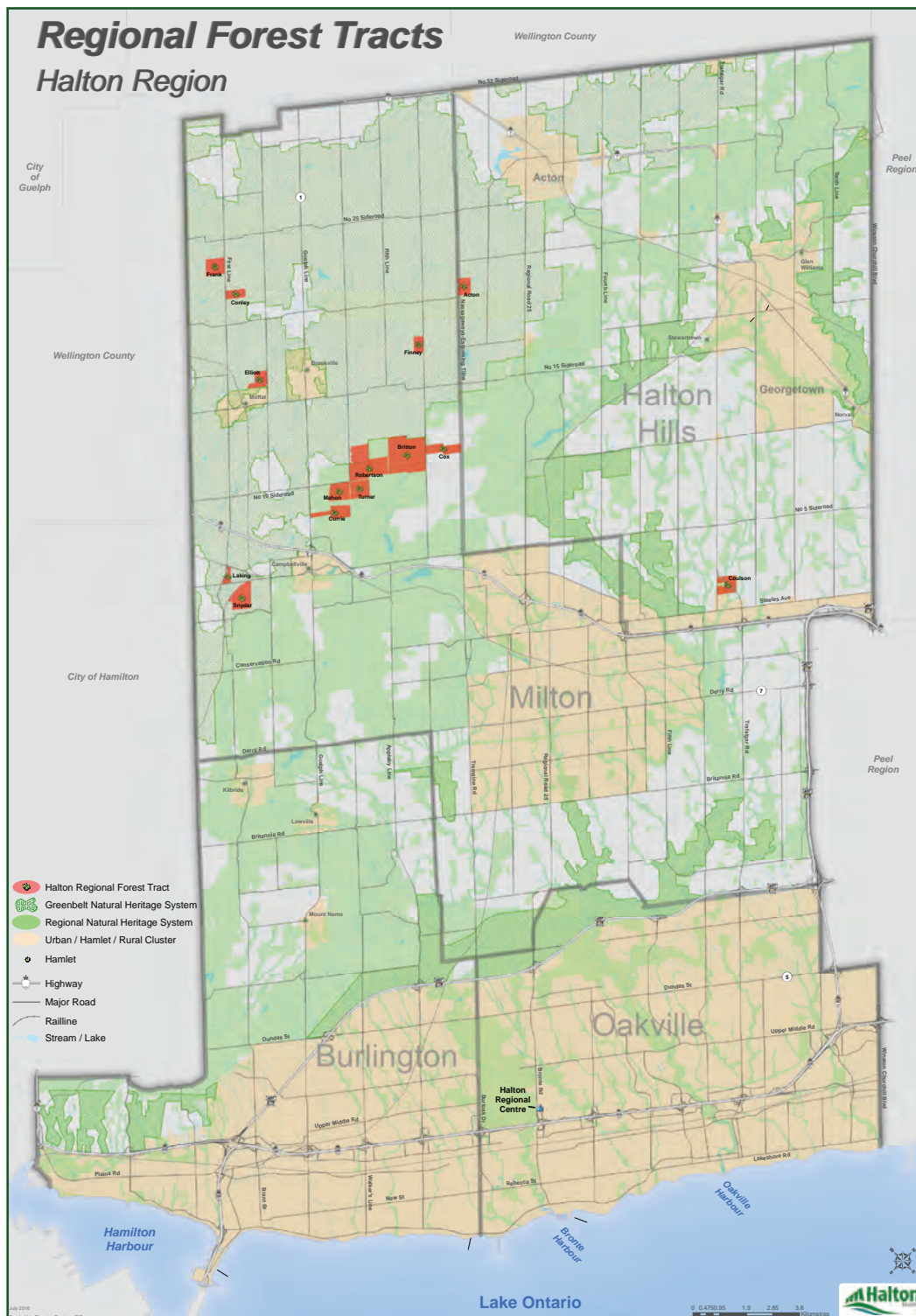




2016 Halton Regional Forest Health Report Card





The Halton Regional Forest lands are comprised of 14 separate tracts totaling 703 hectares. Management of the Regional forests is guided by the Halton Regional Forest Management Plan (2005) and the Halton Regional Forest Biodiversity Strategy (2014). The Regional Forest lands were certified under the Forest Stewardship Council® scheme in 2015.

This report card summarizes regional forestry, ecology, and hydrology activities over the last five years.

Acton Tract - 22 hectares

Natural Heritage Values¹

- 21% Upland Natural Forest - primarily White Cedar and White Ash
- 32% Plantation - primarily White Pine
- 47% Wetland - primarily Deciduous Swamp
- 9.3ha - Interior Forest habitat

Silvicultural Activities²

No silvicultural works undertaken

Biotic Influences⁴

- | | |
|------------------------------|---------------------|
| Insects (native and non) | - No notable issues |
| Diseases (native and non) | - No notable issues |
| Invasive Plants (non-native) | - No notable issues |

Abiotic Influences⁴

- | | |
|------------------------------------------------------------|----------------------------------------|
| Natural (ice, wind, flood, fire) | - Minor damage from the 2013 ice storm |
| Anthropogenic (harvest, fire, non-permitted plant harvest) | - None noted |

Biodiversity Strategy Implementation⁵

None to date

Overall Rank

A



Britton Tract - 166 hectares

Natural Heritage Values¹

- 67% Upland Natural Forest - primarily Sugar Maple and other hardwood tree species
- 8% Plantation - primarily a mix of coniferous tree species
- 25% Wetland - mix of Meadow Marsh, Shallow Marsh, and Deciduous Swamp
- 62.3ha - Interior Forest habitat

Silvicultural Activities²

2014-2015 harvest of 5.7ha under Good Forestry Practices³



Biotic Influences⁴

- | | |
|------------------------------|-----------------------------------------------------------------------------|
| Insects (native and non) | - No notable issues |
| Diseases (native and non) | - No notable issues |
| Invasive Plants (non-native) | - Dog strangling vine in upland areas and phragmites developing in wetlands |

Abiotic Influences⁴

- | | |
|------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|
| Natural (ice, wind, flood, fire) | - No notable issues |
| Anthropogenic (harvest, fire, non-permitted plant harvest) | - Natural regeneration developing well after the 2014-2015 harvest.
Non-permitted harvesting of spring plants noted |

Biodiversity Strategy Implementation⁵

Strategy #1: Managed an invasive Dog Strangling Vine population through Tryclopyp herbicide application in 2014 and 2016. Currently planning to manage invasive Common Reed patches in partnership with P.O.W.E.R (a local NGO) and a University of Waterloo PhD student.

Strategy #2: Issued an RFP in July 2016 for the design of a pedestrian bridge to be constructed across a coldwater tributary of Sixteen Mile Creek containing habitat for the Endangered Redside Dace fish that is being impacted by trail users.

Strategy #3: Established three long-term anuran (frogs and toads) monitoring locations and commenced monitoring in 2016.

Strategy #4: In 2015, installed a water level and temperature logger in a Jefferson Salamander breeding pool to investigate pool hydrology relative to breeding success. Recruited a PhD student from University of Waterloo in 2016 to conduct comprehensive research on the Endangered species, in partnership with Halton Region, the University of Waterloo, and the provincial Jefferson Salamander Recovery Team. Completed vernal pool hydrology screening in 2016 to identify potential additional Jefferson Salamander breeding pools for inclusion in the research study.

Water quality measurements (water temperature, pH, conductivity, dissolved oxygen, and turbidity) have been spot-sampled at two tributaries of Sixteen Mile Creek since 2015. In 2016, additional water quality measurements are being collected (nutrients, metals, chloride, and total suspended solids) to characterize baseline conditions in the major creeks of Halton Region.

Overall Rank

A++

Conley Tract - 21 hectares

Natural Heritage Values¹

- 46% Upland Natural Forest - primarily Sugar Maple and other hardwood tree species
- 24% Plantation - primarily White Pine
- 30% Wetland - primarily Deciduous Swamp
- 12.1ha - Interior Forest habitat

Silvicultural Activities²

No silvicultural works undertaken

Biotic Influences⁴

- | | |
|------------------------------|---------------------|
| Insects (native and non) | - No notable issues |
| Diseases (native and non) | - No notable issues |
| Invasive Plants (non-native) | - No notable issues |

Abiotic Influences⁴

- | | |
|------------------------------------------------------------|---------------------|
| Natural (ice, wind, flood, fire) | - No notable issues |
| Anthropogenic (harvest, fire, non-permitted plant harvest) | - None noted |

Biodiversity Strategy Implementation⁵

Strategy #4: Recruited a PhD student from University of Waterloo in 2016 to conduct comprehensive research on the Endangered species, in partnership with Halton Region, the University of Waterloo, and the provincial Jefferson Salamander Recovery Team. Completed vernal pool hydrology screening in 2016 to identify potential additional Jefferson Salamander breeding pools for inclusion in the research study.

Water quality spot measurements (water temperature, pH, conductivity, dissolved oxygen, and turbidity) and water quality samples (nutrients, metals, chloride, and total suspended solids) at Mill Creek commenced in 2016 to characterize baseline conditions in the major creeks of Halton Region.

Overall Rank

A



Coulson Tract - 36 hectares

Natural Heritage Values¹

- 6% Upland Natural Forest - primarily Black Walnut
- 93% Plantation - many coniferous and deciduous tree species
- 1.6ha - Interior Forest habitat

Silvicultural Activities²

No silvicultural works undertaken

Biotic Influences⁴

- | | |
|------------------------------|---------------------------------------------------------------------------|
| Insects (native and non) | - Signs of emerald ash borer present with moderate level of ash mortality |
| Diseases (native and non) | - No notable issues |
| Invasive Plants (non-native) | - Minor buckthorn population noted in upland area |

Abiotic Influences⁴

- | | |
|------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Natural (ice, wind, flood, fire) | - Low to moderate level mortality of some species of planted trees mainly due to fluctuating soil moisture levels.
Minor to moderate damage to tree tops from the 2013 ice storm. |
| Anthropogenic (harvest, fire, non-permitted plant harvest) | - None noted |

Biodiversity Strategy Implementation⁵

Water quality spot measurements (water temperature, pH, conductivity, dissolved oxygen, and turbidity) and water quality samples (nutrients, metals, chloride, and total suspended solids) at Sixteen Mile Creek commenced in 2016 to characterize baseline conditions in the major creeks of Halton Region.

Overall Rank

C



Cox Tract - 41 hectares

Natural Heritage Values¹

- 65% Natural Upland Forest - primarily Sugar Maple and other hardwood tree species
- 33% Plantation - primarily Red Pine
- 2% Meadow Marsh Wetland
- 7.2ha - Interior Forest Habitat

Silvicultural Activities²

2011 harvest of 16.2ha under Good Forestry Practices³

Biotic Influences⁴

- | | |
|------------------------------|------------------------------------------------------------------|
| Insects (native and non) | - No notable issues |
| Diseases (native and non) | - Moderate to severe red pine decline likely due to root disease |
| Invasive Plants (non-native) | - Single giant hogweed plant removed |

Abiotic Influences⁴

- | | |
|------------------------------------------------------------|----------------------------------------|
| Natural (ice, wind, flood, fire) | - Minor damage from the 2013 ice storm |
| Anthropogenic (harvest, fire, non-permitted plant harvest) | - None noted |

Biodiversity Strategy Implementation⁵

Strategy #3: In partnership with the Niagara Escarpment Commission, long-term forest biodiversity and health monitoring plots have been established and initial data collection occurred in 2014-2015.

Overall Rank

A-



Currie Tract - 39 hectares

Natural Heritage Values¹

- 89% Upland Natural Forest - primarily Sugar Maple and other hardwood tree species
- 7% Plantation - primarily multiple coniferous tree species
- 4% Wetland - primarily Meadow Marsh
- 33.9ha - Interior Forest habitat

Silvicultural Activities²

2014-2015 harvest of 2.5ha under Good Forestry Practices³



Biotic Influences⁴

- | | |
|------------------------------|-----------------------------------------------------------|
| Insects (native and non) | - Minor decline of ash trees due to the emerald ash borer |
| Diseases (native and non) | - No notable issues |
| Invasive Plants (non-native) | - One small population of phragmites in wetland |

Abiotic Influences⁴

- | | |
|------------------------------------------------------------|--------------------------------------------------------------------|
| Natural (ice, wind, flood, fire) | - Minor damage from the 2013 ice storm |
| Anthropogenic (harvest, fire, non-permitted plant harvest) | - Natural regeneration developing well after the 2014-2015 harvest |

Biodiversity Strategy Implementation⁵

Strategy #4: In 2015, installed a water level and temperature logger in a Jefferson Salamander breeding pool to investigate pool hydrology relative to breeding success. Recruited a PhD student from University of Waterloo in 2016 to conduct comprehensive research on the Endangered species, in partnership with Halton Region, the University of Waterloo, and the provincial Jefferson Salamander Recovery Team. Completed vernal pool hydrology screening in 2016 to identify potential additional Jefferson Salamander breeding pools for inclusion in the research study.

Water quality spot measurements (water temperature, pH, conductivity, dissolved oxygen, and turbidity) and water quality samples (nutrients, metals, chloride, and total suspended solids) at Kilbride Creek commenced in 2016 to characterize baseline conditions in the major creeks of Halton Region.

Overall Rank

A++

Elliott Tract - 30 hectares

Natural Heritage Values¹

- 3% Natural Forest - primarily Ash and White Cedar tree species
- 55% Plantation - primarily multiple species of coniferous tree species
- 42% Wetland - primarily Deciduous Swamp
- 8.5ha - Interior Forest habitat

Silvicultural Activities²

No silvicultural works undertaken

Biotic Influences⁴

- | | |
|------------------------------|---------------------|
| Insects (native and non) | - No notable issues |
| Diseases (native and non) | - No notable issues |
| Invasive Plants (non-native) | - No notable issues |

Abiotic Influences⁴

- | | |
|------------------------------------------------------------|----------------------------------------|
| Natural (ice, wind, flood, fire) | - Minor damage from the 2013 ice storm |
| Anthropogenic (harvest, fire, non-permitted plant harvest) | - None noted |

Biodiversity Strategy Implementation⁵

Strategy #4: Recruited a PhD student from University of Waterloo in 2016 to conduct comprehensive research on the Endangered species, in partnership with Halton Region, the University of Waterloo, and the provincial Jefferson Salamander Recovery Team. Completed vernal pool hydrology screening in 2016 to identify potential additional Jefferson Salamander breeding pools for inclusion in the research study.

Water quality spot measurements (water temperature, pH, conductivity, dissolved oxygen, and turbidity) and water quality samples (nutrients, metals, chloride, and total suspended solids) at Mountsberg Creek commenced in 2016 to characterize baseline conditions in the major creeks of Halton Region.

Overall Rank

A



Finney Tract - 19 hectares

Natural Heritage Values¹

- 9% Upland Natural Forest - primarily Sugar Maple and other hardwood tree species
- 89% Plantation - primarily a mix of coniferous tree species
- 2% Wetland - entirely Deciduous Swamp
- 11.7ha - Interior Forest habitat

Silvicultural Activities²

2014-2015 harvest of 11.5ha under Good Forestry Practices³



Biotic Influences⁴

- | | |
|------------------------------|----------------------------------------------------------------------------------|
| Insects (native and non) | - No notable issues |
| Diseases (native and non) | - Trees with moderate to severe "Red Pine Decline" (Root Disease) were harvested |
| Invasive Plants (non-native) | - No notable issues |

Abiotic Influences⁴

- | | |
|------------------------------------------------------------|--------------------------------------------------------------------|
| Natural (ice, wind, flood, fire) | - Minor damage from the 2013 ice storm |
| Anthropogenic (harvest, fire, non-permitted plant harvest) | - Natural regeneration developing well after the 2014-2015 harvest |

Biodiversity Strategy Implementation⁵

None to date

Overall Rank

A-

Frank Tract - 41 hectares

Natural Heritage Values¹

- 19% Upland Natural Forest - primarily a mix of Eastern Hemlock and hardwood tree species
- 14% Plantation - primarily Red Pine
- 67% Wetland - primarily Shallow Marsh
- 1.1ha - Interior Forest habitat

Silvicultural Activities²

2014-2015 harvest of 3.9ha under Good Forestry Practices³



Biotic Influences⁴

- | | |
|------------------------------|--------------------------------------------------------------------------------------|
| Insects (native and non) | - No notable issues |
| Diseases (native and non) | - Minor red pine decline |
| Invasive Plants (non-native) | - Minor buckthorn present in upland areas with several phragmites patches in wetland |

Abiotic Influences⁴

- | | |
|------------------------------------------------------------|--------------------------------------------------------------------|
| Natural (ice, wind, flood, fire) | - Minor damage from the 2013 ice storm |
| Anthropogenic (harvest, fire, non-permitted plant harvest) | - Natural regeneration developing well after the 2014-2015 harvest |

Biodiversity Strategy Implementation⁵

Water quality spot measurements (water temperature, pH, conductivity, dissolved oxygen, and turbidity) and water quality samples (nutrients, metals, chloride, and total suspended solids) at Blue Springs Creek commenced in 2016 to characterize baseline conditions in the major creeks of Halton Region.

Overall Rank

A-

Laking Tract - 13 hectares

Natural Heritage Values¹

- 15% Upland Natural Forest - primarily Sugar Maple and other hardwood tree species
- 27% Plantation - primarily Tamarack and European Larch tree species
- 58% Wetland - primarily Deciduous Swamp
- 3.6ha - Interior Forest habitat

Silvicultural Activities²

No silvicultural works undertaken



Biotic Influences⁴

- | | |
|------------------------------|----------------------------------------------------------------------|
| Insects (native and non) | - Signs of emerald ash borer present with minor decline of ash trees |
| Diseases (native and non) | - Beech bark disease noted |
| Invasive Plants (non-native) | - No notable issues |

Abiotic Influences⁴

- | | |
|------------------------------------------------------------|---------------------|
| Natural (ice, wind, flood, fire) | - No notable issues |
| Anthropogenic (harvest, fire, non-permitted plant harvest) | - None noted |

Biodiversity Strategy Implementation⁵

Strategy #4: Recruited a PhD student from University of Waterloo in 2016 to conduct comprehensive research on the Endangered species, in partnership with Halton Region, the University of Waterloo, and the provincial Jefferson Salamander Recovery Team. Completed vernal pool hydrology screening in 2016 to identify potential additional Jefferson Salamander breeding pools for inclusion in the research study.

Water quality spot measurements (water temperature, pH, conductivity, dissolved oxygen, and turbidity) and water quality samples (nutrients, metals, chloride, and total suspended solids) at Kilbride Creek commenced in 2016 to characterize baseline conditions in the major creeks of Halton Region.

Overall Rank

A

Mahon Tract - 49 hectares

Natural Heritage Values¹

- 94% Natural Forest - primarily Sugar Maple and other hardwood tree species
- 6% Wetland - deciduous swamp
- 31.7ha - Interior Forest habitat

Silvicultural Activities²

No silvicultural works undertaken

Biotic Influences⁴

Insects (native and non)	- No notable issues
Diseases (native and non)	- No notable issues
Invasive Plants (non-native)	- No notable issues

Abiotic Influences⁴

Natural (ice, wind, flood, fire)	- No notable issues
Anthropogenic (harvest, fire, non-permitted plant harvest)	- None noted

Biodiversity Strategy Implementation⁵

Strategy #4: Recruited a PhD student from University of Waterloo in 2016 to conduct comprehensive research on the Endangered species, in partnership with Halton Region, the University of Waterloo, and the provincial Jefferson Salamander Recovery Team. Completed vernal pool hydrology screening in 2016 to identify potential additional Jefferson Salamander breeding pools for inclusion in the research study.

Overall Rank

A++



Robertson Tract - 87 hectares

Natural Heritage Values¹

- 69% Upland Natural Forest - primarily Sugar Maple and other hardwood tree species
- 8% Plantation - primarily Red Pine and White Pine
- 23% Wetland - primarily Meadow Marsh and Shallow Marsh
- 53.5 ha - Interior Forest habitat

Silvicultural Activities²

No silvicultural works undertaken



Biotic Influences⁴

- | | |
|------------------------------|---------------------------------------------------------------------------|
| Insects (native and non) | - No notable issues |
| Diseases (native and non) | - No notable issues |
| Invasive Plants (non-native) | - Moderate Dog strangling vine present with phragmites present in wetland |

Abiotic Influences⁴

- | | |
|------------------------------------------------------------|-------------------------------------------------------------------------------|
| Natural (ice, wind, flood, fire) | - Moderate damage from the 2013 ice storm with tree material salvaged in 2014 |
| Anthropogenic (harvest, fire, non-permitted plant harvest) | - None noted |

Biodiversity Strategy Implementation⁵

Strategy #1: Managed an invasive Dog Strangling Vine population through Tryclopvr herbicide application in 2014 and 2016.

Strategy #3: Established two long-term anuran (frogs and toads) monitoring locations and commenced monitoring in 2016.

Strategy #4: Recruited a PhD student from University of Waterloo in 2016 to conduct comprehensive research on the Endangered species, in partnership with Halton Region, the University of Waterloo, and the provincial Jefferson Salamander Recovery Team. Completed vernal pool hydrology screening in 2016 to identify potential additional Jefferson Salamander breeding pools for inclusion in the research study.

Water quality spot measurements (water temperature, pH, conductivity, dissolved oxygen, and turbidity) and water quality samples (nutrients, metals, chloride, and total suspended solids) at Sixteen Mile Creek commenced in 2016 to characterize baseline conditions in the major creeks of Halton Region.

Overall Rank

A

Robertson Tract Extension - 38 hectares

Natural Heritage Values¹

- 62% Upland Natural Forest - primarily sugar maple and other hardwood tree species
- 38% Wetland
- 14.7ha - Interior Forest habitat

Silvicultural Activities²

No silvicultural works undertaken

Biotic Influences⁴

- | | |
|------------------------------|----------------------------------|
| Insects (native and non) | - No notable issues |
| Diseases (native and non) | - No notable issues |
| Invasive Plants (non-native) | - Dog strangling vine throughout |

Abiotic Influences⁴

- | | |
|------------------------------------------------------------|---------------------|
| Natural (ice, wind, flood, fire) | - No notable issues |
| Anthropogenic (harvest, fire, non-permitted plant harvest) | - None noted |

Biodiversity Strategy Implementation⁵

Strategy #1: Managed an invasive Dog Strangling Vine population through Tryclopvr herbicide application in 2014 and 2016.

Overall Rank

B



Snyder Tract - 37 hectares

Natural Heritage Values¹

- 79% Upland Natural Forest - primarily Sugar Maple and White Pine
- 15% Plantation - primarily Red Pine
- 6% Wetland - primarily Deciduous Swamp
- 39.1ha - Interior Forest habitat

Silvicultural Activities²

No silvicultural works undertaken



Biotic Influences⁴

- | | |
|------------------------------|-----------------------------------|
| Insects (native and non) | - Minor emerald ash borer present |
| Diseases (native and non) | - No notable issues |
| Invasive Plants (non-native) | - No notable issues |

Abiotic Influences⁴

- | | |
|------------------------------------------------------------|---------------------|
| Natural (ice, wind, flood, fire) | - No notable issues |
| Anthropogenic (harvest, fire, non-permitted plant harvest) | - None noted |

Biodiversity Strategy Implementation⁵

Strategy #4: Recruited a PhD student from University of Waterloo in 2016 to conduct comprehensive research on the Endangered species, in partnership with Halton Region, the University of Waterloo, and the provincial Jefferson Salamander Recovery Team. Completed vernal pool hydrology screening in 2016 to identify potential additional Jefferson Salamander breeding pools for inclusion in the research study.

Water quality spot measurements (water temperature, pH, conductivity, dissolved oxygen, and turbidity) and water quality samples (nutrients, metals, chloride, and total suspended solids) at Kilbride Creek will commence in late 2016 to characterize baseline conditions in the major creeks of Halton Region.

Overall Rank

A

Turner Tract - 40 hectares

Natural Heritage Values¹

- 48% Upland Natural Forest - primarily Sugar Maple and other hardwood tree species
- 18% Plantation - primarily White Pine
- 34% Wetland - primarily Meadow and Shallow Marsh
- 19.1ha - Interior Forest habitat

Silvicultural Activities²

No silvicultural works undertaken



Biotic Influences⁴

- | | |
|------------------------------|---------------------------------------------------------------------------|
| Insects (native and non) | - No notable issues |
| Diseases (native and non) | - Beech bark disease noted |
| Invasive Plants (non-native) | - Phragmites common in wetland. Minor buckthorn noted in the upland areas |

Abiotic Influences⁴

- | | |
|------------------------------------------------------------|---------------------|
| Natural (ice, wind, flood, fire) | - No notable issues |
| Anthropogenic (harvest, fire, non-permitted plant harvest) | - None noted |

Biodiversity Strategy Implementation⁵

Strategy #4: Recruited a PhD student from University of Waterloo in 2016 to conduct comprehensive research on the Endangered species, in partnership with Halton Region, the University of Waterloo, and the provincial Jefferson Salamander Recovery Team. Completed vernal pool hydrology screening in 2016 to identify potential additional Jefferson Salamander breeding pools for inclusion in the research study.

Water quality spot measurements (water temperature, pH, conductivity, dissolved oxygen, and turbidity) and water quality samples (nutrients, metals, chloride, and total suspended solids) at Sixteen Mile Creek commenced in 2016 to characterize baseline conditions in the major creeks of Halton Region.

Overall Rank

A++

Notes

Natural Heritage values refer to:

¹ Upland Natural Forest – forest of natural origin; for the purposes of this report it includes all forest types except wetland forests

Plantation – anthropogenic feature intentionally planted in an orderly fashion with coniferous and/or deciduous tree species

Interior Forest – the area of the forest that is greater than 100 meters from any edge.

² Silviculture is the science of growing trees. Silvicultural Activities relate to the growing, harvesting and regenerating trees.

³ “Good Forestry Practices” means the proper implementation of harvest, renewal and maintenance activities known to be appropriate for the forest and environmental conditions under which they are being applied and that minimize detriments to forest values including significant ecosystems, important fish and wildlife habitat, soil and water quality and quantity, forest productivity and health, and the aesthetics and recreational opportunities of the landscape.

⁴ Biotic and Abiotic Influences are obtained from the annual Forest Health Monitoring Report.

⁵ Biodiversity Strategies from the Biodiversity Strategy for the Halton Regional Forest:

Strategy #1: Implement strategic control of priority invasive species in Regional Forest Tracts

Strategy #2: Expand the scope of restoration/ enhancement activities beyond tree and shrub planting

Strategy #3: Implement programs to monitor the biodiversity of Regional Forest Tracts

Strategy #4: Promote Regional Forest Tracts as Living Laboratories

