

APPENDIX M

Subwatershed 13 Targets and CRWMSU Framework for Subwatershed Targets

East Credit Subwatershed Study
Phase III – Management Plan and Implementation Report

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1.0 INTRODUCTION

In the early 1990's, CVC and its member municipalities completed the Credit River Watershed Management Strategy that established a framework for environmental management, resource stewardship and environmentally sound urban planning throughout the watershed. The Strategy established a Watershed-wide Goal and Objectives to guide these initiatives as future changes occurred in the municipalities. The Strategy was unique in its day, because it also characterized the issues facing each of the 20 subwatersheds in the watershed and developed objectives and targets for each one, based on each subwatershed's unique environmental conditions and land use planning issues. The 1992 Credit River Watershed Strategy was also unique in that it established a series of measurable parameters and targets, for each objective, that could be used to identify how well or poorly progress was being made to meet each objective.

Since that time, CVC and its member municipalities have proceeded to implement the watershed strategy by completing more detailed studies (subwatershed studies) on each of the 20 subwatersheds. The East Credit Subwatershed Study is one of these detailed subwatershed studies. As part of the subwatershed study, targets have been developed for the East Credit (see **Table 1.0**). These subwatershed targets use the framework for subwatershed targets developed in the Credit River Water Management Strategy Update (CRWMSU), completed in 2007 (see **Table 2.0**). They also reflect the findings of the East Credit Subwatershed Study, and the information gathered through the watershed-wide monitoring that CVC began in 1999. This comprehensive watershed-wide environmental monitoring program (Integrated Watershed Monitoring Program) tracks changes in the health of the watershed and its resources.

It is the objective of the East Credit Subwatershed Study to meet these targets over time. Where existing conditions are better than the targets, these conditions are to be maintained over time. Further information on the process and approach to the developing goals, objectives and targets for the watershed and subwatersheds can be found in the CRWMSU.

Table 1.0 East Credit Subwatershed Targets

Objective #4	
Preserve and re-establish the natural hydrologic cycle	
Indicator	Measurable Parameter
Watershed Peakiness 1	Riparian Flow Compared to Baseflow ($Q_{25}/Q_{baseflow}$)
Watershed Peakiness 2	Bankfull Flow Compared to Baseflow ($Q_{bankfull}(0.8xQ_2)/Q_{baseflow}$)
Flow Time Series	Ratio of a Flow Time Series ($Q_2:Q_5:Q_{10}:Q_{25}:Q_{50}$ m ³ /s) Compared to Historic Time Series
Objective # 5	
Maintain, enhance or restore natural stream processes to achieve a balance of flow and sediment transport	
Indicator	Measurable Parameter
Instream Erosion Potential 1	Ratio of the Current Bankfull Flow Compared to Historic Bankfull Flow ($Q_{bankfull}$ relative to historic value)
Instream Erosion Potential 2	Erosion Threshold (shear stress or other variable).
Stable Bed Sediment Regime	Particle Size Distribution and Mean Particle Size of Bed Sediments (D_{50} : D_{85} particle size)
Objective # 6	
Manage stream flow to reduce erosion impacts on habitats and property	
Indicator	Measurable Parameter
Protection of Property and Structures	Risk to Structures within Areas Prone to Erosion (the number of affected structures under a Q_5 event)

Objective #4	Interim Target	References/Notes
Watershed Peakiness 1	To be modeled for each subwatershed. Interim Targets are Peakiness (existing) = 109; Peakiness (historic) = 27	Riparian Flow Compared to Baseflow is an indicator of flooding characteristics. Higher ratios than the historic condition indicate a less natural flooding regime.
Watershed Peakiness 2	To be modeled for each subwatershed. Interim Targets are Peakiness (existing) = 21; Peakiness (historic) = 6	Bankfull Flow Compared to Baseflow is an indicator of natural in-stream flow characteristics. Higher ratios than the historic condition indicate a less natural flow regime.
Flow Time Series	Each ratio should be less than 1.5 times the comparable historic value. Interim Targets (i.e., 1.5 x historic time series flow) = 3.9, 7.8, 10.8, 14.6, 18	Ratio of a Flow Time Series Compared to Historic Time Series is an indicator of the extent to which the natural hydrology of the stream has been altered.
Objective # 5		
Maintain, enhance or restore natural stream processes to achieve a balance of flow and sediment transport		References/Notes
Instream Erosion Potential 1	To be calculated for each subwatershed. The target is to maintain the existing ratio or achieve a net reduction. Existing ratio = 3.5 Interim Target < 1.5 Target < 1.5 (existing = 5.2)	Ratio of the Current Bankfull Flow Compared to Historic Bankfull Flow is an indicator of changing erosional/depositional stresses on the geometry of the stream channel.
Instream Erosion Potential 2	To be determined for each subwatershed. The target to be developed based on monitoring	
Stable Bed Sediment Regime	To be determined for each subwatershed. Targets to be developed based on monitoring.	Particle Size Distribution and Mean Particle Size of Bed Sediments is an indicator of their stability. A shifting trend in this distribution indicates channel instability.
Objective # 6		
Manage stream flow to reduce erosion impacts on habitats and property		References/Notes
Protection of Property and Structures	To be determined on a subwatershed basis. Target is no increase or a net decrease in number of affected structures.	The Risk to Structures that are within areas prone to erosion (the number of affected structures under a Q_5 event) increases when the erosion stress in the channel is increased. If flows of a certain duration increase, more structures may become erosion prone.

Objective # 7	Minimize risk to human life and property due to flooding		
Indicator	Measurable Parameter	Interim Target	References/Notes
Protection of Life and Property	Regulatory Peak Flood Flow	To be calculated for each subwatershed. The target is no increase or a net reduction in the regulatory flood flow. Interim Target < 151 cms (Regional – Hurricane Hazel)	An increase in the Regulatory Peak Flood Flow (the Q_{100} or Q_{regional}) can increase the risk to life and property from flooding.
Objective # 8	Maintain groundwater levels and baseflows (groundwater discharge to streams) to sustain watershed functions, human uses and climatological change		
Indicator	Measurable Parameter	Interim Targets	References/Notes
Baseflows in Streams	Ratio of Baseflow to Mean Annual Flow	To be determined for each subwatershed. Interim target is 25%.	The Ratio of the Baseflow to the Mean Annual Flow (baseflow as a percentage of Mean Annual Flow) is an indicator of the suitability of a watercourse to support different types of fish communities.
Groundwater Discharge	Existing Stream Baseflow	No Reduction. To be determined on a subwatershed basis (or other functionally related area). Interim target = $0.35 \text{ m}^3/\text{s}$	The Existing Stream Baseflow is an indicator of the minimum habitat available for fish and affects stream thermal stability (Measured Base Flows).
Recharge Areas	Average Recharge on a Subwatershed Basis	No Reduction. To be determined on a subwatershed basis (or other functionally related area). Interim target = 198 mm/yr	The Average Recharge on a Subwatershed Basis is directly related to the natural water balance. Any reduction in recharge over the area of the subwatershed may indicate increased runoff and decreased stream baseflow.
Water Table Elevations	Average Water Table Elevation	No Reduction. To be determined on a subwatershed basis (or other functionally related basis). Interim target = 307 m asl	The Average Water Table Elevation is an indicator of the natural water table elevation. A lowering of the water table may indicate a reduction in groundwater supplies and a reduction in groundwater discharge to streams.
Objective # 9	Maintain or enhance water and sediment quality to achieve ecological integrity		
Indicator	Measurable Parameter	Interim Targets	References/Notes
Dissolved Oxygen	Minimum Dissolved Oxygen	6 mg/L (coldwater)	Provincial Water Quality Objectives
Water Temperature 1	Absolute Maximum Summer Water Temperature	26°C (coldwater)	Source: Ontario Ministry of Natural Resources and Canadian Department of Fisheries and Oceans, no date. A simple Method to Determine the Thermal Stability of Southern Ontario Trout Streams Personal Communication: Jim Bewlby and Jack Imhof

Water Temperature 2	Daily Maximum Summer Average Water Temperature	20°C (coldwater)	Source: Ontario Ministry of Natural Resources and Canadian Department of Fisheries and Oceans, no date. A simple Method to Determine the Thermal Stability of Southern Ontario Trout Streams Personal Communication: Jim Bewlby and Jack Imhof
Copper	75 percentile	0.005 mg/L	Provincial Water Quality Objectives
Iron	75 percentile	0.3 mg/L	Provincial Water Quality Objectives
Zinc	75 percentile	0.02 mg/L	Provincial Water Quality Objectives
Total Phosphorus	75 percentile	0.03 mg/L	Provincial Water Quality Objectives
Nitrate –Nitrogen	75 percentile	2.9 mg/L	Federal Canadian Council of Ministers of the Environment Guideline (CCME)
Suspended Solids	75 percentile	<25 mg/L (dry)	Federal Canadian Council of Ministers of the Environment Guideline (CCME)
Chlorides	75 percentile	<250 mg/L	Canadian Drinking Water Quality Guidelines/ Ontario Drinking Water Quality Standards
Objective # 15			
Protect, restore or enhance the integrity of the watershed ecosystem, through an integrated network of natural areas, habitats and connecting links			
Indicator	Measurable Parameter	Interim Targets	References/Notes
Riparian Cover 1	Width of the Riparian Buffer	At a minimum 30 m back from each stream (coldwater); Recommended 30 m to 50 m; and Recommended 50 m to 100 m (main branch of East Credit).	The Width of the Buffer (width in m) in natural vegetation is an indicator of the buffer's ability to provide key functions (attenuation of water quality/quantity, stream microclimate, shading, etc.). (Environment Canada, Canadian Wildlife Service, 2004, How Much Habitat is Enough? A Framework to Guide Habitat Rehabilitation in Great Lakes Areas of Concern. Second Edition. Minister of Public Works and Government Services Canada. Downsview.)
Riparian Cover 2	Percent of Stream Length Buffered	75% of stream length in natural vegetation	The Percent of Stream Length Buffered (length of natural stream buffer along the stream) is an indicator of its ability to provide key functions. (Environment Canada, 2004.)
Forest Cover	Percent of the Subwatershed Forested	Interim subwatershed target is 30%.	The Percent of the Subwatershed Forested is an indicator of the sustainability of the natural environment and an indicator of the ability of native forests to provide sustainable watershed benefits such as improving air quality, sequestering carbon, etc. (Federal Great Lakes target >30% on a watershed basis). (Environment Canada, 2004.)
Wetland Cover	Percent of the Subwatershed in Wetlands	Interim subwatershed target is 10%.	The Percent of the Subwatershed in Wetlands is an indicator of the sustainability of the natural environment (Federal Great Lakes target >10% on a watershed basis). (Environment Canada, 2004.)

Interior Forest/Core Habitat	Percent of Forested Habitat > 100 m from Edge ² .	Subwatershed target is a net gain over existing conditions. To be calculated on a subwatershed basis. <i>Currently there is 15.6% of forested area that is comprised of 100 metre core.</i>	The Percent of Forested Habitat > 100 m from edge (a cumulative total of this area over the total watershed) is an indicator of a high quality terrestrial habitat that supports a unique assemblage of species that are generally intolerant of urban environments. (The watershed target is a minimum of 10% over the entire watershed). (Environment Canada, 2004.)
Large Habitat Units	Percent of Natural Vegetation in 200 ha or Larger Patches ³ .	Subwatershed target is a net gain over existing conditions. To be calculated on a subwatershed basis. <i>Currently, there are no patches of natural vegetation that are equal or greater than 200 ha.</i>	The Percent of Natural Vegetation in 200 ha or larger patches over the entire watershed is an indicator of a high quality terrestrial habitat that supports a unique assemblage of species that are generally intolerant of urban environments. They also represent large expanses of natural habitat that serve as natural refuges and centres of ecological and genetic diversity that preserves biosphere-scale biological diversity. (The watershed target is a minimum of 10% over the entire watershed). (Environment Canada, 2004.)
Objective # 16			
Protect, restore or enhance native terrestrial and aquatic plant and animal species, community diversity and productivity			
Indicator	Measurable Parameter	Interim Targets	References/Notes
Aquatic Indicator Species 1	Healthy Populations of Representative Fish Communities	Cold: brook/brown trout and mottled sculpin	Representative fish communities - cold, mixed, warm - have specific habitat requirements that must be present on a subwatershed basis in order for the species that make up the community to persist. Healthy Populations of the Representative Fish Communities are indicators that the stream environment is healthy.
Aquatic Indicator Species 2	Productive Capacity of Habitat	Fish biomass per unit area or fish biomass IBI scores. Target is a net gain on a subwatershed basis, to be determined by monitoring.	The Productive Capacity of Habitat relates to DFO's Fish Habitat Policy. Productive Capacity of Habitat (DFO Fish Habitat Policy) or amount of fish produced by the aquatic habitat in a waterbody is a measure of the waterbody's productive capacity. Generally, better quality habitats produce more fish, and the federal policy is to achieve an overall increase in the productive capacity of aquatic habitats. The total weight of fish produced per unit of habitat (fish biomass) or a relative score based on the species of fish present and their relative biomass (fish biomass IBI score) is a measure of productive capacity.
Species At Risk	Number of Special Status Species Present and Amount of Species At Risk Recovery Habitat Present	Watershed target to be established through monitoring. Target is a net gain over existing conditions on a subwatershed basis.	Number of Special Status Species present is an indicator of ecosystem health, as is the amount of Species At Risk recovery habitat present.
Vegetation Communities	Average Number of Different ELC Community Types per Vegetation Patch	The average number of ELC communities/unit natural area is to be determined through monitoring on a subwatershed basis. Target is a net gain on a	The Average Number of Different ELC Community Types per Vegetation Patch is an indicator of diversity. Higher numbers of communities indicate higher diversity of natural habitats. Ecological Land Classification is a standard classification system

		subwatershed basis	for characterizing natural habitats based on vegetation.
Vegetation Indicator Species 1	Floristic Quality Assessment (FQA)	The FQA is to be determined through monitoring on a subwatershed basis. Target is a net gain on a subwatershed basis.	The FQA is calculated based on an inventory of the native flora of a particular vegetation community. Each native floral species has been assigned a numeric value (0 [low] to 10 [high]), by the Natural Heritage Information Centre, that relates to the degree of species sensitivity or habitat specialization. The values of each species are added and divided by the total number of native species. Higher quality communities will have a higher mean coefficient. Oldham, M.J., W.D. Bakowsky, and D.A. Sutherland. 1995. Floristic Quality Assessment for southern Ontario. Natural Heritage Information Centre, Peterborough, Ontario.
Vegetation Indicator Species 2	Percent Non -Native Species	The percentage of non -native species is to be determined through monitoring on a subwatershed basis. Target is a net gain on a subwatershed basis.	The percentage of non -native species is an indicator of the quality or condition of natural areas. Impacted or poor quality natural areas tend to exhibit a higher percentage of non-native species.

Notes:

1. Where existing conditions are better than interim targets, existing conditions are to be maintained.
2. The following conditions are in effect for the percentage of forested area that is comprised of 100 metre core:
 - both the woodlots and the forest core polygons were clipped to the subwatershed 13 boundary;
 - woodlots were comprised of forest, plantation and swamp;
 - within the clipped boundary, the amount of woodlot is 904.31 ha; and
 - within the clipped boundary, the amount of 100m forest core is 141.52 ha.
3. Natural vegetation includes plantations and cultural.

Table 2.0 Framework for Subwatershed Objectives, Indicators and Targets (Credit River Water Management Strategy Update, November 2007)

Objective	Preserve and re-establish the natural hydrologic cycle			References / Notes
	Indicator	Measurable Parameter	Target	
	Watershed Peakiness 1	Riparian Flow Compared to Baseflow ($Q_{25}/Q_{baseflow}$)	To be modeled for each subwatershed.	Riparian Flow Compared to Baseflow is an indicator of flooding characteristics. Higher ratios than the historic condition indicate a less natural flooding regime.
	Watershed Peakiness 2	Bankfull Flow Compared to Baseflow ($Q_{bankfull}(0.8xQ_2)/Q_{baseflow}$)	To be modeled for each subwatershed.	Bankfull Flow Compared to Baseflow is an indicator of natural in-stream flow characteristics. Higher ratios than the historic condition indicate a less natural flow regime.
	Flow Time Series	Ratio of a Flow Time Series ($Q_2; Q_5; Q_{10}; Q_{25}; Q_{50} m^3/s$) Compared to Historic Time Series	Each ratio should be less than 1.5 times the comparable historic value.	Ratio of a Flow Time Series Compared to Historic Time Series is an indicator of the extent to which the natural hydrology of the stream has been altered.
	Maintain, enhance or restore natural stream processes to achieve a balance of flow and sediment transport			References / Notes
	Indicator	Measurable Parameter	Target	
	Instream Erosion Potential 1	Ratio of the Current Bankfull Flow Compared to Historic Bankfull Flow ($Q_{bankfull}$ relative to historic value)	To be calculated for each subwatershed. The target is to maintain the existing ratio or achieve a net reduction.	Ratio of the Current Bankfull Flow Compared to Historic Bankfull Flow is an indicator of changing erosional/depositional stresses on the geometry of the stream channel.
	Instream Erosion Potential 2	Erosion Threshold (shear stress or other variable).	To be determined for each subwatershed. The target to be developed based on monitoring	
	Stable Bed Sediment Regime	Particle Size Distribution and Mean Particle Size of Bed Sediments ($D_{50}; D_{85}$ particle size)	To be determined for each subwatershed. Targets to be developed based on monitoring.	Particle Size Distribution and Mean Particle Size of Bed Sediments is an indicator of their stability. A shifting trend in this distribution indicates channel instability.
	Manage stream flow to reduce erosion impacts on habitats and property			References / Notes
	Indicator	Measurable Parameter	Target	
	Protection of Property and Structures	Risk to Structures within Areas Prone to Erosion (the number of affected structures under a Q_5 event)	To be determined on a subwatershed basis. Target is no increase or a net decrease in number of affected structures.	The Risk to Structures that are within areas prone to erosion (the number of affected structures under a Q_5 event) increases when the erosion stress in the channel is increased. If flows of a certain duration increase, more structures may become erosion prone.

7 Minimize risk to human life and property due to flooding			
Indicator	Measurable Parameter	Target	References / Notes
Protection of Life and Property	Regulatory Peak Flood Flow	To be calculated for each subwatershed. The target is no increase or a net reduction in the regulatory flood flow.	An increase in the Regulatory Peak Flood Flow (the Q_{100} or $Q_{regional}$ event (m^3/s)) can increase the risk to life and property from flooding.
8 Maintain groundwater levels and baseflows (groundwater discharge to streams) to sustain watershed functions, human uses and climatological change			
Indicator	Measurable Parameter	Targets	References / Notes
Baseflows in Streams	Ratio of Baseflow to Mean Annual Flow	To be determined for each subwatershed.	The Ratio of the Baseflow to the Mean Annual Flow (baseflow as a percentage of Mean Annual Flow) is an indicator of the suitability of a watercourse to support different types of fish communities.
Groundwater Discharge	Existing Stream Baseflow	No Reduction. To be determined on a subwatershed basis (or other functionally related area).	The Existing Stream Baseflow is an indicator of the minimum habitat available for fish and affects stream thermal stability (Measured Base Flows).
Recharge Areas	Average Recharge on a Subwatershed Basis	No Reduction. To be determined on a subwatershed basis (or other functionally related area).	The Average Recharge on a Subwatershed Basis is directly related to the natural water balance. Any reduction in recharge over the area of the subwatershed may indicate increased runoff and decreased stream baseflow.
Water Table Elevations	Average Water Table Elevation	No Reduction. To be determined on a subwatershed basis (or other functionally related basis).	The Average Water Table Elevation is an indicator of the natural water table elevation. A lowering of the water table may indicate a reduction in groundwater supplies and a reduction in groundwater discharge to streams.
9 Maintain or enhance water and sediment quality to achieve ecological integrity			
Indicator	Measurable Parameter	Targets	References / Notes
Dissolved Oxygen	Minimum Dissolved Oxygen	6 mg/L (coldwater and mixed water) 5 mg/L (warmwater)	Provincial Water Quality Objectives
Water Temperature ₁	Absolute Maximum Summer Water Temperature	26°C (coldwater) 28°C (mixed water) 30°C (warmwater)	Credit River Fisheries Management Plan
Water Temperature ₂	Daily Maximum Summer Average Water Temperature	20°C (coldwater) 23°C (mixed water) 26°C (warmwater)	Credit River Fisheries Management Plan
Copper	75 percentile	0.005 mg/L	Provincial Water Quality Objectives
Iron	75 percentile	0.3 mg/L	Provincial Water Quality Objectives
Zinc	75 percentile	0.02 mg/L	Provincial Water Quality Objectives

	Total Phosphorus	75 percentile	0.03 mg/L	Provincial Water Quality Objectives
	Nitrate – Nitrogen	75 percentile	2.9 mg/L	Federal Canadian Council of Ministers of the Environment Guideline (CCME)
	Suspended Solids	75 percentile	<25 mg/L (dry)	Federal Canadian Council of Ministers of the Environment Guideline (CCME)
	Chlorides	75 percentile	<250 mg/L	Canadian Drinking Water Quality Guidelines/ Ontario Drinking Water Quality Standards
15	Protect, restore or enhance the integrity of the watershed ecosystem, through an integrated network of natural areas, habitats and connecting links			
	Indicator	Measurable Parameter	Targets	References / Notes
	Riparian Cover 1	Width of the Riparian Buffer	15 m back from each streambank (warmwater) 30 m back from each stream (coldwater)	The Width of the Buffer (width in m) in natural vegetation is an indicator of the buffer's ability to provide key functions (attenuation of water quality/quantity, stream microclimate, shading, etc.). (Environment Canada, Canadian Wildlife Service, 2004, How Much Habitat is Enough? A Framework to Guide Habitat Rehabilitation in Great Lakes Areas of Concern. Second Edition. Minister of Public Works and Government Services Canada. Downsview.)
	Riparian Cover 2	Percent of Stream Length Buffered	75% of stream length in natural vegetation	The Percent of Stream Length Buffered (length of natural stream buffer along the stream) is an indicator of its ability to provide key functions. (Environment Canada, 2004.)
	Forest Cover	Percent of the Subwatershed Forested	To be calculated on a subwatershed basis.	The Percent of the Subwatershed Forested is an indicator of the sustainability of the natural environment and an indicator of the ability of native forests to provide sustainable watershed benefits such as improving air quality, sequestering carbon, etc. (Federal Great Lakes target >30% on a watershed basis). (Environment Canada, 2004.)
	Wetland Cover	Percent of the Subwatershed in Wetlands	To be calculated on a subwatershed basis.	The Percent of the Subwatershed in Wetlands is an indicator of the sustainability of the natural environment (Federal Great Lakes target >10% on a watershed basis). (Environment Canada, 2004.)
	Interior Forest/Core Habitat	Percent of Forested Habitat > 100 m from Edge	Subwatershed target is a net gain over existing conditions. To be calculated on a subwatershed basis.	The Percent of Forested Habitat > 100 m from edge (a cumulative total of this area over the total watershed) is an indicator of a high quality terrestrial habitat that supports a unique assemblage of species that are generally intolerant of urban environments. (The watershed target is a minimum of 10% over the entire watershed). (Environment Canada, 2004.)

	Large Habitat Units	Percent of Natural Vegetation in 200 ha or Larger Patches	Subwatershed target is a net gain over existing conditions. To be calculated on a subwatershed basis.	The Percent of Natural Vegetation in 200 ha or larger patches over the entire watershed is an indicator of a high quality terrestrial habitat that supports a unique assemblage of species that are generally intolerant of urban environments. They also represent large expanses of natural habitat that serve as natural refuges and centres of ecological and genetic diversity that preserves biosphere-scale biological diversity. (The watershed target is a minimum of 10% over the entire watershed). (Environment Canada, 2004.)
16	Protect, restore or enhance native terrestrial and aquatic plant and animal species, community diversity and productivity			
	Indicator	Measurable Parameter	Targets	References
	Aquatic Indicator Species 1	Healthy Populations of Representative Fish Communities	<p>Small Warmwater targets are: creek chub, blacknose dace, stickleback, bluntnose minnow, fathead minnow, white sucker.</p> <p>Large Warmwater targets are: smallmouth bass, largemouth bass, northern pike, river chub, shiners (emerald, spottail, rosyside, spotfin)</p> <p>Cool/Warmwater targets are: migratory salmonids, central mudminnow, northern redbelly dace, reddsides dace.</p> <p>Cold/Coolwater targets are: brown trout, rainbow trout, rainbow darter, fantail darter, northern hogsucker, stonecat, mottled sculpin, American brook lamprey.</p> <p>Coldwater targets are: brook trout, brown trout, rainbow trout, mottled/slimy sculpin.</p>	Representative fish communities - cold, mixed, warm - have specific habitat requirements that must be present on a subwatershed basis in order for the species that make up the community to persist. Healthy Populations of the Representative Fish Communities are indicators that the stream environment is healthy.
	Aquatic Indicator Species 2	Productive Capacity of Habitat	Fish biomass per unit area or fish biomass IBI scores. Target is a net gain on a subwatershed basis, to be determined by monitoring.	The Productive Capacity of Habitat relates to DFO's Fish Habitat Policy. Productive Capacity of Habitat (DFO Fish Habitat Policy) or amount of fish produced by the aquatic habitat in a waterbody is a measure of the waterbody's productive capacity. Generally, better quality habitats produce more fish, and the federal policy is to achieve an overall increase in the productive capacity of aquatic habitats. The total weight of fish produced per unit of habitat (fish biomass) or a relative score based on the species of fish present and their relative biomass (fish biomass IBI score) is a measure of productive capacity.
	Species At Risk	Number of Special Status Species Present and Amount of Species At Risk Recovery Habitat Present	Watershed target to be established through monitoring. Target is a net gain over existing conditions on a subwatershed basis.	Number of Special Status Species present is an indicator of ecosystem health, as is the amount of Species At Risk recovery habitat present.

	Vegetation Communities	Average Number of Different ELC Community Types per Vegetation Patch	The average number of ELC communities/unit natural area is to be determined through monitoring on a subwatershed basis. Target is a net gain on a subwatershed basis	The Average Number of Different ELC Community Types per Vegetation Patch is an indicator of diversity. Higher numbers of communities indicate higher diversity of natural habitats. Ecological Land Classification is a standard classification system for characterizing natural habitats based on vegetation.
	Vegetation Indicator Species 1	Floristic Quality Assessment (FQA)	The FQA is to be determined through monitoring on a subwatershed basis. Target is a net gain on a subwatershed basis.	The FQA is calculated based on an inventory of the native flora of a particular vegetation community. Each native floral species has been assigned a numeric value (0 [low] to 10 [high]), by the Natural Heritage Information Centre, that relates to the degree of species sensitivity or habitat specialization. The values of each species are added and divided by the total number of native species. Higher quality communities will have a higher mean coefficient. Oldham, M.J., W.D. Bakowsky, and D.A. Sutherland. 1995. Floristic Quality Assessment for southern Ontario. Natural Heritage Information Centre, Peterborough, Ontario.
	Vegetation Indicator Species 2	Percent Non -Native Species	The percentage of non -native species is to be determined through monitoring on a subwatershed basis. Target is a net gain on a subwatershed basis.	The percentage of non -native species is an indicator of the quality or condition of natural areas. Impacted or poor quality natural areas tend to exhibit a higher percentage of non-native species.

Notes:

1. Where existing conditions are better than interim targets, existing conditions are to be maintained.
2. Subwatershed Targets are to be developed by the CVC Subwatershed specialist with technical staff during the development or updating of Subwatershed Plans

2.0 REFERENCES

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