STILLWATER CANADA INC.

MARATHON PGM – Cu PROJECT

TRAFFIC IMPACT STUDY

Prepared by:

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ACCRONYMS AND ABBREVIATIONS

Abbreviation	Description
CARs	Canadian Aviation Regulations
CEA Agency	Canadian Environmental Assessment Agency
CPR	Canadian Pacific Railway
CSAS	Commercial Site Access Standard
Cu	Copper
EA	Environmental Assessment
e.g.	For example
EIS	Environmental Impact Statement
ENL	Engineering Northwest Ltd.
Fe	Iron
GDM	Geometric Design Standards for Ontario Highways
ha	hectare
HCM	Highway Capacity Manual
HO	Harmonization Order
Hwy	Highway
JRP	Joint Review Panel
km	Kilometre
LOS	Level of Service
m	Metre
MPGM	Marathon PGM Corporation
MPI	Marathon Pulp Inc.
MTO	Ministry of Transporation (Ontario)
NoC	Notice of Commencement
OEA Act	Ontario Environmental Assessment Act
O. Reg	Ontario Regulation
OTM	Ontario Traffic Manual
OMNR	Ontario Ministry of Natural Resources
ON	Ontario
PGM	Platinum Group Metal
PTHI Act	Public Transportation and Highway Improvement Act (Ontario)
RAU	Rural Arterial Undivided Highway
RSM	Roadside Safety Manual
SCI	Stillwater Canada Incorporated
SFL	Sustainable Forest License
SMC	Stillwater Mining Company
TC	Transport Canada
TGCL	True Grit Consulting Limited
ToR	Terms of Reference
TPD	Tonnes Per Day
VA	Voluntary Agreement

EXECUTIVE SUMMARY

Engineering Northwest Ltd. (ENL) was retained by Stillwater Canada Inc[1] to undertake a traffic study for their Marathon PGM – Cu Project (the "Project"). The Project consists of the development of an open pit mining and milling operation at a site located approximately 10 km north of the Town of Marathon, Ontario. For the purposes of this study, mine construction is anticipated to begin in 2013 and the mine to be operational by 2015. The operating life of the mine is proposed to be 11.5 years.

The purpose of this Traffic Impact Study is to document how the traffic associated with the Marathon PGM – Cu Project will affect the operational integrity of Highway 17 and to identify highway improvements at the intersection of Highway 17, Peninsula Road and Camp 19 Road that may be necessary to meet Ministry of Transportation standards.

The study analysed the anticipated peak traffic periods both during construction (2013), as well as the commencement and 10 year horizon year of operations (2015 and 2025 respectively). In summary, the study found the Project will not have a significant effect on the level of service that the Highway 17 and Peninsula Road / Camp 19 Road intersection will operate at.

The anticipated growth rate for traffic in the study area, as agreed to by the Ministry of Transportation, is 0.5% per year. With such a minimal increase, deferral of the mine development by four or five years will not impact the results and conclusions of this study.

In addition, sufficient sight distances are currently provided both for vehicles approaching the intersection and departing from the stopped position at the intersection. There are no proposed approved developments or changes to the road network associated with this Project that would have an impact on traffic operations.

With the addition of the proposed development to the existing network the following mitigation is recommended to accommodate the turning manoeuvres of the larger sized vehicular traffic accessing the site, both during the construction and operational phases.

- It is recommended to upgrade the Camp 19 Road entrance at the intersection of Highway 17 to an MTO CSAS-23 (Truck Access) standard. The CSAS-23 optional right turn taper is also recommended to facilitate right turn moves from Highway 17 onto Camp 19 Road.

[1] Stillwater Canada Inc. is a subsidiary of Stillwater Mining Company that acquired the Marathon PGM-Cu Project from Marathon PGM Corp. in November 2010. The current Marathon PGM-Cu Project proponent is Stillwater Canada Inc.

1.0 INTRODUCTION

Stillwater Canada Inc. (SCI) proposes to develop a platinum group metals (PGMs), copper (Cu) and possibly iron (Fe) open-pit mine and milling operation near Marathon, Ontario. A Notice of Commencement (NoC) of an environmental assessment (EA) in relation to the proposed Marathon PGM-Cu Project (the "Project") was filed by the Canadian Environmental Assessment Agency (CEA Agency) under Section 5 of the *Canadian Environmental Assessment Act* on April 29, 2010 (updated July 19, 2010).

The EA was referred to an independent Review Panel by the Minister of the Environment on October 7, 2010. On March 23, 2011 SCI entered into a Voluntary Agreement (VA) with the Province of Ontario to have the Project subject to the Ontario Environmental Assessment Act (OEA Act). This agreement was the instrument that permitted provincial government to issue a Harmonization Order (HO) under Section 18(2) of the Canada-Ontario Agreement on Environmental Assessment Cooperation to Establish a Joint Review Panel for the Project between the Minister of the Environment, Canada and the Minister of the Environment, Ontario.

The HO was issued on March 25, 2011. The Terms of Reference (ToR) for the Project Environmental Impact Statement (EIS) and the agreement establishing the Joint Review Panel (JRP) were issued on August 8, 2011.

The following provides an overview of the proposed development including its location, surrounding land uses, the exploration history of the site and the primary features of the mining and milling facilities. The information provided below, in the Environmental Impact Statement Report and supporting technical studies is based on the conceptual mine design for the Project. The conceptual design provides level information for the environmental assessment process. Final detailed design will commence following EA approval in concordance with the concepts presented herein.

1.1 PROJECT LOCATION

The Project is located approximately 10 km north of the Town of Marathon, Ontario. The town, population approximately 3,000, is situated adjacent to the Trans-Canada Highway 17 (Hwy 17) on the northeast shore of Lake Superior, about 300 km east and 400 km northwest (by highway) of Thunder Bay and Sault Ste. Marie, respectively.

The centre of the Project footprint sits at approximately 48° 47' N latitude and 86° 19' W longitude. The Project site is in an area characterized by relatively dense vegetation, comprised largely of a birch- and, to a lesser extent, spruce-dominated mixed wood forest. The terrain is moderate to steep, with frequent bedrock outcrops and prominent east-west oriented valleys. The climate of this area is typical of northern areas within the Canadian Shield, with long winters and short, warm summers.

A provincial setting map as well as a study plan illustrating the general location of the proposed Project site is shown in Exhibits 1 and 2, respectively.

Exhibit 1: Provincial Setting

Access to the Project site is currently provided by the Camp 19 Road, opposite the Peninsula Road at Hwy 17. The existing road runs east towards the Pic River before turning north along the river to the Project site (approximately 8 km). The existing road will be upgraded and utilized from its junction with Hwy 17 for approximately 2.0 km. At this point a new road running north will be constructed to the future plant site. The primary rationale for developing the new road is to move traffic away from the Pic River. The new section of road will link two sections of abandoned forest access roads located on the site.

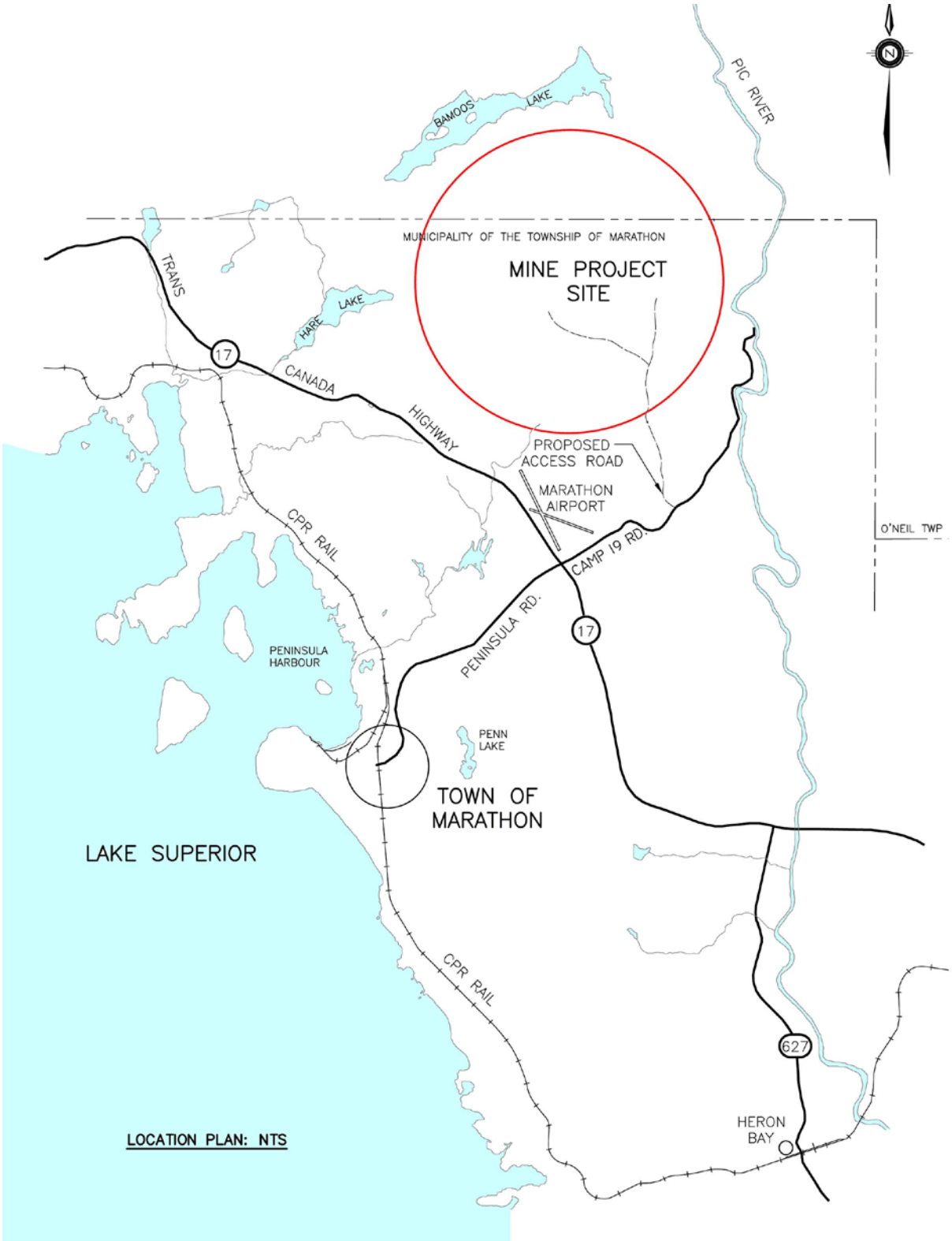


Exhibit 2: Site Location

1.2 SCOPE OF WORK

A Project scoping meeting was held with the Ministry of Transportation on Wednesday, May 26, 2010. The primary objectives of the traffic report are to:

- Follow the MTO General Guidelines for Preparation of Traffic Impact Studies
- Estimate the volume and distribution of traffic associated with the Project. Site generated traffic will be based on information provided by the Project proponent.
- Evaluate traffic operations at the intersection of Highway 17 and Peninsula Road for existing and future traffic volumes including the construction and operation phases of the proposed mine. The assessment of the operations phase shall include start-up as well as 5 and 10 year horizon years.
- Address any traffic operations that do not meet MTO standards.

The Ministry did not have any recent turning movement counts at the intersection of Highway 17 and Peninsula Road. As a result, ENL conducted a 10 hour turning movement count at the intersection in June, 2010.

1.3 INTERSECTION ANALYSIS METHODOLOGY

The traffic operations analysis addressed unsignalized intersection operations at the intersection of Highway 17 with Peninsula Road/Camp 19 using the procedures and methodologies contained in the Highway Capacity Manual 2000 (HCM),[2] for both AM and PM peak hour traffic operations. Synchro/SimTraffic Simulation software version 7, which is approved for use in traffic studies by the MTO Guidelines, was used for the intersection analysis. The Level of Service (LOS), a qualitative measure of traffic operating conditions which varies from LOS A (the best) to LOS F (the worst), is reported for each study intersection. LOS is calculated in terms of delay at intersections, as described in Table A for unsignalized intersections.

[2] Highway Capacity Manual "HCM 2000", Transportation Research Board, Natioanl Research Council, Washington, D.C., 2000

TABLE A. INTERSECTION LEVEL OF SERVICE CRITERIA		
Unsignalized Intersections		
Level of Service	Average Total Delay (seconds/vehicle)	Description
A	< 10	Little or no conflicting traffic for minor street approach.
B	10 to 15	Minor street approach begins to notice absence of available gaps.
C	15 to 25	Minor street approach begins experiencing delay for available gaps.
D	25 to 35	Minor street approach experiences queuing due to a reduction in available gaps.
E	35 to 50	Extensive minor street queuing due to insufficient gaps.
F	> 50	Insufficient gaps of suitable size to allow minor street traffic demand to cross safely through a major traffic stream.
Source: Highway Capacity Manual (Transportation Research Board, 2000).		

In addition to the Highway Capacity Manual (HCM 2000), the Geometric Design Standards for Ontario Highways (GDM)[3], Roadside Safety Manual (RSM)[4] and Ontario Traffic Manual (OTM) Books[5] were referenced in the preparation of this report.

[3] Geometric Design Standards for Ontario Highways, Ministry of Transportation, Surveys & Design Office
[4] Roadside Safety Manual, Ministry of Transportation, Quality & Standards Division
[5] Ontario Traffic Manual, various books

2.0 EXISTING CONDITIONS

2.1 SITE DESCRIPTION

The Project site is located approximately 6 km northeast of the intersection of Highway 17 and Peninsula Road. The site lies partially within the municipal boundaries of the Town of Marathon, as well as partially within the unorganized townships of Pic, O'Neil and McCoy. The primary zoning designation within the site is 'rural'.

2.2 EXISTING ROAD NETWORK

Highway 17 within the study area was recently reconstructed under MTO Contract 2007-6010. This contract included reconstruction of the existing highway, including the addition of an eastbound passing lane immediately east of Peninsula Road. The geometrics allow continued flow for northbound traffic on Peninsula Road to turn onto Highway 17.

The existing roadway network in the vicinity of the study area is described below and the lane configuration is shown in Exhibit 3. For the purposes of this study, Highway 17 is referenced to traverse in an east-west direction, with Camp 19 Road extending north of Highway 17 and Peninsula Road extending to the south.

Camp 19 Road

The Camp 19 Road which intersects with Highway 17 directly opposite Peninsula Road provides current access to the Project site. There are a number of users that use the first section of this road to access various properties. Camp 19 Road is owned by The Corporation of the Improvement District of Marathon from Highway 17 northerly for approximately 700 metres to the Municipal boundary (as detailed in Appendix D). From that point on, the road is under Crown ownership.

The Camp 19 Road intersection consists of a simple open throat design with no tapers or additional lanes provided for traffic moving to or from the road. The intersection entrance is paved and the paved roadway surface extends northerly for a distance of approximately 100 metres. A fully paved shoulder on Highway 17 extends easterly and westerly from the intersection. The intersection as it exists will adequately accommodate the turning movement requirements of vehicles only up to the size of light delivery trucks (vans and pickups).

Peninsula Road

Peninsula Road is comprised of two lanes providing access to the Town of Marathon and is under the jurisdiction of the Town. Peninsula Road south of Highway 17 was transferred to the

Municipality in March 1997 by Order-in-Council OC-172/97. The posted speed limit on Peninsula Road is 80 km/h. A channelized right turn ramp (80 m radius) is provided for vehicles moving from Peninsula Road to Highway 17 to the east.

Highway 17

Highway 17 within the Project study area is identified as a Rural Arterial Undivided King's Highway with a design speed of 110 km/h (RAU110) and a posted speed limit of 90 km/h. This section is a two-lane, Class III Controlled Access Highway and is a part of the Trans-Canada Highway. The Peninsula Road / Highway 17 intersection consists of a right turn deceleration lane and a left turn lane for traffic moving from Highway 17 to Peninsula Road. The left turn lane extends westerly beyond the intersection to accommodate westbound vehicles turning left to the motel / gas station business located in the south west quadrant of the intersection.

The Highway 17 / Peninsula Road/Camp 19 Road cross intersection is unsignalized. Both Peninsula Road and the Camp 19 Road are stop controlled at the intersection of Highway 17, and the existing intersection is partially illuminated.

Information provided in the 2007 Preliminary Design Report prepared by the Ministry of Transportation for GWP 57-97-00 confirms that sight distance requirements are met for turning and crossing movements from Peninsula Road and that the intersection exceeds the minimum requirements for both stopping sight distance and decision sight distance.

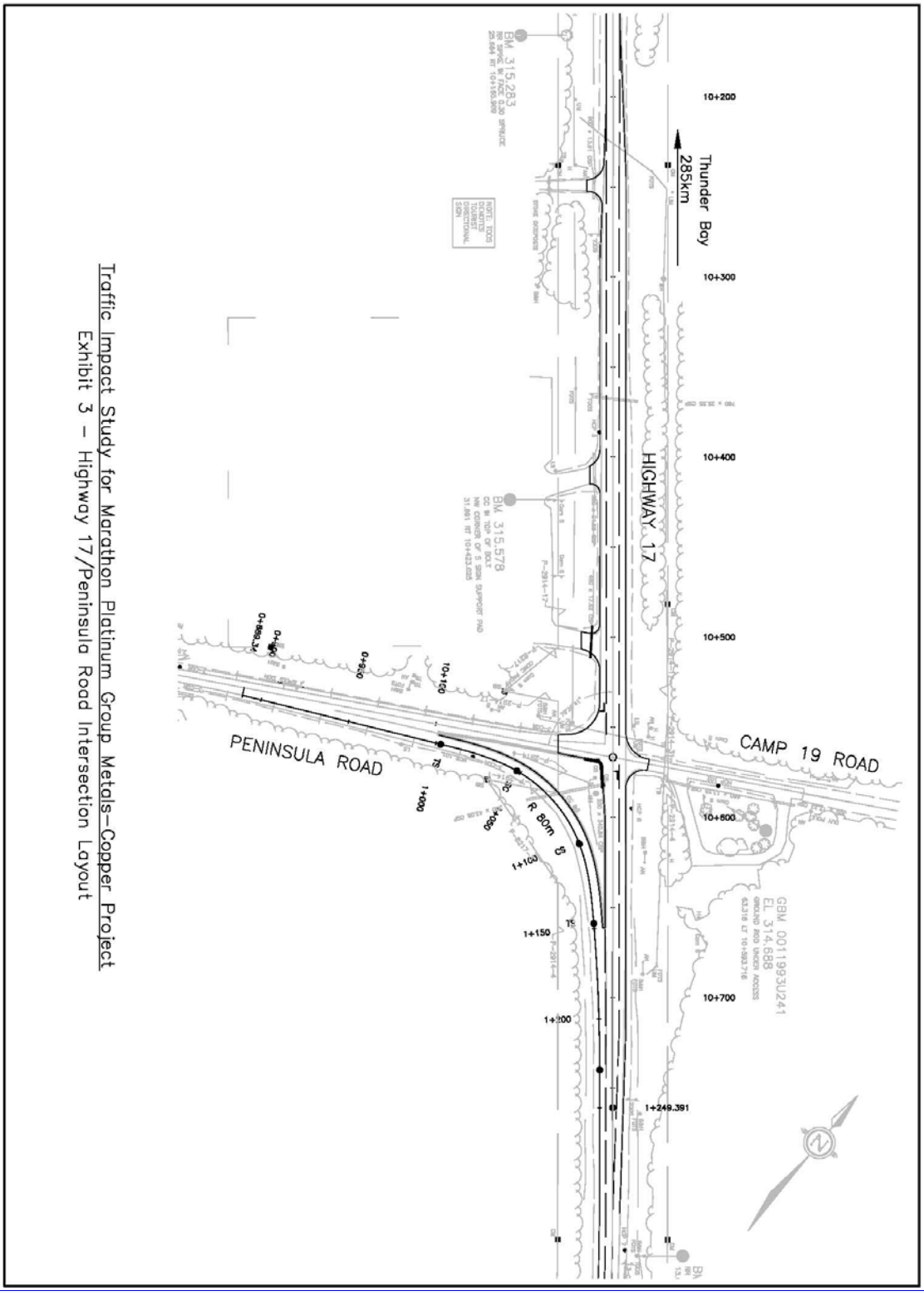


Exhibit 3 – Highway 17 / Peninsula Road Intersection Layout

3.0 STUDY AREA

The study limits are restricted to the intersection of Highway 17 with Peninsula Road/Camp 19 Road.

3.1 SURROUNDING LAND USE

The Project site lies partially within the municipal boundaries of the Town of Marathon, as well as partially within the unorganized townships of Pic, O'Neil and McCoy. The primary zoning designation within the Project Site is "rural".

In the immediate vicinity of the Project there are several authorized aggregate sites, including SCI's licensed aggregate site located to the east of Hwy 17 along the existing site access road (the Camp 19 Road).

The Marathon Municipal Airport (CYSP), which operates as a Registered Airport (Aerodrome class) under the Canadian Aviation Regulations (CARs; Subsection 302), is adjacent to, and south of the Project site. The airport occupies a land area of approximately 219 hectares and is accessed from Hwy 17.

Several First Nations and Métis groups claim the Project site as falling within their traditional land use boundaries. Based on Aboriginal accounts, prior to the construction of the forestry road, the land and water uses associated with (or close to) the site would have typically been limited to the Pic River corridor, the Bamoos Lake-Hare Lake-Lake Superior corridor and the Lake Superior shoreline and near-shore area, rather than the interior of the Project site. Traditional land and water uses (or rights conferred by Treaty) that can be ascribed to the site include:

- Hunting;
- Trapping;
- Fishing; and,
- Plant harvesting for food, cultural and medicinal uses.

Primary industries supporting the Town of Marathon, as well as the region, have historically been forestry, pulp and paper, mining, and tourism. The Project site is located within the Big Pic Forest Management Area. The Big Pic Forest includes Crown land east and north of Lake Superior and is generally north, south and west of the community of Manitouwadge and includes the communities of Marathon, Caramat and Hillsport.

Until July 2010 the forest was managed under the authority of a Sustainable Forest License (SFL), which was held by Marathon Pulp Inc. This SFL was revoked, with the forest reverting to the Crown as a Crown Forest. Until recently, Marathon Pulp Inc. (MPI) operated a kraft pulp mill in Marathon on the shore of Peninsula Harbour. The mill

announced its indefinite shut down (effective at the end of February 2009) on February 11, 2009, and as a result there has been a significant downturn in the local economy. A second mill operated in Terrace Bay was temporarily shut down in December 2011.

The Hemlo Mining Camp is located 30 km to the southeast. There are currently two mines in production at the Camp (David Bell Mine, Williams Mine), which are estimated to be in operations until about 2025.

3.2 MINE DEVELOPMENT LAND USE

Regional land-use activities in the area in which the Project site is found include hunting, fishing, trapping and snowmobiling, as well as mineral exploration (and mining) and forestry. As it pertains specifically to the Project site, the existing access road, which forms the southern limit of the site before turning north along the Pic River, provides access to the Pic River and can also be used to access the interior of the site, though access to the interior of the project site has been limited for the last number of years by a security gate.

4.0 DEVELOPMENT SIZE AND LAND USE PLAN

4.1 MINE PROPERTY SIZE

The mine development plan sees the Project footprint limited to a portion of the claim blocks and leases held by Stillwater in the area east of the Camp 19 Road and south of Bamoos Lake and north of Hwy 17 and west of the Pic River (~1,200 ha).

4.2 SITE PLAN

The Project consists of the development of an open pit mining and milling operation. One primary pit and smaller satellite pits will be mined. Ore will be processed (crushed, ground, concentrated) at an on-site processing facility. Final concentrates containing copper and platinum group metals will be transported off-site via road and/or rail to a smelter and refinery for subsequent metal extraction and separation. The total mineral reserve is estimated to be about 91 million tonnes. It is possible that an iron ore concentrate may also be produced.

4.3 DEVELOPMENT SCOPE

Building construction includes the construction of a mine services complex, concentrator building, assay laboratory, security and first aid building, warehouse, cold storage area, main sub-station and storage facilities for fuel, chemicals and explosives, and a mine shop garage. Construction will also include parking, fencing, exterior lighting and security systems.

The operating life of the mine is proposed to be 11.5 years.

Construction will require a workforce of about 400 people for a period of 18 to 24 months. An estimated 350 full time positions will be created during the height of operations. The mine workforce will reside in local and surrounding communities, as well as an Accommodations Complex that will be constructed in the Town of Marathon.

5.0 DEVELOPMENT STAGES

5.1 STAGE PHASES

The Project will consist of four phases.

- Phase I - Site Preparation
- Phase II – Construction
- Phase III – Operations
- Phase IV – Decommissioning and closure

5.2 HORIZON YEARS - STAGED DEVELOPMENT

The study horizon years for the staged development are[6]:

2013 - Construction Phase
2015 - Start Operations Phase
2025 - Operations Phase (10 Year Horizon)

5.3 PHASE I - SITE PREPARATION

Prior to commencement of construction a number of activities are necessary to prepare the Project site. Phase I Site Preparation will include clearing and grubbing for the access road, for the transmission line corridor, for internal access roads, for the plant site and for the open pit and process solids and mine rock storage areas. Drilling and blasting will be conducted in order to develop the open pits, for road construction and to prepare the plant site area. For the purpose of this study, site preparation is anticipated to begin in 2013.

5.4 PHASE II - CONSTRUCTION

Following site preparation Phase II Construction will commence. Building construction will be carried out as described earlier. Dams will be constructed to act as containment at the Process Solids Management Facility. Process solids and reclaim water pipelines will be constructed between the plant site and the process solids management facilities.

Power to the Project site will be provided via a new 115 kV transmission line that will be constructed from a junction point on the Terrace Bay-Manitouwadge Transmission Line (M2W Line) located to the northwest of the primary pit. The new transmission line will run approximately 4.1 km to a substation at the mill site. The width of the transmission corridor will be approximately 30 m.

The access road will be upgraded and constructed as well as a series of internal roads connecting various components/facilities of the Project. The entrance from Highway 17 to the Project site will be upgraded as necessary to accommodate the increased traffic

[6] The dates provided are Stillwater's best estimate given the current stage of the environmental assessment and permitting processes.

entering/exiting the Project site. For the purpose of this study, site preparation and construction activities are anticipated to begin in 2013 and last for 18 to 24 months.

5.5 PHASE III - OPERATIONS

Phase III Operation will consist of an open pit mining operation with ore being processed at an on-site processing facility. It is estimated that as many as fifty 26 metre long tractor trailer (44 tonne capacity) truckloads per day of final concentrate product will be transported off-site to a concentrate storage and transfer facility. It is anticipated the haul route will consist of the mine access road down to and across Highway 17 to Peninsula Road and along Peninsula Road to an existing Canadian Pacific Railway rail link in the Town of Marathon. The concentrate will then be shipped via rail to a third party smelting facility. No new rail siding construction is envisioned. Facility upgrades would be limited to the development of storage and handling related infrastructure. For the purpose of this study, commercial mine operations are expected to begin in 2015 with mine life predicted to be 11.5 years.

5.6 PHASE IV – DECOMMISSIONING AND CLOSURE

Disturbed areas of the Project footprint will be reclaimed in a progressive manner during all Project phases. The ultimate goal of mine decommissioning will be to reclaim land within the Project footprint to permit future use by resident biota and for traditional land-use activities. Decommissioning will involve a number of activities including dismantling and removal of equipment, removal of power lines and electrical equipment, demolition/removal of surface buildings and associated infrastructure and disposal of resulting rubble. A certified Closure Plan for the Project will be prepared as required by Ontario Regulation (O.Reg.) 240/00 as amended by O.Reg. 194/06 “Mine Development and Closure under Part VII of the Mining Act” and “Mine Rehabilitation Code on Ontario”.

6.0 OTHER DEVELOPMENTS

6.1 PROPERTY DEVELOPMENT

Dialogue with the Town of Marathon economic development manager reveals that the town currently has a land user permit for the Crown Lands property on the northeast corner of the Highway 17/Peninsula Road/Camp 19 Road intersection. The Town has a conceptual plan for development of the property into a tourist information/picnic area but has not submitted a Traffic Impact Study for this development as no schedule is in place and the development is budget dependant. There are two existing entrances to this property off the Camp 19 Road. The property is currently used as a traveller rest/picnic area.

The property on the northwest corner of the Highway 17/Peninsula Road/Camp 19 Road intersection is owned by the Town of Marathon. There are no plans for this corner.

The Town has no other approved developments nor are they aware of any other approved developments that may result in increased traffic at this intersection.

6.2 ROAD DEVELOPMENTS

Peninsula Road from Highway 17 to the Town of Marathon was reconstructed in 2008, and based on consultation with the Town of Marathon and the MTO, there are no road improvements that are planned or currently under construction within the immediate study area.

The Ministry of Transportation reconstructed Highway 17 from 0.6 km west of Peninsula Road, easterly 17.8 km in 2008/09. The Project included repaving the existing highway as well as the construction of a new eastbound passing lane commencing from the Peninsula Road intersections. The right turn channelization lane from Peninsula Road continues to the start of the passing lane, allowing for uninterrupted flow for right turning vehicles.

7.0 TRAFFIC ANALYSIS AND TURNING MOVEMENT COUNTS

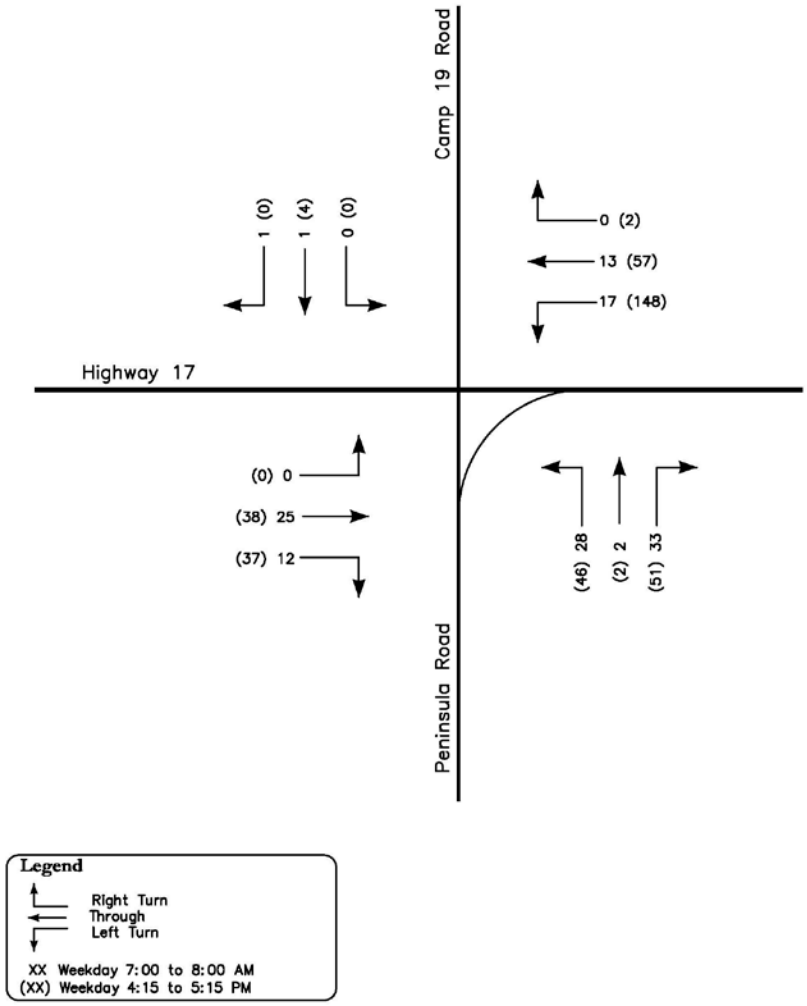
7.1 EXISTING TRAFFIC VOLUMES

The Ministry of Transportation was consulted for available traffic volumes in the vicinity of the Peninsula Road intersection. Although there were Highway 17 sectional volumes on either side of the intersection, there were no recent turning movement counts available for the intersection of Highway 17 and Peninsula Road.

Engineering Northwest Ltd. conducted weekday traffic counts including turning movement counts at the intersection of Highway 17 and Peninsula Road on June 17, 2010. As agreed to with the MTO, counts were conducted from 6 a.m. to 8 a.m. and from 12 p.m. to 8 p.m. A copy of these traffic counts is included in Appendix B of this report.

The a.m. and p.m. peak hours are from 7:00 to 8:00 a.m. and from 4:15 to 5:15 p.m. respectively as detailed in Figure 1

Figure 1: Existing Traffic Volumes (AM and PM Peak Hours)



Under existing conditions, the operation of the Highway 17 / Peninsula Road/Camp 19 Road intersection has been evaluated using Synchro 7 with the results summarized in Table B below.

Table B: Existing Intersection Operations

Intersection and Movement	AM Peak Hour			PM Peak Hour		
	v/c	Delay	LOS	v/c	Delay	LOS
Highway 17 and Peninsula Road OVERALL		**5.3**	**A**		**6.1**	**A**
Northbound left-thru	0.04	9.3	A	0.14	14.6	B
Southbound left-thru-right	0.00	9.0	A	0.01	14.2	B
Westbound left	0.01	7.3	A	0.12	7.7	A
Eastbound left-thru	0.00	0.0	A	0.00	0.0	A

LOS – Level of Service v/c – volume to capacity ratio Delay – Average Delay (s/veh)

The Highway 17 and Peninsula Road intersection is currently operating at an overall level of service of A (*little or no conflicting traffic for minor street approach*) under 2010 conditions. The critical movements are vehicles exiting Peninsula Road and Camp 19 Road which are both operating at LOS B (*minor street approach begins to notice absence of available gaps*).

8.0 TRIP GENERATION

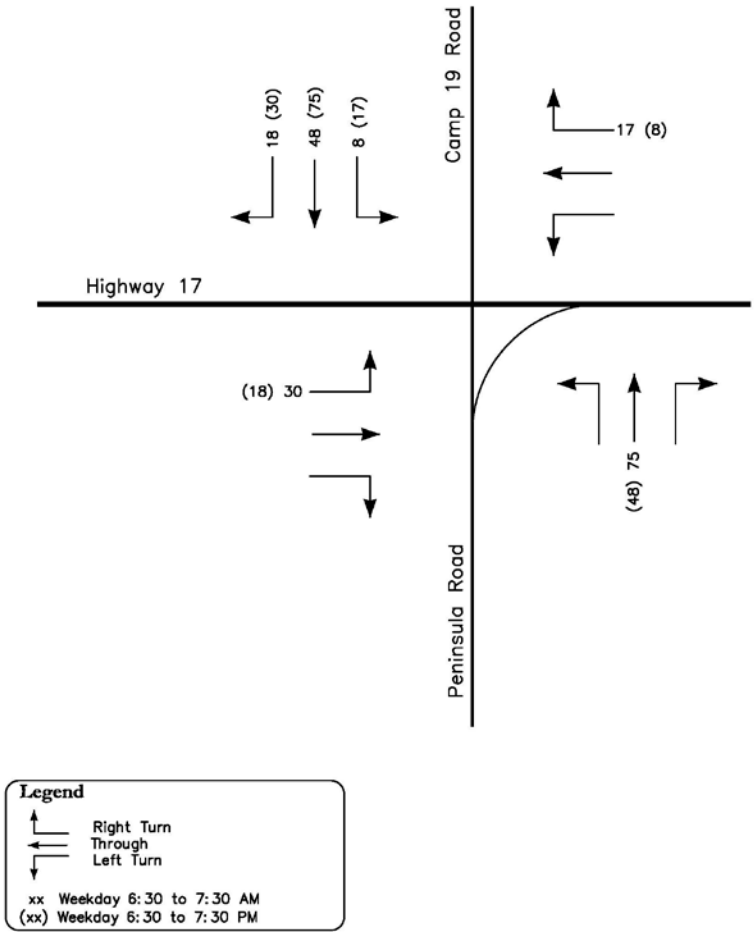
Since the ITE Trip Generation Manual does not include an appropriate land use category for a mine site, and considering the uniqueness of various mine operations, the schedules and estimated trip generations during each phase of this Project were derived from information provided by Met-Chem Canada Inc. Consulting Engineers, True Grit Consulting Ltd., and Stillwater Canada Inc.

8.1 SITE PREPARATION / CONSTRUCTION PHASE

The site preparation/construction stage will be a 7 day per week operation. Operations will include two 12 hour shifts per day with an estimated 90 passenger vehicles entering the mine site for the day shift and an estimated 60 passenger vehicles entering the mine site for the night shift. The majority of the traffic will be workers traveling to and from the site at the start and end of their shifts, with some general freight and equipment transport vehicles accessing the site throughout the day.

Anticipated traffic data provided by Met-Chem Canada Inc. and changes and additional information as provided by True Grit Consulting Ltd. and Stillwater Canada Inc. was used in the analysis of this report and is included in Appendix A. Anticipated AM and PM peak hours of vehicles generated by the site during the Site Preparation / Construction Phase is detailed in Figure 2 below.

Figure 2 –
Project Site Generated Traffic – Site Preparation / Construction Phase



8.2 MINE OPERATIONS PHASE

Mine operations will be 7 days a week. Operations will include two 12 hour shifts per day with approximately 60 passenger vehicles both entering and leaving the site at 7 a.m. and 7 p.m. during the shift change. Peak a.m. and p.m. site generated traffic during the operations phase of the mine was provided by Stillwater Canada Inc. Assumptions were made by Engineering Northwest Ltd. for the expected route assignment of site generated traffic during the mine Operations phase. Table C summarizes the trip distribution during the Operations Phase.

At this time, Stillwater is considering two alternatives for the shipment of concentrate to a smelter and refinery for subsequent metal extraction and separation.

1. If final concentrates containing copper and platinum group metals (gold, platinum, palladium) only is being transported off-site for further processing, this material will be taken by truck to a smelter east of the mine site or to CP's rail yard in Marathon and taken by rail to Montreal and shipped to a smelter in Europe. For this alternative, Stillwater anticipates a total of 8 trucks of concentrate will be shipped to a smelter in Quebec via Highway 17 and Highway 101.

2. If it proves economical to also transport concentrates of iron, all concentrate will be transported by rail from the existing CP Rail line in Marathon. Under this scenario Stillwater anticipates a total of fifty 26 metre long tractor trailer (44 tonne capacity) truckloads of concentrate product with a haul route from Camp 19 Road crossing Highway 17 to Peninsula Road and then to a trans-load facility in the Town of Marathon. The truck haul will take place between 7 a.m. and 11 p.m. each day.

In addition to the hauling of concentrate, some general freight and third party vehicles will be accessing the site throughout the day.

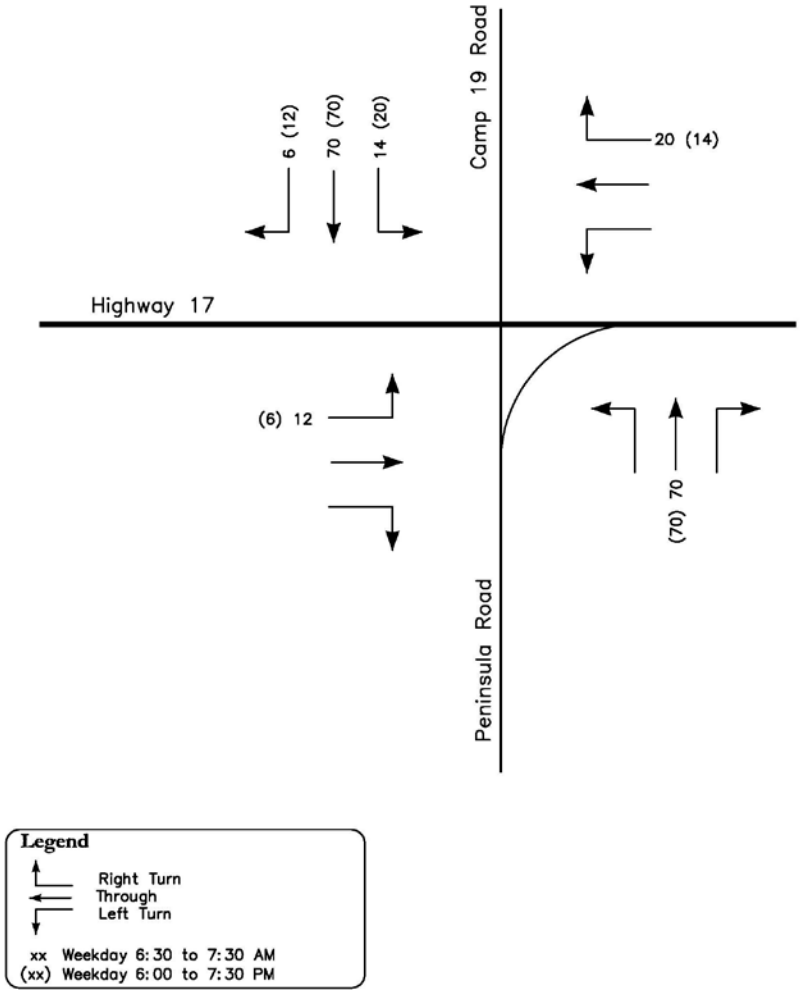
For the purpose of this study, we have taken a worse case approach with an allowance for both the 8 trucks of concentrate hauling easterly as well as the 50 trucks of concentrate into the Town of Marathon.

Table C: Net Trip Distribution

DIRECTION	VIA	PERCENT
South	Peninsula Road	85%
East	Highway 17	12%
West	Highway 17	3%
TOTAL		**100%**

Peak hours of traffic generated by the site during the operations phase are detailed in Figures 3 and 4 below.

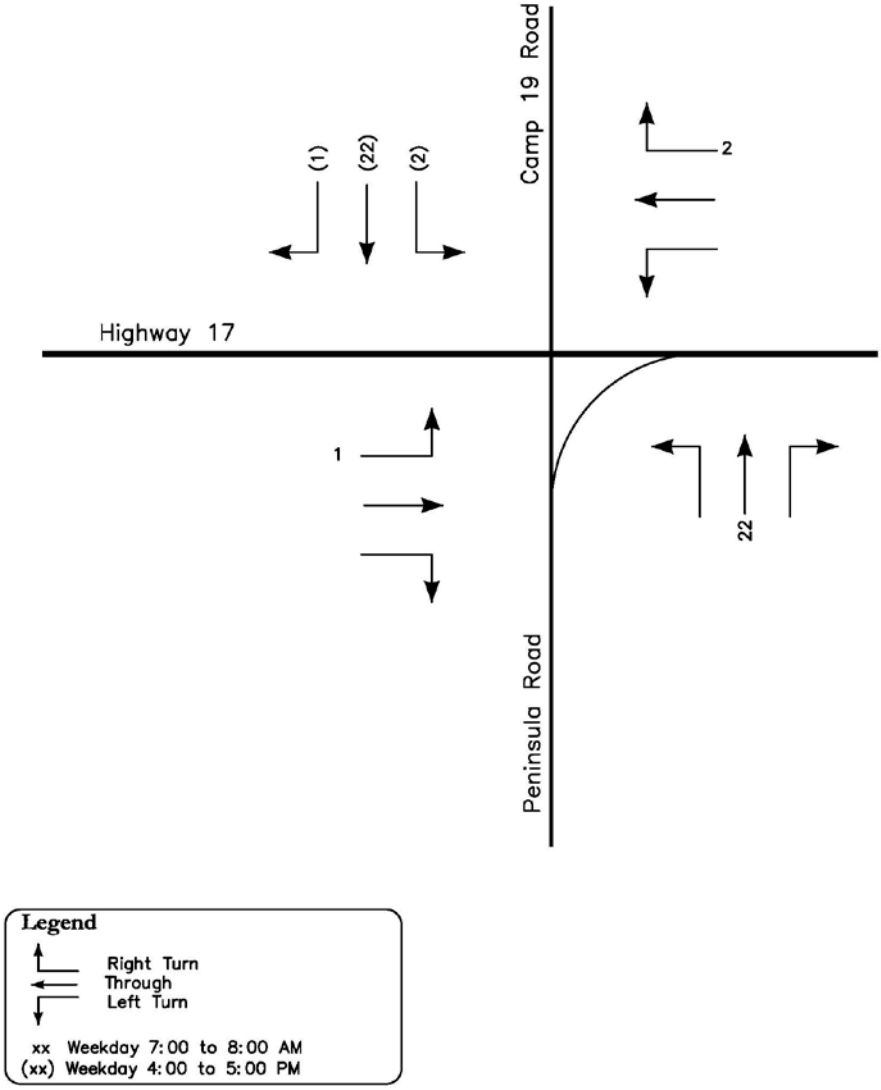
Figure 3 – Site Generated Traffic by Miners – Operations Phase



In addition to the mine workers detailed above, office staff working at the mine will operate on an 8 hour day with approximately 25 vehicles entering at 8 a.m. and 25 leaving the site at 4 p.m.

Site generated traffic resulting from office staff does not overlap that generated by the mine workers, and is in included in Figure 4 below.

Figure 4 – Site Generated Traffic by Office Staff – Operations Phase



9.0 BACKGROUND TRAFFIC FORECASTS (NON-SITE TRAFFIC)

9.1 BACKGROUND TRAFFIC

Future background traffic is derived based on background road traffic growth plus background developments in the vicinity of the study area. Since there are no approved background developments in this study area, the background analysis was derived with background road traffic only.

9.2 BACKGROUND TRAFFIC GROWTH

For this study a 0.5% per annum background traffic growth rate has been utilized. This rate is the same as that provided in the 2007 MTO GWP 57-97-00 Design Criteria for a reconstruction project at this location.

10.0 TRIP PASS-BY / INTERACTION RATES

10.1 TRIP GENERATION

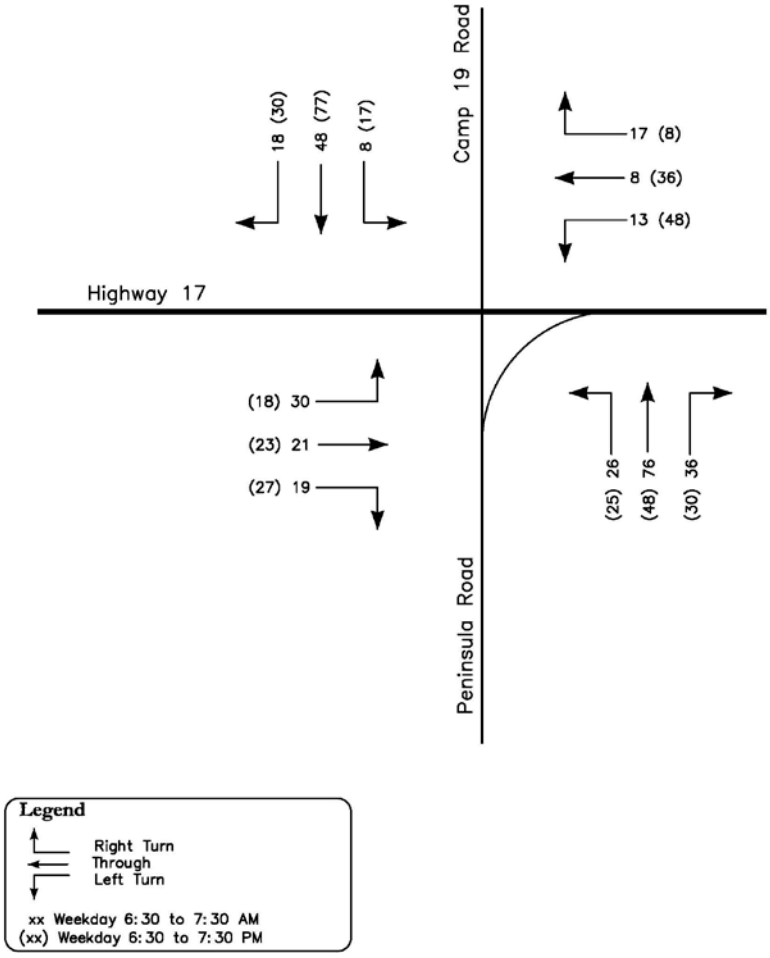
Trip generation has not been adjusted as there is no basis for assuming pass-by trips or site interaction rates.

11.0 2013 CONSTRUCTION PHASE TOTAL TRAFFIC OPERATIONS

Total traffic volumes and intersection operations during the Construction Phase of this Project will consist of the existing 2010 traffic, the background traffic growth up to 2013 as well as the traffic generated by the site during the construction operation.

The resulting 2013 total traffic volumes for the weekday a.m. and p.m. peak hours are detailed in Figure 5 below.

Figure 5 – Total Traffic Volumes – Construction Phase



Under 2013 Total Traffic Volume conditions, the operation of the Highway 17 / Peninsula Road/Camp 19 Road intersection has been evaluated using Synchro 7 with the results summarized in Table D below.

Table D: 2013 Construction Phase Intersection Operations

Intersection and Movement	AM Peak Hour			PM Peak Hour		
	v/c	Delay	LOS	v/c	Delay	LOS
Highway 17 and Peninsula Road OVERALL		**8.0**	**A**		**8.2**	**A**
Northbound left-thru	0.18	11.3	B	0.16	12.4	B
Southbound left-thru-right	0.12	10.5	B	0.23	12.1	B
Westbound left	0.01	7.3	A	0.04	7.4	A
Eastbound left-thru	0.02	4.4	A	0.01	3.3	A

LOS – Level of Service v/c – volume to capacity ratio Delay – Average Delay (s/veh)

It is anticipated the Highway 17 and Peninsula Road intersection will operate at an overall level of service of A with the addition of the construction traffic in 2013. The critical movement will be traffic exiting Peninsula Road and Camp 19 Road which will both operate at a level of service of B under 2013 total traffic volume conditions.

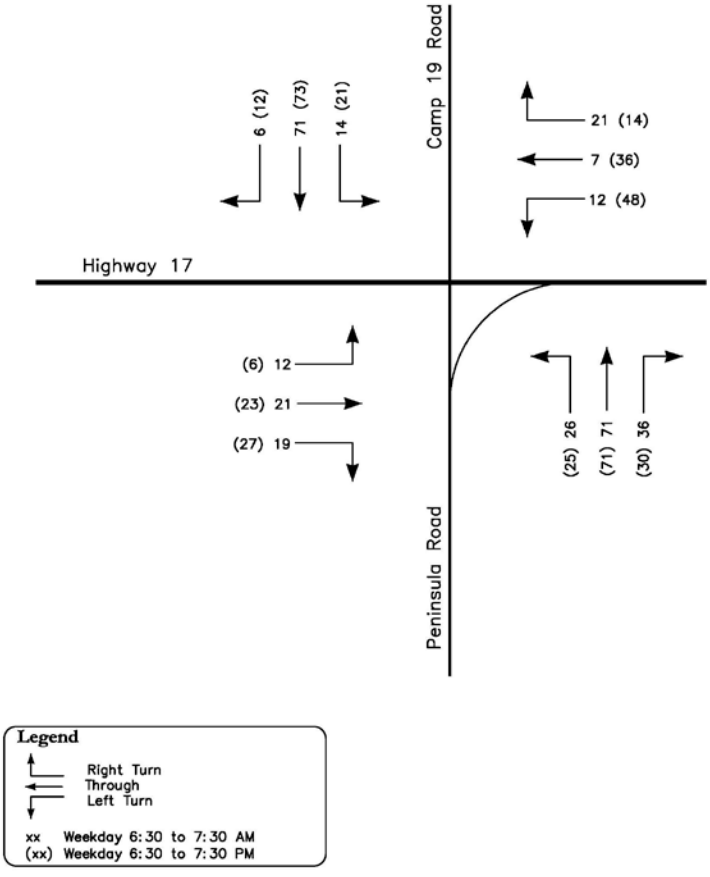
12.0 2015 OPERATIONS PHASE TOTAL TRAFFIC OPERATIONS

Total traffic volumes and intersection operations in 2015 during the start of the Operations Phase of this Project will consist of the existing 2010 traffic, the background traffic growth up to 2015 as well as the traffic generated by the site during the Operations Phase.

12.1 MINE WORKER COMMUTE PEAK HOUR OF GENERATOR

The resulting 2015 total traffic volumes for the weekday a.m. and p.m. peak hours resulting from the commuting of the mine workers are detailed in Figure 6 below.

Figure 6 – Total Traffic Volumes – 2015 Operations Phase (during Mine Workers peak hour)



Under 2015 Total Traffic Volume conditions, the operation of the Highway 17 / Peninsula Road/Camp 19 Road intersection has been evaluated using Synchro 7 with the results summarized in Table E below.

Table E: 2015 Operations Phase Intersection Operations (during Mine Workers peak hour)

Intersection and Movement	AM Peak Hour			PM Peak Hour		
	v/c	Delay	LOS	v/c	Delay	LOS
Highway 17 and Peninsula Road						
OVERALL		**7.9**	**A**		**8.0**	**A**
Northbound left-thru	0.16	10.8	B	0.19	8.6	B
Southbound left-thru-right	0.16	10.6	B	0.20	12.2	B
Westbound left	0.01	7.3	A	0.04	7.4	A
Eastbound left-thru	0.01	2.7	A	0.00	1.5	A

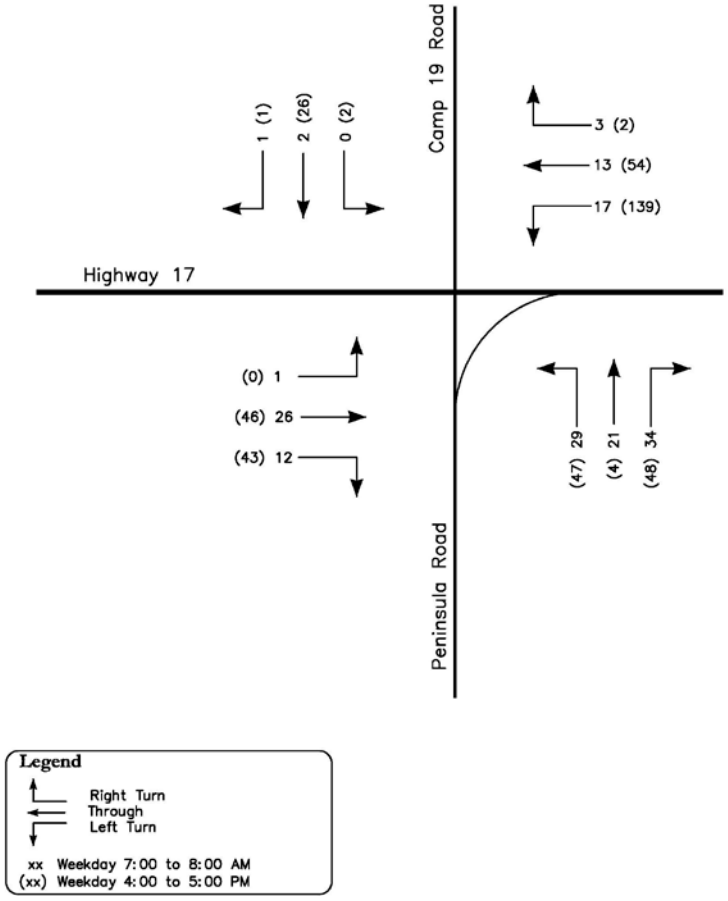
LOS – Level of Service v/c – volume to capacity ratio Delay – Average Delay (s/veh)

It is anticipated the Highway 17 and Peninsula Road intersection will operate at LOS B or better under 2015 total traffic volume conditions, with an overall Intersection Capacity Utilization level of service A.

12.2 OFFICE WORKER COMMUTE PEAK HOUR OF GENERATOR

The resulting 2015 total traffic volumes for the weekday a.m. and p.m. peak hours resulting from the commuting of the office workers are generated at a different time than the mine works. As a result, these times are analysed separately and are detailed in Figure 7 below.

Figure 7 – Total Traffic Volumes – 2015 Operations Phase (during Office Workers peak hour)



Under 2015 Total Traffic Volume conditions, the operation of the Highway 17 / Peninsula Road/Camp 19 Road intersection has been evaluated using Synchro 7 with the results summarized in Table F below.

Table F: 2015 Operations Phase Intersection Operations (during Office Workers peak hour)

Intersection and Movement	AM Peak Hour			PM Peak Hour		
	v/c	Delay	LOS	v/c	Delay	LOS
Highway 17 and Peninsula Road						
OVERALL		**5.9**	**A**		**6.5**	**A**
Northbound left-thru	0.08	9.7	A	0.15	15.1	C
Southbound left-thru-right	0.00	9.3	A	0.09	14.6	B
Westbound left	0.01	7.3	A	0.12	7.8	A
Eastbound Left	0.00	0.3	A	0.00	0.0	A

LOS – Level of Service v/c – volume to capacity ratio Delay – Average Delay (s/veh)

It is anticipated the Highway 17 and Peninsula Road intersection will operate at an overall Intersection Capacity Utilization level of service of A under 2015 total traffic volume conditions. The critical movement will be left turn - thru traffic exiting Peninsula Road which will operate at LOS C.

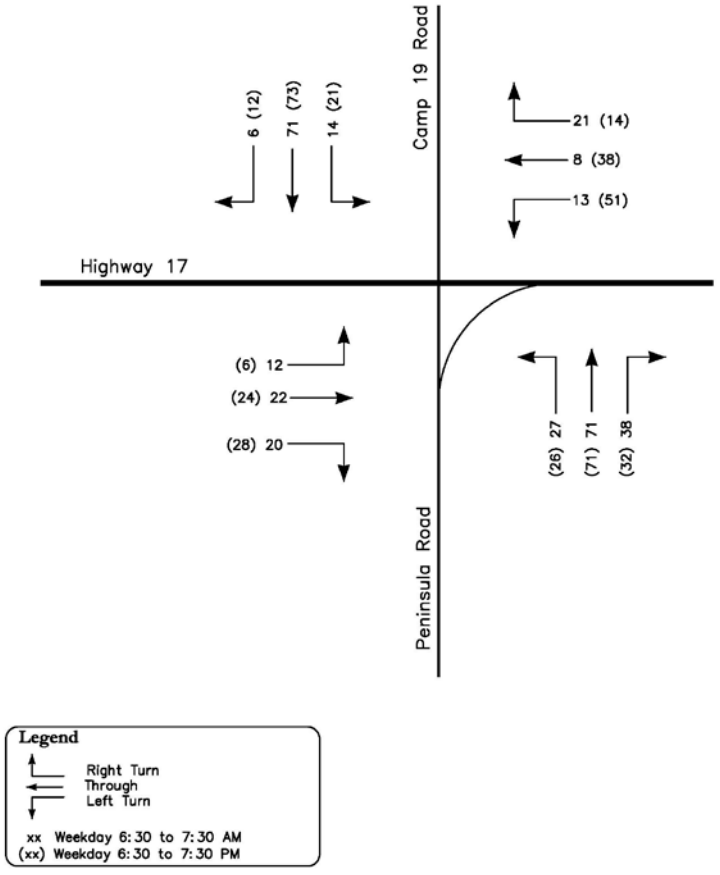
13.0 2025 OPERATIONS PHASE TOTAL TRAFFIC OPERATIONS

Total traffic volumes and intersection operations in 2025 at the completion of the Operations Phase of this Project will consist of the existing 2010 traffic, the background traffic growth up to 2025, as well as the traffic generated by the site during the Operations Phase.

13.1 MINE WORKER COMMUTE PEAK HOUR OF GENERATOR

The resulting 2025 total traffic volumes for the weekday a.m. and p.m. peak hours resulting from the commuting of the mine workers are detailed in Figure 8 below.

Figure 8 – Total Traffic Volumes – 2025 Operations Phase (during Mine Workers peak hour)



Under 2025 Total Traffic Volume conditions, the operation of the Highway 17 / Peninsula Road/Camp 19 Road intersection has been evaluated using Synchro 7 with the results summarized in Table G below.

Table G: 2025 Operations Phase Intersection Operations (during Mine Workers peak hour)

Intersection and Movement	AM Peak Hour			PM Peak Hour		
	v/c	Delay	LOS	v/c	Delay	LOS
Highway 17 and Peninsula Road						
OVERALL		**7.9**	**A**		**8.1**	**A**
Northbound left-thru	0.17	10.8	B	0.20	12.3	B
Southbound left-thru-right	0.15	10.7	B	0.21	12.2	B
Westbound left	0.01	7.3	A	0.04	7.4	A
Eastbound left	0.01	2.6	A	0.00	1.5	A

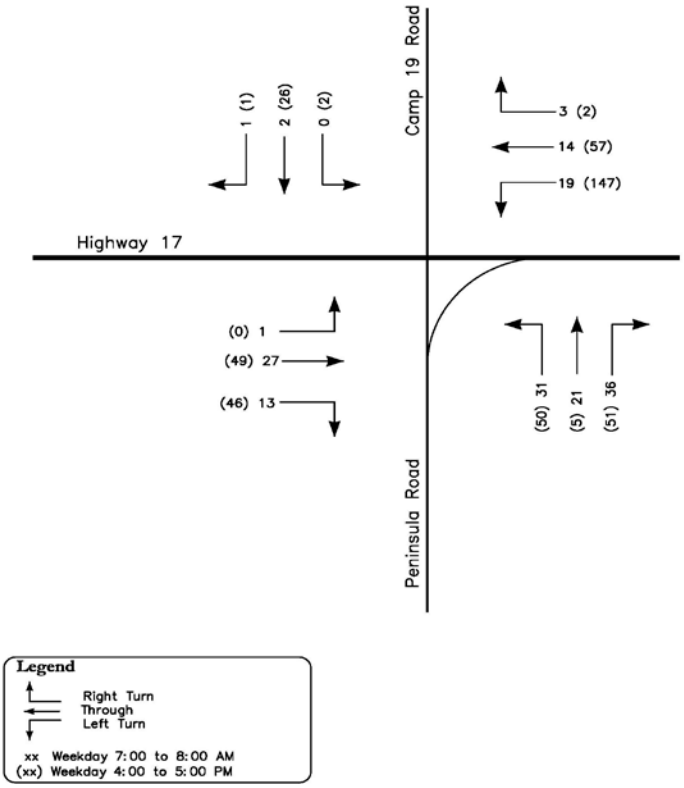
LOS – Level of Service v/c – volume to capacity ratio Delay – Average Delay (s/veh)

It is anticipated the Highway 17 and Peninsula Road intersection will operate at an overall Intersection Capacity Utilization level of service of A under 2025 total traffic volume conditions. The critical movement will be the left turn – thru traffic existing both Peninsula Road and Camp 19 Road which will operate at LOS B.

13.2 OFFICE WORKER COMMUTE PEAK HOUR OF GENERATOR

The resulting 2025 total traffic volumes for the weekday a.m. and p.m. peak hours resulting from the commuting of the office workers are generated at a different time than the mine works. As a result, these times are analysed separately and are detailed in Figure 9 below.

Figure 9 – Total Traffic Volumes – 2025 Operations Phase (during Office Workers peak hour)



Under 2025 Total Traffic Volume conditions, the operation of the Highway 17 / Peninsula Road/Camp 19 Road intersection has been evaluated using Synchro 7 with the results summarized in Table H below.

Table H: 2025 Operations Phase Intersection Operations (during Office Workers peak hour)

Intersection and Movement	AM Peak Hour			PM Peak Hour		
	v/c	Delay	LOS	v/c	Delay	LOS
Highway 17 and Peninsula Road OVERALL		**5.9**	**A**		**6.7**	**A**
Northbound left-thru	0.08	9.7	A	0.17	15.9	C
Southbound left-thru-right	0.00	9.3	A	0.09	15.1	C
Westbound left	0.02	7.3	A	0.13	7.8	A
Eastbound left-thru	0.00	7.3	A	0.00	0.0	A

LOS – Level of Service v/c – volume to capacity ratio Delay – Average Delay (s/veh)

It is anticipated the Highway 17 and Peninsula Road intersection will operate at an overall Intersection Capacity Utilization level of service of A under 2025 total traffic volume

conditions. The critical movements will be left turn – thru traffic exiting Peninsula Road and Camp 19 Road which will both operate at LOS C during the PM Peak Hour.

14.0 SIGNAL JUSTIFICATION

In accordance with the justification spelled out in the Ontario Traffic Manual – Book 12, Traffic Signals are not warranted at the intersection of Highway 17 and Peninsula Road / Camp 19 Road.

15.0 GEOMETRIC IMPROVEMENTS

15.1 Camp 19 Road/Highway 17 Intersection

From the traffic analysis above, some minor improvements are recommended as shown in Exhibit 4 which illustrates the proposed Camp 19 Road/Highway 17 intersection improvements. The improvements are based on MTO's Commercial Site Access Standard 23 – Truck Access and are comprised of a wider Camp 19 Road entrance surface including greater turning radii and a right turn taper. The width of existing Camp 19 Road through driving lane surface within the intersection improvement area will be increased from 6.25 metres to 9.0 metres. The intersection radii improvement treatment will increase the radii pavement area from the existing 60 square metres to 370 square metres. The entrance improvements will accommodate the turning manoeuvres of the larger sized vehicular traffic, which will be entering/exiting the Project site during both the Construction and Operations phases.

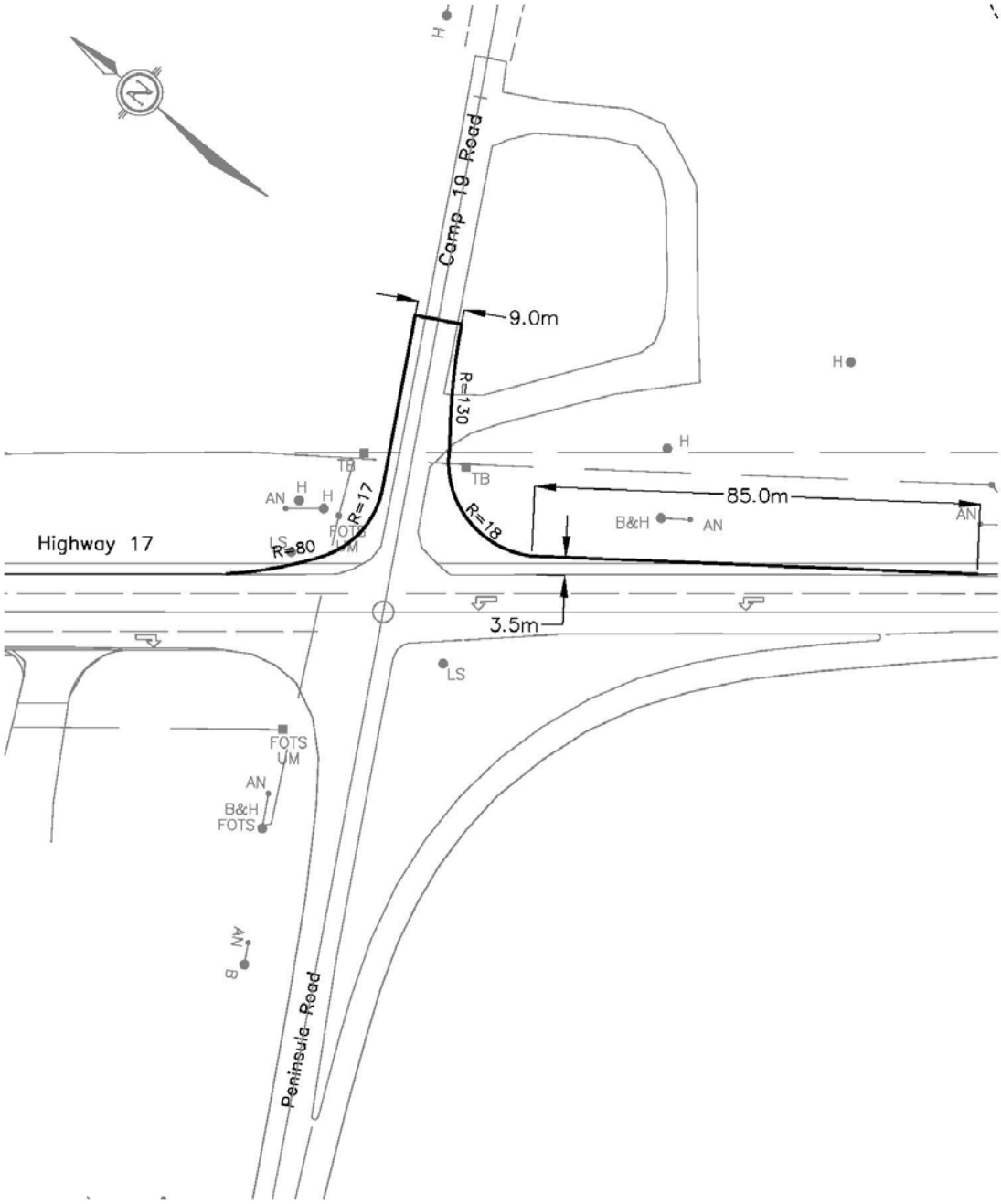
Sight distances were reviewed at the intersection of Highway 17 and Peninsula Road / Camp 19 Road and were found to exceed the Desirable Decision Sight Distance requirements detailed in the Geometric Design Standard for Ontario Highways Manual. The Minimum Decision Sight Distance for the 110 km/h Highway 17 design speed is 335 metres and the Desirable Decision Sight Distance is 435 metres. The available Decision Sight Distance for a driver approaching the intersection from the east is 440 metres and 800 metres plus for a driver approaching the intersection from the west.

ENL carried out an analysis of the need for an eastbound left turn lane. Traffic volume and directional flow for the analysis was based on the anticipated traffic generation data provided by Met-Chem Canada Inc., True Grit Consulting Ltd., and Stillwater Canada Inc. together with the weekday traffic counts conducted by ENL on June 17, 2010. Following the warrants from the Geometric Design Standard for Ontario Highways Manual, an east bound left turn lane is not required.

The overall drainage pattern at the intersection of Highway 17 and Camp 19 Road will remain unchanged. Drainage currently flows both east and west along Highway 17 away from Camp 19 Road, with no culvert across the side road. As a result, no new culvert will be required across the widened roadway platform.

Both buried and aerial Hydro and Bell utilities exist in the vicinity of the intersection. Impacts to these plants will need to be reviewed during detailed design of the intersection improvements with any conflicts mitigated prior to construction. In addition, the existing light standard in the northwest quadrant of Highway 17 and Camp 19 Road may need to be relocated to accommodate intersection improvements. All conflicts will be assessed and dealt with during detail design activities.

Exhibit 4 – Proposed Camp 19 Road / Highway 17 Intersection Improvements



16.0 CONCLUSIONS AND RECOMMENDATIONS

The proposed development of the Marathon PGM – Cu Project will access Highway 17 via Camp 19 Road - an existing access road directly across from Peninsula Road, providing a cross intersection with the highway on a 79 degree skew angle.

Anticipated traffic volumes at the Highway 17 intersection with Peninsula Road / Camp 19 Road were assessed using Synchro. It was found the intersection would operate at an acceptable Level of Service for both the construction and operation phases of the mine.

The anticipated growth rate for traffic in the study area, as agreed to by the Ministry of Transportation, is 0.5% per year. With such a minimal increase, deferral of the mine development by four or five years will not impact the results and conclusions of this study.

Existing sight distances at this intersection meet the Desirable Decision Sight Distances detailed in the Geometric Design Standard for Ontario Highways Manual, and the existing intersection already includes partial illumination.

Based on the analysis of the Construction and Operation Phases of the proposed development of the Marathon PGM – Cu Project, no major road improvements will be required to Highway 17 or Peninsula Road to accommodate the proposed mine development.

The Camp 19 Road is currently paved for a distance of approximately 100 north of Highway 17, after which it is gravel surfaced. The existing sideroad radii at Highway 17 are substandard and not adequate to accommodate the anticipated truck traffic accessing the site both during the construction and operational phases. As a result it is recommended to upgrade the Camp 19 Road at the intersection of Highway 17 to meet an MTO CSAS – 23 (Truck Access) standard, including an 85 m taper.

APPENDIX A

STUDY ASSUMPTIONS

ASSUMPTIONS

The anticipated trip generation was derived from information as provided by Met-Chem Canada Inc. Consulting Engineers and True Grit Consulting Ltd. Some of this information was adjusted and additional information was provided during the course of the study. The changes and additional information were provided by True Grit Consulting Ltd. and Stillwater Mining Company and this reflects in many of the following assumptions which were used in the analysis of this study:

Site Preparation/Construction Phase (2013-2014)

- 7 day/week operation
- two 12 hour shifts – 7 a.m. to 7 p.m., 7 p.m. to 7 a.m.
- 90 passenger vehicles entering the mine site for the day shift
- 60 passenger vehicles entering the mine site for the night shift
- 6 tractor trailer loads / 12 hr. day shift (even split between Highway 17 east and west)
- traffic volume numbers are stated in P.C.E.'s (passenger car equivalents) using a factor of 1 truck = 2 P.C.E.'s

Mine Operations Phase (2015 – 2025)

- 7 day/week operation.
- two 12 hour shifts – 7 a.m. to 7 p.m., 7 p.m. to 7 a.m.
- passenger vehicle traffic generated by miners entering for each of the day and night shifts = 60.
- office staff vehicle traffic entering the site for 8 a.m. to 4 p.m. work day = 25.
- traffic percentage per direction for miners, office workers – 85% from Peninsula Road (Town of Marathon), 12% from Highway 17 East, 3% from Highway 17 West.
- 50 tractor trailer truckloads per day of concentrate product with a haul route consisting of the crossing of Highway 17 to Peninsula Road and then to a rail link in the Town of Marathon. Haul time from 7 a.m. to 11 p.m. each day
- 8 tractor trailer truckloads per day of concentrate hauled to a smelter/refinery in Quebec via Hwy 17 and Hwy 101.
- 6 tractor trailer loads of supplies / 12 hr. day shift (even split between Highway 17 east and west).
- traffic volume numbers are stated in P.C.E.'s (passenger car equivalents) using a factor of 1 truck = 2 P.C.E.'s
- projected traffic volumes include a 0.5% / year growth rate.

APPENDIX B

2010 TRAFFIC COUNT DATA

ENGINEERING NORTHWEST LTD. - TRAFFIC COUNT FORM

PN 09012

Municipality: MARATHON
Weather _____ Observer _____
Location: HWY 17/PENINSULA ROAD
Date of Survey: June 16, 2010

TIME a.m.		Vehicle Type	Highway 17 Eastbound ←		↗	↖	Highway 17 Westbound →	
From	To		Left	Through	Right TO MAR	Left TO MAR	Through	Right
6:00	6:15	Passenger Vehicles		11	1111	1	11	
		Short Trucks						
		Long Trucks		111			1	
		Buses						
		Motorcycles						
		Pedestrians						
6:15	6:30	Passenger Vehicles		11	1	1	1	
		Short Trucks						
		Long Trucks		1			111	
		Buses						
		Motorcycles						
		Pedestrians						
6:30	6:45	Passenger Vehicles		11	1111	11		
		Short Trucks						
		Long Trucks		11	11			
		Buses						
		Motorcycles						
		Pedestrians						
6:45	7:00	Passenger Vehicles		1	11	111	1111	1
		Short Trucks						
		Long Trucks		11			1	
		Buses						
		Motorcycles						
		Pedestrians						
TOTAL								

(2)

ENGINEERING NORTHWEST LTD. - TRAFFIC COUNT FORM

PN 09012

Municipality: MARATHON
Weather ____________

Observer ____________

Location: HWY 17/PENINSULA ROAD
Date of Survey: June 16, 2010

TIME a.m.		Vehicle Type	Highway 17 ← Eastbound			Highway 17 Westbound →		
From	To		Left	Through	Right To MAR	Left To MAR	Through	Right
7:00	7:15	Passenger Vehicles		II	卌	IIII	I	
		Short Trucks		I				
		Long Trucks						
		Buses						
		Motorcycles		III				
		~~Pedestrians~~ Bicycles		II				
7:15	7:30	Passenger Vehicles		卌	III	III		
		Short Trucks						
		Long Trucks						
		Buses						
		Motorcycles						
		Pedestrians			I			
7:30	7:45	Passenger Vehicles		IIII		II	II	
		Short Trucks		I				
		Long Trucks				I	II	
		Buses						
		Motorcycles						
		Pedestrians						
7:45	8:00	Passenger Vehicles		IIII	II	卌	卌 I	
		Short Trucks		I		I	I	
		Long Trucks		II	I		I	
		Buses				I		
		Motorcycles						
		Pedestrians						
TOTAL								

ENGINEERING NORTHWEST LTD. - TRAFFIC COUNT FORM

PN 09012

(3)

Municipality: MARATHON
Weather _____ Observer _____

Location: HWY 17/PENINSULA ROAD
Date of Survey: June 16, 2010

TIME p.m.		Vehicle Type	Highway 17 Eastbound			Highway 17 Westbound		
From	To		Left	Through	Right TO MAR	Left TO MAR	Through	Right
12:00	12:15	Passenger Vehicles		𝍸	𝍸 𝍸 I	III	𝍸 III	
		Short Trucks			I		I	
		Long Trucks		𝍸 II			𝍸 IIII	
		Buses					I	
		Motorcycles						
		Pedestrians						
12:15	12:30	Passenger Vehicles		𝍸 𝍸 I	III	𝍸 𝍸 𝍸 𝍸	𝍸 II	
		Short Trucks		I				
		Long Trucks		III		II	III	
		Buses						
		Motorcycles						
		Pedestrians						
12:30	12:45	Passenger Vehicles		𝍸 𝍸 II	𝍸 I	𝍸 II	𝍸	
		Short Trucks		II	I		II	
		Long Trucks		III	I		𝍸 IIII	
		Buses			I			
		Motorcycles		𝍸 III				
		Pedestrians						
12:45	1:00	Passenger Vehicles		𝍸 I	IIII	𝍸 𝍸	IIII	
		Short Trucks				I		
		Long Trucks		II			𝍸 III	
		Buses						
		Motorcycles		II	I	III		
		Pedestrians						
TOTAL								

ENGINEERING NORTHWEST LTD. - TRAFFIC COUNT FORM

PN 09012

(4)

Municipality: MARATHON
Weather _____ Observer _____

Location: HWY 17/PENINSULA ROAD
Date of Survey: June 16, 2010

TIME p.m.		Vehicle Type	Highway 17 Eastbound			Highway 17 Westbound		
From	To		Left	Through	Right To MAR	Left To MAR	Through	Right
1:00	1:15	Passenger Vehicles		𝍸	𝍸	𝍸 |||	𝍸 𝍸	
		Short Trucks					I	
		Long Trucks		𝍸 I		III	𝍸 𝍸 III	
		Buses						
		Motorcycles					BICYCLE	
		Pedestrians						
1:15	1:30	Passenger Vehicles		𝍸	I	𝍸 𝍸 𝍸	𝍸	
		Short Trucks				II		
		Long Trucks		𝍸			𝍸 II	
		Buses		I				
		Motorcycles		II		I		
		Pedestrians						
1:30	1:45	Passenger Vehicles		𝍸	𝍸 I	𝍸 𝍸 𝍸 III	𝍸	
		Short Trucks		I				
		Long Trucks		III		I	II	
		Buses			I			
		Motorcycles						
		Pedestrians						
1:45	2:00	Passenger Vehicles		𝍸	𝍸 III	𝍸 𝍸 𝍸	𝍸 𝍸 𝍸	
		Short Trucks						
		Long Trucks		II		I	𝍸 𝍸 𝍸 II	
		Buses						
		Motorcycles				II		
		Pedestrians						
TOTAL								

(5)

ENGINEERING NORTHWEST LTD. - TRAFFIC COUNT FORM

PN 09012

Municipality: MARATHON
Weather _____ Observer _____
Location: HWY 17/PENINSULA ROAD
Date of Survey: June 16, 2010

TIME p.m.		Vehicle Type	Highway 17 Eastbound			Highway 17 Westbound		
From	To		Left	Through	Right TO MAR	Left TO MAR	Through	Right
2:00	2:15	Passenger Vehicles		111	11	𝍸 𝍸	11	
		Short Trucks		1		1		
		Long Trucks		𝍸	𝍸 1111		𝍸	
		Buses						
		Motorcycles						
		Pedestrians						
2:15	2:30	Passenger Vehicles		1	111	𝍸 𝍸 𝍸 111	𝍸 𝍸 111	1
		Short Trucks			11		1	
		Long Trucks		𝍸 1			𝍸 11	
		Buses						
		Motorcycles				1	1	
		Pedestrians						
2:30	2:45	Passenger Vehicles		𝍸 111	𝍸 1	𝍸 𝍸 11	𝍸 𝍸	
		Short Trucks		11	11	11		
		Long Trucks		1111			𝍸 1	
		Buses			1	1		
		Motorcycles			1 BIKE		1	
		Pedestrians						
2:45	3:00	Passenger Vehicles		𝍸 𝍸	𝍸 111	𝍸 11	𝍸 1111	
		Short Trucks	1		1	𝍸	111	
		Long Trucks		𝍸		1	111	
		Buses			1	1		
		Motorcycles						
		Pedestrians						
TOTAL								

(6)

ENGINEERING NORTHWEST LTD. - TRAFFIC COUNT FORM

PN 09012

Municipality: MARATHON
Weather SUNNY

Observer ANDREW PEARSON

Location: HWY 17/PENINSULA ROAD
Date of Survey: June 16, 2010

TIME p.m.		Vehicle Type	Highway 17 Eastbound			Highway 17 Westbound		
From	To		Left	Through	Right TO MAR	Left TO MAR	Through	Right
3:00	3:15	Passenger Vehicles		7	3	8	7	
		Short Trucks		2	2	2	4	
		Long Trucks					9	
		Buses				1		
		Motorcycles					1	
		Pedestrians						
3:15	3:30	Passenger Vehicles		3	7 2	12 2	12 4	
		Short Trucks				2		
		Long Trucks		7 2			6	
		Buses						
		Motorcycles			2	3		
		Pedestrians						
3:30	3:45	Passenger Vehicles		6	4 2	10 1	9	
		Short Trucks		2		1	1	
		Long Trucks		2			7	
		Buses						
		Motorcycles		3			1	
		Pedestrians						
3:45	4:00	Passenger Vehicles		7 2	4 3	6 1	5	
		Short Trucks		1		1	1	
		Long Trucks		4			5	
		Buses						
		Motorcycles		1				
		Pedestrians						
TOTAL								

(7)

ENGINEERING NORTHWEST LTD. - TRAFFIC COUNT FORM

PN 09012

Municipality: MARATHON
Weather: SUNNY
Observer: ANDREW PEARSON
Location: HWY 17/PENINSULA ROAD
Date of Survey: June 16, 2010

TIME p.m. From	To	Vehicle Type	Highway 17 Eastbound Left	Highway 17 Eastbound Through	Highway 17 Eastbound Right TO MAR	Highway 17 Westbound Left TO MAR	Highway 17 Westbound Through	Highway 17 Westbound Right
4:00	4:15	Passenger Vehicles		8	12	19	8	
		Short Trucks		2	1		1	
		Long Trucks		3			5	
		Buses						
		Motorcycles				1		
		Pedestrians						
4:15	4:30	Passenger Vehicles		5	10	16	4	
		Short Trucks		1	1	2	1	1
		Long Trucks		2	1		4	
		Buses						
		Motorcycles		1				
		Pedestrians						
4:30	4:45	Passenger Vehicles		6	9	40	5	1
		Short Trucks		1		2	1	
		Long Trucks		5			6	
		Buses						
		Motorcycles			1		1	
		Pedestrians						
4:45	5:00	Passenger Vehicles		6	7	50	11	
		Short Trucks				1	2	
		Long Trucks		4			4	
		Buses		1				
		Motorcycles						
		Pedestrians						
TOTAL								

ENGINEERING NORTHWEST LTD. - TRAFFIC COUNT FORM

PN 09012

Municipality: MARATHON
Weather SUNNY/Partly cloudy.
Observer ANDREW PEARSON
Location: HWY 17/PENINSULA ROAD
Date of Survey: June 16, 2010

TIME p.m.		Vehicle Type	Highway 17 Eastbound			Highway 17 Westbound		
From	To		Left	Through	Right TO MAR	Left TO MAR	Through	Right
5:00	5:15	Passenger Vehicles		5	5 II	5 5 5 5 5 I	5 II	
		Short Trucks		I	I	I	I	
		Long Trucks					5	
		Buses						
		Motorcycles					II	
		Pedestrians						
5:15	5:30	Passenger Vehicles		III	IIII	5 III	5 IIII	
		Short Trucks			I			
		Long Trucks		I	I		IIII	
		Buses						
		Motorcycles					1(BIKE)	
		Pedestrians						
5:30	5:45	Passenger Vehicles		III	5 II	5 5 II	III	
		Short Trucks				I		
		Long Trucks		III			5 II	
		Buses						
		Motorcycles			I			
		Pedestrians						
5:45	6:00	Passenger Vehicles		5	5 III	5 III	5	
		Short Trucks				I		
		Long Trucks		II			5 II	
		Buses						
		Motorcycles		I				
		Pedestrians		I				
TOTAL								

ENGINEERING NORTHWEST LTD. - TRAFFIC COUNT FORM

PN 09012

Municipality: MARATHON
Weather _____ Observer _____
Location: HWY 17/PENINSULA ROAD
Date of Survey: June 16, 2010

TIME p.m.		Vehicle Type	Highway 17 Eastbound			Highway 17 Westbound		
From	To		Left	Through	Right TO MAR	Left TO MAR	Through	Right
6:00	6:15	Passenger Vehicles		1	III	IIII IIII IIII	IIII I	
		Short Trucks		I		II	I	
		Long Trucks		IIII II		I	IIII III	
		Buses						
		Motorcycles						
		Pedestrians						
6:15	6:30	Passenger Vehicles		IIII	II	IIII IIII	IIII I	
		Short Trucks				I		
		Long Trucks					IIII III	
		Buses				I		
		Motorcycles						
		Pedestrians						
6:30	6:45	Passenger Vehicles		IIII I	IIII	IIII IIII	I	
		Short Trucks					I	
		Long Trucks		IIII			II	
		Buses					I	
		Motorcycles					II	
		Pedestrians						
6:45	7:00	Passenger Vehicles		III	IIII I	IIII IIII IIII	III	I
		Short Trucks				I	I	
		Long Trucks		III				
		Buses						
		Motorcycles			BICYCLE 1			
		Pedestrians						
TOTAL								

(10)

ENGINEERING NORTHWEST LTD. - TRAFFIC COUNT FORM

PN 09012

Municipality: MARATHON
Weather _____ Observer _____
Location: HWY 17/PENINSULA ROAD
Date of Survey: June 16, 2010

TIME p.m.		Vehicle Type	Highway 17 Eastbound			Highway 17 Westbound		
From	To		Left	Through	Right TO MAR	Left TO MAR	Through	Right
7:00	7:15	Passenger Vehicles		11	𝍸 𝍸	𝍸 𝍸	𝍸 1	
		Short Trucks				11	1	
		Long Trucks		1		1	𝍸 1111	
		Buses						
		Motorcycles						
		Pedestrians						
7:15	7:30	Passenger Vehicles		1	1111	𝍸 𝍸	11	
		Short Trucks						
		Long Trucks		1			𝍸 11	
		Buses					1	
		Motorcycles						
		Pedestrians						
7:30	7:45	Passenger Vehicles		111	𝍸 11	𝍸 11	1	
		Short Trucks						
		Long Trucks		111			𝍸	
		Buses						
		Motorcycles			BICYCLE 1			
		Pedestrians						
7:45	8:00	Passenger Vehicles		11	111	𝍸 11	1	
		Short Trucks				1		
		Long Trucks		11			11	
		Buses						
		Motorcycles						
		Pedestrians						
TOTAL								

ENGINEERING NORTHWEST LTD. - TRAFFIC COUNT FORM

PN 09012

Municipality: MARATHON
Weather _____
Observer _____
Location: HWY 17/PENINSULA ROAD/ACCESS ROAD
Date of Survey: June 16, 2010

TIME a.m.		Vehicle Type	Peninsula Road Northbound			Access Road Southbound		
From	To		Left	Through	Right (Ramp)	Left	Through	Right
6:00	6:15	Passenger Vehicles	III		𝍸 𝍸 𝍸 𝍸 III			
		Short Trucks						
		Long Trucks						
		Buses						
		Motorcycles						
		Pedestrians						
6:15	6:30	Passenger Vehicles	IIII		𝍸 𝍸 IIII			
		Short Trucks						
		Long Trucks	I					
		Buses						
		Motorcycles						
		Pedestrians						
6:30	6:45	Passenger Vehicles	𝍸 I		𝍸 𝍸 II			
		Short Trucks						
		Long Trucks						
		Buses						
		Motorcycles						
		Pedestrians						
6:45	7:00	Passenger Vehicles	𝍸 II		𝍸 II	I	I	
		Short Trucks						
		Long Trucks						
		Buses						
		Motorcycles						
		Pedestrians						
TOTAL								

ENGINEERING NORTHWEST LTD. - TRAFFIC COUNT FORM

PN 09012

Municipality: MARATHON
Weather _____

Observer _____

Location: HWY 17/PENINSULA ROAD/ACCESS ROAD
Date of Survey: June 16, 2010

TIME a.m.		Vehicle Type	Peninsula Road Northbound			Access Road Southbound		
From	To		Left	Through	Right (RAMP)	Left	Through	Right
7:00	7:15	Passenger Vehicles	III		IIII III			
		Short Trucks						
		Long Trucks			I			
		Buses						
		Motorcycles						
		Pedestrians						
7:15	7:30	Passenger Vehicles	IIII	I	IIII			
		Short Trucks	I		I			
		Long Trucks						
		Buses						
		Motorcycles	II					
		Pedestrians						
7:30	7:45	Passenger Vehicles	IIII III		IIII II			I
		Short Trucks	I		I			
		Long Trucks			I			
		Buses						
		Motorcycles						
		Pedestrians						
7:45	8:00	Passenger Vehicles	IIII	I	IIII II		I	
		Short Trucks	I					
		Long Trucks			I			
		Buses						
		Motorcycles						
		Pedestrians	I					
TOTAL								I

ENGINEERING NORTHWEST LTD. - TRAFFIC COUNT FORM

PN 09012 (3)

Municipality: MARATHON
Weather _____ Observer _____
Location: HWY 17/PENINSULA ROAD/ACCESS ROAD
Date of Survey: June 16, 2010

TIME p.m.		Vehicle Type	Peninsula Road Northbound			Access Road Southbound		
From	To		Left	Through	Right (RAMP)	Left	Through	Right
12:00	12:15	Passenger Vehicles	𝍸 𝍸 |||	1	𝍸 𝍸 𝍸		1	
		Short Trucks						
		Long Trucks			1			
		Buses			1			
		Motorcycles						
		Pedestrians						
12:15	12:30	Passenger Vehicles	𝍸 𝍸 |||		𝍸 |||			
		Short Trucks						
		Long Trucks						
		Buses						
		Motorcycles						
		Pedestrians						
12:30	12:45	Passenger Vehicles	𝍸 ||		𝍸 𝍸 |||			
		Short Trucks						
		Long Trucks			11			
		Buses			1			
		Motorcycles			1			
		Pedestrians						
12:45	1:00	Passenger Vehicles	𝍸 ||		𝍸 𝍸 ||			
		Short Trucks	11		1			
		Long Trucks	1					
		Buses						
		Motorcycles						
		Pedestrians						
TOTAL								

ENGINEERING NORTHWEST LTD. - TRAFFIC COUNT FORM

PN 09012

(4)

Municipality: MARATHON
Weather _____
Observer _____
Location: HWY 17/PENINSULA ROAD/ACCESS ROAD
Date of Survey: June 16, 2010

TIME p.m.		Vehicle Type	Peninsula Road Northbound			Access Road Southbound		
From	To		Left	Through	Right (RAMP)	Left	Through	Right
1:00	1:15	Passenger Vehicles	5	1	8			
		Short Trucks			1			
		Long Trucks	1					
		Buses						
		Motorcycles			2			
		Pedestrians						
1:15	1:30	Passenger Vehicles	8		13		1	1
		Short Trucks			3			
		Long Trucks	1					
		Buses						
		Motorcycles						
		Pedestrians						
1:30	1:45	Passenger Vehicles	5		8			
		Short Trucks	3					
		Long Trucks	1					
		Buses						
		Motorcycles			1			
		Pedestrians						
1:45	2:00	Passenger Vehicles	6		7			
		Short Trucks	1					
		Long Trucks						
		Buses						
		Motorcycles						
		Pedestrians						
TOTAL								

ENGINEERING NORTHWEST LTD. - TRAFFIC COUNT FORM

PN 09012

(5)

Municipality: MARATHON
Weather PARTIALLY CLOUDY

Observer ANDREW PEARSON

Location: HWY 17/PENINSULA ROAD/ACCESS ROAD
Date of Survey: June 16, 2010

TIME p.m.		Vehicle Type	Peninsula Road Northbound			Access Road Southbound		
From	To		Left	Through	Right (RAMP)	Left	Through	Right
2:00	2:15	Passenger Vehicles	8		7			
		Short Trucks						
		Long Trucks						
		Buses						
		Motorcycles	2		2			
		Pedestrians						
2:15	2:30	Passenger Vehicles	5	1	7		1	
		Short Trucks	2		2			
		Long Trucks			1			
		Buses						
		Motorcycles						
		Pedestrians						
2:30	2:45	Passenger Vehicles	4	1	9			
		Short Trucks	1					
		Long Trucks						
		Buses						
		Motorcycles						
		Pedestrians						
2:45	3:00	Passenger Vehicles	8		10			
		Short Trucks						
		Long Trucks						
		Buses			1			
		Motorcycles			2			
		Pedestrians						
TOTAL								

ENGINEERING NORTHWEST LTD. - TRAFFIC COUNT FORM

PN 09012

(6)

Municipality: MARATHON
Weather _____

Observer _____

Location: HWY 17/PENINSULA ROAD/ACCESS ROAD
Date of Survey: June 16, 2010

TIME p.m.		Vehicle Type	Peninsula Road Northbound			Access Road Southbound		
From	To		Left	Through	Right (RAMP)	Left	Through	Right
3:00	3:15	Passenger Vehicles	9		8			
		Short Trucks			1			
		Long Trucks			2			
		Buses	1		1			
		Motorcycles	1		1			
		Pedestrians						
3:15	3:30	Passenger Vehicles	12	1	9			
		Short Trucks	1		1			
		Long Trucks						
		Buses						
		Motorcycles		1	1		1	
		Pedestrians						
3:30	3:45	Passenger Vehicles	4		10			
		Short Trucks	1		1			
		Long Trucks						
		Buses			2			
		Motorcycles						
		Pedestrians						
3:45	4:00	Passenger Vehicles	4	1	7		1	
		Short Trucks	1					
		Long Trucks			1			
		Buses						
		Motorcycles	1					
		Pedestrians						
TOTAL								

ENGINEERING NORTHWEST LTD. - TRAFFIC COUNT FORM

PN 09012

(7)

Municipality: MARATHON
Weather _____

Observer _____

Location: HWY 17/PENINSULA ROAD/ACCESS ROAD
Date of Survey: June 16, 2010

TIME p.m.		Vehicle Type	Peninsula Road Northbound			Access Road Southbound		
From	To		Left	Through	Right (RAMP)	Left	Through	Right
4:00	4:15	Passenger Vehicles	10	2	8		2	
		Short Trucks			2			
		Long Trucks						
		Buses						
		Motorcycles	1					
		Pedestrians						
4:15	4:30	Passenger Vehicles	10		12			
		Short Trucks	2	1			1	
		Long Trucks						
		Buses						
		Motorcycles						
		Pedestrians		1				
4:30	4:45	Passenger Vehicles	8		13		2	
		Short Trucks	1		2			
		Long Trucks	1					
		Buses						
		Motorcycles						
		Pedestrians						
4:45	5:00	Passenger Vehicles	13		10			
		Short Trucks						
		Long Trucks						
		Buses						
		Motorcycles						
		Pedestrians						
TOTAL								

ENGINEERING NORTHWEST LTD. - TRAFFIC COUNT FORM

PN 09012

Municipality: MARATHON
Weather _____

Observer _____

Location: HWY 17/PENINSULA ROAD/ACCESS ROAD
Date of Survey: June 16, 2010

TIME p.m.		Vehicle Type	Peninsula Road Northbound			Access Road Southbound		
From	To		Left	Through	Right (RAMP)	Left	Through	Right
5:00	5:15	Passenger Vehicles	12	1	14		1	
		Short Trucks						
		Long Trucks						
		Buses						
		Motorcycles						
		Pedestrians						
5:15	5:30	Passenger Vehicles	7	1	19			
		Short Trucks	2					
		Long Trucks			1			
		Buses						
		Motorcycles						
		Pedestrians						
5:30	5:45	Passenger Vehicles	4		13			
		Short Trucks						
		Long Trucks						
		Buses						
		Motorcycles						
		Pedestrians						
5:45	6:00	Passenger Vehicles	6		13		1	
		Short Trucks	1					
		Long Trucks						
		Buses						
		Motorcycles						
		Pedestrians						
TOTAL								

ENGINEERING NORTHWEST LTD. - TRAFFIC COUNT FORM

PN 09012

Municipality: MARATHON
Weather _____ Observer _____
Location: HWY 17/PENINSULA ROAD/ACCESS ROAD
Date of Survey: June 16, 2010

TIME p.m.		Vehicle Type	Peninsula Road Northbound			Access Road Southbound		
From	To		Left	Through	Right (RAMP)	Left	Through	Right
6:00	6:15	Passenger Vehicles	𝍸 III		𝍸 𝍸 𝍸			
		Short Trucks						
		Long Trucks			I			
		Buses						
		Motorcycles						
		Pedestrians						
6:15	6:30	Passenger Vehicles	𝍸 𝍸 II		𝍸 𝍸 III			
		Short Trucks						
		Long Trucks						
		Buses						
		Motorcycles						
		Pedestrians						
6:30	6:45	Passenger Vehicles	II		𝍸 II			
		Short Trucks	III		I			
		Long Trucks						
		Buses	I					
		Motorcycles						
		Pedestrians						
6:45	7:00	Passenger Vehicles	IIII		IIII		III	
		Short Trucks			I			
		Long Trucks						
		Buses						
		Motorcycles						
		Pedestrians						
TOTAL								

ENGINEERING NORTHWEST LTD. - TRAFFIC COUNT FORM

PN 09012

Municipality: MARATHON
Weather _____
Observer _____
Location: HWY 17/PENINSULA ROAD/ACCESS ROAD
Date of Survey: June 16, 2010

TIME p.m.		Vehicle Type	Peninsula Road Northbound			Access Road Southbound		
From	To		Left	Through	Right (RAMP)	Left	Through	Right
7:00	7:15	Passenger Vehicles	9	1	7			1
		Short Trucks			1			
		Long Trucks						
		Buses						
		Motorcycles	1					
		Pedestrians						
7:15	7:30	Passenger Vehicles	4		8			
		Short Trucks						
		Long Trucks						
		Buses						
		Motorcycles						
		Pedestrians						
7:30	7:45	Passenger Vehicles	3	1	5		1	1
		Short Trucks						
		Long Trucks			1			
		Buses						
		Motorcycles	Bicycle 1					
		Pedestrians						
7:45	8:00	Passenger Vehicles	6	1	6		1	
		Short Trucks						
		Long Trucks						
		Buses						
		Motorcycles						
		Pedestrians						
TOTAL								

APPENDIX C

LOS CALCULATION WORK SHEETS (SYNCHRO)

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	25	12	17	13	0	28	2	33	0	1	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	0	31	15	21	16	0	35	2	41	0	1	1
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	16			46			92	90	31	91	105	16
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	16			46			92	90	31	91	105	16
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			96	100	96	100	100	100
cM capacity (veh/h)	1601			1561			881	789	1043	847	774	1063

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1
Volume Total	31	15	21	16	38	41	2
Volume Left	0	0	21	0	35	0	0
Volume Right	0	15	0	0	0	41	1
cSH	1601	1700	1561	1700	874	1043	896
Volume to Capacity	0.00	0.01	0.01	0.01	0.04	0.04	0.00
Queue Length 95th (m)	0.0	0.0	0.3	0.0	1.1	1.0	0.1
Control Delay (s)	0.0	0.0	7.3	0.0	9.3	8.6	9.0
Lane LOS			A		A	A	A
Approach Delay (s)	0.0		4.2		8.9		9.0
Approach LOS					A		A

Intersection Summary			
Average Delay	5.3		
Intersection Capacity Utilization	22.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	38	37	148	57	2	46	2	51	0	4	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	0	48	46	185	71	2	58	2	64	0	5	0
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	74			94			491	491	48	491	536	72
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	74			94			491	491	48	491	536	72
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			88			87	99	94	100	99	100
cM capacity (veh/h)	1526			1500			437	419	1022	412	395	990

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1
Volume Total	48	46	185	74	60	64	5
Volume Left	0	0	185	0	58	0	0
Volume Right	0	46	0	2	0	64	0
cSH	1526	1700	1500	1700	437	1022	395
Volume to Capacity	0.00	0.03	0.12	0.04	0.14	0.06	0.01
Queue Length 95th (m)	0.0	0.0	3.4	0.0	3.8	1.6	0.3
Control Delay (s)	0.0	0.0	7.7	0.0	14.6	8.8	14.2
Lane LOS			A		B	A	B
Approach Delay (s)	0.0		5.5		11.6		14.2
Approach LOS					B		B

Intersection Summary			
Average Delay	6.1		
Intersection Capacity Utilization	30.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	30	21	19	13	8	17	26	76	36	8	48	18
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	38	26	24	16	10	21	32	95	45	10	60	22
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	31			50			196	165	26	202	178	21
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	31			50			196	165	26	202	178	21
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			99			95	86	96	98	91	98
cM capacity (veh/h)	1581			1557			679	703	1049	633	691	1057

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1
Volume Total	64	24	16	31	128	45	92
Volume Left	38	0	16	0	32	0	10
Volume Right	0	24	0	21	0	45	22
cSH	1581	1700	1557	1700	697	1049	747
Volume to Capacity	0.02	0.01	0.01	0.02	0.18	0.04	0.12
Queue Length 95th (m)	0.6	0.0	0.3	0.0	5.3	1.1	3.4
Control Delay (s)	4.4	0.0	7.3	0.0	11.3	8.6	10.5
Lane LOS	A		A		B	A	B
Approach Delay (s)	3.2		2.5		10.6		10.5
Approach LOS					B		B

Intersection Summary			
Average Delay	8.0		
Intersection Capacity Utilization	26.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	18	23	27	48	36	8	25	48	30	17	77	30
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	22	29	34	60	45	10	31	60	38	21	96	38
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	55			62			324	249	29	274	278	50
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	55			62			324	249	29	274	278	50
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			96			94	90	96	96	84	96
cM capacity (veh/h)	1550			1540			510	619	1046	582	597	1018

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1
Volume Total	51	34	60	55	91	38	155
Volume Left	22	0	60	0	31	0	21
Volume Right	0	34	0	10	0	38	38
cSH	1550	1700	1540	1700	577	1046	661
Volume to Capacity	0.01	0.02	0.04	0.03	0.16	0.04	0.23
Queue Length 95th (m)	0.4	0.0	1.0	0.0	4.5	0.9	7.3
Control Delay (s)	3.3	0.0	7.4	0.0	12.4	8.6	12.1
Lane LOS	A		A		B	A	B
Approach Delay (s)	2.0		3.9		11.3		12.1
Approach LOS					B		B

Intersection Summary			
Average Delay	8.2		
Intersection Capacity Utilization	29.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	26	12	17	13	3	29	21	34	0	2	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	1	32	15	21	16	4	36	26	42	0	2	1
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	20			48			96	98	32	109	111	18
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	20			48			96	98	32	109	111	18
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			96	97	96	100	100	100
cM capacity (veh/h)	1596			1560			873	781	1041	804	768	1060

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1
Volume Total	34	15	21	20	62	42	4
Volume Left	1	0	21	0	36	0	0
Volume Right	0	15	0	4	0	42	1
cSH	1596	1700	1560	1700	832	1041	846
Volume to Capacity	0.00	0.01	0.01	0.01	0.08	0.04	0.00
Queue Length 95th (m)	0.0	0.0	0.3	0.0	1.9	1.0	0.1
Control Delay (s)	0.3	0.0	7.3	0.0	9.7	8.6	9.3
Lane LOS	A		A		A	A	A
Approach Delay (s)	0.2		3.8		9.2		9.3
Approach LOS					A		A

Intersection Summary			
Average Delay	5.9		
Intersection Capacity Utilization	23.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	46	43	139	54	2	47	4	48	2	26	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	0	58	54	174	68	2	59	5	60	2	32	1
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	70			111			490	475	58	476	528	69
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	70			111			490	475	58	476	528	69
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			88			86	99	94	99	92	100
cM capacity (veh/h)	1531			1479			417	431	1009	423	402	994

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1
Volume Total	58	54	174	70	64	60	36
Volume Left	0	0	174	0	59	0	2
Volume Right	0	54	0	2	0	60	1
cSH	1531	1700	1479	1700	418	1009	412
Volume to Capacity	0.00	0.03	0.12	0.04	0.15	0.06	0.09
Queue Length 95th (m)	0.0	0.0	3.2	0.0	4.3	1.5	2.3
Control Delay (s)	0.0	0.0	7.8	0.0	15.1	8.8	14.6
Lane LOS			A		C	A	B
Approach Delay (s)	0.0		5.5		12.1		14.6
Approach LOS					B		B

Intersection Summary			
Average Delay	6.5		
Intersection Capacity Utilization	30.5%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	12	21	19	12	7	21	26	71	36	14	71	12
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	15	26	24	15	9	26	32	89	45	18	89	15
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	35			50			154	121	26	152	132	22
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	35			50			154	121	26	152	132	22
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			95	88	96	97	88	99
cM capacity (veh/h)	1576			1557			717	754	1049	699	744	1055

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1
Volume Total	41	24	15	35	121	45	121
Volume Left	15	0	15	0	32	0	18
Volume Right	0	24	0	26	0	45	15
cSH	1576	1700	1557	1700	744	1049	765
Volume to Capacity	0.01	0.01	0.01	0.02	0.16	0.04	0.16
Queue Length 95th (m)	0.2	0.0	0.2	0.0	4.6	1.1	4.5
Control Delay (s)	2.7	0.0	7.3	0.0	10.8	8.6	10.6
Lane LOS	A		A		B	A	B
Approach Delay (s)	1.7		2.2		10.2		10.6
Approach LOS					B		B

Intersection Summary			
Average Delay	7.9		
Intersection Capacity Utilization	27.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	6	23	27	48	36	14	25	71	30	21	73	6
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	8	29	34	60	45	18	31	89	38	26	91	8
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	62			62			262	226	29	262	251	54
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	62			62			262	226	29	262	251	54
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			96			95	86	96	95	85	99
cM capacity (veh/h)	1540			1540			589	644	1046	576	623	1013

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1
Volume Total	36	34	60	62	120	38	125
Volume Left	8	0	60	0	31	0	26
Volume Right	0	34	0	18	0	38	8
cSH	1540	1700	1540	1700	628	1046	627
Volume to Capacity	0.00	0.02	0.04	0.04	0.19	0.04	0.20
Queue Length 95th (m)	0.1	0.0	1.0	0.0	5.6	0.9	5.9
Control Delay (s)	1.5	0.0	7.4	0.0	12.1	8.6	12.2
Lane LOS	A		A		B	A	B
Approach Delay (s)	0.8		3.6		11.2		12.2
Approach LOS					B		B

Intersection Summary			
Average Delay	8.0		
Intersection Capacity Utilization	28.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	27	13	19	14	3	31	21	36	0	2	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	1	34	16	24	18	4	39	26	45	0	2	1
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	21			50			104	105	34	116	119	19
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	21			50			104	105	34	116	119	19
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			98			96	97	96	100	100	100
cM capacity (veh/h)	1594			1557			863	772	1040	792	759	1059

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1
Volume Total	35	16	24	21	65	45	4
Volume Left	1	0	24	0	39	0	0
Volume Right	0	16	0	4	0	45	1
cSH	1594	1700	1557	1700	824	1040	838
Volume to Capacity	0.00	0.01	0.02	0.01	0.08	0.04	0.00
Queue Length 95th (m)	0.0	0.0	0.4	0.0	2.1	1.1	0.1
Control Delay (s)	0.3	0.0	7.3	0.0	9.7	8.6	9.3
Lane LOS	A		A		A	A	A
Approach Delay (s)	0.2		3.9		9.3		9.3
Approach LOS					A		A

Intersection Summary			
Average Delay	5.9		
Intersection Capacity Utilization	23.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	49	46	147	57	2	50	5	51	2	26	1
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	0	61	58	184	71	2	62	6	64	2	32	1
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	74			119			518	502	61	504	559	72
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	74			119			518	502	61	504	559	72
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			87			84	98	94	99	92	100
cM capacity (veh/h)	1526			1469			396	412	1004	400	383	990

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1
Volume Total	61	58	184	74	69	64	36
Volume Left	0	0	184	0	62	0	2
Volume Right	0	58	0	2	0	64	1
cSH	1526	1700	1469	1700	398	1004	392
Volume to Capacity	0.00	0.03	0.13	0.04	0.17	0.06	0.09
Queue Length 95th (m)	0.0	0.0	3.4	0.0	4.9	1.6	2.4
Control Delay (s)	0.0	0.0	7.8	0.0	15.9	8.8	15.1
Lane LOS			A		C	A	C
Approach Delay (s)	0.0		5.6		12.5		15.1
Approach LOS					B		C

Intersection Summary			
Average Delay	6.7		
Intersection Capacity Utilization	31.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	12	22	20	13	8	21	27	71	38	14	71	6
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	15	28	25	16	10	26	34	89	48	18	89	8
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	36			52			152	126	28	158	138	23
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	36			52			152	126	28	158	138	23
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			95	88	95	97	88	99
cM capacity (veh/h)	1575			1553			724	749	1048	691	738	1054

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1
Volume Total	42	25	16	36	122	48	114
Volume Left	15	0	16	0	34	0	18
Volume Right	0	25	0	26	0	48	8
cSH	1575	1700	1553	1700	742	1048	745
Volume to Capacity	0.01	0.01	0.01	0.02	0.17	0.05	0.15
Queue Length 95th (m)	0.2	0.0	0.3	0.0	4.7	1.1	4.3
Control Delay (s)	2.6	0.0	7.3	0.0	10.8	8.6	10.7
Lane LOS	A		A		B	A	B
Approach Delay (s)	1.7		2.3		10.2		10.7
Approach LOS					B		B

Intersection Summary			
Average Delay	7.9		
Intersection Capacity Utilization	26.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	6	24	28	51	38	14	26	71	32	21	73	12
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Hourly flow rate (vph)	8	30	35	64	48	18	32	89	40	26	91	15
Pedestrians												
Lane Width (m)												
Walking Speed (m/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (m)												
pX, platoon unblocked												
vC, conflicting volume	65			65			281	238	30	273	264	56
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	65			65			281	238	30	273	264	56
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			96			94	86	96	95	85	99
cM capacity (veh/h)	1537			1537			566	633	1044	563	612	1010

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	SB 1
Volume Total	38	35	64	65	121	40	132
Volume Left	8	0	64	0	32	0	26
Volume Right	0	35	0	18	0	40	15
cSH	1537	1700	1537	1700	613	1044	629
Volume to Capacity	0.00	0.02	0.04	0.04	0.20	0.04	0.21
Queue Length 95th (m)	0.1	0.0	1.0	0.0	5.8	1.0	6.3
Control Delay (s)	1.5	0.0	7.4	0.0	12.3	8.6	12.2
Lane LOS	A		A		B	A	B
Approach Delay (s)	0.8		3.7		11.4		12.2
Approach LOS					B		B

Intersection Summary			
Average Delay	8.1		
Intersection Capacity Utilization	28.6%	ICU Level of Service	A
Analysis Period (min)	15		

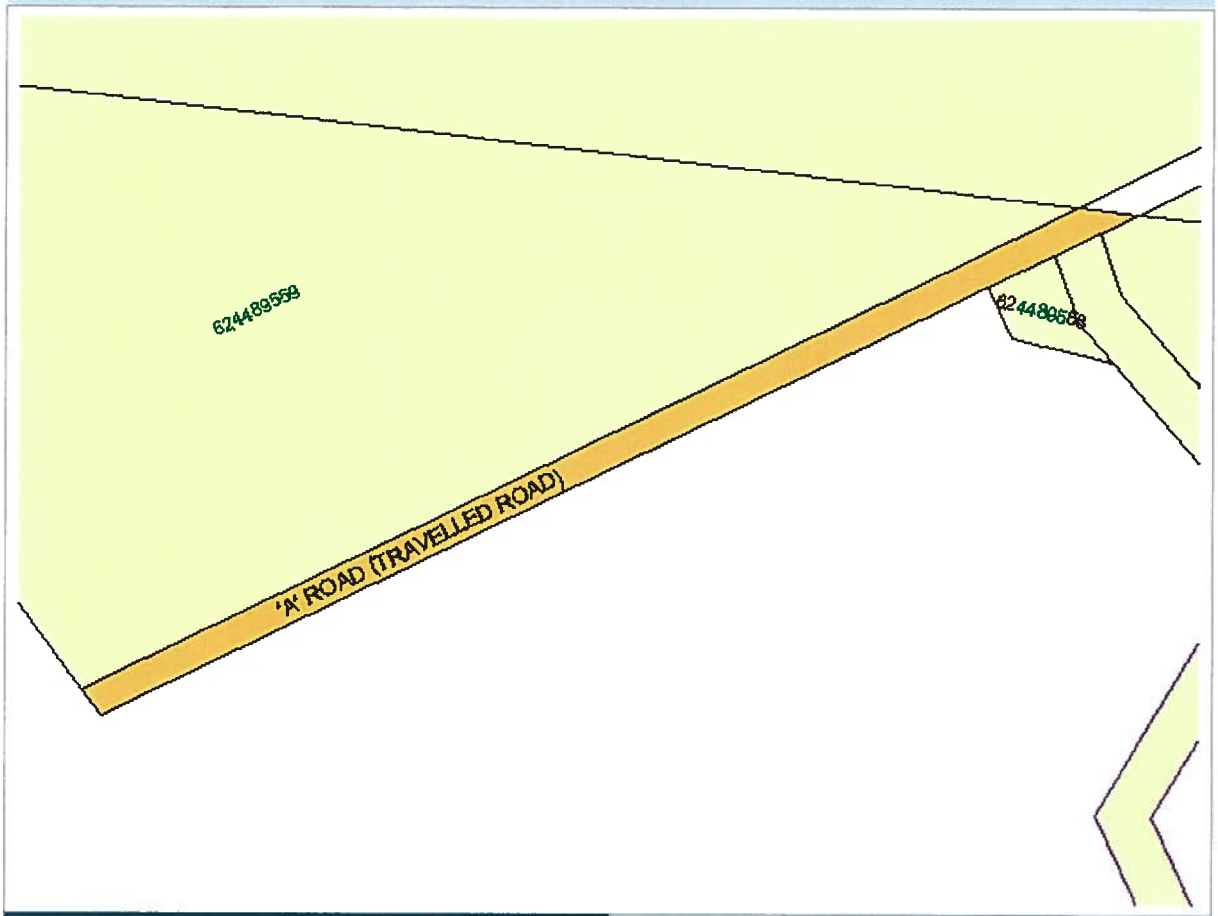
APPENDIX D

MISCELLANEOUS CORRESPONDENCE

TERANET SALES HISTORY REPORT

Prepared: Friday, March 09, 2012 8:49:07 AM

For: WEB02\EllisK



Legend	
	Subject Property Polygon
	Parcel Polygons
	Roads
	Railways
	Water Limits
	Easement Limits

0 118 m

This map was compiled using plans and documents recorded in the Land Registry System and has been prepared for property indexing purposes only. This is not a Plan of Survey. For actual dimensions of property boundaries, see recorded plans and documents. Only major easements are shown.

TERANET SALES HISTORY REPORT

Prepared: Friday, March 09, 2012 8:49:07 AM

For: WEB02\EllisK

SUBJECT PROPERTY IDENTIFICATION INFORMATION

LRO	55
PIN	624481847
ASSESSMENT ROLL NUMBER	N/A
REGISTRATION TYPE	LT
LAND REGISTRY STATUS	ACTIVE
MUNICIPALITY	N/A
ADDRESS	N/A N/A
AREA	13620 m2
PERIMETER	1432 m
DESCRIPTION	PCL 9297 SEC TBF; PT TWP OF PIC AS IN PPA5595 (SECONDLY (2)); DISTRICT OF THUNDER BAY
PARTY TO	THE CORPORATION OF THE IMPROVEMENT DISTRICT OF MARATHON

SALES HISTORY

DISCLAIMER INFORMATION

Reports Not the Official Record	Reports other than the Parcel Register, obtained through Purview "TM" Risk Management Services are not the official government record and will not necessarily reflect the current status of interests in land.
Currency of Information	Data contained in the Purview reports are not maintained real-time. Data contained in reports, other than the Parcel Register, may be out of date ten business days or more from data contained in POLARIS.
Coverage	Data, information and other products and services accessed through the Purview Risk Management Services are limited to certain land registry offices in the areas identified on the coverage map.
Completeness of the Sales History Report	Some Sales History Reports may be incomplete due to the amount of data collected during POLARIS title automation. Subject properties may also show nominal consideration or sales price (e.g. $2) in cases such as transfers between spouses or in tax exempt transfers.

Ministry of Transportation
Northwestern Region
Planning and Design
615 South James Street
Thunder Bay, Ontario P7E 6P6

Phone: (807) 473-2117
Fax: (807) 473-2168

March 17, 2011

Email to: dwiersema@enl-tbay.com
(2 Pages)

Engineering Northwest Ltd.,
Suite 301, 200 South Syndicate Avenue,
Thunder Bay, ON
P7E 1C9

Attention: Dale Wiersema, P. Eng.
Project Manager

Re: Draft Traffic Impact Study – Initial MTO Review
Marathon PGM Mine Now Owned by Stillwater Canada Inc.
ENL/True Grit

Dear Sir:

The above draft Traffic Impact Study was emailed to this Ministry on February 15th, and circulated for review and comment. The Ministry's comments are provided below.

Section 16 presents the Recommendations and Conclusions. The title should be Conclusions and Recommendations to reflect the body of the section. As well, there should be an Executive Summary at the beginning of the document.

The Ministry requests copies of the electronic/digital (input) Synchro files for review that are discussed on page 3. As well, subsection 1.3 speaks to intersection LOS analysis in terms of delay. However, Table B on page 16 and similar tables throughout show v/c instead of delay. The Ministry requests that delay as well as the v/c is to be provided in the applicable tables.

Subsection 2.2 on page 5 discusses the Existing Road Network. This discussion indicates that Peninsula Road and Camp Road 19 have different jurisdictions, and that Camp 19 Road is not a municipal road, but rather that MNR records indicate that the Camp Road 19 belongs to the Crown. It is our understanding that this is a municipal road. Please confirm this, and if a Crown road, please provide an MNR contact with respect to the current status and future upgrading of this road.

In this regard, Exhibit 3 on page 7 of the draft shows this road as Mine Access Road. What is the name of this road?

In this same subsection, the paragraph on Peninsula Road states that "until recently Peninsula Road was under the jurisdiction of the MTO". Peninsula Road south of Highway 17 was transferred to the Municipality in March 1997 by Order-in-Council OC-172/97. The phrase "until recently" should be replaced with this information.

The recommended CSAS-23 (Truck Access) has been reviewed by the Ministry's Planning and Design Section, and accepted as a recommendation. However, this entrance standard includes an optional taper, which would be a westbound right turn taper at this specific intersection. Was this taper to be included in the recommendation, and if not, why not?

Any work at this intersection, including the development of this recommended entrance, would require an Encroachment Permit under the Public Transportation and Highway Improvement Act. Prior to the submission of an Application for such a Permit, or as part of the Application, the proponent will need to submit detailed design of this intersection improvement to this Ministry for review and approval.

Why is the eastbound left/through/right movement not shown in Table B on page 16, as well as in similar tables throughout?

In general, was any analysis of the need for an E/B left turn lane undertaken? The draft TIS does not address nor speak to this matter. This should be reviewed and addressed in the TIS.

The information in Appendix A (traffic count data, data provided by Met. Chem. Canada Inc.) was not included in the report. Please include this as this Ministry would like an opportunity to review this data.

In subsection 5.4 on page 12, there is a discussion regarding phase II of construction, including the construction of the transmission line from the Peninsula Road substation across Highway 17 to the mine site. As indicated in previous discussion and correspondence, an Application for an Encroachment Permit and possibly a Building and Land Use Permit for this line under the Public Transportation and Highway Improvement Act will need to be submitted to this Ministry for approval prior to any construction occurring. Any poles that are required must satisfy highway clear zone requirements.

Please revise the draft report as per the above discussions, and re-submit it for review and approval. Should you have any questions, please do not hesitate to contact me at your convenience.

Yours truly,

Original Signed & Filed

Jim McKever
Corridor Management Planner