

Environmental Targets:

Strategic Plan

June 2016





UTRCA Environmental Targets - Translating Purpose into Action

Poor water quality. Habitat loss. Soil erosion. Flooding and drought. Great Lakes algae blooms. Severe weather events.

These are some of the key environmental challenges facing all of us. Locally, the Thames River Watershed benefits from an active and energetic group of environmental agencies, not-for-profit organizations and passionate individuals. For decades, these groups have collaborated to improve the health of our local environment. However, while the effort has been tremendous, our collective progress in terms of measurable health improvements has been slow, largely due to a lack of capacity.

The Upper Thames River Conservation Authority's (UTRCA) Watershed Report Cards give our water quality and forest health an average grade of D. Hazard risks from flooding and erosion have been effectively managed but must now consider the significant impact of a changing climate. Public use of natural areas is impressive, but there is room for growth and an opportunity to use outdoor connections to educate and promote conservation.

The Environmental Targets proposed in this report offer a better future for our watershed's health, while supporting growth and economic development. The benefits of this effort would be far-reaching. Nearly 40 years of scientific research have proven the economic, social, and health benefits of a healthy local environment.

- Canadians consider the environment as an indispensable feature of "quality of life." Specific aspects identified as crucial include water quality, air quality, responsible stewardship of natural resources and access to the outdoors.
- Businesses and talented workers they hire are attracted to places that have high numbers of amenities and high quality natural environments.
- Time spent in and around a healthy and green environment is consistently linked to objective, long-term health outcomes. The less green a person's surroundings, the higher their risk of morbidity and mortality – even when controlling for socioeconomic status and other possible confounding variables.
- The range of specific health outcomes tied to nature is startling, including reduced or improved depression and anxiety disorder, diabetes mellitus, attention deficit/hyperactivity disorder (ADHD), various infectious diseases, cancer, healing from surgery, obesity, respiratory disease, and others.

In 2014, the UTRCA's Board of Directors approved developing environmental targets as a strategic planning initiative. These targets are a statement of how healthy and resilient we believe the Thames River watershed can be by 2037, if we focus our efforts and commit resources.

Good intentions and passion can only accomplish so much. The watershed simply needs more: more funding for projects and more work on the ground. How much more? Approximately double our current effort is needed to accomplish these ends.

The Thames River watershed has incredible potential. The targets recommended in this report are aggressive but realistic. We have the tools, experience, and expertise to achieve them. With adequate resources and strong partnerships, we can achieve our targets during the next 20 years.

Target 1:

Improve each subwatershed's water quality score by one grade, as measured by UTRCA Watershed Report Cards, by the year 2037.

Links to UTRCA strategic end:
"Protect and improve water quality."



About the target:

The target aims to improve the water quality in each of the 28 subwatersheds in the Upper Thames watershed by one grade. A-F grades, based on river monitoring data, are provided for each subwatershed every five years according to provincially standardized watershed report card guidelines. Three indicators of water quality and aquatic health are used to determine the grades: total phosphorus, bacteria and benthic invertebrates. The grades reflect the impacts from surrounding land use activities in each subwatershed.

Using best available science and local knowledge, key actions to meet the target will be prescribed in each subwatershed that provide the greatest benefits to local stream health and water quality. These actions are a shared responsibility across sectors and stakeholders to achieve the target. Current water quality scores average a D grade.



Actions to achieve the target:

Double Our Existing Rural Stewardship Program

- Target soil and nutrient loss from 600 hectares (1500 acres) per year by implementing projects that reduce peak flows/runoff, such as structural erosion control projects and constructed wetlands.
- Increase technical outreach and knowledge transfer, and establish three demonstration subwatersheds (one per county) that engage partners.
- Double the capacity of the Clean Water Program to deliver enhanced cost sharing and technical services with sustained and enhanced funding support from municipal, provincial, federal and alternative sources.

Timeline: Ongoing implementation and technical outreach for 2017-2037.



Create an Urban Stewardship Program

- Reduce storm water and nutrient runoff by promoting widespread adoption of low impact development (LID) through education, demonstration and technical support.
- Implement five new demonstration sites per year focusing on urban centres across the watershed.
- Initiate urban nutrient landscape program focused on education and based on the 4R concept (right source, rate, time, and place), and develop outreach program and materials to reach urban property owners.

Timeline: Ongoing implementation and technical outreach for 2017-2037.



Stream Corridor Enhancement Projects

- Restore three priority stream corridor sections per year with restoration techniques such as buffers and natural channel structure enhancement.

Timeline: Ongoing for 2017-2037.



Expand Comprehensive Monitoring

- Increase the level of water quality and stream health monitoring and add 13 monitoring sites to fill gaps in data collection to equally cover all 28 subwatersheds in support of the expanded stewardship and enhancement programs identified above.
- Develop an urban monitoring program to support new urban stewardship program.

Timeline: Ongoing, phased and sustained implementation for 2017-2037.



Potential Partners:

- Watershed landowners
- Watershed Municipalities
- Ontario Ministry of Environment and Climate Change
- Ontario Ministry of Agriculture, Food and Rural Affairs
- Environment and Climate Change Canada

Target 2:

Establish and restore 1,500 hectares of natural vegetation cover, windbreaks and buffers by 2037.

*Links to UTRCA strategic end:
“Preserve and manage natural areas.”*

About the target:

Significantly expanded planting and restoration programs will improve the health of the watershed as measured every five years in the UTRCA Watershed Report Cards. Forest health grades are based on three indicators related to the sustainability of natural heritage systems: percent forest cover, percent forest interior, and percent riparian zone forested.

This target aims to establish 1000 hectares of new natural vegetation cover and restore or improve 500 hectares of existing vegetation cover. Key actions to achieve this target will be prescribed for each subwatershed based on best available data and local knowledge to determine optimal placement. Achieving this target will create wildlife habitat, recover species at risk, shade streams, reduce soil erosion, facilitate carbon sequestration for climate change, and improve water and air quality. Current forest health scores average a D grade.



Actions to achieve the target:

Increase Technical Outreach and Double Existing Restoration Program

- Prepare and implement a marketing plan to promote the planting, stewardship, and habitat restoration services to target groups and double current landowner participation in programs.
- Promote free site visits and offer more landowner workshops, tours, articles, etc.
- Expand planting programs and services in order to double the current acreage of trees, shrubs and meadows planted every year.
- Work with landowners to target marginal lands, stream buffers, vulnerable farm fields and other areas.
- Collaborate with other agencies, NGOs and academia to test new restoration techniques.
- Work with vegetation suppliers to ensure native stock is available to meet the increased demand.

Timeline: Ongoing for 2017-2037.





Advocate for Natural Heritage Restoration and Protection

- Strengthen UTRCA's advocacy role related to the prevention of natural vegetation cover loss.
- Work with OMAFRA and municipalities to establish and promote enforcement of minimum setbacks for cropping along watercourses, as well as advocate for new and strengthen existing by-laws to preserve natural cover, including windbreaks.

Timeline: Ongoing for 2017-2037.



Comprehensive Monitoring

- Develop an improved, spatially-based database to track vegetation cover change as well as planting and restoration projects (including area planted, species, methods, costs, grants, survival assessments, etc.).

Timeline: Ongoing for 2017-2037.



Potential Partners:

- Watershed landowners
- Watershed Municipalities
- Ontario Ministry of Environment and Climate Change
- Ontario Ministry of Agriculture, Food and Rural Affairs
- Environment and Climate Change Canada

Target 3:

Reduce flood and erosion risk by updating flood models and hazard mapping for all UTRCA subwatersheds by 2020, then integrating climate change scenarios into the updated models and developing climate change adaptation strategies by 2030.

*Links to UTRCA strategic end:
"Protect life and property from flooding
and erosion."*



Photo: London Free Press

About the target:

The UTRCA has a legislative responsibility to reduce flooding and erosion risks. The existing models are dated and must be modernized with current information, including the significant impact of climate change. Renewal of the flood and erosion hazard program began in 2012 with work to modernize flood forecasting and warning tools. The focus now shifts to updating hydraulic and hydrologic computer models used for hazard mapping and implementation of our regulatory program. Models currently in use were originally developed in the 1980s and many factors have changed significantly since then. The models need to be updated to reflect current land use, frequency analysis, modelling technology and a better physical definition of the water courses.

Efforts to meet these targets will be integrated with ongoing renewal of flood forecasting and warning information management. In addition, an expanded water and erosion control capital maintenance plan is needed that includes all flood control assets including monitoring systems and software.

The second phase of this target will use the updated models to consider climate change scenarios and impacts on flood hazards, develop adaptation strategies and incorporate these strategies into policy.



Actions to achieve the target:

Update and Modernize Hydraulic and Hydrologic Models

- Identify and prioritize flood risk areas for updates, considering factors such as development pressure, level of risk and potential for climate change impacts, and determine metrics for measuring completion of this work.
- Complete an updated digital elevation model (DEM) and watercourse definition ensuring appropriate levels of accuracy for model areas based on risk.
- Update hydrologic models to reflect current land use, historical precipitation utilizing updated frequency analysis, and modern modelling tools.
- Assess appropriate hydraulic modelling tools, identify and address data gaps, and calibrate models. Apply the models to produce appropriate flood elevations for updating regulatory mapping.

Timeline: Ongoing to 2020 (note: implementation of these actions began in 2012).



Flood Control Capital Plan

- Expand Flood Control Capital Plan to include all water and erosion control structures and funding partners. Include monitoring infrastructure, communications telemetry, Information Management Systems (software and hardware), etc.
- Add the need for monitoring gauges for smaller urbanizing watersheds where flood risks may be driven by shorter duration, high intensity storms resulting in localized flooding.
- Implement maintenance plan with annual updates.

Timeline: 2017-2020 (with implementation continuing).



Identify and Model Priority Climate Change Scenarios

- Using best available information, determine scenarios to assess using the updated hydrologic and hydraulic models and determine the range of potential flood and drought impacts on the watershed's built and natural environments.
- In addition to meteorological changes driven by climate change, consider factors such as development pressures, policy implications, and infrastructure maintenance. Assessing the impacts of climate change on the risk from natural hazards will be an important step in reducing risk to loss of life and property damage and developing adaptation strategies for the watershed.

Timeline: 2020-2025.

Adaptation Strategies

- Identify impacts on UTRCA and municipal programs and determine how to apply knowledge through implementation tools such as revisions to conservation authority regulations, conformity with the Provincial Policy Statement, reservoir operations or expansion, appropriate structural measures and ways of utilizing (retrofit) existing storm water and drainage works.
- Based on adaptation strategies, consult with and engage municipalities and other stakeholder groups on the range of impacts and adaptation measures.
- Implement appropriate climate change adaptation strategies and undertake education and outreach.

Timeline: Complete by 2030.

Potential Partners:

- Ontario Ministry of Environment and Climate Change
- Ontario Ministry of Natural Resources and Forestry
- Ontario Ministry of Municipal Affairs and Housing
- Public Safety Canada
- Natural Resources Canada
- Canadian Insurance Industry
- Watershed Municipalities



Regulatory Mapping/Policy

- Update flood hazard and erosion limit mapping based on updated modelling results and detailed information submitted through planning and permit activities.
- Undertake consultation and communication with municipalities and stakeholder groups to clearly identify changes and regulatory impacts.
- Ensure updated mapping is provided to watershed municipalities to incorporate into Official Plans and Zoning By-Laws to be consistent with natural hazard and climate change adaption policies contained in the Provincial Policy Statement.
- Establish a comprehensive maintenance program to ensure natural hazard information is kept up-to-date and able to support regulation limit mapping and the ability to effectively implement Section 28 of the Conservation Authorities Act.

Timeline: Ongoing for 2017-2020 with maintenance program extending beyond 2020.

Target 4:

Instill conservation values by supporting outreach to one million people annually by 2037 through visits to UTRCA owned and managed lands, as well as hands-on environmental experiences.

*Links to UTRCA strategic end:
"Provide outdoor recreation
opportunities."*



About the target:

Outdoor recreation offers opportunities to educate and promote conservation among the public for the watershed's natural environment. This target will be achieved through public access to UTRCA owned and managed recreational lands and exposure to conservation messages, programs and services offered on these lands. Outdoor recreation and education provided by the UTRCA are an opportunity to promote conservation messages to a large audience.

Actions to achieve this goal include expanding existing conservation, education and recreation programs as part of attendance strategies for all UTRCA owned and managed lands that provide recreational opportunities. These programs aim to influence the participants to change their own behaviour to improve watershed health. Developing and implementing a Green Infrastructure Plan reinforces the conservation message through leadership and a demonstrated corporate responsibility to minimize the impact of our own operations on the local environment.



Actions to achieve the target:

Market Analysis

- Develop a better understanding of our clients (demographics, attendance, activities, etc.) through a survey of current users of UTRCA lands.
- Determine why current clients are attracted to UTRCA land and why others are not.

Timeline: Complete in 2017.



Develop and Implement Property-specific Marketing and Education Plans

- Identify new target clients and develop a marketing and education plan to encourage attendance with appropriate conservation messages.
- Implement new programs blending outdoor recreation opportunities and conservation.

Timeline: Complete in 2017-2030.



Evaluate and Monitor

- Establish and implement ongoing tracking processes for both attendance and participation as an indicator of achieving the 1 million people target.

Timeline: Monitoring efforts will be developed and implemented ongoing for 2018-2030.



Develop and Implement a Green Infrastructure Plan

- Develop and implement property and facility specific green infrastructure plans to minimize our own environmental impacts and to serve as educational tools/ demonstrations for the visiting public.
- Expand green infrastructure on UTRCA lands and facilities, based on a multi-year work plan and budget.

Timeline: Complete in 2017-2037.



Potential Partners:

- Watershed Municipalities
- Other outdoor recreation providers – Ontario Parks, Parks Canada
- School Boards
- Educational institutions offering Outdoor Recreation Program
- Green Infrastructure Industry partners
- Ivey School of Business (master plan/business plan)
- CAMIS Reservations System



Targets: Budget



A commitment to achieve Environmental Targets represents the most significant programming change in the UTRCA's nearly 70 year history. New funding will be required if these Environmental Targets are to be achieved. This new funding is needed to expand staff support for landowners and other groups, for preliminary studies to ensure programs are targeted effectively, for incentives to encourage conservation, and for small capital demonstration projects.

Overall, a 32% budget increase is proposed to support a doubling of conservation efforts. In real dollars, \$4 million is needed in addition to the UTRCA's current \$12.5 million budget. The majority of new revenue is proposed to come from user fees and provincial and federal sources. Municipal support is needed to leverage these other sources. The UTRCA is proposing that most of this new revenue be phased-in over a four year period (2017-2020). The following three pages detail the costs, potential revenue sources, and a planned four year phase-in of new funding.

Targets Budget

Annual Expenses (2016\$) After Full Implementation					Cost by Target			
Category	Position/ Expense	# FTEs*	Unit Cost	Annual Total	1. Water Quality	2. Natural Areas	3. Hazard Management	4. Outdoor Recreation/ Education
1. Staff Capacity** (a) Technical Staff	Water Quality Target							
	Rural/ Urban Stewardship Program Staff	4	\$149,000	\$596,000	\$596,000			
	Natural Areas Target							
	Natural Areas Restoration Program Staff	4	\$149,000	\$596,000		\$596,000		
	Flood Control Target							
	Monitoring/ Information Management (Capital)	1	\$149,000	\$149,000			\$149,000	
	Field Survey Staff (4 seasonal staff)	0.8	\$149,000	\$119,200			\$119,200	
	Modeller (Hydrology and Hazard Mapping)	2	\$149,000	\$298,000			\$298,000	
	Plan Review Staff (Hydrology)	1	\$149,000	\$149,000			\$149,000	
	Outdoor Recreation/ Education Target							
	Green Infrastructure Plan Coordinator/ Facility Manager	1	\$149,000	\$149,000				\$149,000
	Land Management Staff	1	\$149,000	\$149,000				\$149,000
	Conservation Area Staff	2	\$149,000	\$298,000				\$298,000
(b) Marketing/ Partnerships Staff	Marketing Staff	1	\$149,000	\$149,000	\$37,250	\$37,250	\$37,250	\$37,250
	Partnerships Staff	2	\$149,000	\$298,000	\$74,500	\$74,500	\$74,500	\$74,500
(c) Monitoring Staff	Fundraising/ Tracking Coordinator	1	\$149,000	\$149,000	\$37,250	\$37,250	\$37,250	\$37,250
	Monitoring/ Data Analysis Staff	1	\$149,000	\$149,000	\$37,250	\$37,250	\$37,250	\$37,250
2. Consultants and Outside Support***	CA Lands - Use Survey		\$50,000	\$2,500				\$2,500
	CA Lands - Facility and Education Plans		\$100,000	\$5,000				\$5,000
	Multi-target Marketing Plans		\$75,000	\$3,750	\$938	\$938	\$938	\$938
	Green Infrastructure Baseline Study		\$50,000	\$2,500				\$2,500
	Green Infrastructure Management Plan		\$80,000	\$4,000				\$4,000
3. Grants/ Incentives	Clean Water Program Incentive Funding			\$700,000	\$350,000	\$350,000		
4. Capital	Increase to Capital Maintenance Levy			\$60,000				\$60,000
Grand Total				\$4,025,950	\$1,133,188	\$1,133,188	\$902,388	\$857,188

*FTEs = Full Time Equivalents

**Staff Capacity = Unit Cost Wages based on Grade Level 8, job rate plus benefits, mandatory employment related costs, support and administration (occupancy, fleet, HR, finance, IT, administration, communications)

***Consultants and Outside Support costs amortized over 20 years

Environmental Targets: Proposed Revenue

Proposed Revenue Allocations (%)				
Revenue Sources	Water Quality	Natural Areas	Hazard Management	Outdoor Recreation/ Education
Provincial/ Federal Transfer Payment	40.0%	0.0%	65.0%	10.0%
Municipal Levy	30.0%	30.0%	30.0%	20.0%
Contracts	10.0%	20.0%	5.0%	20.0%
User Fees	20.0%	50.0%	0.0%	50.0%

Budget Revenue Allocations (\$)	Water Quality	Natural Areas	Hazard Management	Outdoor Recreation/ Education	Total	Percent of New \$
Total Investment Needed	\$1,133,188	\$1,133,188.00	\$902,388	\$857,188	\$4,025,952	
Proposed Revenue Sources						
Provincial/ Federal Transfer Payment	\$453,275	\$0	\$586,552	\$85,719	\$1,125,546	28.0%
Municipal Levy	\$339,956	\$339,956	\$270,716	\$171,438	\$1,122,067	27.9%
Contracts	\$113,319	\$226,638	\$45,119	\$171,438	\$556,513	13.8%
User Fees	\$226,638	\$566,594	\$0	\$428,594	\$1,221,826	30.3%

Notes:

Contracts and Provincial/ Federal Transfer Payment are somewhat interchangeable.
Restores 50/50 ratio between levy and senior government funding.

Funding Phase-in Plan

Target	Additional Funding Required/Year						Total New Revenue
	2017	2018	2019	2020	2017-2020 Total	2021-2025	
1. Water Quality							
Provincial/ Federal Transfer Payment	\$75,000	\$200,000	\$100,000	\$78,275	\$453,275		\$453,275
Municipal Levy	\$0	\$149,000	\$144,065	\$46,891	\$339,956		\$339,956
Contracts	\$0	\$0	\$57,000	\$56,319	\$113,319		\$113,319
User Fees	\$0	\$20,000	\$40,000	\$40,000	\$100,000	\$126,638	\$226,638
2. Natural Areas							
Provincial/ Federal Transfer Payment	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Municipal Levy	\$0	\$0	\$144,065	\$195,891	\$339,956	\$0	\$339,956
Contracts	\$25,000	\$50,000	\$50,000	\$50,000	\$175,000	\$51,638	\$226,638
User Fees	\$0	\$25,000	\$25,000	\$100,000	\$150,000	\$416,594	\$566,594
3. Hazard Management							
Provincial/ Federal Transfer Payment	\$50,000	\$100,000	\$100,000	\$100,000	\$350,000	\$236,552	\$586,552
Municipal Levy	\$149,000	\$121,716	\$0	\$0	\$270,716	\$0	\$270,716
Contracts	\$0	\$45,119	\$0	\$0	\$45,119	\$0	\$45,119
User Fees	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4. Outdoor Recreation/ Education							
Provincial/ Federal Transfer Payment	\$0	\$0	\$0	\$50,000	\$50,000	\$35,719	\$85,719
Municipal Levy	\$107,676	\$0	\$0	\$63,762	\$171,438	\$0	\$171,438
Contracts	\$0	\$50,000	\$50,000	\$50,000	\$150,000	\$21,438	\$171,438
User Fees	\$0	\$25,000	\$25,000	\$50,000	\$100,000	\$328,594	\$428,594

Annual Increase by Revenue Source							
Provincial/ Federal Transfer Payment	\$125,000	\$300,000	\$200,000	\$228,275	\$853,275	\$272,271	\$1,125,546
Municipal Levy	\$256,676	\$270,716	\$288,130	\$306,544	\$1,122,066	\$0	\$1,122,066
Contracts	\$25,000	\$145,119	\$157,000	\$156,319	\$483,438	\$73,076	\$556,514
User Fees	\$0	\$70,000	\$90,000	\$190,000	\$350,000	\$871,826	\$1,221,826
TOTAL	\$406,676	\$785,835	\$735,130	\$881,138	\$2,808,779	\$1,217,173	\$4,025,952

Concepts:

1. Annual levy increases = ~6.0%
2. Hazard Management is the levy priority for the first two years and is then stable.
3. Water Quality comes on-stream for levy in Year 2.
4. Natural Areas comes on-stream for levy in Year 3.
5. Outdoor Recreation receives levy in Years 1 and 4.
6. Levy is needed first to develop capacity and to be used as leverage to generate new senior government funding and contracts in future years.
7. User fee revenue increases are not predicted to come in full until after the first four years as up-front work and program development is needed before demand increases.
8. Unclear if Federal/ Provincial \$ will actually materialize as a transfer payment (perhaps through CA Act Review) or as contracts e.g., National Disaster Mitigation Program (NDMP).
9. \$700K is flow through \$ in the form of Clean Water Program grants (18% of requested \$).
10. Immediate opportunities: Environment and Climate Change Canada/Great Lakes, NDMP, CA Act Review, etc.