linkages
			LT	Parks	B&D Plan ERCA

Goal D: Use Resources Efficiently

To increase resource efficiency, conserve water and energy and reduce waste

Objective Da: Adopt an environmentally friendly purchasing policy

Action	Steps	Indicators	Time Frame	Responsibility	
				Lead	Assist
To develop and adopt an environmentally-friendly purchasing policy by 2010	• Identify current purchasing policy. • During review of the purchasing policy (planned for 2007-2008), develop a written environmentally friendly purchasing policy • Develop a list of "green" attributes of suppliers, contractors and products for inclusion in the policy. Suppliers with the "green attributes" will be given first priority in purchasing decisions where costs are within 10% of competitors. • Develop a business case showing the life-cycle and cost-benefit analysis of environmentally-friendly purchasing • Inform suppliers and contractors about the change in the City's policy • Create staff awareness about the change in policy and the benefits of the new policy • If the City would like to measure the changes that result due to the change in the purchasing policy, consider the inclusion of a self-audit as part of the State of the Environment Report (Objective Ea)	• Presence of policy • Change in City's purchasing habits	MT	Purch	PW Council RASC Suppliers

Goal D: Use Resources Efficiently
To increase resource efficiency, conserve water and energy and reduce waste

Objective Db: Recycle and reduce wastes from City operations

Action	Steps	Indicators	Time Frame	Responsibility	
				Lead	Assist

To reduce paper usage within City operations	• Investigate current paper use patterns and set a percentage of paper reduction
	Develop and implement a paper reduction plan by:
	• Gathering information from all City facilities about how much paper is purchased on an annual basis
	• Soliciting creative ideas for paper reduction from staff
	• Ensure all work spaces have paper recycling bins within reach
	• Determining focus areas for paper reduction strategy, for example:
	  ○ Move to two-sided copying
	  ○ Take advantage of electronic document management: make access to electronic information easy and safe so people don't have to print documents; provide training
	• Compare the amount of paper purchased by the City on an annual basis
	• If paper usage has not declined, investigate reasons why, and adjust the plan and focus areas
		• Amount of paper purchased on an annual basis (# of reams)	LT	EWSWA ES	Comm

Increase the amount of recyclable material collected on-site at all City facilities by 25% by 2011	• Measure the amount of recycled material collected from City facilities vs. the amount of waste collected • In an effort to increase this, choose appropriate recycling containers and consider individual containers, where possible. • Encourage the use of recycling bins (paper, glass and plastics) in all City buildings and in the community: parks, transit stops, and pedestrian areas. • Locate recycling bins in convenient locations and label them clearly. • Provide training for facilities staff with respect to any changes in recycling procedures • Focus reminders and incentive programs on any problem areas (as part of Objective Eb) • Encourage contractors and suppliers to make recycled-content products available • Use savings from waste prevention efforts to offset the costs of buying recycled products in those instances where they cost more. • Ensure that all building permits include appropriate provisions for source separation recycling as mandated under Ontario Regulation 103/94 to the Environmental Protection Act	• Amount of recycled material collected from City facilities (kg) • Amount of solid waste collected from municipal facilities (kg) • Number of recycling bins provided at public facilities	LT	EWSWA	Comm B&D

Goal D: Use Resources Efficiently
To increase resource efficiency, conserve water and energy and reduce waste

Objective Dc: Establish a Corporate Energy Management Plan

Action	Steps	Indicators	Time Frame	Responsibility	
				Lead	Assist

To reduce the amount of energy the City of Windsor uses for its operations by 15% by 2011	• Develop a Corporate Energy Management Plan, by:
	  ○ Assigning a project leader
	  ○ Reviewing current energy management plan and practices
	  ○ Identifying baseline energy usage for electricity, water and natural gas.
	  ○ Evaluate costs and benefits over the long-term
	• Use the results of the plan to implement retrofits and energy saving mechanisms with a payback time
	• Energy conservation measures may include:
	  ○ Adopting a dynamic lighting plan that would allow for lighting curfews, examination of LED use and a night light protocol such as participation in the Fatal Light Awareness Program (FLAP).
	  ○ Alternative lighting
	  ○ Building retrofits, green roofs, etc.
	  ○ Heating and cooling changes
	  ○ Installing sensors
	  ○ Developing an energy component in the education strategy (Objective Eb)
	• Assess current water usage across all municipal buildings. Windsor Utilities Commission (WUC) is moving towards a full cost recovery model which will measure and charge for water used for summer services. This will result in conservation and will reduce water usage by at least 10%.
		• Amount of energy the City uses for its operations on an annual basis (kWh) (as a function of climatic conditions)
		• Amount of natural gas the City uses for its operations on an annual basis (cf) (as a function of climatic conditions)
		• Amount of water the City uses for its operations on an annual basis (L) (as a function of climatic conditions)
			ST	Corp. Facil. Plan.	All staff
					WUC
					RASC

Goal D: Use Resources Efficiently
To increase resource efficiency, conserve water and energy and reduce waste

Objective Dd: Promote "greening" of new and existing city facilities

Action	Steps	Indicators	Time Frame	Responsibility	
				Lead	Assist
To investigate the possibility of developing a policy so that all newly constructed municipal buildings are LEED certified by 2016	• Develop a draft policy stipulating that all newly constructed public buildings are to be LEED certified to at least a Gold rating • Start pilot projects on smaller buildings such as fire halls or the proposed Transit Building. • Develop education material about LEED for staff, contractors and Council (as part of Objective Eb) • Encourage home owners and builders to consider LEED standards (Objective Bc) • Coordinate linkages with Windsor Seen, Reference #15: Develop policies to promote "Green Architecture" • Apply the City's City Centre West Urban Village Performance-Based Urban Design Guidelines (Sections 3 and 5.3) to new municipal buildings.	• Presence of policy • Percentage of new municipal buildings built that are LEED certified	MT-LT	Plan.	B&D. Purch. PW Contr. Council
To promote adaptive reuse of buildings, especially heritage buildings	• Develop a municipal "heritage first" policy to reuse existing buildings (and materials), in core areas. It is environmentally-friendly and cost-effective to reuse these buildings because they already have infrastructure in place (streets, sewers, schools, transit). In addition, recycling waste and building materials is possible.	• Number of heritage buildings reused • Amount of building material reused	LT	Plan.	B&D
To reduce energy consumption of City buildings by installing green roofs on at least five City facilities by 2011	• Provide leadership in energy savings by installing green roofs. Green roofs involve planting vegetation on rooftops for insulation, noise reduction and aesthetic purposes (Environment Canada found that a typical one storey building with a grass roof and 10 cm of growing medium results in a 25% reduction in summer cooling needs. Source: www.greenroofs.net). • Parks is currently leading this initiative with a potential installation at the waterfront	• Net energy use reduction as a result of green roof installation (kWh)	LT	Facil.	B&D Plan. Council Parks

Goal E: Promote Awareness
To foster an engaged community and staff that appreciates and protects its local environment through active communication

Objective Ea: Assess, evaluate and report on the city's environmental performance

Action	Steps	Indicators	Time Frame	Responsibility	
				Lead	Assist
To report, biannually, on the progress of the implementation of the Environmental Master Plan	• Develop, every two years, a report on the progress of the implementation of the Environmental Master Plan, including recommendations for changes to: ○ Objectives or action plans ○ Funding ○ Staffing ○ Education strategies ○ Composition of the EMP Implementation Committee • Present the report to the City's EMP Implementation Committee Present the report to City Council	• Presentation of report to City Council • Changes to the EMP, committee, funding or staffing	QH, C	EC	EIC

Goal E: Promote Awareness
To foster an engaged community and staff that appreciates and protects its local environment through active communication

Objective Ea: Assess, evaluate and report on the city's environmental performance

Action	Steps	Indicators	Time Frame	Responsibility	
To establish a Windsor State of the Environment Report with regular updates	• Decide on the environmental focus areas that Windsor would like to track over time. Include a representation of land, air, water and energy issues in the indicators. • Key considerations in the development of indicators will be: cost, reliability, realism, and availability of information • Develop a "baseline" for each of the indicators • Publish and distribute Windsor's first State of the Environment Report • Monitor and report on indicators over a four-year time period – work in partnership with community groups, other orders of government and residents to monitor changes. • Repeat the publication and distribution of the State of the Environment Report on a five-year cycle • Incorporate the results of the State of the Environment Report into the annual EMP review • Investigate the development and implementation of "The Natural Step": "The Natural Step Framework is a science and systems-based approach to organizational planning for sustainability. It provides a practical set of design criteria that can be used to direct social, environmental, and economic actions."	• Existence of a State of the Environment Report • Changes to the objectives of the EMP	ST	EC	EIC Res. S/H ERCA
To conduct a regular survey of environmental attitudes with resident and staff	• Develop a survey to determine environmental awareness, and participation in environmental activities, events and programs by staff and residents • Review the 2005 Environmental Attitudes Survey questionnaire for relevance • Adjust the questions according to the objectives of the final EMP • Conduct an environmental attitudes survey once every four years; coordinate questions and timing with any other City surveys • Compare the results of the surveys and integrate results into the annual report on the implementation of the EMP	• Percentage of residents and staff who have changed their attitudes over a three year period • Changes to the objectives of the EMP	MT, C	EC	EIC

Goal E: Promote Awareness

To foster an engaged community and staff that appreciates and protects its local environment through active communication

Objective Eb: Develop an environmental education strategy

Action	Steps	Indicators	Time Frame	Responsibility	
				Lead	Assist

To develop an environmental education strategy that is tailored towards:
• Staff
• Council; and
• Contractors
	• Identify focus areas for the environmental education strategy – likely focus on individual actions that staff, council and contractors can take to improve the City's environment
	• Develop an environmental education strategy with a focus on each of the target groups: staff, council and contractors
	  ○ Focus on individual actions that can be taken to improve the environment
	  ○ Develop training material for new staff to expose them to the EMP
	  ○ Development of incentives to encourage participation in environmental activities and events
	  ○ Creative methods for information dissemination about environmental activities (i.e., weekly email, information sheets, awards, prizes, quarterly information sessions)
	• Implement environmental education strategy
		• Presence of environmental education strategy
		• Percentage change in environmental attitudes, as measured by the City-wide survey in Objective Ea
			ST, C	EC	Comm.
					Staff Dev't
					HR
					Purch.
					RASC

To develop and maintain a web-based environmental information site	• Develop a webpage on the City's site (link from www.citywindsor.ca) that includes:
	  ○ Windsor's current environmental initiatives, programs and policies
	  ○ Contact information
	  ○ References
	  ○ Links to more information
	• Ensure adequate technical staff to keep the site up-to-date
		• Number of visits to website	LT	ES	EC
					Comm.

Goal E: Promote Awareness

To foster an engaged community and staff that appreciates and protects its local environment through active communication

Objective Ec: Continue to seek resident and stakeholder input on the city's environmental decisions

Action	Steps	Indicators	Time Frame	Responsibility	
				Lead	Assist
To ensure involvement of residents and stakeholders in environmental decision-making	• Continue to create forums for stakeholder and resident input and dialogue (i.e., open houses, workshops, etc.) • Continue to advertise public sessions through local media and on the City's website • For specific environmental issues, develop specifically targeted communication strategies • As mentioned in Objective Ea, continue to conduct the Environmental Attitudes Survey on a regular basis. Include, in the survey, a question gauging the level of ownership residents feel towards environmental processes and outcomes • Develop a working relationship with school board and business representatives to ensure that notification for all environmental issues is passed on to youth and business leaders.	• Outcome of consultation sessions – number of individuals that participate and/or provide feedback • Results of the Environmental Attitudes Survey question about input	C	ES	Comm. RASC S/H

Goal E: Promote Awareness

To foster an engaged community and staff that appreciates and protects its local environment through active communication

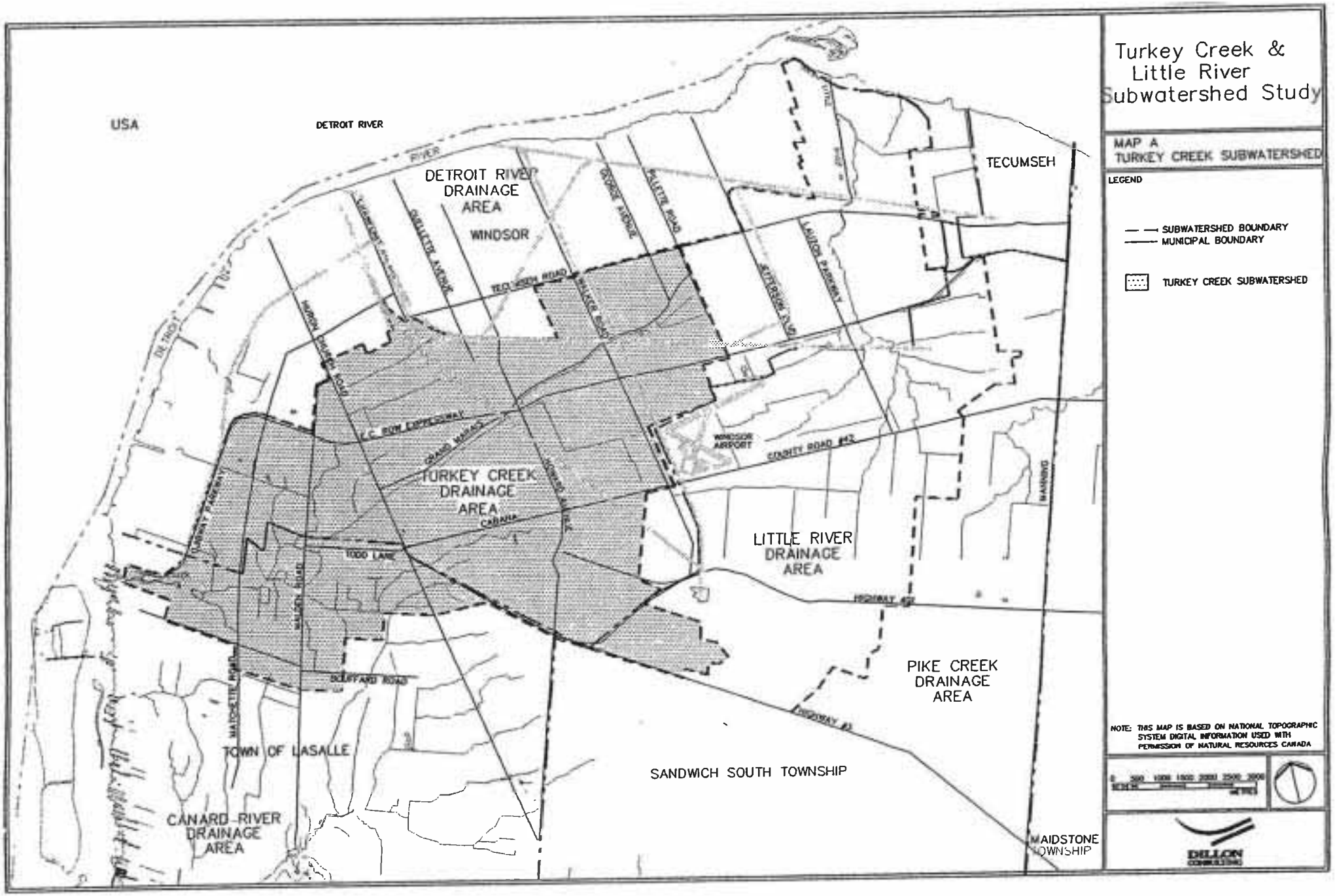
Objective Ed: Build awareness and understanding of the city's environmental initiatives

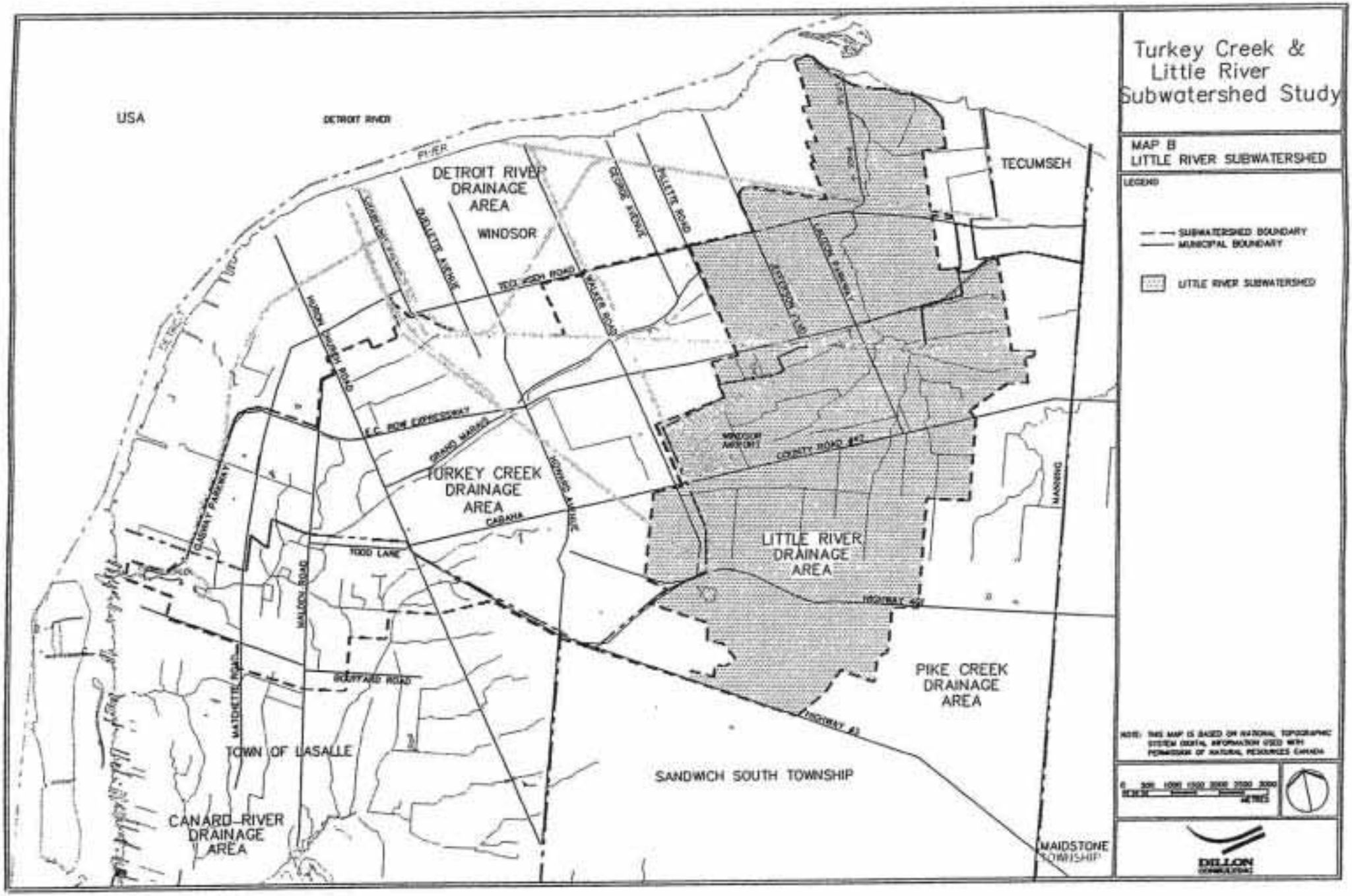
Action	Steps	Indicators	Time Frame	Responsibility	
				Lead	Assist

To increase awareness among residents and stakeholders of the City's environmental programs, policies and initiatives, such as:
• Hazardous waste drop off (batteries, used oil, hazardous materials, old medicines, etc)
• Clean City Committee
• Essex-Windsor HHW Depot Mercury Collection Program
• Anti-idling by-law
• Sewer use by-law
• Smog action plan
	• Lead by example by showcasing ongoing environmental initiatives in local media
	• Develop an education campaign that may include:
	  ○ A "Enviro-Topic of the Week" in the Windsor Star
	  ○ Newsletters
	  ○ Targeted flyers
	• Repeat the Environmental Attitudes Survey on a regular cycle to gauge changes in attitudes and awareness (e.g., every four years)
		• Percentage of residents who are aware of (or participate in) the City's environmental programs, policies and initiatives	LT, C	Comm. EWSWA	L & E

Appendix "B"

Turkey Creek and Little River Subwatershed Areas


Turkey Creek & Little River Subwatershed Study
MAP A
TURKEY CREEK SUBWATERSHED
LEGEND
SUBWATERSHED BOUNDARY
MUNICIPAL BOUNDARY
TURKEY CREEK SUBWATERSHED
NOTE: THIS MAP IS BASED ON NATIONAL TOPOGRAPHIC SYSTEM DIGITAL INFORMATION USED WITH PERMISSION OF NATURAL RESOURCES CANADA
USA
DETROIT RIVER
DETROIT RIVER DRAINAGE AREA
WINDSOR
TECUMSEH
TURKEY CREEK DRAINAGE AREA
LITTLE RIVER DRAINAGE AREA
PIKE CREEK DRAINAGE AREA
TOWN OF LASALLE
SANDWICH SOUTH TOWNSHIP
MAIDSTONE TOWNSHIP
CANARD RIVER DRAINAGE AREA
TECUMSEH ROAD
COUNTY ROAD #42
HIGHWAY #3
DELCAN


Turkey Creek & Little River Subwatershed Study
MAP B
LITTLE RIVER SUBWATERSHED
LEGEND
SUBWATERSHED BOUNDARY
MUNICIPAL BOUNDARY
LITTLE RIVER SUBWATERSHED
USA
DETROIT RIVER
DETROIT RIVER DRAINAGE AREA
WINDSOR
TECUMSEH
TURKEY CREEK DRAINAGE AREA
LITTLE RIVER DRAINAGE AREA
PIKE CREEK DRAINAGE AREA
TOWN OF LASALLE
SANDWICH SOUTH TOWNSHIP
MAIDSTONE TOWNSHIP
CANARD RIVER DRAINAGE AREA
E.C. ROW EXPRESSWAY
TODD LANE
COUNTY ROAD 42
HIGHWAY 401
HIGHWAY 3
DELCAN

Appendix "C"

Candidate Natural Heritage Site Study Areas

City of Windsor - CNHS Update 2006
Sites Subject to Study