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via email (gerryvanam@hotmail.com)
CCTA File 305820-7

Gerald Van Amelsvoort
1522417 Ontario Ltd.
27 Horseshoe Valley Road East, R.R. #2
Oro Station, Ontario L0K 2E0

**Re: Bayou Subdivision, Township of Severn
Traffic Impact Brief**

Dear Mr. Van Amelsvoort:

As per your request, we have reviewed the revised development site plan (dated July 5, 2017) with respect to the potential impacts of the proposed development on the adjacent transportation system. Our comments are provided below.

Site Location

The proposed development site is located south of Grand Tamarack Crescent and west of Timberline Avenue in the Township of Severn. The site location is illustrated in Figure 1.

Existing Conditions

Road Network

Grand Tamarack Crescent is a collector road under the jurisdiction of the Township of Severn. The road has a two-lane rural cross-section, providing one lane of travel per direction. The speed limit is unposted, thus a 50 km/h speed limit has been assumed (typical of a local residential road) and a 60 km/h design speed (speed limit + 10 km/h for lower speed roads). While the road is relatively flat, there is a horizontal curve located approximately 40 metres east of the proposed access location for the development. As a collector road, Grand Tamarack Crescent has an assumed planning capacity in the order of 500 to 600 vehicles per hour per lane (vphpl).

As per MTO's *Highway Access Management Guideline (December 2013)*, Highway 11 is classified as a 1B – Staged Freeway. The 1B – Staged Freeway classification is assigned to roads that are projected to become 1A – Freeways (i.e. Highway 11 from Severn Bridge to North Bay, the 400 series highways, etc.) at some future date. As a staged freeway, this section of Highway 11 is a controlled access

highway, with access preferred via public road connections at approved locations for future grade separated interchanges. Highway 11 is a divided highway providing two lanes of travel per direction. The capacity of Highway 11 has been determined following MTO procedures for maximum service flow for a multi-lane divided highway, considering factors such as base capacity (2,000 vphpl) and adjustment factors for lane width and/or lateral clearance restrictions, presence of heavy vehicles, development environment and driver population. Based on the MTO methodology, a maximum service flow of 3,270 vehicles has been determined per direction, which equates to 1,635 vphpl.

The intersection of Grand Tamarack Crescent with Highway 11 northbound is a right-in/right-out intersection with yield control on Grand Tamarack Crescent (the east approach). There is no access provided to or from Highway 11 southbound from Grand Tamarack Crescent.

The intersection of Grand Tamarack Crescent with Timberline Avenue is a four-leg intersection with stop control on Timberline Avenue. Each approach consists of a single shared left/through/right lane.

Photographs of the area road network are provided in Figure 2.

Existing Traffic Volumes

Traffic volumes on Grand Tamarack Crescent at Timberline Avenue were determined from intersection counts completed on Wednesday July 26, 2017 (AM count – 7:00 to 9:00) and Tuesday August 1, 2017 (PM count – 16:00 to 18:00). Given the time of year, the observed volumes are considered reflective of peak summer conditions.

Traffic data for Highway 11 through the study area was obtained from MTO in order to determine the existing traffic volumes on the road network. The 24-hour traffic data was observed over seven consecutive days during each of the following periods:

- April 1 to April 7, 2014 (spring conditions);
- July 29 to August 4, 2014 (summer conditions); and
- September 11 to September 17, 2014 (fall conditions).

The traffic data was collected between the Laclie Street interchange and the Bayou Road/New Brailey Line interchange (Grand Tamarack Crescent is located between these interchanges). With respect to the peak conditions, only the peak northbound traffic volumes were considered, recognizing that Highway 11 is a divided highway and access to/from Grand Tamarack Crescent is restricted to the northbound lanes only. Upon review of the available data, the peak northbound volumes (AM and PM) occurred on Friday September 12, 2014. To reflect 2017 conditions, the 2014 peak hour northbound volumes were adjusted by an annual growth rate of 2.0% (additional discussion on background growth is provided below).

The resulting 2017 peak hour traffic volumes (considered representative of peak summer weekday conditions), are illustrated in Figure 3.

Road Section Operations

As indicated, peak hour peak directional volumes on Grand Tamarack Crescent are in the order of 35 to 68 vehicles. As previously noted, Grand Tamarack Crescent has an assumed planning capacity in the order of 500 to 600 vphpl. In considering the lower capacity threshold (500 vphpl), Grand Tamarack Crescent is operating at approximately 14% capacity. Thus, there is excess reserve capacity on the road to accommodate future growth. It is noted that volumes on Grand Tamarack Crescent immediately east of Highway 11 will be greater than those at Timberline Avenue given the adjacent Tim Hortons and the location of its access in close proximity to Highway 11. Notwithstanding, there is significant reserve capacity on Grand Tamarack Crescent to accommodate this.

The 2017 northbound PM peak hour volumes (i.e. the critical peak hour) on Highway 11 are in the order of 2,187 vehicles per hour. As previously noted, and based on MTO methodology, Highway 11 through the area has a capacity in the order of 1,635 vphpl or 3,270 vehicles per direction (i.e. two lanes per direction). In considering the noted capacity, the 2017 northbound volumes reflect approximately 67% of the northbound capacity. Thus the highway is operating with reserve capacity.

Future Background Conditions

Road Network

There are no planned improvements to the study area road network. As such, the road network as described above has been maintained.

Background Growth

Historic traffic volumes on Highway 11 between Laclie Street and Bayou Road/New Brailey Line were reviewed for the 10-year period 2006 through 2016 (the most current published MTO data). The following growth rates were realized:

- 0.7% for average annual daily traffic (AADT); and
- -2.0% for summer average daily traffic (SADT).

While the historic growth indicates growth below 1.0% per annum, an annual growth rate of 2.0% has been applied. This is considered a conservative approach given the modest growth experienced over the noted 10-year period and, more notably, the negative growth in SADT volumes (recognizing that the volumes considered reflect peak summer conditions).

While it is acknowledged that the Webers Restaurant on Highway 11 has proposed the addition of a Starbucks coffee shop, such is not expected to generate any additional traffic on the road system (rather

it will serve those already on the highway as they pass by). No other specific developments have been identified within the immediate area for consideration in the background volumes. Regardless, a conservative 2.0% annual background growth rate has been applied to volumes on Grand Tamarack Crescent and Timberline Avenue.

Background Traffic Volumes

Given the limited size of the proposed development, a single 10-year planning horizon (2027) has been considered in order to assess the future impacts of the development on the adjacent road system. The future background volumes are based on the 2017 volumes, adjusted to reflect background growth of 2% per annum. The resulting 2027 background traffic volumes are illustrated in Figure 4.

Road Section Operations

As indicated, the 2027 peak hour peak directional volumes on Grand Tamarack Crescent will be in the order of 50 to 90 vehicles. Thus the road will be operating at 18% or less of the available capacity through the 2027 horizon based on the projected background traffic volumes. For Highway 11, the 2027 northbound peak hour volumes will be in the order 2,670 vehicles or less, which reflects approximately 82% of capacity. As such, operations on the highway will remain below its assumed capacity of 3,270 vehicles per hour per direction. It is noted that the 2% background growth rate is considered conservative given the modest growth experienced along the Highway 11 corridor in recent years. Regardless, the highway will continue to operate with excess capacity through 2027.

Proposed Development

Development Plan

The proposed development plan will consist of 42 condominium townhouse units in 11 blocks. A site plan is provided in Figure 5.

Site Access & On-Site Circulation

The site will be served by a single private road access on Grand Tamarack Crescent, located approximately 170 metres east of the Highway 11 Northbound ramps and 120 metres west of Timberline Avenue. The access will have a width of 6.5 metres and provide two-way operations (i.e. one lane of travel per direction). The private road will maintain a minimum width of 6.5 metres throughout the site. Based on the proposed design of the internal road network and access provision, and in considering the anticipated volumes and types of vehicles accessing the site, the site layout as proposed is considered appropriate.

Parking Review

The parking requirements have been determined based on the noted residential land use and in consideration of applicable Township of Severn parking rates. As per the *Township of Severn Comprehensive Zoning By-law No. 2010-65*, the parking requirement for a townhouse development is two spaces per dwelling unit. Based on the concept plan, the site would be required to provide 84 spaces (42 units x 2 spaces per unit). It is understood that each townhouse unit will provide two parking spaces (one driveway space and one garage space), thus satisfying the Township's requirements. It is further noted that the site will provide an additional 14 off-street parking spaces for visitors.

Site Generated Trips

The number of vehicle trips to be generated by the proposed residential townhouse development has been determined based on the development size, land use and trip generation rates provided in the *ITE Trip Generation Manual, 9th Edition*. Based on the proposed residential use, the *low-rise residential condo/townhouse* (ITE code 231) land use has been applied to development.

The associated trip rates and trip estimates are provided in Table 1. The rates represent the weekday AM and PM peak hour of the adjacent street.

Table 1: Trip Generation

Land Use	rate/ estimate	Weekday AM Peak Hour			Weekday PM Peak Hour		
		In	Out	Total	In	Out	Total
low-rise residential condo/townhouse (ITE code 231)	units	0.17	0.50	0.67	0.45	0.33	0.78
	42	7	21	28	19	14	33

As indicated, the proposed development is expected to generate 28 trips during the weekday AM peak hour and 33 trips during the weekday PM peak hour.

The distribution of the trips to be generated by the proposed development has been developed based on the proximity of the site to surrounding development, particularly the City of Orillia which is the closest major employment centre. The following distribution was assumed:

- 25% to/from the north; and
- 75% to/from the south.

The assignment of the site generated trips to the area road network is based on the trip distribution noted above with consideration given to the expected travel routes, noting that outbound traffic destined to the south and inbound traffic from the north must utilize the Bayou Road/New Brailey Line interchange. The resulting site generated traffic assignment to the road network is illustrated in Figure 6.

Traffic Operations Assessment

Total Traffic Volumes

To assess the future impacts of the increased traffic volumes resulting from the proposed development, the site generated traffic was combined with the 2027 background traffic volumes. The resulting 2027 total traffic volumes are presented in Figure 7.

Road Section Operations

In considering the 2027 total volumes and the estimated trips to be generated by the site, the resulting peak directional peak hour volumes on the study area road network will be as follows:

- Grand Tamarack Crescent – 60 to 105 vehicles; and
- Highway 11 Northbound – 1,735 to 2,685 vehicles.

As previously noted, Grand Tamarack Crescent has an assumed lane capacity of 500 vehicles per hour; whereas Highway 11 has a directional capacity of 3,270 vehicles per hour. As such, Grand Tamarack Crescent is expected to operate at 21% of capacity or less, while Highway 11 Northbound will operate at 82% of capacity or less. Thus the study area road network will continue to operate below capacity and can readily accommodate the additional volumes associated with the proposed condominium townhouse development.

Intersection Operations

The study area intersections have not been explicitly analyzed, given the limited volumes at the intersection of Grand Tamarack Crescent with Timberline Avenue and the right-in/right-out configuration at the intersection of Highway 11 Northbound with Grand Tamarack Crescent. The intersections are expected to continue to operate without issue.

Turn Lane Requirements

The need for left turn lanes on Grand Tamarack Crescent at the site access was reviewed based on MTO warrants. Given the limited volumes on Grand Tamarack Crescent, a left turn lane is not required.

As per MTO guidelines, right turn lanes should be considered when the right turning volumes exceed 60 vehicles per hour and impede through traffic. This criterion is not satisfied at intersection of Grand Tamarack Crescent with the site access. As such, a right turn lane is not warranted.

Sight Line Analysis

Based on MTO geometric design standards, the minimum stopping sight distance for a design speed of 60 km/h is 85 metres. This requirement provides sufficient distance for an approaching vehicle to

observe a stationary hazard in the road (i.e. a vehicle stopped at an intersection waiting to complete a turn) and bring their vehicle to a complete stop prior to the hazard.

The available sight lines along Grand Tamarack Crescent as determined at the site access are more than 150 metres to the west and approximately 70 metres to the east. As such, to the east, the available sight distance does not satisfy the requirements for a design speed of 60 km/h. However, it does satisfy the requirements for a 50 km/h design speed (the minimum stopping sight distance = 65 metres) and thus is considered appropriate, particularly in context of the local nature of the road and limited volumes. While it is desired that the design speed exceed the speed limit to provide an increased factor of safety, MTO guidelines indicate a design speed equal to the posted speed is acceptable where warranted by such factors as low traffic volumes, rugged terrain and economic considerations. Furthermore, the radius of the existing horizontal curve to the east will limit approach speeds (the radius of 53 metres translates to a design speed of 40 km/h). As such, the sight lines at the site access are appropriate.

Summary

Given the limited traffic volumes to be generated by the proposed development and in considering the relatively low AM and PM peak hour weekday traffic volumes on the road system, the increase in traffic volumes resulting from the proposed development will not have any significant operational impacts on the adjacent road network.

The available sight distances along Grand Tamarack Crescent at the site access meet the minimum stopping sight distance requirements for a design speed of 60 km/h the west, whereas the available sight distance to the east meets the minimum stopping sight distance requirements for a design speed of 50 km/h. Given that the design speed can be equal to the posted speed and that the existing horizontal curve radius will limit approach speeds (the radius corresponds to a design speed of 40 km/h), the existing conditions are considered appropriate.

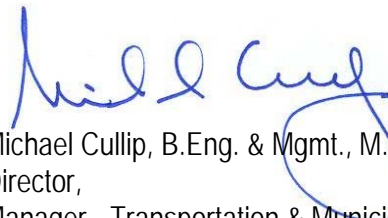
Should you have any questions or comments on the above, please do not hesitate to contact us.

Yours truly,

C.C. Tatham & Associates Ltd.



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DP:mw



Michael Cullip, B.Eng. & Mgmt., M.Eng., P.Eng.
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source: maps.simcoe.ca

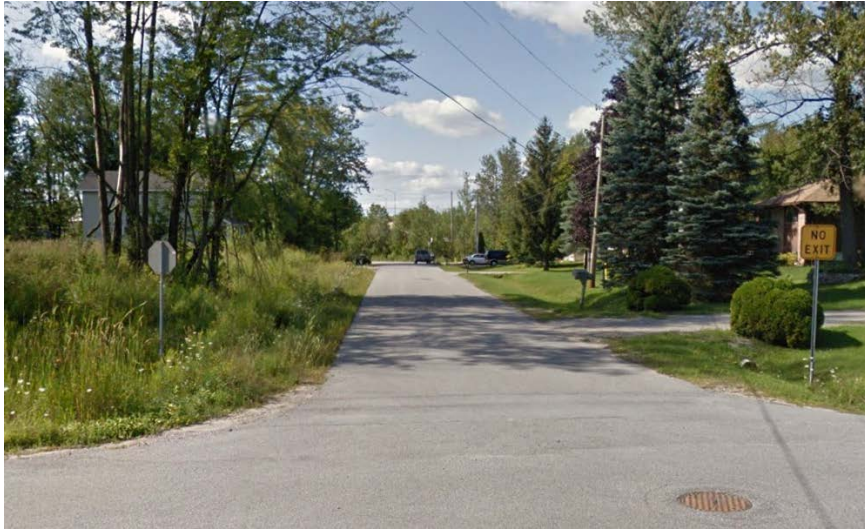


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Bayou Subdivision, Traffic Impact Brief

Site Location

Figure
1



Looking north along Timberline Avenue from Grand Tamarack Crescent



Looking south along Timberline Avenue from Grand Tamarack Crescent



Looking east along Grand Tamarack Crescent from Timberline Avenue



Looking west along Grand Tamarack Crescent from Timberline Avenue

source: Google Streetview



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Bayou Subdivision, Traffic Impact Brief
Area Road Network

Figure
2a



Looking east along Grand Tamarack Crescent from Highway 11



Looking west along Grand Tamarack Crescent towards Highway 11 access



Looking east along Grand Tamarack Crescent from proposed site access



Looking west along Grand Tamarack Crescent from proposed site access

source: Google Streetview



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Bayou Subdivision, Traffic Impact Brief Area Road Network

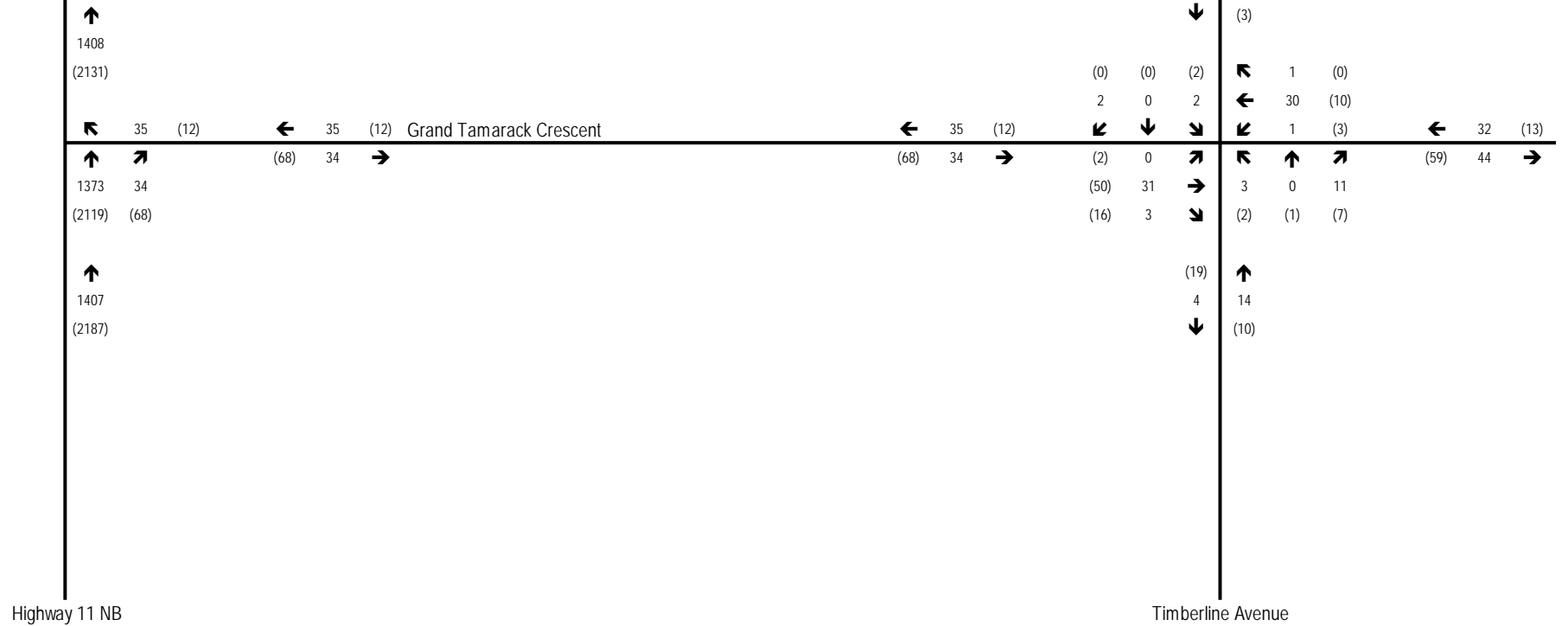
Figure
2b



Highway 11 NB

Timberline Avenue

100 Weekday AM Peak Hour
(100) Weekday PM Peak Hour





Highway 11 NB

Timberline Avenue

100 Weekday AM Peak Hour
 (100) Weekday PM Peak Hour
 Volumes rounded to nearest 5

↑
1725
(2600)

↖ 50 (20)
↑ ↗
1675 45
(2580) (90)

↑
1720
(2670)

← 50 (20)
↖ ↗
(90) 45 →

Grand Tamarack Crescent

← 50 (20)
↖ ↗
(90) 45 →

(0) (0) (5)
5 0 5
↓ ↓ ↓
(65) 40 →
(20) 5 ↓

(5) ↑
10 ↓
(10)

↖ 5 (0)
← 40 (15)
↙ 5 (5)
↖ ↑ ↗
5 0 15
(5) (5) (10)

← 50 (20)
↖ ↗
(80) 60 →

(25) ↑
10 20
↓ (20)

Timberline Avenue

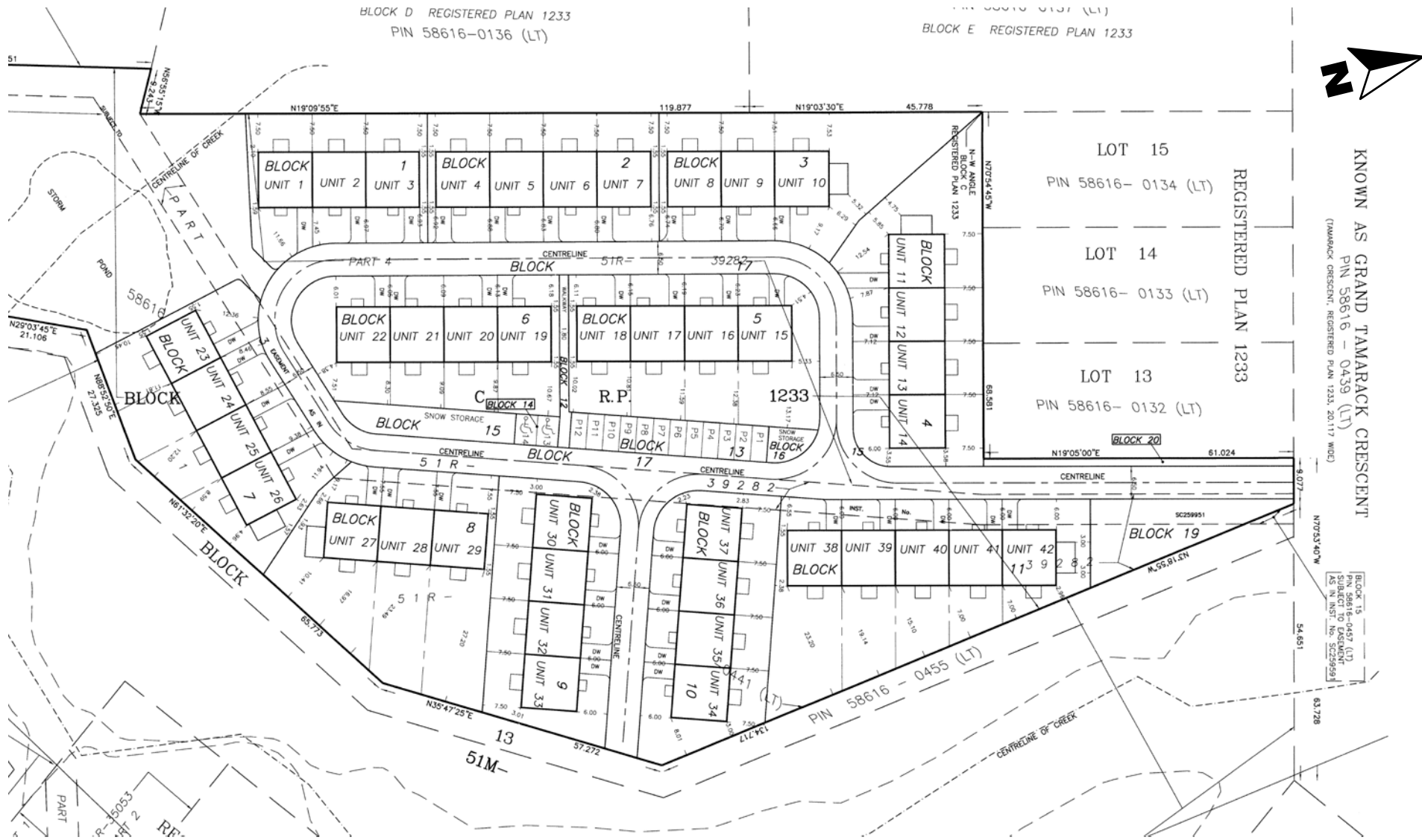
Highway 11 NB



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Bayou Subdivision, Traffic Impact Brief
2027 Background Traffic Volumes

**Figure
4**



KNOWN AS GRAND TAMARACK CRESCENT
 (TAMARACK CRESCENT, REGISTERED PLAN 1233, 20.117 WIDE)
 REGISTERED PLAN 1233

LOT 15
 PIN 58616-0134 (LT)
 LOT 14
 PIN 58616-0133 (LT)
 LOT 13
 PIN 58616-0132 (LT)

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Site Plan

Figure 5



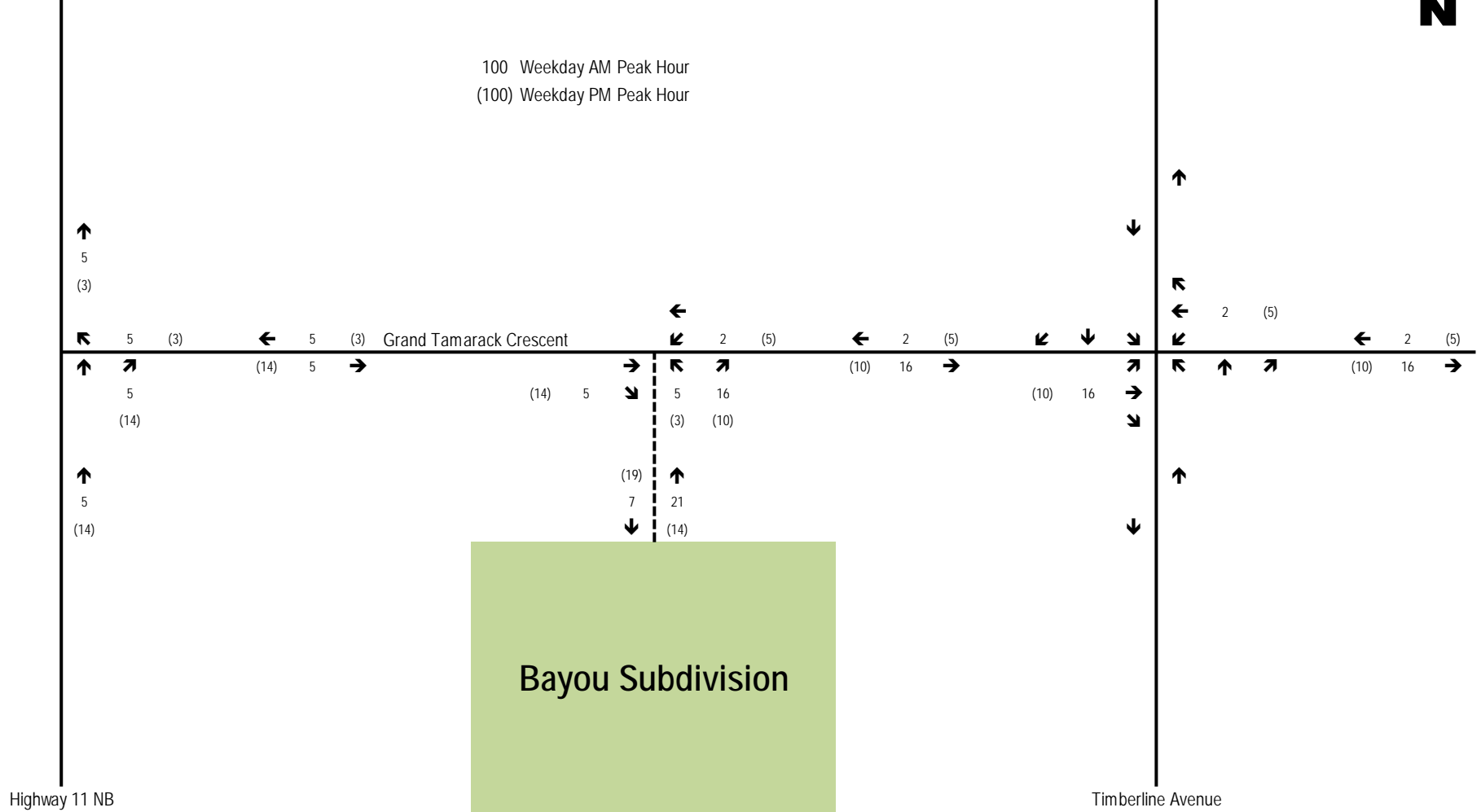
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Highway 11 NB

Timberline Avenue

100 Weekday AM Peak Hour
 (100) Weekday PM Peak Hour



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Site Generated Traffic

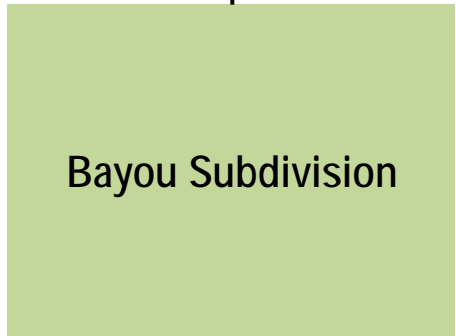
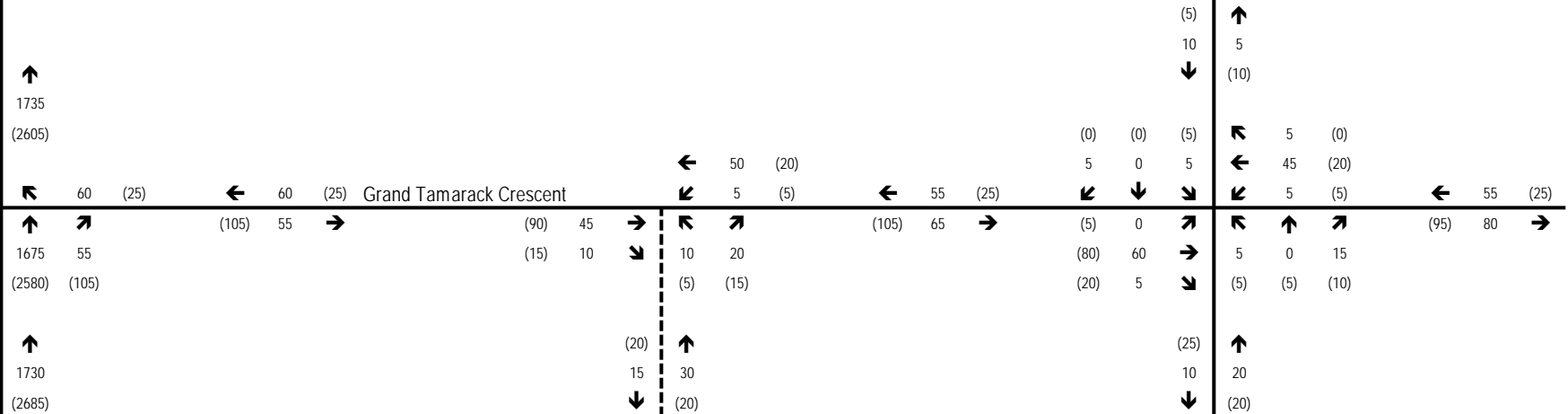
Figure
6



Highway 11 NB

Timberline Avenue

100 Weekday AM Peak Hour
 (100) Weekday PM Peak Hour
 Volumes rounded to nearest 5



Bayou Subdivision

Highway 11 NB

Timberline Avenue



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2027 Total Traffic Volumes

Figure
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