Appendix D

Environmental Impact Studies

Initial Environmental Impact Study Ruby Road Waste Disposal Site

Township of Bonnechere Valley

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Initial Environmental Impact Study Ruby Road Waste Disposal Site

1. Introduction

The Municipality of Bonnechere Valley Township is undertaking a preliminary environmental screening of a potential expansion of the Ruby Road waste site in accordance with Ontario Regulation 101/07 under the Environmental Assessment Act.

This study is for the initial Environmental Impact Studies (EIS). The studies objectives are first to assess for the presence of all natural heritage features as well as other natural features on the site, the potential lands of purchase, as well as the adjacent areas out 120m from the waste site and in a more general manner the surrounding area out to a distance of one kilometre. The studies second objective is to assess for possible impacts to any natural heritage features from the potential use of the site and expansion of the site for the placement of municipal waste and whether potential impacts may present an obstacle to the municipality to use the site for placement of municipal waste.

Where sufficient information was not available to fully assess particular features or to assess potential impacts to those features then supplemental studies are suggested to accomplish these objectives.

2. Description of Site

The Ruby Road waste disposal site is located at 2213 Ruby Road located on part lot 27 con 9 within the geographic township of South Algona in the amalgamated township of Bonnechere Valley in Renfrew County. The site is located approximately 10 km east of the village of Killaloe.

The licensed waste site is a 0.5 ha area that received municipal waste until December 2003 (Cambium 2007). Presently the Ruby Road location is being used as a waste transfer site.

There is a 33 ha area on lot 27 con 9 extending in a southerly direction from the waste site that are potential lands for purchase for the contaminant attenuation zone.

The Renfrew County soils map (Gillespie et al. 1964) indicates that the soils on the waste site and the 33 ha potential expansion property are part of the White Lake group characterized as a gravely sandy loam. The parent material of the soil is calcareous coarse gravel and rock with good drainage.

The 0.5 ha waste site is located in a former gravel pit. The site is surrounded by an area of former agricultural land that is now rough pasture slowly reverting back to a forested habitat.

Field work at the Ruby Road site was carried out on April 15 and 16, 2008. It was early in the season for field work and although snow cover had disappeared from open areas approximately half of the forested areas on site were still snow covered. Spring green-up had not started. April 15th and 16th appeared to be at or near maximum water levels as assessed from weather and flood reports.

Photo 1. Ruby Road waste site viewed from entrance gate

3. Study Rationale

The natural features of this project were reviewed under the guidance of the Natural Heritage Section (Sect 2.1) of the Provincial Policy Statement (PPS) (MMAH 2005) that was issued under section 3 of the Planning Act. The Natural Heritage features examined are significant wetlands, fish habitat, Areas of Natural and Scientific Interest (ANSI's), threatened and endangered species habitat, significant woodlands, significant valleylands and significant wildlife habitat.

In addition linkages between natural features were investigated. Vegetation communities for treed upland sites within the study area were categorized according to the methodology of the Forest Ecosystems of Central Ontario (Chambers et al 1997) and non treed sites were categorized according to the Ecological Land Classification (ELC) (Lee et al 1998).

Study focus occurred on several levels. The most intensive level was the present 0.5 ha waste site. The next level of inspection was directed at the 33 ha expansion area. A review of all available resource information combined with a complete on site inspection with vegetation community mapping of the property.

The Natural Heritage section of the Provincial Policy Statement (MMAH 2005) refers to the adjacent areas of natural heritage features and a commonly used adjacent distance (MNR 1999) is 120m. As a result a 120m adjacent study area was selected for the Ruby Road site and all natural features within 120 m of the waste site was reviewed. The 120 m area was inspected closely where it fell on the 33ha potential lands for purchase but where the 120 m adjacent area fell on private property the area was inspected from the edge of the expansion property and from Ruby Road. Vegetation communities were extended across the 120m adjacent area onto private property based on information from resource mapping and from visual inspection from the property edge.

In order to understand the general setting of the Ruby Road waste site a more general review of features within 1 km of the Ruby Road waste site (figures 1 and 2) was undertaken. A review of all available information of the MNR, the NHIC and other sources that occurred within the 1km radius were reviewed. Municipal roads were

travelled and adjacent vegetation assessed. All watercourses that crossed a municipal road within a 1 km radius were inspected.

4. Vegetation Communities

Identification of vegetation communities forms the foundation of an environmental assessment and permits insight into ecological processes and linkages operating within the study area. An assessment of vegetation communities allows an assessment of what significant species may occur in particular portions of the study area.

Vegetation communities on the property were categorized using the methodology of the Field Guide to Forest Ecosystems of Central Ontario (Chambers et al.1997). In order to classify non forested communities the Ecological Land Classification (ELC) of Southern Ontario (Lee et al 1998) was used. There is no methodology similar to the ELC for central Ontario. The ELC is intended specifically for ecoregions 6E and 7E however the Ruby Road waste site is in the southern portion of ecoregion 5E. It was considered that the ELC would be a suitable vehicle for assessing non-forested vegetation communities at the Ruby Road site.

4.1 Vegetation Communities On Study Area

Community 1

Community 1 is an extensive area (figure 3) of open non-forested habitat (photo 2) identified as an old field meadow type **CUM1-1** (Lee et al 1998) of cultural origins.

The community represents an agricultural site that is presently being used for rough pasture. The community is well drained with light sandy soils.

The community is being invaded by shrub and tree species primarily white pine.

Community 1 was the only non-forested community evaluated according to the methodology of the ELC (Lee et al 1998).

Photo 2. Old field/meadow habitat

Community 2

Community 2 (figure 3) was identified as a White Pine-Red Pine Ecosite **ES11.1**. The community represents an invasion of the old field habitat with the natural regeneration of white pine. The process is continuing and the amount of white pine forest (photo 3) is continuing to expand.

Photo 3. Edge of white pine community

Community 3

This community (figure 3) is an extensive area of hardwoods dominated by beech and sugar maple with varying amounts of large-tooth aspen (photo 4) and ironwood. The community was identified as a Sugar Maple-Beech-Red Oak Ecosite **ES25.1**. There was no red oak in this community.

This community shows the effects of logging and the forest community is fairly young. The community is located on the south facing slope and is well drained. The community is available to cattle but the forest does not show any significant impact of cattle.

Photo 4. Community 3 a young beech, sugar maple stand

Community 4

This community (photo 5) is Sugar Maple-Hemlock-Yellow Birch Ecosite **ES 28.1**. The community is located lower (figure 3) on the slope in a more moist site.

Yellow birch did not occur in the community as a functional component. Present in the community were beech and large-tooth aspen. The shrub component was dominated by striped maple. This community is also fairly young as a result of past logging.

Photo 5. Community 4 a young hemlock, beech and large-tooth aspen stand

Community 5

Community 5 was identified as a Sugar Maple-White Birch-Poplar- White Pine Ecosite **ES 27.1**. This community is located (figure 3) on the north side of Ruby Road on an north facing slope.

This community was a variable community (photo 6) with different proportions of sugar maple, large-tooth aspen and beech. White pine and ironwood were minor components in the community.

Photo 6. Community 5 a sugar maple, large-tooth aspen and beech stand

Abandoned Gravel Pit

The abandoned gravel pit is adjacent to the waste site (figure 3) on the south and on the east.

The old gravel pit can be seen as two areas. The area to the south of the waste site is an older site and has completely re-vegetated with grass cover and small shrubs. A second smaller area is located to the south east. This area was more recently used for aggregate extraction and hasn't completely re-vegetated (photo 7) and there are areas of exposed gravel with several small exposed banks.

Photo 7. Old gravel pit next to waste site

5. Significant Wetlands

The Pembroke MNR District did not indicate the presence of any evaluated wetlands in the area of the landfill site. The NHIC website (NHIC 2008) (figure 4) did not have any evaluated wetland occurrences in the vicinity of the waste disposal site.

Silver Creek a provincially significant wetland is located to the south of the site in lot 28 con 8 and is approximately 1.5 km from the proposed waste site. The MNR Pembroke identified the Silver Creek Wetland (figure 5) and indicated that the least bittern a threatened species was identified there as well as the sedge wren (S4).

Other unevaluated wetland habitat was identified to the south west of the potential lands for purchase (figure 1 and 3) approximately 365m. from the proposed waste site. This wetland habitat is limited in size and lacks any known significant features relating to the wetland and it is unlikely that this wetland would be a provincially significant wetland if evaluated.

Field investigation of the proposed waste site, the 33 ha potential purchase lands and the 120m adjacent areas to the waste site indicated that there was no wetland habitat and that these lands are well drained.

6. Fish Habitat

The proposed waste site, the 33 ha potential purchase lands as well as the 120m adjacent area to the waste site have no watercourses identified on any maps of the area. Field investigation of the proposed waste site and the 33 ha potential purchase lands did not identify any watercourses on these lands and investigations indicated that these areas are well drained.

The MNR provided a map of watercourses in the general area. The closest watercourse mapped (figure 5) was the wetland habitat that was measured as 365 m from the proposed waste site. This habitat was viewed from a distance on April 15, 2008 and was seen as a grassed shrub wetland. This wetland habitat was not flooded during the spring freshet of April 15 and 16 and therefore is probably not a watercourse. The closest confirmed watercourse would be the watercourse identified as number 77 as it crosses Ruby Road (figure 1 and 2). This watercourse identified as intermittent on the MNR mapping (figure 5) was 535 m from the proposed waste site. The watercourse went through a 36 inch (91 cm) culvert (table 1) with a water level filling of 5 cm.

All of the small watercourses shown on figures 1 and 2 were examined at road crossings in the field visit of April 15 and 16 at a time of high spring flow. Characteristics of watercourses are provided in table 1 and are shown in photos 8, 9 and 10.

Photo 8. Watercourse identified as #77 (photo April 15, 08)

Photo 9 Watercourse identified as #78 (photo April 15, 08)

Photo 10. Watercourse identified as #121 (photo April 15, 08)

Fish were looked for in all watercourses but no fish were seen.

The watercourses flow to Golden Lake and the MNR indicated that many of the watercourses flowing to Golden Lake were cold water fish habitat.

It is not apparent from the field visit whether the watercourse to the west represented by 77, 78 and 121 (figure 1 and 2) is an intermittent watercourse. It is possible that the watercourse is permanent and may represent cold water fish habitat. The other identified potential watercourses within 1 km indicated by 120 and 80 were intermittent watercourses. The MNR in their values letter (appendix 1) indicated that the watercourse to the west and north although mapped as intermittent had the potential of being permanent.

7. ANSIs (Areas of Natural and Scientific Interest)

The NHIC website (NHIC 2008) and the MNR screening letter and mapping (appendix 1 and figure 4) indicate that there is no ANSI on the proposed waste site, the 33 ha potential purchase lands, the 120m adjacent area to the waste site or within a 1km radius of the waste site.

The closest potential ANSI is the Silver Creek Peatlands which is a candidate provincially significant life science ANSI. A candidate provincially significant ANSI is one that is recommended for provincial significance.

The Silver Creek Peatlands is superimposed on the evaluated Silver Creek Wetland and is over 1.5 km from the waste site.

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8. Threatened and Endangered Species Habitat

The NHIC website (NHIC 2008) (figure 4) indicated that there were no identified threatened or endangered species sightings on the proposed waste site, the 33ha waste disposal expansion property, the 120m adjacent area to the waste site or within a 1km radius of the site.

The Pembroke MNR District has no information of occurrences of any threatened or endangered species in the area of the waste disposal site. The Pembroke District identified that the least bittern a threatened species was identified in the Silver Creek Wetland to the south (1.5km) of the study area. The Pembroke District indicated that American ginseng and butternut two endangered species are known to occur in this general area of Renfrew County.

The Ontario Breeding Bird Atlas (OBBA 2007) has an extensive database of breeding bird information on a 10X10 km square grid pattern. UTM 18UR14, a 10X10 km square, that includes the study area was investigated on line. It was found that there were no identified threatened or endangered bird species in this square for the last atlas period of 2001 to 2005. The species of breeding birds and the level of breeding evidence in UTM square 18UR14 is presented in table 2.

The field investigations of April 15 and 16, 2008 showed no butternut trees in the study area.

9. Significant Woodlands

Significant Woodlands in the Provincial Policy Statement (MMAH 2005) refers to Significant Woodlands south and east of the Canadian Shield specifically in Ecoregions 6E and 7E. The Ruby Road study area is in Ecoregion 5E. The significance of the woodlands on site were assessed for characteristics that could be interpreted as significant even though the study area is outside Ecoregion 6E and 7E.

The size of the forest that occurs next to the waste disposal site is large and continuous. Large size is considered as adding ecological value to a woodland (MNR1999) however the importance of woodland size is related to the proportion of forest cover in the municipality with even small woodlots being significant in municipalities with only a

small amount of forest cover (i.e. <5%) such as regularly occurs in south western Ontario. The Township of Bonnechere Valley is largely forested and therefore the large size of the forest located next to the waste disposal area would not be considered to greatly improve its value.

The treed vegetation communities identified in the study area were considered as common and secure in Ontario.

The forest vegetation did not appear to have significance in terms of age with most of the forest in the expansion property showing evidence of having been logged in the last 20 years the forest is not old aged forest and it did not contain significant species of trees.

Based on the above characteristics none of the forest area in the study area is considered as having potential for being considered significant woodlands.

10. Significant Valleylands

Significant Valleylands are identified in the PPS for those areas south of the Canadian Shield specifically in Ecoregions 6E and 7E. The significance of the valleylands on site were assessed for characteristics that could be interpreted as significant even though the study area is not in Ecoregion 6E or 7E.

The study area would not be considered as potentially significant Valleyland it has no recognized natural riparian vegetation or recognized flood hazard limit or other features used as significant Valleyland criteria by the MNR (1999).

11. Significant Wildlife Habitat

Significant wildlife habitat is not identified by the MNR but is to be identified by the municipality. Significant wildlife habitat has not been identified in the township or in Renfrew County. The MNR has provided Ontario's municipalities guidance in identifying significant wildlife habitat in several documents (MNR 1999, 2000). Wildlife habitat suggested as significant by the MNR includes flora and fauna as well as significant habitat communities such as rare prairie or alvar habitats. The habitat guidelines are wide ranging providing diverse options for municipalities.

The Pembroke MNR office provided a screening letter (appendix 1) that contained some information regarding significant wildlife habitat. The district stated that they had mapped the area as a winter deer yard. The district also identified the following species of Special Concern: milksnake, red-headed woodpecker, southern flying squirrel, eastern wolf, red-shouldered hawk and monarch butterfly.

A general guideline description of significant wildlife habitat is provided in the Natural Heritage Reference Manual (MNR 1999) under four categories:

- seasonal concentrations of animals
- rare vegetation communities or specialized habitats for wildlife
- habitats of species of conservation concern and

- wildlife movement corridors

These 4 categories were investigated for possible significance.

Seasonal concentrations of animals

At certain times of the year some species of wildlife are highly concentrated within relatively small areas. Examples of seasonal concentrations provided by the MNR (2000) are; bird breeding colonies, hibernation sites for bats or snakes, migration stopover spots for both birds and butterflies and winter deer yards.

Winter deer yards are one type of seasonal concentration that has importance in central Ontario (MNR 2000) and is the one most often considered. MNR districts generally have mapping or knowledge of traditional winter deer yards. The Pembroke MNR District indicated that the study area is located in a deer yard that surrounds Golden Lake. The MNR further indicated that the FRI forest typing (figure 6) would suggest that the hemlock trees located in the 33 ha potential lands for purchase could be providing winter cover for deer.

Field investigations indicated that there was no evidence of significant deer wintering activity in the 33 ha potential lands for purchase. There were no winter deer droppings, or heavy browsing activity on food shrubs. The lot did contain some areas of hemlock that could provide thermal cover but it was clear that deer were not using the hemlock.

Rare vegetation communities or specialized habitats for wildlife

Rare vegetation communities could be prairie or savannah habitat or alvar or rare forest community types.

No rare prairie, savannah, alvar, bog, fen or other rare vegetation type was noted in the study area.

The vegetation communities were all considered common and widespread in the area.

Habitats of species of conservation concern

Species of conservation concern may include provincially rare species (i.e. S1, S2 and S3 species) or species of Special Concern (SC):

S1 Critically imperilled – often 5 or fewer occurrences

S2 Imperilled – often 20 or fewer occurrences

S3 Vulnerable – often 80 or fewer occurrences

SC A species of special concern - a species with characteristics that make it sensitive to human activities or natural events.

A geographic query of the NHIC database did not indicate the presence (figure 4) of any tracked (rare or at risk species) species. No other information suggested a significant seasonal concentration for a wildlife species.

The Ontario Breeding Bird Atlas (OBBA 2008) has an extensive database of breeding bird information on a 10X10 km square grid pattern. UTM 18UR42 (a 10X10 km square) includes the study area was investigated on line and it was found that there are no

significant bird species identified in this square for the last atlas period (2001 to 2005). The species of birds identified on UTM 18UR42 is shown in table 2.

The Pembroke District indicated that the following species of special concern (SC) are known to occur in the general area of the landfill: southern flying squirrel, redheaded woodpecker, eastern milksnake, eastern wolf, red-shouldered hawk and monarch butterfly. The red-shouldered hawk and the redheaded woodpecker the two SC bird species identified by the MNR were not identified in the Ontario Breeding Bird Atlas (table 2) square 18UR42.

No species of special concern or provincially rare species were identified in the study area. Stick nests of some raptor or crow or raven etc were identified in 3 groupings and information on these nests is provided in table 3. None of the 8 nests were being used at the time of the April visits.

Photo 11. Two stick nests identified in beech trees (#103 and # 104)

Wildlife movement corridors

Wildlife movement corridors are elongated naturally vegetated parts of the landscape used by animals to move from one habitat to another (MNR 2000). The general area surrounding the study area is a mix of forested land and rough pasture land without major topographic or vegetation restrictions that will funnel wildlife in their movement from one habitat to another.

Streams, rivers or lakes can act as movement corridors for aquatic or semi aquatic species. There are no watercourses on the proposed waste site or on the 33 ha potential lands for purchase or the 120m adjacent area. The small intermittent nature of adjacent watercourses within 1km of the proposed waste site suggests a minimal importance as travel corridors. The area does not appear to present a significant wildlife movement corridor function.

Significant wildlife habitat conclusions

Significant wildlife habitat guidelines (MNR 1999, 2000) are wide ranging being designed to be of value for municipalities across the province in many different ecological settings both urban and rural. Present evidence indicates that wildlife habitat

present on and adjacent to the site is not significant in terms of features, functions, representation or amount.

However appropriate seasonal studies would be required for the full assessment of significant species of flora and fauna within the study area an important aspect would be to specifically search for species of Special Concern provided by the Pembroke MNR District.

12. Natural Linkages

The surrounding area is largely forested and as a result most of the natural features are linked by the extensive areas of forested habitat. There are no identified significant linkages within the study area or in the surrounding area.

13. Scavengers

Municipal waste sites attract scavengers both wild and domestic. Perhaps the most important scavenger in rural Ontario waste sites is the black bear.

Other commonly attracted scavengers include gulls (primarily ringed bill and herring) ravens, crows and turkey vultures. Mammals include raccoons, skunks, red foxes, coyotes and eastern wolves. Feral species include cats, dogs and Norway rats.

Black bears are often the most serious problem because of safety concerns and also their ability to dig up buried refuse that can be blown offsite or carried off by bears or other scavengers.

The presence of old claw marks on several poplar trees indicates the probable presence of bears during the former operation of the waste site.

At present the transfer site is well maintained with no litter spread around. The transfer site was not attracting scavengers and none were seen on April 15 and 16, 2008.

14. Other significant Areas

There were no provincial or federal parks identified in the vicinity.

Important Bird Areas of Canada (IBA) designated by Bird Studies Canada and Nature Canada (http://www.bsc-eoc.org/iba/canmap.jsp) was searched and there are no IBAs in the general area.

International Biological Sites (IBP), Crown Game Preserves and Conservation Reserves are present in Renfrew County but none of these features are located in the general vicinity of the waste site.

The Silver Creek Peatland approximately 1.5 km south of the waste site has been identified in several ways; as a provincially significant wetland, a candidate life science ANSI as well as a Conservation Reserve.

The waste site is designated as a waste site in the Official Plan and the 33 ha potential lands for purchase is designated as mineral aggregate in the Renfrew County Official Plan.

The county has not identified any Environmental Protection Area (EPA) anywhere in the general vicinity of the waste site.

A county forest known as the Ruby Tract is located to the north (figure 5 and 6) of the proposed waste site well within a 1km radius of the site. The Ruby Tract is one of 51 forest properties owned by the county that are being managed for forest products and public recreational uses.

15. Summary of 7 Natural Heritage Features

The summary of findings in this study as applied to the 7 natural heritage features is presented below in table 4.

Table 4. **Status of Natural Heritage Features in Study Area**

Natural Heritage Feature	In Study Area	Comments
Significant Wetland	No	
Threatened or Endangered Species Habitat	None known	Complete seasonal studies not conducted.
Fish Habitat	There are no watercourses on waste site the waste expansion area or within 120m of waste site.	A small watercourse mapped as intermittent is located 535 m from the waste site. This watercourse may be permanent and may be cold water fish habitat.
Significant Woodlands	No	
Significant Valleylands	No	
Significant Wildlife Habitat	None known	Complete seasonal studies not conducted
Significant ANSI	No	

16. Potential Impacts

No significant features were noted in the study area however a mid April field visit is not adequate to assess all features and therefore it is not possible to fully address all potential impacts.

Bears will probably be attracted to any future waste site at this location. Besides the human safety concern bears create a problem by carrying materials off site as well as

digging down through soil to expose waste materials that then are blown off site or are removed by bears and other scavengers.

The potential of large numbers of wildlife being drawn to scavenge at the future waste site could possibly have a local impact on the small mammals and birds utilizing the surrounding habitat through predation or competition. As well large quantities of waste material being spread offsite can have an impact on ground vegetation in areas outside the waste site boundaries.

These potential impacts would be considered as potential problems of most small rural waste sites across Ontario.

Within 120 m of the waste footprint is a mix of natural and cultural origin habitats including old field and abandoned aggregate sites. There were no identified significant features within this 120m adjacent areas however full appropriate seasonal studies have not been done.

The closest watercourses were 535m away. All watercourses within a 1km radius were mapped as intermittent by the MNR. However the MNR (appendix 1) stated that the watercourse to the west of the waste site although mapped as intermittent may be permanent and may support coldwater fish habitats. Field investigations at this time could not confirm if the watercourse(s) referred to above and represented by numbers 77, 78 and 121 were intermittent or permanent or coldwater habitat. Appropriate seasonal studies would need to be carried out to determine these characteristics.

Present work on the leachate plume by Cambium (2007) indicates that the leachate plume is directed to the north east. It is a long distance in this direction to any watercourses and to Golden Lake.

17. Recommendations

It is important to ensure that surface drainage off any potential future landfill cap is managed to allow infiltration off site and to not allow any surface drainage to form erosion channels. Good stormwater management practices should be employed on site.

The recent implementation of electric fences at several landfill sites in Ontario offers an opportunity to reduce the potential problems of bears and other scavengers by keeping bears out of any potential waste site.

It is recommended that an electric bear fence be built, maintained and monitored to keep bears from the potential waste site in order to reduce the spread of materials from the waste site into the adjacent areas and to also assist in the reduction of other associated scavengers.

A robust program of covering waste is important to further reduce the level of scavenging and reduce the attraction of large numbers of scavengers.

An inventory of plant species should be carried out to determine the presence of provincially significant species including the species at risk identified by the MNR Pembroke District.

A breeding bird inventory should be done to determine the presence of any provincially significant species breeding within the study area.

It is recommended that a small study be undertaken to determine the characteristics of the watercourses to the west (identified as 77, 78 and 121).

18. Proposed Studies

Breeding Bird Survey

A breeding bird survey of the study area in order to assess for the presence for bird Species at Risk (threatened and endangered S1, S2 S3 and SC).

Bird observations would follow the methodology of the breeding bird atlas of Ontario. The study focus on the peak breeding period from May 24 to the end of June. The study should provide a list of breeding birds found in the study area and nearby areas, best breeding evidence observed for each species and the habitat communities that each species was observed in.

Vascular Plant Survey

A plant survey within the study area would provide an assessment of plant Species at Risk identified by the Pembroke District as well as other possible provincially rare species and Species at Risk.

Plant surveys could be carried out in June or July. Each identified vascular plant species should be listed to the community in which it was located and its provincial level of significance indicated.

Other Possible Species at Risk

All species of reptiles, amphibians and mammals detected should be listed with the community in which they were observed and their provincial level of significance presented.

Invertebrates at Risk should also be identified.

Fish Habitat

The watercourse(s) identified with the numbers 77, 78 and 121 should be investigated in July during a period of hot weather. The channel should be described and water flow characterized. Water temperatures should be taken according to the methodology of Stoneman and Jones (1996) for assessing stream temperature regimes. Stream invertebrates should be sampled and identified and fish sampled with a dip net and fish traps.

A Scientific Collectors permit would need to be obtained from the Pembroke MNR District in order to carry out fish sampling.

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Personal Communications

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Table 1. Characteristics of watercourses in the area of the Ruby Road Waste Site

Site number	Location	Culvert diameter	Amount of flow	Comments
77	18 T 316966 5045195	36”	2”	Channel present, clear water
78	18 T 316893 5045299	36”	4”	Channel present, clear water
79	18 T 316499 5045816	32”	Half full	
		40”	trickle	Not permanent Grassy swale
80	18 T 318299 5044629	No culvert seen could be hiddened	Wet area but no detectable flow	Seasonal wet area with no channel
81	18 T 317031 5044138	18”	6”	Not permanent grassy swale
82	18 T 316431 5043929	18”	Half full but little flow	
121	18 T 317835 5045897	29”	Quarter full	Channel present, clear water

Table 2. OBBA breeding bird species in the 10X10km UTM square 18UR14

Species	Breeding Category	Species	Breeding Category
Common Loon	PROB	Sedge Wren	PROB
Pied-billed Grebe	POSS	Marsh Wren	PROB
Double-crested Cormorant	CONF	Ruby-crowned Kinglet	PROB
American Bittern	PROB	Eastern Bluebird	PROB
Mallard	PROB	Veery	PROB
Blue-winged Teal	PROB	Hermit Thrush	POSS
Common Merganser	CONF	Wood Thrush	POSS
Broad-winged Hawk	POSS	American Robin	CONF
Red-tailed Hawk	POSS	Gray Catbird	POSS
American Kestrel	POSS	Brown Thrasher	PROB
Merlin	POSS	European Starling	CONF
Ruffed Grouse	CONF	Cedar Waxwing	POSS
Wild Turkey	PROB	Nashville Warbler	PROB
Killdeer	POSS	Yellow Warbler	PROB
Wilson's Snipe	PROB	Chestnut-sided Warbler	PROB
American Woodcock	POSS	Magnolia Warbler	POSS
Herring Gull	CONF	Black-throated Blue Warbler	POSS
Mourning Dove	PROB	Yellow-rumped Warbler	POSS
Ruby-throated Hummingbird	POSS	Black-throated Green Warbler	PROB
Belted Kingfisher	CONF	Blackburnian Warbler	POSS
Yellow-bellied Sapsucker	POSS	Pine Warbler	POSS
Downy Woodpecker	POSS	Black-and-white Warbler	PROB
Hairy Woodpecker	POSS	American Redstart	PROB
Northern Flicker	POSS	Ovenbird	CONF
Pileated Woodpecker	PROB	Northern Waterthrush	PROB
Eastern Wood-Pewee	PROB	Mourning Warbler	POSS
Alder Flycatcher	PROB	Common Yellowthroat	PROB
Least Flycatcher	PROB	Chipping Sparrow	PROB
Eastern Phoebe	POSS	Savannah Sparrow	PROB
Great Crested Flycatcher	PROB	Song Sparrow	PROB
Eastern Kingbird	PROB	Swamp Sparrow	PROB
Blue-headed Vireo	POSS	White-throated Sparrow	CONF
Warbling Vireo	PROB	Rose-breasted Grosbeak	POSS
Red-eyed Vireo	PROB	Indigo Bunting	POSS
Blue Jay	PROB	Bobolink	POSS
American Crow	POSS	Red-winged Blackbird	CONF
Common Raven	POSS	Eastern Meadowlark	PROB
Tree Swallow	POSS	Common Grackle	PROB
Barn Swallow	PROB	Brown-headed Cowbird	POSS
Black-capped Chickadee	POSS	Baltimore Oriole	PROB
Red-breasted Nuthatch	POSS	American Goldfinch	POSS
White-breasted Nuthatch	POSS		
Brown Creeper	POSS		
House Wren	PROB		
Winter Wren	POSS		

Table 3. Stick nests found on April 15 and 16, 2008

3 Nest Groupings	Site number	Location	Tree species	Tree diameter	Nest height (estimated)	Community
A	59	18 T 317688 5045087	beech	19cm	12m	Community 3
A	59B	Close to 59	beech	28cm (estimated)	18m	Community 3
B	67	18 T 317652 5044749	beech	17cm	17m	Community 3
B	68	18 T 317665 5044755	beech	14cm	15m	Community 3
B	69	18 T 317653 5044728	beech	19cm	11m	Community 3
C	102	18 T 317725 5044709	white birch	20cm	15m	Community 3
C	103	18 T 317725 5044709	beech	22cm	18m	Community 3
C	104	18 T 317725 5044709	beech	22cm	15m	Community 3
C	105	18 T 317725 5044709	hemlock	25cm	14m	Community 4

Figure 1. Location map of the Ruby Road Waste Disposal Area

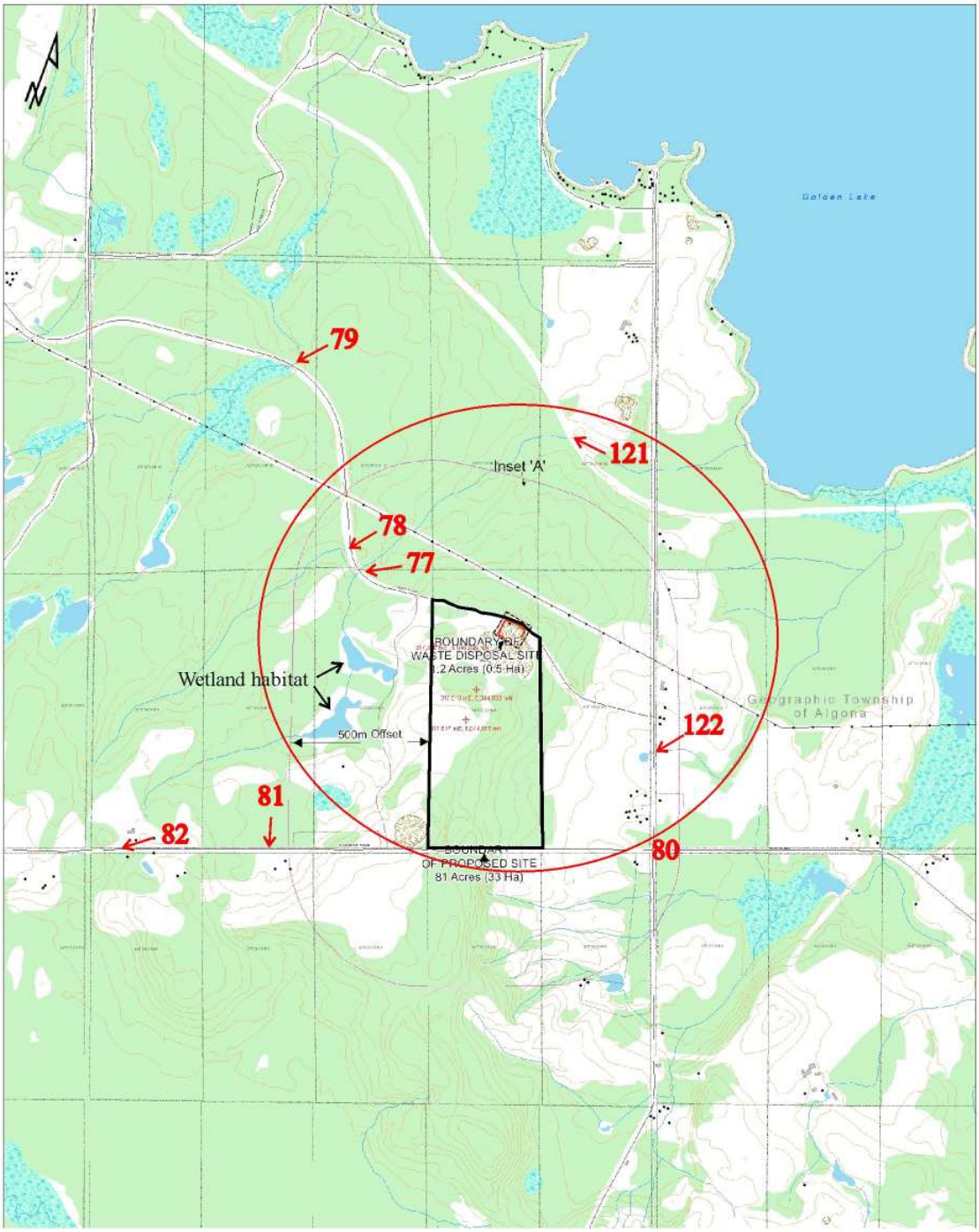


Figure 2. Watercourse Crossings and other Features in the General Area of Ruby Road Waste Site

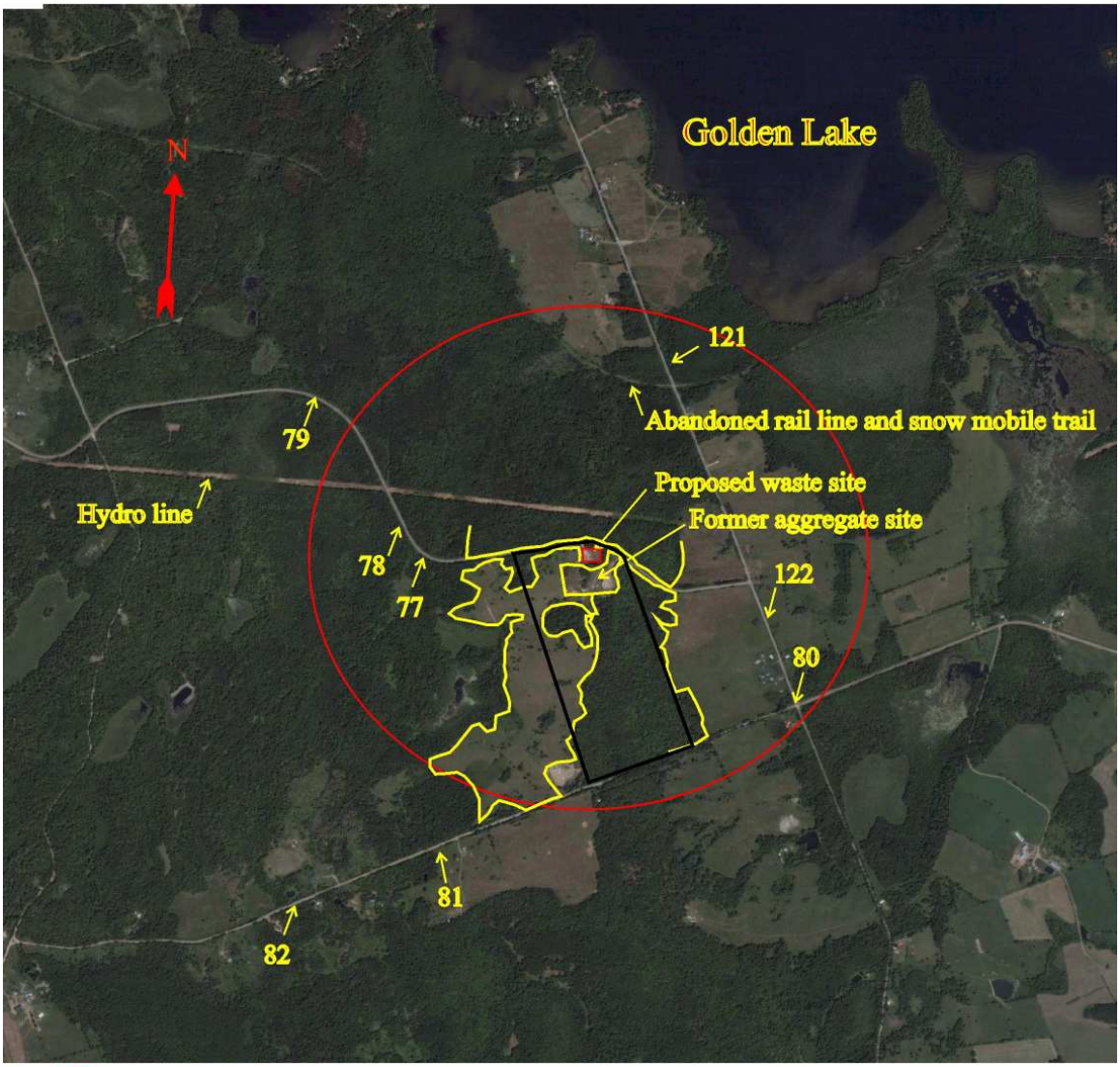


Figure 3. Vegetation Communities and other Natural Features in the Areas of the Ruby Road Waste Site

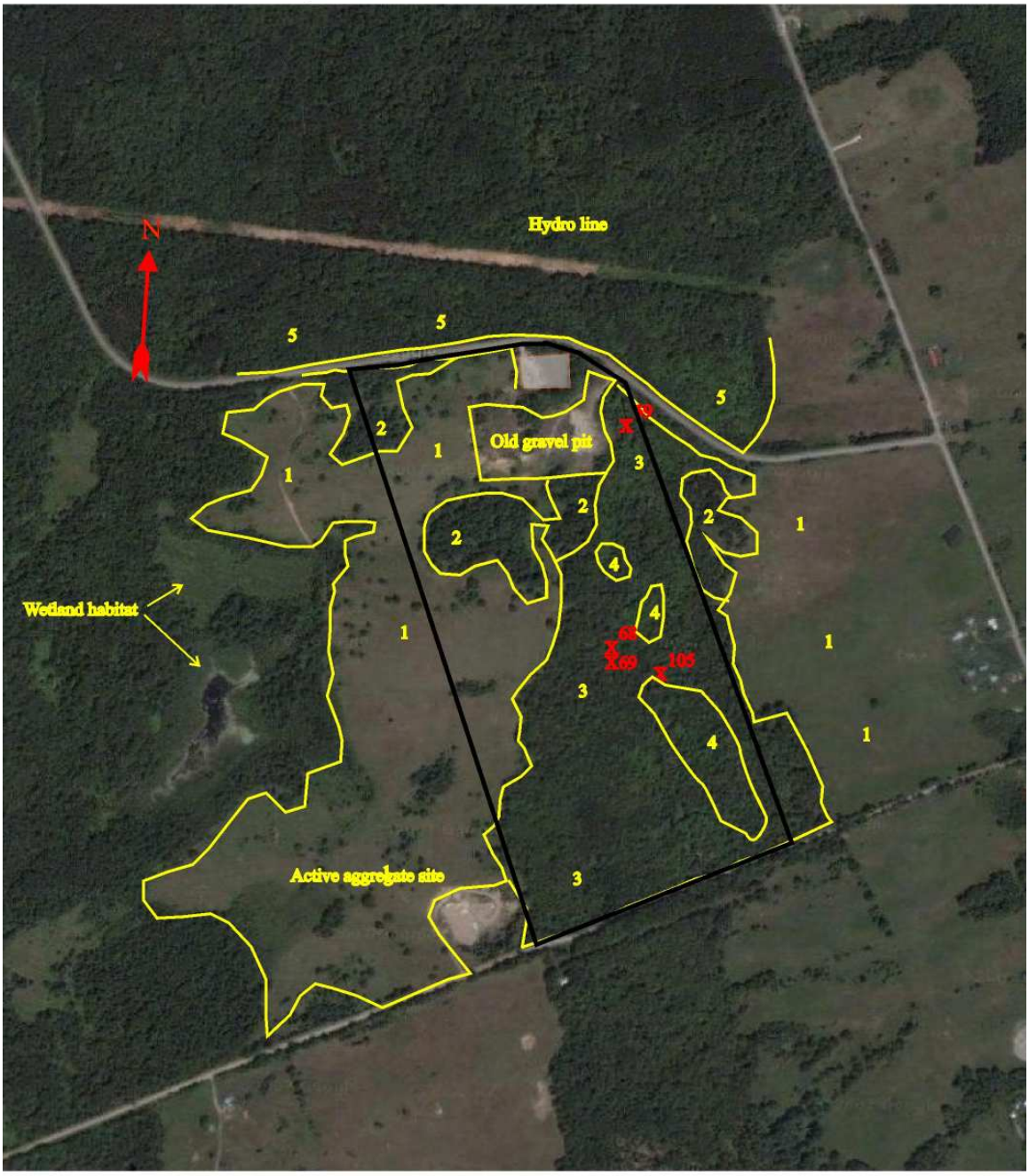
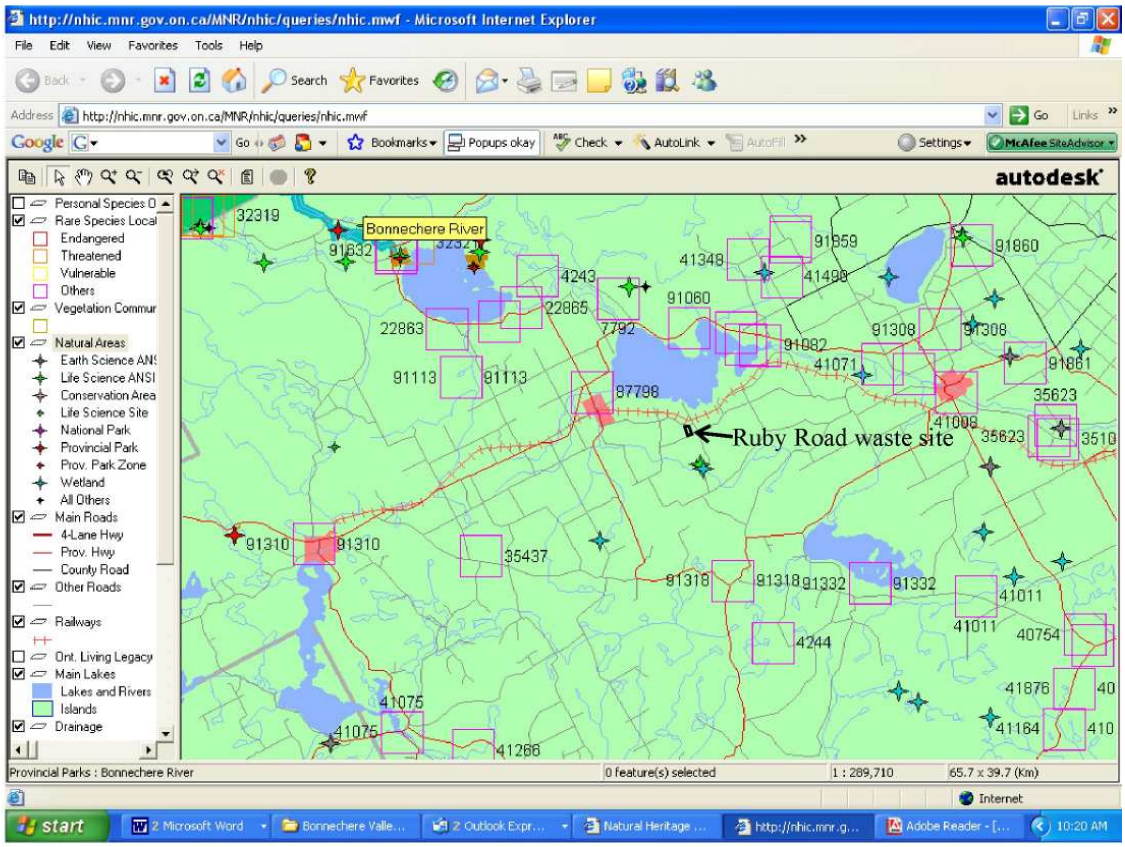


Figure 4. On line Capture of NHIC Information of Rare Species and Natural in the Area of the Ruby Road Waste Site



Annotated with location of Ruby Road waste site

Figure 5. MNR Values Mapping in the Area of the Ruby Road Waste Site

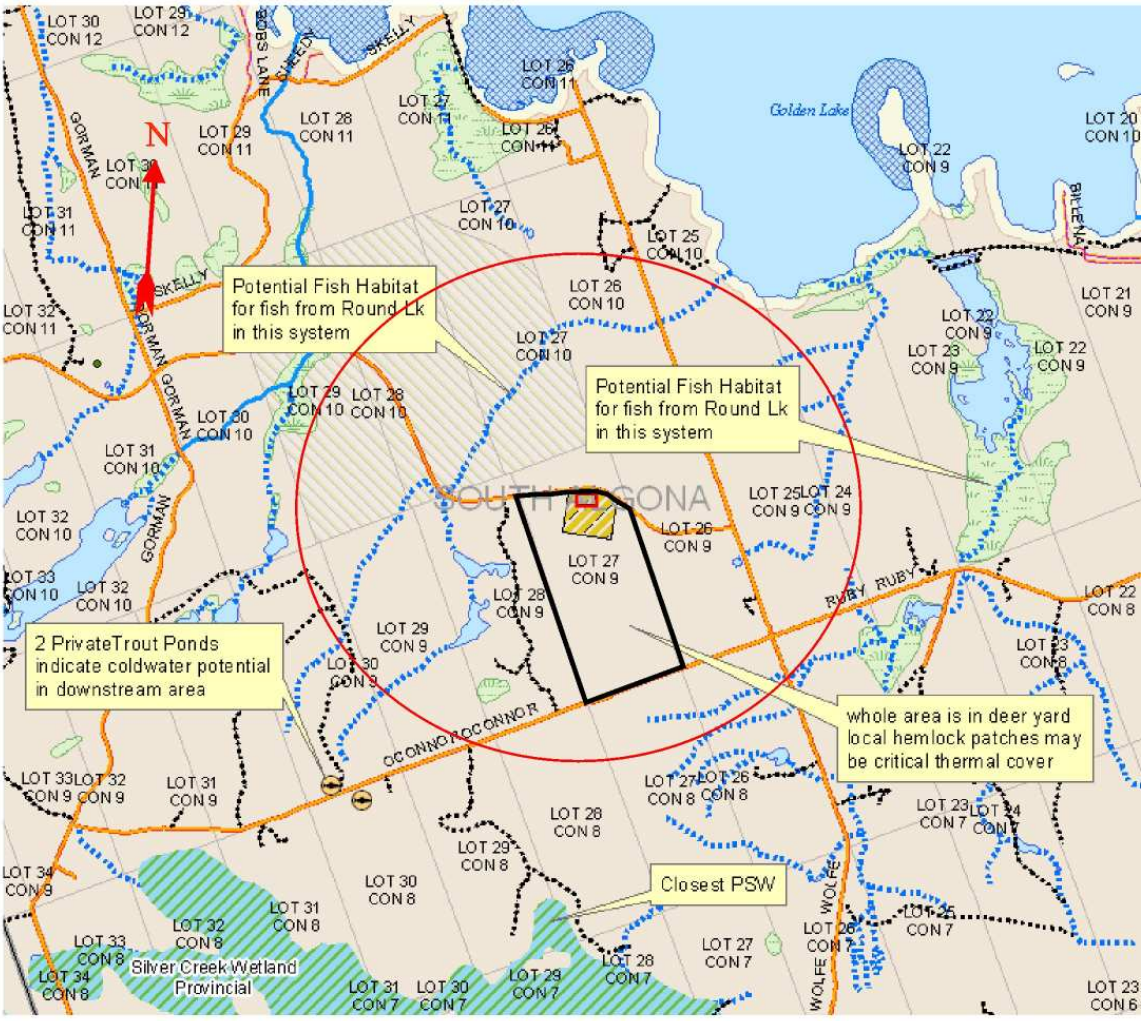
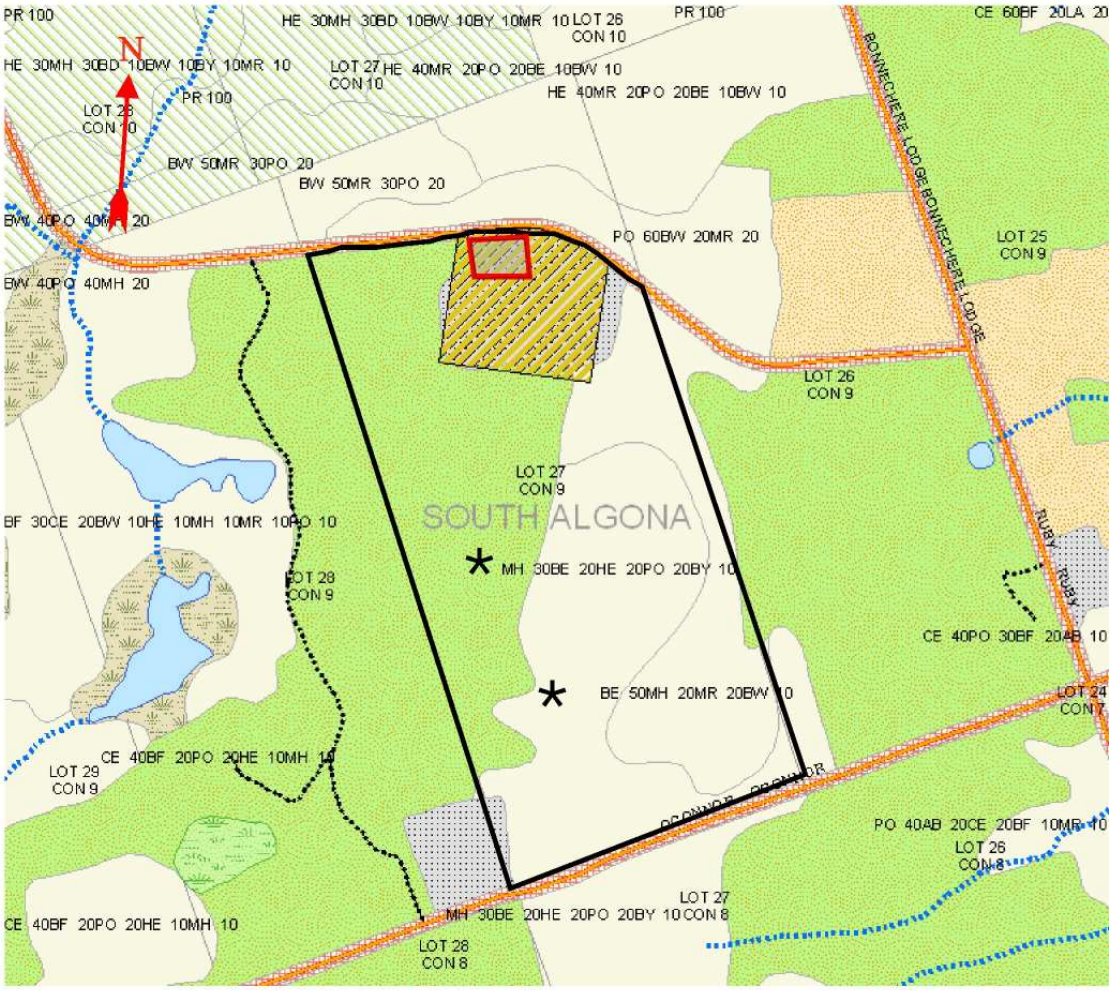


Figure 6. MNR Forest Resource Inventory in the Area of the Ruby Road Waste Site



500 m

★ Mh30 Be20 He20 By10 - Hard maple 30%, Beech20%, Hemlock20%, Yellow birch 10%

Be50 Mh20 Mr20 Bw10 - Beech 50%, Hard maple 20%, Red maple 20%, White birch 10%

Appendix 1 MNR values letter to Cambium Environmental (Feb 2008)

Ministry of
Natural Resources
31 Riverside Drive
Pembroke, ON
K8A 8R6

Ministère des
Richesses naturelles

Telephone: (613) 732-5522
Facsimile: (613) 732-2972

Ontario

February 29, 2008

Sadie Bachynski
Cambium Environmental Inc.
PO Box 325, 2085 Whittington Drive, Unit 2
Peterborough, ON K9J 6X4

Dear Ms. Bachynski:

RE: Request for Information Relating to Ruby Road Waste Disposal Site
Township of Bonnechere Valley Environmental Screening Process
Cambium Ref No. 07-1219-001

Thank you for circulation to the Ministry of Natural Resources (MNR) for comments regarding the proposed expansion of the Ruby Road Waste Disposal Site located at 2213 Ruby Road, Lot 27, Concession 9, in the geographic Township of South Algona. Upon review of the existing information the MNR has the following comments:

Streams / Fish Habitat:
There are no known streams on the subject property however there are tributaries of Golden Lake located on adjacent properties. There are privately stocked fish ponds in the headwater areas of the two larger streams that support trout which may indicate that downstream areas have coldwater potential (Figure 1). The permanency of these stream systems should be confirmed; they have potential to be permanent in parts and to support coldwater fish habitats. Other similar tributaries of Golden Lake are known to support brook trout (for example Silver Creek system to the south).

The landfill is located in the watersheds of several stream systems and groundwater connections need to be considered. Leachate contamination of ground water in the vicinity of the landfill is a potential threat to any adjacent fisheries values (leachate is considered a deleterious substance under the *Fisheries Act*). The size of the current leachate plume and the groundwater movement patterns should be investigated to ensure that leachate is not affecting groundwater and fisheries located in surrounding areas.

There is potential for fish from Golden Lake to access tributaries surrounding the landfill expansion proposal area. Golden Lake, a coldwater lake inline on the Bonnechere River, is known to support walleye, northern pike, yellow perch, rock bass, pumpkinseed, lake whitefish, cisco (lake herring), burbot (ling), common shiner, golden shiner, brown bullhead, grass pickerel, black crappie, rainbow smelt, smallmouth bass, largemouth bass, white sucker, and shorthead redhorse. Historically lake trout were also present in Golden Lake however they have been lost due to declining water quality and over-harvest.

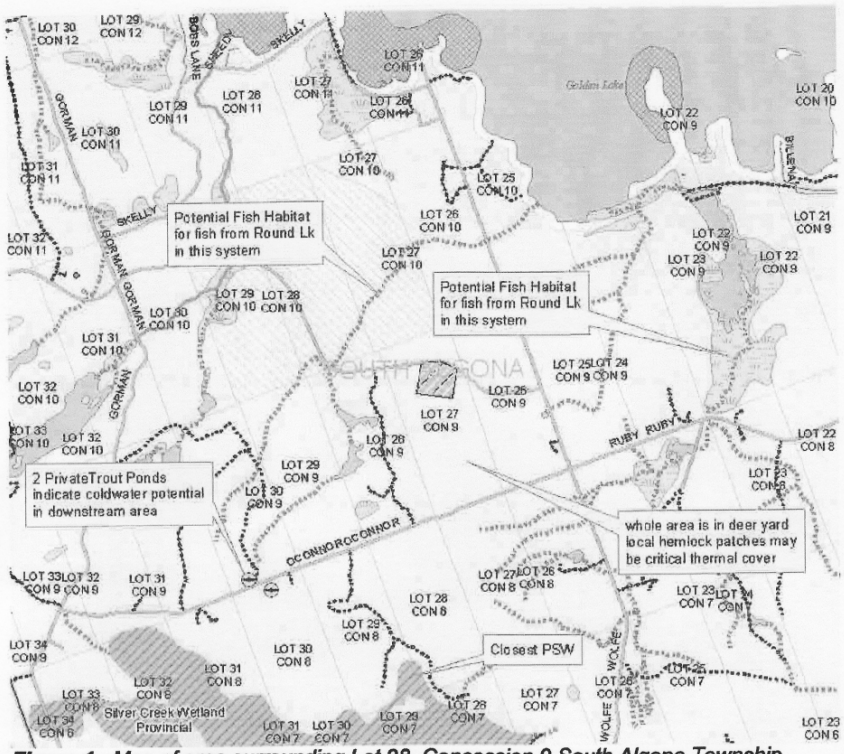


Figure 1. *Map of area surrounding Lot 28, Concession 9 South Algona Township illustrating fish and wildlife values.*

The water quality of Golden Lake was impacted in the recent past by sewage outputs from the Town of Killaloe and continues to be impacted by extensive shoreline development. Further improvements in the lake's water quality may eventually make it suitable for the re-introduction of lake trout if the walleye fishery doesn't improve. The water levels of Golden Lake are managed by Renfrew Power generation (RPG), via Tramore dam located near the small community of Golden Lake. Whitefish and walleye are known to spawn below Tramore dam upstream of the lake on the Bonnechere River. Many of the Golden Lake's tributaries are coldwater and are known to support brook trout.

Silver Creek and Silver Lake are part of the Zummachs Creek system that flows into the west side of Golden Lake. They are located to the south of the proposed landfill expansion area but not in the same watershed. Silver Creek is a coldwater value known to support brook trout. Other fish species known to be present in this stream system include northern redbelly dace, white sucker, common shiner, central mudminnow, brook stickleback, blacknose dace, bluntnose minnow, pearl dace, finescale dace and golden shiner. Silver Lake is also known to contain pumpkinseed, brown bullhead and yellow perch. It is possible that the streams surrounding the landfill

Wetlands / PSWs:

There are no known wetlands on the lot associated with landfill expansion. The closest Provincially Significant Wetland is Silver Creek Wetland located approximately 800 m to the south of Lot 27, Concession 9 (green hatched area on Figure 1). The fisheries values of this wetland stream system are covered above. Silver Creek Wetland is known to be significant habitat for the least bittern (THR) and sedge wren (S4). There is potential for this very large wetland complex to support many other provincially significant species and habitats that are currently undocumented. There are no large unevaluated wetlands within the immediate area of the proposed landfill expansion however there are some smaller wetlands on the surrounding stream systems that have potential to provide significant wildlife habitat.

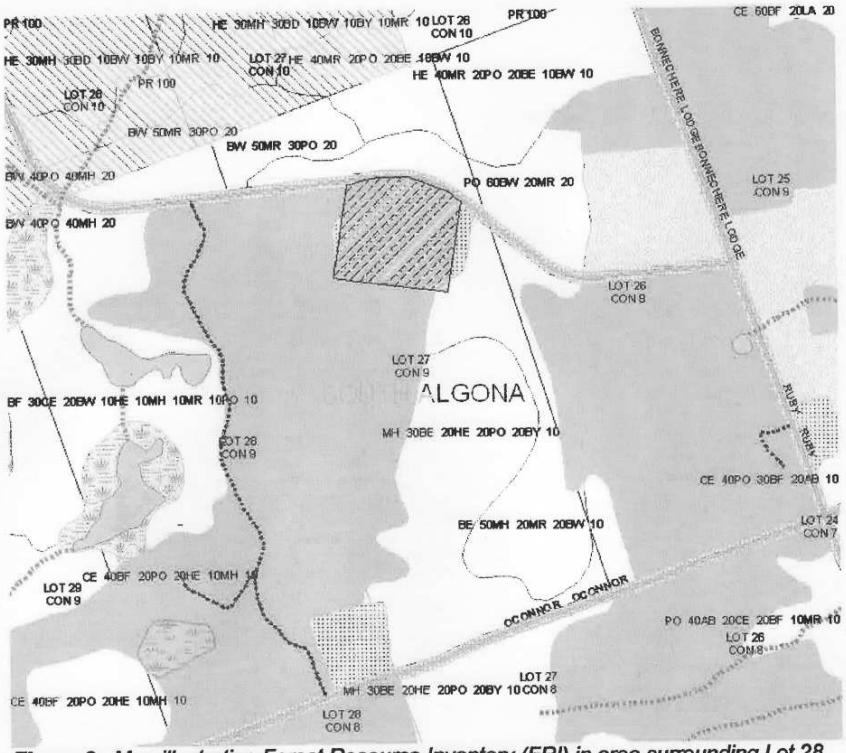


Figure 2. *Map illustrating Forest Resource Inventory (FRI) in area surrounding Lot 28, Concession 9, South Algona Township.*

Significant Wildlife Habitat:

A large portion of land surrounding Golden Lake, including the subject site, is within a deer wintering area. The Forest Resource Inventory (FRI) indicates that the forest on the lot containing the landfill site is likely dominated by sugar maple and beech with patches of hemlock and yellow birch (Figure 2). The hemlock patches are likely providing important winter thermal cover and bedding areas for the deer that winter

also indicates that approximately half of the property is possibly forested with the other half being open field or meadow. Other wildlife that are rare or of special concern known in the general area of the landfill property include, but are not limited to; milksnake (SC), redheaded woodpecker (SC), southern flying squirrel (SC), eastern wolf (SC), red-shoulder hawk (SC), and monarch butterfly (SC). These and other rare wildlife and plants (S1-S3) may use or have habitat on the landfill property and require consideration. The habitats of these species are considered Significant Wildlife Habitat and assessment to determine their presence or absence on the property needs to be investigated as part of the environmental screening process. If critical habitats of these species are present on the property, delineation, appropriate mitigation measures and/or the retention of critical habitat areas will need to be factored into the landfill expansion proposal.

Habitat of Threatened or Endangered Species:
There are no known occurrences of threatened or endangered species on the landfill expansion area or the lots immediately surrounding it. However there are known occurrences of American ginseng (END) and butternut (END) in this part of Renfrew County. Both species are typically associated with sugar maple stands so there is high potential for these endangered species to be present on the property. The presence or absence of these endangered species needs to be investigated as part the environmental screening process. If these species are present on the property, the retention of the species, identified habitat areas and appropriate forested setbacks will need to be factored into the landfill expansion proposal. Please treat all Species at Risk information as sensitive and confidential and do not share beyond the Township of Bonnechere Valley planning staff.

Aggregate Resources:
As you are aware, the subject area falls within a secondary aggregate deposit. A license has been issued on Part of Lot 27 and Lot 28, Concession 9 for a 44 hectare Class A gravel pit. As indicated in correspondence from this office on August 17, 2007, the MNR does not oppose rezoning and the theoretical use of a portion of the above property for waste disposal provided that the permitted uses in the rezoned area include extraction of aggregate and any accessory structures/uses associated with it. Collection of baseline data and information will assist in ensuring there are no significant barriers to the project and determine the appropriate amount of land to be rezoned.

The *Significant Wildlife Habitat Technical Guide* and the *Natural Heritage Reference Manual* are available online at http://www.mnr.gov.on.ca/mnr/pubs/wildlife/swhtg.html or http://www.mnr.gov.on.ca/MNR/pubs/nat_heritage_manual.pdf to assist you. Please do not hesitate to call me with any further questions at 613-732-5522 or erin.malloy@ontario.ca. Thank you again for your inquiry.

Yours truly,

Erin Malloy

Erin Malloy
District Planner
Pembroke District MNR

Supplemental Studies for Natural Environment Features of Ruby Road Waste Disposal Site

Township of Bonnechere Valley

Prepared for:
Cambium Environmental Inc.
P O Box 325, 2085 Whittington Drive
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K9J 6X4

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November 2008

Supplemental Studies of Natural Environment Features of Ruby Road Waste Disposal Site

Introduction

The initial environmental impact study of the Ruby Road waste disposal site (Snider 2008) identified the need to conduct supplemental studies during appropriate seasons to assess specific natural heritage features. The initial environmental impact study specifically stated the need for supplemental studies to assess the potential presence of threatened and endangered species, the potential presence of other significant species of flora or fauna that could indicate significant wildlife habitat and lastly to assess the nearby watercourses for their potential as fish habitat.

This study addresses those identified needs specifically:

- A breeding bird survey to observe for threatened and endangered, species, species of special concern and provincially significant species on the site, the potential lands of purchase, as well as the adjacent areas.
- A vascular plant survey to observe for threatened and endangered species, species of special concern and provincially significant species on the site, the potential lands of purchase, as well as the adjacent areas.
- A survey of other possible species at risk including reptiles, amphibians and mammals on the site, the potential lands of purchase, as well as the adjacent areas.
- A survey of fish habitat in nearby watercourses identified with the numbers 77, 78 and 121 (Figure 1).

Field investigations were conducted on April 15 and 16, 2008, May 16, 2008, June 19 and 20, 2008 and July 30, 2008 on the Ruby Road waste site.

The licensed waste site is a 0.5 ha area that received municipal waste until December 2003 (Cambium 2007). The proposed waste disposal site is to the southwest (Figure 2) of the transfer site.

There is a 33 ha area on lot 27 con 9 extending in a southerly direction from the waste site that are potential lands for purchase for the contaminant attenuation zone.

Field investigations focused on the licensed site and on the 33 ha potential contaminant attenuation zone. Field investigations then paid attention to watercourses closest to the licensed site primarily within a 1 km radius of the transfer site. Vegetation communities on the north side of Ruby Road opposite the licensed site were also assessed for plants and wildlife as seen from the road right of way.

Table 1 Dates of Field Investigation

Date	Survey focus
April 15, 2008	Breeding bird survey
April 16, 2008	Breeding bird survey
May 16, 2008	Breeding bird and vascular plant survey
June 19, 2008	Breeding bird and vascular plant survey
June 20, 2008	Breeding bird and vascular plant survey
July 30, 2008	Fish habitat survey

Breeding Bird Survey

The initial environmental impact study (Snider 2008) had field investigations in April 2008 outside of the normal breeding period of most birds. To assess for significant birds a breeding bird inventory at the appropriate time of the year was carried out to assess for the presence of threatened or endangered species, species of special concern or other provincially significant species.

The Ontario Breeding Bird Atlas (OBBA 2008) has an extensive database of breeding bird information on a 10X10 km square grid pattern. UTM 18UR42 (a 10X10 km square) includes the study area was investigated on line and it was found that there are no significant bird species identified in this square for the last atlas period (2001 to 2005).

Table 2 Provincial Rarity or S Ranks Definitions from the NHIC Website

S1	**Critically Imperiled**—Critically imperiled in the nation or state/province because of extreme rarity (often 5 or fewer occurrences) or because of some factor(s) such as very steep declines making it especially vulnerable to extirpation from the state/province.
S2	**Imperiled**—Imperiled in the nation or state/province because of rarity due to very restricted range, very few populations (often 20 or fewer), steep declines, or other factors making it very vulnerable to extirpation from the nation or state/province.
S3	**Vulnerable**—Vulnerable in the nation or state/province due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.
S4	**Apparently Secure**—Uncommon but not rare; some cause for long-term concern due to declines or other factors.
S5	**Secure**—Common, widespread, and abundant in the nation or state/province.
SNR	**Unranked**—Nation or state/province conservation status not yet assessed.
SE	**Exotic;** not believed to be a native component of Ontario's flora.
SU	**Unrankable**—Currently unrankable due to lack of information or due to substantially conflicting information about status or trends.
SNA	**Not Applicable** —A conservation status rank is not applicable because the species is not a suitable target for conservation activities.
S#S#	**Range Rank** —A numeric range rank (e.g., S2S3) is used to indicate any range of uncertainty about the status of the species or community. Ranges cannot skip more than one rank (e.g., SU is used rather than S1S4).

The Pembroke District indicated in a letter to Cambium Environmental (Appendix 1 Snider 2008) that red-shouldered hawks and the redheaded woodpeckers are two species of special concern that are known to occur in the general area of the waste site.

The red-shouldered hawk is a species of special concern nationally (SARA 2008) and has been downlisted provincially. The red-shouldered hawk prefers deciduous or mixed-wood forests (SARA 2008) containing shade-tolerant hardwood trees close to wetland areas. Large woodlots (10 to 100 hectares) can sustain viable red-shouldered hawk populations provided larger raptors do not interfere.

Attention was paid to the presence of red-shouldered hawks calls particularly during the May 16, 2008 field visit. No red-shouldered hawks were heard or seen during field investigations. No nesting raptors were detected in the area of the nests that were detected in April. These nests were considered as probably too small to be red-shouldered hawk nests. No hawk activity was seen in the area of the 3 nest areas (see Figure 3 Snider 2008).

Redheaded woodpeckers live in open woodland and woodland edges, especially in oak savannahs and riparian forest (ROM 2008). No redheaded woodpeckers were seen during field investigations.

There were 40 species of birds detected and these are listed in Table 4. No threatened or endangered species, species of special concern or provincially significant species were detected.

Vascular Plant Survey

The initial environmental impact study (Snider 2008) identified a need to carry out a plant survey during the appropriate time of the year to assess for threatened and endangered species, species of special concern and plant species of provincial significance.

The Pembroke District (Appendix 1 Snider 2008) indicated that American ginseng and butternut are two endangered species that are known to occur in the general area of the waste disposal site. Special attention was given to searching for these two species. Both American ginseng and butternut are at the northern edge (ROM 2008) of their range. No ginseng or butternut were seen during field investigations.

Vascular plant species were identified during work on May 16 and June 19 and 20, 2008. Some species were taken from notes made in April 2008. All of the plant species identified in field investigation are listed in Table 3.

The vegetation communities in which the species were found are listed in Table 3. The vegetation communities are mapped on Figure 3 (Snider 2008) in the preliminary report. The Natural Heritage Information Centre (NHIC 2008) maintains a list of all species of plants found in Ontario as well as the status of the plant species, this information is available on the NHIC website. Table 3 provides the NHIC provincial rarity ranking and global ranking for each species of plant identified in the study area. No provincially rare species that is species with an S Rank of S1, S2 or S3 were identified with all of the species identified being either S5 or S4 species, species that are considered common and secure within the province or SE species which represent alien or exotic species.

A total of 102 species of plants were identified and are listed in Table 3. All of the species identified were S4 or S5 species the most common and secure species or alien or exotic species (SE). Of the total of 102 species identified 25 were exotic or alien species or 25% of the total. Most of the 25 exotic species were located as expected in the old field habitat or the old gravel pit with the natural habitats having a much lower ratio of exotic species. No threatened or endangered species or species of special concern were identified.

A waste disposal site offers the potential for alien plant material coming in with the household waste.

Other Significant Species

The Pembroke District indicated that the southern flying squirrel, milksnake, eastern wolf and monarch butterfly four species of special concern are known to occur in the general area of the waste disposal site. Species of special concern is defined as a species with characteristics that make it sensitive to human activities or natural events. A species of special concern is not necessarily rare.

Mammals detected were all common and expected species (Table 5). Similarly the amphibians and reptiles detected were limited and were common and expected species (Table 6).

The only species of special concern that was detected was the monarch butterfly. Several monarch butterflies were seen in the old field habitat on several occasions. The monarch butterfly can be found in Ontario (ROM 2008) wherever there are milkweed plants for its caterpillars and wildflowers for a nectar source. Monarchs are often found on abandoned farmland and roadsides, but also in city gardens and parks. The eastern North American population migrates to Mexico each fall to overwinter at 12 sites in the central mountains.

The eastern wolf is a smaller form (ROM 2008) of the grey wolf. Recent genetic analyses have shown that it contains both red wolf and coyote genes.The Eastern Wolf is protected under Ontario's Fish and Wildlife Conservation Act, 1997, and hunting and trapping of this wolf are permitted only under a license. In 2004, the eastern wolf was included on the list of Species at Risk in Ontario with a status of Special Concern. No evidence of the eastern wolf was detected. However the eastern wolf is both a secretative and wide ranging species and the study area could be expected to be used by the eastern wolf.

The milksnake is best known for occurring in rural areas, where it is most frequently reported (ROM 2008) in and around buildings, especially old structures. However, it is found in a wide variety of habitats, from prairies, pastures, and hayfields, to rocky hillsides and a wide variety of forest types. Two other important features of good milksnake habitat are proximity to water, and suitable locations for basking and egg-laying. No milksnakes were detected in the study area. However the milksnake is a difficult to detect species.

Southern Flying Squirrels (ROM 2008) inhabit hardwood forests in eastern North America. Dead hollow trees are used as den sites. The southern flying squirrel has been dowlisted and is no longer a species of special concern. No flying squirrels were detected in the study area but this species is a particularly difficult species to detect.

The MNR guidelines on significant wildlife habitat (MNR 2000) provides specific guidelines on interpreting the habitat of species of special concern in Appendix Q3. The guidelines were used to assess the potential of significant wildife habitat specifically for monarch butterfly but also for the eastern wolf, eastern, the southern flying squirrel and the milksnake. Features mentioned in Appendix Q3 (MNR 2000) as indicators of significant habitat include size of species population at the site, degree of rarity of species at the site, documented significant decline in its critical habitat. It was concluded that the habitat of the study area is not critical habitat of the monarch butterfly or the other three secretive species of special concern that may possibly exist on the site.

Fish Habitat

The MNR stated that there was a potential of coldwater tributaries in the vicinity of the waste site and also a potential for spawning fish from Golden Lake using the tributaries in the vicinity of the waste site. Mapping indicated that the tributaries were intermittent and not permanent however mapping can be inaccurate.

The status of the streams were investigated. A licence to collect fish was obtained from the MNR Pembroke District (licence number 1047045). It was intended to use dip nets and set minnow traps to determine the presence and species of fish present. Minnow traps were not set however because not enough water was found to place the traps.

The watercourses were investigated April 15/16, June 20 and July 30, 2008. Collected information is provided in Table 7 and provides information on permanence, water temperatures and other characteristics.

Tributaries identified as 77 and 78 to the west of the waste site were flowing in April and in June but when investigated on July 30, 08 both sites were not flowing. There were pockets of water present and this water was a cool 15°C at both locations on July 30. No fish were seen or aquatic vegetation. Several caddis fly larvae invertebrates were seen in tributary 77. Any pockets of water were searched for fish and invertebrates with a dip net. No fish were seen or caught.

Tributary 121 is downstream of the confluence of the tributaries identified as 77 and 78. There was water flow in this tributary on April 15/16 and June 20 but on July 30 there was no water flowing in the watercourse. There was a small amount of water seeping out of the banks where it came through a swamp on the road right of way. This water was a cool 14°C. However this water was not sufficient to establish a flow in the watercourse. Pockets of water were sampled with a dip net for invertebrates and fish but none were captured and none were seen.

The watercourses of the stream system closest to the proposed waste site represented by numbers 77, 78 and 121 are defined as intermittent watercourses that do not directly provide fish habitat in the vicinity of the road crossing.

The watercourse identified as 122 at the corner of Wolfe Rd and Ruby Rd had a trickle of flow on April 15/16 but no flow when investigated June 20 or July 30, 2000. This watercourse is defined as a ditch that transports surface runoff during storm events. The pond a few metres to the north of where 122 crosses Wolfe Rd is a dug farm pond.

Watercourse identified as 80 at the corner of Wolfe Rd and O'Connor Rd is not a watercourse but only a wet area. No culvert was discovered and no flowing water was seen at any time.

A waterbody is mapped on some maps and is shown on Figure 2 280m to the west of the proposed waste site. This waterbody was not investigated directly but investigated from air photos and observed from the property boundary. The closest water body as shown on Figure 1 was observed to be a shrub swamp. It was not flooded open water during any of the 4 observation time periods.

In conclusion no permanent watercourses were identified there was some coldwater seepage that was not sufficient in July to maintain a flow in a year with above average rainfall. Water courses could provide nutrients and organisms such as invertebrates to downstream fish populations. No fish were seen or captured.

Conclusions

The breeding bird survey did not identify any threatened or endangered species or species of special concern or provincially significant species. Only common and expected bird species were observed in the study area. There was no significant wildlife species detected other than the ubiquitous monarch butterfly.

Butternut and American ginseng, two endangered species, were specifically searched for in the study area and not found. The vascular plant survey did not identify any threatened or endangered species or species of special concern or provincially significant plant species.

It was concluded that there was not critical habitat of a threatened or endangered species or significant wildlife habitat within the study area.

The watercourses next to the disposal site were determined to be intermittent seasonal and did not contain any fish and would not be important fish habitat.

The proposed waste site located within the 33 ha contaminant attenuation zone is located in an area of early successional white pine regeneration and cultural meadow. The area is presently being pastured and did not contain any significant natural heritage features.

References

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MMAH 2005 Provincial Policy Statement. Queens Printer for Ontario 42 pp.

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NHIC 2008. Natural Heritage Information Centre, MNR Website www.nhic.gov.on.ca

OBBA 2006. Ontario Breeding Birds Atlas. Website www.birdsontario.org

Snider's Ecological Services 2008. Initial Environmental Impact Study Ruby Road Waste Disposal Site. 33 pp.

ROM 2008. Ontario's Species At Risk Website http://www.rom.on.ca/ontario/risk.php

SAR 2008 Canada's Species At Risk Act Website http://www.sararegistry.gc.ca/default_e.cfm

Table 3 Vascular Plants Observed in the Ruby Road Study Area

Family	Scientific Name	Common Name	Provincial or S Rank	Vegetation Community
ACERACEAE	Acer pensylvanicum	Striped Maple	S5 (1995-01-01)	4
ACERACEAE	Acer rubrum	Red Maple	S5 (1995-01-01)	2
ACERACEAE	Acer saccharum ssp. saccharum	Sugar Maple	S5 (1995-01-01)	2, 3, 5
ANACARDIACEAE	Rhus typhina	Staghorn Sumac	S5 (1995-01-01)	ogp
APOCYNACEAE	Apocynum androsaemifolium	Spreading Dogbane	S5 (1995-12-19)	1
ARALIACEAE	Aralia nudicaulis	Wild Sarsaparilla	S5 (1995-12-19)	3
ASCLEPIADACEAE	Asclepias syriaca	Kansas Milkweed	S5 (1995-12-19)	1
ASTERACEAE	Antennaria howellii ssp. neodioica	Pussy-toes	SU (1995-12-19)	1
ASTERACEAE	Arctium minus ssp. minus	Common Burdock	SE5 (1995-12-19)	1
ASTERACEAE	Chrysanthemum leucanthemum	Oxeye Daisy	SE5 (1995-12-19)	1
ASTERACEAE	Erigeron strigosus	Daisy Fleabane	S5 (1995-12-19)	1
ASTERACEAE	Hieracium aurantiacum	Orange Hawkweed	SE5 (1995-12-19)	1
ASTERACEAE	Hieracium pilosella	Mouseear	SE5 (1995-12-19)	1
ASTERACEAE	Solidago canadensis var. canadensis	Canada goldenrod	S5 (1997-03-26)	ogp
BETULACEAE	Alnus incana	Speckled Alder	S5 (1995-12-19)	1
BETULACEAE	Betula alleghaniensis	Yellow Birch	S5 (1995-12-19)	4
BETULACEAE	Betula papyrifera	Paper Birch	S5 (1995-12-19)	ogp, 3, 5
BETULACEAE	Ostrya virginiana	Eastern Hop-hornbeam	S5 (1995-12-19)	3
BORAGINACEAE	Echium vulgare	Common Viper's-bugloss	SE5 (1995-12-19)	1
BRASSICACEAE	Erysimum hieraciifolium	European Wallflower	SE5 (1995-12-19)	1
BRASSICACEAE	Lepidium densiflorum	Dense-flower Pepper-grass	SE5 (1995-12-19)	1
CAPRIFOLIACEAE	Lonicera involucrata	Fly Honeysuckle	S5 (1995-12-19)	3
CAPRIFOLIACEAE	Lonicera tatarica	Tartarian Honeysuckle	SE5 (1995-12-19)	1
CAPRIFOLIACEAE	Viburnum acerifolium	Maple-leaf Viburnum	S5 (1995-12-19)	3
CAPRIFOLIACEAE	Viburnum cassinoides	Northern Wild-raisin	S5 (1995-12-19)	1

Table 3 Vascular Plants Observed in the Ruby Road Study Area

Family	Scientific Name	Common Name	Provincial or S Rank	Vegetation Community
CARYOPHYLLACEAE	Cerastium fontanum	Common Mouse-ear Chickweed	SE5 (1995-12-19)	1
CARYOPHYLLACEAE	Dianthus armeria	Deptford-pink	SE5 (1995-12-19)	ogp
CARYOPHYLLACEAE	Silene vulgaris	Maiden's Tears	SE5 (1995-12-19)	1
CONVOLVULACEAE	Calystegia sepium	Hedge Bindweed	S5 (1995-12-19)	3
CUPRESSACEAE	Juniperus communis	Ground Juniper	S5 (1995-12-19)	1
DENNSTAEDTIACEAE	Pteridium aquilinum	Bracken Fern	S5 (1995-12-19)	ogp, 1, 2
DRYOPTERIDACEAE	Athyrium filix-femina var. angustum	Lady Fern	S5 (1995-12-19)	3
DRYOPTERIDACEAE	Deparia acrostichoides	Silvery Spleenwort	S4 (1995-12-19)	3
DRYOPTERIDACEAE	Dryopteris carthusiana	Spinulose Shield Fern	S5 (1995-12-19)	3
DRYOPTERIDACEAE	Dryopteris marginalis	Marginal Wood-fern	S5 (1995-12-19)	3
DRYOPTERIDACEAE	Gymnocarpium dryopteris	Oak Fern	S5 (1995-12-19)	5
DRYOPTERIDACEAE	Matteuccia struthiopteris	Ostrich Fern	S5 (1995-12-19)	5
DRYOPTERIDACEAE	Onoclea sensibilis	Sensitive Fern	S5 (1995-12-19)	1, 3, 5
EQUISETACEAE	Equisetum hyemale ssp. affine	Scouring Rush	S5 (1995-12-19)	1
EQUISETACEAE	Equisetum variegatum	Variegated Horsetail	S5 (1995-12-19)	1
FABACEAE	Lotus corniculatus	Birds-foot Trefoil	SE5 (1995-12-19)	1
FABACEAE	Trifolium aureum	Yellow Clover	SE5 (1995-12-19)	1
FABACEAE	Trifolium pratense	Red Clover	SE5 (1995-12-19)	1
FABACEAE	Trifolium repens	White Clover	SE5 (1995-12-19)	1
FABACEAE	Vicia cracca	Tufted Vetch (Cow Vetch)	SE5 (1995-12-19)	1
FAGACEAE	Fagus grandifolia	American Beech	S5 (1995-12-19)	3, 5
GERANIACEAE	Erodium cicutarium	Pin Clover	SE3 (1995-12-19)	1
GROSSULARIACEAE	Ribes cynosbati	Prickly Gooseberry	S5 (1995-12-19)	1, 2
LAMIACEAE	Prunella vulgaris ssp. lanceolata	Self-heal	S5 (1995-12-19)	1
LILIACEAE	Erythronium americanum	Yellow Trout-lily	S5 (1995-12-19)	3
LILIACEAE	Maianthemum canadense	Wild-lily-of-the-valley	S5 (1995-12-19)	3

Table 3 Vascular Plants Observed in the Ruby Road Study Area

Family	Scientific Name	Common Name	Provincial or S Rank	Vegetation Community
LILIACEAE	Maianthemum stellatum	Starflower False Solomon's-seal	S5 (1995-12-19)	3
LILIACEAE	Streptopus amplexifolius	White Mandarin	S4S5 (1995-12-19)	3
LILIACEAE	Trillium grandiflorum	White Trillium	S5 (1995-12-19)	3
LYCOPODIACEAE	Diphasiastrum digitatum	Fan Club-moss	S5 (1995-12-19)	2, 3
ONAGRACEAE	Oenothera biennis		S5 (1995-12-19)	1
OPHIOGLOSSACEAE	Botrychium virginianum	Rattlesnake Fern	S5 (1995-12-19)	3
ORCHIDACEAE	Epipactis helleborine	Eastern Helleborine	SE5 (1995-12-19)	3
OROBANCHACEAE	Epifagus virginiana	Beechdrops	S5 (1995-12-19)	3
OSMUNDACEAE	Osmunda claytoniana	Interrupted Fern	S5 (1995-12-19)	5
PINACEAE	Abies balsamea	Balsam Fir	S5 (1995-12-19)	1, 2, 3
PINACEAE	Pinus strobus	Eastern White Pine	S5 (1995-12-19)	2, 5
PINACEAE	Tsuga canadensis	Eastern Hemlock	S5 (1995-12-19)	3, 4
POACEAE	Danthonia spicata	Poverty Oatgrass	S5 (1995-12-19)	1
POACEAE	Festuca rubra	Red Fescue	S5 (1995-12-19)	1
POACEAE	Lolium perenne var. perenne	Perrenial ryegrass	SE4 (1997-03-26)	1
POACEAE	Oryzopsis asperifolia	White-grained Mountain-ricegrass	S5 (1995-12-19)	2
POACEAE	Poa compressa	Canada Bluegrass	SE5 (2001-11-26)	1
POACEAE	Poa pratensis	Kentucky Bluegrass	S5 (1996-06-20)	1, 2
PRIMULACEAE	Trientalis borealis	Northern Starflower	S5 (1995-12-19)	3
PYROLACEAE	Pyrola chlorantha	Greenish-flowered Wintergreen	S4S5 (1995-12-19)	3
RANUNCULACEAE	Actaea rubra	Red Baneberry	S5 (1995-12-19)	3
RANUNCULACEAE	Anemone virginiana	Virginia Anemone	S5 (1995-12-19)	1
RANUNCULACEAE	Clematis virginiana	Virginia Virgin-bower	S5 (1995-12-19)	1
RANUNCULACEAE	Ranunculus acris	Tall Butter-cup	SE5 (1995-12-19)	1
ROSACEAE	Amelanchier laevis	Allegheny Service-berry	S5 (1995-12-19)	1
ROSACEAE	Aruncus dioicus	Common Goatsbeard	SE1 (1995-12-19)	1

Table 3 Vascular Plants Observed in the Ruby Road Study Area

Family	Scientific Name	Common Name	Provincial or S Rank	Vegetation Community
ROSACEAE	Crataegus chrysocarpa var. aboriginum	A Hawthorn	S4? (1996-06-28)	1
ROSACEAE	Crataegus mollis	Downy Hawthorn	S5 (1995-12-19)	ogp
ROSACEAE	Fragaria vesca	Woodland Strawberry	S5 (1995-12-19)	3
ROSACEAE	Fragaria virginiana	Virginia Strawberry	S5 (1995-12-19)	ogp
ROSACEAE	Malus pumila	Common Apple	SE5 (1995-12-19)	1
ROSACEAE	Potentilla argentea	Silvery Cinquefoil	SE5 (1995-12-19)	ogp, 1
ROSACEAE	Prunus serotina	Wild Black Cherry	S5 (1995-12-19)	3
ROSACEAE	Rosa blanda	Smooth Rose	S5 (1995-12-19)	ogp, 1, 3
ROSACEAE	Rubus allegheniensis	Allegheny Blackberry	S5 (1995-12-19)	ogp, 1
ROSACEAE	Rubus idaeus ssp. melanolasius	Wild Red Raspberry	S5 (1996-06-24)	1, 3
ROSACEAE	Rubus odoratus	Purple Flowering Raspberry	S5 (1995-12-19)	3
ROSACEAE	Spiraea alba	Narrow-leaved Meadow-sweet	S5 (1995-12-19)	1
RUBIACEAE	Galium aparine	Catchweed Bedstraw	S5 (1995-12-19)	2
RUBIACEAE	Mitchella repens	Partridge-berry	S5 (1995-12-19)	3
SALICACEAE	Populus grandidentata	Large-tooth Aspen	S5 (1995-12-19)	ogp, 2, 3, 5
SALICACEAE	Populus tremuloides	Trembling Aspen	S5 (1995-12-19)	2, 3, 4
SALICACEAE	Salix bebbiana	Bebb's Willow	S5 (1995-12-19)	1
SALICACEAE	Salix petiolaris	Meadow Willow	S5 (1995-12-19)	1
SCROPHULARIACEAE	Verbascum thapsus	Great Mullein	SE5 (1995-12-19)	1
THYMELAEACEAE	Dirca palustris	Eastern Leatherwood	S4? (1995-12-19)	3
TILIACEAE	Tilia americana	American Basswood	S5 (1995-12-19)	3, 5
ULMACEAE	Ulmus americana	American Elm	S5 (1995-12-19)	1
URTICACEAE	Urtica dioica ssp. gracilis	Nettle	S5 (1995-12-19)	3
VERBENACEAE	Verbena stricta	Hoary Vervain	S4 (1995-12-19)	1
VITACEAE	Parthenocissus vitacea	Virginia Creeper	S5 (2000-09-20)	ogp

Table 4. Birds Observed in the Ruby Road Study Area

Bird Species	Dates Observed	Highest Breeding Evidence	Global Ranking	Provincial Ranking
Mallard	A16	Observed	G5	S5B,SZN
Ring-billed Gull	A15	Observed	G5	S5B,SZN
Common Snipe	A16	Possible	G5	S5B,SZN
Ruffed Grouse	A15 M16	Possible	G5	S5
Wild Turkey	A15	Possible	G5	S4
Sharp-shinned Hawk	J20	Possible	G5	S5B,SZN
Broad-winged Hawk	M16	Possible	G5	S5B,SZN
Turkey Vulture	M16	Observed	G5	S4B,SZN
American Kestrel	A16 X	Probable	G5	S5B,SZN
Pileated Woodpecker	A16	Observed	G5	S4S5
Northern Flicker	A16 M16	Probable	G5	S5B,SZN
Yellow-bellied Sapsucker	A15 M16, J20	Probable	G5	S5B,SZN
Hairy Woodpecker	A16	Possible	G5	S5
Great-crested Flycatcher	J20	Possible	G5	S5B,SZN
Eastern Kingbird	M16 Jly30	Probable	G5	S5B,SZN
Eastern Wood Pewee	J20	Possible	G5	S5B,SZN
Tree Swallow	M16	Possible	G5	S5B,SZN
American Crow	A16	Observed	G5	S5B,SZN
Blue Jay	M16	Observed	G5	S5
Black-capped Chickadee	A15, J20	Probable	G5	S5
White-breasted Nuthatch	A15 M16	Probable	G5	S5
Gray Catbird	M16	Possible	G5	S5B,SZN
Brown Thrasher	M16	Possible	G5	S5B,SZN
American Robin	A15 M16	Probable	G5	S5B,SZN
Hermit Thrush	M16	Probable	G5	S5B,SZN
Veery	J19	Possible	G5	S4B,SZN
Cedar Waxwings	J20	Observed	G5	S5B,SZN
Red-eyed Vireo	J20	P	G5	S5B,SZN
Black-throated Blue Warbler	M16	Possible	G5	S5B,SZN
Yellow-rumped Warbler	M16 J19	Possible	G5	S5B,SZN
Oven Bird	M16 J19	Possible	G5	S5B,SZN
Red-winged Blackbird	M16	Observed	G5	S5B,SZN
Common Grackle	M16, J20	Possible	G5	S5B,SZN
Eastern Meadowlark	A15	Probable	G5	S5B,SZN
Northern Juncoe	A15	Observed	G5	S5B,SZN
Indigo Bunting	J19	Probable	G5	S5B,SZN
Rose-breasted Grosbeak	J20	Probable	G5	S5B,SZN
Chipping Sparrow	M16	Probable	G5	S5B,SZN
Song Sparrow	A16 M16	Probable	G5	S5B,SZN
Vesper Sparrow	J19 Jly 30	Probable	G5	S4B,SZN

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Table 5. Mammals Detected on the Ruby Road Study Area

Species	Date	Community	Global Rank	Provincial Rank
Red Fox	April 15	OGP	G5	S5
White-tailed deer	April 15 June 19	3,1	G5	S5
Woodchuck	April 15	OGP	G5	S5
Snowshoe Hare	April 15	3	G5	S5
Porcupine	April 16	3, 4	G5	S5
American Black Bear	June 19	1, 3, OGP	G5	S5
Red Squirrel	June 19	2, 3	G5	S5
Striped Skunk	June 19	OGP	G5	S5

Table 6. Amphibians and Reptiles on the Ruby Road Study Area

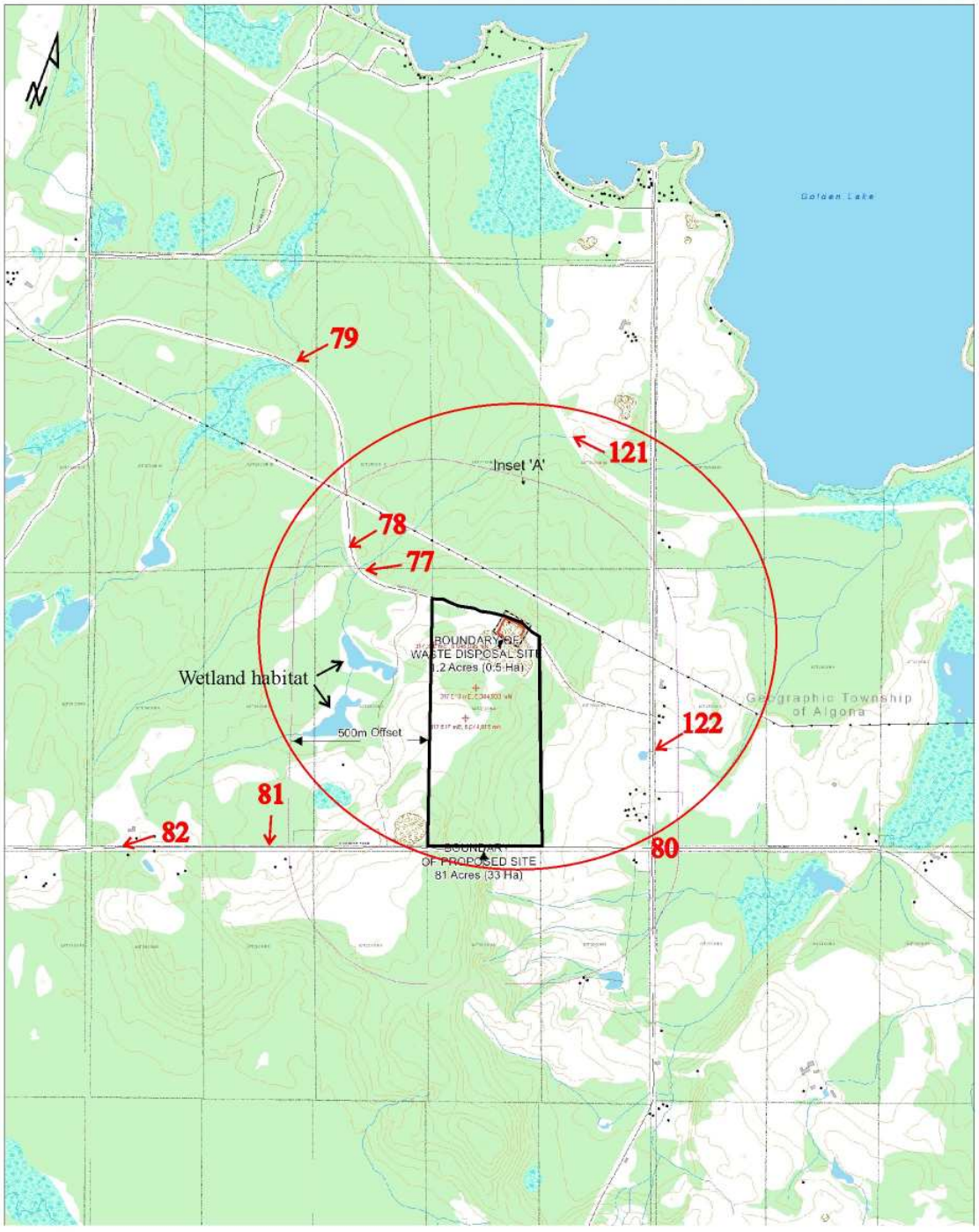
Species	Date Seen	Community	Global Rank	Provincial Rank
Gray tree frog	June 19	3	G5	S5
American toad	June 20	3	G5	S5
Northern leopard frog	July 30	1	G5	S5
Wood frog	July 30	3	G5	S5
Painted turtle	July 30	Watercourse 79	G5T5	S5

Table 7. Watercourse Characteristics in the Vicinity of the Ruby Road Study Area

Site number	Culvert diameter	Watercourse conditions April 15, 16, 08	Watercourse conditions June 20, 08	Watercourse conditions July 30, 08	Comments
77	36" (91.4cm)	5 cm of flowing clear water	Water flowing through culvert Caddis fly larvae found. 14°C	Stream bed dry at Ruby Road. Downstream some water in stream bed. Water 15°C No fish seen.	Intermittent stream. With seasonal spring activity. No direct fish habitat. with Channel present, clear water
78	36" (91.4cm)	10 cm of flowing clear water	Water flowing through culvert. Flooded terrestrial plants. No aquatic plants no invertebrates. Water 11°C	No water flow, a few pockets of standing water. Water 15°C. No fish seen.	Intermittent stream. With seasonal spring activity. No direct fish habitat Channel present, clear water
122	40" (101.6 cm)	trickle	No water flow	Culvert dry, wet pasture below culvert. Water in nearby dug pond	Seasonal storm waters. No Direct fish habitat. Best characterized as a grassy swale
80	No culvert seen could be hidden	Wet area but no detectable flow	No water flow	No water. Area moist but no flowing or standing water	Seasonal water only. Not fish habitat. wet area with no channel
121	29" (73.7cm)	Quarter full	Water flowing. No invertebrates no fish seen. Water 14°C	No stream flow but small amount of water coming from marsh. Water 14°C. No fish no invertebrates	Intermittent stream. With seasonal spring activity. No direct fish habitat Channel present, clear water

Figure 1 taken from Snider 2008

Figure 1. Location map of the Ruby Road Waste Disposal Area



Waste disposal site and potential lands of purchase

500 m

1 km radius from proposed waste site

82 Location of watercourse crossing

Figure 2. Location of the Ruby Road Waste Disposal Site