



June 12, 2022

ATTN. Leah Lefler, Environmental Planner
Planning and Building Services, Infrastructure, Development and Enterprise
City of Guelph
1 Carden Street
Guelph, ON N1H 3A1

T. 519-822-1260 ext. 2362

Sent via email: leah.lefler@guelph.ca

Re: Natural Heritage System (NHS) Peer Review and Updates, Rolling Hills, Guelph

Dear Leah,

As requested, Margot Ursic, Senior Planning Ecologist at Grounded Solutions Services Ltd. ("Grounded Solutions") with support from Rob Aitken, Senior Ecologist and GIS Analyst at Terrastory Environmental Consulting Inc., ("Terrastory") have:

1. Undertaken a peer review of the suggested refinements to the Natural Heritage System (NHS) in the northern portion of the Rolling Hills Study Area in the City of Guelph's south end provided by Natural Resources Solutions Inc. (NRSI) on behalf of several landowners in the area (referred to herein and shown on the Terrastory mapping provided as the "Peer Review Area" and as "Area 1 Study Area" in the mapping provided by NRSI), and
2. Provided recommendations for refinements and updates to the City's NHS for the Rolling Hills Study Area as a whole to be considered for Official Plan Amendment (OPA) 80 Shaping Guelph and the Municipal Comprehensive Review (MCR) which is underway.

The letter submitted to the City from NRSI on March 25, 2022 is appended as Attachment A to this letter for ease of reference (Attachment A).

The refined Ecological Land Classification (ELC) and NHS mapping (Figures 1 through 4) developed by Terrastory for the Rolling Hills Study Area in support of this memo in consultation with Grounded Solutions and the City, is appended as Attachment B.

As you are aware, the layers and associated metadata for the attached maps (Figures 1 through 4) have been provided to the City in digital (GIS) format for use in the City's OPA 80 mapping being undertaken as part of the ongoing MCR.

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Approach for This Review

The recommended NHS refinements for the Rolling Hills Study Area have been made based on consideration for:

- a. the refinements suggested by NRSI in the Peer Review Area
- b. a scoped field review of certain properties in the Peer Review Area in April and May 2022
- c. windshield surveys of all properties in the Rolling Hills Study Area in April and May 2022, noting that these surveys were limited to what could be viewed from the road
- d. a close re-examination of all current and relevant desktop information, including:
 - i. current aerial photography and older aerial photography going back to 2006 on Google Earth for reference where land use changes have been made in the past 15 or so years
 - ii. topographic and wetland mapping from the Grand River Conservation Authority (GRCA), and
 - iii. wetland mapping from the Northern Development, Mines, Natural Resources and Forestry (MNDMNRF, formerly the Ministry of Natural Resources and Forestry – MNRF)
- e. a careful review of the Cultural Woodland, Significant Woodland and Significant Wetland boundary delineation and mapping in the context of:
 - i. the City's current and in effect Official Plan policies
 - ii. supporting technical guidance provided in the Natural Heritage Reference Manual (NHRM) (OMNR 2010) and Oak Ridges Moraine Technical Paper 7 (Government of Ontario 2015), and
 - iii. consistency with the approach taken for mapping the various applicable NHS components in the recently refined and Council approved NHS in the adjacent Clair-Maltby Secondary Plan area.

Qualifications of the Consultants Undertaking This Review

Margot Ursic (now Principal of Grounded Solutions) and Rob Aitken (now a Senior Ecologist at Terrastory) both have extensive familiarity with the natural heritage features and areas in Rolling Hills, as well as a solid understanding of how the various components of the NHS in Rolling Hills have been identified and mapped based on their lead roles in the NHS review and refinements for the Clair Maltby Secondary Plan (CMSP) (while at Beacon Environmental) between 2016 and 2021, as outlined in more detail below.

Notably, the NHS work undertaken as part of the CMSP project included preliminary ecological assessments within the Rolling Hills Study Area, including field surveys where permission was granted, as well as generating preliminary NHS refinements in the Study Area in March 2018. However, Council decided to remove the Rolling Hills Study Area from the CMSP process in May 2018. Therefore, the first cut of the NHS refinements on these lands was not subject to the subsequent cycles of scrutiny, stakeholder and public consultation, and careful re-review as the remainder of the lands that remained within the CMSP.

Margot Ursic and Rob Aitken have also provided natural heritage support for numerous other projects for the City of Guelph over the past two decades including recent ELC updates and natural areas input to the City's first



Natural Asset Inventory (2019 – 2022) and prior support provided by Margot in the development and defense of the City's current NHS policies and mapping (OPA 42) before the Ontario Municipal Board (OMB) (2011 – 2014). Notably, all 14 appeals to the OMB were ultimately settled successfully through mediation and site-specific agreements.

Given their recent experience with the NHS updates and refinements in the CMSP, and with the application of NHS mapping and policies across the City, Margot Ursic and Rob Aitken were retained by the City in April 2022 to assist with the review of and refinements to the Proposed NHS put forward in the Rolling Hills Study Area through Shaping Guelph OPA 80 and the City's MCR.

Context for This Review

The following bullet points provide an overview of the recent NHS refinement work undertaken in the Rolling Hills Study Area, including the roles Margot Ursic and Rob Aitken have played in its development.

- At the outset of the CMSP in spring 2016, the Primary Study Area (PSA) for this project included the Rolling Hills Study Area. Consequently, desktop analyses, scoped field work and mapping in GIS were undertaken in relation to the NHS in the Rolling Hills Study Area over 2017 and 2018.
- Rob Aitken was the lead Field Ecologist and GIS Analyst for this work and under direction from Margot Ursic as the Natural Heritage Project Lead he completed:
 - A review of and refinements to the vegetation community mapping using the current standard, the Ecological Land Classification (ELC) system for southern Ontario (Lee *et al.*, 1998) based on:
 - a close re-examination of all relevant desktop information, including: current aerial photography and older aerial photography going back to 2006 on Google Earth for reference, topographic and wetland mapping from the GRCA, and wetland mapping from the MNDMNRF (formerly the MNRF)
 - more comprehensive vegetation assessments on properties where access was provided, and
 - scoped windshield surveys in the Rolling Hills Study Area
 - Targeted wildlife surveys on a combination of public lands, including roadsides, and private lands where access was provided (with support from other Ecologists at Beacon Environmental) including surveys for breeding amphibians, basking turtles, breeding birds, winter wildlife and road crossing / mortality, as well as incidental surveys for snakes, mammals, butterflies and dragonflies observed while undertaking other surveys.

IMPORTANT NOTE: The NRSI letter (dated March 25, 2022) regarding proposed refinements to the NHS in the Rolling Hills Peer Review Area (as shown in Attachments A and B) stated that: *"The NHS within the Rolling Hills neighbourhood was not previously ground-truthed by the City or either of their contractors; mapping provided by the City to-date has been undertaken through airphoto interpretation."* However, we would like to clarify that this is not correct. Natural heritage field work, as described above, was undertaken in the Rolling Hills Study Area in 2017 and 2018 as part of the CMSP study in five parcels where access was provided for vegetation and wildlife data collection. More limited field truthing was also undertaken in an additional two parcels where access was only provided for amphibian data collection.



- The first Draft of NHS refinements for the CMSP Study Area, which included the Rolling Hills Study Area, was developed in early 2018 and released to stakeholders and the community and presented to Council in spring 2018.
- In May 2018 Council decided to exclude the Rolling Hills Study Area from the CMSP, and to defer further engagement on and reviews of the proposed NHS refinements in this area to the anticipated MCR process, which is currently being implemented through OPA 80.
- As such, the Rolling Hills NHS continued to be included as part of the broader Secondary Study Area (Wood 2022a, Wood 2002b), but the Draft NHS refinements released in the spring of 2018 for the Rolling Hills Study Area were not considered further or formally adopted through OPA 79 for the CMSP, which was recently approved by Council on May 16, 2022.
- The first Draft of NHS refinements for the Rolling Hills Study Area, which was released in spring of 2018 as part of the CMSP process, was recently re-released to residents in Rolling Hills and the community-at-large for formal consideration as the “Proposed NHS Refinements” for the Rolling Hills Study Area through the current Official Plan Review process and OPA 80.

Methods for This Review: Site Visits

For this project, Margot Ursic and Rob Aitken undertook a scoped field-based peer review of vegetation community mapping for six properties in the Rolling Hills Study Area where access was provided, supplemented by roadside surveys and a desktop review of the available data (i.e., historical and current aerial photography, wetland and topographic mapping from the GRCA, and wetland mapping from the MNDMNRF).

Field visits were undertaken with various staff from NRSI (i.e., David Stephenson, Nyssa Hardie and Patrick Deacon) representing the landowners and with the City’s Environmental Planner, Leah Lefler. This work was used to inform refinements to the ELC mapping for the Rolling Hills Study Area, as well as the subsequent and related refinements to Significant Woodlands, Cultural Woodlands and Significant Wetlands.

Specific site visits and field review completed include:

- Roadside surveys along Megan Place on April 4, 2022
- Site visits to 2 Megan Place, 4 Megan Place, 6 Megan Place and 7 Megan Place on April 4, 2022
- Roadside surveys along Kilkenny Place on April 25, 2022
- Site visits to 287 Clair Road and 9 Kilkenny Place on April 25, 2022, and
- Roadside surveys along Victoria Road South, Serena Lane and Carlaw Place on May 30, 2022.

Natural heritage features and areas within the Rolling Hills Study Area on lands immediately adjacent to the properties to which access was provided and/or publicly accessible lands were also viewed in the field to the limited extent feasible from within lands for which access was provided.

Notably, this scoped field work focused on a review of the ELC community boundaries based on the nature and extent of the dominant vegetation cover in evidence at the time and did not include botanical surveys or detailed ELC field data collection. Furthermore, no wildlife habitat screening, assessment or surveys were undertaken as part of this process.



Methods: Mapping Review and Updates

Mapping updates and refinements to the ELC in Rolling Hills were completed based on:

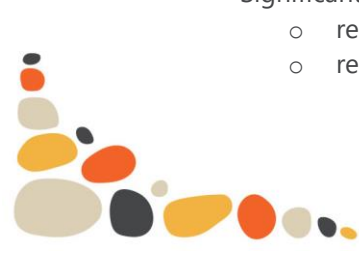
- Consideration of the proposed NRSI refinements, as per their letter submitted March 25, 2022 on behalf of the South Clair Road Neighborhood Association
- The findings of the desktop analysis and scoped field visits
- Ensuring consistent application of (a) the City's Official Plan criteria for designating Significant Natural Areas and Natural Areas and (b) current mapping methodologies related to the ELC and related NHS components as applied elsewhere in the City, including:
 - considering wooded ELC polygons contiguous unless they are separated by more than 20 m, as per the Official Plan definition of woodland, and
 - clipping contiguous narrow "fingers" from a broader wooded polygon in cases where the narrow linear treed area is (a) less than 40 m wide, and (b) more than three times longer than its average width (as per the Oak Ridges Moraine Technical Paper 7 and NHRM [OMNR 2010]).

Mapping updates and refinements to the NHS in Rolling Hills were undertaken in accordance with the established Official Plan policies and in a manner consistent with the approach taken in the neighbouring CMSP. Specifically:

- Mapping of Significant Woodlands by capturing all contiguous forest, woodland, plantation and / or swamp (i.e., FO-, CUP and SW- communities as per the ELC system) polygons of 1 hectare (ha) or greater.
 - Notably, where mapped cultural woodlands (CUW as per the ELC system) are contiguous with such areas they were incorporated into the Significant Woodland.
- Mapping of Cultural Woodlands (i.e., CUW as per the ELC system) isolated from other wooded areas (i.e., FO-, CUP and SW- communities as per the ELC system) where one or more contiguous CUW polygons (as per the ELC system) is / are at least 1 ha.
 - Notably, Cultural Woodlands identified through this process are to be mapped as Natural Area Overlays in the Official Plan (rather than confirmed and designated Natural Areas) and no minimum buffers are to be applied because the detailed data collection required to confirm whether or not they meet the established criteria for protection was not completed and remains to be done at the site-specific (i.e., Environmental Impact Study) stage.
- Mapping of Significant Wetlands by capturing all wetland polygons of at least 0.2 ha that were verified in the field and / or captured in GRCA and / or MNDMNRF wetland mapping.
- Application 10 m minimum buffers to Significant Woodlands and 30 m minimum buffers to Significant Wetlands, as per the Official Plan.

Mapping of the overall recommended Refined NHS was developed by synthesizing the following as per the applicable NHS components and structure in the City's Official Plan:

- Significant Natural Areas
 - refined Significant Woodlands with their minimum buffers
 - refined Significant Wetlands and their minimum buffers



- Significant Landform, unchanged from the Official Plan mapping as approved through OPA 42 before the Ontario Municipal Board (OMB) in 2014
- Significant Wildlife Habitat - Ecological Linkages, unchanged from the Official Plan mapping as approved through OPA 42 before the OMB in 2014
- Natural Areas (to be mapped as an Overlay as noted above)
 - Refined Cultural Woodlands (not contiguous with Significant Woodlands)

It is understood that, as a last step in the mapping process, the City will take the NHS mapping layers provided by Grounded Solutions and Terrastory, and will delineate and “clip out” the lands in the Rolling Hills Study Area with “existing development” to be consistent with the Official Plan and with how NHS mapping has been undertaken elsewhere in the City. “Existing development”, as per Official Plan policy 4.1.1.11, is understood to include municipal ROWs, residential driveways, residences and accessory structures, as well as impervious or maintained amenity areas such as tennis courts, pools and mown lawn.

Findings

The primary deliverables generated from this review are mapping refinements to the vegetation communities (using the ELC system) in the Rolling Hills Study Area as illustrated in Figure 1, and related refinements to the Significant Woodland, Cultural Woodland and Significant Wetland mapping as illustrated in Figures 2 and 3 respectively. The consolidated and recommended Refined NHS (prior to the application of “existing development cut-outs” as noted above, which are to be completed by the City) is illustrated in Figure 4.

These refinements were determined based on application of the methodologies described above.

The Refined NHS in the Rolling Hills Study Area, as per the attached Figure 4, includes several changes from the Proposed NHS (Draft OPA 80) for the Rolling Hills Study Area based on the review undertaken. The peer review and overall review of the NHS in the Rolling Hills Study Area undertaken for the City, as documented in this letter, has resulted in some “additions” and some “removals” of Significant Woodlands, Cultural Woodlands and Significant Wetlands, and their buffers as applicable.

When comparing the newly Refined NHS to the Draft Proposed NHS in the Rolling Hills Area there is an overall net reduction to the mapped NHS. However, when comparing the recommended Refined NHS to the approved NHS in the Official Plan in the Rolling Hills Study Area, there is an overall net gain to the mapped NHS.

Notably, these refinements do not pre-empt the opportunity for further refinements or supersede the need for feature boundary confirmation at the site-specific scale, which is typically undertaken as part of a complete application through an Environmental Impact Study (EIS) or as part of the work completed as part of an Environmental Assessment (EA).

Discussion of Proposed Significant Landform Refinements

Several refinements to Significant Landform in Rolling Hills were proposed by NRSI in their March 25, 2022 letter (as per Attachment A, Map 3 and Map 3b). However, following internal discussions and further discussions on site with the proponents’ consultants, it was agreed that it would be premature to consider Significant Landform (SL) refinements as part of this peer review for the following reasons.



- Reductions in SL were being proposed outside of an Environmental Impact Study or Environmental Assessment without any alternate areas at least of equal hectarage that also qualify as hummocky topography, making the proposal inconsistent with the applicable Official Plan policies.
- It was agreed that refinements to SL in accordance with the Official Plan policies (requiring a no net loss of area, among other things) are generally best made as part of the site-specific process when the local drainage and surface water-ground water connections and functions are better understood, and when all NHS components, including Ecological Linkages where appropriate, can be considered in an integrated manner in conjunction with the details of the development proposal.

Concluding Remarks and Next Steps

The Refined NHS for the Rolling Hills Study Area, as identified in the attached maps, is recommended for inclusion in the broader NHS being put forward through Shaping Guelph OPA 80 and the City's MCR.

As noted above, as a last step prior to finalizing the OPA 80 maps, the City will take the NHS mapping layers provided by Grounded Solutions and Terrastory for the Rolling Hills Study Area (as per Figures 2, 3 and 4 attached) and will delineate and "clip out" the lands with "existing development" (as described above). This approach is understood to be consistent with the Official Plan policy 4.1.1.11 and with how NHS mapping has been undertaken elsewhere in the City. It is further understood that this is intended to strike a balance between (a) allowing the continuation of existing uses following the implementation of OPA 80 and the related zoning by-law updates, and (b) preventing unauthorized encroachments into the NHS going forward.

This NHS mapping, if approved by Council, is to be formally adopted and integrated into the City's Official Plan Schedules.

Please do not hesitate to reach out with any questions or should you require any additional information.



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Planning Ecologist, Facilitator
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Wood. 2022b. Clair-Maltby Secondary Plan and Master Environmental Servicing Plan (CMSP / MESP) Comprehensive Environmental Impact Study (CEIS) Phase 3 Impact Assessment and Management Plan (Final Iteration). Prepared for the City of Guelph, May 2, 2002. Accessed at: <https://guelph.ca/wp-content/uploads/CMSP-MESP-CEIS-Phase-3.pdf>





March 25, 2022

#2771

Leah Lefler
City of Guelph
Infrastructure, Development and Enterprise, Planning and Building Services
1 Carden Street
Guelph, ON
N1H 3A1

Dear Ms. Lefler,

**RE: South Clair Road Neighbourhood Association
Natural Heritage System Assessment**

Natural Resource Solutions Inc. (NRSI) was retained by the landowners within the South Clair Road Neighbourhood Association to provide natural heritage advisement relating to the proposed Natural Heritage System (NHS) mapped by the City of Guelph as part of the latest Growth Management Strategy documents. This letter provides an overview of the planning background for the Rolling Hills neighbourhood within the City of Guelph, the methodology used to assess the properties within the study area ('Area 1'), and our interpretation of Natural Heritage System (NHS) features within the properties. The landowners from the following properties are the focus of this study (Map 1):

- 2 Megan Place
- 4 Megan Place
- 6 Megan Place
- 7 Megan Place
- 9 Kilkenny Road
- 287 Clair Road E
- 331 Clair Road E

Background

The City of Guelph is currently undergoing a Municipal Comprehensive Review (MCR) to update their Official Plan (OP) and ensure conformity with recent amendments to the Planning Act, the Clean Water Act, the Provincial Policy Statement (2020), and a Place to Grow: Growth Plan for the Greater Golden Horseshoe (2019). The City has provided a number of policy documents and studies as part of this review, including a Growth Management Strategy and Land Needs Assessment Report (City of Guelph 2021) which includes different growth scenarios within the City to meet the targets set out by the Province of Ontario into 2051. Updated mapping of the NHS was provided in this document which incorporated revisions of the properties within Rolling Hills based on the natural heritage studies that were completed by Wood & Beacon for the Clair-Maltby Secondary Plan (CMSP). Changes to land use

designations were also proposed within Rolling Hills that will allow for some properties to include higher density development. Proposed draft changes to the OP ('Draft Official Plan Amendment 80') were provided in February 2022 and the Schedules were updated to include the proposed NHS and land use changes.

The City is also undertaking community engagement as part of this process, which includes a virtual open house on March 22nd, 2022 and a statutory public meeting on March 30th, 2022 which will provide information and consider public comments regarding the OP review.

The NHS within the Rolling Hills neighbourhood was not previously ground-truthed by the City or either of their contractors; mapping provided by the City to-date has been undertaken through airphoto interpretation. The goal of this study is to provide updated mapping within the study area by ground-truthing the existing natural features within the study area where site access was obtained (i.e., within a property listed above) and provide our interpretation of the NHS based on updated mapping. Detailed methodology is described below. The City of Guelph has requested that City staff be invited to these properties to confirm the features that have been refined.

The City's NHS mapping is shown on Map 1. Within the study area, NHS features include Significant Natural Areas, Natural Areas Overlay, and Ecological Linkages. Table 1 outlines the NHS components within the study area.

Table 1. Natural Heritage System Components within the Study Area

Natural Heritage System Designation	Feature	Established Buffer
Significant Natural Areas	Provincially Significant Wetland	30m
	Significant Woodland	10m
	Ecological Linkages	n/a
	Significant Landform	n/a
Natural Areas Overlay	Candidate Significant Wildlife Habitat	n/a

The Natural Areas Overlay shown on 9 Kilkenny Place is associated with candidate Significant Wildlife Habitat (SWH) for Amphibian Breeding Habitat (Woodland), identified by Wood & Beacon (2021).

As per City of Guelph Official Plan policy 4.1.1.17, natural heritage features and areas are to be field verified and staked as part of an Environmental Impact Study or Environmental Assessment. Minor refinements do not require amendment to the Official Plan. As such, this exercise is meant to provide the landowners with a high-level understanding of the development potential within their property, and should development applications be considered, further study would be required to determine all development constraints following municipal, provincial, and federal policy/regulations.

Methodology

The term "study area" refers to all the properties in the northern section of the Rolling Hills neighbourhood, including the properties on Kilkenny Place and Megan Place ('Area 1'), as shown on Map 1.

On March 7th, 2022, a terrestrial and wetland biologist (Pat Deacon) and an ecohydrologist (Nyssa Hardie) from NRSI completed field surveys to map the existing natural features on the

subject properties. Vegetation communities within the study area were mapped and classified following the Ecological Land Classification (ELC) system for Southern Ontario (Lee et al. 1998). The boundaries of the features currently mapped by the City within the NHS were surveyed where any discrepancies were found using a SxBlue II GNSS GPS receiver capable of <30cm accuracy, on properties where site access was obtained. Wetland boundaries were refined but are subject to in-season confirmation with the Grand River Conservation Authority (GRCA). Where site access was not obtained, mapping was confirmed within the study area from the roadside or through airphoto interpretation using 2021 airphotos. Woodland features were also assessed using historical imagery to determine their approximate age and likely origin (i.e., recently planted, or successional features).

As per the Official Plan policies 4.1.3.8.9, the boundaries of Significant Landform are to be confirmed on a site-specific basis by a qualified professional. The landform boundary was determined by observing slope conditions observed in the field with desktop confirmation using the slope class mapping found within the CMSP Phase 3 Compressive Environmental Impact Study (CEIS) (Wood & Beacon 2021), and updated slope class analysis. The updated slope class was determined using Spring 2017 Ontario Digital Terrain Model (Lidar-Derived) (NDMNRF 2022), at 0.5m intervals. Criteria for identifying Significant Landform was described in the Guelph Natural Heritage Strategy – Phase 2: Terrestrial Inventory & Natural Heritage System Volume 1 Report (Dougan 2009). The refinements to Significant Landform within the Study Area were cross referenced with the criteria and follow the recommendations in the NHS Study document.

The habitat associated with the Natural Areas Overlay was also assessed in the field to determine suitability for candidate SWH.

There were no revisions made for areas south of the study area.

Results

The results of the vegetation community mapping are shown on Map 2. Significant Woodlands and Significant Wetlands have been identified based on ELC mapping. The revisions to the Significant Landform are shown on Map 3. A comparison of the overall NHS interpretation, which incorporates established buffers, with the City’s NHS is shown on Map 4. Table 2 outlines the major Significant feature revisions that were made for each property within the study area.

Table 2. Natural Heritage System Revisions within Area 1

Property Address	Significant Feature Revision Summary
287 Clair Road E*	The dripline of the western edge of the plantation (CUP3-2) community was surveyed. The northern extension of this feature has been excluded from the Significant Woodland designation because it is narrow and isolated from other woodlands. Previous mapping showed a woodland feature to the west of this property, which was determined to be a cultural savannah (CUS1) through this exercise; the lack of surrounding woodlands leaves the portion of the plantation feature that extends to the north isolated from other woodlands. The woodland boundaries in the southern areas of the property were refined based on ground conditions and airphoto interpretation. Historical airphotos indicate that the majority of the trees, outside of the deciduous woodland (FOD4) community, were planted at least 20 years ago, likely for privacy and/or wind screening.

	The wetland boundaries were refined and surveyed. Upland/woodland areas have been identified between the wetland pockets on this property and 9 Kilkenny Place.
331 Clair Road E*	No changes.
1 Kilkenny Place	No changes.
2 Kilkenny Place	No changes.
4 Kilkenny Place	Significant Landform has been refined in the southeastern corner of the property, based on slope analysis (Map 3a).
5 Kilkenny Place	No changes.
6 Kilkenny Place	Significant Landform has been refined in the southeastern corner of the property, based on observations from the adjacent property and slope class analyses.
8 Kilkenny Place	No changes.
9 Kilkenny Place*	The wetland boundaries were refined and surveyed. Upland/woodland areas have been identified between the wetland pockets on this property and 287 Clair Road E. The small wetland feature to the north of the residence that was identified in the CMSP CEIS (Wood & Beacon 2021) was confirmed to be upland (a depression within the mowed lawn) that may experience brief spring flooding; wetland vegetation was not found here. This area would not be considered candidate SWH.
10 Kilkenny Place	The woodland and wetland boundaries were refined based on roadside observations and airphoto interpretation.
12 Kilkenny Place	The woodland and wetland boundaries were refined based on roadside observations and airphoto interpretation.
1 Megan Place	No changes.
2 Megan Place*	The plantation boundary was revised based on ground conditions and airphoto interpretation.
3 Megan Place	The cultural woodland (CUW1) has been excluded from the Significant Woodland designation because it is less than 1ha in size and is isolated from other woodlands.
4 Megan Place*	Woodland boundaries were surveyed and revised. The FOD5-2 community closest to Megan Place has been excluded from the Significant Woodland designation due to its small size and isolation from other woodlands.
5 Megan Place	Significant Landform has been refined in the southwestern corner of the property, based on observations from the adjacent property and slope analysis. The cultural woodland (CUW1) has been excluded from the Significant Woodland designation because it is less than 1ha in size and is isolated from other woodlands.
6 Megan Place*	Woodland boundaries were surveyed and revised. The deciduous forest (FOD3-1) community adjacent to Megan Place has been excluded from the Significant Woodland designation due to its small size and isolation from other woodlands. Wetland boundaries were revised. The Significant Landform boundary was confirmed to not require revisions based on slope analysis and ground conditions (Map 3a).
7 Megan Place*	The woodland boundaries have been revised based on ground conditions and airphoto interpretation. Significant Landform boundaries were refined based on field conditions and slope class analyses (Map 3a).
8 Megan Place	The woodland boundaries have been revised based on airphoto interpretation and roadside assessment. The cultural woodland (CUW1) has been excluded from the Significant Woodland designation because it is less than 1ha and is dominated by invasive species. The Significant Landform boundary was confirmed to not require revisions based on slope analysis and ground conditions (Map 3a).

*Property access obtained

It is understood that further study is required, as outlined in the City's Official Plan, to determine full constraints on the properties should development applications be considered. This may include, but is not limited to, wetland boundary confirmation with GRCA, seasonal field work (vegetation surveys breeding birds, amphibian breeding, etc.), and applicable engineering studies (water balance analysis, geotechnical studies, etc.). However, the assessment completed as part of this exercise is useful to provide the landowners with a high-level understanding of development potential within their lands. Where refinements to natural heritage features have been shown, additional development opportunities may be possible.

Should you have any questions or comments regarding this study, please do not hesitate to contact the undersigned.

Sincerely,
Natural Resource Solutions Inc.

A handwritten signature in cursive script that reads "Laura Hockley".

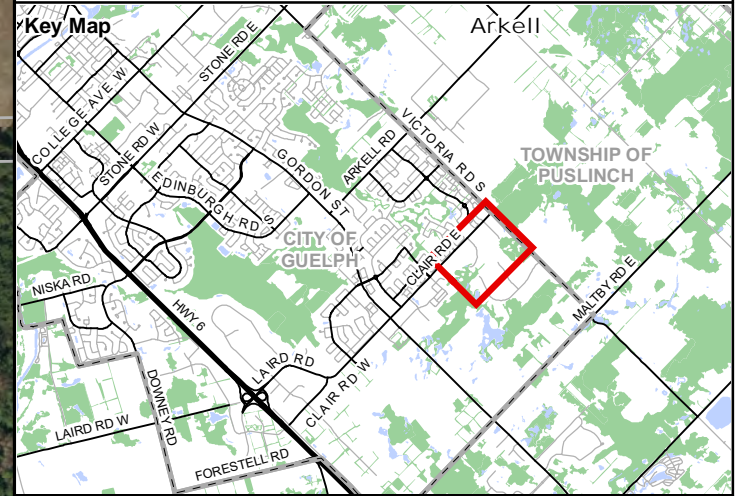
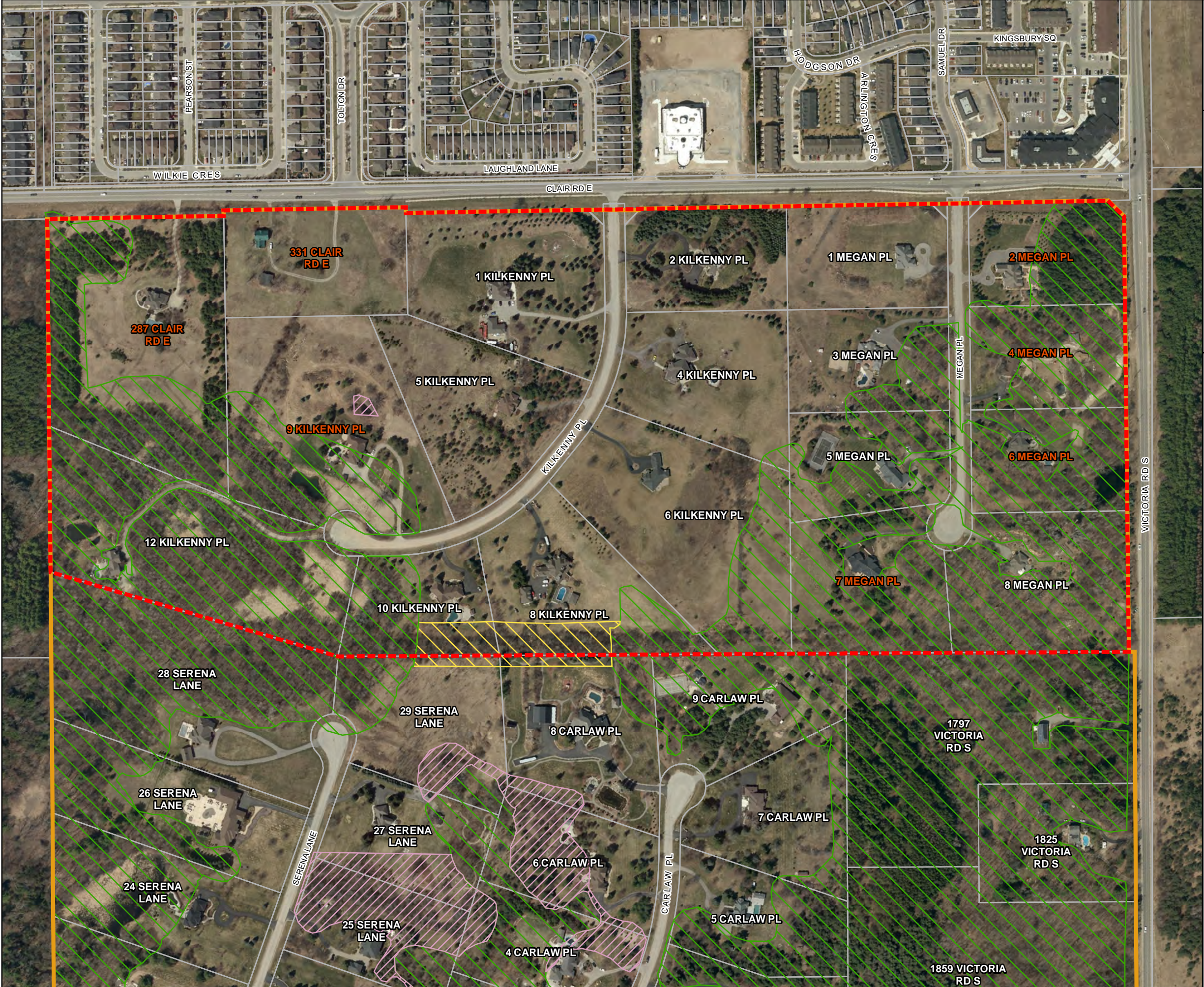
Laura Hockley, B.E.S.
Environmental Analyst

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MAPS

Rolling Hills - Area 1 Natural Heritage System



- Legend**
- Rolling Hills
 - Area 1 Study Area
 - Growth Management Strategy NHS (Feb 2021)**
 - Ecological Linkages
 - Natural Areas Overlay
 - Significant Natural Areas and Natural Areas

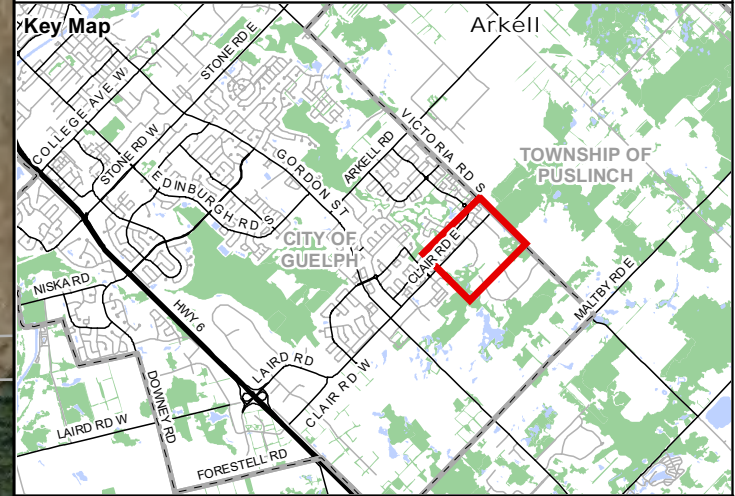
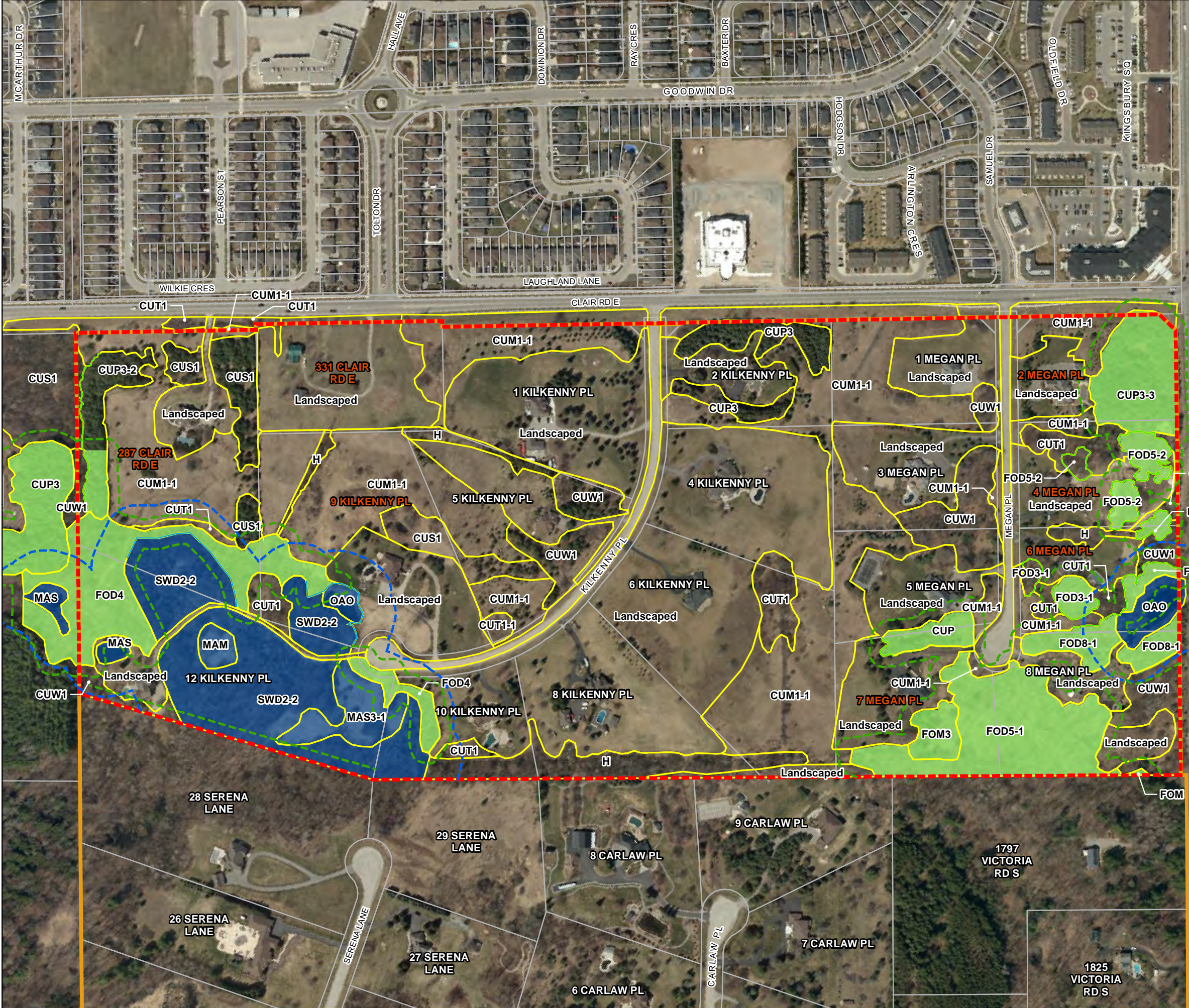


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Project: 2771 Date: March 14, 2022	NAD83 - UTM Zone 17 Size: 11x17" 1:3,500
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0 40 80 120 160 200 Metres

Rolling Hills - Area 1 Vegetation Communities

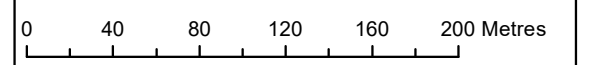


- Legend**
- Rolling Hills
 - Area 1 Study Area
 - Significant Woodland
 - Significant Wetland
 - Surveyed Dripline (NRSI March 7, 2022)
 - Surveyed Wetland (NRSI March 7, 2022)
 - Significant Woodland Buffer (10m)
 - Significant Wetland Buffer (30m)
 - Ecological Land Classification (ELC)
- | | |
|---|---|
| <ul style="list-style-type: none"> (CUM1-1) Dry - Moist Old Field Meadow Type (CUP) Plantation (CUP3) Coniferous Plantation (CUP3-2) White Pine Coniferous Plantation Type (CUP3-3) Scots Pine Coniferous Plantation Type (CUS1) Mineral Cultural Savannah Ecosite (CUT1) Mineral Cultural Thicket Ecosite (CUT1-1) Sumac Cultural Thicket Type (CUW1) Mineral Cultural Woodland Ecosite (FOD3-1) Dry - Fresh Poplar Deciduous Forest Type (FOD4) Dry - Fresh Deciduous Forest Ecosite | <ul style="list-style-type: none"> (FOD5-1) Dry - Fresh Sugar Maple Deciduous Forest Type (FOD5-2) Dry - Fresh Sugar Maple - Beech Deciduous Forest Type (FOD5-7) Dry - Fresh Sugar Maple - Black Cherry Deciduous Forest Type (FOD8-1) Fresh - Moist Poplar Deciduous Forest Type (FOM) Mixed Forest (FOM3) Dry - Fresh Hardwood - Hemlock Mixed Forest Ecosite (H) Hedgerow (MAM) Meadow Marsh (MAS) Shallow Marsh (MAS3-1) Cattail Organic Shallow Marsh Type (OAO) Open Aquatic (SWD2-2) Green Ash Mineral Deciduous Swamp Type |
|---|---|

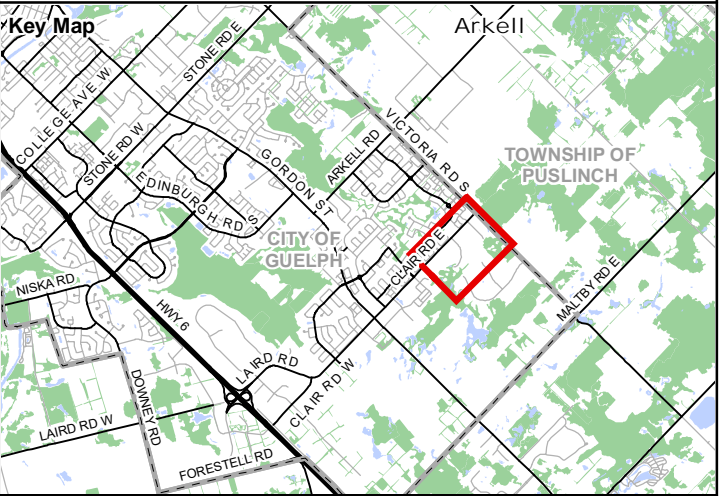
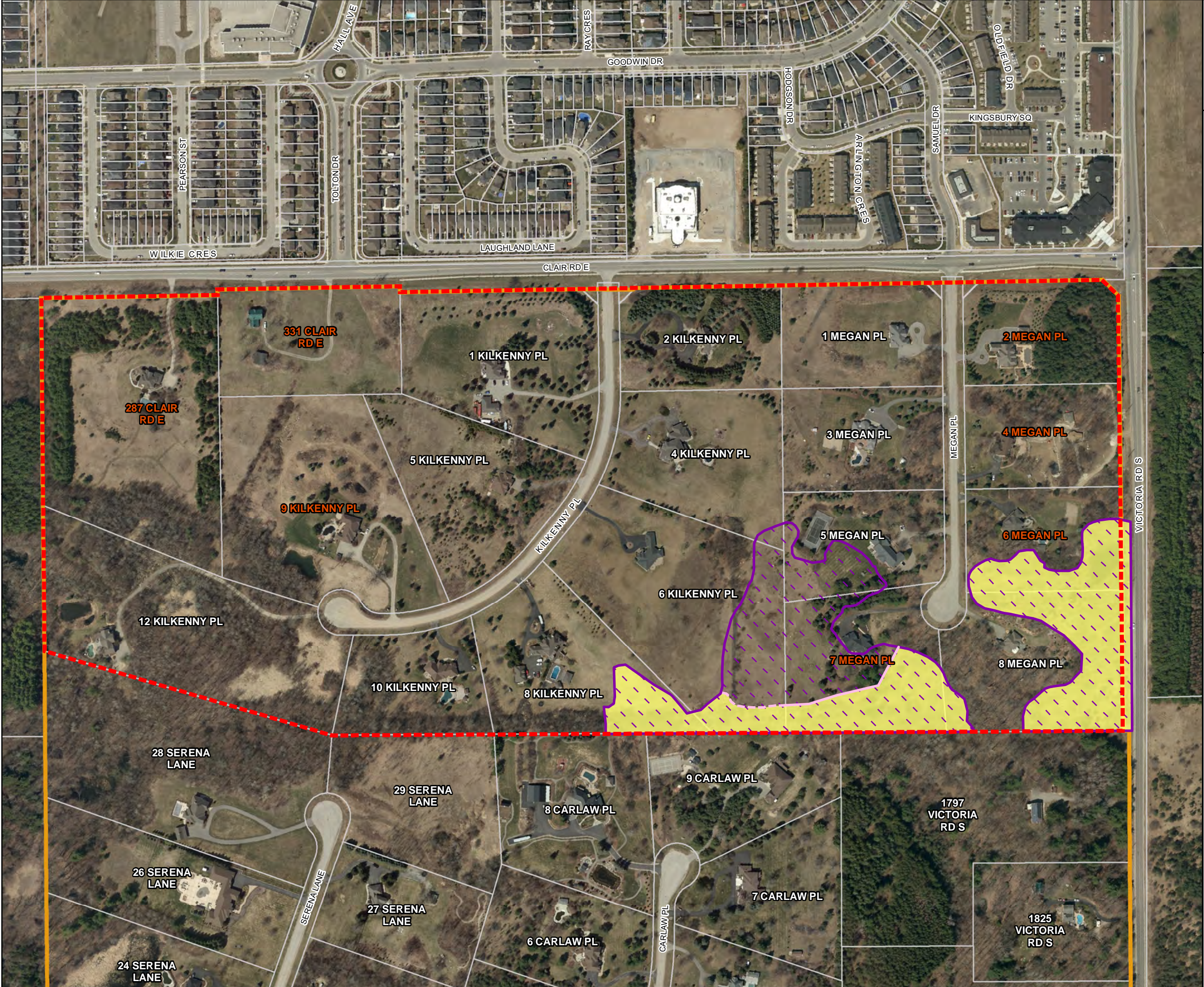


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Project 2771 Date: March 17, 2022	NAD83 - UTM Zone 17 Size: 11x17" 1:3,500
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Rolling Hills - Area 1 Significant Landform



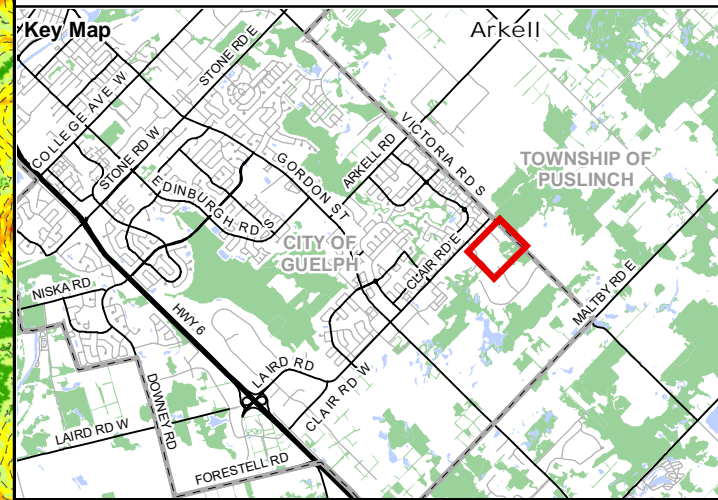
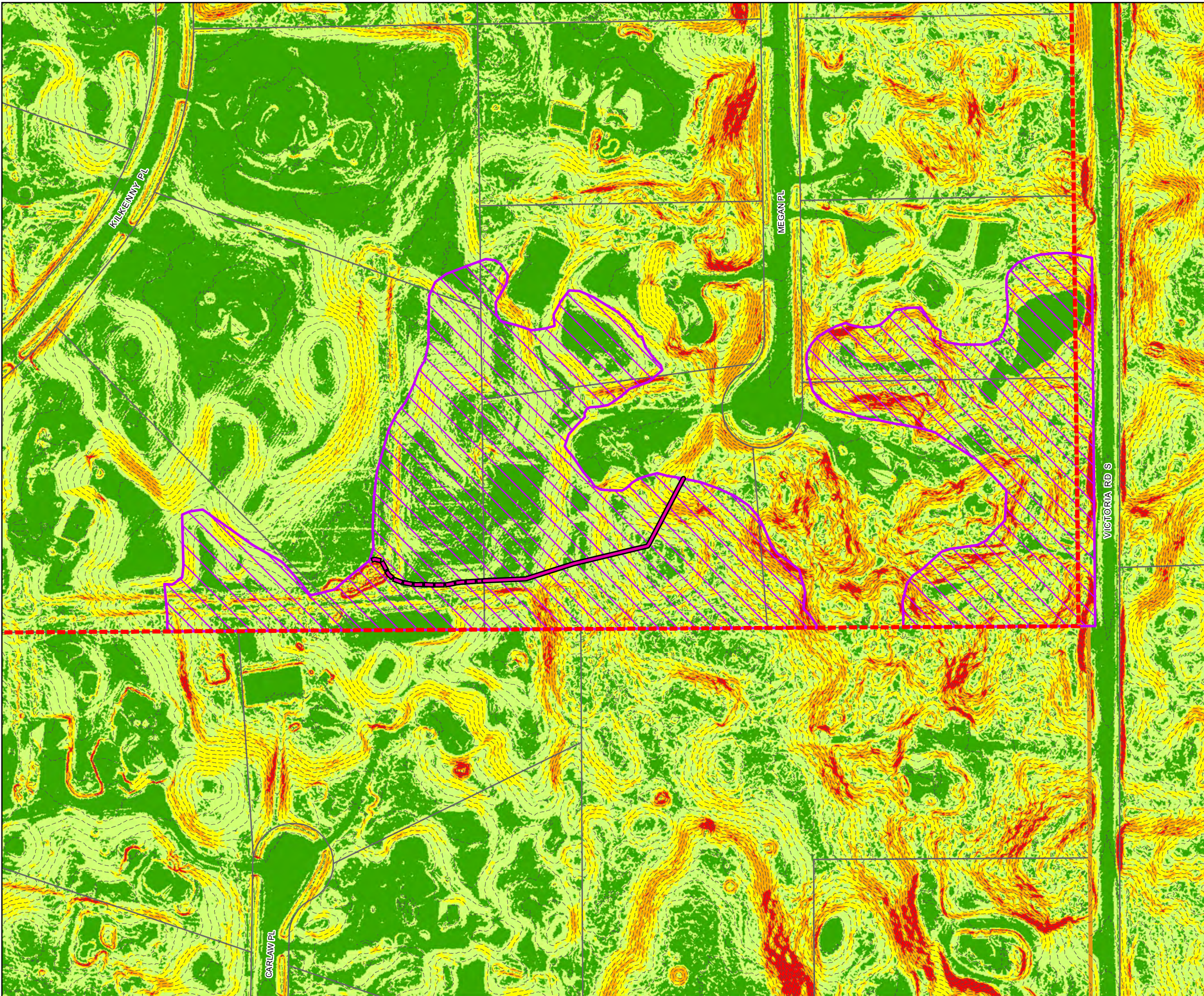
- Legend**
- Rolling Hills
 - Area 1 Study Area
 - Significant Landform (OPA 42, 2010)
 - Surveyed Landform Boundary
 - Approximate Landform Boundary
 - Refined Landform



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Project: 2771 Date: March 14, 2022	NAD83 - UTM Zone 17 Size: 11x17" 1:3,500	

Rolling Hills - Area 1 Significant Landform



Legend

- Rolling Hills
- Area 1 Study Area
- Significant Landform (OPA 42, 2010)
- Surveyed Landform Boundary
- Approximate Landform Boundary
- 0.5m Contour (MNRF Spring 2017)

Elevation Slope Class (%) (MNRF Spring 2017)

- <5.0
- 5-10
- 10-15
- 15-20
- >20

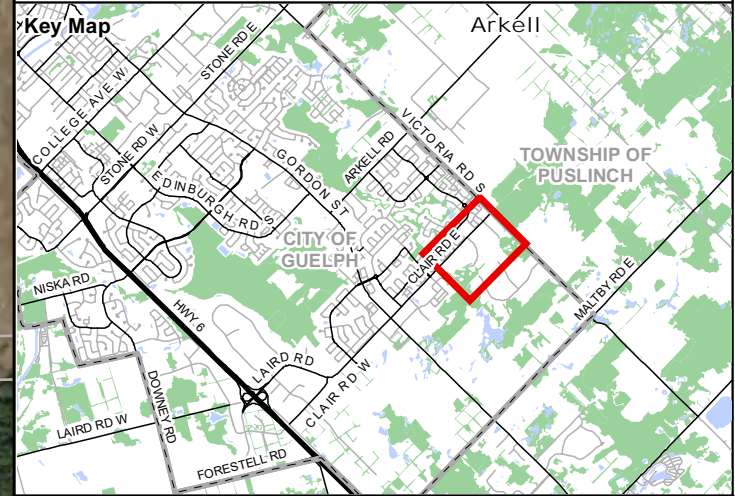
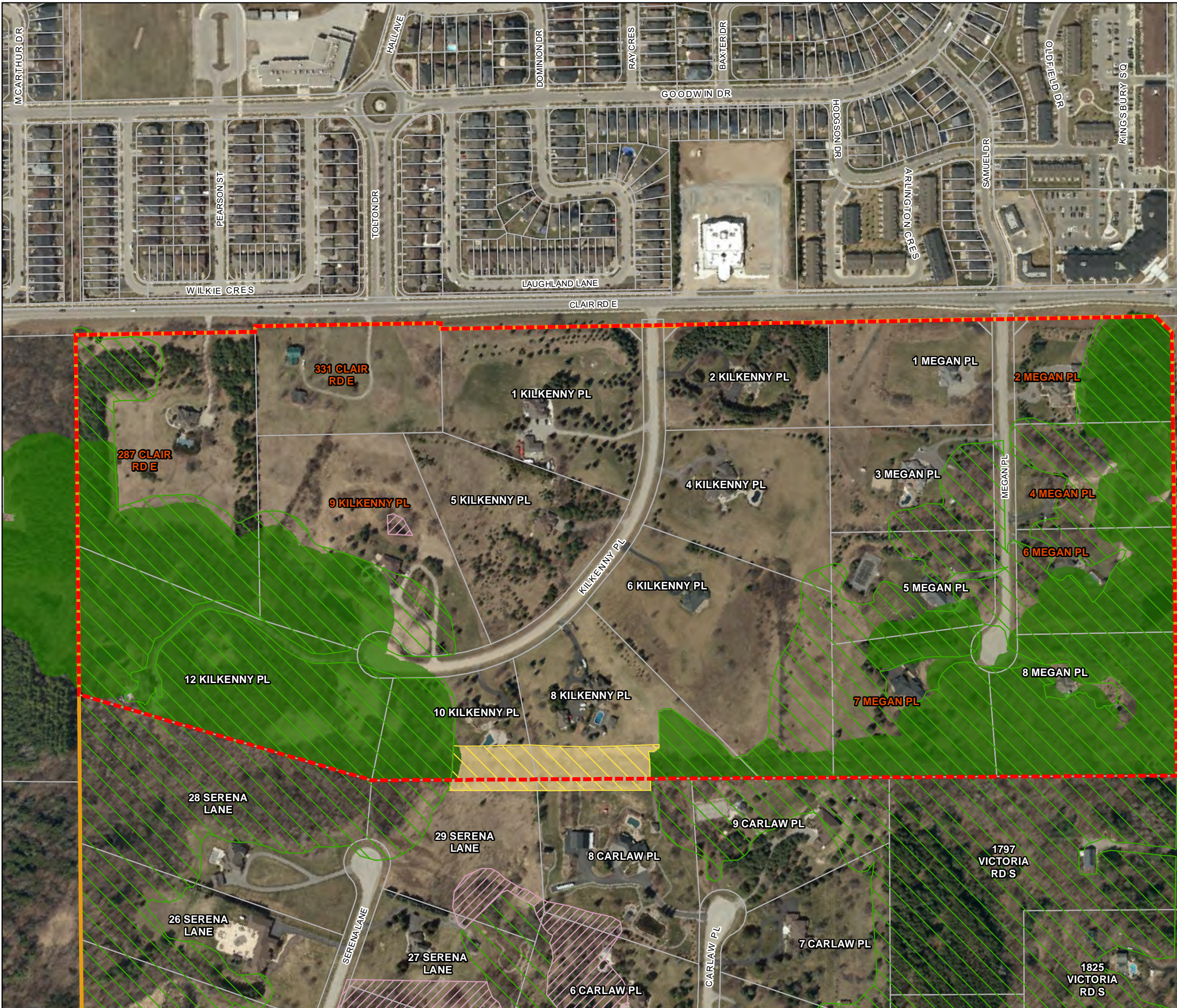
NATURAL RESOURCE SOLUTIONS INC.
Aquatic, Terrestrial and Wetland Biologists

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Project: 2771 Date: March 17, 2022	NAD83 - UTM Zone 17 Size: 11x17" 1:2,000
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0 40 80 120 Metres

Rolling Hills - Area 1 Natural Heritage System Comparison

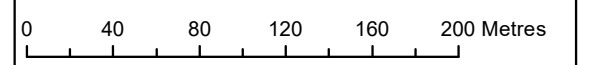


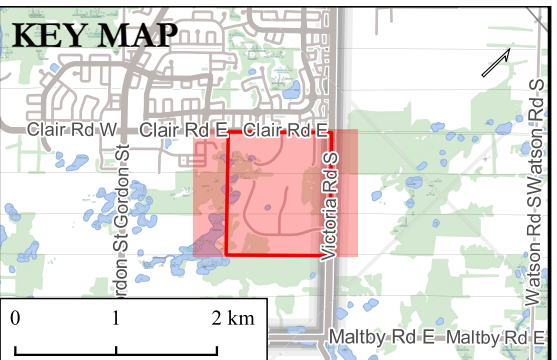
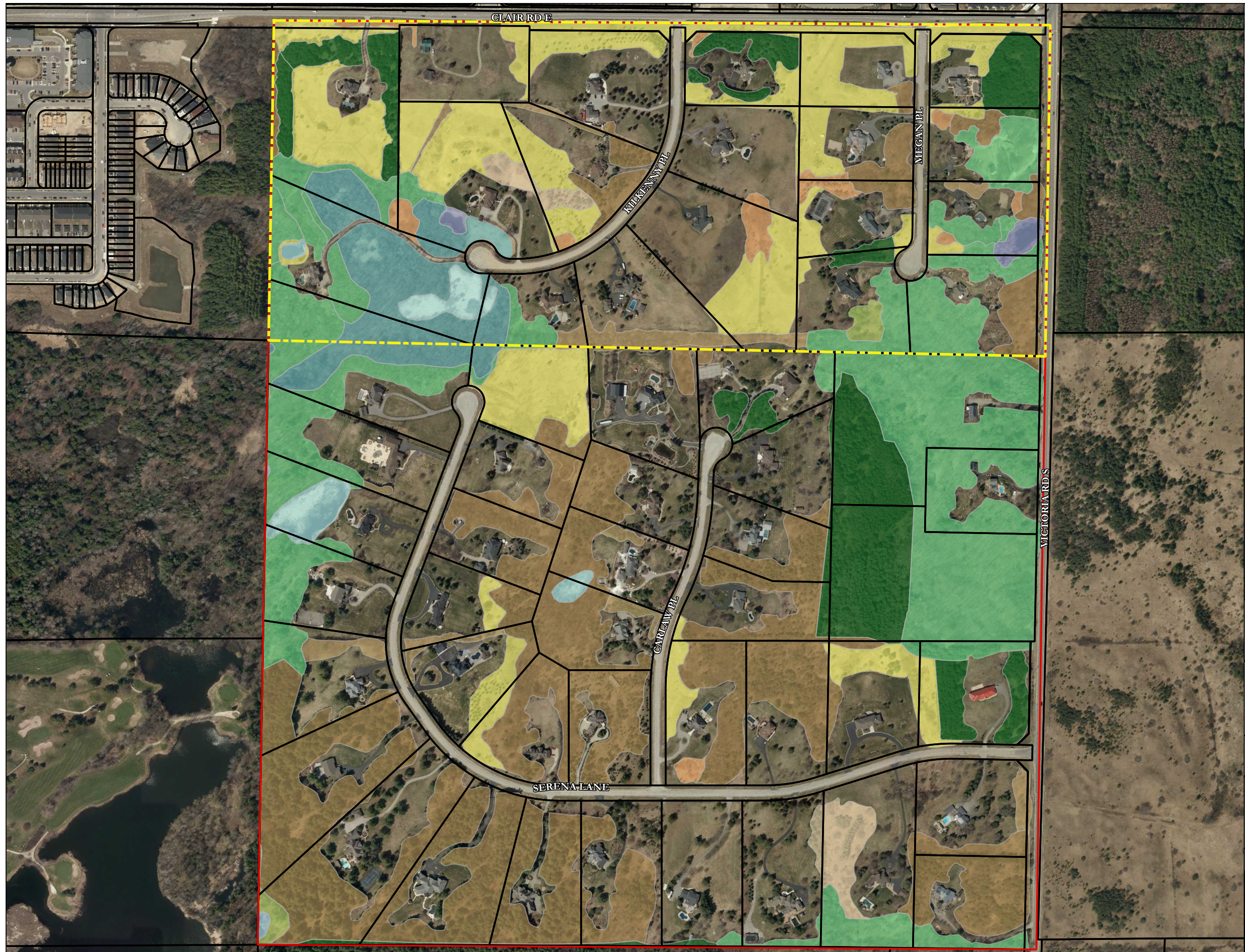
- Legend**
- Rolling Hills
 - Area 1 Study Area
 - Natural Heritage System (NRSI 2022)**
 - Significant Natural Areas
 - Ecological Linkages
 - Growth Management Strategy NHS (Feb 2021)**
 - Ecological Linkages
 - Natural Areas Overlay
 - Significant Natural Areas and Natural Areas



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Project: 2771 Date: March 15, 2022	NAD83 - UTM Zone 17 Size: 11x17" 1:3,500
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Legend

- Rolling Hills Study Area
- Parcel Fabric
- Peer Review Area

Ecological Land Classification Mapping

- Mixed Forest (FOM)
- Deciduous Forest (FOD)
- Cultural Plantation (CUP)
- Cultural Thicket (CUT)
- Cultural Meadow (CUM)
- Cultural Savannah (CUS)
- Cultural Woodland (CUW)
- Hedgerow (H)
- Deciduous Swamp (SWD)
- Meadow Marsh (MAM)
- Shallow Marsh (MAS)
- Open Aquatic (OAO)

GENERAL NOTES:
 -Features depicted herein should not be used in place of a professional survey.
 -Numeric scale is for a 11x17 inch print.

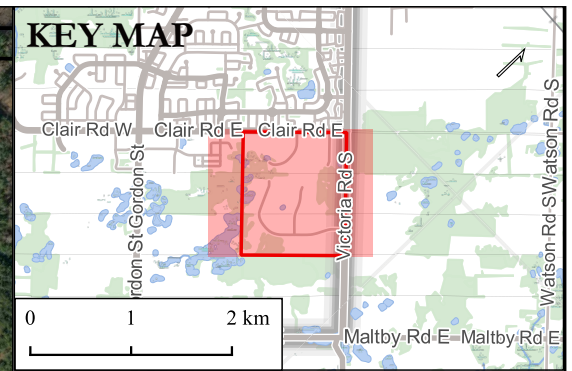
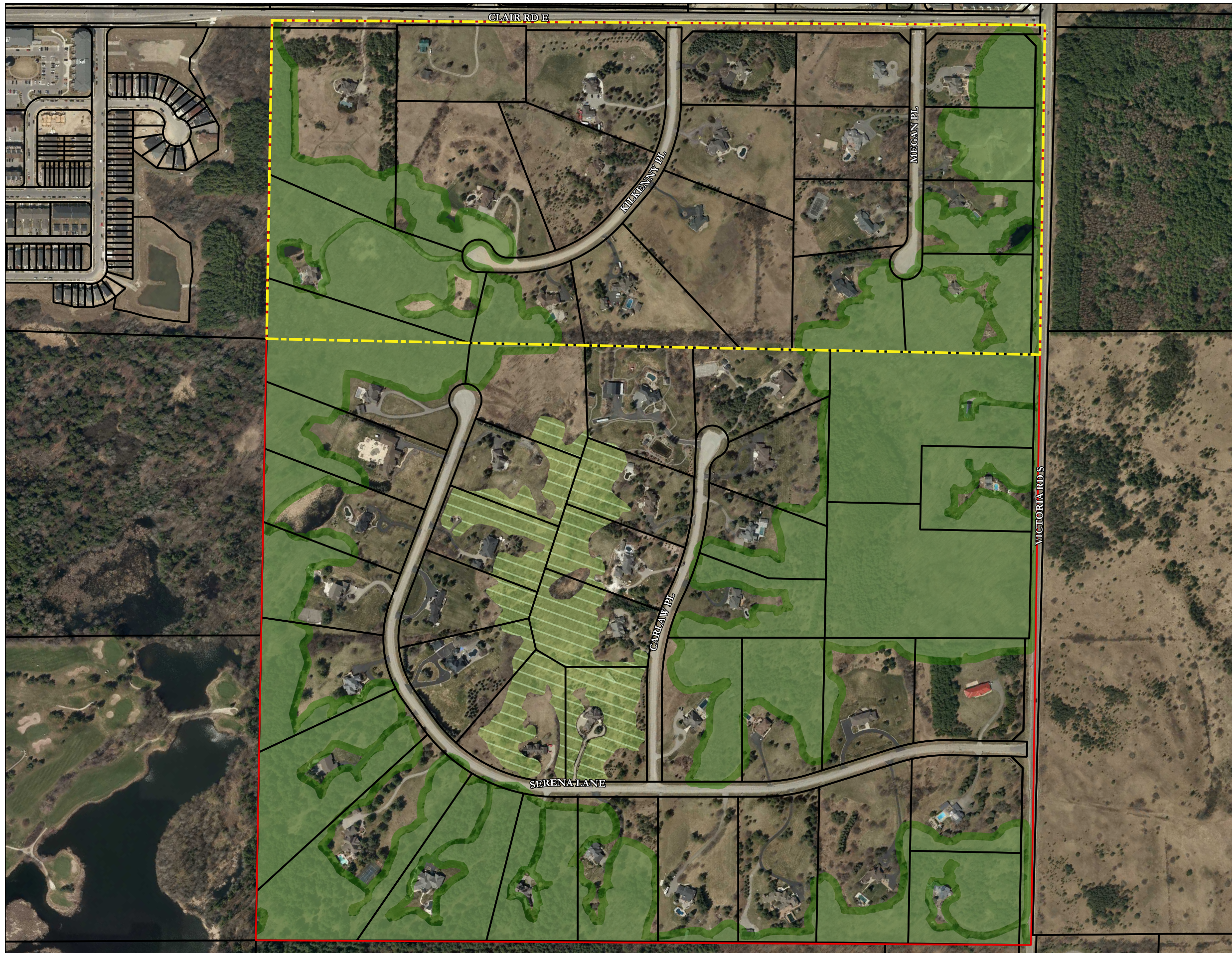
TERRASTORY
 environmental consulting inc.
 info@terrastoryenviro.com 905.745.5398

1:5,000 0 50 100 150 m

Location:
 Rolling Hills Community,
 City of Guelph

Project No.: 22011
Date: 2022-06-03
By: RA
Orthophotograph Date:
 City of Guelph, 2021.

Figure 1:
 Refined ELC
 Mapping



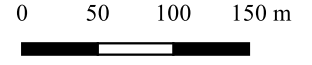
Legend

- Rolling Hills Study Area
- Parcel Fabric
- Peer Review Area
- Significant Woodland
- Cultural Woodland (Overlay)
- Significant Woodlands 10 m Buffer

GENERAL NOTES:
 -Features depicted herein should not be used in place of a professional survey.
 -Numeric scale is for a 11x17 inch print.

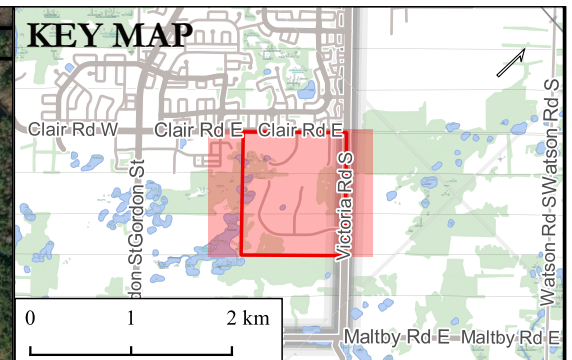
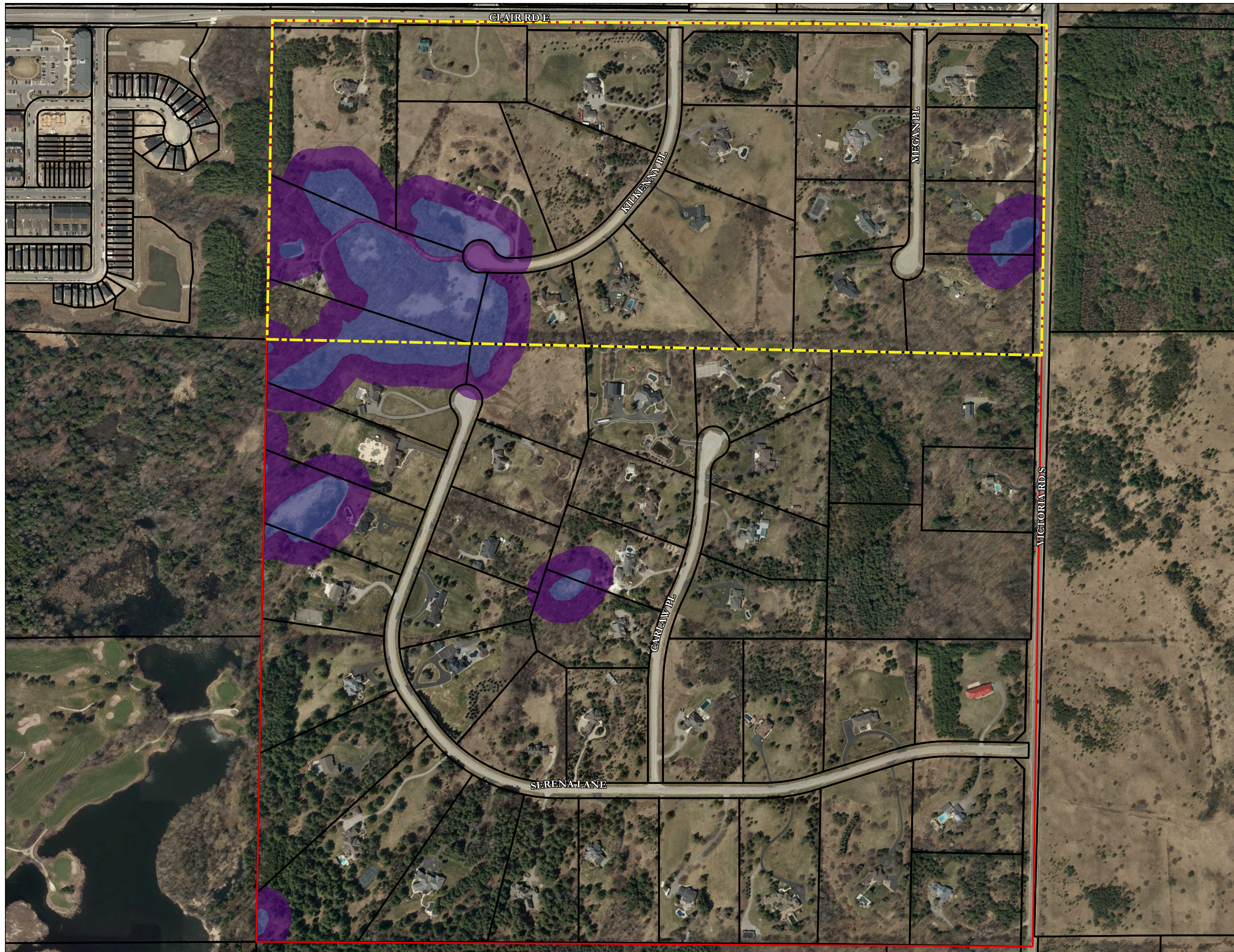


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1:5,000 

Location:
 Rolling Hills Community,
 City of Guelph

Project No.: 22011	Figure 2: Refined Woodlands and Buffers
Date: 2022-06-09	
By: RA	
Orthophotograph Date: City of Guelph, 2021.	



Legend

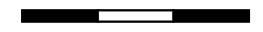
- Rolling Hills Study Area
- Parcel Fabric
- Peer Review Area
- Significant Wetlands
- Significant Wetland 30 m Buffer

GENERAL NOTES:
 -Features depicted herein should not be used in place of a professional survey.
 -Numeric scale is for a 11x17 inch print.



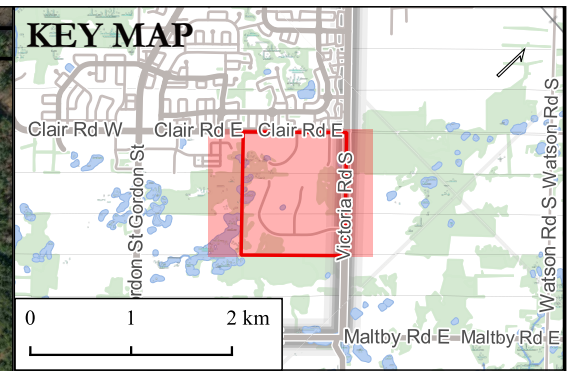
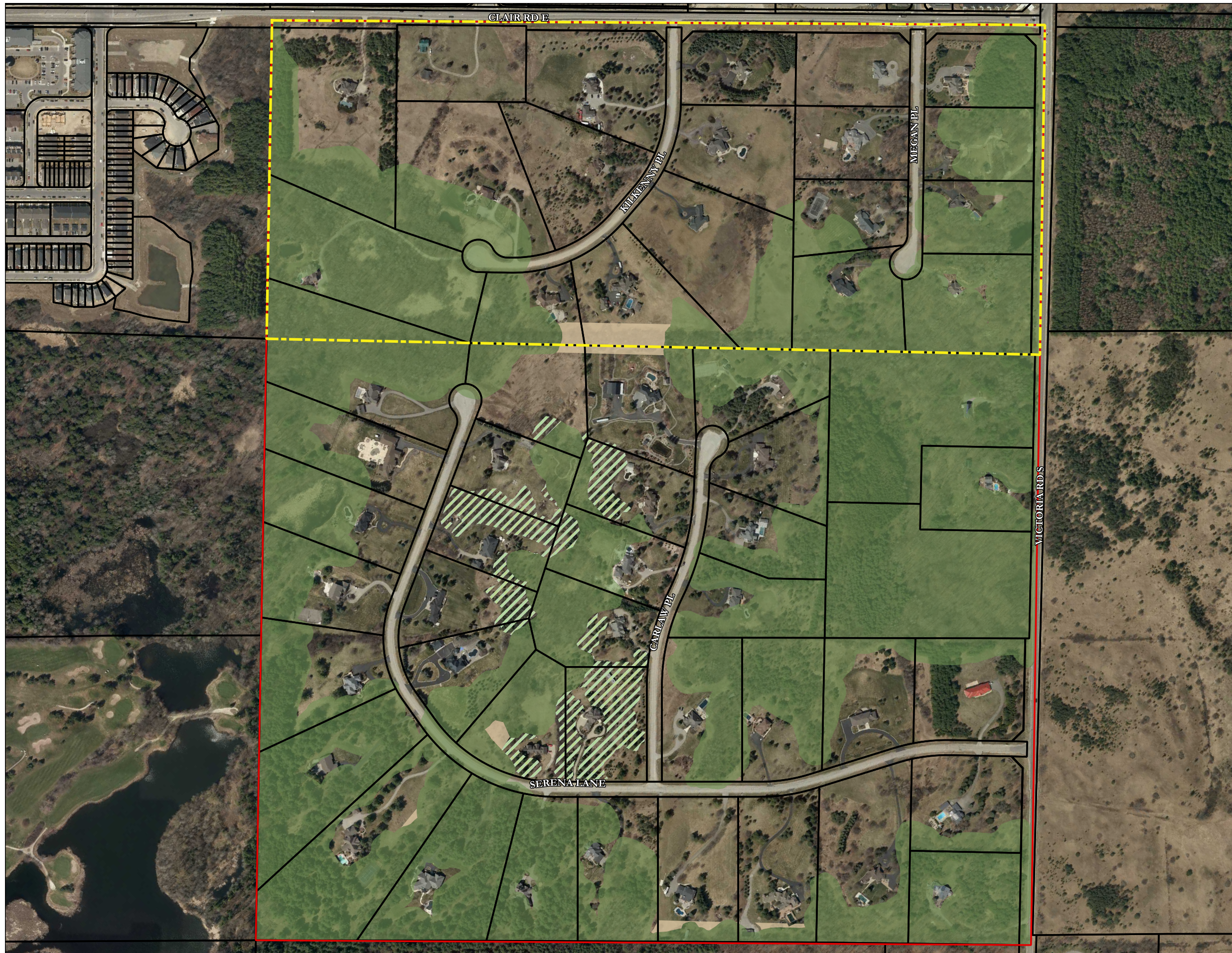
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 info@terrastoryenviro.com 905.745.5398

1:5,000 0 50 100 150 m



Location:
 Rolling Hills Community,
 City of Guelph

Project No.: 22011	Figure 3: Refined Wetlands and Buffers
Date: 2022-06-09	
By: RA	
Orthophotograph Date: City of Guelph, 2021.	



Legend

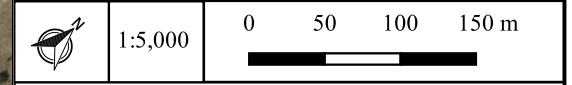
- Rolling Hills Study Area
- Parcel Fabric
- Peer Review Area

Refined Natural Heritage System

- Significant Natural Areas
- Natural Areas Overlay
- Ecological Linkages

GENERAL NOTES:
 -Features depicted herein should not be used in place of a professional survey.
 -Numeric scale is for a 11x17 inch print.

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Location:
 Rolling Hills Community,
 City of Guelph

Project No.: 22011	Figure 4: Refined Natural Heritage System
Date: 2022-06-09	
By: RA	
Orthophotograph Date: City of Guelph, 2021.	