

# Appendix 1. Aquatic Resources

Table A1.1: Trout Creek Benthic Water Quality Sampling Summary

Watercourse Name	Location	Sample Date	Family Biotic Index (FBI) Value	
Harrington Creek	Near Harrington	6/4/1997	5.535353535	Fair
		6/22/1998	5.214953271	Fair
		6/25/1999	5.051282051	Fair
		6/25/1999	5.18852459	Fair
		6/5/2000	4.8359375	Good
		10/2/2000	5.301886792	Fair
		6/19/2001	4.220588235	Excellent
		6/19/2002	4.274038462	Good
		6/10/2003	4.171232877	Excellent
		5/31/2004	4.791666667	Good
		5/30/2006	4.850828729	Good
		10/6/2006	5.26910299	Fair
		5/30/2007	4.86039886	Good
		10/1/2007	5.264026403	Fair
5/28/2008	5.293706294	Fair		
John Green Drain	Upstream of Road 96	6/25/2003	6.285714286	Fairly Poor
		10/23/2003	7.141304348	Poor
Kerr Lupton Drain	Line 35	6/22/1998	6.072727273	Fairly Poor
		6/25/1999	5.844660194	Fairly Poor
		6/19/2001	5.921296296	Fairly Poor
Kerr-Lupman Drain Branch D	45th Line	6/25/2003	6.175159236	Fairly Poor
		10/23/2003	6.595477387	Poor
Kerr-Lupton Drain	West of Tavistock	6/22/1999	6.1	Fairly Poor
Lowe Drain	County Road 26	6/19/2007	5.891129032	Fairly Poor
Rolston Drain	St. Marys	12/7/2003	4.223880597	Excellent
		10/6/2006	6.299465241	Fairly Poor
Trout Creek	At Dump Road	6/2/2000	7.462809917	Very Poor
	Below County Road 20	6/3/1997	6.069565217	Fairly Poor
		6/22/1998	6.289719626	Fairly Poor
		6/22/1999	5.930693069	Fairly Poor
		6/22/1999	6.062857143	Fairly Poor
		6/5/2000	7.423728814	Very Poor
		10/2/2000	6.027777778	Fairly Poor
		6/19/2001	6.688995215	Poor
6/19/2002	7.680089485	Very Poor		

Watercourse Name	Location	Sample Date	Family Biotic Index (FBI) Value	
	Below Junction of Main Tributaries	6/10/2003	6.185328185	Fairly Poor
		5/31/2004	5.852380952	Fairly Poor
		5/26/2005	6.207885305	Fairly Poor
		5/30/2006	6.07860262	Fairly Poor
		5/30/2007	5.494773519	Fair
		5/28/2008	6.095808383	Fairly Poor
		7/8/2008	5.237373737	Fair
	Below Wildwood Reservoir	6/27/1997	6.762135922	Poor
	Between Wildwood and St. Marys	6/27/1997	6.782945736	Poor
	Perth County Road 9	6/22/1998	6.923728814	Poor
		6/4/1999	6.877192982	Poor
		6/8/2000	6.441947566	Fairly Poor
		6/20/2002	7.433962264	Very Poor
		6/10/2003	6.653846154	Poor
		5/31/2004	7.527675277	Very Poor
		5/26/2005	7.204678363	Poor
		5/30/2006	6.702564103	Poor
		5/30/2007	6.89047619	Poor
		5/28/2008	7.742930591	Very Poor
			St. Marys - Station St. south of Peel St. N.	10/1/2007
	Township/County Line Upstream of Wildwood Reservoir	6/5/2000	6.723214286	Poor
		6/19/2001	6.32173913	Fairly Poor
		6/12/2002	6.810559006	Poor
		10/2/2006	4.628440367	Good
		5/30/2007	6.020408163	Fairly Poor
		10/1/2007	5.115485564	Fair
		7/8/2008	5.517006803	Fair
	Upstream of Line 20	10/2/2006	5.594339623	Fair
		6/19/2007	6.437799043	Fairly Poor
Trout Creek Tributary	T. Jackson Property	6/5/2000	6.272	Fairly Poor
Trout Creek Tributary	Upstream of Wildwood, at Road 96 and 33rd Line	6/3/1997	5.503937008	Fair
		6/22/1998	5.47706422	Fair
		7/8/2008	5.615835777	Fair
Trout Creek Tributary (Harmony Creek)	Harmony Conservation Area	6/3/1997	6.368131868	Fairly Poor
		7/2/1998	5.352941176	Fair
		10/2/2006	5.004587156	Fair
		6/19/2007	6.012195122	Fairly Poor
		7/8/2008	5.8	Fairly Poor

Watercourse Name	Location	Sample Date	Family Biotic Index (FBI) Value	
Wildwood CA Creek	Wildwood Conservation Area	6/20/2002	5.277227723	Fair
		10/28/2002	6.737864078	Poor
		6/10/2003	4.515923567	Good
		10/31/2003	2.126696833	Excellent
		5/31/2004	3.714285714	Excellent
		5/26/2005	4.417956656	Good
		5/30/2006	5.572992701	Fair
		10/6/2006	6	Fairly Poor
		5/30/2007	5.278125	Fair
		5/28/2008	5.870229008	Fairly Poor
Young Drain	Line 35	6/25/1999	5.614754098	Fair

Biotic indices are values assigned to benthic invertebrate taxa indicating their pollution sensitivity and tolerance on a scale from 0 to 10. Lower numbers indicate pollution sensitivity and high numbers pollution tolerance. The Family Biotic Index (FBI) is the weighted average of the biotic index and number of bugs in each taxon in the sample. The water quality ranges for the FBI values are as follows: <4.25 = Excellent; 4.25-5.00 = Good; 5.00-5.75 = Fair; 5.75-6.50 = Fairly Poor; 6.50-7.50 = Poor; >7.50 = Very Poor.

## **Fisheries Monitoring**

In the Federal Fisheries Act, fish have been defined to include parts of fish; shellfish, crustaceans, marine animals and any parts of shellfish, crustaceans or marine animals; and the eggs, sperm, spawn, larvae, spat and juvenile stages of fish, shellfish, crustaceans and marine animals (Department of Justice, 2006). Essentially the Fisheries Act definition states that fish, freshwater mussels, crayfish and marine mammals are defined as fish. In the scope of this study, fish species will be discussed further in this section, crustaceans fall into the category of benthic macroinvertebrates and shellfish are considered mussels which will be a separate subsection of fisheries monitoring in this report.

## **Fish**

Fish are vertebrates (have a backbone), that live in water, breath through gills and swim with fins. Most fish are able to survive in various habitat and water quality conditions; however, several species of fish have very specific habitat and water quality requirements as well as food preferences. Some species of fish are considered to be sedentary, spending their time under the cover of rocks or overhanging vegetation, even though all are capable of moving throughout the water column and traveling large distances in a watercourse. Due to specific habitat requirements, varying water quality tolerances, and ability to accumulate substances such as toxins, fish are excellent indicators of ecosystem health, especially those species susceptible to pollution and intolerant of habitat alterations. Generally speaking, a diverse fish community indicates a relatively healthy aquatic environment. Fish also play a crucial role in the aquatic food chain, by providing food for humans, fish, and other wildlife.

Approximately 94 species of fish have been recorded from the Thames River and its tributaries which represent more than half of the 165 fish species found in Ontario. A dozen of these have federal or provincial species at risk (SAR) status. Federal SAR are listed by the Committee of the Status of Endangered Wildlife in Canada (COSEWIC) according to the Species at Risk Act (SARA). SAR in Ontario (SARO) are designated by the Ontario Ministry of Natural Resources (OMNR) in accordance with the provincial Endangered Species Act (ESA).

Since 1928, 41 species of fish have been recorded in fish samples that were collected throughout the Trout Creek subwatershed and are listed in Table A1.2: Trout Creek Fish Species Summary. Map 4: Monitoring illustrates the fish sampling locations and Appendix 3 contains the fish report for each sample collected. Records for two species at risk exist, a historic Northern Brook Lamprey record and a recent Silver Shiner record. Both have status federally and provincially as Special Concern.

Much of the Trout Creek watershed supports a warmwater fish community, with commonly occurring minnow, sucker and darter species present. Wildwood Reservoir and the lower reaches of Trout Creek also support gamefish populations including such species as largemouth and smallmouth bass, yellow perch, and northern pike. Several tributaries and parts of Trout Creek provide coldwater habitat, representing a significant proportion of this habitat type remaining in the Upper Thames watershed. Coldwater conditions exist where water temperatures rarely exceed the 20 degree Celsius range, even during the hottest summer days. Coldwater habitat can support a unique and sensitive community, including trout species such as Brook Trout. Considering that brook trout are identified as the ‘canary in the coal mine’ of the aquatic environment, and a significant amount of habitat is available for this species in the subwatershed, efforts should focus on protecting and restoring viable habitat.

**Table A1.2: Trout Creek Fish Species Summary**

Common Name	Scientific Name	Species at Risk		Native	Coldwater	Sensitive	Target	Migrant
		Federal	Provincial					
American Brook Lamprey	<i>Lampetra appendix</i>			✓	✓			
Black Bullhead	<i>Ameiurus melas</i>			✓				
Blacknose Dace	<i>Rhinichthys atratulus</i>			✓				
Blackside Darter	<i>Percina maculata</i>			✓				
Bluegill	<i>Lepomis macrochirus</i>			✓				
Bluntnose Minnow	<i>Pimephales notatus</i>			✓				
Brassy Minnow	<i>Hybognathus hankinsoni</i>			✓				
Brook Stickleback	<i>Culaea inconstans</i>			✓				
Brook Trout	<i>Salvelinus fontinalis</i>			✓	✓	✓	✓	✓
Brown Bullhead	<i>Ameiurus nebulosus</i>			✓				
Central Mudminnow	<i>Umbra limi</i>			✓				
Central Stoneroller	<i>Campostoma anomalum</i>			✓				
Common Carp	<i>Cyprinus carpio</i>							
Common Shiner	<i>Luxilus cornutus</i>			✓				
Creek Chub	<i>Semotilus atromaculatus</i>			✓				
Fantail Darter	<i>Etheostoma flabellare</i>			✓				
Fathead Minnow	<i>Pimephales promelas</i>			✓				
Golden Shiner	<i>Notemigonus crysoleucas</i>			✓				
Greenside Darter	<i>Etheostoma blennioides</i>			✓		✓		
Hornyhead Chub	<i>Nocomis biguttatus</i>			✓				
Iowa Darter	<i>Etheostoma exile</i>			✓				
Johnny Darter	<i>Etheostoma nigrum</i>			✓				
Largemouth Bass	<i>Micropterus salmoides</i>			✓		✓	✓	
Mimic Shiner	<i>Notropis volucellus</i>			✓				
Mottled Sculpin	<i>Cottus bairdi</i>			✓	✓			
Northern Brook Lamprey	<i>Ichthyomyzon fossor</i>	Special Concern	Special Concern	✓		✓		
Northern Hog Sucker	<i>Hypentelium nigricans</i>			✓				
Northern Pike	<i>Esox lucius</i>			✓		✓	✓	✓
Northern Redbelly Dace	<i>Phoxinus eos</i>			✓				
Pearl Dace	<i>Margariscus margarita</i>			✓	✓			
Pumpkinseed	<i>Lepomis gibbosus</i>							
Rainbow Darter	<i>Etheostoma caeruleum</i>			✓				
Rainbow Trout	<i>Oncorhynchus mykiss</i>				✓	✓	✓	✓
Rock Bass	<i>Ambloplites rupestris</i>			✓		✓	✓	
Silver Shiner	<i>Notropis photogenis</i>	Special Concern	Special Concern	✓		✓		
Smallmouth Bass	<i>Micropterus dolomieu</i>			✓		✓	✓	

Common Name	Scientific Name	Species at Risk		Native	Coldwater	Sensitive	Target	Migrant
		Federal	Provincial					
Stonecat	<i>Noturus flavus</i>			✓				
Striped Shiner	<i>Luxilus chrysocephalus</i>			✓				
White Sucker	<i>Catostomus commersoni</i>			✓				✓
Yellow Bullhead	<i>Ameiurus natalis</i>			✓				
Yellow Perch	<i>Perca flavescens</i>			✓		✓	✓	✓

With respect to the preceding table, the terms are:

**Coldwater:** Life history information was reviewed in "Morphological and Ecological Characteristics of Canadian Freshwater Fishes" to identify species habitat, including thermal 'preferences'. These species are found in coldwater habitats, defined as having water temperatures of less than 19°C.

**Native:** A species indigenous to a particular region or area.

**Migrant:** A species that travels a significant distance in order to carry out one of its life history requirements such as spawning.

**Sensitive:** In 2005, Coker and Portt identified sensitive species in the draft "Sensitive Species List for Agricultural Municipal Drain Clean Outs". Sensitive species have specific habitat requirements, and any alterations to their habitat could prove to be detrimental to the species.

**Target:** Indicates if the species is a sportfish and considered a top level predator or a species requiring the same habitat as a top level predator. Generally speaking, any species that is targeted for angling purposes would be a sportfish.

**COSEWIC Status:** The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) assesses species for their consideration for legal protection and recovery (or management) under the Species at Risk Act (SARA).

*Extinct:* A wildlife species that no longer exists.

*Extirpated:* A wildlife species no longer existing in the wild in Canada, but exists elsewhere.

*Endangered:* A wildlife species facing imminent extirpation or extinction.

*Threatened:* A wildlife species likely to become endangered if limiting factors are not reversed.

*Special Concern:* A wildlife species that may become a threatened or an endangered species because of a combination of biological characteristics and identified threats.

*Not at Risk:* A wildlife species that has been evaluated and found to be not at risk of extinction given the current circumstances.

*Data Deficient:* A category that applies when the available information is insufficient (a) to resolve a wildlife species' eligibility for assessment or (b) to permit an assessment of the wildlife species' risk of extinction.

References: [http://www.cosewic.gc.ca/eng/sct2/sct2\\_6\\_e.cfm](http://www.cosewic.gc.ca/eng/sct2/sct2_6_e.cfm) , [http://www.cosewic.gc.ca/eng/sct5/index\\_e.cfm](http://www.cosewic.gc.ca/eng/sct5/index_e.cfm) ,  
[http://www.cosewic.gc.ca/rpts/Short\\_Species\\_Assessments\\_e.htm](http://www.cosewic.gc.ca/rpts/Short_Species_Assessments_e.htm) ,  
[http://www.cosewic.gc.ca/eng/sct0/rpt/dsp\\_booklet\\_e.htm](http://www.cosewic.gc.ca/eng/sct0/rpt/dsp_booklet_e.htm)  
(current to December 2008)

**SARO Status:** Species at Risk in Ontario (SARO) are designated by the Ontario Ministry of Natural Resources (OMNR) in accordance with the provincial Endangered Species Act (ESA) through the Committee on the Status of Species at Risk in Ontario (COSSARO).

*Extirpated:* A species that no longer exists in the wild in Ontario but still occurs elsewhere.

*Endangered:* A species facing imminent extinction or extirpation in Ontario which is a candidate for regulation under Ontario's ESA.

*Threatened:* A species that is at risk of becoming endangered in Ontario if limiting factors are not reversed.

*Special Concern:* A species with characteristics that make it sensitive to human activities or natural events.

Reference: [http://www.mnr.gov.on.ca/en/Business/Species/2ColumnSubPage/STEL01\\_131230.html](http://www.mnr.gov.on.ca/en/Business/Species/2ColumnSubPage/STEL01_131230.html) and  
<http://www.mnr.gov.on.ca/en/Business/Species/2ColumnSubPage/246809.html> (current to December 2008)

## **Fisheries Management Planning**

The process to prepare a fisheries management plan for the Thames River watershed was initiated in December 2003 as a Fish Habitat Management Plan for the Upper Thames River Watershed. In obtaining stakeholder input, the project focus shifted from one component of fisheries management (i.e. habitat) in the upper part of the watershed, to an all-encompassing fisheries management plan for the entire Thames River watershed.

The purpose of the plan is to articulate and enable a vision for the fisheries of the Thames River watershed in a way that is most likely to maintain and improve benefits for those living in the watershed and those utilizing the resource. The plan will form a document, and will be developed in collaboration with stakeholders and it will be for the entire Thames River watershed. It involves managing fish, their habitat and use, while complementing other watershed plans and recognizing other planning efforts. A fisheries management plan for the Thames River watershed will help guide and integrate initiatives to optimize societal benefits from use of fisheries resources.

The first round of public consultation was completed in 2006 when the TRFMP committee hosted six public input sessions throughout the Thames River watershed. The goal of the public consultation process was to provide the community with an opportunity to provide input to the Fisheries Management Plan for the Thames River watershed. Two objectives of the consultation process were to:

1. Provide the community with an appreciation for the fish of the Thames resource and a fisheries management plan including the plan process and components.
2. Provide the community with an opportunity to influence the plan process and components by providing input regarding the resource, the management plan, and issues and opportunities pertaining to fish of the Thames and the fisheries management plan.

The input sessions gathered quite a bit of valuable information regarding the fisheries resource, the fisheries management plan, and issues and opportunities relating to the fish of the Thames and the fisheries management plan. Additional information was collected through email correspondence, phone calls and the return of questionnaires.

A summary of the public input collected in 2006 is provided in Appendix 3, and following the summary, the rough notes that pertain to the North Branch and Mud Creek subwatershed are listed.

Upon completion of the TRFMP public consultation process, a workshop was held with TRFMP committee members to consolidate and define the public input collected. This workshop developed issues and solutions to form the basis for the Draft TRFMP document.

The workshop proceedings and Draft TRFMP document must be circulated for review and edits prior to release to the public. A second round of public consultation will be developed in order to inform the public of what was heard from them, to ensure that their input has been incorporated, and to assist with finalizing the TRFMP. These next steps have been dependent upon staff availability and receipt of funding and will be completed as resources become available.

## **Fish Habitat**

The Federal Fisheries Act defines fish habitat as spawning grounds and nursery, rearing, food supply and migration areas on which fish depend directly or indirectly in order to carry out their life processes (Department of Justice, 2006). Essentially fish habitat would include all sections of a watercourse that fish depend on during any stage of their life process, whether directly or indirectly. Areas in which fish migrate, forage for food, spawn and rear their young are all considered fish habitat. This also includes watercourses and adjacent lands that are only seasonally wet, such as intermittent systems or swales and the floodplain.

Historical fish habitat information was gathered by the ROM and the MNR. UTRCA has collected fish habitat information since 1998 following the Municipal Drain Classification Project (MDC) protocol. Habitat information was also collected during the UTRCA benthic monitoring program that was initiated in 1997. Basically, measurements are taken in the watercourse, such as water width and depth, water temperature, dissolved oxygen levels, water flow, types of sediment and vegetation present. The habitat information collected combined with the fish community found in the watercourse determines the fish habitat that is present, or the fish habitat potential for the watercourse. This fish habitat information has been lumped with other aquatic resources information into 3 categories of aquatic systems. The summary of aquatic resources discusses the categorisation of the aquatic system and Figure 5.4: Watercourse Categories shows the locations of the different aquatic habitat found within the Trout Creek Subwatershed.

The Trout Creek watershed provides habitat that supports both warmwater and coldwater fish communities. Wildwood Reservoir, parts of Trout Creek and several tributaries provide habitat for the spawning and survival of important gamefish such as Northern Pike, Yellow Perch, and Smallmouth and Largemouth Bass. Other parts of Trout Creek and several tributaries have coldwater habitat supporting Brook Trout populations. A priority should be the protection of these coldwater habitats that support Brook Trout. The potential for coldwater habitat throughout much of the subwatershed suggests that with a concentrated effort to rehabilitate stream habitat and restore riparian vegetation, coldwater conditions would be enhanced. The aquatic environments found in the Trout Creek subwatershed have the potential to provide enhanced fish habitat, especially if implementation activities such as rehabilitation and restoration occur.



## Mussels Monitoring

Freshwater mussels or molluscs are soft-bodied organisms that secrete a calcareous substance that surrounds the soft body and hardens into a shell to protect the mussel from predation and adverse conditions (Metcalf-Smith, 2005). Mussels serve as natural filters as they feed on algae, bacteria and organic matter. Mussels have a muscular foot that allows these sedentary creatures to burrow into softer sediments and move about. Freshwater mussels are sensitive to environmental pollution and habitat alterations, which make them excellent indicators of ecosystem health (Morris, 2004).

A total of 34 of Ontario's 41 species of freshwater mussels have been recorded in the Thames River watershed, including 10 species designated, or proposed for designation, as Species at Risk (SAR). Freshwater mussel sampling in the Thames has occurred since the 1930s. Environment Canada has collected mussel information since the early 1980s, while Fisheries and Oceans Canada, the University of Guelph and UTRCA have gathered more recent mussel data. Little sampling effort has been directed towards mussels in the Trout Creek watershed with only two commonly occurring species recorded. Considering SAR populations occur in nearby reaches of the North Thames River and several other Thames tributaries, this represents a significant information gap. Table A1.3: Trout Creek Mussel Species Summary lists the two species observed. Map 4: Monitoring illustrates the mussel sampling stations.

All mussel species are negatively affected by drought, pollutants, sedimentation, urbanization, agricultural practices, dams and barriers, poor water quality, predation (by muskrats and raccoons), loss of habitat, and recreational activities (Thames River Recovery Team, 2004; Morris, 2004; Metcalfe-Smith et al., 2000). A diverse community of mussels indicates a healthy aquatic environment. Further sampling of the mussel populations in the watershed could provide a clearer indication of the mussel community.

**Table A1.3: Trout Creek Mussel Species Summary**

Common Name	Scientific Name	COSEWIC Status	SARO Status	Native
Creek Heelsplitter	<i>Lasmigona compressa</i>			✓
Giant Floater	<i>Pyganodon grandis</i>			✓

With respect to the preceding table, the terms are described as:

**Native:** A species indigenous to a particular region or area.

**COSEWIC Status:** The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) assesses species for their consideration for legal protection and recovery (or management) under the Species at Risk Act (SARA).

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*Special Concern:* A wildlife species that may become a threatened or an endangered species because of a combination of biological characteristics and identified threats.

*Not at Risk:* A wildlife species that has been evaluated and found to be not at risk of extinction given the current circumstances.

*Data Deficient:* A category that applies when the available information is insufficient (a) to resolve a wildlife species' eligibility for assessment or (b) to permit an assessment of the wildlife species' risk of extinction.

**References:** [http://www.cosewic.gc.ca/eng/sct2/sct2\\_6\\_e.cfm](http://www.cosewic.gc.ca/eng/sct2/sct2_6_e.cfm) , [http://www.cosewic.gc.ca/eng/sct5/index\\_e.cfm](http://www.cosewic.gc.ca/eng/sct5/index_e.cfm) , [http://www.cosewic.gc.ca/rpts/Short\\_Species\\_Assessments\\_e.htm](http://www.cosewic.gc.ca/rpts/Short_Species_Assessments_e.htm) (current November 2009), [http://www.cosewic.gc.ca/eng/sct0/rpt/dsp\\_booklet\\_e.htm](http://www.cosewic.gc.ca/eng/sct0/rpt/dsp_booklet_e.htm) (current to August 2009)

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*Threatened:* A species that is at risk of becoming endangered in Ontario if limiting factors are not reversed.

*Special Concern:* A species with characteristics that make it sensitive to human activities or natural events.

## **Dams and Barriers**

Dams and barriers found in watercourses are also known as impoundments because they back up water behind them. Generally, dams were built for water storage to store more water on the landscape, to prevent flooding and to use as a source of water for livestock and other domestic uses such as irrigation or fire fighting and as a source of power generation for mills. The design of dams and other structures such as road, lane and train crossings, culverts, and weirs create barriers. These structures mentioned are designed and installed by man. There are other naturally occurring structures that create barriers such as velocity (fast flowing), gradient (steep slope), woody debris, natural formations of bedrock (waterfalls) and beavers also build dams. Chemical and thermal differences within the water column/body may also create a barrier.

Many dams and reservoirs are highly valued by their local communities for their recreational and aesthetic uses as well as their historical significance. Other structures are important for their role in flood control or flow augmentation. Incidental benefits of dams and reservoirs include, fish and wildlife habitat, recreational activities such as fishing, canoeing, swimming and cultural value. While it may seem that increasing water storage capacity would provide a positive result, there are negative impacts of dams and barriers on riverine systems. The negative impacts include barring migration of fish and wildlife, altering the river channel to a lake like habitat, increasing soil deposition upstream of the dam, accelerating erosion downstream of the dam/barrier, altering water quantity and quality, increasing temperature of the water, escalating eutrophication (excess nutrients that cause excessive algae growth and a resulting lack of oxygen), as well as causing wildlife mortality.

Man-made dams have traditionally been managed and maintained as multi-use facilities. Starting in the late 1900s, dams reaching the end of their lifespan were evaluated to consider whether it was worthwhile to replace the dam or to just decommission the dam. Some of the reasoning for dam decommissioning or removal considers whether the dam serves a purpose, the cost of rehabilitation or maintenance, and the restoration of the fish and wildlife community as well as the riverine state. In some instances, it may be necessary to maintain the barrier as it is. These reasons include the cost of removing or altering the structure is prohibitive as it may house some form of infrastructure, the hazard/cost of damage associated with structures that were built for flood control purposes is high, species partitioning, which means that species upstream of the dam/barrier could be displaced by invasive species inhabiting downstream, or species downstream of the barrier could bring diseases such as VHS to the population upstream.

When considering the fate of any dam, it is important to complete studies and provide the best option for the structure. Normally the options include maintaining the status quo (maintain and repair), doing nothing, rehabilitating the structure (usually by modifying the structure and providing mitigation for fish and wildlife movement) or removing the structure. Since most dams have a historical or cultural value to the local community, a process to engage the public is required to mediate any issues or concerns, and to aid in deciding upon the best solution for the structure. It is important to note that all instream dam and barrier alterations require permits and approvals from several regulatory agencies prior to works commencing, which means that these agencies would also be involved throughout the process.

Based on a dam and barrier inventory that was completed in 2001 by UTRCA, 14 barriers have been identified in the Trout Creek Subwatershed. None of the dams identified in the Trout Creek Subwatershed have a purpose for flood control, nor were they designed for that purpose. One dam, the St Mary's Dam is located where Trout Creek outlets into the North Thames River in the Town of St Mary's. This dam, though not directly in the Trout Creek watershed, influences the lower reach of Trout Creek and the confluence of the North Thames and Trout Creek. Refer to Map 9 to view the general locations of these barriers in the watershed. Some of the recognizable dams include the Wildwood Dam, Harrington Pond Dam, and the Ducks Unlimited Berm. Appendix 6 has a table that lists the dams and barriers that have been identified in the watershed and provides a description of the type of barrier and the purpose of the

structure. All of the dams and barriers in this watershed are characterized as being a run of the river. Run of the river structures create a blockage in the water column and once the water is backed up behind it the water will continue to flow over the dam.

### **Summary of Aquatic Resources**

Based on the aquatic resources mentioned previously in this section, these resources combined have contributed to a system of differentiating the aquatic natural heritage features found in the subwatershed. This approach follows the categorization process that was developed for the Oxford Natural Heritage Study (ONHS) (County of Oxford, 2006). The intent of the ONHS was to be consistent with federal and provincial policies; thus, this approach was adapted for the Trout Creek watershed community strategy. Appendix 5 describes the process developed for the ONHS.

Aquatic resources were grouped into three categories called System Type I, II and III. Refer to Map 9: Watercourse Information for the differentiation of the aquatic systems within Trout Creek.

#### **System Type I**

System Type I is generally considered to be the most desirable of the three system types due to the permanence of water found in these watercourses year round and the diverse habitat that is available in these watercourses. Some of the more sensitive species (as identified in Table 5.2 Trout Creek Fish Species Summary and Table 5.3 Trout Creek Mussel Species Summary) found in these aquatic environments are susceptible to changes in habitat such as fluctuating water temperatures or water levels, pollutants, and a loss of spawning grounds.

As an aquatic natural heritage feature, watercourses identified as System Type I should be conserved, protected and enhanced when possible. One should not expect that all watercourses could become this, however, it is an attainable goal to restore some watercourses to this level.

#### **System Type II**

System Type II watercourses may have water flowing in them all year, or have standing pools of water when flow is lacking during the drier periods of the year or during periods of drought. The species found in this category are usually found in many aquatic habitats as they are more tolerant to habitat changes. All watercourses in this category are warmwater, which by definition means that they have an average temperature of 25 °C (or greater). These watercourses are generally fairly productive and diverse.

With targeted rehabilitation or restoration efforts, conditions in many of these watercourses would improve to support more diverse and sensitive fish communities, and potentially restore System Type I habitat.

#### **System Type III**

Watercourses in System Type III are intermittent or ephemeral systems, meaning that they have water in them for only part of the year, and their aquatic ecosystem function is largely limited to these periods. Usually these watercourses convey water during rain events, snowmelt and spring runoff. These watercourses are feeder streams for the larger watercourses as they play an important role in transporting water, sediment, and nutrients downstream. When wet, these watercourses provide migration corridors and access to food and spawning habitats for many species of fish, waterfowl, and amphibian.

Remedial activities would enhance these watercourses. Habitat restoration and rehabilitation has the potential to elevate some watercourses to System Type II and a few others to System Type I.

## Appendix 2. Trout Creek Benthic Sampling Results

Table A2.1: Benthic Sampling Results

Watercourse Name	Location	Sample Date	Taxonomic Names	Common Name	Life Stage	# Individuals	Biotic Index	Family Biotic Index (FBI)	Stream Health
Harrington Creek	Near Harrington	6/4/1997	<i>Acariformes</i>	Water Mite	Adult	6	4		
			<i>Baetidae</i>	Small Mayfly	Nymph	2	4		
			<i>Chironomidae</i>	Midge	Larvae	38	6		
			<i>Elmidae</i>	Riffle Beetle	Larvae	9	4		
			<i>Elmidae</i>	Riffle Beetle	Larvae	2	4		
			<i>Empididae</i>	Dance Fly	Larvae	9	6		
			<i>Hydropsychidae</i>	Net-spinning Caddisfly	Larvae	7	4		
			<i>Nematoda</i>	Thread Worm	Adult	1	-1		
			<i>Nemouridae</i>	Stonefly	Nymph	5	2		
			<i>Neophylax</i>	Caddisfly	Larvae	2	4		
			<i>Simuliidae</i>	Black Fly	Pupa	1	6		
			<i>Sphaeriidae</i>	Fingernail Clam	Adult	9	8		
			<i>Tabanidae</i>	Horse Fly	Larvae	3	6		
			<i>Talitridae</i>	Sideswimmer	Adult	6	8	5.535353535	Fair
					6/22/1998	<i>Acariformes</i>	Water Mite	Adult	1
<i>Baetidae</i>	Small Mayfly	Nymph				16	4		
<i>Ceratopogonidae</i>	Biting Midge	Larvae				1	6		
<i>Chironomidae</i>	Midge	Larvae				64	6		
<i>Chironomidae</i>	Midge	Pupa				4	6		
<i>Elmidae</i>	Riffle Beetle	Larvae				5	4		
<i>Empididae</i>	Dance Fly	Larvae				2	6		
<i>Hydropsychidae</i>	Net-spinning Caddisfly	Larvae				1	4		
<i>Lepidostomatidae</i>	Lepistomatid Caddisfly	Larvae				2	1		
<i>Leptoceridae</i>	Long-horned Caddisfly	Larvae				1	4		

Watercourse Name	Location	Sample Date	Taxonomic Names	Common Name	Life Stage	# Individuals	Biotic Index	Family Biotic Index (FBI)	Stream Health
			<i>Leuctridae</i>	Stonefly	Nymph	5	0		
			<i>Oligochaeta</i>	Aquatic Worm	Adult	2	8		
			<i>Simuliidae</i>	Black Fly	Larvae	2	6		
			<i>Tabanidae</i>	Horse Fly	Larvae	1	6	5.214953271	Fair
		6/25/1999	<i>Acariformes</i>	Water Mite	Adult	8	4		
			<i>Baetidae</i>	Small Mayfly	Nymph	19	4		
			<i>Capniidae</i>	Stonefly	Nymph	5	1		
			<i>Chironomidae</i>	Midge	Larvae	72	6		
			<i>Chironomidae</i>	Midge	Pupa	1	6		
			<i>Daphniidae</i>	Water Flea	Adult	2	8		
			<i>Elmidae</i>	Riffle Beetle	Adult	1	4		
			<i>Elmidae</i>	Riffle Beetle	Larvae	2	4		
			<i>Empididae</i>	Dance Fly	Larvae	2	6		
			<i>Isotomidae</i>	Springtail	Adult	1	5		
			<i>Lepidostomatidae</i>	Lepistomatid Caddisfly	Larvae	3	1		
			<i>Nematoda</i>	Thread Worm	Adult	3	-1		
			<i>Physidae</i>	Pouch Snail	Adult	1	8		
			<i>Simuliidae</i>	Black Fly	Larvae	2	6		
			<i>Sphaeriidae</i>	Fingernail Clam	Adult	1	8		
			<i>Tipulidae</i>	Crane Fly	Larvae	2	3	5.18852459	Fair
		6/25/1999	<i>Acariformes</i>	Water Mite	Adult	6	4		
			<i>Baetidae</i>	Small Mayfly	Nymph	40	4		
			<i>Capniidae</i>	Stonefly	Nymph	6	1		
			<i>Chironomidae</i>	Midge	Larvae	89	6		
			<i>Chironomidae</i>	Midge	Pupa	1	6		
			<i>Elmidae</i>	Riffle Beetle	Larvae	4	4		
			<i>Elmidae</i>	Riffle Beetle	Adult	1	4		

Watercourse Name	Location	Sample Date	Taxonomic Names	Common Name	Life Stage	# Individuals	Biotic Index	Family Biotic Index (FBI)	Stream Health
			<i>Empididae</i>	Dance Fly	Larvae	2	6		
			<i>Ephemeroptera</i>	Mayfly	Nymph	1	-1		
			<i>Hydropsychidae</i>	Net-spinning Caddisfly	Larvae	2	4		
			<i>Nematoda</i>	Thread Worm	Adult	1	-1		
			<i>Rhyacophilidae</i>	Primitive Caddisfly	Larvae	2	0		
			<i>Simuliidae</i>	Black Fly	Larvae	3	6	5.051282051	Fair
		6/5/2000	<i>Acariformes</i>	Water Mite	Adult	4	4		
			<i>Baetidae</i>	Small Mayfly	Nymph	26	4		
			<i>Chironomidae</i>	Midge	Pupa	8	6		
			<i>Chironomidae</i>	Midge	Larvae	67	6		
			<i>Elmidae</i>	Riffle Beetle	Larvae	4	4		
			<i>Empididae</i>	Dance Fly	Larvae	1	6		
			<i>Hemiptera</i>	Water Bug	Adult	1	-1		
			<i>Leuctridae</i>	Stonefly	Nymph	13	0		
			<i>Nematoda</i>	Thread Worm	Adult	2	-1		
			<i>Nemouridae</i>	Stonefly	Nymph	1	2		
			<i>Oligochaeta</i>	Aquatic Worm	Adult	2	8		
			<i>Simuliidae</i>	Black Fly	Larvae	1	6		
			<i>Tipulidae</i>	Crane Fly	Larvae	1	3	4.8359375	Good
		10/2/2000	<i>Acariformes</i>	Water Mite	Adult	9	4		
			<i>Chironomidae</i>	Midge	Pupa	7	6		
			<i>Chironomidae</i>	Midge	Larvae	38	6		
			<i>Elmidae</i>	Riffle Beetle	Larvae	5	4		
			<i>Empididae</i>	Dance Fly	Larvae	7	6		
			<i>Gammaridae</i>	Sideswimmer	Adult	1	4		
			<i>Hydropsychidae</i>	Net-spinning Caddisfly	Larvae	20	4		
			<i>Lepidostomatidae</i>	Lepistomatid Caddisfly	Larvae	3	1		

Watercourse Name	Location	Sample Date	Taxonomic Names	Common Name	Life Stage	# Individuals	Biotic Index	Family Biotic Index (FBI)	Stream Health
			<i>Lymnaeidae</i>	Pond Snail	Adult	1	6		
			<i>Nemouridae</i>	Stonefly	Nymph	1	2		
			<i>Oligochaeta</i>	Aquatic Worm	Adult	7	8		
			<i>Physidae</i>	Pouch Snail	Adult	1	8		
			<i>Simuliidae</i>	Black Fly	Larvae	4	6		
			<i>Sphaeriidae</i>	Fingernail Clam	Adult	1	8		
			<i>Tipulidae</i>	Crane Fly	Larvae	1	3	5.301886792	Fair
		6/19/2001	<i>Acariformes</i>	Water Mite	Adult	1	4		
			<i>Baetidae</i>	Small Mayfly	Nymph	66	4		
			<i>Chironomidae</i>	Midge	Pupa	1	6		
			<i>Chironomidae</i>	Midge	Larvae	66	6		
			<i>Elmidae</i>	Riffle Beetle	Adult	2	4		
			<i>Elmidae</i>	Riffle Beetle	Larvae	9	4		
			<i>Empididae</i>	Dance Fly	Pupa	1	6		
			<i>Empididae</i>	Dance Fly	Larvae	1	6		
			<i>Gammaridae</i>	Sideswimmer	Adult	2	4		
			<i>Hydropsychidae</i>	Net-spinning Caddisfly	Larvae	4	4		
			<i>Hydrozoa</i>	Hydra	Adult	1	5		
			<i>Leuctridae</i>	Stonefly	Nymph	34	0		
			<i>Nematoda</i>	Thread Worm	Adult	2	-1		
			<i>Oligochaeta</i>	Aquatic Worm	Adult	3	8		
			<i>Physidae</i>	Pouch Snail	Adult	1	8		
			<i>Psychodidae</i>	Sand Fly	Larvae	1	10		
			<i>Simuliidae</i>	Black Fly	Larvae	10	6		
			<i>Turbellaria</i>	Flatworm	Adult	1	4	4.220588235	Excellent
		6/19/2002	<i>Acariformes</i>	Water Mite	Adult	4	4		
			<i>Baetidae</i>	Small Mayfly	Nymph	58	4		

Watercourse Name	Location	Sample Date	Taxonomic Names	Common Name	Life Stage	# Individuals	Biotic Index	Family Biotic Index (FBI)	Stream Health
			<i>Chironomidae</i>	Midge	Pupa	8	6		
			<i>Chironomidae</i>	Midge	Larvae	64	6		
			<i>Coenagrionidae</i>	Narrow-winged Damselfly	Nymph	1	9		
			<i>Elmidae</i>	Riffle Beetle	Adult	4	4		
			<i>Elmidae</i>	Riffle Beetle	Larvae	8	4		
			<i>Empididae</i>	Dance Fly	Larvae	2	6		
			<i>Leuctridae</i>	Stonefly	Nymph	38	0		
			<i>Nemouridae</i>	Stonefly	Nymph	2	2		
			<i>Oligochaeta</i>	Aquatic Worm	Adult	7	8		
			<i>Ostracoda</i>	Seed Shrimp	Adult	1	8		
			<i>Psychodidae</i>	Sand Fly	Larvae	1	10		
			<i>Simuliidae</i>	Black Fly	Larvae	8	6		
			<i>Sphaeriidae</i>	Fingernail Clam	Adult	1	8		
			<i>Tabanidae</i>	Horse Fly	Larvae	1	6	4.274038462	Good
		6/10/2003	<i>Acariformes</i>	Water Mite	Adult	4	4		
			<i>Baetidae</i>	Small Mayfly	Nymph	108	4		
			<i>Ceratopogonidae</i>	Biting Midge	Larvae	1	6		
			<i>Chironomidae</i>	Midge	Pupa	12	6		
			<i>Chironomidae</i>	Midge	Larvae	66	6		
			<i>Elmidae</i>	Riffle Beetle	Larvae	36	4		
			<i>Elmidae</i>	Riffle Beetle	Adult	4	4		
			<i>Empididae</i>	Dance Fly	Pupa	1	6		
			<i>Empididae</i>	Dance Fly	Larvae	7	6		
			<i>Glossiphoniidae</i>	Leech	Adult	2	8		
			<i>Hemiptera</i>	Water Bug	Adult	1	-1		
			<i>Leuctridae</i>	Stonefly	Nymph	34	0		
			<i>Nematoda</i>	Thread Worm	Adult	1	-1		



Watercourse Name	Location	Sample Date	Taxonomic Names	Common Name	Life Stage	# Individuals	Biotic Index	Family Biotic Index (FBI)	Stream Health
			<i>Nemouridae</i>	Stonefly	Nymph	9	2		
			<i>Simuliidae</i>	Black Fly	Larvae	4	6		
			<i>Sphaeriidae</i>	Fingernail Clam	Adult	2	8		
			<i>Tabanidae</i>	Horse Fly	Larvae	1	6		
			<i>Talitridae</i>	Sideswimmer	Adult	1	8	4.171232877	Excellent
		5/31/2004	<i>Acariformes</i>	Water Mite	Adult	7	4		
			<i>Baetidae</i>	Small Mayfly	Nymph	31	4		
			<i>Ceratopogonidae</i>	Biting Midge	Larvae	2	6		
			<i>Chironomidae</i>	Midge	Larvae	85	6		
			<i>Chironomidae</i>	Midge	Pupa	2	6		
			<i>Daphniidae</i>	Water Flea	Adult	3	8		
			<i>Elmidae</i>	Riffle Beetle	Larvae	11	4		
			<i>Elmidae</i>	Riffle Beetle	Adult	2	4		
			<i>Empididae</i>	Dance Fly	Larvae	10	6		
			<i>Leptophlebiidae</i>	Mayfly	Nymph	1	2		
			<i>Leuctridae</i>	Stonefly	Nymph	30	0		
			<i>Limnephilidae</i>	Northern Caddisfly	Larvae	1	4		
			<i>Nemouridae</i>	Stonefly	Nymph	1	2		
			<i>Oligochaeta</i>	Aquatic Worm	Adult	4	8		
			<i>Rhyacophilidae</i>	Primitive Caddisfly	Larvae	1	0		
			<i>Simuliidae</i>	Black Fly	Larvae	11	6		
			<i>Sphaeriidae</i>	Fingernail Clam	Adult	12	8		
			<i>Talitridae</i>	Sideswimmer	Adult	1	8		
			<i>Tipulidae</i>	Crane Fly	Larvae	1	3	4.791666667	Good
		5/30/2006	<i>Acariformes</i>	Water Mite	Adult	7	4		
			<i>Baetidae</i>	Small Mayfly	Nymph	48	4		
			<i>Capniidae</i>	Stonefly	Nymph	18	1		

Watercourse Name	Location	Sample Date	Taxonomic Names	Common Name	Life Stage	# Individuals	Biotic Index	Family Biotic Index (FBI)	Stream Health
			<i>Ceratopogonidae</i>	Biting Midge	Larvae	3	6		
			<i>Chironomidae</i>	Midge	Larvae	159	6		
			<i>Chironomidae</i>	Midge	Pupa	3	6		
			<i>Elmidae</i>	Riffle Beetle	Adult	4	4		
			<i>Elmidae</i>	Riffle Beetle	Larvae	60	4		
			<i>Empididae</i>	Dance Fly	Larvae	11	6		
			<i>Gammaridae</i>	Sideswimmer	Adult	1	4		
			<i>Hydroptilidae</i>	Micro-caddisfly	Larvae	2	4		
			<i>Leuctridae</i>	Stonefly	Nymph	14	0		
			<i>Lymnaeidae</i>	Pond Snail	Adult	1	6		
			<i>Nemouridae</i>	Stonefly	Nymph	3	2		
			<i>Oligochaeta</i>	Aquatic Worm	Adult	2	8		
			<i>Simuliidae</i>	Black Fly	Larvae	11	6		
			<i>Sphaeriidae</i>	Fingernail Clam	Adult	11	8		
			<i>Tabanidae</i>	Horse Fly	Larvae	1	6		
			<i>Taeniopterygidae</i>	Stonefly	Nymph	3	2	4.850828729	Good
		10/6/2006	<i>Acariformes</i>	Water Mite	Adult	12	4		
			<i>Asellidae</i>	Sow Bug	Adult	1	8		
			<i>Caenidae</i>	Crawling Mayfly	Nymph	1	7		
			<i>Chironomidae</i>	Midge	Larvae	117	6		
			<i>Chironomidae</i>	Midge	Pupa	20	6		
			<i>Elmidae</i>	Riffle Beetle	Adult	1	4		
			<i>Elmidae</i>	Riffle Beetle	Larvae	48	4		
			<i>Empididae</i>	Dance Fly	Larvae	5	6		
			<i>Hydropsychidae</i>	Net-spinning Caddisfly	Larvae	8	4		
			<i>Hydroptilidae</i>	Micro-caddisfly	Larvae	2	4		
			<i>Hydroptilidae</i>	Micro-caddisfly	Pupa	1	4		

Watercourse Name	Location	Sample Date	Taxonomic Names	Common Name	Life Stage	# Individuals	Biotic Index	Family Biotic Index (FBI)	Stream Health
			<i>Leptophlebiidae</i>	Mayfly	Nymph	5	2		
			<i>Leuctridae</i>	Stonefly	Nymph	2	0		
			<i>Limnephilidae</i>	Northern Caddisfly	Larvae	2	4		
			<i>Nematoda</i>	Thread Worm	Adult	1	-1		
			<i>Nemouridae</i>	Stonefly	Nymph	30	2		
			<i>Oligochaeta</i>	Aquatic Worm	Adult	3	8		
			<i>Ostracoda</i>	Seed Shrimp	Adult	1	8		
			<i>Physidae</i>	Pouch Snail	Adult	8	8		
			<i>Rhyacophilidae</i>	Primitive Caddisfly	Larvae	1	0		
			<i>Simuliidae</i>	Black Fly	Larvae	1	6		
			<i>Sphaeriidae</i>	Fingernail Clam	Adult	11	8		
			<i>Talitridae</i>	Sideswimmer	Adult	20	8		
			<i>Tipulidae</i>	Crane Fly	Larvae	1	3	5.26910299	Fair
		5/30/2007	<i>Acariformes</i>	Water Mite	Adult	3	4		
			<i>Baetidae</i>	Small Mayfly	Nymph	34	4		
			<i>Capniidae</i>	Stonefly	Nymph	40	1		
			<i>Ceratopogonidae</i>	Biting Midge	Larvae	2	6		
			<i>Chironomidae</i>	Midge	Pupa	9	6		
			<i>Chironomidae</i>	Midge	Larvae	170	6		
			<i>Elmidae</i>	Riffle Beetle	Adult	2	4		
			<i>Elmidae</i>	Riffle Beetle	Larvae	49	4		
			<i>Empididae</i>	Dance Fly	Larvae	10	6		
			<i>Gomphidae</i>	Clubtail Dragonfly	Nymph	1	1		
			<i>Hydropsychidae</i>	Net-spinning Caddisfly	Larvae	3	4		
			<i>Limnephilidae</i>	Northern Caddisfly	Larvae	1	4		
			<i>Nemouridae</i>	Stonefly	Nymph	3	2		
			<i>Oligochaeta</i>	Aquatic Worm	Adult	2	8		

Watercourse Name	Location	Sample Date	Taxonomic Names	Common Name	Life Stage	# Individuals	Biotic Index	Family Biotic Index (FBI)	Stream Health
			<i>Simuliidae</i>	Black Fly	Larvae	11	6		
			<i>Sphaeriidae</i>	Fingernail Clam	Adult	3	8		
			<i>Taeniopterygidae</i>	Stonefly	Nymph	1	2		
			<i>Talitridae</i>	Sideswimmer	Adult	3	8		
			<i>Tipulidae</i>	Crane Fly	Larvae	3	3		
			<i>Tricorythidae</i>	Crawling Mayfly	Nymph	1	4	4.86039886	Good
		10/1/2007	<i>Acariformes</i>	Water Mite	Adult	10	4		
			<i>Baetidae</i>	Small Mayfly	Nymph	3	4		
			<i>Caenidae</i>	Crawling Mayfly	Nymph	1	7		
			<i>Capniidae</i>	Stonefly	Nymph	2	1		
			<i>Chironomidae</i>	Midge	Larvae	166	6		
			<i>Chironomidae</i>	Midge	Pupa	19	6		
			<i>Elmidae</i>	Riffle Beetle	Larvae	27	4		
			<i>Empididae</i>	Dance Fly	Larvae	3	6		
			<i>Gammaridae</i>	Sideswimmer	Adult	7	4		
			<i>Heptageniidae</i>	Stream Mayfly	Nymph	1	4		
			<i>Hydropsychidae</i>	Net-spinning Caddisfly	Larvae	9	4		
			<i>Leptophlebiidae</i>	Mayfly	Nymph	6	2		
			<i>Limnephilidae</i>	Northern Caddisfly	Larvae	3	4		
			<i>Muscidae</i>	Muscid Fly	Larvae	6	6		
			<i>Nematoda</i>	Thread Worm	Adult	1	-1		
			<i>Nemouridae</i>	Stonefly	Nymph	7	2		
			<i>Oligochaeta</i>	Aquatic Worm	Adult	2	8		
			<i>Physidae</i>	Pouch Snail	Adult	4	8		
			<i>Pyralidae</i>	Pyralid Moth	Larvae	1	5		
			<i>Rhyacophilidae</i>	Primitive Caddisfly	Larvae	10	0		
			<i>Simuliidae</i>	Black Fly	Larvae	1	6		

Watercourse Name	Location	Sample Date	Taxonomic Names	Common Name	Life Stage	# Individuals	Biotic Index	Family Biotic Index (FBI)	Stream Health
			<i>Sphaeriidae</i>	Fingernail Clam	Adult	1	8		
			<i>Taeniopterygidae</i>	Stonefly	Nymph	3	2		
			<i>Talitridae</i>	Sideswimmer	Adult	10	8		
			<i>Tipulidae</i>	Crane Fly	Larvae	1	3	5.264026403	Fair
		5/28/2008	<i>Acariformes</i>	Water Mite	Adult	6	4		
			<i>Baetidae</i>	Small Mayfly	Nymph	18	4		
			<i>Capniidae</i>	Stonefly	Nymph	16	1		
			<i>Chironomidae</i>	Midge	Pupa	9	6		
			<i>Chironomidae</i>	Midge	Larvae	155	6		
			<i>Dytiscidae</i>	Predacious Diving Beetle	Larvae	1	5		
			<i>Elmidae</i>	Riffle Beetle	Larvae	26	4		
			<i>Elmidae</i>	Riffle Beetle	Adult	9	4		
			<i>Empididae</i>	Dance Fly	Larvae	6	6		
			<i>Limnephilidae</i>	Northern Caddisfly	Larvae	1	4		
			<i>Nematoda</i>	Thread Worm	Adult	1	-1		
			<i>Nemouridae</i>	Stonefly	Nymph	8	2		
			<i>Oligochaeta</i>	Aquatic Worm	Adult	6	8		
			<i>Perlodidae</i>	Stonefly	Nymph	1	2		
			<i>Philopotamidae</i>	Finger-net Caddisfly	Larvae	1	3		
			<i>Simuliidae</i>	Black Fly	Larvae	10	6		
			<i>Sphaeriidae</i>	Fingernail Clam	Adult	11	8		
			<i>Talitridae</i>	Sideswimmer	Adult	2	8	5.293706294	Fair
John Green Drain	Upstream of Road 96	6/25/2003	<i>Asellidae</i>	Sow Bug	Adult	3	8		
			<i>Baetidae</i>	Small Mayfly	Nymph	22	4		
			<i>Chironomidae</i>	Midge	Larvae	129	6		
			<i>Chironomidae</i>	Midge	Pupa	14	6		
			<i>Coenagrionidae</i>	Narrow-winged Damselfly	Nymph	1	9		

Watercourse Name	Location	Sample Date	Taxonomic Names	Common Name	Life Stage	# Individuals	Biotic Index	Family Biotic Index (FBI)	Stream Health
			<i>Elmidae</i>	Riffle Beetle	Larvae	1	4		
			<i>Gammaridae</i>	Sideswimmer	Adult	1	4		
			<i>Glossosomatidae</i>	Caddisfly	Larvae	1	0		
			<i>Glossosomatidae</i>	Caddisfly	Pupa	1	0		
			<i>Lepidostomatidae</i>	Lepistomatid Caddisfly	Larvae	6	1		
			<i>Limnephilidae</i>	Northern Caddisfly	Larvae	8	4		
			<i>Molannidae</i>		Larvae	2	6		
			<i>Oligochaeta</i>	Aquatic Worm	Adult	6	8		
			<i>Planorbidae</i>	Orb Snail	Adult	2	7		
			<i>Simuliidae</i>	Black Fly	Larvae	21	6		
			<i>Sphaeriidae</i>	Fingernail Clam	Adult	88	8		
			<i>Tabanidae</i>	Horse Fly	Larvae	8	6		
			<i>Tipulidae</i>	Crane Fly	Larvae	1	3	6.285714286	Fairly Poor
		10/23/2003	<i>Asellidae</i>	Sow Bug	Adult	3	8		
			<i>Ceratopogonidae</i>	Biting Midge	Larvae	1	6		
			<i>Chironomidae</i>	Midge	Larvae	71	6		
			<i>Elmidae</i>	Riffle Beetle	Larvae	3	4		
			<i>Empididae</i>	Dance Fly	Larvae	1	6		
			<i>Hydropsychidae</i>	Net-spinning Caddisfly	Larvae	4	4		
			<i>Leptophlebiidae</i>	Mayfly	Nymph	5	2		
			<i>Limnephilidae</i>	Northern Caddisfly	Larvae	6	4		
			<i>Oligochaeta</i>	Aquatic Worm	Adult	17	8		
			<i>Perlodidae</i>	Stonefly	Nymph	3	2		
			<i>Phryganeidae</i>	Large Caddisfly	Larvae	4	4		
			<i>Physidae</i>	Pouch Snail	Adult	2	8		
			<i>Planorbidae</i>	Orb Snail	Adult	1	7		
			<i>Psychodidae</i>	Sand Fly	Larvae	2	10		

Watercourse Name	Location	Sample Date	Taxonomic Names	Common Name	Life Stage	# Individuals	Biotic Index	Family Biotic Index (FBI)	Stream Health
			<i>Sialidae</i>	Alderfly	Nymph	1	4		
			<i>Simuliidae</i>	Black Fly	Larvae	1	6		
			<i>Sphaeriidae</i>	Fingernail Clam	Adult	228	8		
			<i>Tabanidae</i>	Horse Fly	Larvae	8	6		
			<i>Tipulidae</i>	Crane Fly	Larvae	7	3	7.141304348	Poor
Kerr Lupton Drain	Line 35	6/22/1998	<i>Acariformes</i>	Water Mite	Adult	1	4		
			<i>Caenidae</i>	Crawling Mayfly	Nymph	2	7		
			<i>Chironomidae</i>	Midge	Larvae	72	6		
			<i>Chironomidae</i>	Midge	Pupa	3	6		
			<i>Corixidae</i>	Water Boatmen	Adult	4	5		
			<i>Elmidae</i>	Riffle Beetle	Larvae	10	4		
			<i>Hemiptera</i>	Water Bug	Adult	1	-1		
			<i>Oligochaeta</i>	Aquatic Worm	Adult	17	8		
			<i>Psephenidae</i>	Water Penny Beetle	Larvae	1	4	6.072727273	Fairly Poor
		6/25/1999	<i>Acariformes</i>	Water Mite	Adult	2	4		
			<i>Ceratopogonidae</i>	Biting Midge	Larvae	1	6		
			<i>Chironomidae</i>	Midge	Pupa	1	6		
			<i>Chironomidae</i>	Midge	Larvae	74	6		
			<i>Coenagrionidae</i>	Narrow-winged Damselfly	Nymph	2	9		
			<i>Corixidae</i>	Water Boatmen	Adult	20	5		
			<i>Elmidae</i>	Riffle Beetle	Larvae	1	4		
			<i>Oligochaeta</i>	Aquatic Worm	Adult	1	8		
			<i>Sphaeriidae</i>	Fingernail Clam	Adult	1	8	5.844660194	Fairly Poor
		6/19/2001	<i>Acariformes</i>	Water Mite	Adult	10	4		
			<i>Athericidae</i>	Snipe Fly	Larvae	1	2		
			<i>Ceratopogonidae</i>	Biting Midge	Larvae	4	6		
			<i>Chironomidae</i>	Midge	Larvae	37	6		

Watercourse Name	Location	Sample Date	Taxonomic Names	Common Name	Life Stage	# Individuals	Biotic Index	Family Biotic Index (FBI)	Stream Health
			<i>Collembola</i>	Springtail	Adult	1	5		
			<i>Corixidae</i>	Water Boatmen	Adult	41	5		
			<i>Cyclopoida</i>	Fish Lice	Adult	5	8		
			<i>Elmidae</i>	Riffle Beetle	Larvae	46	4		
			<i>Hydrozoa</i>	Hydra	Adult	3	5		
			<i>Nematoda</i>	Thread Worm	Adult	3	-1		
			<i>Oligochaeta</i>	Aquatic Worm	Adult	29	8		
			<i>Ostracoda</i>	Seed Shrimp	Adult	36	8		
			<i>Simuliidae</i>	Black Fly	Larvae	1	6		
			<i>Sphaeriidae</i>	Fingernail Clam	Adult	2	8	5.921296296	Fairly Poor
Kerr-Lupton Drain	West of Tavistock	6/22/1999	<i>Asellidae</i>	Sow Bug	Adult	8	8		
			<i>Ceratopogonidae</i>	Biting Midge	Larvae	1	6		
			<i>Chironomidae</i>	Midge	Larvae	103	6		
			<i>Chironomidae</i>	Midge	Pupa	3	6		
			<i>Corixidae</i>	Water Boatmen	Adult	3	5		
			<i>Elmidae</i>	Riffle Beetle	Adult	7	4		
			<i>Halplidae</i>	Crawling Water Beetle	Larvae	1	5		
			<i>Hydropsychidae</i>	Net-spinning Caddisfly	Larvae	1	4		
			<i>Lymnaeidae</i>	Pond Snail	Adult	1	6		
			<i>Oligochaeta</i>	Aquatic Worm	Adult	8	8		
			<i>Ostracoda</i>	Seed Shrimp	Adult	1	8		
			<i>Simuliidae</i>	Black Fly	Larvae	2	6		
			<i>Tabanidae</i>	Horse Fly	Larvae	1	6	6.1	Fairly Poor
Kerr-Lupman Drain Branch D	45th Line	6/25/2003	<i>Acariformes</i>	Water Mite	Adult	1	4		
			<i>Asellidae</i>	Sow Bug	Adult	13	8		
			<i>Chironomidae</i>	Midge	Pupa	1	6		
			<i>Chironomidae</i>	Midge	Larvae	208	6		



Watercourse Name	Location	Sample Date	Taxonomic Names	Common Name	Life Stage	# Individuals	Biotic Index	Family Biotic Index (FBI)	Stream Health
			<i>Corixidae</i>	Water Boatmen	Adult	1	5		
			<i>Cyclopoida</i>	Fish Lice	Adult	13	8		
			<i>Dytiscidae</i>	Predacious Diving Beetle	Larvae	11	5		
			<i>Gammaridae</i>	Sideswimmer	Adult	16	4		
			<i>Hydrophilidae</i>	Water Scavenger Beetle	Adult	3	5		
			<i>Lymnaeidae</i>	Pond Snail	Adult	18	6		
			<i>Muscidae</i>	Muscid Fly	Larvae	1	6		
			<i>Nematoda</i>	Thread Worm	Adult	8	-1		
			<i>Oligochaeta</i>	Aquatic Worm	Adult	4	8		
			<i>Physidae</i>	Pouch Snail	Adult	19	8		
			<i>Planorbidae</i>	Orb Snail	Adult	4	7		
			<i>Sphaeriidae</i>	Fingernail Clam	Adult	1	8	6.175159236	Fairly Poor
		10/23/2003	<i>Acariformes</i>	Water Mite	Adult	7	4		
			<i>Asellidae</i>	Sow Bug	Adult	3	8		
			<i>Chironomidae</i>	Midge	Larvae	36	6		
			<i>Chrysomelidae</i>	Leaf Beetle	Adult	2	-1		
			<i>Cyclopoida</i>	Fish Lice	Adult	9	8		
			<i>Diptera</i>	Two-winged Fly	Pupa	1	-1		
			<i>Dixidae</i>	Dixa Fly	Larvae	1	1		
			<i>Dolichopodidae</i>	Long-legged Fly	Larvae	3	4		
			<i>Dytiscidae</i>	Predacious Diving Beetle	Adult	1	5		
			<i>Gammaridae</i>	Sideswimmer	Adult	11	4		
			<i>Hydrophilidae</i>	Water Scavenger Beetle	Adult	4	5		
			<i>Limnephilidae</i>	Northern Caddisfly	Larvae	35	4		
			<i>Lymnaeidae</i>	Pond Snail	Adult	30	6		
			<i>Nematoda</i>	Thread Worm	Adult	30	-1		

Watercourse Name	Location	Sample Date	Taxonomic Names	Common Name	Life Stage	# Individuals	Biotic Index	Family Biotic Index (FBI)	Stream Health
			<i>Nemouridae</i>	Stonefly	Nymph	3	2		
			<i>Oligochaeta</i>	Aquatic Worm	Adult	133	8		
			<i>Planorbidae</i>	Orb Snail	Adult	8	7		
			<i>Psychodidae</i>	Sand Fly	Larvae	8	10		
			<i>Rhyacophilidae</i>	Primitive Caddisfly	Larvae	1	0		
			<i>Sphaeriidae</i>	Fingernail Clam	Adult	65	8		
			<i>Stratiomyidae</i>	Soldier Fly	Larvae	1	7		
			<i>Tipulidae</i>	Crane Fly	Larvae	6	3		
			<i>Turbellaria</i>	Flatworm	Adult	33	4	6.595477387	Poor
Lowe Drain	County Road 26	6/19/2007	<i>Acariformes</i>	Water Mite	Adult	9	4		
			<i>Asellidae</i>	Sow Bug	Adult	7	8		
			<i>Baetidae</i>	Small Mayfly	Nymph	3	4		
			<i>Chironomidae</i>	Midge	Larvae	71	6		
			<i>Chironomidae</i>	Midge	Pupa	3	6		
			<i>Corixidae</i>	Water Boatmen	Adult	2	5		
			<i>Daphniidae</i>	Water Flea	Adult	1	8		
			<i>Dytiscidae</i>	Predacious Diving Beetle	Larvae	1	5		
			<i>Elmidae</i>	Riffle Beetle	Adult	1	4		
			<i>Elmidae</i>	Riffle Beetle	Larvae	37	4		
			<i>Erpobdellidae</i>	Leech	Adult	1	10		
			<i>Gerridae</i>	Water Strider	Adult	1	-1		
			<i>Halplidae</i>	Crawling Water Beetle	Larvae	8	5		
			<i>Heptageniidae</i>	Stream Mayfly	Nymph	1	4		
			<i>Hydropsychidae</i>	Net-spinning Caddisfly	Larvae	11	4		

Watercourse Name	Location	Sample Date	Taxonomic Names	Common Name	Life Stage	# Individuals	Biotic Index	Family Biotic Index (FBI)	Stream Health
			<i>Hydroptilidae</i>	Micro-caddisfly	Larvae	14	4		
			<i>Hydrozoa</i>	Hydra	Adult	2	5		
			<i>Leptoceridae</i>	Long-horned Caddisfly	Larvae	4	4		
			<i>Ostracoda</i>	Seed Shrimp	Adult	1	8		
			<i>Physidae</i>	Pouch Snail	Adult	19	8		
			<i>Simuliidae</i>	Black Fly	Larvae	1	6		
			<i>Sphaeriidae</i>	Fingernail Clam	Adult	3	8		
			<i>Talitridae</i>	Sideswimmer	Adult	44	8		
			<i>Turbellaria</i>	Flatworm	Adult	4	4	5.891129032	Fairly Poor
Rolston Drain	St. Marys	12/7/2003	<i>Acariformes</i>	Water Mite	Adult	4	4		
			<i>Asellidae</i>	Sow Bug	Adult	1	8		
			<i>Capniidae</i>	Stonefly	Nymph	55	1		
			<i>Ceratopogonidae</i>	Biting Midge	Larvae	1	6		
			<i>Chironomidae</i>	Midge	Larvae	53	6		
			<i>Cyclopoida</i>	Fish Lice	Adult	9	8		
			<i>Diptera</i>	Two-winged Fly	Pupa	1	-1		
			<i>Dytiscidae</i>	Predacious Diving Beetle	Larvae	1	5		
			<i>Limnephilidae</i>	Northern Caddisfly	Larvae	3	4		
			<i>Lymnaeidae</i>	Pond Snail	Adult	1	6		
			<i>Nemouridae</i>	Stonefly	Nymph	28	2		
			<i>Oligochaeta</i>	Aquatic Worm	Adult	20	8		
			<i>Planorbidae</i>	Orb Snail	Adult	9	7		
			<i>Simuliidae</i>	Black Fly	Larvae	4	6		
			<i>Turbellaria</i>	Flatworm	Adult	12	4	4.223880597	Excellent

Watercourse Name	Location	Sample Date	Taxonomic Names	Common Name	Life Stage	# Individuals	Biotic Index	Family Biotic Index (FBI)	Stream Health
		10/6/2006	<i>Acariformes</i>	Water Mite	Adult	2	4		
			<i>Asellidae</i>	Sow Bug	Adult	2	8		
			<i>Baetidae</i>	Small Mayfly	Nymph	9	4		
			<i>Capniidae</i>	Stonefly	Nymph	3	1		
			<i>Chironomidae</i>	Midge	Pupa	1	6		
			<i>Chironomidae</i>	Midge	Larvae	57	6		
			<i>Cyclopoida</i>	Fish Lice	Adult	1	8		
			<i>Daphniidae</i>	Water Flea	Adult	1	8		
			<i>Diptera</i>	Two-winged Fly	Pupa	2	-1		
			<i>Elmidae</i>	Riffle Beetle	Larvae	1	4		
			<i>Elmidae</i>	Riffle Beetle	Adult	2	4		
			<i>Gammaridae</i>	Sideswimmer	Adult	1	4		
			<i>Lymnaeidae</i>	Pond Snail	Adult	8	6		
			<i>Nematoda</i>	Thread Worm	Adult	16	-1		
			<i>Oligochaeta</i>	Aquatic Worm	Adult	36	8		
			<i>Physidae</i>	Pouch Snail	Adult	7	8		
			<i>Planorbidae</i>	Orb Snail	Adult	32	7		
			<i>Rhyacophilidae</i>	Primitive Caddisfly	Larvae	1	0		
			<i>Sciomyzidae</i>	Snail Killing Fly	Larvae	2	-1		
			<i>Sphaeriidae</i>	Fingernail Clam	Adult	5	8		
			<i>Stratiomyidae</i>	Soldier Fly	Larvae	1	7		
			<i>Talitridae</i>	Sideswimmer	Adult	1	8		
			<i>Turbellaria</i>	Flatworm	Adult	16	4	6.299465241	Fairly Poor
Trout Creek	Between Wildwood and	6/27/1997	<i>Acariformes</i>	Water Mite	Adult	1	4		

Watercourse Name	Location	Sample Date	Taxonomic Names	Common Name	Life Stage	# Individuals	Biotic Index	Family Biotic Index (FBI)	Stream Health		
St. Marys			<i>Asellidae</i>	Sow Bug	Adult	3	8				
			<i>Baetidae</i>	Small Mayfly	Nymph	1	4				
			<i>Caenidae</i>	Crawling Mayfly	Nymph	5	7				
			<i>Chironomidae</i>	Midge	Pupa	2	6				
			<i>Chironomidae</i>	Midge	Larvae	62	6				
			<i>Hydropsychidae</i>	Net-spinning Caddisfly	Larvae	1	4				
			<i>Nematoda</i>	Thread Worm	Adult	2	-1				
			<i>Oligochaeta</i>	Aquatic Worm	Adult	49	8				
			<i>Simuliidae</i>	Black Fly	Larvae	4	6				
			<i>Turbellaria</i>	Flatworm	Adult	1	4			6.782945736	Poor
Perth County Road 9		6/22/1998	<i>Baetidae</i>	Small Mayfly	Nymph	1	4				
			<i>Chironomidae</i>	Midge	Larvae	14	6				
			<i>Oligochaeta</i>	Aquatic Worm	Adult	59	8				
			<i>Ostracoda</i>	Seed Shrimp	Adult	5	8				
			<i>Planorbidae</i>	Orb Snail	Adult	9	7				
			<i>Pleuroceridae</i>	River Snail	Adult	4	6				
			<i>Simuliidae</i>	Black Fly	Larvae	3	6				
			<i>Sphaeriidae</i>	Fingernail Clam	Adult	5	8				
			<i>Turbellaria</i>	Flatworm	Adult	18	4			6.923728814	Poor
					6/4/1999	<i>Baetidae</i>	Small Mayfly			Nymph	2
<i>Chironomidae</i>	Midge	Larvae				39	6				
<i>Nematoda</i>	Thread Worm	Adult				3	-1				
<i>Oligochaeta</i>	Aquatic Worm	Adult				22	8				
<i>Ostracoda</i>	Seed Shrimp	Adult				1	8				

Watercourse Name	Location	Sample Date	Taxonomic Names	Common Name	Life Stage	# Individuals	Biotic Index	Family Biotic Index (FBI)	Stream Health
			<i>Simuliidae</i>	Black Fly	Larvae	21	6		
			<i>Sphaeriidae</i>	Fingernail Clam	Adult	15	8		
			<i>Valvatidae</i>	Round-mouthed Snail	Adult	14	8	6.877192982	Poor
		6/8/2000	<i>Baetidae</i>	Small Mayfly	Nymph	2	4		
			<i>Chironomidae</i>	Midge	Larvae	10	6		
			<i>Hydropsychidae</i>	Net-spinning Caddisfly	Larvae	1	4		
			<i>Hydrozoa</i>	Hydra	Adult	124	5		
			<i>Nematoda</i>	Thread Worm	Adult	2	-1		
			<i>Oligochaeta</i>	Aquatic Worm	Adult	119	8		
			<i>Ostracoda</i>	Seed Shrimp	Adult	3	8		
			<i>Planorbidae</i>	Orb Snail	Adult	4	7		
			<i>Sphaeriidae</i>	Fingernail Clam	Adult	2	8		
			<i>Turbellaria</i>	Flatworm	Adult	2	4	6.441947566	Fairly Poor
		6/20/2002	<i>Asellidae</i>	Sow Bug	Adult	1	8		
			<i>Chironomidae</i>	Midge	Pupa	1	6		
			<i>Chironomidae</i>	Midge	Larvae	27	6		
			<i>Cyclopoida</i>	Fish Lice	Adult	15	8		
			<i>Daphniidae</i>	Water Flea	Adult	35	8		
			<i>Gammaridae</i>	Sideswimmer	Adult	1	4		
			<i>Hydrozoa</i>	Hydra	Adult	12	5		
			<i>Nematoda</i>	Thread Worm	Adult	1	-1		
			<i>Oligochaeta</i>	Aquatic Worm	Adult	104	8		
			<i>Ostracoda</i>	Seed Shrimp	Adult	8	8		
			<i>Physidae</i>	Pouch Snail	Adult	1	8		

Watercourse Name	Location	Sample Date	Taxonomic Names	Common Name	Life Stage	# Individuals	Biotic Index	Family Biotic Index (FBI)	Stream Health
			<i>Sphaeriidae</i>	Fingernail Clam	Adult	1	8		
			<i>Turbellaria</i>	Flatworm	Adult	6	4	7.433962264	Very Poor
		6/10/2003	<i>Acariformes</i>	Water Mite	Adult	2	4		
			<i>Asellidae</i>	Sow Bug	Adult	9	8		
			<i>Baetidae</i>	Small Mayfly	Nymph	3	4		
			<i>Caenidae</i>	Crawling Mayfly	Nymph	1	7		
			<i>Ceratopogonidae</i>	Biting Midge	Larvae	1	6		
			<i>Chironomidae</i>	Midge	Larvae	141	6		
			<i>Chironomidae</i>	Midge	Pupa	38	6		
			<i>Chrysomelidae</i>	Leaf Beetle	Larvae	3	-1		
			<i>Cyclopoida</i>	Fish Lice	Adult	1	8		
			<i>Empididae</i>	Dance Fly	Pupa	1	6		
			<i>Empididae</i>	Dance Fly	Larvae	1	6		
			<i>Haliplidae</i>	Crawling Water Beetle	Adult	1	5		
			<i>Oligochaeta</i>	Aquatic Worm	Adult	95	8		
			<i>Simuliidae</i>	Black Fly	Larvae	7	6		
			<i>Simuliidae</i>	Black Fly	Pupa	9	6		
			<i>Sphaeriidae</i>	Fingernail Clam	Adult	1	8		
			<i>Talitridae</i>	Sideswimmer	Adult	1	8	6.653846154	Poor
		5/31/2004	<i>Acariformes</i>	Water Mite	Adult	5	4		
			<i>Asellidae</i>	Sow Bug	Adult	9	8		
			<i>Baetidae</i>	Small Mayfly	Nymph	6	4		
			<i>Caenidae</i>	Crawling Mayfly	Nymph	18	7		
			<i>Chironomidae</i>	Midge	Larvae	63	6		

Watercourse Name	Location	Sample Date	Taxonomic Names	Common Name	Life Stage	# Individuals	Biotic Index	Family Biotic Index (FBI)	Stream Health
			<i>Chironomidae</i>	Midge	Pupa	13	6		
			<i>Daphniidae</i>	Water Flea	Adult	360	8		
			<i>Empididae</i>	Dance Fly	Pupa	2	6		
			<i>Empididae</i>	Dance Fly	Larvae	1	6		
			<i>Oligochaeta</i>	Aquatic Worm	Adult	42	8		
			<i>Simuliidae</i>	Black Fly	Larvae	17	6		
			<i>Simuliidae</i>	Black Fly	Pupa	1	6		
			<i>Sphaeriidae</i>	Fingernail Clam	Adult	4	8		
			<i>Talitridae</i>	Sideswimmer	Adult	1	8	7.527675277	Very Poor
		5/26/2005	<i>Acariformes</i>	Water Mite	Adult	2	4		
			<i>Asellidae</i>	Sow Bug	Adult	3	8		
			<i>Caenidae</i>	Crawling Mayfly	Nymph	8	7		
			<i>Ceratopogonidae</i>	Biting Midge	Larvae	2	6		
			<i>Chironomidae</i>	Midge	Larvae	45	6		
			<i>Chironomidae</i>	Midge	Pupa	2	6		
			<i>Cyclopoida</i>	Fish Lice	Adult	1	8		
			<i>Daphniidae</i>	Water Flea	Adult	72	8		
			<i>Hydropsychidae</i>	Net-spinning Caddisfly	Larvae	1	4		
			<i>Hydrozoa</i>	Hydra	Adult	6	5		
			<i>Nematoda</i>	Thread Worm	Adult	2	-1		
			<i>Oligochaeta</i>	Aquatic Worm	Adult	28	8		
			<i>Sphaeriidae</i>	Fingernail Clam	Adult	1	8	7.204678363	Poor
		5/30/2006	<i>Asellidae</i>	Sow Bug	Adult	18	8		
			<i>Caenidae</i>	Crawling Mayfly	Nymph	5	7		



Watercourse Name	Location	Sample Date	Taxonomic Names	Common Name	Life Stage	# Individuals	Biotic Index	Family Biotic Index (FBI)	Stream Health
			<i>Ceratopogonidae</i>	Biting Midge	Larvae	5	6		
			<i>Chironomidae</i>	Midge	Pupa	2	6		
			<i>Chironomidae</i>	Midge	Larvae	48	6		
			<i>Corixidae</i>	Water Boatmen	Adult	3	5		
			<i>Dytiscidae</i>	Predacious Diving Beetle	Larvae	2	5		
			<i>Empididae</i>	Dance Fly	Pupa	1	6		
			<i>Hydropsychidae</i>	Net-spinning Caddisfly	Larvae	1	4		
			<i>Hydrozoa</i>	Hydra	Adult	37	5		
			<i>Nematoda</i>	Thread Worm	Adult	7	-1		
			<i>Oligochaeta</i>	Aquatic Worm	Adult	68	8		
			<i>Simuliidae</i>	Black Fly	Larvae	1	6		
			<i>Simuliidae</i>	Black Fly	Pupa	2	6		
			<i>Talitridae</i>	Sideswimmer	Adult	2	8	6.702564103	Poor
		5/30/2007	<i>Asellidae</i>	Sow Bug	Adult	7	8		
			<i>Caenidae</i>	Crawling Mayfly	Nymph	2	7		
			<i>Ceratopogonidae</i>	Biting Midge	Larvae	2	6		
			<i>Chironomidae</i>	Midge	Pupa	17	6		
			<i>Chironomidae</i>	Midge	Larvae	88	6		
			<i>Corixidae</i>	Water Boatmen	Adult	1	5		
			<i>Cyclopoida</i>	Fish Lice	Adult	2	8		
			<i>Daphniidae</i>	Water Flea	Adult	12	8		
			<i>Empididae</i>	Dance Fly	Larvae	1	6		
			<i>Empididae</i>	Dance Fly	Pupa	2	6		
			<i>Hydroptilidae</i>	Micro-caddisfly	Larvae	2	4		

Watercourse Name	Location	Sample Date	Taxonomic Names	Common Name	Life Stage	# Individuals	Biotic Index	Family Biotic Index (FBI)	Stream Health
			<i>Oligochaeta</i>	Aquatic Worm	Adult	74	8	6.89047619	Poor
		5/28/2008	<i>Acariformes</i>	Water Mite	Adult	3	4		
			<i>Asellidae</i>	Sow Bug	Adult	5	8		
			<i>Caenidae</i>	Crawling Mayfly	Nymph	4	7		
			<i>Chironomidae</i>	Midge	Larvae	41	6		
			<i>Daphniidae</i>	Water Flea	Adult	330	8		
			<i>Nematoda</i>	Thread Worm	Adult	1	-1		
			<i>Oligochaeta</i>	Aquatic Worm	Adult	5	8		
			<i>Simuliidae</i>	Black Fly	Larvae	1	6	7.742930591	Very Poor
	Below Wildwood Reservoir	6/27/1997	<i>Baetidae</i>	Small Mayfly	Nymph	1	4		
			<i>Caenidae</i>	Crawling Mayfly	Nymph	1	7		
			<i>Ceratopogonidae</i>	Biting Midge	Larvae	5	6		
			<i>Chironomidae</i>	Midge	Larvae	67	6		
			<i>Chironomidae</i>	Midge	Pupa	14	6		
			<i>Cladocera</i>	Water Flea	Adult	11	8		
			<i>Cyclopoida</i>	Fish Lice	Adult	1	8		
			<i>Empididae</i>	Dance Fly	Pupa	1	6		
			<i>Oligochaeta</i>	Aquatic Worm	Adult	56	8		
			<i>Ostracoda</i>	Seed Shrimp	Adult	11	8		
			<i>Simuliidae</i>	Black Fly	Larvae	26	6		
			<i>Simuliidae</i>	Black Fly	Pupa	12	6	6.762135922	Poor
	Township/County Line Upstream of Wildwood	6/5/2000	<i>Acariformes</i>	Water Mite	Adult	1	4		
			<i>Asellidae</i>	Sow Bug	Adult	5	8		

Watercourse Name	Location	Sample Date	Taxonomic Names	Common Name	Life Stage	# Individuals	Biotic Index	Family Biotic Index (FBI)	Stream Health
	Reservoir		<i>Chironomidae</i>	Midge	Larvae	38	6		
			<i>Chironomidae</i>	Midge	Pupa	4	6		
			<i>Dytiscidae</i>	Predacious Diving Beetle	Larvae	1	5		
			<i>Elmidae</i>	Riffle Beetle	Larvae	9	4		
			<i>Elmidae</i>	Riffle Beetle	Adult	2	4		
			<i>Oligochaeta</i>	Aquatic Worm	Adult	47	8		
			<i>Physidae</i>	Pouch Snail	Adult	2	8		
			<i>Sphaeriidae</i>	Fingernail Clam	Adult	1	8		
			<i>Turbellaria</i>	Flatworm	Adult	2	4	6.723214286	Poor
		6/19/2001	<i>Asellidae</i>	Sow Bug	Adult	2	8		
			<i>Baetidae</i>	Small Mayfly	Nymph	9	4		
			<i>Chironomidae</i>	Midge	Larvae	110	6		
			<i>Chironomidae</i>	Midge	Pupa	14	6		
			<i>Elmidae</i>	Riffle Beetle	Adult	2	4		
			<i>Empididae</i>	Dance Fly	Pupa	1	6		
			<i>Hydropsychidae</i>	Net-spinning Caddisfly	Larvae	23	4		
			<i>Oligochaeta</i>	Aquatic Worm	Adult	67	8		
			<i>Physidae</i>	Pouch Snail	Adult	2	8	6.32173913	Fairly Poor
		6/12/2002	<i>Acariformes</i>	Water Mite	Adult	3	4		
			<i>Asellidae</i>	Sow Bug	Adult	44	8		
			<i>Baetidae</i>	Small Mayfly	Nymph	7	4		
			<i>Ceratopogonidae</i>	Biting Midge	Larvae	1	6		
			<i>Chironomidae</i>	Midge	Pupa	11	6		
			<i>Chironomidae</i>	Midge	Larvae	108	6		

Watercourse Name	Location	Sample Date	Taxonomic Names	Common Name	Life Stage	# Individuals	Biotic Index	Family Biotic Index (FBI)	Stream Health
			<i>Corixidae</i>	Water Boatmen	Adult	1	5		
			<i>Elmidae</i>	Riffle Beetle	Larvae	6	4		
			<i>Elmidae</i>	Riffle Beetle	Adult	2	4		
			<i>Hydropsychidae</i>	Net-spinning Caddisfly	Larvae	10	4		
			<i>Nematoda</i>	Thread Worm	Adult	2	-1		
			<i>Oligochaeta</i>	Aquatic Worm	Adult	99	8		
			<i>Physidae</i>	Pouch Snail	Adult	17	8		
			<i>Simuliidae</i>	Black Fly	Larvae	12	6		
			<i>Turbellaria</i>	Flatworm	Adult	1	4	6.810559006	Poor
		10/2/2006	<i>Acariformes</i>	Water Mite	Adult	8	4		
			<i>Asellidae</i>	Sow Bug	Adult	6	8		
			<i>Baetidae</i>	Small Mayfly	Nymph	3	4		
			<i>Caenidae</i>	Crawling Mayfly	Nymph	1	7		
			<i>Calopterygidae</i>	Broad-winged Damselfly	Nymph	1	5		
			<i>Chironomidae</i>	Midge	Pupa	4	6		
			<i>Chironomidae</i>	Midge	Larvae	42	6		
			<i>Elmidae</i>	Riffle Beetle	Larvae	31	4		
			<i>Elmidae</i>	Riffle Beetle	Adult	7	4		
			<i>Empididae</i>	Dance Fly	Larvae	2	6		
			<i>Hebridae</i>	Sphagnum Bug	Nymph	1	-1		
			<i>Heptageniidae</i>	Stream Mayfly	Nymph	15	4		
			<i>Hydropsychidae</i>	Net-spinning Caddisfly	Larvae	87	4		
			<i>Hydroptilidae</i>	Micro-caddisfly	Larvae	4	4		
			<i>Nematoda</i>	Thread Worm	Adult	2	-1		

Watercourse Name	Location	Sample Date	Taxonomic Names	Common Name	Life Stage	# Individuals	Biotic Index	Family Biotic Index (FBI)	Stream Health
			<i>Oligochaeta</i>	Aquatic Worm	Adult	1	8		
			<i>Simuliidae</i>	Black Fly	Larvae	1	6		
			<i>Sphaeriidae</i>	Fingernail Clam	Adult	2	8		
			<i>Tipulidae</i>	Crane Fly	Larvae	1	3		
			<i>Turbellaria</i>	Flatworm	Adult	2	4	4.628440367	Good
		5/30/2007	<i>Acariformes</i>	Water Mite	Adult	4	4		
			<i>Asellidae</i>	Sow Bug	Adult	20	8		
			<i>Baetidae</i>	Small Mayfly	Nymph	22	4		
			<i>Chironomidae</i>	Midge	Pupa	37	6		
			<i>Chironomidae</i>	Midge	Larvae	200	6		
			<i>Elmidae</i>	Riffle Beetle	Adult	8	4		
			<i>Elmidae</i>	Riffle Beetle	Larvae	6	4		
			<i>Gammaridae</i>	Sideswimmer	Adult	1	4		
			<i>Hydroptilidae</i>	Micro-caddisfly	Larvae	3	4		
			<i>Leptophlebiidae</i>	Mayfly	Nymph	2	2		
			<i>Oligochaeta</i>	Aquatic Worm	Adult	34	8		
			<i>Perlidae</i>	Stonefly	Nymph	1	1		
			<i>Simuliidae</i>	Black Fly	Larvae	5	6	6.020408163	Fairly Poor
		10/1/2007	<i>Acariformes</i>	Water Mite	Adult	33	4		
			<i>Asellidae</i>	Sow Bug	Adult	1	8		
			<i>Baetidae</i>	Small Mayfly	Nymph	5	4		
			<i>Calopterygidae</i>	Broad-winged Damselfly	Nymph	3	5		
			<i>Chironomidae</i>	Midge	Pupa	15	6		
			<i>Chironomidae</i>	Midge	Larvae	136	6		

Watercourse Name	Location	Sample Date	Taxonomic Names	Common Name	Life Stage	# Individuals	Biotic Index	Family Biotic Index (FBI)	Stream Health
			<i>Corixidae</i>	Water Boatmen	Adult	4	5		
			<i>Elmidae</i>	Riffle Beetle	Adult	16	4		
			<i>Elmidae</i>	Riffle Beetle	Larvae	20	4		
			<i>Empididae</i>	Dance Fly	Larvae	4	6		
			<i>Heptageniidae</i>	Stream Mayfly	Nymph	4	4		
			<i>Hydropsychidae</i>	Net-spinning Caddisfly	Larvae	85	4		
			<i>Hydroptilidae</i>	Micro-caddisfly	Larvae	2	4		
			<i>Leptoceridae</i>	Long-horned Caddisfly	Larvae	1	4		
			<i>Nematoda</i>	Thread Worm	Adult	1	-1		
			<i>Oligochaeta</i>	Aquatic Worm	Adult	12	8		
			<i>Physidae</i>	Pouch Snail	Adult	7	8		
			<i>Pisauridae</i>	Fisher Spider	Adult	2	-1		
			<i>Planorbidae</i>	Orb Snail	Adult	2	7		
			<i>Simuliidae</i>	Black Fly	Larvae	8	6		
			<i>Sphaeriidae</i>	Fingernail Clam	Adult	2	8		
			<i>Tipulidae</i>	Crane Fly	Larvae	2	3		
			<i>Turbellaria</i>	Flatworm	Adult	19	4		
			<i>Veliidae</i>	Ripple Bug	Adult	5	-1	5.115485564	Fair
		7/8/2008	<i>Acariformes</i>	Water Mite	Adult	2	4		
			<i>Ancylidae</i>	Limpet	Adult	1	6		
			<i>Asellidae</i>	Sow Bug	Adult	8	8		
			<i>Baetidae</i>	Small Mayfly	Nymph	14	4		
			<i>Chironomidae</i>	Midge	Larvae	217	6		
			<i>Chironomidae</i>	Midge	Pupa	5	6		

Watercourse Name	Location	Sample Date	Taxonomic Names	Common Name	Life Stage	# Individuals	Biotic Index	Family Biotic Index (FBI)	Stream Health
			<i>Dytiscidae</i>	Predacious Diving Beetle	Larvae	1	5		
			<i>Elmidae</i>	Riffle Beetle	Larvae	40	4		
			<i>Elmidae</i>	Riffle Beetle	Adult	7	4		
			<i>Gammaridae</i>	Sideswimmer	Adult	1	4		
			<i>Hydropsychidae</i>	Net-spinning Caddisfly	Larvae	52	4		
			<i>Hydroptilidae</i>	Micro-caddisfly	Larvae	8	4		
			<i>Nematoda</i>	Thread Worm	Adult	2	-1		
			<i>Oligochaeta</i>	Aquatic Worm	Adult	10	8		
			<i>Simuliidae</i>	Black Fly	Pupa	3	6		
			<i>Simuliidae</i>	Black Fly	Larvae	72	6	5.517006803	Fair
	Below County Road 20	6/3/1997	<i>Acariformes</i>	Water Mite	Adult	1	4		
			<i>Ceratopogonidae</i>	Biting Midge	Larvae	2	6		
			<i>Chironomidae</i>	Midge	Larvae	81	6		
			<i>Chironomidae</i>	Midge	Pupa	8	6		
			<i>Elmidae</i>	Riffle Beetle	Adult	1	4		
			<i>Elmidae</i>	Riffle Beetle	Larvae	2	4		
			<i>Empididae</i>	Dance Fly	Larvae	2	6		
			<i>Hydropsychidae</i>	Net-spinning Caddisfly	Larvae	3	4		
			<i>Oligochaeta</i>	Aquatic Worm	Adult	11	8		
			<i>Simuliidae</i>	Black Fly	Larvae	3	6		
			<i>Simuliidae</i>	Black Fly	Pupa	1	6	6.069565217	Fairly Poor
		6/22/1998	<i>Baetidae</i>	Small Mayfly	Nymph	1	4		
			<i>Chironomidae</i>	Midge	Larvae	56	6		
			<i>Chironomidae</i>	Midge	Pupa	9	6		

Watercourse Name	Location	Sample Date	Taxonomic Names	Common Name	Life Stage	# Individuals	Biotic Index	Family Biotic Index (FBI)	Stream Health
			<i>Corixidae</i>	Water Boatmen	Adult	1	5		
			<i>Elmidae</i>	Riffle Beetle	Adult	1	4		
			<i>Hydropsychidae</i>	Net-spinning Caddisfly	Larvae	6	4		
			<i>Oligochaeta</i>	Aquatic Worm	Adult	25	8		
			<i>Simuliidae</i>	Black Fly	Larvae	7	6		
			<i>Turbellaria</i>	Flatworm	Adult	1	4	6.289719626	Fairly Poor
		6/22/1999	<i>Acariformes</i>	Water Mite	Adult	4	4		
			<i>Caenidae</i>	Crawling Mayfly	Nymph	2	7		
			<i>Calanoida</i>	Fish Lice	Adult	2	-1		
			<i>Ceratopogonidae</i>	Biting Midge	Larvae	1	6		
			<i>Chironomidae</i>	Midge	Pupa	6	6		
			<i>Chironomidae</i>	Midge	Larvae	129	6		
			<i>Corixidae</i>	Water Boatmen	Adult	1	5		
			<i>Elmidae</i>	Riffle Beetle	Larvae	6	4		
			<i>Elmidae</i>	Riffle Beetle	Adult	1	4		
			<i>Hydropsychidae</i>	Net-spinning Caddisfly	Larvae	4	4		
			<i>Oligochaeta</i>	Aquatic Worm	Adult	17	8		
			<i>Ostracoda</i>	Seed Shrimp	Adult	1	8		
			<i>Simuliidae</i>	Black Fly	Larvae	1	6		
			<i>Sphaeriidae</i>	Fingernail Clam	Adult	2	8	6.062857143	Fairly Poor
			<i>Acariformes</i>	Water Mite	Adult	4	4		
			<i>Caenidae</i>	Crawling Mayfly	Nymph	2	7		
			<i>Chironomidae</i>	Midge	Larvae	76	6		
			<i>Chironomidae</i>	Midge	Pupa	6	6		



Watercourse Name	Location	Sample Date	Taxonomic Names	Common Name	Life Stage	# Individuals	Biotic Index	Family Biotic Index (FBI)	Stream Health
			<i>Corixidae</i>	Water Boatmen	Adult	1	5		
			<i>Elmidae</i>	Riffle Beetle	Larvae	3	4		
			<i>Hydropsychidae</i>	Net-spinning Caddisfly	Larvae	2	4		
			<i>Leptoceridae</i>	Long-horned Caddisfly	Larvae	1	4		
			<i>Oligochaeta</i>	Aquatic Worm	Adult	6	8	5.930693069	Fairly Poor
		6/5/2000	<i>Acariformes</i>	Water Mite	Adult	2	4		
			<i>Caenidae</i>	Crawling Mayfly	Nymph	10	7		
			<i>Ceratopogonidae</i>	Biting Midge	Larvae	1	6		
			<i>Chironomidae</i>	Midge	Pupa	4	6		
			<i>Chironomidae</i>	Midge	Larvae	14	6		
			<i>Elmidae</i>	Riffle Beetle	Larvae	2	4		
			<i>Oligochaeta</i>	Aquatic Worm	Adult	80	8		
			<i>Sphaeriidae</i>	Fingernail Clam	Adult	3	8		
			<i>Talitridae</i>	Sideswimmer	Adult	1	8		
			<i>Turbellaria</i>	Flatworm	Adult	1	4	7.423728814	Very Poor
		10/2/2000	<i>Acariformes</i>	Water Mite	Adult	5	4		
			<i>Baetidae</i>	Small Mayfly	Nymph	3	4		
			<i>Caenidae</i>	Crawling Mayfly	Nymph	3	7		
			<i>Chironomidae</i>	Midge	Larvae	70	6		
			<i>Chironomidae</i>	Midge	Pupa	2	6		
			<i>Daphniidae</i>	Water Flea	Adult	2	8		
			<i>Elmidae</i>	Riffle Beetle	Larvae	3	4		
			<i>Oligochaeta</i>	Aquatic Worm	Adult	11	8		
			<i>Simuliidae</i>	Black Fly	Larvae	7	6		

Watercourse Name	Location	Sample Date	Taxonomic Names	Common Name	Life Stage	# Individuals	Biotic Index	Family Biotic Index (FBI)	Stream Health
			<i>Turbellaria</i>	Flatworm	Adult	2	4	6.027777778	Fairly Poor
		6/19/2001	<i>Acariformes</i>	Water Mite	Adult	9	4		
			<i>Baetidae</i>	Small Mayfly	Nymph	1	4		
			<i>Chironomidae</i>	Midge	Larvae	76	6		
			<i>Chironomidae</i>	Midge	Pupa	22	6		
			<i>Coenagrionidae</i>	Narrow-winged Damselfly	Nymph	2	9		
			<i>Diptera</i>	Two-winged Fly	Pupa	3	-1		
			<i>Elmidae</i>	Riffle Beetle	Larvae	4	4		
			<i>Hydropsychidae</i>	Net-spinning Caddisfly	Larvae	3	4		
			<i>Hydrozoa</i>	Hydra	Adult	2	5		
			<i>Muscidae</i>	Muscid Fly	Larvae	1	6		
			<i>Oligochaeta</i>	Aquatic Worm	Adult	78	8		
			<i>Ostracoda</i>	Seed Shrimp	Adult	3	8		
			<i>Physidae</i>	Pouch Snail	Adult	4	8		
			<i>Simuliidae</i>	Black Fly	Larvae	2	6		
			<i>Sphaeriidae</i>	Fingernail Clam	Adult	2	8	6.688995215	Poor
		6/19/2002	<i>Acariformes</i>	Water Mite	Adult	3	4		
			<i>Ceratopogonidae</i>	Biting Midge	Larvae	1	6		
			<i>Chironomidae</i>	Midge	Larvae	48	6		
			<i>Chironomidae</i>	Midge	Pupa	5	6		
			<i>Corixidae</i>	Water Boatmen	Adult	2	5		
			<i>Elmidae</i>	Riffle Beetle	Larvae	1	4		
			<i>Hydrozoa</i>	Hydra	Adult	3	5		
			<i>Oligochaeta</i>	Aquatic Worm	Adult	378	8		

Watercourse Name	Location	Sample Date	Taxonomic Names	Common Name	Life Stage	# Individuals	Biotic Index	Family Biotic Index (FBI)	Stream Health
			<i>Simuliidae</i>	Black Fly	Larvae	2	6		
			<i>Sphaeriidae</i>	Fingernail Clam	Adult	4	8	7.680089485	Very Poor
	At Dump Road	6/2/2000	<i>Acariformes</i>	Water Mite	Adult	1	4		
			<i>Asellidae</i>	Sow Bug	Adult	3	8		
			<i>Ceratopogonidae</i>	Biting Midge	Larvae	1	6		
			<i>Chironomidae</i>	Midge	Larvae	21	6		
			<i>Chironomidae</i>	Midge	Pupa	1	6		
			<i>Corixidae</i>	Water Boatmen	Adult	1	5		
			<i>Cyclopoida</i>	Fish Lice	Adult	6	8		
			<i>Dytiscidae</i>	Predacious Diving Beetle	Adult	2	5		
			<i>Elmidae</i>	Riffle Beetle	Larvae	1	4		
			<i>Muscidae</i>	Muscid Fly	Larvae	1	6		
			<i>Oligochaeta</i>	Aquatic Worm	Adult	82	8		
			<i>Sphaeriidae</i>	Fingernail Clam	Adult	1	8	7.462809917	Very Poor
	Below Junction of Main Tributaries	6/10/2003	<i>Acariformes</i>	Water Mite	Adult	6	4		
			<i>Asellidae</i>	Sow Bug	Adult	6	8		
			<i>Baetidae</i>	Small Mayfly	Nymph	28	4		
			<i>Caenidae</i>	Crawling Mayfly	Nymph	3	7		
			<i>Ceratopogonidae</i>	Biting Midge	Larvae	2	6		
			<i>Chironomidae</i>	Midge	Larvae	58	6		
			<i>Chironomidae</i>	Midge	Pupa	15	6		
			<i>Elmidae</i>	Riffle Beetle	Larvae	18	4		
			<i>Elmidae</i>	Riffle Beetle	Adult	8	4		
			<i>Gammaridae</i>	Sideswimmer	Adult	1	4		

Watercourse Name	Location	Sample Date	Taxonomic Names	Common Name	Life Stage	# Individuals	Biotic Index	Family Biotic Index (FBI)	Stream Health
			<i>Hydropsychidae</i>	Net-spinning Caddisfly	Pupa	3	4		
			<i>Hydropsychidae</i>	Net-spinning Caddisfly	Larvae	3	4		
			<i>Hydroptilidae</i>	Micro-caddisfly	Larvae	1	4		
			<i>Hydroptilidae</i>	Micro-caddisfly	Pupa	1	4		
			<i>Nematoda</i>	Thread Worm	Adult	2	-1		
			<i>Oligochaeta</i>	Aquatic Worm	Adult	87	8		
			<i>Perlidae</i>	Stonefly	Nymph	1	1		
			<i>Planorbidae</i>	Orb Snail	Adult	1	7		
			<i>Simuliidae</i>	Black Fly	Larvae	6	6		
			<i>Sphaeriidae</i>	Fingernail Clam	Adult	6	8		
			<i>Tipulidae</i>	Crane Fly	Larvae	1	3		
			<i>Turbellaria</i>	Flatworm	Adult	4	4	6.185328185	Fairly Poor
		5/31/2004	<i>Acariformes</i>	Water Mite	Adult	3	4		
			<i>Asellidae</i>	Sow Bug	Adult	4	8		
			<i>Baetidae</i>	Small Mayfly	Nymph	24	4		
			<i>Caenidae</i>	Crawling Mayfly	Nymph	4	7		
			<i>Chironomidae</i>	Midge	Larvae	27	6		
			<i>Chironomidae</i>	Midge	Pupa	5	6		
			<i>Elmidae</i>	Riffle Beetle	Adult	17	4		
			<i>Elmidae</i>	Riffle Beetle	Larvae	44	4		
			<i>Empididae</i>	Dance Fly	Larvae	3	6		
			<i>Heptageniidae</i>	Stream Mayfly	Nymph	3	4		
			<i>Hydrophilidae</i>	Water Scavenger Beetle	Larvae	1	5		
			<i>Nematoda</i>	Thread Worm	Adult	1	-1		

Watercourse Name	Location	Sample Date	Taxonomic Names	Common Name	Life Stage	# Individuals	Biotic Index	Family Biotic Index (FBI)	Stream Health
			<i>Oligochaeta</i>	Aquatic Worm	Adult	70	8		
			<i>Psephenidae</i>	Water Penny Beetle	Larvae	1	4		
			<i>Simuliidae</i>	Black Fly	Larvae	3	6		
			<i>Sphaeriidae</i>	Fingernail Clam	Adult	1	8	5.852380952	Fairly Poor
		5/26/2005	<i>Acariformes</i>	Water Mite	Adult	2	4		
			<i>Baetidae</i>	Small Mayfly	Nymph	25	4		
			<i>Chironomidae</i>	Midge	Larvae	121	6		
			<i>Chironomidae</i>	Midge	Pupa	10	6		
			<i>Elmidae</i>	Riffle Beetle	Larvae	13	4		
			<i>Elmidae</i>	Riffle Beetle	Adult	12	4		
			<i>Hydropsychidae</i>	Net-spinning Caddisfly	Larvae	2	4		
			<i>Oligochaeta</i>	Aquatic Worm	Adult	83	8		
			<i>Simuliidae</i>	Black Fly	Larvae	11	6	6.207885305	Fairly Poor
		5/30/2006	<i>Acariformes</i>	Water Mite	Adult	2	4		
			<i>Asellidae</i>	Sow Bug	Adult	15	8		
			<i>Baetidae</i>	Small Mayfly	Nymph	12	4		
			<i>Capniidae</i>	Stonefly	Nymph	1	1		
			<i>Chironomidae</i>	Midge	Pupa	9	6		
			<i>Chironomidae</i>	Midge	Larvae	81	6		
			<i>Elmidae</i>	Riffle Beetle	Larvae	14	4		
			<i>Elmidae</i>	Riffle Beetle	Adult	7	4		
			<i>Empididae</i>	Dance Fly	Pupa	1	6		
			<i>Gammaridae</i>	Sideswimmer	Adult	1	4		
			<i>Heptageniidae</i>	Stream Mayfly	Nymph	1	4		

Watercourse Name	Location	Sample Date	Taxonomic Names	Common Name	Life Stage	# Individuals	Biotic Index	Family Biotic Index (FBI)	Stream Health
			<i>Hydrophilidae</i>	Water Scavenger Beetle	Larvae	1	5		
			<i>Leptoceridae</i>	Long-horned Caddisfly	Larvae	1	4		
			<i>Nematoda</i>	Thread Worm	Adult	1	-1		
			<i>Oligochaeta</i>	Aquatic Worm	Adult	33	8		
			<i>Physidae</i>	Pouch Snail	Adult	1	8		
			<i>Simuliidae</i>	Black Fly	Larvae	48	6		
			<i>Sphaeriidae</i>	Fingernail Clam	Adult	1	8	6.07860262	Fairly Poor
		5/30/2007	<i>Acariformes</i>	Water Mite	Adult	1	4		
			<i>Asellidae</i>	Sow Bug	Adult	11	8		
			<i>Baetidae</i>	Small Mayfly	Nymph	38	4		
			<i>Ceratopogonidae</i>	Biting Midge	Larvae	1	6		
			<i>Chironomidae</i>	Midge	Larvae	100	6		
			<i>Chironomidae</i>	Midge	Pupa	33	6		
			<i>Elmidae</i>	Riffle Beetle	Adult	7	4		
			<i>Elmidae</i>	Riffle Beetle	Larvae	36	4		
			<i>Empididae</i>	Dance Fly	Larvae	2	6		
			<i>Heptageniidae</i>	Stream Mayfly	Nymph	2	4		
			<i>Hydropsychidae</i>	Net-spinning Caddisfly	Larvae	6	4		
			<i>Hydroptilidae</i>	Micro-caddisfly	Larvae	4	4		
			<i>Nemouridae</i>	Stonefly	Nymph	1	2		
			<i>Oligochaeta</i>	Aquatic Worm	Adult	12	8		
			<i>Simuliidae</i>	Black Fly	Larvae	30	6		
			<i>Sphaeriidae</i>	Fingernail Clam	Adult	2	8		
			<i>Tipulidae</i>	Crane Fly	Larvae	1	3	5.494773519	Fair

Watercourse Name	Location	Sample Date	Taxonomic Names	Common Name	Life Stage	# Individuals	Biotic Index	Family Biotic Index (FBI)	Stream Health
		5/28/2008	<i>Acariformes</i>	Water Mite	Adult	3	4		
			<i>Asellidae</i>	Sow Bug	Adult	11	8		
			<i>Baetidae</i>	Small Mayfly	Nymph	9	4		
			<i>Capniidae</i>	Stonefly	Nymph	1	1		
			<i>Ceratopogonidae</i>	Biting Midge	Larvae	6	6		
			<i>Chironomidae</i>	Midge	Larvae	122	6		
			<i>Chironomidae</i>	Midge	Pupa	17	6		
			<i>Dytiscidae</i>	Predacious Diving Beetle	Larvae	1	5		
			<i>Elmidae</i>	Riffle Beetle	Larvae	9	4		
			<i>Elmidae</i>	Riffle Beetle	Adult	11	4		
			<i>Empididae</i>	Dance Fly	Larvae	1	6		
			<i>Hydropsychidae</i>	Net-spinning Caddisfly	Larvae	1	4		
			<i>Hydroptilidae</i>	Micro-caddisfly	Larvae	1	4		
			<i>Nemouridae</i>	Stonefly	Nymph	1	2		
			<i>Oligochaeta</i>	Aquatic Worm	Adult	44	8		
			<i>Simuliidae</i>	Black Fly	Larvae	90	6		
			<i>Sphaeriidae</i>	Fingernail Clam	Adult	3	8		
			<i>Turbellaria</i>	Flatworm	Adult	3	4	6.095808383	Fairly Poor
		7/8/2008	<i>Acariformes</i>	Water Mite	Adult	3	4		
			<i>Asellidae</i>	Sow Bug	Adult	9	8		
			<i>Baetidae</i>	Small Mayfly	Nymph	29	4		
			<i>Chironomidae</i>	Midge	Pupa	3	6		
			<i>Chironomidae</i>	Midge	Larvae	95	6		
			<i>Corixidae</i>	Water Boatmen	Adult	3	5		

Watercourse Name	Location	Sample Date	Taxonomic Names	Common Name	Life Stage	# Individuals	Biotic Index	Family Biotic Index (FBI)	Stream Health
			<i>Elmidae</i>	Riffle Beetle	Adult	13	4		
			<i>Elmidae</i>	Riffle Beetle	Larvae	57	4		
			<i>Hydropsychidae</i>	Net-spinning Caddisfly	Larvae	101	4		
			<i>Hydroptilidae</i>	Micro-caddisfly	Pupa	1	4		
			<i>Hydroptilidae</i>	Micro-caddisfly	Larvae	3	4		
			<i>Oligochaeta</i>	Aquatic Worm	Adult	30	8		
			<i>Physidae</i>	Pouch Snail	Adult	1	8		
			<i>Simuliidae</i>	Black Fly	Larvae	14	6		
			<i>Sphaeriidae</i>	Fingernail Clam	Adult	26	8		
			<i>Tipulidae</i>	Crane Fly	Larvae	1	3		
			<i>Turbellaria</i>	Flatworm	Adult	7	4	5.237373737	Fair
	Upstream of Line 20	10/2/2006	<i>Acariformes</i>	Water Mite	Adult	8	4		
			<i>Ceratopogonidae</i>	Biting Midge	Larvae	3	6		
			<i>Chironomidae</i>	Midge	Pupa	3	6		
			<i>Chironomidae</i>	Midge	Larvae	70	6		
			<i>Corixidae</i>	Water Boatmen	Adult	2	5		
			<i>Elmidae</i>	Riffle Beetle	Adult	5	4		
			<i>Elmidae</i>	Riffle Beetle	Larvae	43	4		
			<i>Empididae</i>	Dance Fly	Larvae	1	6		
			<i>Hydropsychidae</i>	Net-spinning Caddisfly	Larvae	12	4		
			<i>Hydroptilidae</i>	Micro-caddisfly	Larvae	2	4		
			<i>Hydrozoa</i>	Hydra	Adult	3	5		
			<i>Leptoceridae</i>	Long-horned Caddisfly	Larvae	11	4		
			<i>Limnephilidae</i>	Northern Caddisfly	Larvae	1	4		
			<i>Oligochaeta</i>	Aquatic Worm	Adult	44	8		
			<i>Tabanidae</i>	Horse Fly	Larvae	2	6		
			<i>Tipulidae</i>	Crane Fly	Larvae	1	3		



Watercourse Name	Location	Sample Date	Taxonomic Names	Common Name	Life Stage	# Individuals	Biotic Index	Family Biotic Index (FBI)	Stream Health
			<i>Turbellaria</i>	Flatworm	Adult	1	4	5.594339623	Fair
		6/19/2007	<i>Acariformes</i>	Water Mite	Adult	16	4		
			<i>Baetidae</i>	Small Mayfly	Nymph	6	4		
			<i>Chironomidae</i>	Midge	Pupa	7	6		
			<i>Chironomidae</i>	Midge	Larvae	126	6		
			<i>Corixidae</i>	Water Boatmen	Adult	1	5		
			<i>Elmidae</i>	Riffle Beetle	Adult	20	4		
			<i>Elmidae</i>	Riffle Beetle	Larvae	41	4		
			<i>Hydropsychidae</i>	Net-spinning Caddisfly	Larvae	6	4		
			<i>Nematoda</i>	Thread Worm	Adult	2	-1		
			<i>Oligochaeta</i>	Aquatic Worm	Adult	180	8		
			<i>Simuliidae</i>	Black Fly	Larvae	6	6		
			<i>Sphaeriidae</i>	Fingernail Clam	Adult	5	8		
			<i>Turbellaria</i>	Flatworm	Adult	4	4	6.437799043	Fairly Poor
	St. Marys - Station St. south of Peel St. N.	10/1/2007	<i>Acariformes</i>	Water Mite	Adult	1	4		
			<i>Baetidae</i>	Small Mayfly	Nymph	8	4		
			<i>Caenidae</i>	Crawling Mayfly	Nymph	11	7		
			<i>Ceratopogonidae</i>	Biting Midge	Larvae	51	6		
			<i>Chironomidae</i>	Midge	Larvae	134	6		
			<i>Coenagrionidae</i>	Narrow-winged Damselfly	Nymph	2	9		
			<i>Cyclopoida</i>	Fish Lice	Adult	8	8		
			<i>Daphniidae</i>	Water Flea	Adult	8	8		
			<i>Elmidae</i>	Riffle Beetle	Larvae	6	4		
			<i>Elmidae</i>	Riffle Beetle	Adult	1	4		
			<i>Glossiphoniidae</i>	Leech	Adult	1	8		
			<i>Halipidae</i>	Crawling Water Beetle	Larvae	1	5		
			<i>Hydrophilidae</i>	Water Scavenger Beetle	Larvae	3	5		

Watercourse Name	Location	Sample Date	Taxonomic Names	Common Name	Life Stage	# Individuals	Biotic Index	Family Biotic Index (FBI)	Stream Health
			<i>Nematoda</i>	Thread Worm	Adult	1	-1		
			<i>Oligochaeta</i>	Aquatic Worm	Adult	85	8		
			<i>Sphaeriidae</i>	Fingernail Clam	Adult	9	8		
			<i>Talitridae</i>	Sideswimmer	Adult	1	8		
			<i>Turbellaria</i>	Flatworm	Adult	10	4		
			<i>Valvatidae</i>	Round-mouthed Snail	Adult	1	8	6.548387097	Poor
Trout Creek Tributary	Upstream of Wildwood, at Road 96 and 33rd Line	6/3/1997	<i>Acariformes</i>	Water Mite	Adult	4	4		
			<i>Ceratopogonidae</i>	Biting Midge	Larvae	1	6		
			<i>Chironomidae</i>	Midge	Larvae	44	6		
			<i>Chironomidae</i>	Midge	Pupa	10	6		
			<i>Elmidae</i>	Riffle Beetle	Larvae	10	4		
			<i>Elmidae</i>	Riffle Beetle	Adult	1	4		
			<i>Lepidostomatidae</i>	Lepistomatid Caddisfly	Larvae	13	1		
			<i>Leuctridae</i>	Stonefly	Nymph	4	0		
			<i>Lymnaeidae</i>	Pond Snail	Adult	1	6		
			<i>Nematoda</i>	Thread Worm	Adult	1	-1		
			<i>Oligochaeta</i>	Aquatic Worm	Adult	31	8		
			<i>Ostracoda</i>	Seed Shrimp	Adult	3	8		
			<i>Rhyacophilidae</i>	Primitive Caddisfly	Larvae	1	0		
			<i>Simuliidae</i>	Black Fly	Larvae	2	6		
			<i>Tipulidae</i>	Crane Fly	Larvae	2	3	5.503937008	Fair
		6/22/1998	<i>Acariformes</i>	Water Mite	Adult	5	4		
			<i>Baetidae</i>	Small Mayfly	Nymph	8	4		
			<i>Chironomidae</i>	Midge	Pupa	5	6		
			<i>Chironomidae</i>	Midge	Larvae	58	6		
			<i>Elmidae</i>	Riffle Beetle	Adult	1	4		
			<i>Elmidae</i>	Riffle Beetle	Larvae	2	4		

Watercourse Name	Location	Sample Date	Taxonomic Names	Common Name	Life Stage	# Individuals	Biotic Index	Family Biotic Index (FBI)	Stream Health
			<i>Hydropsychidae</i>	Net-spinning Caddisfly	Larvae	1	4		
			<i>Lepidostomatidae</i>	Lepistomatid Caddisfly	Larvae	5	1		
			<i>Leuctridae</i>	Stonefly	Nymph	3	0		
			<i>Oligochaeta</i>	Aquatic Worm	Adult	8	8		
			<i>Ostracoda</i>	Seed Shrimp	Adult	1	8		
			<i>Physidae</i>	Pouch Snail	Adult	2	8		
			<i>Simuliidae</i>	Black Fly	Larvae	3	6		
			<i>Sphaeriidae</i>	Fingernail Clam	Adult	2	8		
			<i>Tabanidae</i>	Horse Fly	Larvae	3	6		
			<i>Tipulidae</i>	Crane Fly	Larvae	2	3	5.47706422	Fair
		7/8/2008	<i>Acariformes</i>	Water Mite	Adult	4	4		
			<i>Asellidae</i>	Sow Bug	Adult	5	8		
			<i>Baetidae</i>	Small Mayfly	Nymph	11	4		
			<i>Capniidae</i>	Stonefly	Nymph	1	1		
			<i>Ceratopogonidae</i>	Biting Midge	Larvae	4	6		
			<i>Chironomidae</i>	Midge	Larvae	168	6		
			<i>Elmidae</i>	Riffle Beetle	Larvae	3	4		
			<i>Hydrophilidae</i>	Water Scavenger Beetle	Larvae	1	5		
			<i>Hydropsychidae</i>	Net-spinning Caddisfly	Pupa	1	4		
			<i>Hydropsychidae</i>	Net-spinning Caddisfly	Larvae	24	4		
			<i>Lepidostomatidae</i>	Lepistomatid Caddisfly	Larvae	1	1		
			<i>Philopotamidae</i>	Finger-net Caddisfly	Larvae	12	3		
			<i>Physidae</i>	Pouch Snail	Adult	3	8		
			<i>Rhyacophilidae</i>	Primitive Caddisfly	Larvae	1	0		
			<i>Simuliidae</i>	Black Fly	Larvae	99	6		
			<i>Tipulidae</i>	Crane Fly	Larvae	2	3		

Watercourse Name	Location	Sample Date	Taxonomic Names	Common Name	Life Stage	# Individuals	Biotic Index	Family Biotic Index (FBI)	Stream Health
			<i>Turbellaria</i>	Flatworm	Adult	1	4	5.615835777	Fair
Trout Creek Tributary	T. Jackson Property	6/5/2000	<i>Acariformes</i>	Water Mite	Adult	1	4		
			<i>Chironomidae</i>	Midge	Larvae	98	6		
			<i>Chironomidae</i>	Midge	Pupa	7	6		
			<i>Cyclopoida</i>	Fish Lice	Adult	2	8		
			<i>Nematoda</i>	Thread Worm	Adult	1	-1		
			<i>Oligochaeta</i>	Aquatic Worm	Adult	5	8		
			<i>Ostracoda</i>	Seed Shrimp	Adult	1	8		
			<i>Physidae</i>	Pouch Snail	Adult	9	8		
			<i>Sphaeriidae</i>	Fingernail Clam	Adult	1	8		
						<i>Tabanidae</i>	Horse Fly	Larvae	1
Trout Creek Tributary (Harmony Creek)	Harmony Conservation Area	6/3/1997	<i>Chironomidae</i>	Midge	Larvae	118	6		
			<i>Chironomidae</i>	Midge	Pupa	13	6		
			<i>Chloroperlidae</i>	Stonefly	Nymph	2	1		
			<i>Elmidae</i>	Riffle Beetle	Larvae	4	4		
			<i>Nematoda</i>	Thread Worm	Adult	2	-1		
			<i>Oligochaeta</i>	Aquatic Worm	Adult	44	8		
			<i>Tipulidae</i>	Crane Fly	Larvae	1	3	6.368131868	Fairly Poor
		7/2/1998	<i>Acariformes</i>	Water Mite	Adult	1	4		
	<i>Caenidae</i>		Crawling Mayfly	Nymph	1	7			
	<i>Chironomidae</i>		Midge	Pupa	8	6			
	<i>Chironomidae</i>		Midge	Larvae	58	6			
	<i>Corixidae</i>		Water Boatmen	Adult	1	5			
	<i>Dytiscidae</i>		Predacious Diving Beetle	Larvae	1	5			
	<i>Elmidae</i>		Riffle Beetle	Larvae	18	4			
	<i>Elmidae</i>		Riffle Beetle	Adult	5	4			
	<i>Heptageniidae</i>		Stream Mayfly	Nymph	2	4			

Watercourse Name	Location	Sample Date	Taxonomic Names	Common Name	Life Stage	# Individuals	Biotic Index	Family Biotic Index (FBI)	Stream Health
			<i>Hydropsychidae</i>	Net-spinning Caddisfly	Larvae	4	4		
			<i>Sialidae</i>	Alderfly	Nymph	1	4		
			<i>Simuliidae</i>	Black Fly	Larvae	1	6		
			<i>Tipulidae</i>	Crane Fly	Larvae	1	3	5.352941176	Fair
		10/2/2006	<i>Acariformes</i>	Water Mite	Adult	20	4		
			<i>Asellidae</i>	Sow Bug	Adult	2	8		
			<i>Baetidae</i>	Small Mayfly	Nymph	2	4		
			<i>Caenidae</i>	Crawling Mayfly	Nymph	1	7		
			<i>Chironomidae</i>	Midge	Larvae	42	6		
			<i>Chironomidae</i>	Midge	Pupa	3	6		
			<i>Elmidae</i>	Riffle Beetle	Larvae	29	4		
			<i>Elmidae</i>	Riffle Beetle	Adult	4	4		
			<i>Empididae</i>	Dance Fly	Larvae	1	6		
			<i>Heptageniidae</i>	Stream Mayfly	Nymph	10	4		
			<i>Hydrophilidae</i>	Water Scavenger Beetle	Larvae	1	5		
			<i>Hydropsychidae</i>	Net-spinning Caddisfly	Larvae	53	4		
			<i>Leptoceridae</i>	Long-horned Caddisfly	Larvae	5	4		
			<i>Limnephilidae</i>	Northern Caddisfly	Larvae	3	4		
			<i>Lymnaeidae</i>	Pond Snail	Adult	2	6		
			<i>Oligochaeta</i>	Aquatic Worm	Adult	15	8		
			<i>Physidae</i>	Pouch Snail	Adult	2	8		
			<i>Pisauridae</i>	Fisher Spider	Adult	1	-1		
			<i>Simuliidae</i>	Black Fly	Larvae	4	6		
			<i>Sphaeriidae</i>	Fingernail Clam	Adult	9	8		
			<i>Talitridae</i>	Sideswimmer	Adult	1	8		
			<i>Tipulidae</i>	Crane Fly	Larvae	5	3		

Watercourse Name	Location	Sample Date	Taxonomic Names	Common Name	Life Stage	# Individuals	Biotic Index	Family Biotic Index (FBI)	Stream Health
			<i>Turbellaria</i>	Flatworm	Adult	4	4	5.004587156	Fair
		6/19/2007	<i>Acariformes</i>	Water Mite	Adult	26	4		
			<i>Baetidae</i>	Small Mayfly	Larvae	7	4		
			<i>Chironomidae</i>	Midge	Pupa	6	6		
			<i>Chironomidae</i>	Midge	Larvae	166	6		
			<i>Chrysomelidae</i>	Leaf Beetle	Larvae	2	-1		
			<i>Coleoptera</i>	Beetle	Adult	1	-1		
			<i>Corixidae</i>	Water Boatmen	Adult	1	5		
			<i>Dytiscidae</i>	Predacious Diving Beetle	Larvae	1	5		
			<i>Elmidae</i>	Riffle Beetle	Adult	8	4		
			<i>Elmidae</i>	Riffle Beetle	Larvae	13	4		
			<i>Hydrachnidae</i>	Water Mite	Adult	1	4		
			<i>Hydropsychidae</i>	Net-spinning Caddisfly	Larvae	13	4		
			<i>Muscidae</i>	Muscid Fly	Larvae	1	6		
			<i>Oligochaeta</i>	Aquatic Worm	Adult	73	8		
			<i>Physidae</i>	Pouch Snail	Adult	1	8		
			<i>Simuliidae</i>	Black Fly	Larvae	2	6		
			<i>Sphaeriidae</i>	Fingernail Clam	Adult	3	8		
			<i>Tabanidae</i>	Horse Fly	Larvae	1	6		
			<i>Tipulidae</i>	Crane Fly	Larvae	2	3		
			<i>Trichoptera</i>	Caddisfly	Pupa	1	-1		
			<i>Turbellaria</i>	Flatworm	Adult	3	4		
			<i>Veliidae</i>	Ripple Bug	Adult	1	-1	6.012195122	Fairly Poor
		7/8/2008	<i>Acariformes</i>	Water Mite	Adult	2	4		
			<i>Baetidae</i>	Small Mayfly	Nymph	6	4		
			<i>Chironomidae</i>	Midge	Larvae	278	6		
			<i>Chironomidae</i>	Midge	Pupa	10	6		

Watercourse Name	Location	Sample Date	Taxonomic Names	Common Name	Life Stage	# Individuals	Biotic Index	Family Biotic Index (FBI)	Stream Health
			<i>Corixidae</i>	Water Boatmen	Adult	1	5		
			<i>Elmidae</i>	Riffle Beetle	Larvae	23	4		
			<i>Elmidae</i>	Riffle Beetle	Adult	6	4		
			<i>Empididae</i>	Dance Fly	Larvae	2	6		
			<i>Hydropsychidae</i>	Net-spinning Caddisfly	Larvae	16	4		
			<i>Muscidae</i>	Muscid Fly	Larvae	2	6		
			<i>Oligochaeta</i>	Aquatic Worm	Adult	8	8		
			<i>Psephenidae</i>	Water Penny Beetle	Larvae	1	4		
			<i>Simuliidae</i>	Black Fly	Larvae	39	6		
			<i>Simuliidae</i>	Black Fly	Pupa	1	6		
			<i>Sphaeriidae</i>	Fingernail Clam	Adult	8	8		
			<i>Turbellaria</i>	Flatworm	Adult	2	4	5.8	Fairly Poor
Wildwood CA Creek	Wildwood Conservation Area	6/20/2002	<i>Acariformes</i>	Water Mite	Adult	1	4		
			<i>Asellidae</i>	Sow Bug	Adult	1	8		
			<i>Baetidae</i>	Small Mayfly	Nymph	11	4		
			<i>Ceratopogonidae</i>	Biting Midge	Larvae	8	6		
			<i>Chironomidae</i>	Midge	Larvae	74	6		
			<i>Dytiscidae</i>	Predacious Diving Beetle	Larvae	19	5		
			<i>Elmidae</i>	Riffle Beetle	Larvae	3	4		
			<i>Gammaridae</i>	Sideswimmer	Adult	5	4		
			<i>Nematoda</i>	Thread Worm	Adult	5	-1		
			<i>Nemouridae</i>	Stonefly	Nymph	36	2		
			<i>Nemouridae</i>	Stonefly	Nymph	2	2		
			<i>Oligochaeta</i>	Aquatic Worm	Adult	6	8		
			<i>Physidae</i>	Pouch Snail	Adult	24	8		
			<i>Planorbidae</i>	Orb Snail	Adult	4	7		
			<i>Simuliidae</i>	Black Fly	Pupa	1	6		

Watercourse Name	Location	Sample Date	Taxonomic Names	Common Name	Life Stage	# Individuals	Biotic Index	Family Biotic Index (FBI)	Stream Health
			<i>Simuliidae</i>	Black Fly	Larvae	4	6		
			<i>Sphaeriidae</i>	Fingernail Clam	Adult	1	8		
			<i>Tabanidae</i>	Horse Fly	Larvae	1	6		
			<i>Tipulidae</i>	Crane Fly	Larvae	1	3	5.277227723	Fair
		10/28/2002	<i>Acariformes</i>	Water Mite	Adult	3	4		
			<i>Capniidae</i>	Stonefly	Nymph	1	1		
			<i>Chironomidae</i>	Midge	Larvae	2	6		
			<i>Cyclopoida</i>	Fish Lice	Adult	90	8		
			<i>Dytiscidae</i>	Predacious Diving Beetle	Adult	8	5		
			<i>Elmidae</i>	Riffle Beetle	Adult	11	4		
			<i>Elmidae</i>	Riffle Beetle	Larvae	14	4		
			<i>Gammaridae</i>	Sideswimmer	Adult	6	4		
			<i>Glossiphoniidae</i>	Leech	Adult	1	8		
			<i>Halplidae</i>	Crawling Water Beetle	Adult	4	5		
			<i>Halplidae</i>	Crawling Water Beetle	Larvae	4	5		
			<i>Limnephilidae</i>	Northern Caddisfly	Larvae	11	4		
			<i>Nematoda</i>	Thread Worm	Adult	4	-1		
			<i>Oligochaeta</i>	Aquatic Worm	Adult	37	8		
			<i>Physidae</i>	Pouch Snail	Adult	4	8		
			<i>Planorbidae</i>	Orb Snail	Adult	4	7		
			<i>Sialidae</i>	Alderfly	Nymph	1	4		
			<i>Sphaeriidae</i>	Fingernail Clam	Adult	1	8		
			<i>Tabanidae</i>	Horse Fly	Larvae	2	6		
			<i>Tipulidae</i>	Crane Fly	Larvae	1	3		
			<i>Turbellaria</i>	Flatworm	Adult	1	4	6.737864078	Poor
		6/10/2003	<i>Acariformes</i>	Water Mite	Adult	1	4		
			<i>Asellidae</i>	Sow Bug	Adult	1	8		



Watercourse Name	Location	Sample Date	Taxonomic Names	Common Name	Life Stage	# Individuals	Biotic Index	Family Biotic Index (FBI)	Stream Health
			<i>Baetidae</i>	Small Mayfly	Nymph	21	4		
			<i>Ceratopogonidae</i>	Biting Midge	Larvae	6	6		
			<i>Chironomidae</i>	Midge	Pupa	7	6		
			<i>Chironomidae</i>	Midge	Larvae	151	6		
			<i>Dytiscidae</i>	Predacious Diving Beetle	Larvae	3	5		
			<i>Elmidae</i>	Riffle Beetle	Larvae	1	4		
			<i>Gammaridae</i>	Sideswimmer	Adult	5	4		
			<i>Haliplidae</i>	Crawling Water Beetle	Larvae	1	5		
			<i>Leptophlebiidae</i>	Mayfly	Nymph	3	2		
			<i>Nematoda</i>	Thread Worm	Adult	2	-1		
			<i>Nemouridae</i>	Stonefly	Nymph	96	2		
			<i>Oligochaeta</i>	Aquatic Worm	Adult	4	8		
			<i>Perlodidae</i>	Stonefly	Nymph	6	2		
			<i>Physidae</i>	Pouch Snail	Adult	1	8		
			<i>Simuliidae</i>	Black Fly	Larvae	6	6		
			<i>Sphaeriidae</i>	Fingernail Clam	Adult	1	8	4.515923567	Good
		10/31/2003	<i>Acariformes</i>	Water Mite	Adult	2	4		
			<i>Capniidae</i>	Stonefly	Nymph	161	1		
			<i>Ceratopogonidae</i>	Biting Midge	Larvae	6	6		
			<i>Chironomidae</i>	Midge	Larvae	8	6		
			<i>Cyclopoida</i>	Fish Lice	Adult	3	8		
			<i>Elmidae</i>	Riffle Beetle	Larvae	2	4		
			<i>Gammaridae</i>	Sideswimmer	Adult	1	4		
			<i>Limnephilidae</i>	Northern Caddisfly	Larvae	14	4		
			<i>Lymnaeidae</i>	Pond Snail	Adult	1	6		
			<i>Nemouridae</i>	Stonefly	Nymph	4	2		
			<i>Oligochaeta</i>	Aquatic Worm	Adult	5	8		

Watercourse Name	Location	Sample Date	Taxonomic Names	Common Name	Life Stage	# Individuals	Biotic Index	Family Biotic Index (FBI)	Stream Health
			<i>Phryganeidae</i>	Large Caddisfly	Larvae	9	4		
			<i>Physidae</i>	Pouch Snail	Adult	1	8		
			<i>Planorbidae</i>	Orb Snail	Adult	3	7		
			<i>Tabanidae</i>	Horse Fly	Larvae	1	6	2.126696833	Excellent
		5/31/2004	<i>Acariformes</i>	Water Mite	Adult	5	4		
			<i>Baetidae</i>	Small Mayfly	Nymph	89	4		
			<i>Ceratopogonidae</i>	Biting Midge	Larvae	2	6		
			<i>Chironomidae</i>	Midge	Pupa	1	6		
			<i>Chironomidae</i>	Midge	Larvae	27	6		
			<i>Chrysomelidae</i>	Leaf Beetle	Larvae	3	-1		
			<i>Dytiscidae</i>	Predacious Diving Beetle	Larvae	2	5		
			<i>Elmidae</i>	Riffle Beetle	Larvae	2	4		
			<i>Elmidae</i>	Riffle Beetle	Adult	1	4		
			<i>Gammaridae</i>	Sideswimmer	Adult	4	4		
			<i>Nemouridae</i>	Stonefly	Nymph	63	2		
			<i>Oligochaeta</i>	Aquatic Worm	Adult	4	8		
			<i>Perlodidae</i>	Stonefly	Nymph	8	2		
			<i>Simuliidae</i>	Black Fly	Larvae	2	6		
			<i>Trichoptera</i>	Caddisfly	Pupa	2	-1	3.714285714	Excellent
		5/26/2005	<i>Acariformes</i>	Water Mite	Adult	5	4		
			<i>Baetidae</i>	Small Mayfly	Nymph	48	4		
			<i>Ceratopogonidae</i>	Biting Midge	Larvae	4	6		
			<i>Chironomidae</i>	Midge	Larvae	70	6		
			<i>Chironomidae</i>	Midge	Pupa	5	6		
			<i>Cyclopoida</i>	Fish Lice	Adult	1	8		
			<i>Dytiscidae</i>	Predacious Diving Beetle	Adult	1	5		
			<i>Dytiscidae</i>	Predacious Diving Beetle	Larvae	3	5		

Watercourse Name	Location	Sample Date	Taxonomic Names	Common Name	Life Stage	# Individuals	Biotic Index	Family Biotic Index (FBI)	Stream Health
			<i>Elmidae</i>	Riffle Beetle	Larvae	5	4		
			<i>Elmidae</i>	Riffle Beetle	Adult	2	4		
			<i>Gammaridae</i>	Sideswimmer	Adult	10	4		
			<i>Limnephilidae</i>	Northern Caddisfly	Larvae	5	4		
			<i>Nematoda</i>	Thread Worm	Adult	2	-1		
			<i>Nemouridae</i>	Stonefly	Nymph	75	2		
			<i>Oligochaeta</i>	Aquatic Worm	Adult	4	8		
			<i>Perlodidae</i>	Stonefly	Nymph	16	2		
			<i>Simuliidae</i>	Black Fly	Pupa	35	6		
			<i>Simuliidae</i>	Black Fly	Larvae	33	6		
			<i>Tipulidae</i>	Crane Fly	Larvae	1	3		
			<i>Veliidae</i>	Ripple Bug	Adult	1	-1	4.417956656	Good
		5/30/2006	<i>Acariformes</i>	Water Mite	Adult	36	4		
			<i>Ceratopogonidae</i>	Biting Midge	Larvae	2	6		
			<i>Chironomidae</i>	Midge	Larvae	196	6		
			<i>Dytiscidae</i>	Predacious Diving Beetle	Larvae	21	5		
			<i>Nemouridae</i>	Stonefly	Nymph	8	2		
			<i>Oligochaeta</i>	Aquatic Worm	Adult	8	8		
			<i>Perlodidae</i>	Stonefly	Nymph	2	2		
			<i>Simuliidae</i>	Black Fly	Larvae	1	6	5.572992701	Fair
		10/6/2006	<i>Acariformes</i>	Water Mite	Adult	4	4		
			<i>Asellidae</i>	Sow Bug	Adult	3	8		
			<i>Baetidae</i>	Small Mayfly	Nymph	1	4		
			<i>Ceratopogonidae</i>	Biting Midge	Larvae	18	6		
			<i>Chironomidae</i>	Midge	Pupa	2	6		
			<i>Chironomidae</i>	Midge	Larvae	33	6		
			<i>Coenagrionidae</i>	Narrow-winged Damselfly	Nymph	2	9		

Watercourse Name	Location	Sample Date	Taxonomic Names	Common Name	Life Stage	# Individuals	Biotic Index	Family Biotic Index (FBI)	Stream Health
			<i>Cyclopoida</i>	Fish Lice	Adult	7	8		
			<i>Elmidae</i>	Riffle Beetle	Adult	3	4		
			<i>Elmidae</i>	Riffle Beetle	Larvae	65	4		
			<i>Gammaridae</i>	Sideswimmer	Adult	3	4		
			<i>Haliplidae</i>	Crawling Water Beetle	Adult	1	5		
			<i>Haliplidae</i>	Crawling Water Beetle	Larvae	5	5		
			<i>Hydropsychidae</i>	Net-spinning Caddisfly	Larvae	1	4		
			<i>Limnephilidae</i>	Northern Caddisfly	Larvae	12	4		
			<i>Lymnaeidae</i>	Pond Snail	Adult	7	6		
			<i>Nematoda</i>	Thread Worm	Adult	1	-1		
			<i>Nemouridae</i>	Stonefly	Nymph	1	2		
			<i>Oligochaeta</i>	Aquatic Worm	Adult	31	8		
			<i>Ostracoda</i>	Seed Shrimp	Adult	1	8		
			<i>Phryganeidae</i>	Large Caddisfly	Larvae	1	4		
			<i>Physidae</i>	Pouch Snail	Adult	56	8		
			<i>Planorbidae</i>	Orb Snail	Adult	18	7		
			<i>Psychomyiidae</i>	Tube-making Caddisfly	Larvae	2	2		
			<i>Rhyacophilidae</i>	Primitive Caddisfly	Larvae	5	0		
			<i>Sphaeriidae</i>	Fingernail Clam	Adult	7	8		
			<i>Stratiomyidae</i>	Soldier Fly	Larvae	1	7		
			<i>Tabanidae</i>	Horse Fly	Larvae	3	6		
			<i>Talitridae</i>	Sideswimmer	Adult	2	8		
			<i>Tipulidae</i>	Crane Fly	Larvae	3	3		
			<i>Turbellaria</i>	Flatworm	Adult	1	4	6	Fairly Poor
		5/30/2007	<i>Acariformes</i>	Water Mite	Adult	9	4		
			<i>Baetidae</i>	Small Mayfly	Nymph	31	4		
			<i>Capniidae</i>	Stonefly	Nymph	2	1		

Watercourse Name	Location	Sample Date	Taxonomic Names	Common Name	Life Stage	# Individuals	Biotic Index	Family Biotic Index (FBI)	Stream Health
			<i>Ceratopogonidae</i>	Biting Midge	Larvae	10	6		
			<i>Chironomidae</i>	Midge	Larvae	144	6		
			<i>Chironomidae</i>	Midge	Pupa	5	6		
			<i>Corixidae</i>	Water Boatmen	Adult	1	5		
			<i>Cyclopoida</i>	Fish Lice	Adult	10	8		
			<i>Diptera</i>	Two-winged Fly	Pupa	3	-1		
			<i>Dytiscidae</i>	Predacious Diving Beetle	Larvae	20	5		
			<i>Elmidae</i>	Riffle Beetle	Larvae	21	4		
			<i>Elmidae</i>	Riffle Beetle	Adult	4	4		
			<i>Gammaridae</i>	Sideswimmer	Adult	8	4		
			<i>Hydroptilidae</i>	Micro-caddisfly	Larvae	6	4		
			<i>Leptophlebiidae</i>	Mayfly	Nymph	7	2		
			<i>Limnephilidae</i>	Northern Caddisfly	Larvae	1	4		
			<i>Mesoveliidae</i>	Water Measurer	Adult	1	-1		
			<i>Nematoda</i>	Thread Worm	Adult	1	-1		
			<i>Nemouridae</i>	Stonefly	Nymph	16	2		
			<i>Oligochaeta</i>	Aquatic Worm	Adult	13	8		
			<i>Perlodidae</i>	Stonefly	Nymph	3	2		
			<i>Physidae</i>	Pouch Snail	Adult	9	8		
			<i>Veliidae</i>	Ripple Bug	Adult	2	-1	5.278125	Fair
		5/28/2008	<i>Acariformes</i>	Water Mite	Adult	8	4		
			<i>Ceratopogonidae</i>	Biting Midge	Larvae	1	6		
			<i>Chironomidae</i>	Midge	Larvae	349	6		
			<i>Cyclopoida</i>	Fish Lice	Adult	3	8		
			<i>Dytiscidae</i>	Predacious Diving Beetle	Larvae	5	5		
			<i>Elmidae</i>	Riffle Beetle	Adult	1	4		
			<i>Gammaridae</i>	Sideswimmer	Adult	1	4		

Watercourse Name	Location	Sample Date	Taxonomic Names	Common Name	Life Stage	# Individuals	Biotic Index	Family Biotic Index (FBI)	Stream Health
			<i>Heptageniidae</i>	Stream Mayfly	Nymph	1	4		
			<i>Hydrozoa</i>	Hydra	Adult	1	5		
			<i>Nematoda</i>	Thread Worm	Adult	3	-1		
			<i>Oligochaeta</i>	Aquatic Worm	Adult	6	8		
			<i>Ostracoda</i>	Seed Shrimp	Adult	3	8		
			<i>Perlodidae</i>	Stonefly	Nymph	12	2		
			<i>Planorbidae</i>	Orb Snail	Adult	1	7		
			<i>Tabanidae</i>	Horse Fly	Larvae	1	6	5.870229008	Fairly Poor
Young Drain	Line 35	6/25/1999	<i>Acariformes</i>	Water Mite	Adult	7	4		
			<i>Baetidae</i>	Small Mayfly	Nymph	9	4		
			<i>Caenidae</i>	Crawling Mayfly	Nymph	2	7		
			<i>Chironomidae</i>	Midge	Pupa	1	6		
			<i>Chironomidae</i>	Midge	Larvae	73	6		
			<i>Elmidae</i>	Riffle Beetle	Adult	1	4		
			<i>Elmidae</i>	Riffle Beetle	Larvae	10	4		
			<i>Hydrophilidae</i>	Water Scavenger Beetle	Larvae	1	5		
			<i>Hydropsychidae</i>	Net-spinning Caddisfly	Larvae	4	4		
			<i>Hypogasturidae</i>	Springtail	Adult	1	-1		
			<i>Nemouridae</i>	Stonefly	Nymph	2	2		
			<i>Oligochaeta</i>	Aquatic Worm	Adult	6	8		
			<i>Ostracoda</i>	Seed Shrimp	Adult	2	8		
			<i>Physidae</i>	Pouch Snail	Adult	1	8		
			<i>Simuliidae</i>	Black Fly	Larvae	1	6		
			<i>Sphaeriidae</i>	Fingernail Clam	Adult	2	8	5.614754098	Fair

## Appendix 3: Trout Creek Fish Sampling Results

Table A3.1: Fish Sampling Results

Watercourse Name	Location	Sample Date	Source	Common Name	Scientific Name	Species at Risk	
						Provincial	Federal
Central Drain	Road 111	11/8/2000	UTRCA	Blacknose Dace	<i>Rhinichthys atratulus</i>		
				Bluntnose Minnow	<i>Pimephales notatus</i>		
				Brassy Minnow	<i>Hybognathus hankinsoni</i>		
				Central Mudminnow	<i>Umbra limi</i>		
				Central Stoneroller	<i>Campostoma anomalum</i>		
				Creek Chub	<i>Semotilus atromaculatus</i>		
				Johnny Darter	<i>Etheostoma nigrum</i>		
				Northern Redbelly Dace	<i>Phoxinus eos</i>		
				Pearl Dace	<i>Margariscus margarita</i>		
				White Sucker	<i>Catostomus commersoni</i>		
Road 112	8/15/2001	UTRCA	Blacknose Dace	<i>Rhinichthys atratulus</i>			
			Blackside Darter	<i>Percina maculata</i>			
			Bluntnose Minnow	<i>Pimephales notatus</i>			
			Creek Chub	<i>Semotilus atromaculatus</i>			
			Fantail Darter	<i>Etheostoma flabellare</i>			
			Fathead Minnow	<i>Pimephales promelas</i>			
			Johnny Darter	<i>Etheostoma nigrum</i>			
			Rock Bass	<i>Ambloplites rupestris</i>			
			White Sucker	<i>Catostomus commersoni</i>			
Harmony C A, Perth Line 26	11/7/1995	MNR-MDC	Bluntnose Minnow	<i>Pimephales notatus</i>			
			Central Stoneroller	<i>Campostoma anomalum</i>			
			White Sucker	<i>Catostomus commersoni</i>			
Road 112	8/15/2001	UTRCA	Blacknose Dace	<i>Rhinichthys atratulus</i>			
			Bluntnose Minnow	<i>Pimephales notatus</i>			

Watercourse Name	Location	Sample Date	Source	Common Name	Scientific Name	Species at Risk	
						Provincial	Federal
				Central Stoneroller	<i>Campostoma anomalum</i>		
				Creek Chub	<i>Semotilus atromaculatus</i>		
				Johnny Darter	<i>Etheostoma nigrum</i>		
				White Sucker	<i>Catostomus commersoni</i>		
		6/25/2007	UTRCA	Black Bullhead	<i>Ameiurus melas</i>		
				Blacknose Dace	<i>Rhinichthys atratulus</i>		
				Bluntnose Minnow	<i>Pimephales notatus</i>		
				Brook Stickleback	<i>Culaea inconstans</i>		
				Central Mudminnow	<i>Umbra limi</i>		
				Central Stoneroller	<i>Campostoma anomalum</i>		
				Common Carp	<i>Cyprinus carpio</i>		
				Creek Chub	<i>Semotilus atromaculatus</i>		
				Fathead Minnow	<i>Pimephales promelas</i>		
				Iowa Darter	<i>Etheostoma exile</i>		
				Johnny Darter	<i>Etheostoma nigrum</i>		
				Largemouth Bass	<i>Micropterus salmoides</i>		
				Northern Pike	<i>Esox lucius</i>		
				White Sucker	<i>Catostomus commersoni</i>		
		7/15/2008	UTRCA	Blacknose Dace	<i>Rhinichthys atratulus</i>		
				Bluntnose Minnow	<i>Pimephales notatus</i>		
				Brook Stickleback	<i>Culaea inconstans</i>		
				Creek Chub	<i>Semotilus atromaculatus</i>		
				Fathead Minnow	<i>Pimephales promelas</i>		
				Johnny Darter	<i>Etheostoma nigrum</i>		
				Northern Pike	<i>Esox lucius</i>		
				White Sucker	<i>Catostomus commersoni</i>		



Watercourse Name	Location	Sample Date	Source	Common Name	Scientific Name	Species at Risk	
						Provincial	Federal
	Road 111	7/15/2008	UTRCA	Blacknose Dace	<i>Rhinichthys atratulus</i>		
				Bluntnose Minnow	<i>Pimephales notatus</i>		
				Brook Stickleback	<i>Culaea inconstans</i>		
				Creek Chub	<i>Semotilus atromaculatus</i>		
				Pearl Dace	<i>Margariscus margarita</i>		
				White Sucker	<i>Catostomus commersoni</i>		
Harrington Creek	Upstream of Harrington CA pond	10/13/1992	ROM	Brook Trout	<i>Salvelinus fontinalis</i>		
				Mottled Sculpin	<i>Cottus bairdi</i>		
	d/s Harrington CA	11/29/2004	UTRCA	Black Bullhead	<i>Ameiurus melas</i>		
				Blacknose Dace	<i>Rhinichthys atratulus</i>		
				Blackside Darter	<i>Percina maculata</i>		
				Bluntnose Minnow	<i>Pimephales notatus</i>		
				Central Stoneroller	<i>Campostoma anomalum</i>		
				Common Shiner	<i>Luxilus cornutus</i>		
				Creek Chub	<i>Semotilus atromaculatus</i>		
				Largemouth Bass	<i>Micropterus salmoides</i>		
				Rainbow Darter	<i>Etheostoma caeruleum</i>		
				Rock Bass	<i>Ambloplites rupestris</i>		
				Smallmouth Bass	<i>Micropterus dolomieu</i>		
				Striped Shiner	<i>Luxilus chrysocephalus</i>		
				White Sucker	<i>Catostomus commersoni</i>		
				Yellow Perch	<i>Perca flavescens</i>		
Harrington West Tributary	Road 92 and Line 29	8/14/2008	UTRCA	Brook Stickleback	<i>Culaea inconstans</i>		
Harrington-West Drain	31st Line	10/25/1999	UTRCA	Brook Trout	<i>Salvelinus fontinalis</i>		
				Mottled Sculpin	<i>Cottus bairdi</i>		

Watercourse Name	Location	Sample Date	Source	Common Name	Scientific Name	Species at Risk	
						Provincial	Federal
				White Sucker	<i>Catostomus commersoni</i>		
		8/14/2008	UTRCA	Blacknose Dace	<i>Rhinichthys atratulus</i>		
				Brook Trout	<i>Salvelinus fontinalis</i>		
				White Sucker	<i>Catostomus commersoni</i>		
John Green Drain	Rd 96 East of Harrington	10/27/1999	UTRCA	Blacknose Dace	<i>Rhinichthys atratulus</i>		
				Brook Trout	<i>Salvelinus fontinalis</i>		
				Creek Chub	<i>Semotilus atromaculatus</i>		
				Johnny Darter	<i>Etheostoma nigrum</i>		
				Mottled Sculpin	<i>Cottus bairdi</i>		
	d/s of Road 96	11/21/2003	UTRCA	American Brook Lamprey	<i>Lampetra appendix</i>		
				Brook Trout	<i>Salvelinus fontinalis</i>		
				Central Mudminnow	<i>Umbra limi</i>		
				Largemouth Bass	<i>Micropterus salmoides</i>		
				Mottled Sculpin	<i>Cottus bairdi</i>		
Kerr-Lupton Drain	35th Line	10/27/1999	UTRCA	Black Bullhead	<i>Ameiurus melas</i>		
				Bluntnose Minnow	<i>Pimephales notatus</i>		
				Common Carp	<i>Cyprinus carpio</i>		
				Common Shiner	<i>Luxilus cornutus</i>		
				Creek Chub	<i>Semotilus atromaculatus</i>		
				Fathead Minnow	<i>Pimephales promelas</i>		
				Johnny Darter	<i>Etheostoma nigrum</i>		
				Pumpkinseed	<i>Lepomis gibbosus</i>		
				Rock Bass	<i>Ambloplites rupestris</i>		
				White Sucker	<i>Catostomus commersoni</i>		
		11/28/2002	UTRCA	Blacknose Dace	<i>Rhinichthys atratulus</i>		
				Bluntnose Minnow	<i>Pimephales notatus</i>		

Watercourse Name	Location	Sample Date	Source	Common Name	Scientific Name	Species at Risk	
						Provincial	Federal
				Central Stoneroller	<i>Campostoma anomalum</i>		
				Common Shiner	<i>Luxilus cornutus</i>		
				Creek Chub	<i>Semotilus atromaculatus</i>		
				Johnny Darter	<i>Etheostoma nigrum</i>		
				White Sucker	<i>Catostomus commersoni</i>		
Kerr-Lupton Drain	35th Line, Hwy 6 between Perth-Oxford Road and Road 96 (CR 28)	6/22/2004	DFO	Blacknose Dace	<i>Rhinichthys atratulus</i>		
				Blackside Darter	<i>Percina maculata</i>		
				Bluntnose Minnow	<i>Pimephales notatus</i>		
				Creek Chub	<i>Semotilus atromaculatus</i>		
				Johnny Darter	<i>Etheostoma nigrum</i>		
				Northern Pike	<i>Esox lucius</i>		
				Rock Bass	<i>Ambloplites rupestris</i>		
				White Sucker	<i>Catostomus commersoni</i>		
				Yellow Perch	<i>Perca flavescens</i>		
Kerr-Lupton Drain	35th Line	7/14/2008	UTRCA	Black Bullhead	<i>Ameiurus melas</i>		
				Blackside Darter	<i>Percina maculata</i>		
				Bluntnose Minnow	<i>Pimephales notatus</i>		
				Central Stoneroller	<i>Campostoma anomalum</i>		
				Johnny Darter	<i>Etheostoma nigrum</i>		
				Largemouth Bass	<i>Micropterus salmoides</i>		
				White Sucker	<i>Catostomus commersoni</i>		
				Yellow Perch	<i>Perca flavescens</i>		
		Road 112	7/15/2008	UTRCA	Brook Stickleback	<i>Culaea inconstans</i>	
				Central Stoneroller	<i>Campostoma anomalum</i>		
				Creek Chub	<i>Semotilus atromaculatus</i>		
				Fathead Minnow	<i>Pimephales promelas</i>		

Watercourse Name	Location	Sample Date	Source	Common Name	Scientific Name	Species at Risk			
						Provincial	Federal		
				Pumpkinseed	<i>Lepomis gibbosus</i>				
				White Sucker	<i>Catostomus commersoni</i>				
				Yellow Perch	<i>Perca flavescens</i>				
Kerr-Lupton Drain Branch D	45th Line	11/21/2003	UTRCA	Central Stoneroller	<i>Campostoma anomalum</i>				
				Common Shiner	<i>Luxilus cornutus</i>				
				Creek Chub	<i>Semotilus atromaculatus</i>				
				White Sucker	<i>Catostomus commersoni</i>				
Lange Drain	Road 112	11/7/1995	MNR-MDC	Blacknose Dace	<i>Rhinichthys atratulus</i>				
				Central Stoneroller	<i>Campostoma anomalum</i>				
				White Sucker	<i>Catostomus commersoni</i>				
Lowe Drain	County Road 26	6/25/2007	UTRCA	Black Bullhead	<i>Ameiurus melas</i>				
				Blacknose Dace	<i>Rhinichthys atratulus</i>				
				Bluntnose Minnow	<i>Pimephales notatus</i>				
				Central Mudminnow	<i>Umbra limi</i>				
				Central Stoneroller	<i>Campostoma anomalum</i>				
				Common Carp	<i>Cyprinus carpio</i>				
				Creek Chub	<i>Semotilus atromaculatus</i>				
				Fantail Darter	<i>Etheostoma flabellare</i>				
				Johnny Darter	<i>Etheostoma nigrum</i>				
				Northern Pike	<i>Esox lucius</i>				
		White Sucker	<i>Catostomus commersoni</i>						
				7/15/2008	UTRCA	Black Bullhead	<i>Ameiurus melas</i>		
						Bluntnose Minnow	<i>Pimephales notatus</i>		
						Central Stoneroller	<i>Campostoma anomalum</i>		
		Creek Chub	<i>Semotilus atromaculatus</i>						
				Johnny Darter	<i>Etheostoma nigrum</i>				

Watercourse Name	Location	Sample Date	Source	Common Name	Scientific Name	Species at Risk	
						Provincial	Federal
				Northern Pike	<i>Esox lucius</i>		
				White Sucker	<i>Catostomus commersoni</i>		
	Line 29 West of Road 111	7/15/2008	UTRCA	No Fish Found			
Lowe Drain Improvement	Line 29	11/7/1995	MNR-MDC	No Fish Found			
Raper Drain	35th Line	10/27/1999	UTRCA	Blacknose Dace	<i>Rhinichthys atratulus</i>		
				Brook Stickleback	<i>Culaea inconstans</i>		
				Central Stoneroller	<i>Campostoma anomalum</i>		
				Creek Chub	<i>Semotilus atromaculatus</i>		
				Johnny Darter	<i>Etheostoma nigrum</i>		
		7/14/2008	UTRCA	Blacknose Dace	<i>Rhinichthys atratulus</i>		
				Blackside Darter	<i>Percina maculata</i>		
				Brook Trout	<i>Salvelinus fontinalis</i>		
				Creek Chub	<i>Semotilus atromaculatus</i>		
				Fantail Darter	<i>Etheostoma flabellare</i>		
				Fathead Minnow	<i>Pimephales promelas</i>		
				Johnny Darter	<i>Etheostoma nigrum</i>		
				White Sucker	<i>Catostomus commersoni</i>		
Rolston Drain	St. Marys	12/5/2003	UTRCA	Blacknose Dace	<i>Rhinichthys atratulus</i>		
				Brook Stickleback	<i>Culaea inconstans</i>		
				Central Stoneroller	<i>Campostoma anomalum</i>		
				Creek Chub	<i>Semotilus atromaculatus</i>		
				Striped Shiner	<i>Luxilus chrysocephalus</i>		
				White Sucker	<i>Catostomus commersoni</i>		
		12/7/2003	UTRCA	Blacknose Dace	<i>Rhinichthys atratulus</i>		
	Line 7	9/1/2006	UTRCA	Black Bullhead	<i>Ameiurus melas</i>		
				Blacknose Dace	<i>Rhinichthys atratulus</i>		

Watercourse Name	Location	Sample Date	Source	Common Name	Scientific Name	Species at Risk	
						Provincial	Federal
				Brook Stickleback	<i>Culaea inconstans</i>		
				Central Stoneroller	<i>Campostoma anomalum</i>		
				Common Shiner	<i>Luxilus cornutus</i>		
				Creek Chub	<i>Semotilus atromaculatus</i>		
				Fathead Minnow	<i>Pimephales promelas</i>		
				Northern Redbelly Dace	<i>Phoxinus eos</i>		
				White Sucker	<i>Catostomus commersoni</i>		
Trout Creek	West Zorra	1/1/1974	OMNR	Brook Stickleback	<i>Culaea inconstans</i>		
				Brook Trout	<i>Salvelinus fontinalis</i>		
				Brown Bullhead	<i>Ameiurus nebulosus</i>		
				Central Mudminnow	<i>Umbra limi</i>		
				Common Shiner	<i>Luxilus cornutus</i>		
				Johnny Darter	<i>Etheostoma nigrum</i>		
				Northern Hog Sucker	<i>Hypentelium nigricans</i>		
				Pumpkinseed	<i>Lepomis gibbosus</i>		
				Rainbow Darter	<i>Etheostoma caeruleum</i>		
				Rainbow Trout	<i>Oncorhynchus mykiss</i>		
				Rock Bass	<i>Ambloplites rupestris</i>		
				Slimy Sculpin	<i>Cottus cognatus</i>		
				Smallmouth Bass	<i>Micropterus dolomieu</i>		
				White Sucker	<i>Catostomus commersoni</i>		
				Yellow Bullhead	<i>Ameiurus natalis</i>		
	Below Wildwood Dam	8/23/1974	ROM	Fantail Darter	<i>Etheostoma flabellare</i>		
	Perth Line 9	11/6/1998	ROM	Common Carp	<i>Cyprinus carpio</i>		
				Pumpkinseed	<i>Lepomis gibbosus</i>		
				Silver Shiner	<i>Notropis photogenis</i>	Special Concern	Special Concern

Watercourse Name	Location	Sample Date	Source	Common Name	Scientific Name	Species at Risk	
						Provincial	Federal
				Yellow Perch	<i>Perca flavescens</i>		
	Perth-Oxford Rd, County Line	11/27/1999	UTRCA	Blacknose Dace	<i>Rhinichthys atratulus</i>		
				Bluntnose Minnow	<i>Pimephales notatus</i>		
				Brook Stickleback	<i>Culaea inconstans</i>		
				Brook Trout	<i>Salvelinus fontinalis</i>		
				Central Stoneroller	<i>Campostoma anomalum</i>		
				Common Shiner	<i>Luxilus cornutus</i>		
				Creek Chub	<i>Semotilus atromaculatus</i>		
				Fantail Darter	<i>Etheostoma flabellare</i>		
				Fathead Minnow	<i>Pimephales promelas</i>		
				Hornyhead Chub	<i>Nocomis biguttatus</i>		
				Johnny Darter	<i>Etheostoma nigrum</i>		
				White Sucker	<i>Catostomus commersoni</i>		
	Below Wildwood	12/7/1999	UTRCA	Bluntnose Minnow	<i>Pimephales notatus</i>		
				Common Carp	<i>Cyprinus carpio</i>		
				Golden Shiner	<i>Notemigonus crysoleucas</i>		
				Pumpkinseed	<i>Lepomis gibbosus</i>		
				Yellow Perch	<i>Perca flavescens</i>		
	Perth Road 113	8/8/2000	UTRCA	Blacknose Dace	<i>Rhinichthys atratulus</i>		
				Blackside Darter	<i>Percina maculata</i>		
				Bluntnose Minnow	<i>Pimephales notatus</i>		
				Common Carp	<i>Cyprinus carpio</i>		
				Common Shiner	<i>Luxilus cornutus</i>		
				Creek Chub	<i>Semotilus atromaculatus</i>		
				Fantail Darter	<i>Etheostoma flabellare</i>		
				Hornyhead Chub	<i>Nocomis biguttatus</i>		

Watercourse Name	Location	Sample Date	Source	Common Name	Scientific Name	Species at Risk	
						Provincial	Federal
				Johnny Darter	<i>Etheostoma nigrum</i>		
				Northern Pike	<i>Esox lucius</i>		
				Rock Bass	<i>Ambloplites rupestris</i>		
				Stonecat	<i>Noturus flavus</i>		
				White Sucker	<i>Catostomus commersoni</i>		
	Perth-Oxford Rd, County Line	6/22/2004	DFO	Blacknose Dace	<i>Rhinichthys atratulus</i>		
Blackside Darter				<i>Percina maculata</i>			
Brook Trout				<i>Salvelinus fontinalis</i>			
Central Stoneroller				<i>Campostoma anomalum</i>			
Creek Chub				<i>Semotilus atromaculatus</i>			
		6/25/2007	UTRCA	Black Bullhead	<i>Ameiurus melas</i>		
				Blacknose Dace	<i>Rhinichthys atratulus</i>		
				Blackside Darter	<i>Percina maculata</i>		
				Brook Trout	<i>Salvelinus fontinalis</i>		
				Creek Chub	<i>Semotilus atromaculatus</i>		
				Johnny Darter	<i>Etheostoma nigrum</i>		
				Stonecat	<i>Noturus flavus</i>		
				White Sucker	<i>Catostomus commersoni</i>		
		7/14/2008	UTRCA	Blacknose Dace	<i>Rhinichthys atratulus</i>		
				Blackside Darter	<i>Percina maculata</i>		
				Bluntnose Minnow	<i>Pimephales notatus</i>		
				Central Stoneroller	<i>Campostoma anomalum</i>		
				Common Carp	<i>Cyprinus carpio</i>		
				Greenside Darter	<i>Etheostoma blennioides</i>	Not at Risk	Special Concern
				Johnny Darter	<i>Etheostoma nigrum</i>		
				Largemouth Bass	<i>Micropterus salmoides</i>		



Watercourse Name	Location	Sample Date	Source	Common Name	Scientific Name	Species at Risk	
						Provincial	Federal
				Northern Pike	<i>Esox lucius</i>		
				Smallmouth Bass	<i>Micropterus dolomieu</i>		
				White Sucker	<i>Catostomus commersoni</i>		
				Yellow Perch	<i>Perca flavescens</i>		
	Road 120, upstream of golf course	7/14/2008	UTRCA	Black Bullhead	<i>Ameiurus melas</i>		
				Bluntnose Minnow	<i>Pimephales notatus</i>		
				Central Stoneroller	<i>Campostoma anomalum</i>		
				Common Shiner	<i>Luxilus cornutus</i>		
				Greenside Darter	<i>Etheostoma blennioides</i>	Not at Risk	Special Concern
				Hornyhead Chub	<i>Nocomis biguttatus</i>		
				Mimic Shiner	<i>Notropis volucellus</i>		
				Pumpkinseed	<i>Lepomis gibbosus</i>		
				Rock Bass	<i>Ambloplites rupestris</i>		
				Smallmouth Bass	<i>Micropterus dolomieu</i>		
				Stonecat	<i>Noturus flavus</i>		
				Striped Shiner	<i>Luxilus chrysocephalus</i>		
				White Sucker	<i>Catostomus commersoni</i>		
				Yellow Perch	<i>Perca flavescens</i>		
	St. Marys - Rehab site	7/14/2008	UTRCA	Bluntnose Minnow	<i>Pimephales notatus</i>		
				Central Stoneroller	<i>Campostoma anomalum</i>		
				Common Shiner	<i>Luxilus cornutus</i>		
				Golden Shiner	<i>Notemigonus crysoleucas</i>		
				Greenside Darter	<i>Etheostoma blennioides</i>	Not at Risk	Special Concern
				Johnny Darter	<i>Etheostoma nigrum</i>		
				Largemouth Bass	<i>Micropterus salmoides</i>		
				Mimic Shiner	<i>Notropis volucellus</i>		

Watercourse Name	Location	Sample Date	Source	Common Name	Scientific Name	Species at Risk	
						Provincial	Federal
				Rock Bass	<i>Ambloplites rupestris</i>		
				Smallmouth Bass	<i>Micropterus dolomieu</i>		
				White Sucker	<i>Catostomus commersoni</i>		
				Yellow Perch	<i>Perca flavescens</i>		
	Line 20	7/15/2008	UTRCA	Blacknose Dace	<i>Rhinichthys atratulus</i>		
				Central Stoneroller	<i>Campostoma anomalum</i>		
				Common Carp	<i>Cyprinus carpio</i>		
				Creek Chub	<i>Semotilus atromaculatus</i>		
				Johnny Darter	<i>Etheostoma nigrum</i>		
				Northern Pike	<i>Esox lucius</i>		
				Rock Bass	<i>Ambloplites rupestris</i>		
				Smallmouth Bass	<i>Micropterus dolomieu</i>		
				Stonecat	<i>Noturus flavus</i>		
				White Sucker	<i>Catostomus commersoni</i>		
Trout Creek Tributary	St.Marys	9/1/1928	ROM	Iowa Darter	<i>Etheostoma exile</i>		
Trout Creek Tributary	27th Line	10/25/1999	UTRCA	Brook Stickleback	<i>Culaea inconstans</i>		
Unknown Creek	Harrington Near Stratford	5/27/1931	ROM	Northern Brook Lamprey	<i>Ichthyomyzon fossor</i>	Special Concern	Special Concern
Wildwood C.A. Reservoir	West Zorra	1/1/1968	OMNR	Bluegill	<i>Lepomis macrochirus</i>		
				Common Carp	<i>Cyprinus carpio</i>		
				Largemouth Bass	<i>Micropterus salmoides</i>		
				Rainbow Trout	<i>Oncorhynchus mykiss</i>		
				Rock Bass	<i>Ambloplites rupestris</i>		
				Smallmouth Bass	<i>Micropterus dolomieu</i>		
				White Sucker	<i>Catostomus commersoni</i>		
				Yellow Perch	<i>Perca flavescens</i>		
		1/1/1979	OMNR	Bluegill	<i>Lepomis macrochirus</i>		

Watercourse Name	Location	Sample Date	Source	Common Name	Scientific Name	Species at Risk	
						Provincial	Federal
				Common Carp	<i>Cyprinus carpio</i>		
				Largemouth Bass	<i>Micropterus salmoides</i>		
				Rainbow Trout	<i>Oncorhynchus mykiss</i>		
				Rock Bass	<i>Ambloplites rupestris</i>		
				Smallmouth Bass	<i>Micropterus dolomieu</i>		
				White Sucker	<i>Catostomus commersoni</i>		
				Yellow Perch	<i>Perca flavescens</i>		
Wildwood Tributary	29th Line	11/28/2002	UTRCA	Blacknose Dace	<i>Rhinichthys atratulus</i>		
				Blackside Darter	<i>Percina maculata</i>		
				Bluntnose Minnow	<i>Pimephales notatus</i>		
				Brook Stickleback	<i>Culaea inconstans</i>		
				Creek Chub	<i>Semotilus atromaculatus</i>		
				Fantail Darter	<i>Etheostoma flabellare</i>		
				Fathead Minnow	<i>Pimephales promelas</i>		
				Johnny Darter	<i>Etheostoma nigrum</i>		
				Largemouth Bass	<i>Micropterus salmoides</i>		
				Northern Redbelly Dace	<i>Phoxinus eos</i>		
				White Sucker	<i>Catostomus commersoni</i>		
				Yellow Perch	<i>Perca flavescens</i>		
		8/14/2008	UTRCA	Blacknose Dace	<i>Rhinichthys atratulus</i>		
				Brook Stickleback	<i>Culaea inconstans</i>		
				Creek Chub	<i>Semotilus atromaculatus</i>		
				Fantail Darter	<i>Etheostoma flabellare</i>		
				Largemouth Bass	<i>Micropterus salmoides</i>		
				Smallmouth Bass	<i>Micropterus dolomieu</i>		
				White Sucker	<i>Catostomus commersoni</i>		

Watercourse Name	Location	Sample Date	Source	Common Name	Scientific Name	Species at Risk	
						Provincial	Federal
				Yellow Perch	<i>Perca flavescens</i>		
Young Drain	Vicinity of County Road 96, Lot 30-31, Conc IV	10/13/1992	ROM	American Brook Lamprey	<i>Lampetra appendix</i>		
				Blacknose Dace	<i>Rhinichthys atratulus</i>		
				Brook Trout	<i>Salvelinus fontinalis</i>		
				Creek Chub	<i>Semotilus atromaculatus</i>		
				White Sucker	<i>Catostomus commersoni</i>		
33rd Line	33rd Line	10/27/1999	UTRCA	American Brook Lamprey	<i>Lampetra appendix</i>		
				Blacknose Dace	<i>Rhinichthys atratulus</i>		
				Blackside Darter	<i>Percina maculata</i>		
				Bluntnose Minnow	<i>Pimephales notatus</i>		
				Brook Stickleback	<i>Culaea inconstans</i>		
				Brook Trout	<i>Salvelinus fontinalis</i>		
				Common Carp	<i>Cyprinus carpio</i>		
				Common Shiner	<i>Luxilus cornutus</i>		
				Creek Chub	<i>Semotilus atromaculatus</i>		
				Fathead Minnow	<i>Pimephales promelas</i>		
				Johnny Darter	<i>Etheostoma nigrum</i>		
				Mottled Sculpin	<i>Cottus bairdi</i>		
				Pumpkinseed	<i>Lepomis gibbosus</i>		
				Rock Bass	<i>Ambloplites rupestris</i>		
				Striped Shiner	<i>Luxilus chrysocephalus</i>		
White Sucker	<i>Catostomus commersoni</i>						
Vicinity of County Road 96, Lot 30-31, Conc IV	Vicinity of County Road 96, Lot 30-31, Conc IV	11/28/2002	UTRCA	American Brook Lamprey	<i>Lampetra appendix</i>		
				Bluntnose Minnow	<i>Pimephales notatus</i>		

Watercourse Name	Location	Sample Date	Source	Common Name	Scientific Name	Species at Risk	
						Provincial	Federal
				Brook Trout	<i>Salvelinus fontinalis</i>		
				Creek Chub	<i>Semotilus atromaculatus</i>		
				Largemouth Bass	<i>Micropterus salmoides</i>		
				Northern Redbelly Dace	<i>Phoxinus eos</i>		
				Smallmouth Bass	<i>Micropterus dolomieu</i>		
				White Sucker	<i>Catostomus commersoni</i>		
	33rd Line	11/29/2004	UTRCA	American Brook Lamprey	<i>Lampetra appendix</i>		
				Black Bullhead	<i>Ameiurus melas</i>		
				Blackside Darter	<i>Percina maculata</i>		
				Johnny Darter	<i>Etheostoma nigrum</i>		
				Largemouth Bass	<i>Micropterus salmoides</i>		
				Mottled Sculpin	<i>Cottus bairdi</i>		
				White Sucker	<i>Catostomus commersoni</i>		
	Line 35	7/14/2008	UTRCA	American Brook Lamprey	<i>Lampetra appendix</i>		
				Blacknose Dace	<i>Rhinichthys atratulus</i>		
				Brook Trout	<i>Salvelinus fontinalis</i>		
				Central Mudminnow	<i>Umbra limi</i>		
				Largemouth Bass	<i>Micropterus salmoides</i>		
				Mottled Sculpin	<i>Cottus bairdi</i>		
				White Sucker	<i>Catostomus commersoni</i>		
				Yellow Perch	<i>Perca flavescens</i>		

**COSEWIC Status:** The Committee on the Status of Endangered Wildlife in Canada (COSEWIC) assesses species for their consideration for legal protection and recovery (or management) under the Species at Risk Act (SARA).

*Extinct:* A wildlife species that no longer exists

*Extirpated:* A wildlife species no longer existing in the wild in Canada, but, occurring elsewhere.

*Endangered:* A wildlife species facing imminent extirpation or extinction.

*Threatened:* A wildlife species likely to become endangered if limiting factors are not reversed.

*Special Concern:* A wildlife species that may become a threatened or endangered species because of a combination of biological characteristics and identified threats.

*Not at Risk:* A wildlife species that has been evaluated and found to be not at risk of extinction given the current circumstances.

Reference: [http://www.cosewic.gc.ca/eng/sct0/rpt/rpt\\_csar\\_e.pdf](http://www.cosewic.gc.ca/eng/sct0/rpt/rpt_csar_e.pdf) (current to August 2009)

**SARO Status:** Species at Risk in Ontario (SARO) are designated by the Ontario Ministry of Natural Resources (OMNR) in accordance with the provincial Endangered Species Act (ESA)

*Extinct:* A species that no longer exists.

*Extirpated:* A species that no longer exists in the Wild in Ontario but still occurs elsewhere.

*Endangered-R (Regulated):* A species facing imminent extinction or extirpation in Ontario which is regulated under Ontario's Endangered Species Act (ESA).

*Endangered (Not Regulated):* A species facing imminent extinction or extirpation in Ontario which is a candidate for regulation under Ontario's ESA.

*Threatened:* A species that is at risk of becoming endangered if limiting factors are not reversed.

*Special Concern:* A species with characteristics that make it sensitive to human activities or natural events.

*Not at Risk:* A species that has been evaluated and found to be not at risk.

Reference: <http://www.mnr.gov.on.ca/en/Business/Species/2ColumnSubPage/246809.html> (current to September 2009)

**Abundance:** Refers to the relative abundance or common occurrence of the species found within the waters of the Thames River watershed based on sampling results.

Consideration was given to accurately reflect the species presence within the watershed due to the sampling capture method, effort and biases, difficulty in capturing certain species and anecdotal reporting.

*Abundant:* Greater than 50 sample records in the database.

*Common:* Between 15 and 50 sample records in the database

*Historical:* Species that have been previously recorded in the Thames

*Rare:* Less than 5 sample records in database

*Uncommon:* Between 5 and 15 sample records in database

## Appendix 4: TRFMP Summary of Public Input

The questions posed to the public and the summary of responses for each subject area follow.

### Resource (refers to fish, fish habitat and their use)

#### Questions Asked:

*What can you tell us about the river and the fish as a resource in your area, in your experience? Over time, have things changed? How?*

#### Summary of Responses:

We were informed of fish species locations (general areas) and of local actions taken to improve the fisheries resource (including stocking and habitat improvements). This information supplements existing information by confirming anecdotal information and by providing current and historical knowledge.

The information gathered informs us that fishing is a popular recreational activity and that people are targeting specific species when fishing.

Over the years, the public have noticed significant changes to fish communities. In some locations, there are species that were never there before and in other locations, certain species have decreased in size and numbers or have been lost completely. There have been positive and negative responses to the noticeable changeover in species – depending upon the view and interest of the individual.

Many comments focused on the lack of water everywhere, although, it was mentioned that there are variations in water levels at certain times of year (spring flooding or rain events).

There is also a concern for the poor water quality such as an increase in algae blooms and a decrease in the water clarity during the warmer months.

The public also mentioned a significant loss of habitat. This loss of habitat occurs when tributaries have been lost or converted to closed surface drainage, and when watercourses became channelized or converted to drains that are uniform, lacking riffle, pool, run sequencing and riparian vegetation. Ongoing rehabilitation efforts in localized areas or tributaries have made improvements to the habitat.

There is a perception that there is nothing there (in terms of fish) and it's not worth the effort (to fish). The size and numbers of fish have gone down. People are going elsewhere to fish, not in their own backyards anymore – especially when they have a certain target species in mind.

Some people believe that the Thames is a good fisheries resource, while others wish that it had more to offer. There is a perception that there are more people fishing (specific locations were not identified) and that additional recreational activities have increased the fishing pressure.

## Issues

### Questions Asked:

*What do you think impacts the health of the fish in the Thames? What do you see as the biggest challenges facing the future of the fish of the Thames?*

### Summary of Responses:

Many rural and urban impacts were discussed as issues. These included erosion and sedimentation, industry, urban development/sprawl, aggregate operations, storm water management, agricultural land use practices, drainage, water takings, barriers, flood control operations, and spills. Some of the issues that were mentioned more than once were agricultural drainage, pollution, water quality, loss of riparian habitat and loss of water. Several other items mentioned that would have an impact on the fisheries were the lack of enforcement for poaching and other legislation, lack of resources to implement remedial actions, tile drainage and the loss of first order watercourses, storm and sanitary sewers, developing to the waters edge, and climate change.

The public has also noticed the alteration in the hydrograph following rain events, with the time lag decreasing over the years and flooding occurring immediately after a rain event. They noted that most of the watercourses have become silted in where there were pools, and that dams and barriers have had a significant impact on the habitat upstream and downstream of the dam.

The public stated that the connection between the local resource has been lost due to the lack of understanding the resource and loss of respect for what is in landowners own backyard. People would like to know where to fish, or just enjoy the resource, while there are landowners that have noticed a lack of respect when the public is accessing the resource on private lands.

Conflicting uses such as recreational activities and flood control structures are thought to negatively influence the fisheries resource (fish and habitat).

Invasive and non-native species are a concern as both terrestrial and aquatic non-native invasive species can detrimentally impact fish communities and the fisheries resource.

Concerns for the impact that impaired water quality and increased pollution would have on the human health and the aquatic community that come from humans and wildlife include increases in e coli, agricultural and urban runoff containing fertilizers, herbicides and pesticides, increases in gull, geese, and cormorant populations, and littering.

The public identified that there is a lack of awareness and/or communication between partners and agencies, and that there are several outdated or ineffective policies and legislation.

Some of the needs mentioned were for more education and awareness building to bridge communication and understanding gaps, and to use research and monitoring to identify problems and solutions.

They would like access to fishing addressed by decreasing the barriers and making the Thames more accessible.

They noted the lack of habitat, the need for wetland restoration, the influence of Lake St. Clair and the Sydenham River and the decrease in the walleye population acknowledged and addressed.



## The Plan

### Questions Asked:

*What would you like to see the fisheries management plan accomplish? What would signal to you that the plan has been a success? Are there questions that the plan should endeavour to answer?*

### Summary of Responses:

The public would like the TRFMP document to be a reference manual that can influence the day-to-day activities of the stakeholders. They would like the plan to identify priority tactics on a regional basis and provide clear guidelines for stocking programs and managing for certain species populations. The plan should identify areas in need of improvement and provide adaptive management programs, including action plans for quick responses. The plan should address the unknowns, and identify areas requiring further research and monitoring. The plan needs to address the issues and target areas for improvement and implement activities. The plan needs to educate and create momentum.

The plan should be part of other plans such as a Thames River Watershed Plan, and integrate with other plans already prepared like the Species at Risk Recovery Strategy, Lake Erie and Lake St. Clair Management Plans, and subwatershed plans. The plan also needs to be in a similar format as other watershed Fisheries Management Plans (FMP's).

Ideally the plan would identify the shortcomings of information, development management, strategies and provide a means of breaking down barriers between authority, regulation and policy for the proper needs of the riparian lands and public interest. This would require equally sharing the cost between all who have a shared interest. This could also include clarifying and simplifying regulations such as creel limits, which should be adjusted to reflect current conditions.

The plan should provide a means of collecting and storing data all in one place including historical data, and ensuring the data is in a user friendly format for all interest groups. The plan would bring together different user groups with common goals. It would be an educational and promotional tool to heighten the awareness of the value of the natural resource. It would create momentum and build on implementation.

The plan must protect significant fish habitat, improve water quality and quantity, improve swamps and wetlands, address issues like carp and pike in Wildwood, prioritize hierarchy of species, and set timelines for implementation activities such as removing barriers.

The plan must also show success by collecting baseline information and incorporating long term monitoring programs.

The plan should provide a means of answering questions like What is causing algae blooms and what are the impacts on the fish? It needs to look at different ways of controlling water levels – for more consistent flow, encourage cooling water temperatures, improving habitat, letting vegetation grow back along streams or implementing BMP's along all streams and creeks to include buffer zones and fence cattle out of streams.

## Opportunities

### Questions Asked:

*Are there activities that you would suggest for helping to support the fish in the Thames? Are there ways that we can involve the public in improving the health of the fishery?*

### Summary of Responses:

Education of the resource and dispelling myths were stated repeatedly. There is a need to target staff, students, landowners, agricultural community, policy makers, municipal staff and the public through various techniques such as posters, demonstrations, presentations, newspaper ads/articles, tabloids, promoting fish monitoring programs, integrating with communities/schools and corporations, developing curriculum units, websites, door to door awareness campaigns, etc.

Creating or expanding partnerships to complete projects such as adopting a stream, cleanups, tree planting and enforcement are necessary especially with interest groups and landowners. Landowner buy in and involvement is crucial in protecting and enhancing the resource. Increase stewardship and incentives for landowners are necessary. Promote and share scientific evidence of benefits of Best/beneficial management practices (BMP's) such as buffer strips. Perhaps develop sector specific BMP's for aggregate operations, agriculture, industry, golf courses, and developers.

It is felt that improvements to communications with stakeholders are needed especially a two way means of communicating for receiving input and generating feedback. The public would like more input and information from agencies to be shared with users in order that work can be targeted.

Enforcement is another means of educating the public. Increasing enforcement efforts would improve some of the issues and problems. There is a need for the municipalities to put the "bite" into legislation or prompt change in legislation/acts such as the drainage act to incorporate the protection of habitat.

The opportunity to get people involved in projects in their own backyard will generate a greater respect and appreciation of the resource. Habitat enhancement projects need to be implemented in priority areas in order to observe the results in that location as well as downstream.

Increasing access to the resource/river would assist with promoting the river and potentially identify ways of improving the opportunities.

Consider other programs that increase or improve community involvement, such as the US example of the River Keepers.

## TRFMP Public Workshop Rough Notes - Public Input for Trout Creek subwatershed

### Resource

- Used to be species in certain areas that were never there, or species lost – no longer where they were, or expected to be
- Change is noticeable in species - change
- Positive and/or negative comments related to above – some people are happy to see new species there, others not – some people are disappointed that some species are no longer where they use to be, others indifferent indicating there's nothing there now, or it's not worth the effort
- Streams/water is running dry sooner – swamps are drier (noted in MNHS)
- Fishing is big business
- Education need on how our reservoir system is managed – future of dams
- Last 20 years manage reservoir for fisheries
- Conflict between habitat and flood/flow augmentation
- Balance and better connection between management of reservoirs/fisheries/SAR
- Considerations for future
- Going elsewhere to fish not in own backyards anymore (access).
- Targeting what fishing for – certain species
- Increase recreation activities increase fishing pressure

### Wildwood

- Consistent fishing pressure last 5 years
- Bigger bass and more bass (#'s)
- 20 years ago was perch fishery, changed to pike, now bass
- Fish (pike) below dam now due to aerator
- Ice fishing on Wildwood - crowding fish in small area (dam reserves gone, water is lower)
- Habitat enhancement in the 80s
- Stocking at Harrington
- Wide variations in water levels
- Increase in carp and perch populations
- In last 6 or 7 years have noticed a decrease in size of pike – below Wildwood pike stopped by dam – too many being harvested? (1 dot)
- Warmer weather causing algae blooms
- Difficult to catch fish at Wildwood in August because the water has become so warm that the fish move to cooler, deeper water
- Water clarity changes over season – clearer early May and becomes progressively worse as season moves on (1 dot)
- More people are fishing but this isn't perceived to be having a large impact on the health of the fish community
- Ice fishing impacted perch population in past at Wildwood
- 30 years ago bass, trout and perch were caught regularly at Wildwood and it was rare to see a pike
- See pike here in Trout Creek now not 20 years ago
- 22 freshwater springs (1 dot)
- Loss of coldwater habitat (1 dot)
- Mature and young pike upstream of St. Marys – now more than ever – due to stocking of Wildwood
- Perch behind Harrington Pond – everywhere upstream of St. Marys
- Now carp remove vegetation
- Smallmouth bass and brook Harrington ( out back here )
- 60s change

- Loss of springs
  - Used to catch minnows in all drains
  - Less water everywhere
  - Mudpuppies - Harmony (stream goes dry) fed by Stratford city dump
  - Used to be a ton of fish above St. Marys, now just carp (you could walk across the river on them) (more of a comment for North Thames River, but applicable to Trout Creek)
  - We also own a cottage (#4) on Wildwood Lake near St. Marys and I am actually the only cottager that routinely fishes the lake. I've noticed the bass (smallmouth) population diminish and the pike increase; especially a multitude of hammer handles.
  - Four years ago, we witnessed a couple of bass "nesting" on the small, sandy beach beside our dock and then saw millions of hatched fry seek the shelter of the dock. They were that numerous that there would be a dark cloud in the water. At the end of the season the shoreline was thick with smallmouth 2-3" long. Haven't seen this abundance since.
- 
- Trout Creek- mid 60s to early 70s –from Cty Road 139 (old hwy #7) downstream to St. Marys Golf Course. There were SpeckleD Trout stocked and provided good fishing. Today no trout.
  - Harrington Road Creek - Cty Road 28- this small creek meanders down upstream of road and then finally into Wildwood Lake, it always had a good population of wild Speckled Trout.
  - Harrington Pond back in the 60s and 70s – colder and cleaner pond with some weed patches. Now, apparently, it is full of weeds in the summer. It had Rainbow trout, natural Speckled Trout (also in the creek running into the pond) and the occasional Brown Trout.

*Questionnaire Submitted:*

In an attempt to raise some concerns about the declining fishery at Wildwood Lake I found this questionnaire posted on your website. I hope that this submission is not too late and can be included as feedback for your plan. I will attempt to write this by using the template you had requested as part of your questionnaire. Although, I am not a fisheries biologist, I do have a biology degree from the University of Waterloo and I have a significant amount of angling experience.

I started fishing Wildwood as a teenager with my family in the early 1980's as we lived only a few miles from the lake. This has continued to the present time so I believe my experience is fairly representative of the fishing conditions and the change to the resource. All of our fishing has been done from a boat in the months of May to September. Primarily, we use artificial lures as bait; however we do have experience using live bait including crayfish, minnows, and worms. I would estimate that we have used a 50/50 split between casting and trolling. Our targeted fish has always been pike and smallmouth. We extensively use catch and release.

I would say until the mid 1990's and especially in the late 80's and early 90's the quality of our fishing experience on the lake was excellent. It was not uncommon to boat 10 to 15 pike each trip per fisherperson and I would estimate that our average was about 4-6 pike per trip per fisherperson. The size of pike on average was varied; however, I would estimate that 50% were between 2 – 5 lbs and between 28 – 34 inches. Large fish tended to be about 6 - 7 lbs and around 36 – 39 inches. Large fish represented only about 3% of our catch. The remainder were small pike between 14-28 inches. Typically, when targeting smallmouth, we would catch between 2 – 5 bass per outing. The average weight was around 1.5 - 2lbs with heavy fish approaching 4lbs. There were a few incidental catches of largemouth bass over the years including my largest to date of 5.25 lbs. I have not caught a largemouth since the mid 1990's.

Starting in the mid 1990's until the present time we have witnessed a gradual but steady decline in the numbers and size of both pike and bass as well as a decline to our "fishing experience." This became very obvious last weekend at the family fishing derby when, I believe, we were the only participants to catch a pike (15 inches) and not a single smallmouth bass was caught by anyone participating in the derby. I cannot verify these statistics; however, I do believe they are correct. I believe the OFAH tracks the catches and have done so over the number of years that the derby has taken place. You are, therefore,

probably already aware of the decreased catch trend at the derby. I recall a few years when large scale catch and release tournaments were held on the lake with significant catches of both pike and bass. From our own personal experience, we entered a couple of these tournaments in the early 90's and at one weighed in 4 bass and 4 pike.

We now consider a “good” outing if we catch one or two fish. We have been out three times this year and have caught two pike in total. This includes the one in the derby (15 inches) and one caught (22 inches) a couple of weeks ago. Last year we fished the lake three times and caught three pike and no bass.

## Issues

- Flood control operations at the reservoirs – raising/lowering lake levels – seen as impacting fish communities (1 dot)
- Quick flashes in spring the spring and the draw down all impacting
- The design of the dam at Wildwood is drawing cooler water from the bottom of the reservoir and sending it downstream
- Mention of the oxygenator – elbow, below Wildwood
- In the upper reaches of the river (Tavistock)an increase in population of herons has been noticed
- Fish stocking and introduction of different species is changing the natural fish population
- Harrington Pond was drained in past – many carp
- Spills have been an issue in the past
- Impact of gravel extraction upstream of Harrington Pond (potential) (6 dots)
- Lack of enforcement (poaching) (1 dot)
- Foam, phosphorus? soap? From Happy Hills area (McCorkadale Drain) (2 dots)
- Events – rains – time lag has decreased over the years
- Floods immediately after rain event (2 dots)
- Loss of retention time (storage) (2 dots)
- Fish stranded after floods
- Drainage and dredging (2 dots)
- Loss of riparian habitat – farmed to edge of watercourse
- Landuse
- Value of land
- Loss of watercourse (tiling/closing)
- Rehabilitation
- '52 report
- Stop dredging and drainage – clean out
- Streams now municipal drains
- Pollution
- Nutrient load – where coming from
- Highway 7 below Wildwood
- Poor water quality (stench)
- Disconnect between old and new drainage practices
- Encourages improved drainage activities – fish friendly
- Education required for drainage
- Upstream of here (TR&GC) – loss of depth of water
- Runoff events
- Loss of baseflow in summer retention in wetlands – loss
- Dams and obstructions (barriers) (1dot)
- Silt
- Boaters stir up
- Increase temperature
- Algae blooms – Wildwood, increase temperatures, increase nutrients (1 dot)
- Climate change

- Loss of slow steady rains
- More short rains with lots of rain, heavy and fast
- Increase in bait fishing
- Fewer fishermen
- Raw sewage applications to agriculture lands – loss of cattle
- Barriers – removal – what is their purpose
- Build structures in stream as kind oxygenating water
- Fish there after
- Riffle pool sequences lost
- Gabions extra rocks in river – better habitat – fish like it there (1 dot)
- More structures, not getting rid of water fast
- Agricultural practices – cattle in watercourse
- Wildwood – every year it gets worse for the fish population, during the season people are cutting up fish right after they are caught (probably the same ones that I just released)
- Protection of native species (1 dot)
- Brook trout, increase protection
- Concerns with introduced trout and competition and effects
- Climate change
- Success if still Brook trout in 30 years and beyond
- Quality of water is mostly at fault and somewhat due to loss of habitat (lower water levels in streams).
- There is a serious problem with algae blooms on Wildwood, probably due to manure and fertilizer runoff from farmlands.
- Likewise, there are millions of seagulls that flock onto Wildwood during late July on to the end of the season. Where do these seagulls come from? Why do they only come after mid-summer? (rather they didn't come at all!).
- I believe erosion and ag-fertilizers impact the Thames River the most. Erosion fills in the deep pools that the fish need and also is a problem in smothering eggs in the bass nests. Ag-fertilizers of course increase both algae and weed growth.
- Another problem has been in the clearing of trees along stream banks to get more land into production of farm crops. This has helped in the increase in water temperature making it difficult for cold water species such as trout. The root systems not only created cover for trout but also played a part in holding stream banks together to prevent erosion.
- One of the biggest challenges facing the Thames is proper animal waste management or fertilizing crop land. Over fertilizing and run off directly into waterways and the extensive use of tile draining has the potential for both fish kill and creating weed and algae growth.
- Another problem is cattle knocking down creek banks to get access to drinking water and then “crapping” in the water. That should be illegal.
- Old farm machinery left to rust on “the back forty” has the potential to leak out oil into the waterway. These should be cleaned up.

I personally trend the decline to the fishery with the explosion of ice fishing. In the late 80's and early 90's there never appeared to be more than 2 or 3 people ice fishing at any one time. Now it is not uncommon to see 15 – 30 people ice fishing on a weekend in January and February. As the lake is drained down each fall the fish are forced into the deeper water around the dam and I would suggest that they are extremely vulnerable to over harvest. The catch and keep rates for ice fishermen are significantly higher than warm water fishing to begin with and the fact that it is literally a “fish in a barrel” situation further exacerbates the issue. I don't believe the lake is highly productive for new fish recruitment to begin with and I believe that over harvesting of fish is a significant issue. Belwood Lake, part of the Grand River Watershed, went through the same issue a number of years ago and actually shut down the lake to ice fishing for a few years.

Obviously, smallmouth bass are not typically targeted or caught by ice fishing; however I would suggest that as the pike population crashed, people began to keep more and more bass in an attempt to bring home enough fish for a meal. In the past, these bass may have been released as pike are a better tasting fish to begin with.

In general I have never witnessed much of a “catch and release” mentality at the lake and this has also contributed to the decline. I totally support keeping a few fish to eat but I don’t believe Wildwood can support the harvest pattern that has existed over time.

## Plan

- Look at different ways of controlling water levels – for more consistent flow (5 dots)
- What is causing the algae blooms – what are the impacts on the fish? (1 dot)
- Consider fish friendly dams when they are being replaced
- Encourage cooling water temperature, improving habitat, let vegetation grow back along streams (3 dots)
- Compensate landowners – incentives
- Need to do work everywhere
- Identify what is salvageable
- Clean water
- TR & GC – improve here 1<sup>st</sup> or won’t get better downstream
- Identify habitat – substrate – gradient water table (aggregates)
- Improve swamps/wetlands in watershed (2 dots)
- Increase water retention
- Shift in ideas from draining to storing
- Grassed waterways
- Let low areas flood – renaturalize - fragile land retirement
- Look at hydrology and connect between river and aggregate resources
- Spawning grounds – improve for sustainable natural reproduction
- Find issues (investigate problems)
- Prime habitat – wood debris, large rubble get it back in – don’t remove it
- More desirable species
- Improve water quality/quantity (2 dots)
- Sanctuaries
- Prioritize – hierarchy of species (2 dots)
- Carp and pike issues in Wildwood (1 dot)
- Ducks Unlimited berm – waterfowl pollution probs
- Wildwood seagulls in August (2 dots)
- Cormorants in Wildwood
- Want to see more people use the river/creek/stream,
- Ask the public, and /or service clubs to assist with clean-ups, restoration projects – most are more than willing to help.
- Upper Thames must learn to cooperate and partner with other groups –such as the NOAH group who is involved in conservation/clean ups.
- Let me know if you need anyone to monitor anything at Wildwood.
- I would like to see a 10 yard buffer zone created along all streams and creeks – to stop soil erosion. Tree planting in this zone would not only help shade the waterway but would also be good for the environment.
- I would like to see all cattle fenced from streams, creeks. Perhaps some subsidy for farmers to accomplish this and provide water in an appropriate manner. Too often, farmers believe that a stream that runs through their property is theirs to do with what they want.

The most significant accomplishment of the plan, from the perspective of Wildwood Lake, would be the re-establishment of a good fishery with improved catch rates and an improved fishing experience.

Another significant accomplishment would be to introduce and achieve buy-in around a catch and release philosophy at the lake since it will never be able to support high harvest rates.

## Opportunities

- Harrington – who owns, who operates, etc, details need to be communicated to participants (2 dots)
- More study (diagnostic) is needed and would be very helpful
- Adopt a stream project has worked in other places
- Need to work landowner to landowner and talk about impact on the river and ways that problem can be solved
- Problems seen in reservoirs – what can we do about these
- Education regarding the impacts on the river and fish community are needed to bring the issue a higher profile (2 dots)
- Enforcement is another method to communicate that negative impacts will not be tolerated
- There is abuse that is going unchecked (1 dot)
- Target the schools
- Touch people personally – use messages that explains what is in it for them
- Need to create a sense of responsibility
- Direct communication to water quality – and fish community health will follow (3 dots)
- Need money or funding or some incentives for improvements to be implemented (2 dots)
- Flow augmentation is an issue
- Look at how other reservoirs are operated for lesson learned (1 dot)
- Climate change
- Need to emphasize landowner in targeting efforts (4 dots)
- Partner landowners with helpers from clubs – connect them with each other (7 dots)
- Technical assistance/tact and diplomacy are all needed (1 dot)
- Use OMAF contacts
- Tree incentive programs for landowners – erosion, rain, wind
- Land stewardship (2 dots)
- Plant buffers (1 dot)
- Quick fix for Harrington Pond (1 dot)
- Magic pill
- Gain momentum – do small project
- Habitat enhancement – incentives
- Erosion in Trout creek – riparian planting, combine – fencing, rock placement, trees, shrubs, etc.
- Club involvement
- Clean up efforts
- Get them back in their own yards
- Ownership of resource - protect
- Tell us where to go fishing, specifically for Trout in the Thames
- Stock fish – bass, pike above the dam in st mary's
- Want to take the next generation to wildwood to enjoy the same opportunities that I had – fishing for perch, walleye and bass
- Implement a catch and release program through a tagging system – ensure that there will be fish left in wildwood – protect fish population (understand that many will ignore this request)
- Plans to start a trout species program – steelhead, browns or brooks
- Other species plans
- Cleanup plans
- Involve the public – inform them how
- Shape the thames into a viable resource for the future
- Farmers must be educated and encouraged to:



- Reduce manure/fertilizer near streams/drains etc.
- Plant buffer strips of grass and trees along all streams and rivers, even 3 meter width would help.
- Build (or re-build) spawning areas suitable for bass
- Ministry must monitor the ice fishing harvest and ensure that over-harvesting is not occurring (on Wildwood)
- Limit or eliminate the harvest of vulnerable fish during the ice fishing season in an attempt to allow the population to naturally restore itself.
- Set your own harvest limits for the lake that are significantly below current MNR levels for both pike and bass. I am assuming you are allowed to do this.
- Post signs at the launch ramp, dam and other bridges that encourage catch and release and list your new harvest limits.
- Enforce fishing regulations as I have witnessed a number of situations where out of season bass were kept by either unscrupulous or unaware individuals.
- Provide education to the campers at the lake about the importance of establishing a strong fishery.

I believe a good stable fishery would increase revenues to the Conservation Authority as more people would angle at the lake. For example, we no longer buy the annual pass as a result poor catch rates we have had over the last 5 – 7 years. On a more positive note, the smallmouth fishing in the Thames River around St. Marys has remained quite good over the last 10 years. We usually have good success and catch some nice sized bass each time we go out. Although the catch rates were low at the derby last weekend it was very well organized and ran quite smoothly.

## Appendix 5. Aquatic Ecosystem Categories

The following describes the process developed to categorize aquatic ecosystems in the Oxford Natural Heritage Study (ONHS) (County of Oxford, 2006).

### Categories of Aquatic Ecosystems

A system of categorizing watercourses suited to the purpose of the ONHS was required. This system also required an approach that would be consistent across different agencies including conservation authorities, upper and lower tier municipalities, and federal and provincial governments. It was evident that the categories needed to follow existing and standardised approaches, and be enhanced where appropriate for the ONHS.

The Municipal Drain Classification Project (MDC), the Natural Heritage Reference Manual for Policy 2.3 of the Provincial Policy Statement and the Fish Habitat Protection Guidelines for Developing Areas provided guidance in categorizing the watercourses for Oxford County. The Ontario Ministry of Natural Resources (OMNR) prepared the Natural Heritage Reference Manual in 1999 and the Fish Habitat Protection Guidelines in 1994. These two documents differentiate between three types of fish habitat. The MDC is a federally funded initiative of Fisheries and Oceans Canada (DFO). The purpose of the MDC was to streamline the Fisheries Act Authorisation process for maintenance activities on municipal drains. A classification scheme was developed to identify the type of fish habitat present and to aid the authorization process. All conservation authorities (CA's) in Southwestern Ontario have completed this initiative and the most current information can be obtained from the respective CA. These federal and provincial initiatives aided in providing consistency between governments and agencies.

Three categories of watercourses were defined to give a general overview of the current aquatic ecosystem conditions found throughout the County. Simply put, more sensitive or complex systems with permanent flow were placed in one category called System Type I, less sensitive systems with permanent flow were placed in another category called System Type II, and watercourses with intermittent flow were placed in the final category called System Type III. These categories allowed for the development of general recommendations and management prescriptions for each category. For example, System Type I watercourses have significant or sensitive features that need to be protected, conserved and enhanced, while System Types II and III might be targeted for rehabilitation and restoration activities.

Several components were used to develop the MDC classifications and were also used to create the categories of watercourses for the ONHS. These components include Species at Risk (SAR), fish community, aquatic and semi aquatic species, habitat, thermal regime/water temperature, permanent flow and the municipal drain classification. The following table, *Table 5.4 Aquatic Categories Component Summary* shows how each component fits into each category.

Additional aquatic and semi-aquatic species such as mussels and plants are included in the system types; however, in the future these species may have additional considerations which could alter the category that they are currently found in.

Currently, the categories do not contain components for threats and issues such as invasive species, and dams or barriers. Water quantity and water quality components were not included as components of the system types. In the future, these components require further consideration for incorporation into the system types of watercourses for the purpose of Oxford Natural Heritage features.

#### *System Type I*

System Type I is generally considered the most desirable of the 3 system types due to the permanence of water found in these watercourses year round and the diverse habitat that is available in these watercourses. Some of the more sensitive species found in these aquatic environments are susceptible to

changes in habitat such as fluctuating water temperatures or water levels, pollutants, and a loss of spawning grounds.

As an aquatic natural heritage feature, watercourses identified as System Type I require conservation, protection, and enhancement measures when possible. One should not expect that all watercourses could become this, however, it is an attainable goal to restore some watercourses to this level.

#### *System Type II*

System Type II watercourses may have water flowing in them all year, or have standing pools of water when flow is lacking during the drier periods of the year or during periods of drought. The species found in this category are usually in many aquatic habitats, as they are more tolerant to habitat changes. All watercourses in this category are warmwater, which by definition means that they have an average temperature of 25 °C (or greater). These watercourses are generally fairly productive and diverse.

With targeted rehabilitation or restoration efforts, conditions in many of these watercourses would improve to support more diverse and sensitive fish communities, and potentially restore System Type I habitat.

#### *System Type III*

Watercourses in System Type III are intermittent or ephemeral systems, meaning that they have water in them for only part of the year, and their aquatic ecosystem function is largely limited to these periods. Usually these watercourses convey water during rain events, snowmelt and spring runoff. These watercourses are feeder streams for the larger watercourses as they play an important role in transporting water, sediment, and nutrients downstream. When wet, these watercourses provide migration corridors and access to food and spawning habitats for many species of fish, waterfowl, and amphibian.

Remedial activities would enhance these watercourses. Habitat restoration and rehabilitation has the potential to elevate some watercourses to System Type II and a few others to System Type I.

**Table A5.1 Aquatic Categories Component Summary**

Components	System Type		
	I	II	III
<b>Species at Risk</b>	Species with Federal and Provincial SAR status	NA	NA
<b>Fisheries</b>	Sportfish / top predators / salmonids, sensitive and indicator species, their surrogates/indicator species, and their habitat or spawning areas	With or without fish	With or without fish when inundated with water (may only be seasonally)
<b>Species</b>	Indicator species sensitive to habitat alteration, disruption or destruction, and cold/cool water	Resilient to habitat alteration, disruption or destruction	Ephemeral
<b>Habitat</b>	Identified to support Sportfish / top predators / salmonids, sensitive and indicator species as well as SAR.  Complex, natural, or diverse habitat Supports significant areas that provide the life requirements of aquatic species	Supports species not identified in the first category Provides the life requirements of aquatic species	<ul style="list-style-type: none"> <li>- Seasonally supports aquatic and semi-aquatic species when wet.</li> <li>- Provides cover and corridors and food source for terrestrial species</li> <li>- Provides the life requirements of aquatic and semi-aquatic species</li> <li>- Provides corridors for aquatic, semi-aquatic and terrestrial species (i.e.: migratory species, spawning areas)</li> </ul>
<b>MDC Classifications</b>	A, B, E , & D	C	F
<b>Thermal Regime</b>	Warm, cold/cool	Warm	NA
<b>Permanency</b>	Permanent, or if intermittent based on spawning areas or critical habitat	Permanent, or Standing/Pooled water	Intermittent or Ephemeral

## Appendix 6: Dams and Barriers

Dam ID	Name	Watercourse	Year Constructed	Dam type	Purpose	Additional Comments
UT21-067	Ducks Unlimited / UTRCA Dam	Trout Creek	1977	water storage	wetland enhancement	Dam built to store water to create DU wetland.
UT21-065	EHF1 Dam	Trib of Trout Creek	1970	water storage		Brook Trout know in this system. Earthen Berm dam with long impound. Outflow culvert is also barrier. Perched outflow .3 m
UT21-065	KC1 Dam	Harrington Creek	1967	water storage		Earthen dam with stop log structure and rec pond. Kinsman club maintains dam. Pond closed for swimming in 1991. still used for boating.
UT21-059	Harrington CA Dam	Harrington Creek	-	water storage		Dam breached in 1999. works ongoing to restore dam and mill as historic site
UT21-066	MB Dam	Harrington Creek	1953	water storage		Max depth of pond is approx. 16 feet. Brook trout present. Never breached or overflowed
UT21-065	EHF2 Dam	Trib of Trout Creek	1970	water storage		Earthen Berm dam with long impound. Outflow culvert is also barrier. Perched outflow .3 m. Brook trout known in this system
UT21-065	KC2 Dam	Harrington Creek	1967	water storage		Earthen dam with stop log structure and rec pond. Kinsman club maintains dam. Pond closed for swimming 1991. still used for boating
UT21-032	B Dam # 1	Trib of Trout Creek	1954	water storage		Stocked with rainbow trout. Reported that fish were dying
UT21-031	M Dam	Trib of Trout Creek	1961	water storage		Concerned over gravel deposition in spring time. Never stocked but fish present.
UT27-405T	VN Dam # 2	Trib of Trout Creek	-	water storage		Small earthen berm with piped outlet. Stocked with rainbow trout. Good flow leaving this impoundment.
UT27-070	VN Dam # 1	Trib of Trout Creek	-	water storage		Long earthen dam with large impound w/ island. Stocked with rainbow trout. Very clear water flowing through
UT21-301T	B Dam # 2	Trib of Trout Creek	1954	water storage		Small dam and pond upstream of Barton Dam # 1.
UT21-060	GN	Trib of Trout Creek	1973	water storage		No reason ("just because") for the construction of pond. Pond is groundwater fed only. Has always overflowed. Stocked with SM bass.
UT21-044	Wildwood CA Dam	Trout Creek	1965	flood control	flood control	
UT21-034	St. Marys Dam	N Thames River	1890	run of river	mill dam, flood control	Evidence of rebuild. Dam in very poor shape. Likely to fail soon.