

3.0 Description of the Existing Environment

3.1 Physical and Natural Features

3.1.1 Topography and Drainage

A review of contour mapping indicates that the area slopes gently to the east / southeast towards Little Waasis Stream, which is located approximately 3.3 kilometres east of the Project (NRCAN, 2016). Figure 4 shows the topography of the Project area.

Local topography was observed to be relatively flat throughout the Project area. Slight sloping towards the west and eastern portions of PID 75516740 and slight sloping south along the southern boundary of PID 75254433 were observed during the site visits completed by GEMTEC Limited (GEMTEC) in June and July, 2016.

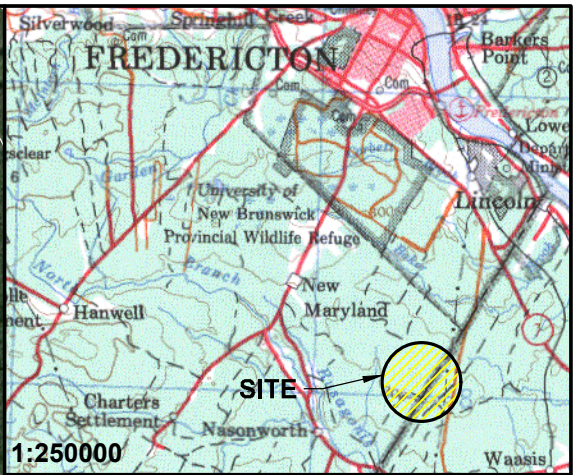
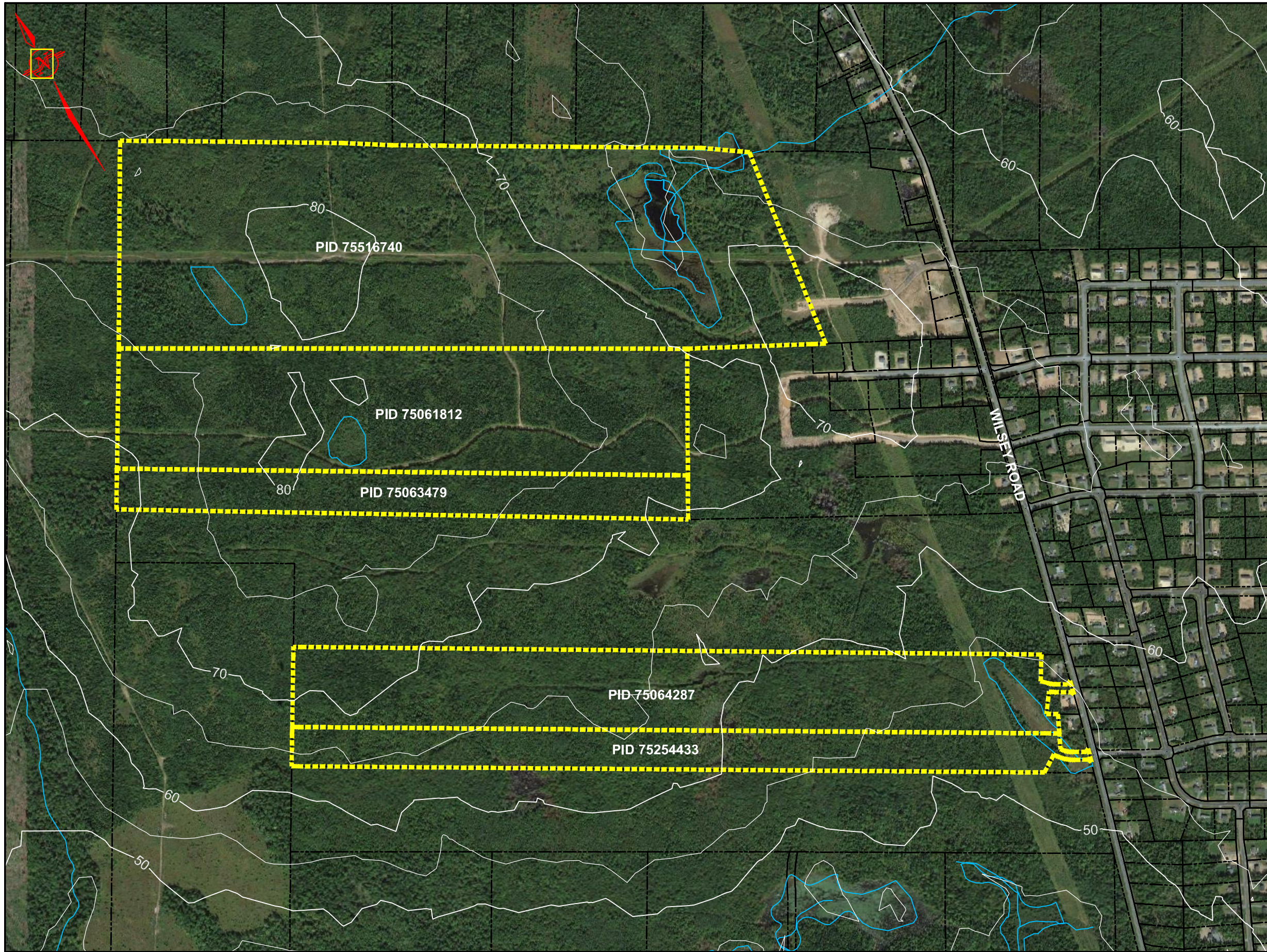
Regionally, the study area is located within the Rusagonis Hills, which is a subdivision of the New Brunswick Lowlands. The Rusagonis Hills form a hilly upland area along the western edge of the New Brunswick Lowlands to the south of the Saint John River. The streams in this area show dendritic drainage patterns in the north and deranged drainage patterns in the south. Drainage in the Rusagonis Hills is good with the exception of a few poorly drained broad depressions north of Oromocto Lake. Within the proposed development area, the ground surface varies from 80 to 60 metres in elevation above mean sea level.

3.1.2 Site Geology

Surficial mapping indicates that the Project area is covered with a discontinuous veneer (less than 0.5 metres thick) of Late Wisconsinan age morainal sediments. The morainal sediments consist of lodgement till, ablation till, and associated sand and gravel deposited directly by Late Wisconsinan ice or with minor reworking by water. This is overlain by a undifferentiated veneer (less than 0.5 meters thick) of Laucustrine and marine sediments consisting of sand, some gravel and silt, rare clay and a patchy thin veneer of organic sediments (Rampton, 1984).

Bedrock mapping indicates that the area is underlain by Late Carboniferous sedimentary rocks consisting of medium to fine-grained, terrestrial, clastic rock of the Pictou Group (Minto Formation) (Smith, E.A. 2005).

The surficial and bedrock geology described in The NBDELG Online Well Log System (OWLS; NBDELG, 2016) shows that the bedrock in the Project area is predominately shale and / or sandstone overlain by till, overburden, sand and gravel and / or clay and sand. Well logs for a radial distance of 1 kilometre (km) from the center of the Project area are attached in Appendix D.



NOTES:

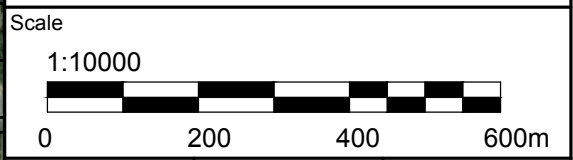
- 1) 2015 aerial photo from Google Earth.
- 2) Contours from GeoNB.

Drawn By	AGSD	Checked By	JH
Calculations By		Checked By	

Date: SEPT, 2016

Project: EIA REGISTRATION, WILSEY ROAD DEVELOPMENT, FREDERICTON, NB

Drawing: TOPOGRAPHY



File No.	Drawing	Revision No.
104790101	FIGURE 4	0



PID 75516740

PID 75061812

PID 75063479

PID 75064287

PID 75254433

WILSEY ROAD

3.1.3 Hydrogeology

The proposed development is situated within the lower reaches of the Rusagonis Stream drainage area (281 square kilometres(km²)), a sub-basin of the Oromocto River basin (2025 square kilometres), near the confluence of the Oromocto and Saint John Rivers.

Based on pumping tests completed for the neighbouring Harris and O’Leary Estates Subdivision (located across Wilsey Road) between 2008 and 2013, the transmissivity of the aquifer in the Project area ranges from 0.2 to 3.6 m²/day with storativity ranging from 4.1 x 10⁻⁵ to 1.5 x 10⁻⁴. Based on 44 well records within 1 km of the Project area from the OWLs, the estimated safe yield of individual wells ranges from 17 L/min to 827 L/min with an average of 196 L/min. These rates are sufficient to meet the average daily requirement as well as the peak water demand requirement.

3.1.4 Flood Risk

GeoNB flood risk mapping (GeoNB, 2016) was reviewed for the area. The Project area is not located within a mapped flood zone. The nearest flood zone is located approximately 4.9 km to the east along the Little Waasis Stream. A copy of the GeoNB flood mapping is included in Appendix C.

3.1.5 Water Extraction

The NBDELG OWLS was accessed to identify water extraction within a 1 km radius of the Project area. This database is maintained by NBDELG and contains information on water wells constructed from 1994. The NBDELG takes no responsibility and makes no guarantee as to the completeness, accuracy or timeliness of the data provided. The 1 km radius was the smallest radius possible to generate both well construction and water quality data from the NBDELG database.

There are 44 wells (drilled between 2002 and 2016) identified in the NBDELG database within a 1 km radius of the site (well logs are attached in Appendix D).

Well construction details for these wells are summarized in Table 2.

Table 2 Well Construction Details for Wells Reported within 1 km of the Project

Well Construction Component	Minimum	Maximum	Average
Total Well Depth (m)	18.3	93.0	34.8
Casing Depth (m)	6.1	40.2	10.7
Casing Diameter (m)	0.13	0.15	0.15
Estimated Safe Yield (L/min (igpm))	17 (3.6)	827 (182)	196 (43)
Water Bearing Fracture Zones (m)	12.2	93.0	27.1
Depth to Bedrock (m)	0.6	20.7	7.0
Bedrock Type	Conglomerate, Mudstone, Sandstone, Shale, Slate, Granite		
Notes: m = Metres L/min = Litres per minute igpm = Imperial gallons per minute			

Available water chemistry data were compared to the Canadian Drinking Water Quality Guidelines (CDWQG; Health Canada 2014). Based on the available data (six groundwater chemistry records), exceedances of the following CDWQGs were noted in one or more wells: aluminium, iron, manganese, and pH (Table D1 in Appendix D).

3.1.6 Climate

The closest weather station to the Project with available historical data is the Fredericton International Airport station (45°55'00.000" N 66°37'00.000" W), which is located approximately 8 km northeast of the Project site. The Canadian Climate Normals (1981 to 2010) recorded from the Fredericton Airport climate station indicate an annual daily mean temperature of 5.6°C, with a daily maximum of 11.4°C and minimum of 0.2°C. No extreme maximum or minimum annual temperatures are listed. According to the climate normals, January is typically the coldest month with a daily average temperature of -15.0°C. July is the warmest month with a daily average temperature of 25.5°C (Environment Canada, 2016).

Measurable precipitation averages 1077.7 millimetres (mm) annually. Extreme daily precipitation has not been recorded. On average, May and November are the rainiest months; January is the snowiest (Environment Canada, 2016).

The climate averages indicate the average wind speed is 12 kilometres/hour (km/h). The prevailing winds are generally from the west year around. The maximum wind speeds are in February (average of 80 km/h) and the minimum speeds in July (average 48 km/h) (Environment Canada, 2016).

3.1.7 Air Quality

Air quality and the level of pollutants in an area at any point are dependent on emission sources, source emission rates, dispersion and removal rates. Air quality in New Brunswick is good and continues to improve. The Province of New Brunswick has Air Quality Objectives (Table 3) for regulated air contaminants under the *Air Quality Regulation* of the *Clean Air Act*.

Table 3 New Brunswick Air Quality Objectives*

Pollutant	Averaging Period			
	1 Hour	8 Hours	24 Hours	1 Year
Carbon Monoxide	30 ppm	13 ppm	-	-
Hydrogen Sulphide	11 ppb	-	3.5 ppb	-
Nitrogen Dioxide	210 ppb	-	105 ppb	52 ppb
Sulphur Dioxide	339 ppb	-	113 ppb	23 ppb
Total Suspended Particulate	-	-	120 µg/m ³	70 µg/m ³
Notes:				
ppm = parts per million; ppb = parts per billion; µg/m ³ = micrograms per cubic metre				
* NBDELG, 2015, Air Quality Monitoring Results 2012-2013.				

There are no major industrial sources of emissions located in the Project area. Emissions from home heating systems, motor vehicles and air contaminants transported by prevailing winds to the Project area are the predominant contributors to ambient air contaminant concentrations in the Project area.

The closest air quality monitoring stations to the Project area are operated by the NBDELG in Fredericton, NB. One station monitors ozone, while the other measures Carbon Monoxide (CO), Hydrogen Sulphide (H₂S), Nitrogen Dioxide (NO₂), Sulphur Dioxide (SO₂) and particulate matter (PM_{2.5}). The site is located in the downtown area of the City of Fredericton on Aberdeen Street and is considered to be representative of the downtown residential and business district. The most recent air quality index is for 2010 where the air quality in Fredericton was good 99.5% of the time and fair 0.5% of the time (NBDELG, 2012). Due to the more rural setting of the Project area as compared to the location of the monitoring station, air quality at the Project site is likely equal to or better than the monitoring station.

3.1.8 Ambient Noise

Existing ambient noise levels in the Project area are not available. The surrounding area is vacant and / or residential and there are no significant noise sources in the vicinity of the Project area. Noise sensitive areas (NSAs) in the vicinity of the Project area would consist of developed residential properties. No additional NSAs, such as daycares, hospitals, nursing homes, religious institutions or schools are located in close proximity to the Project.

Temporary and reversible changes in ambient noise levels will be observed during the construction phase of the Project due to grubbing and clearing, earthwork, rock excavation and

the operation of heavy equipment associated with site and roadbed preparation. Noise levels during the operation phase will be similar to those currently observed in the surrounding area. Additionally, nighttime noise levels will remain unchanged as construction will only occur during daytime hours. In the unlikely event that construction activities extend beyond daylight hours, directional lighting with a downward/ lateral focus will be utilized. Street lights (if proposed) will also be downward focusing, so that little light escapes to the sky. Where possible, LED lighting fixtures will be utilized, as they are less prone to light trespass.

Sound pressure levels of commonly used construction equipment are outlined in Table 4. It should be noted not all equipment required for the development will be in operation at once.

Table 4 Typical Construction Equipment Sound Levels

Equipment	Sound Level (dB _A) at 15 m (USDOT, 2015)
Backhoe	78
Chain Saw	84
Concrete Mixer Truck	79
Concrete Pump Truck	81
Crane	81
Drill Rig Truck	79
Dozer	82
Dump Truck	76
Excavator	81
Generator	81
Paver	77
Roller	80
Scraper	84
Notes: dBA = Decibels on an “L _{max} ” weighted scale. L _{max} is the highest value measured on a sound meter over a given period of time.	

3.1.9 Wetlands

GEMTEC Limited personnel visited the site on June 10, June 23, June 24, and July 8, 2016. The Project area is vacant and wooded with the exception of a gravel roadway and a cleared hydro-line (Figure 3). A gravel road network enters the eastern portion of PID 75061812, eventually forking near the centre to extend west on both PID 75061812 and PID 75516740. A roadway also extends off the northern boundary of PID 75516740. An all-terrain vehicle (ATV) path is present on PID 75254433 and PID 75064287 that extends east to west across a mapped wetland to a cleared hydro-line. The cleared hydro-line extends north to south across PID 75254433 and PID 75064287 and east to west across PID 75516740.

Five GeoNB mapped, regulated wetlands are present throughout the Project site (GeoNB, 2016). The location and characteristics of the five regulated wetlands within the proposed development are described below and presented on Figure 3.

One regulated wetland located in the western portion of PID 75516740 that contains a moss covered floor with stressed, stunted Black Spruce (*Picea mariana*) throughout. The ground surface is very saturated with some surface water. The wetland extends south on PID 75516740 and north across the hydro-line and into the northern portion of the PID. Although this wetland was not delineated, the actual wetland boundaries appear to be bigger than what is depicted on GeoNB mapping;

Two large, open water regulated wetlands (connected by a tributary to the Little Waasis Stream) are present in the eastern portion of PID 75516740. Speckled Alder (*Alnus incana*) is present along the boundary of the wetland. Grasses and sedges are present between the shrubs and open water. Some dead trees are present in the centre. The ground is saturated with surface water present in all areas;

One regulated wetland is present in the south / southwestern portion of PID 75061812 just north of the gravel road. The wetland has a thick, moss covering along the ground with shrubs including, but not limited to; Labrador Tea (*Rhododendron groenlandicum*), Rhodora (*Rhododendron canadense*), Leather Leaf (*Chamaedaphne calyculata*), Huckleberry (*Gaylussacia baccata*) and Bog Laurel (*Kalmia polifolia*) and stunted trees throughout; and

One regulated wetland is present along the eastern boundary of PIDs 75064287 and 75254433 that contains mostly grasses and sedges with open, standing water. The northeastern portion of the wetland is forested. Abundant dead trees and deadfall are present throughout. An ATV trail enters the eastern side of the wetland and adjoins the western boundary.

In addition to the mapped wetlands, several un-mapped wetlands were observed across all PIDs due to local beaver activity as presented on Figure 3 and described below.

An unregulated wetland is present in the center of PIDs 75516740 and 75061812. The wetland extends on either side of the gravel road. The wetland appears to be the result of a beaver dam in a small drainage channel. The eastern portion of the wetland is mostly vegetated with flowing water that exits the northern boundary of the site. The southwestern side of the wetland contains open-standing water with a forested wetland in the western portions.

An old skidder track extends east to west along PID 75064287. The skidder track contains saturated soils and, in places, significant surface water. A raised berm on either side of the skidder track directs surface water flow into the alignment. Beaver activity along the length of the skidder track has caused flooding and wetlands throughout most of PID 75064287 and PID 75254433.

An unregulated forested wetland is present near the centre / eastern portion of the two PIDs. Skidder tracks were observed throughout, creating upland and low land pockets. In the centre and western portion of the two PIDs, the wetland transitions into a large, open water wetland with evidence of recent beaver activity. The open water portion of the wetland contains deep water (approximately 5 feet or greater) and is stagnant. Abundant dead trees and dead fall are present. Forested and skidder wetlands are present along the edges of the open water area.

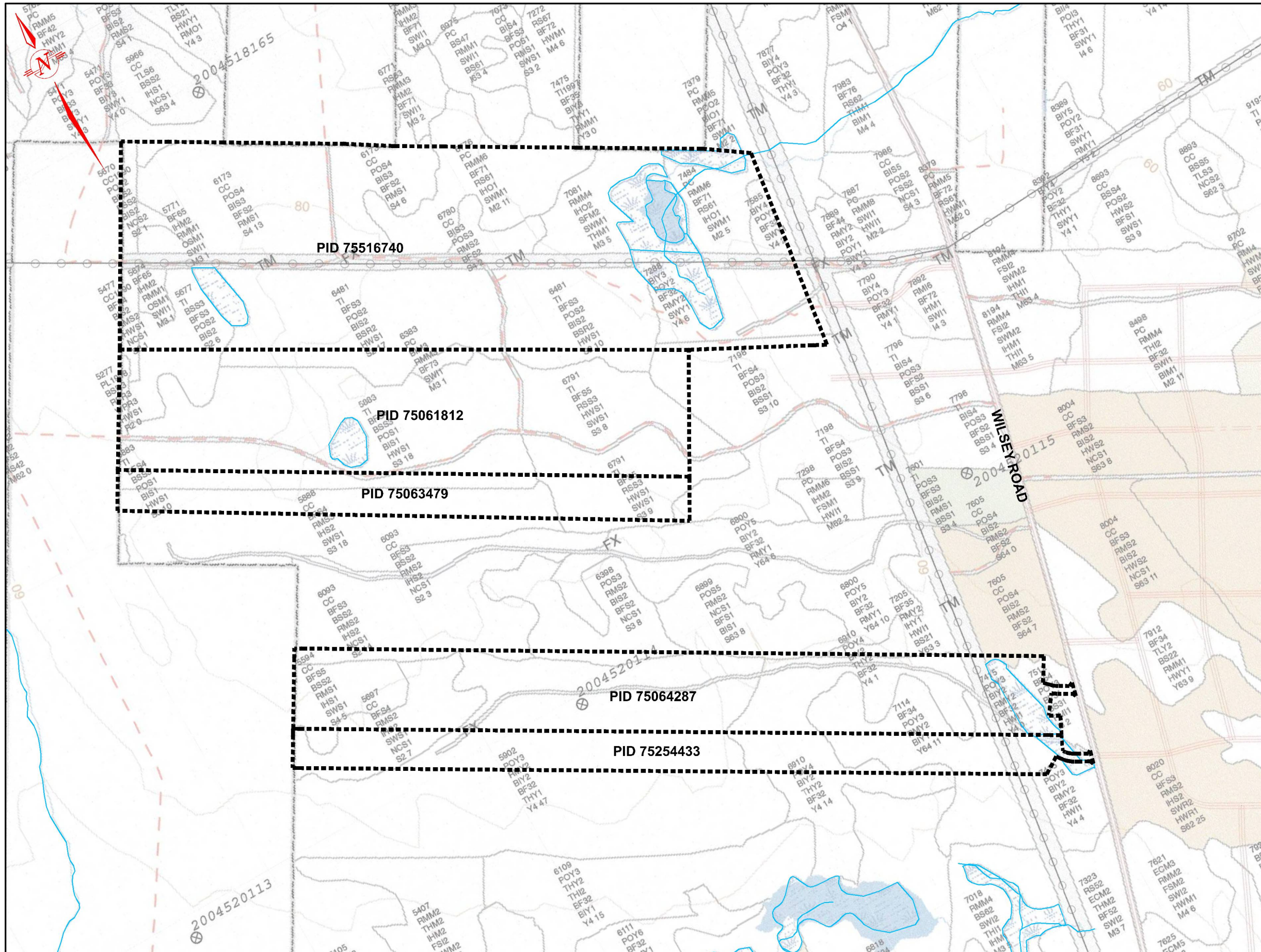
The tree cover across the Project area ranges from mixed deciduous trees and shrubs to mixed deciduous and coniferous trees. The majority of the forest cover is young following harvesting approximately 20 - 30 years ago. Evidence of historical harvesting was present throughout the Project area. Forest inventory mapping (Figure 5), shows that most of the Project area west of the transmission line was clear cut or pre-commercial thinned.

Dominant tree vegetation observed throughout the site included White Spruce (*Picea glauca*), Balsam Fir (*Abies balsamea*), White Birch (*Betula papyrifera*), Gray Birch (*Betula populifolia*), Trembling Aspen (*Populus tremuloides*) and Red Maple (*Acer rubrum*). Dominant ground vegetation included various ferns, Sarsaparilla (*Smilax regelii*) and Bunchberry (*Cornus canadensis*).

Adjoining areas to the north, west and south of the Project are vacant and wooded. Three residential dwellings are present along Wilsey Road near PIDs 75064287 and 75254433. Berry Drive and several single-family dwellings properties are present east of PID 75061812 and 75063479. A cleared, vacant lot is present east of PID 75516740.

3.1.10 Rare Plants

The Atlantic Canada Conservation Data Centre (ACCDC) report (2016) identified two plant species of provincial conservation concern; Western Dock (S1S2, *Rumex aquaticus* var. *fenestratus*) and Long-bracted Frog Orchid (S2, *Coeloglossum viride* var. *virescens*) within a 5-kilometre radius of the Project area. Neither species is protected provincially (*New Brunswick Species at Risk Act*) or federally (*Federal Species at Risk Act*). ACCDC report is presented in Appendix E. A Species Habitat Comparison table (Table E1) outlining the species and their habitat requirements is presented in Appendix E. Suitable habitat for these species is present within the Project area.



NOTE: See drawing C1 for legend.

Drawn By	AGSD	Checked By	AG
Calculations By		Checked By	

Date
SEPT, 2016

Project
EIA REGISTRATION, WILSEY ROAD DEVELOPMENT, FREDERICTON, NB

Drawing
FOREST INVENTORY MAPPING

Scale
1:10000
0 200 400 600m

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104790101	FIGURE 5	0



Mr. Gart Bishop (field botanist) of B&B Botanical conducted a rare plant survey of select wetlands in the Project area on July 16, 17 and 18, 2016. The Rare Plant Survey report is included in Appendix F. Two species of conservation concern, Floating Crystalwort (*Riccia fluitans*) and Large Purple Fringed Orchis (*Platanthera grandiflora*) were observed during the rare plant survey. Floating Crystalwort is ranked S2S4 (Rare in province / Widespread, common and apparently secure in province). Large Purple Fringed Orchis is ranked S3 (Uncommon in province). Neither have been assigned a General Status ranking by the New Brunswick Department of Natural Resources (NBDNR). No S1 (Very Rare) or S2 (Rare) species were observed. The Floating Crystalwort was found in the large, mapped wetlands in the eastern portion of PID 75516740, this area is to remain unaltered as green space. The Large Purple Fringe Orchis was found in the un-mapped wetlands located on PIDs 575064287 and 75254433 that will be cleared and graded for lot development.

3.1.11 Migratory Birds

The ACCDC report (2016) identified 24 bird species within a 5 km radius of the project area. Of the 24 bird species identified, 12 have habitat requirements similar, but not limited to, the habitats identified in the Project area. These species include the Wood Thrush (*Hylocichla mustelina*), Green Heron (*Butorides virescens*), Indigo Bunting (*Passerina cyanea*), Brown-headed Cowbird (*Molothrus ater*), Willow Flycatcher (*Empidonax traillii*), Virginia Rail (*Rallus limicola*), Common Nighthawk (*Chordeiles minor*), Canada Warbler (*Wilsonia Canadensis*), Eastern Wood-Pewee (*Contopus virens*), Great Crested Flycatcher (*Myiarchus crinitus*), American Wigeon (*Anas Americana*) and Northern Shoveler (*Anas clypeata*). The Common Nighthawk and the Canada Warbler are both listed as Threatened under the *Specific at Risk Act* (SARA), Committee on the Status of Endangered Wildlife in Canada (COSEWIC) and the *New Brunswick Species at Risk Act*. The Wood Thrush is listed as Threatened and the Eastern Wood-Pewee is listed as Special Concern under COSEWIC (2016) and the *New Brunswick Species at Risk Act*. A species habitat comparison presenting habitat requirements is located in Table E1 in Appendix E.

ACCDC range maps listed an additional two "location sensitive" bird species that may be found in the Project area. The species list includes: the Bald Eagle (*Haliaeetus leucocephalus*) and Bat Hibernaculum (*Myotis lucifugus*, *Myotis septentrionalis*, *Perimyotis subflavus*). The Bald Eagle is endangered under the *New Brunswick Species at Risk Act* and the three bat species are endangered under SARA and the *New Brunswick Species at Risk Act*. Marginal habitat for the Bald Eagle was found within the project area (tall trees, transmission poles); however, fishing and scavenging spots were not observed. Furthermore, no evidence of eagle presence (nests) were observed. Bat hibernaculum was not observed within the project area.

NatureCounts data (2016) for Species at Risk and Colonial Nesters (2006-2010) was requested and reviewed. Data from 2006-2010 was included in the review as data previous to this is included in the ACCDC information. Species listed include the Great Blue Heron (*Ardea herodias*), Northern Cardinal (*Cardinalis cardinalis*), Northern Rough-winged Swallow (*Stelgidopteryx serripennis*), House Finch (*Haemorhous mexicanus*), Pine Warbler (*Setophaga*

pinus), Bald Eagle, Canadian Warbler, Field Sparrow (*Spizella pusilla*), Northern Mockingbird (*Chordeiles minor*), Willow Flycatcher and Green Heron. The Canada Warbler is listed as Threatened by COSEWIC and under Schedule 1 of SARA. Habitat similar to habitat frequented by the Canada Warbler has been identified within the Project area. No other bird species listed by NatureCounts are considered species of conservation concern. A species habitat comparison is included in Table E1 in Appendix E.

3.1.12 Bird Surveys

An assessment of the bird habitat in the Project area and an inventory of bird species in the area, especially Species at Risk was conducted over four visits between June 10 and June 30, 2016 by biologist Derrick Mitchell, BSc.F of Boreal Environmental. The breeding bird survey report is included in Appendix G. This report is briefly summarized below; however, the full breeding bird survey report should be reviewed.

Forty bird species comprising 228 individuals were recorded during the surveys. In decreasing order, the following birds were most abundant species identified in the Project area: ovenbird, hermit thrush, red-eyed vireo and black-throated green warbler, consistent with the development stage and species composition of the forest within the Project area. No raptor nests were noted in the vicinity of the Project area. No common nighthawks were detected during the survey. Although the transmission line right of way is suitable habitat for common nighthawks, regular vegetation management in this area may deter birds from nesting.

The large mapped wetland on the northeastern portion of PID 75516740 was identified during the bird survey to be a shallow water wetland with ideal habitat for waterfowl and other wetland bird species. Waterfowl and several bird species were observed foraging in this wetland and included: a female mallard, red-winged blackbird (pair), tree swallows, belted Kingfisher and a great blue heron. A list of all bird species recorded during the bird surveys is included in the bird survey report included in Appendix G, along with their highest breeding status and the number of individuals of each species that were observed. A summary of the bird species and their associated habitat within the Project area is also included in the report in Appendix G.

Bird Species at Risk

Bald Eagle (*Haliaeetus leucocephalus*) was identified as a probable breeding species during the current MBBA and a nesting location is known to exist within 5 km of the Project area. Bald Eagle nests are often conspicuous and located in large mature trees which are used year after year. No Bald Eagle nests were observed during the site visits completed in June 2016. Bald eagles were observed in the Maritime Breeding Bird Atlas (NatureCounts, 2010) square 19LF87, but were not confirmed as breeders.

Bird Species of Conservation Concern

During the surveys only one COSEWIC listed species, the Canada Warbler (*Cardellina Canadensis*), was identified. Canada Warbler is listed as Threatened by COSEWIC and under Schedule 1 of SARA. Two birds were observed and both were singing males that appeared to be agitated which indicates that breeding was probable. Suitable breeding habitat is present on the Project site; however, this is similar to habitat present abundantly in New Brunswick. Additionally, the Canada Warbler is a relatively widespread breeder across New Brunswick. No Common Nighthawks (*Chordeiles minor*) were detected during the survey; however, the cleared hydro-line represents suitable habitat but regular vegetation management may deter birds from nesting. Higher quality nesting habitat may be more abundant in the surrounding landscape as large bogs and open coniferous treed swamps are relatively common in this region. One singing male Wood Thrush (*Hylocichla mustelina*) was detected during the June 2016 breeding bird survey at one location within the Project area. The Eastern Wood Pewee (*Contopus virens*) nor the Olive-sided flycatcher (*Contopus cooperi*) was detected during the bird surveys. The habitat within the Project area was determined to be possibly unsuitable nesting habitat for the Olive-sided flycatcher. Wood thrush (*Hylocichla mustelina*) was detected during the June 2016 survey at one location within the Project area. A singing male wood thrush was detected in immature mixed wood habitat with a well-developed shrub stratum.

3.1.13 Other Species of Conservation Concern

In addition to the bird species of conservation concern, ACCDC range maps listed an additional “location sensitive” fauna species that may be found in the Project area: the Wood Turtle (*Glyptemys insculpta*). The Wood Turtle is considered Threatened and under Schedule 1 of SARA.

The Wood Turtle inhabits permanent streams for the majority of the year; however, does roam terrestrially (up to 300 metres) during the summer months (ACCDC, 2010; Species at Risk Public Registry, 2013). It is typically found in large rivers and streams with sand or gravel bottoms and sandy banks. Therefore, it is unlikely the Wood Turtle would be present within the Project as the branch of the unnamed tributary to Little Waasis Stream that passes through the mapped wetland on the northeast portion of the site is an open water wetland with organic bottom. A species habitat comparison is included in Table E1, Appendix E.

3.1.14 Sensitive Areas

The site is not located within a NBDELG protected wellfield or watershed area (NBDELG, 2016b^b). According to the ACCDC report (2014), one Important Bird Area (IBA) is located approximately 3 kilometres northeast of the Project area (Lower St. John River (Sheffield-Jemseg) IBA) and one managed area (University of New Brunswick Refuge) is located approximately 3.5 kilometers northwest of the Project area (Birdlife International, 2016). No Environmentally Significant Areas, as identified by the New Brunswick Nature Trust, are located within five kilometres of the Site.

No National Wildlife Areas (NWAs), Migratory Bird Sanctuaries (MBSs), Ramsar Sites, or New Brunswick Protected Natural Areas are located within five kilometres of the Project area (Environment Canada Protected Areas Network, 2016, Ramsar Sites Information Service, 2016 and NBDNR Protected Natural Areas, 2016).

3.1.15 Wildlife Observations

White-tailed Deer (*Odocoileus virginianus*), Black Bear (*Ursus americanus*), Moose (*Alces alces*) and Coyote (*Canis latrans*) scat and footprints were observed throughout the Project area. This area is likely inhabited by other smaller wildlife typical of New Brunswick (e.g., chipmunks, rabbits, raccoons, foxes). Frogs could be heard in the vicinity of the open-water wetlands located throughout the Project area.

3.1.16 Regulated Watercourses and Wetlands

As of March 2012, the NBDELG relies solely on publicly available wetland mapping (GeoNB, 2016) to determine the presence or absence of regulated wetlands within a Project area. Five regulated wetlands are present within the Project area:

- One in the western portion and two in the eastern portion of PID 75516740;
- One in the eastern portion of PID 75061812; and
- One along the eastern boundary of PID 75064287 and 75254433.

The GeoNB Map Viewer wetland mapping layer as of June 21, 2016 is attached in Appendix C.

There are no watercourses within the developable area on the site; however, an unnamed tributary to the Little Waasis Stream originates in the wetland on PID 75516740 and flows east off the property. SNB mapping (SNB, 2016) and GeoNB mapping (GeoNB, 2016) do not show any additional watercourses on the Site. Maps are presented in Appendix C. No additional watercourses were observed on the Site at the time of the Site visits.

3.1.17 Fish Habitat

There are no watercourses present within the proposed developable Project area; therefore, fish habitat is not present. A branch of the Little Waasis Stream passes through the eastern portion of the Project area in the regulated mapped wetland area. This is located within the Project area designated as green space and will not be altered.

3.2 Archaeological Resources

Predictive mapping for the Project area supplied by the New Brunswick Department of Tourism, Heritage and Culture (NBTHC), Archaeological Services showed no areas designated as having elevated potential for encountering archaeological resources (New Brunswick Department of Tourism, Heritage and Culture, 2016). The predictive mapping is included in Appendix C.

An archeological assessment (i.e., pedestrian survey) of the Project area was completed on June 17, 2016 by Jason Jeandron, MPhil. of Archeological Prospectors located in Fredericton, New Brunswick. The archeological assessment report is included in Appendix H. Findings of this assessment are briefly summarized below.

“Four provincially mapped wetlands were identified as holding elevated potential for the presence of archaeological remains. Also, given the elevation and association with nearby rivers (Oromocto and Rusagonis), there is an increased potential for the presence of late Pleistocene/early Holocene shoreline within the Project Area. However, the review of the LiDAR data failed to identify any remnant palaeo-shorelines.

3.3 Cultural Features

The nearest Aboriginal communities include Oromocto First Nation (OFN) located approximately 25 kilometres east of the Project, St. Mary’s First Nation located approximately 20 kilometres north of the Project and Kingsclear First Nation located approximately 30 kilometres northwest of the Project.

A description of the Project was submitted to the Aboriginal Affairs Secretariat (AAS) for review. GEMTEC is currently awaiting a response from AAS. This information will be forwarded to the NBDELG upon receipt.

3.4 Existing and Historic Land Use – Project Area and Adjoining Properties

The Project area land parcels are currently and have historically been vacant. A gravel road is present in PIDs 75516740 and 75061812, presumably the remnants of historical forestry activity in the area. A cleared hydro-line is present east to west, across PID 75516740 and north to south across PIDs 75064287 and 7525443. The remainder of the Project area is vacant and wooded.

A vacant, wooded property is present between PIDs 75064287 and 75063479. The PID (75064295) is owned by Natalie Chippin Lipkowitz, Seth Chippin, LPR Investments Limited, and Godaar Investments Limited. Single-family, residential dwellings are present in neighbouring properties along Wilsey Road. The property adjoining PIDs 75516740 to the east has been cleared of vegetation. Vacant, forested land is present to the north, west and south.

The adjacent properties and property owners are identified (based on Service New Brunswick data accessed in August, 2016) in Appendix I. Historically, adjoining properties were vacant and wooded. Based on the review of current and historic land uses on the Project site and adjoining properties, it is unlikely that environmental contamination is present on-site. There are no registered Federal Contaminated Sites in the Project area (FCSI, 2013). Federal Contaminated Sites mapping is included in Appendix C.

A review of NBDNR historic aerials for the Project area was conducted. Aerials from 1945, 1951, 1962, 1976, 1981, 1994 and 2004 were reviewed (NBDNR, 2016). The Project area and surrounding land is vacant in all aerials reviewed. Historically, no residential or other developments have been present on the site. The gravel roads were constructed between 1981 and 1994.