

Natural Environment

Introduction

The following Natural Environment Background Report has been prepared in conjunction with a proposed secondary plan for the Everett Community in the County of Simcoe. The study area encompasses the existing community of Everett and immediately adjacent lands (Figure 1). The background report provides the following information:

- A description and evaluation of the biophysical resource features within the study area based largely on existing background information and mapping;
- Confirmation of natural area boundaries, buffers and linkages through airphoto interpretation and windshield surveys;
- Identification of opportunities/constraints for future development within Everett;
- An evaluation of potential impacts for future development on core natural areas and linkage functions;
- Recommended mitigation/design measures, including buffers/setbacks to reduce development related impacts, protect sensitive environmental features and achieve habitat enhancement; and,
- Additional information, field inventories, and studies required at the development application stage.

The following tasks were completed as part of the analysis:

- Review of background reports and GIS mapping provided by MNR, County of Simcoe and NVCA;
- Consultation with NVCA staff;
- Review of aerial photography, topographic mapping, soils and physiographic mapping; and,
- Windshield survey of study area.

Existing Conditions Overview

The landscape associated with the village of Everett can be described as a mosaic of agricultural land interspersed with mature hedgerows, woodlots, thicket/meadow, and wetlands associated with the Pine River valleylands. The wetlands within the study area are regulated by the Nottawasaga Valley Conservation Authority under their *Development, Interference with Wetlands and Alterations to Shorelines and Watercourses* regulation. They occur in low lying

areas and floodplains, and consist primarily of mixed swamp communities dominated by a mixture of balsam fir, white spruce, eastern hemlock, eastern white cedar, trembling aspen, balsam poplar, white elm, yellow birch and black ash. Inclusions of cattail and reed canary grass marsh, willow/dogwood thicket swamp, cedar swamp, and deciduous swamp are associated with the mixed swamp features. Adjacent upland habitats support a mixture of mixed and deciduous forest associations. Typical species present include sugar maple, red maple, American beech, white ash, white pine, eastern hemlock, eastern white cedar, black cherry, ironwood, basswood and white birch. A rich, diverse native ground flora comprised of herbaceous plants, sedges/grasses, and ferns are associated with the large, intact wetland and forest blocks.

The upland and wetland communities associated with the Pine River are part of a larger core natural area and corridor that provides an important linkage connection between the Niagara Escarpment core natural areas to the west and the Minesing Swamp and Canadian Shield to the northeast. This provincial scale corridor is considered highly significant due to the connection it provides between major core natural areas within the landscape.

The community of Everett is located within the watersheds of the Pine River and Boyne River systems. The Pine River flows northerly through the northwest corner of the community. A broad floodplain and large expanses of connected forest and wetland habitat are associated with the Pine River, extending both upstream and downstream of the community. A small, intermittent headwater tributary of the Boyne River is located in the southwest corner of the community, in association with cultivated agricultural land. Several small, intermittent tributaries to a tributary of the Pine River are located within the village of Everett and drain easterly through an expansive block of forested wetland (swamp).

The Pine River is a permanent, coldwater stream that supports a variety of fish species, including resident and migratory trout species. Water quality within the Pine River is considered to be good (*NVCA Pine River Subwatershed Report Card*, NVCA 2007). Protection of the groundwater recharge/discharge regime within the community of Everett is of paramount importance to the protection of the ecological integrity and function of the Pine River and its associated wetland features.

Water quality in the Boyne River is rated as poor to fair due to the impacts of agricultural runoff and loss of riparian cover (*NVCA Boyne River Subwatershed Report Card*, NVCA 2007). The Boyne River supports a variety of warmwater and coldwater fish species, including trout.

Existing conditions within the study area are mapped on Figure 1.

Species-at-Risk

A list of species-at-risk for Simcoe County is presented in Table 1 (attached). The establishment of the natural heritage system for the Everett Community will provide for the protection and enhancement of existing and potential habitat for species-at-risk that may occur within the study area. The key habitat features within the community are primarily associated with the Pine River in the northwest and the large block of wetland and forest to the east. Large blocks of intact wetland and forest habitat occur to the north, south, east and west of Everett.

Wildlife

The large expanses of connected forest and wetland habitat within the community of Everett support a variety of important functions for wildlife including winter habitat for deer (conifer dominated areas), habitat for area sensitive forest interior birds, and dispersal corridor (Pine River, tributary system). Given the size and diversity of habitat conditions present, it is expected that a diverse wildlife community exists within the community of Everett. As noted above, the habitat features within Everett are part of a significant, provincial scale wildlife corridor.

Environmental Policy Areas

The study area contains numerous natural heritage features that are designated as environmental policy areas. These features include:

- Greenlands (County of Simcoe)
- Floodplains, slopes, watercourses and wetlands regulated by the NVCA

From a Provincial Policy Statement and Natural Heritage Reference Manual perspective, the large expanses of forest and wetland within and adjacent to Everett would be considered a "significant" woodland with other natural heritage features/functions associated with it such as significant wildlife habitat, significant valleylands, and significant fish habitat. Habitat for some of the species at risk listed for Simcoe County (refer to Table 1) is likely provided within the large wetland/forest blocks associated with the Pine River corridor. The County of Simcoe Greenlands designation encompasses the forest and wetland features within Everett, as well as the linkage corridor with enhancements.

Environmental policy areas within the study area are shown in Figure 2.

Physiography, Soils and Topography

The study area is primarily flat to gently undulating with relief associated with the Pine River in the northwest and sloping topography in the southeast associated with a remnant shoreline of former Lake Algonquin. From a physiographic standpoint, the study area is located within the Simcoe Lowlands. In the *Physiography of Southern Ontario 3rd Edition*, Chapman and Putnam

(1984) describe the study area as a gently undulating to flat outwash sand plain formed by glacio-fluvial till deposits.

According to the *Soil Survey of Simcoe County – Report No. 29 of the Ontario Soil Survey* (Hoffman et al., 1962), the soils within the study area are predominantly well drained Tioga sandy loam, Bondhead sandy loam, and Bennington fine sandy loam (Hoffman et al. 1962). Organic muck soils and poorly drained Granby sandy loam soils are associated with the Pine River and wetland areas. The soils of Simcoe County are underlain by rocks of the Ordovician, Silurian and Precambrian ages. Limestones of the Black River, Trenton, Medina, Cataract and Lockport formations and shales of the Utica, Queenston and Richmond formations are present (Hoffman et al., 1962).

The topography of the study area, including slopes and the NVCA Regulation Limit are presented in Figure 2.

Opportunities/Constraints – Natural Heritage System

The study area supports a mosaic of agricultural land interspersed with mature hedgerows, woodlots, and wetlands. Large expanses of forest and wetland (mixed swamp) are located in the northwest and east/northeast section of the study area, in association with the Pine River and tributaries, respectively. The remnant natural areas are primarily associated with valleylands and low-lying depressional areas with poorly drained, organic muck soils. Deciduous/mixed forest and cultural habitat features (thicket, woodland, old field meadow) occur in the upland areas adjacent to the wetlands.

The key natural heritage and hydrologic features within and in proximity to the study area include:

- Pine River – significant valleyland feature, major corridor function, coldwater fishery
- NVCA regulated wetlands – associated with Pine River and headwater tributaries
- Significant woodlands – associated with Pine River and headwater tributaries (Pine River)
- Intermittent headwater tributaries to the Pine River and the Boyne River
- Floodplains
- Habitat for species-at-risk
- Linkage connections among natural features (i.e. both within and in proximity to the study area)
- Simcoe County Greenlands – encompasses the above core natural areas and corridors with buffers/enhancements

Combined, these natural heritage features form the natural heritage system for the community of Everett (Figure 3). The system incorporates the key natural heritage and hydrologic features

noted above plus a minimum 30 m buffer, and enhancements to core area and corridor functions. The County of Simcoe Greenlands, floodplain areas, slopes and meander belt width have also been taken into account in determining the location of the natural heritage system. The application of a minimum 30 m buffer is consistent with current guidelines and policy practices within Southern Ontario, including the adjacent GreenBelt Plan area.

Given the significance and sensitivity of the natural environment features within the study area, appropriate stormwater and groundwater management measures are recommended to maintain and enhance water quality, sustain stream baseflow/temperature and protect wetland hydrology. Low impact development (LID) measures for stormwater management such as bio-swales, at-source infiltration of runoff, wetland storm ponds, and infiltration/cooling trench outlets, are recommended to protect the aquatic and wetland components of the natural heritage system. The predominantly well drained soils across the study area should be suitable for the application of LID stormwater management measures.

Naturalization of the buffers and storm ponds with native species is also recommended to enhance the function and integrity of the natural heritage system and increase its resilience to development of the landscape.

The key elements to be incorporated into the secondary plan with respect to environmental protection are as follows:

- Control of post-development runoff to pre-development levels with Enhanced (former Level 1) stormwater management facilities, constructed as wetland or hybrid type storm ponds;
- Cooling of runoff through a combination of outlet design (e.g. buried stone trench) and shade plantings along the receiving channel;
- Minimizing cut/fill requirements to reduce alterations to surface drainage and infiltration;
- Low Impact Development (LID) stormwater management measures such as landscaped bio-swales, perforated drain tiles, permeable pavement systems, rainwater collection cisterns for irrigation, and minimal or no grade changes within buffer areas;
- Naturalization of buffers and parkland with common, native species indicative of the surrounding landscape and existing site conditions;
- Low level lighting for sports fields and trails adjacent to natural areas;
- Minimal hedgerow tree removal to maintain micro-climate and linkages;

Other urban design criteria to be incorporated into the secondary plan to promote environmental protection include the use of single loaded roads adjacent to natural areas,

positioning of parkettes and storm ponds between residential areas and features to be protected, large lots to promote at-source infiltration of runoff, and avoidance of areas with steep/sloping topography.

Buffers

As noted above, a 30 m buffer has been applied to the core environmental features within the study area. The secondary plan should be designed to respect the natural heritage features and the buffers. No roads or lots should be permitted within buffer areas.

Compatible uses within buffer areas include stormwater management facilities (provided a minimum 10 m “no touch” buffer is maintained to the feature), trails and passive/active park uses, such as the edges or rear of a sports field.

Larger buffers may be required in certain locations to accommodate areas of seasonal inundation with water (i.e. in the spring), sloping topography, and protection of the natural heritage system. In-season vegetation and wildlife surveys are recommended at the development application stage (EIS) to confirm and refine, where necessary, the buffers to the natural heritage system.

Environmental Protection Strategy

The above noted environmental protection measures are intended to be developed in greater detail as part of the individual EIS's to be submitted with a development application. Specific details related to the protection of stream baseflow/temperature, water quality, wetland hydrology, and the features/functions of the overall natural heritage system will be provided in the EIS. The environmental protection strategy will be developed in conjunction with the results of the hydrogeological investigation, stormwater management plan, geotechnical studies related to slopes and top of bank, fluvial geomorphological analysis of storm pond outlets and receiving channels. In addition, the EIS will confirm the appropriateness of the proposed buffers and make adjustments, where necessary, to ensure adequate protection is provided to the natural heritage system.

A key element of the EIS will be to provide recommendations for environmental stewardship and awareness for future residents of the Everett community (e.g. through Homeowners Manual, interpretative signage, community involvement in monitoring and enforcement). Recommendations for the naturalization of the buffers, including fencing and signage, will be provided with the goal of augmenting/supplementing existing habitat and deterring public/pedestrian access into sensitive environmental areas. This will be particularly important for the proposed residential areas that abut the natural heritage system as well as the sports fields, and trail connections to natural areas (where appropriate).

Depending on the results of the in-season field work completed at the EIS stage, refinements to the development concepts may be required to accommodate larger buffers/setbacks to provide long-term protection to the natural heritage system.

Follow-up Studies

The following studies should be identified in the Secondary Plan policies for consideration at the draft plan of subdivision stage:

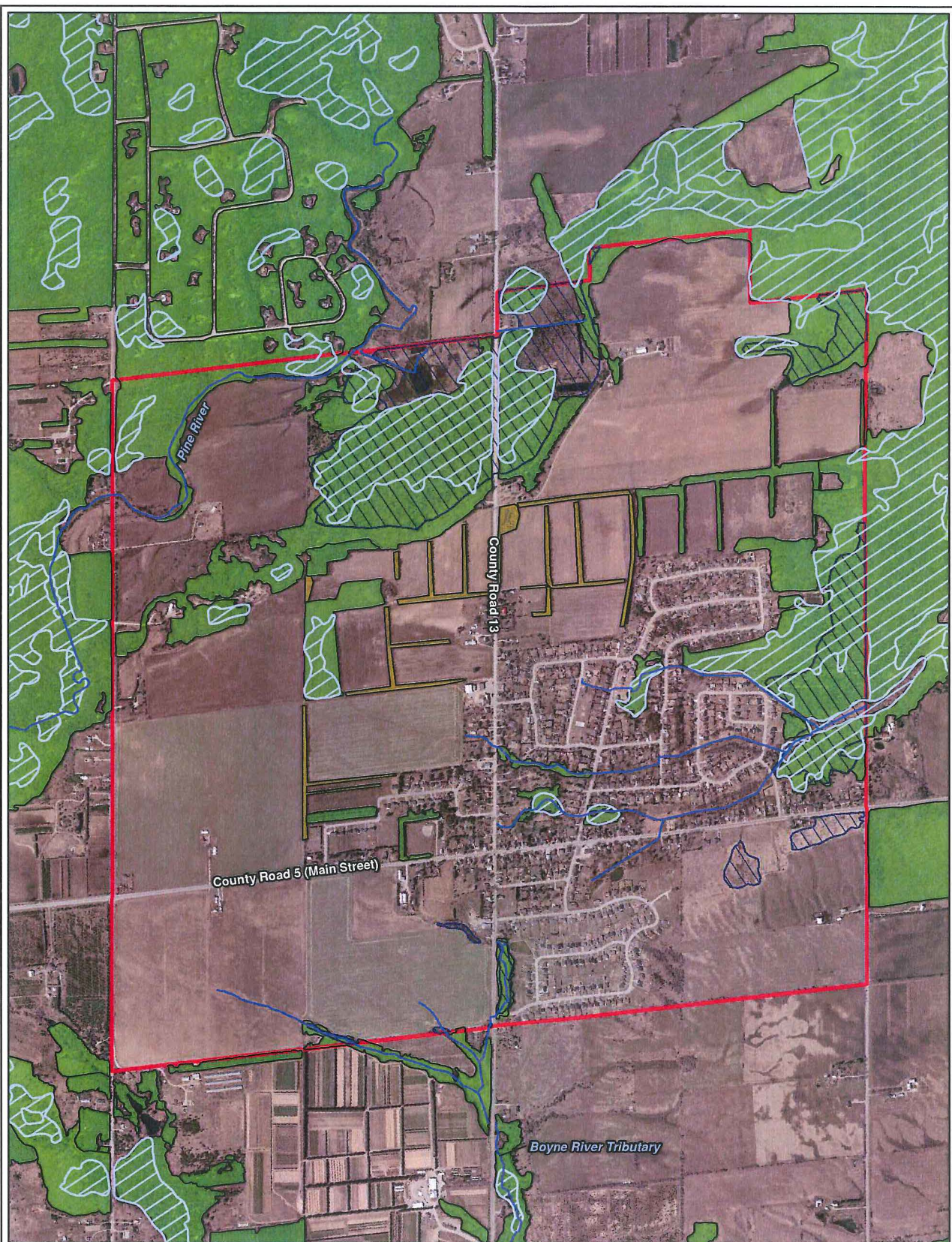
- A detailed hydrogeological investigation and water balance analysis will be required to confirm the pre-development pattern/volume of infiltration, impacts of development, and proposed mitigation measures to maintain and/or enhance the groundwater recharge function of the site;
- Detailed stormwater management plans, including outlet cooling design, landscaping plan and performance monitoring program, for proposed storm ponds. Where necessary, a fluvial geomorphological analysis should be completed for the pond outlets to ensure that any downstream erosion concerns are not exacerbated. A key component of this analysis will be to identify and map the locations of tile drain outlets and determine the most appropriate means of maintaining the pre-development contribution to wetland hydrology and stream baseflow;
- The Master Servicing Plan will provide some direction related to hydrogeology, hydrology and stormwater management, but additional detailed studies, as noted above, will be required prior to development being approved;
- In-season field inventories (vegetation, wildlife, fisheries, species-at-risk screening) within the proposed natural heritage system to confirm opportunities/constraints, identify potential impacts and mitigating measures, including buffer/setback requirements and habitat compensation/restoration;
- Naturalization plans for buffer areas, floodplains (formerly farmed) and non-active portions of park uses;
- An EIS will be required for future draft plan of subdivisions. The study should demonstrate how the development plans conform with the environmental protection and enhancement objectives for the Secondary Plan, as outlined in this document;
- Overall environmental monitoring program to measure the effectiveness of the proposed mitigation/enhancement strategy and identify contingency actions (Adaptive Management Plan) to address unforeseen impacts and poor performance;
- Erosion and siltation control plan in accordance with the most stringent standards applied by the NVCAA for protecting the Pine River and Boyne River systems; and,

- Future residents of the community should be informed of the significance/sensitivity of the natural environment and appropriate stewardship behaviour. This can be accomplished through a variety of ways including; interpretative signage at trail heads, homeowners manual, school programs, and trail/nature watch volunteers.

Servicing

Details related to the master servicing scheme for the community of Everett are provided under separate cover by Greenland International. The environmental characterization and natural heritage system mapping provided in this background report will provide a framework for the stormwater management plan. It will also inform the identification of alternative locations for a sewage treatment facility and the selection of a preferred site, as part of a separate class environmental assessment process. Key environmental considerations with respect to the proposed sewage treatment facility include the following:

- Protection of water quality, baseflow, temperature and natural channel processes within the receiving Pine River;
- Protection of the groundwater regime (quality, quantity, discharge regime/pattern);
- Minimizing or avoiding removal of wetland/forest habitat, including habitat of species-at-risk protected under the *Endangered Species Act*, to accommodate the treatment facility, sewer connections and related infrastructure;
- Compensation for habitat loss/alteration; and,
- Restoration/enhancement of adjacent natural areas including receiving wetlands/watercourse.



Legend

- Study Area
- Watercourse (NVCA & Plan B)
- Unevaluated Wetland (MNR)
- Wetland (NVCA)
- Woodlands (MNR)
- Hedgerows

PLAN B Natural Heritage

Landscape Ecology & Natural Heritage Planning

176 Fallowes Crescent
Waterdown, ON
L0R 2K2

Everett Secondary Plan

Existing Conditions

Project # 2012-50

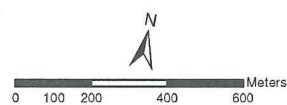
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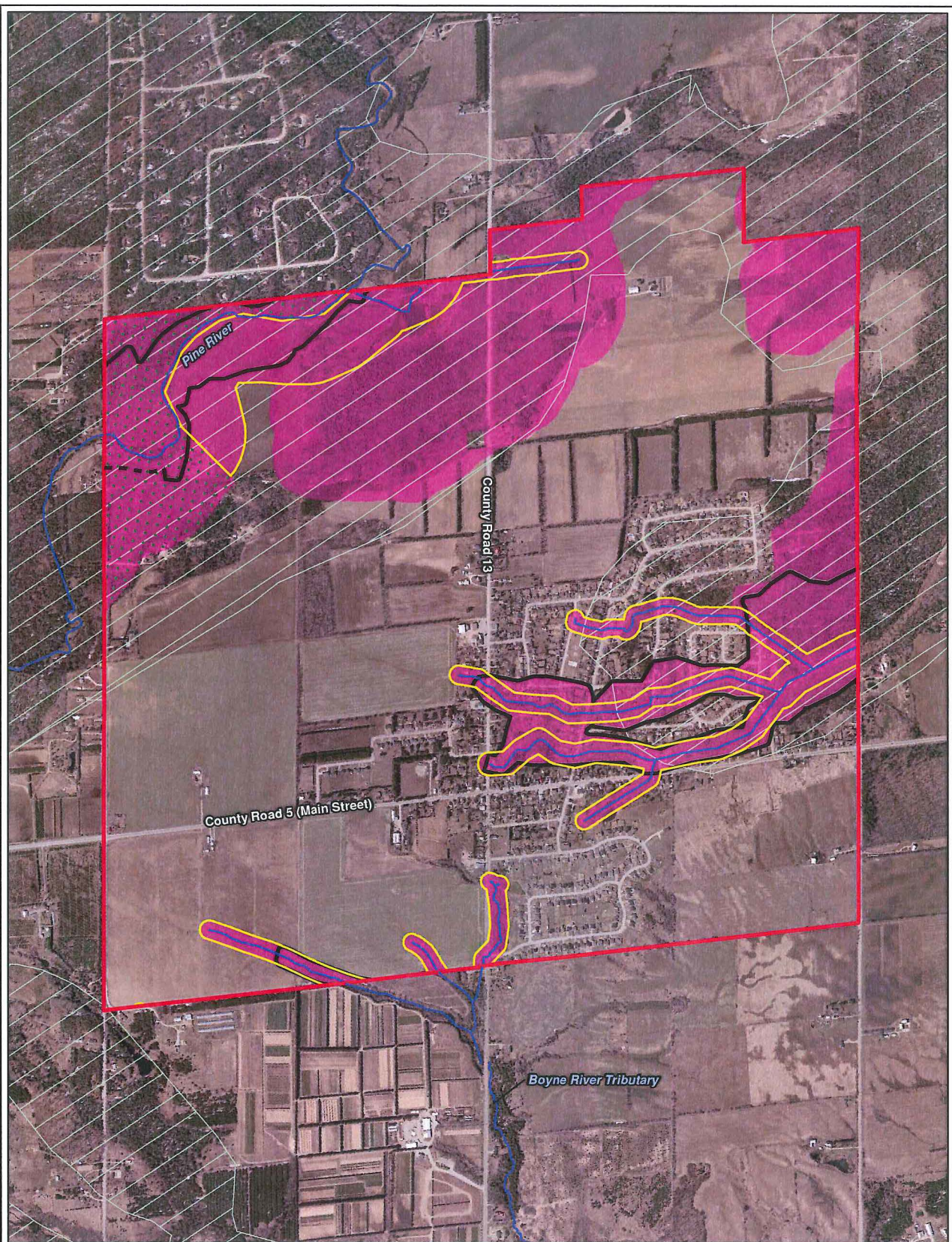
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Prepared By: JJ Reviewed By: BDB

Figure #

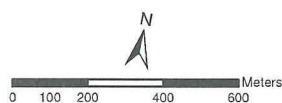
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Legend

- Study Area
- Watercourse (NVCA & Plan B)
- Meanderbelt (NVCA)
- Flood Lines (NVCA)
- Flood Lines (Township)
- Slope (NVCA)
- Regulated Area (NVCA)
- Greenland (Simcoe County)



PLAN B Natural Heritage

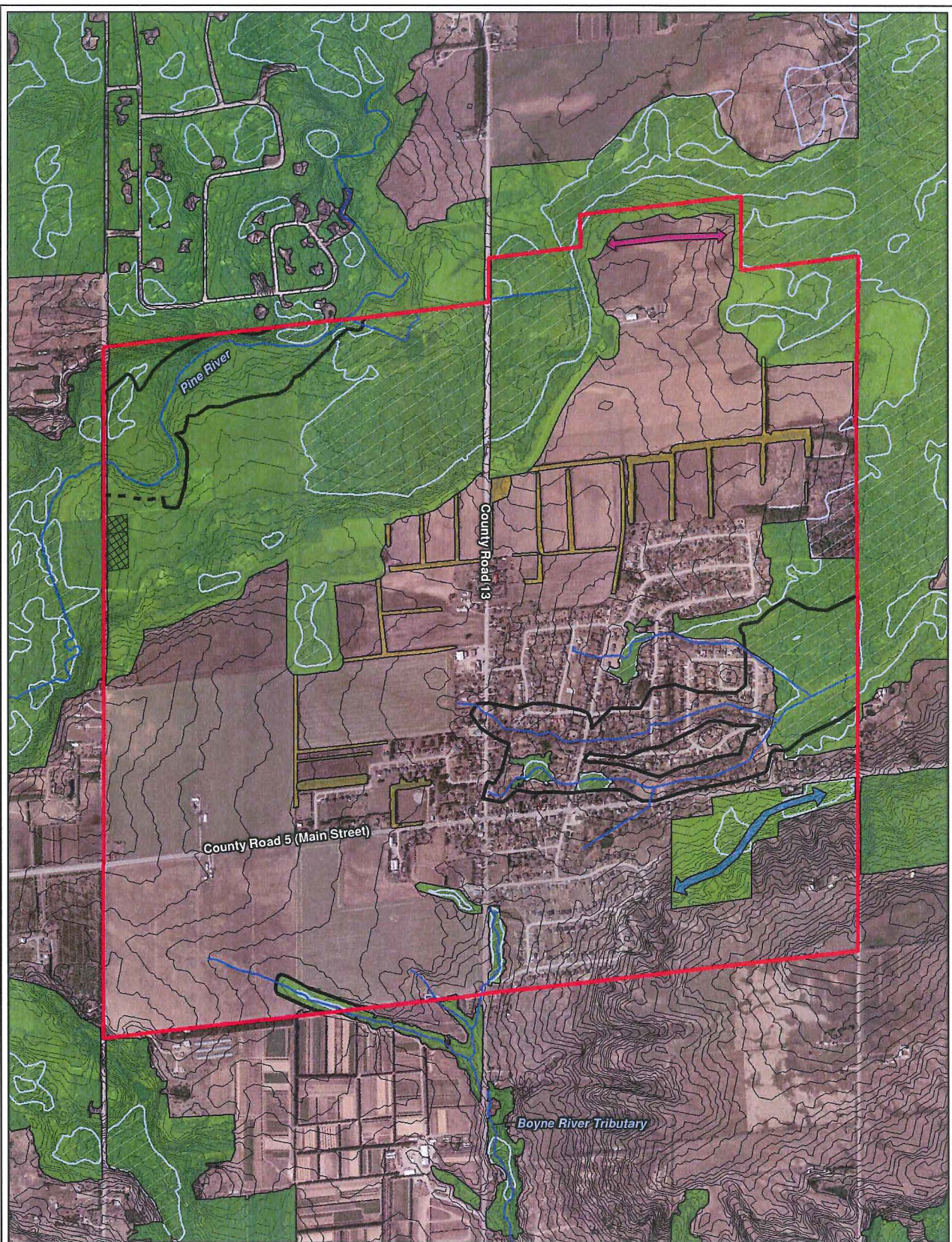
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Everett Secondary Plan

Environmental Policy Areas

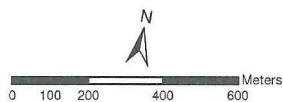
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Legend

- | | | | |
|--|--|--|--|
| | Study Area | | Sloping Topography with Ground Water Seepage, Wetlands and Erosion |
| | Watercourse (NVCA) | | Corridor Enhancement Opportunity |
| | Flood Lines (NVCA) | | Wetlands (NVCA and MNR) |
| | Flood Lines (Township) | | Prior Development Approval |
| | 1 m Contour Lines (Greenland Consulting Engineers) | | |
| | Natural Heritage System* (Natural Heritage Feature plus 30 m buffer) | | |
| | Hedgerow (Mature, Planted Conifers, retain where feasible) | | |

* Natural Heritage System is comprised of Simcoe County Core Greenlands, NVCA regulated wetlands, woodlands, floodplain/meander belt, linkages and enhancements to core natural areas and linkages



PLAN B Natural Heritage

Landscape Ecology & Natural Heritage Planning

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Everett Secondary Plan

Natural Heritage System

Project #	2012-50	Figure #
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