

Northwest Territories
Highway Traffic, 2011



Northwest
Territories Transportation

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Department of Transportation
Government of the Northwest Territories
June 2012

Acknowledgements

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If you have any comments or questions related to the content of this report, please contact the Planning, Policy and Environment Division by telephone at (867) 873-7666, or by facsimile at (867) 920-2565.

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Section 1.0

Summary of Traffic Data Collection Activities and Analysis

1.0 Summary of Traffic Data Collection Activities and Analysis

1.1 Background

The Northwest Territories highway network consists of 2200 kilometres of all-weather roads and 1400 kilometres of winter roads. The highway system also includes five vehicle ferries. A map of the highway network is provided in Figure 1. A detailed listing of the highway system classification by surface type is provided in Table 1. It is noted that, in addition to the above, there are a number of winter roads constructed by mining companies to facilitate mine resupply.

The Department of Transportation of the Government of the Northwest Territories is responsible for operation and maintenance, capital rehabilitation, and upgrading of the Northwest Territories highway network. To monitor traffic utilizing the highway system, the Department of Transportation operates a series of mechanical counters and conducts periodic visual counts and surveys. Supplementing this information is data from the weigh scales and usage logs from the five ferries. Information obtained is used by the department to monitor changes in traffic flows, classify highways, set priorities in maintenance and capital funding, monitor safety aspects of the highways and optimize engineering designs. Traffic data is made available to businesses and the general public as needed.

This report presents traffic data collected by the Department of Transportation on the territorial highway network from 1993 to 2011. This report includes traffic information collected on major highways, access roads, winter roads and associated ferry crossings. The report also contains information on vehicle classifications.

1.2 Traffic Data Collection System

The Northwest Territories Department of Transportation collects traffic data at a number of permanent and seasonal counting stations as shown in Table 2 and illustrated in Figure 1. These stations provide hourly information on traffic for the complete year, or selected portions of the year for counters located on winter roads or other seasonal access roads. These stations are positioned to capture the general flow of traffic on the highway network.

Vehicle classification information is collected at the five ferries that operate on the highway system. The Marine Services Division of the Department of Transportation is responsible for collecting and processing this information.

Special turning movement counts at select intersections and visual vehicle classification counts are also conducted annually or as need arises. Three intersection counts were undertaken in 2011.

Information on truck volumes and commodities is obtained from the weigh scale in Enterprise. Truck volumes utilizing private (mining) winter roads is also collected and presented in this report.

In 2011, over 40 percent of all potential data was useable for determining traffic volumes. This performance is attributed to the age of the traffic counters, breakdown of the loops and malfunctioning batteries and data modules, but represents a significant improvement since 2006. Where data was missing, traffic volumes have been estimated based on previous years' data and information from other sources such as vehicle movements at ferries and weigh scales. The Department is working to improve data collection activities, including the purchase of new counters and loops and the installation of temporary counters.

Figure 1
Northwest Territories Permanent and Seasonal Traffic Counter Locations (2011)

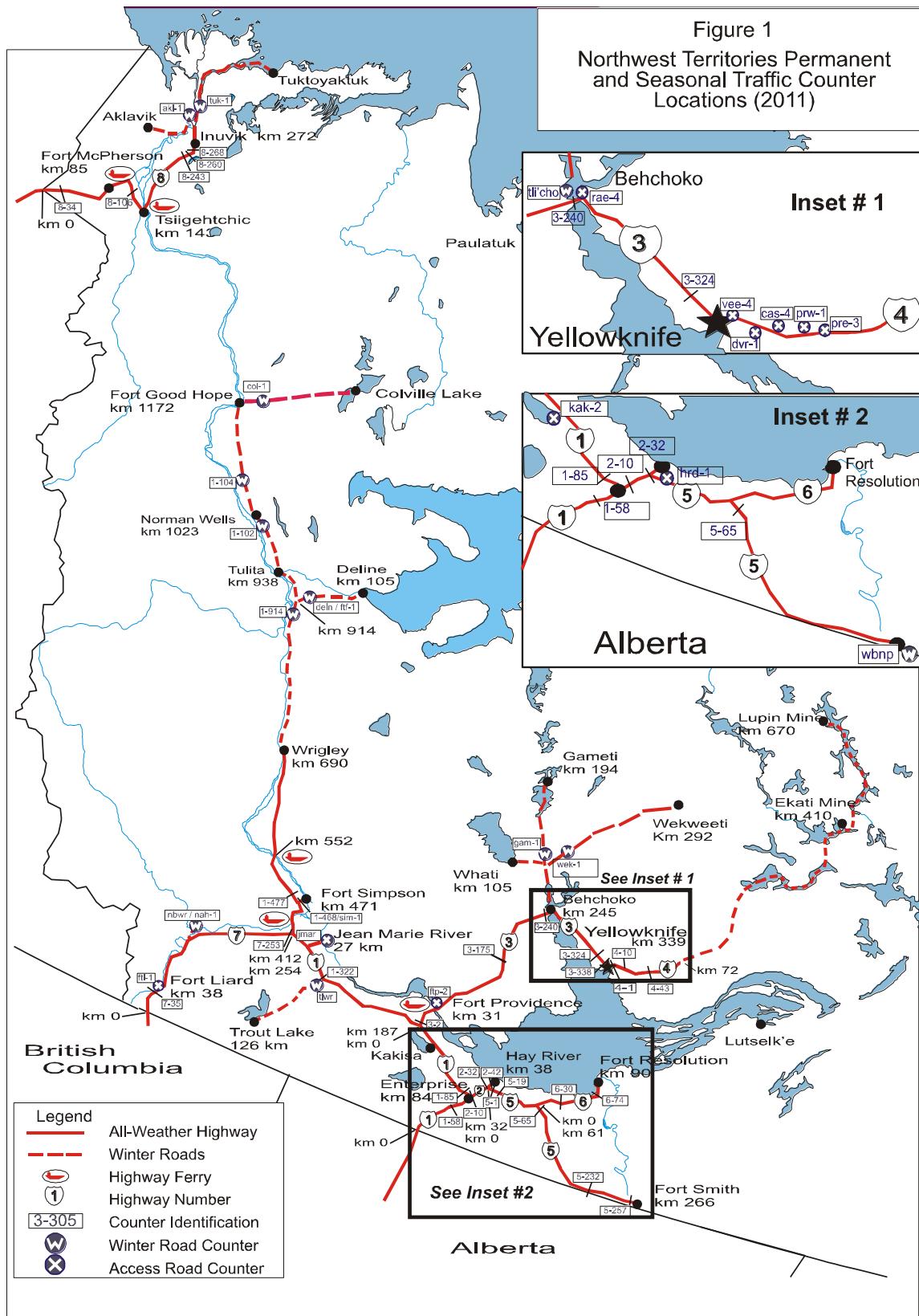


Table 1 Highway System Classification (2011)

Classification	Length (kilometres)						Total
	Paved	Dust- Controlled Gravel	Untreated Gravel	Ferry Crossing	Winter Road		
All-Weather Highways							
Highway 1 (Mackenzie Highway to Wrigley)	290.2	201.8	195.5	2.5	-	690.0	
Highway 2 (Hay River Highway)	43.7	-	-	-	-	43.7	
Highway 3 (Yellowknife Highway)	337.6	-	-	1.2	-	338.8	
Highway 4 (Ingraham Trail)	35.2	34.0	-	-	-	69.2	
Highway 5 (Fort Smith Highway)	203.0	64.0	-	-	-	267.0	
Highway 6 (Fort Resolution Highway)	56.0	16.0	18.0	-	-	90.0	
Highway 7 (Liard Highway)	-	73.2	180.9	-	-	254.1	
Highway 8 (Dempster Highway)	10.3	67.2	195.0	-	-	272.5	
Total	976.0	456.2	589.4	3.7	0.0	2,025.3	
Access Roads							
Kakisa Lake Access	12.9	-	-	-	-	12.9	
Fort Simpson Access	3.4	-	-	-	-	3.4	
Jean Marie River Access	-	-	27.4	-	-	27.4	
Fort Providence Access	5.4	-	-	-	-	5.4	
Rae Access	10.5	-	-	-	-	10.5	
Dettah Access	7.8	3.5	-	-	-	11.3	
Hay River Reserve Access	11.0	1.4	1.9	-	-	14.3	
Fort Liard Access	1.3	-	4.0	-	-	5.3	
Hay River Hwy. No. 2 Km 43.7 - 48.6	4.9	-	-	-	-	4.9	
Nahanni Butte Access	-	-	21.3	-	1.0	22.3	
Yellowknife Access	1.7	-	-	-	-	1.7	
Fort McPherson Access	-	1.1	-	-	-	1.1	
Inuvik Access	0.6	-	-	-	-	0.6	
Hwy 3 Ice Crossing Access	-	9.4	-	-	-	9.4	
Miscellaneous Minor Access	3.2	8.5	45.2	-	-	56.9	
Total	62.7	23.9	99.8	0.0	1.0	187.4	
Winter Roads							
Highway 1 (Mackenzie Highway, Wrigley to FGH)	-	-	-	-	486.4	486.4	
Colville Lake Access (opened March 2001)	-	-	-	-	165.0	165.0	
Highway 3 Ice Crossing	-	-	-	-	3.1	3.1	
Trout Lake Access	-	-	-	-	126.0	126.0	
Deline Access	-	-	-	-	105.3	105.3	
Wha'ti Road	-	-	-	-	103.0	103.0	
Rae Lake Road	-	-	-	-	125.0	125.0	
Tuktoyaktuk Access	-	-	-	-	184.0	184.0	
Ak lavik Access	-	-	-	-	85.0	85.0	
Dettah Access	-	-	-	-	6.3	6.3	
Total	0.0	0.0	0.0	0.0	1,389.1	1,389.1	
Total All-Weather Roads							2,212.7
Total Winter Roads (Department of Transportation)							1,389.1

Table 2 Permanent and Seasonal Counter Locations

Counter ID	Location (Hwy / Road)	Kilometre	Description
All-Weather Highways			
1-58	Highway 1	58	15 km south of Alexandra Falls
1-85	Highway 1	85	1.2 km west of Enterprise
1-322	Highway 1	322	0.4 km west of Trout Lake winter road
1-477	Highway 1	477	5.2 km west of Fort Simpson Access on Highway 1
2-10	Highway 2	10	10 km north of Enterprise, south of Paradise Gardens
2-32	Highway 2	32	40 metres north of Highway 2 and 5 intersection, south of service road
2-42	Highway 2	42	North of West Channel, across bridge
3-2	Highway 3	2	2 km north of Highway 1 and 3 intersection, south of ferry landing
3-175	Highway 3	175	53 km north of Chan Lake, 62 km south of Edzo
3-240	Highway 3	240	3 km south of Rae Access, north of Edzo
3-324	Highway 3	324	19.3 km east of Boundary Creek
3-338	Highway 3	338	0.8 km west of Highway 3 and 4 intersection
4-1	Highway 4	1	1 km north of Highway 3 and 4 intersection
4-10	Highway 4	10	2.5 km east of Yellowknife River Bridge / 300 m west of Dettah Access Road
4-43	Highway 4	43	11 km east of Prelude Lake East Access, 12 km west of Cameron River
5-1	Highway 5	1	1 km east of Highway 2 and 5, 1.5 km west of Hay River Reserve Access
5-19	Highway 5	19	10.6 km east of Sandy Creek, 19 km east of Highway 2 and 5 intersection
5-65	Highway 5	65	5 km south of Highway 5 and 6 intersection
5-232	Highway 5	232	12.3 km west of Salt River Village Access
5-257	Highway 5	257	6.1 km west of Fort Smith
6-30	Highway 6	30	8.5 km east of Pine Point Access
6-74	Highway 6	74	16 km west of Fort Resolution
7-35	Highway 7	35	2.6 km south of Fort Liard
7-253	Highway 7	253	0.3 km south of Highway 1 and 7 intersection
8-34	Highway 8	34	10 km west of Midway Lake
8-106	Highway 8	106	20.6 km north of Fort McPherson Access
8-243	Highway 8	243	1 km south of Cabin Creek
8-260	Highway 8	260	0.7 km north of airport access
8-268	Highway 8	268	1.3 km south of Inuvik
Access Roads			
cas-4	Cassidy Point	1	1 km north of junction with Highway 4
dvr-1	Dettah	1	1 km south of junction with Highway 4
ftl-1	Fort Liard	1	1 km west of junction with Highway 7
ftp-2	Fort Providence	2	2 km west of junction with Highway 3
hrd-1	Hay River Dene Reserve	1	1 km north of junction with Highway 5
jmar	Jean Marie River	1	1 km north of junction with Highway 1
kak-2	Kakisa	2	2 km south of junction with Highway 1
pre-3	Prelude East	1	1 km north of junction with Highway 4
prw-1	Prelude West	1	1 km north of junction with Highway 4
rae-4	Fort Rae	4.2	4.2 km north of junction with Highway 3
vee-4	Vee Lake	4.3	4 km north of junction with Highway 4
sim-1	Fort Simpson	1	1 km north of junction with Highway 1
Winter Roads			
1-914	Highway 1	914	northern-most side of junction of Highway 1 and Deline Access
1-102	Highway 1	1022	1.4 km south of Norman Wells
1-104	Highway 1	1031	7.6 km north of Norman Wells
akl-1	Aklavik	1	1 km west of junction with Tuktoyuktuk Winter Road
col-1	Colville Lake	1	1 km east of junction with Highway 1 at Fort Good Hope
deln / ftf-1	Deline	1	1 km east of junction with Highway 1
det-1	Dettah	1	0.1 km east of junction with School Draw Avenue
det-6	Dettah	6	0.3 km west of Dettah Village
elwr / lacl	Wha'ti	72	1 km west of junction with Tli Cho Winter Road
gam-1	Gameti	72	1 km north of junction with Wha'ti Access Road
nbwr / nah-1	Nahanni Butte	2	2 km west of junction with Highway 7
tli cho	Tli Cho	1	1.5 km north of junction with Highway 3
tlwr	Trout Lake	1	1 km south of junction with Highway 1
tuk-1	Tuktoyaktuk	1	km 34 on Tuk winter road, 1 km north of junction with Aklavik Winter Road
wek-1	Wekweeti	1	1 km east of junction with Tli Cho Winter Road

1.3 Traffic Data Processing

The permanent traffic counters located throughout the Northwest Territories highway network collect traffic data on a continual basis. This data is stored to memory every hour. Approximately once per month, personnel working out of the highway maintenance camps download the data to a module, clear the internal memory of the counter, and send the downloaded data to the Transportation Planning, Policy and Environment Division.

Personnel with the Transportation Planning, Policy and Environment Division download the data from the module to the government network in a flat file (ASCII format) and conduct a first level screening of the data. Any problems are noted and corrupt data is disregarded. The data is then copied into a Microsoft Excel spreadsheet and analysed to obtain the information presented in this report.

The first step in the analysis of the traffic data is to check for completeness and accuracy. Common problems include missing data due to the counter or module not functioning correctly, overlapping or missing data between months, and counts too high or low due to counter malfunctions. To ensure accurate results and also provide as much information as possible, a series of procedures have been established to correct deficiencies in the data. These steps are outlined in Appendix B.

1.4 Glossary of Terms

Average Annual Daily Traffic (AADT) is an estimate of the mean daily traffic for a period of one year.

Average Daily Traffic (ADT) is an estimate of the mean traffic for a specified period of time. For example, monthly ADT is an estimate of the mean daily traffic for a specified month.

Growth Rate is the increase or decrease in AADT from year to year.

Near Urban Highway is a section of highway located within or near a major urban centre.

Peak Summer Average Daily Traffic (PSADT) is an estimate of the mean daily traffic for the months of June, July and August.

Permanent Traffic Counter is a counter that is permanently placed at a specific location and counts traffic continuously.

Rural Highway is a section of highway located away from the traffic influence of a major urban centre.

Short Term Counts provide measurements of traffic characteristics based on visual observation for a specified period of time and purpose.

Traffic Distributions illustrate how traffic varies over time. Distributions may be by month, by day of the week or hourly, and is usually measured as a percent of the AADT.

Vehicle Classification is the distribution of vehicle types in a traffic stream.

Vehicle Kilometres Travelled is the total number of vehicles for a specific road segment multiplied by the length of the road segment.

1.5 Layout of the Report

This report is organized into four sections.

Section 1 provides an introduction to the Northwest Territories traffic data collection system.

Section 2 presents the traffic information collected at all permanent counter locations and selected mining roads; including traffic volumes, distributions and vehicle kilometres travelled.

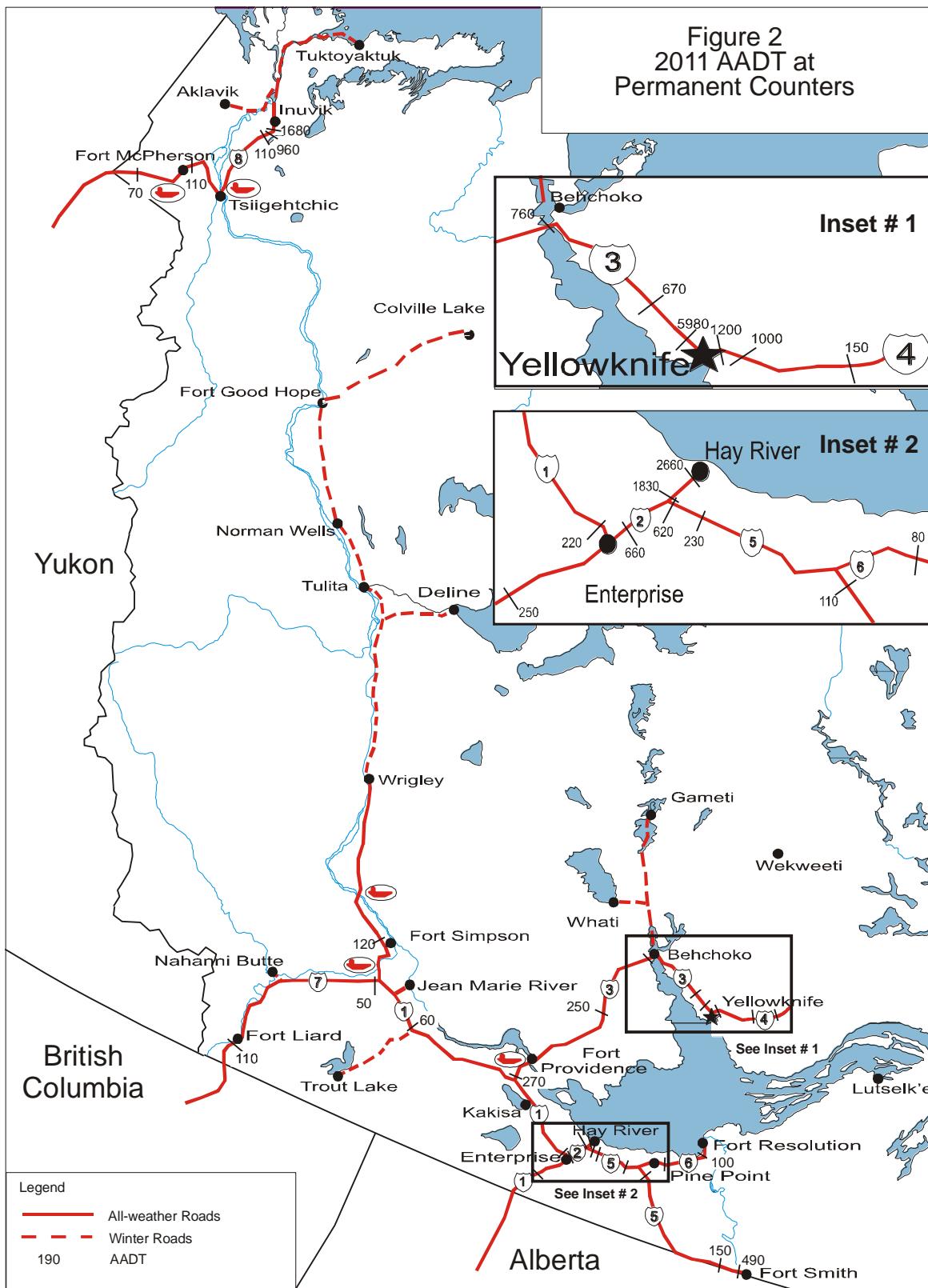
Section 3 presents traffic information collected on highway ferries, and commercial vehicle activity from the weigh scales.

Section 4 presents short term traffic count data at three intersections.

The Appendices present additional detailed traffic information.

Section 2.0

Highway Traffic Volume Data



Note: Some data in this figure has been estimated using information from past years. See Appendix A for actual data.

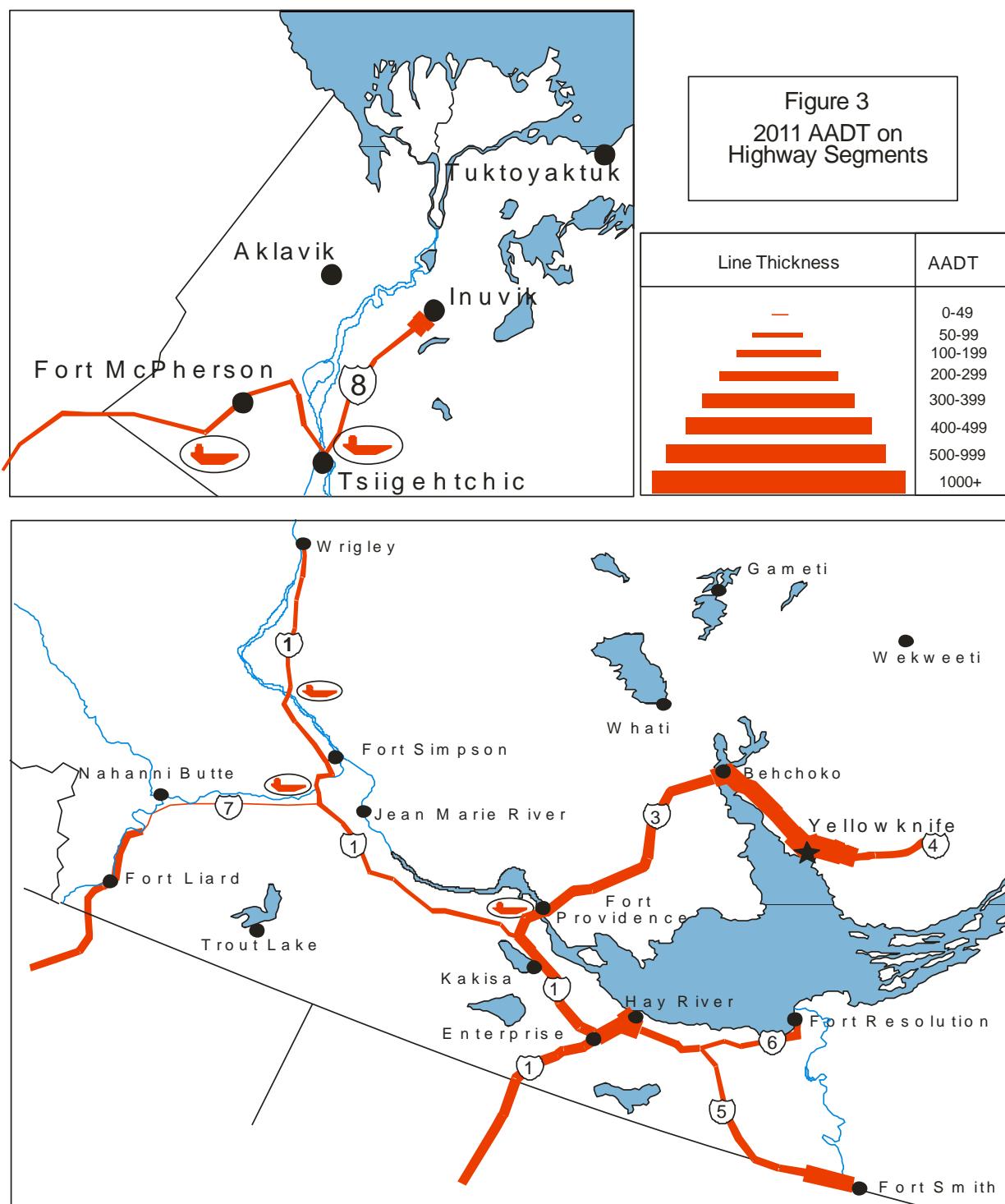


Table 7 Truck Traffic on the Tibbitt to Contwoyo Winter Road

		Lupin Mine (1)	BHP Diamonds Ekati Mine	Diavik Diamond Mines Inc.	DeBeers Snap Lake	Tahera	Mineral Exploration Traffic	Total
2012	Total Tonnage	0	69,351	89,045	46,137	0	4,693	209,226
	Total Trucks	0	2,272	2,947	1,755	0	225	7,199
2011	Total Tonnage	0	64,594	127,375	42,619	0	4,457	239,045
	Total Trucks	0	1,967	3,863	1,373	0	186	7,389
2010	Total Tonnage	0	47,581	39,748	32,505	0	186	120,020
	Total Trucks	0	1,461	1,345	1,116	0	15	3,937
2009	Total Tonnage	0	58,544	91,362	22,884	0	405	173,195
	Total Trucks	0	1,663	2,779	904	0	31	5,377
2008	Total Tonnage	0	72,233	138,051	43,244	2,300	2,513	258,341
	Total Trucks	0	1,840	4,239	1,250	49	77	7,455
2007	Total Tonnage	2,059	121,716	133,267	64,505	17,566	4,172	343,285
	Total Trucks	55	3,937	4,573	2,355	500	236	11,656
2006 (2)	Total Tonnage	1,071	82,447	55,750	34,852	7,821	2,435	184,376
	Total Trucks	35	3,152	2,094	1,623	258	148	7,310
2005	Total Tonnage	7,709	117,661	94,303	18,089	0	14,771	252,533
	Total Trucks	251	3,434	2,848	703	0	614	7,850
2004	Total Tonnage	11,097	105,127	53,960	6,852	0	2,108	179,144
	Total Trucks	288	2,984	1,572	295	0	117	5,256
2003	Total Tonnage	27,832	101,990	67,394	0	0	1,602	198,818
	Total Trucks	702	3,003	2,202	0	0	87	5,994
2002 (3)	Total Tonnage	27,315	132,077	93,009	0	0	3,083	255,484
	Total Trucks	698	3,913	3,339	0	0	218	8,168

The number of trucks indicated are "loaded truckloads" and therefore represents one-way traffic. To determine the total truck traffic these numbers should be multiplied by 2.

(1) Winter road data provided by the Tibbitt to Contwoyo Winter Road Joint Venture.

2012 season	56 days (February 1 - March 28)
2011 season	62 days (January 28 - March 31)
2010 season	45 days (February 4 - March 21)
2009 season	52 days (February 1 - March 25)
2008 season	70 days (January 28 - April 7)
2007 season	70 days (January 28 - April 8)
2006 (2) season	49 days (February 5 - March 26)
2005 season	69 days (January 26 - April 5)
2004 season	63 days (January 28 - March 31)
2003 season	60 days (February 1 - April 2)
2002 season	80 days (January 26 - April 16)

Notes: BHP Diamond Mines Ekati Mine went into production in October of 1998.
 Diavik Diamond Mine began construction of the mine site in 2000.
 Tahera Diamond Mine suspended operations in February 2008.

(2) Climatically, 2006 was one of the warmest winters on record.

Winter road never reached full load bearing capacity.

(3) For data preceding 2002, please see Appendix B 'Historical Data'.

Refer to Figure 1 for the location of this winter road

Table 8 Estimated Vehicle Kilometres Traveled on NWT Highways

Hwy	km	Length (km)	AaDT	Vehicle Kilometres Traveled (Millions)																			
				2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2010	2009	2008	2007					
1	58	Alberta Border to Enterprise	84.2	250	250	250	280	270	280	250	250	260	7.7	7.7	8.6	8.3	8.7	7.6	7.6	7.8			
1	85	Enterprise to Junction with Hwy #3	103.4	250	290	220	330	410	390	300	270	270	10.8	11.0	8.4	12.7	15.4	14.8	11.4	10.3	10.1		
1 Arterial			187.6										18.5	18.7	16.0	21.3	23.7	23.5	20.1	18.0	18.0	17.9	
2	10	Enterprise to Junction with Hwy #5	37.5	660	430	610	450	380	420	450	440	410	420	9.1	5.9	8.3	6.1	5.3	5.7	6.1	5.6	5.6	5.6
2	32	Junction with Hwy #5 to Hay River (West Channel Bridge)	6.2	1830	1630	1900	1850	1420	1460	1390	1390	1420	4.1	3.7	4.3	4.2	4.1	3.2	3.3	3.1	3.1	3.2	3.2
2	42	1 km south Airport Access	2860	2670	3250	2660	2940	2130	2530	2760	2530	2760	13.2	9.6	12.6	10.3	9.3	9.0	9.4	8.7	8.7	9.0	9.0
2 Arterial			43.7																				
3	2	Junction with Hwy #1 to Fort Providence Access	44.1	270	270	250	320	300	270	280	250	240	240	4.3	4.3	4.1	5.1	4.7	4.3	4.2	4.0	4.0	3.9
3	175	Fort Providence Access to Ezzo Access	192.4	250	240	250	310	210	210	210	210	210	210	17.3	16.8	17.5	21.8	20.9	14.9	14.9	14.9	14.6	14.6
3	240	Ezzo Access to Rae Access	8.5	760	840	620	770	780	650	650	640	240	240	2.4	1.9	2.4	2.4	2.4	2.4	2.0	2.0	2.0	2.0
3	324	Rae Access to Yellowknife Access (Old Airport Road)	88.5	670	750	640	640	640	640	640	450	450	440	21.6	24.1	20.7	20.7	20.7	20.7	14.6	14.6	14.3	14.3
3	337	Old Airport Road Junction to Junction with Hwy #44	5.3	5980	6730	5600	5600	5600	5600	5600	5570	5570	5460	11.6	13.0	10.8	10.8	11.0	10.8	10.8	10.8	10.6	10.6
3 Arterial			388.8																				
Total Arterial			570.1										91.1	85	68	77	83	93	101	86	86	91	91
Total Collector													88.8	89.2	83.6	92.4	92.6	85.7	76.0	72.9	72.9	72.2	72.2
Total Vehicle Kilometres Traveled													1312										

Percent increase from 2002 to 2003 = 1.1% (Arterial increase = 0.9%; Collector increase = 1.3%)
Percent increase from 2003 to 2004 = 0% (Arterial increase = 0%; Collector increase = 0%)
Percent increase from 2004 to 2005 = 4.3% (Arterial increase = 4.3%; Collector increase = 4.2%)

Percent increase from 2005 to 2006 = 6.6% (Arterial increase = 12.7%; Collector increase = -3.5%)
Percent increase from 2009 to 2010 = 5.5% (Arterial increase = 6.7%; Collector increase = 2.6%)
Percent increase from 2010 to 2011 = 2.6% (Arterial increase = 2.6%; Collector increase = 2.6%)

Average annual percent increase from 2002 to 2011 = 1.6% (Arterial increase = 1.6%; Collector increase = 1.6%)
Vehicle Kilometres Traveled (VKT) is a unit for measuring the amount of traffic on a road. It is calculated by multiplying the AaDT by the length of the road.
I.E. (number of vehicles)(number of kilometres assumed driven)=vehicle kilometres travelled.

Figure 4 Estimated Vehicle Kilometres Travelled on Northwest Territories Highways

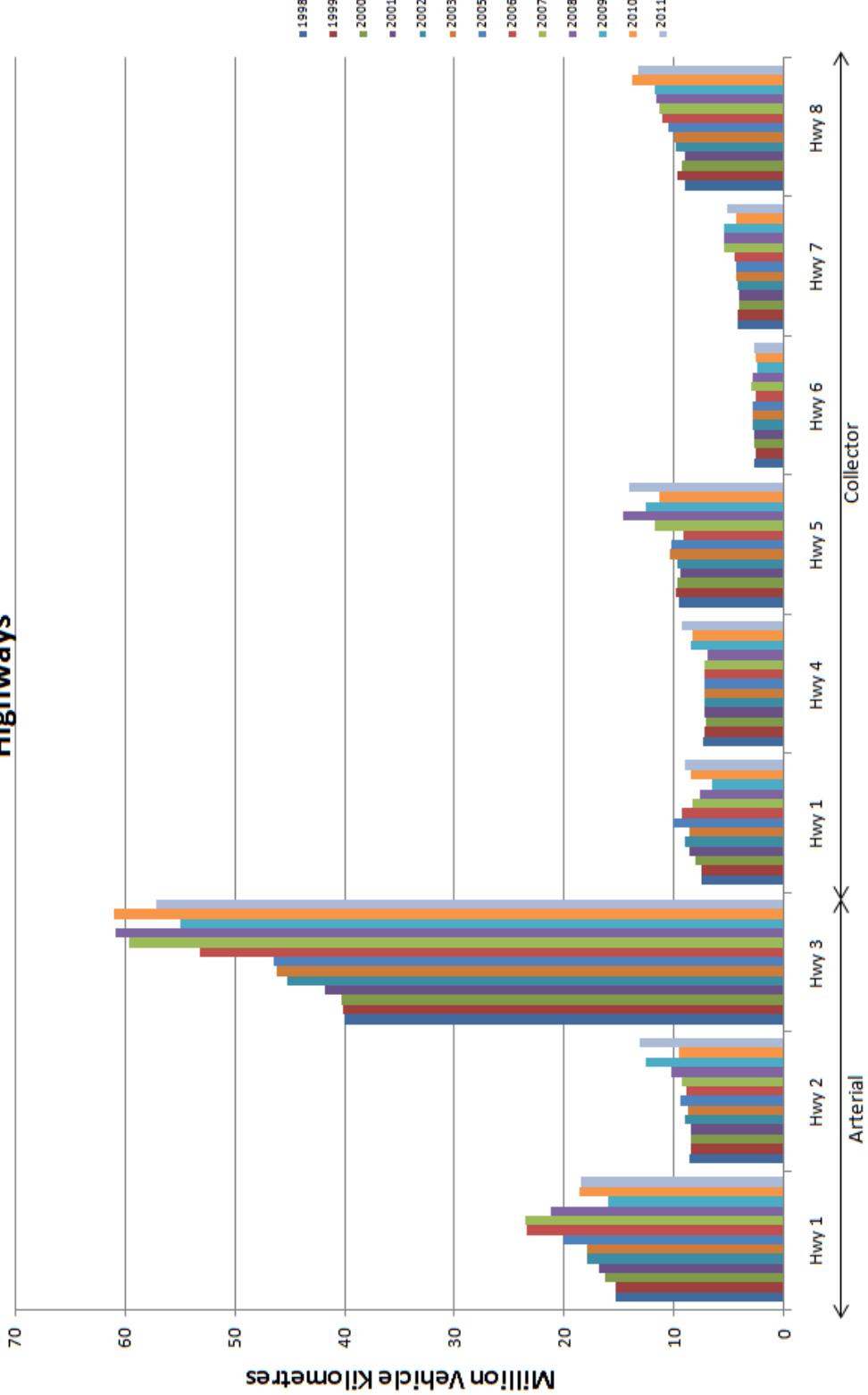
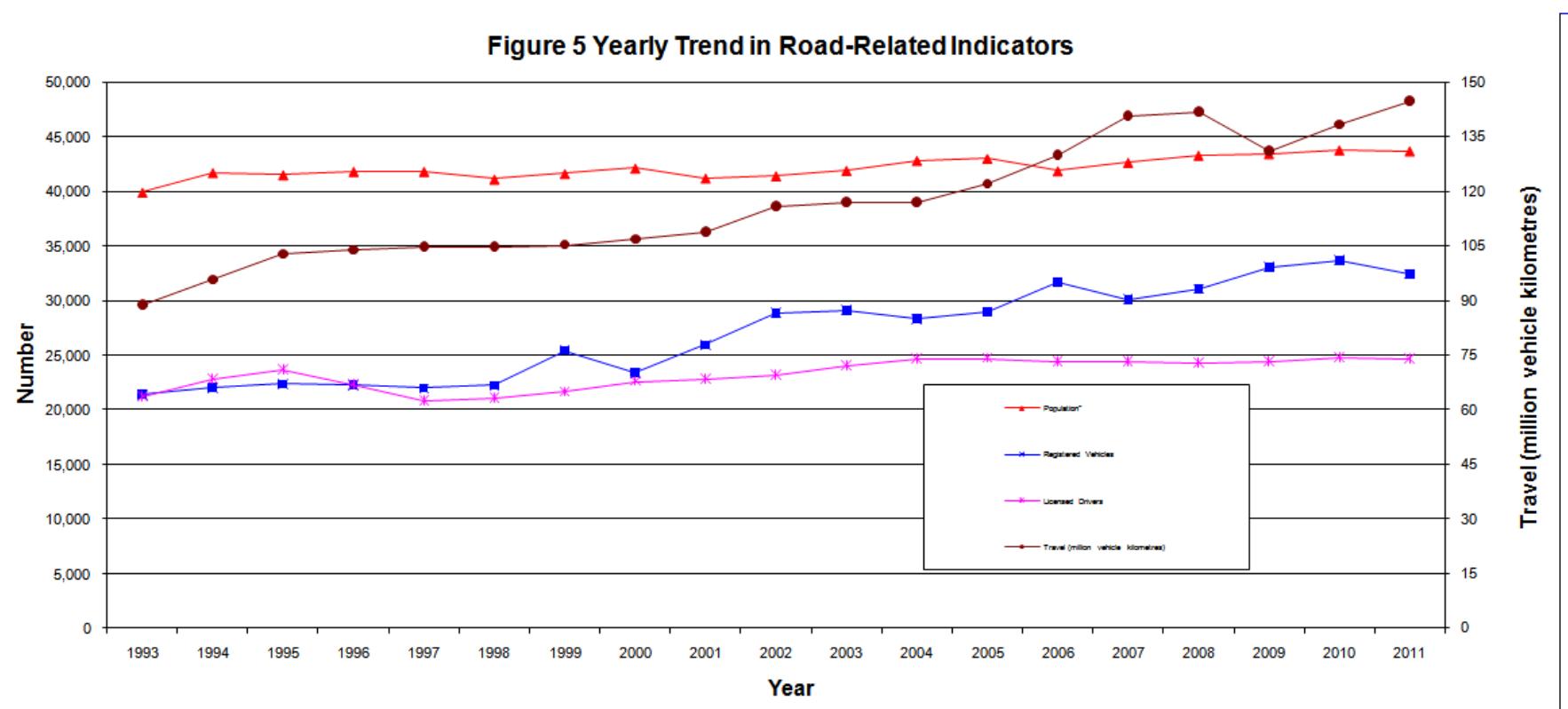


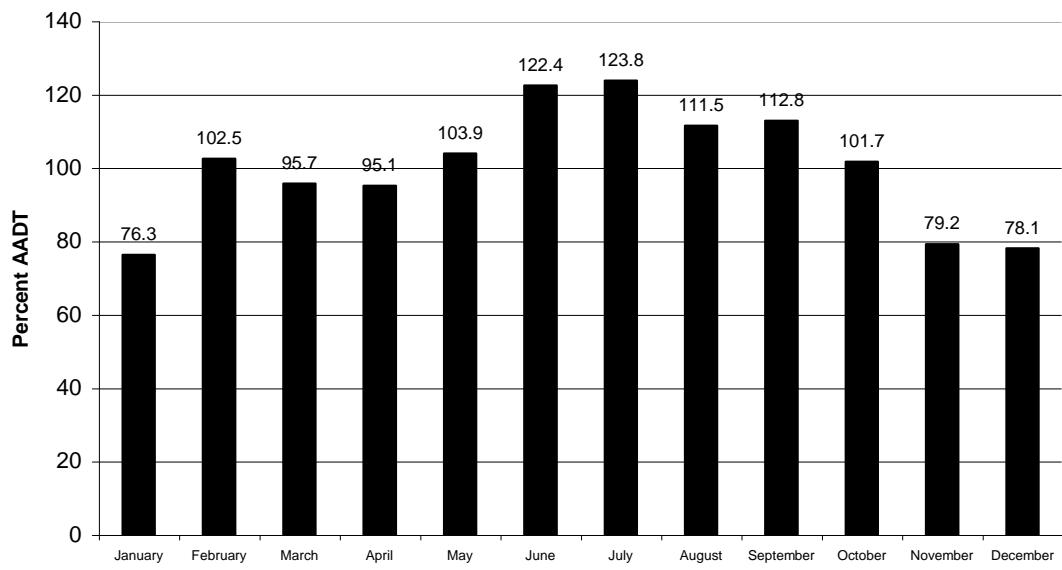
Figure 5 Yearly Trend in Road-Related Indicators



Indicators	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Population*	41,800	41,100	41,600	42,100	41,200	41,400	41,900	42,810	42,982	41,861	42,637	42,322	43,282	43,439	43,759
Registered Vehicles	21,956	22,201	25,426	23,371	25,936	28,856	29,106	28,305	28,934	31,664	30,078	31,042	33,036	33,688	32,391
Licensed Drivers	20,850	21,112	21,669	22,626	22,838	23,223	24,040	24,641	24,703	24,432	24,442	24,323	24,449	24,785	24,691
Travel (million vehicle kilometres)	104.6	104.7	105.2	106.8	108.7	115.8	117.0	117.0	122.0	130.0	140.6	141.7	131.0	138.3	144.8

*Source: Northwest Territories Stats Bureau

Figure 6
Distribution of Monthly Traffic
Typical Near Urban Highway
(Hwy 3, Km 338)



Typical Rural Highway
(Hwy 5, Km 65)

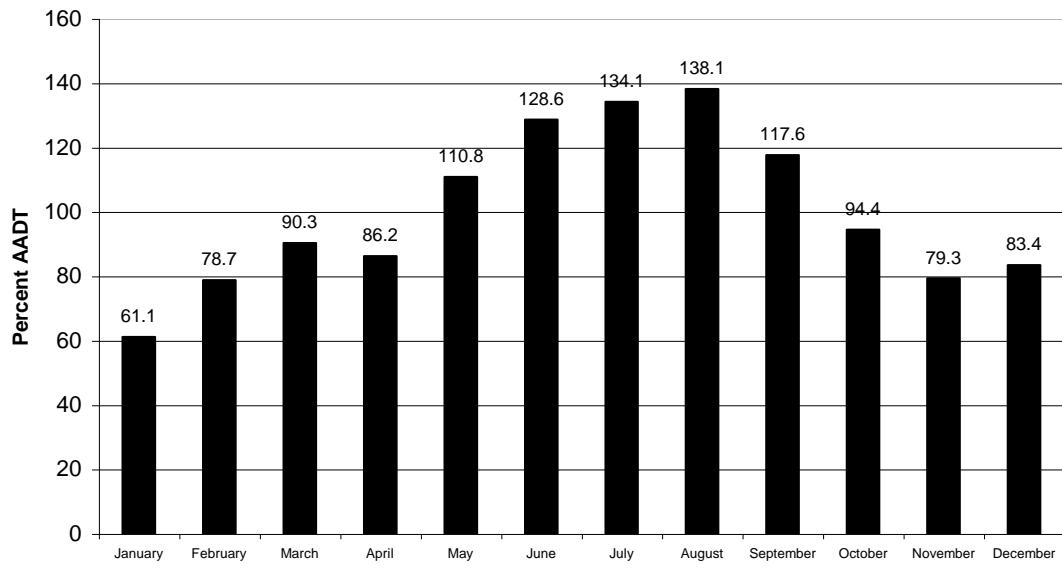
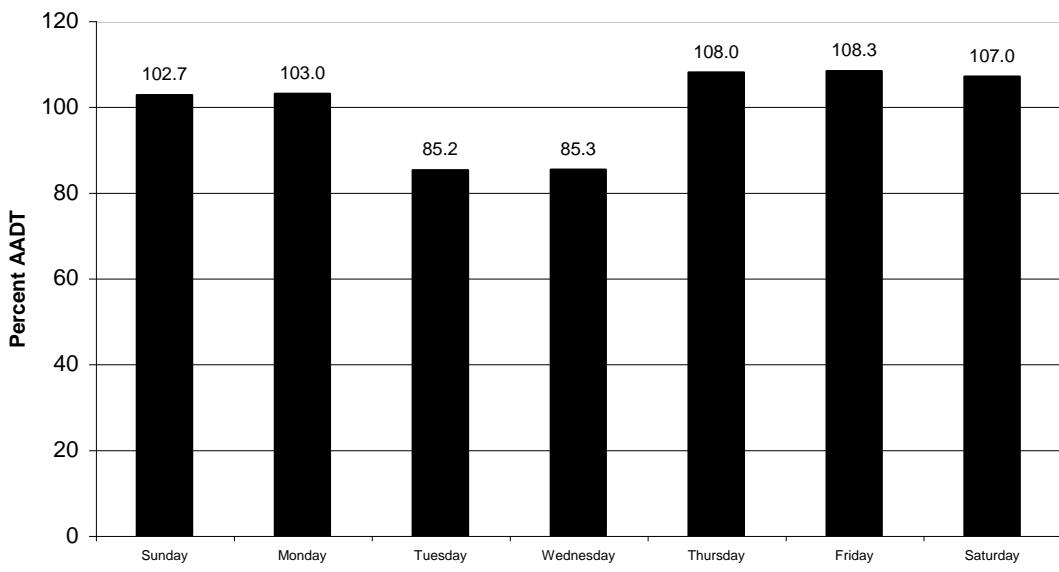


Figure 7
Distribution of Daily Traffic
Typical Near Urban Highway
(Hwy 3, Km 338)



Typical Rural Highway
(Hwy 5, Km 65)

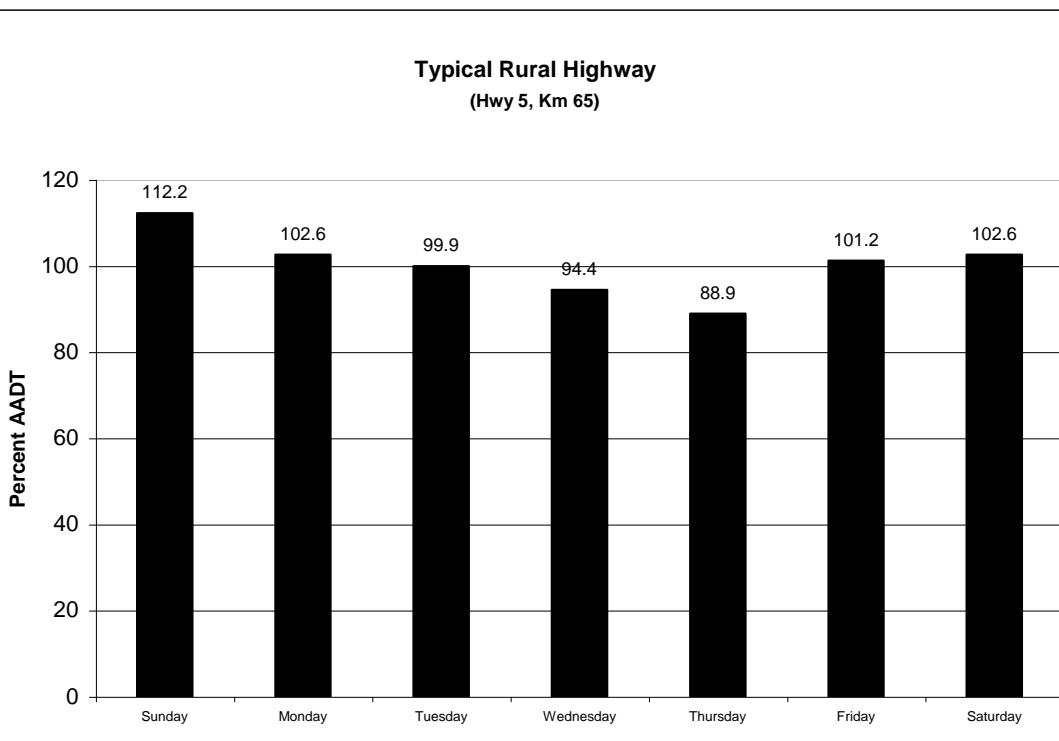
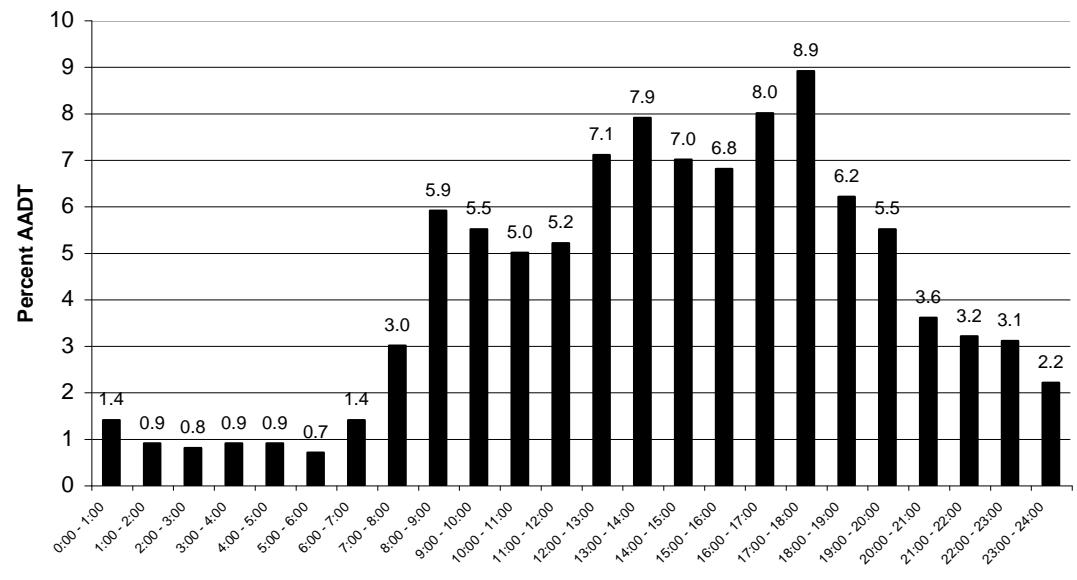
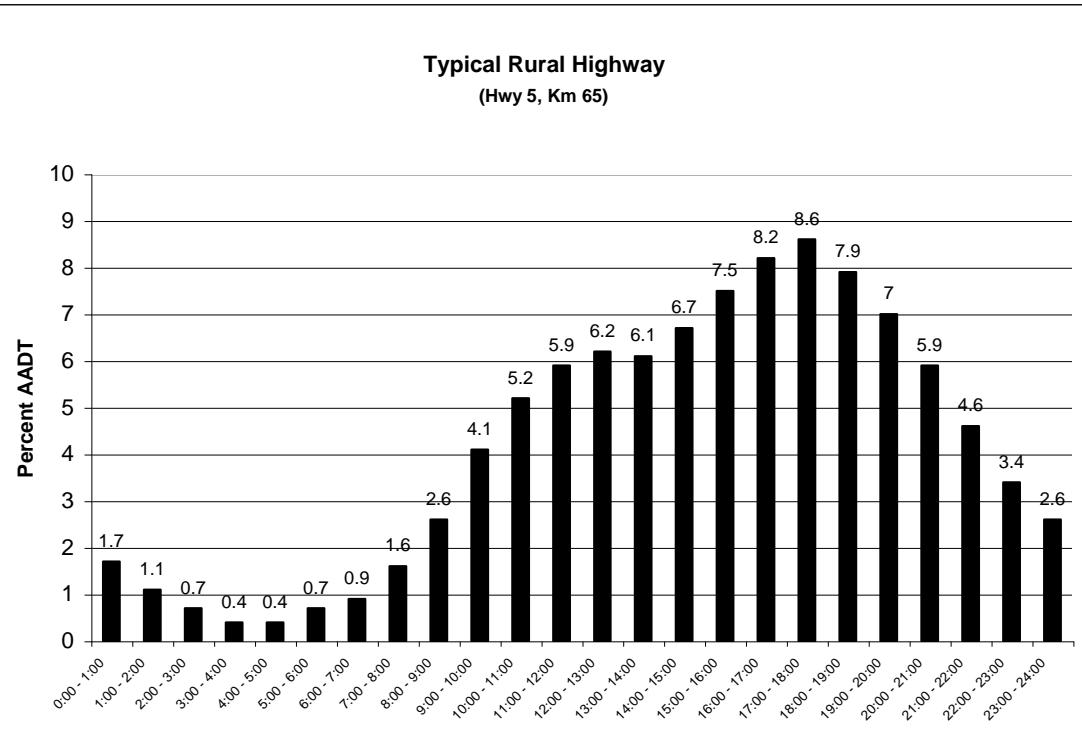


Figure 8
Distribution of Hourly Traffic
Typical Near Urban Highway
(Hwy 3, Km 338)



Typical Rural Highway
(Hwy 5, Km 65)



Section 3.0

Vehicle Movements at Ferries and Weigh Scales

Figure 9
Average Daily Traffic on Highway Ferries

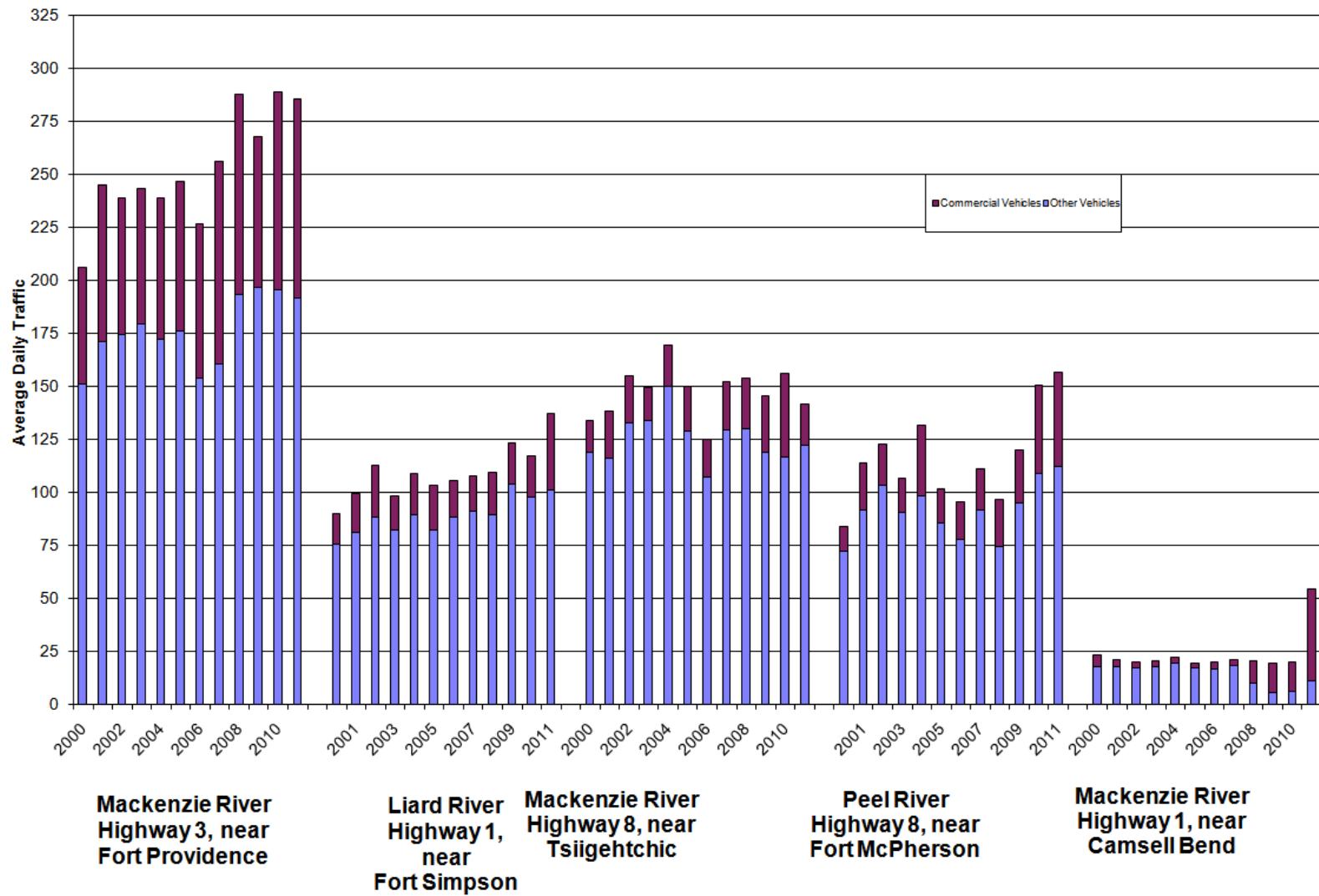
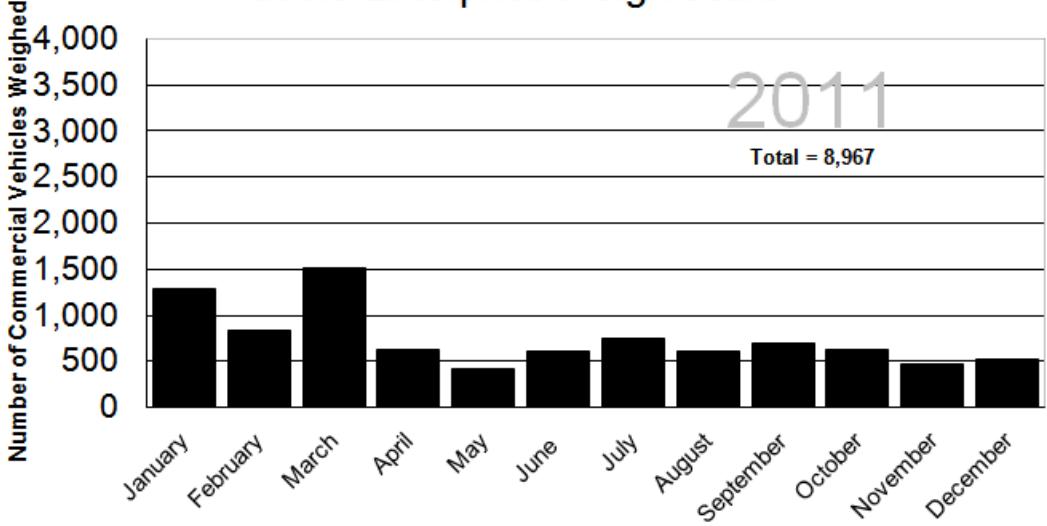


Table 9 Average Daily Traffic on Highway Ferries

Ferry Crossing	Location	Ferry	Vehicle Type	Year											
				2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000
Dory Point	Highway 3, near Fort Providence	M.V. Merv Hardie	Commercial Vehicles	94	93	71	94	95	73	71	67	64	64	74	55
			Light Vehicles	173	177	177	176	142	138	159	154	159	156	154	134
			Trailers Towed	19	19	20	18	19	17	17	18	21	19	18	17
			Total	286	289	268	288	256	227	247	239	244	239	245	206
Liard River	Highway 1, near Fort Simpson	M.V. Lafferty	Commercial Vehicles	36	20	19	20	17	17	21	20	16	24	19	14
			Light Vehicles	92	90	96	83	84	81	76	83	76	82	75	70
			Trailers Towed	9	8	8	7	7	7	6	6	7	7	6	6
			Total	138	118	123	110	108	106	104	109	98	113	100	90
Mackenzie River	Highway 8, near Tsigehtchic	M.V. Louis Cardinal	Commercial Vehicles	20	40	27	24	23	18	21	20	15	23	22	15
			Light Vehicles	116	108	109	122	119	99	119	136	127	120	104	106
			Trailers Towed	7	9	10	8	11	8	10	14	7	13	12	13
			Total	142	157	146	154	152	125	150	170	150	155	139	134
Peel River	Highway 8, near Fort McPherson	C.F. Abraham Francis	Commercial Vehicles	45	42	25	22	19	18	16	34	16	19	22	12
			Light Vehicles	105	100	88	69	82	71	80	91	82	97	82	64
			Trailers Towed	7	9	7	6	10	7	6	8	9	7	10	8
			Total	157	151	120	97	111	96	102	132	107	123	114	84
Mackenzie River	Highway 1, near Camsell Bend	M.V. Johnny Berens	Commercial Vehicles	44	14	14	11	3	3	3	3	3	3	3	6
			Light Vehicles	9	5	5	9	18	16	16	18	17	16	17	17
			Trailers Towed	2	1	1	1	1	1	1	1	1	1	1	1
			Total	55	20	19	21	21	20	20	22	21	20	21	23

Figure 10
Commercial Vehicles Weighed
at the Enterprise Weigh Scale



Total Vehicles Weighed

Year	January	February	March	April	May	June	July	August	September	October	November	December	Total
2011	1,284	832	1,520	622	416	615	752	615	692	629	461	529	8,967
2010	694	1,036	1,118	406	699	278	296	641	460	307	465	511	6,911
2009	1,053	1,187	1,757	973	659	851	939	401	876	658	797	710	10,861
2008	2,187	2,739	2,551	939	1,102	1,545	1,469	1,081	1,391	1,417	1,301	1,098	18,820
2007	2,405	3,916	3,992	866	888	1,129	1,006	1,069	1,752	1,578	1,548	1,311	21,460
2006	1,874	3,190	3,942	805	696	1,049	701	892	1,286	1,209	1,143	1,020	17,807
2005	1,816	3,378	4,187	907	667	987	1,387	1,000	1,080	1,024	1,363	1,120	18,916
2004	1,551	2,866	3,858	596	582	1,225	844	1,046	1,358	1,102	870	838	16,736
2003	1,229	2,788	3,883	675	739	693	1,169	729	953	1,143	976	925	15,902
2002	1,443	2,906	3,349	888	333	1,111	977	845	1,042	1,123	1,127	801	15,945
2001	1,881	2,230	3,410	1,257	566	874	730	767	842	839	938	240	14,574
2000	1,051	1,862	2,266	522	501	830	720	703	681	798	795	762	11,491
1999	991	1,493	1,697	436	523	909	834	633	758	953	515	753	10,495

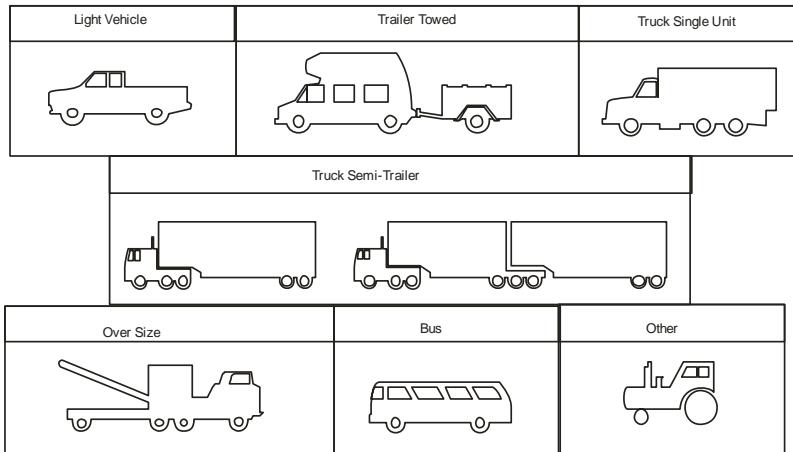
Note:

(1) A commercial vehicle is any vehicle with a GVW over 4500 kg.

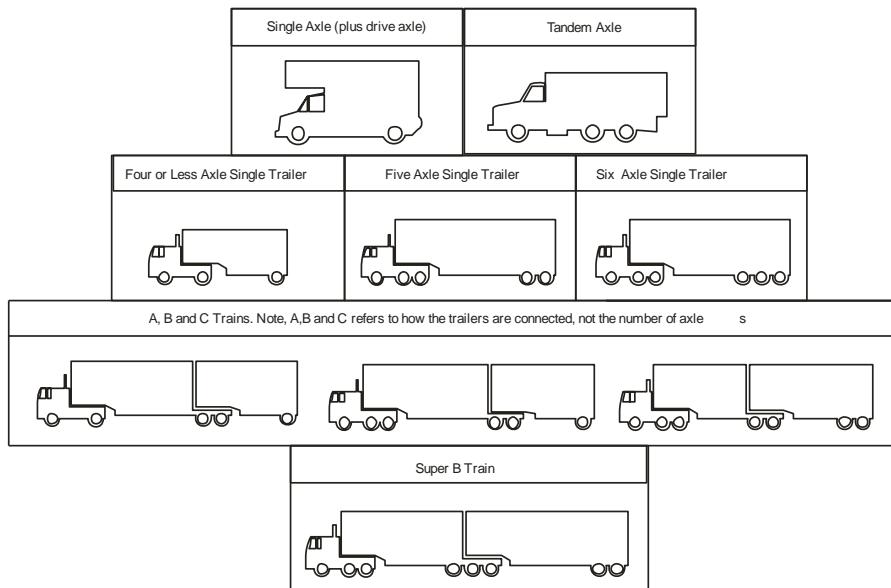
(2) In December 2001, it is estimated that only one-third of the data was collected due to weigh scale closures.

Figure 15
Vehicle Classifications

Highway Ferries



Weigh Scale Classification



Note: For more information regarding commercial vehicle definitions and allowable weights, please see the *Large Vehicle Control Regulations* under the *Motor Vehicles Act* available at www.justice.gov.nt.ca

Section 4.0

Short Term Traffic Count Data at Selected Locations

Figure 16 Short Term Traffic Counts – Yellowknife Access Road and Niven gate

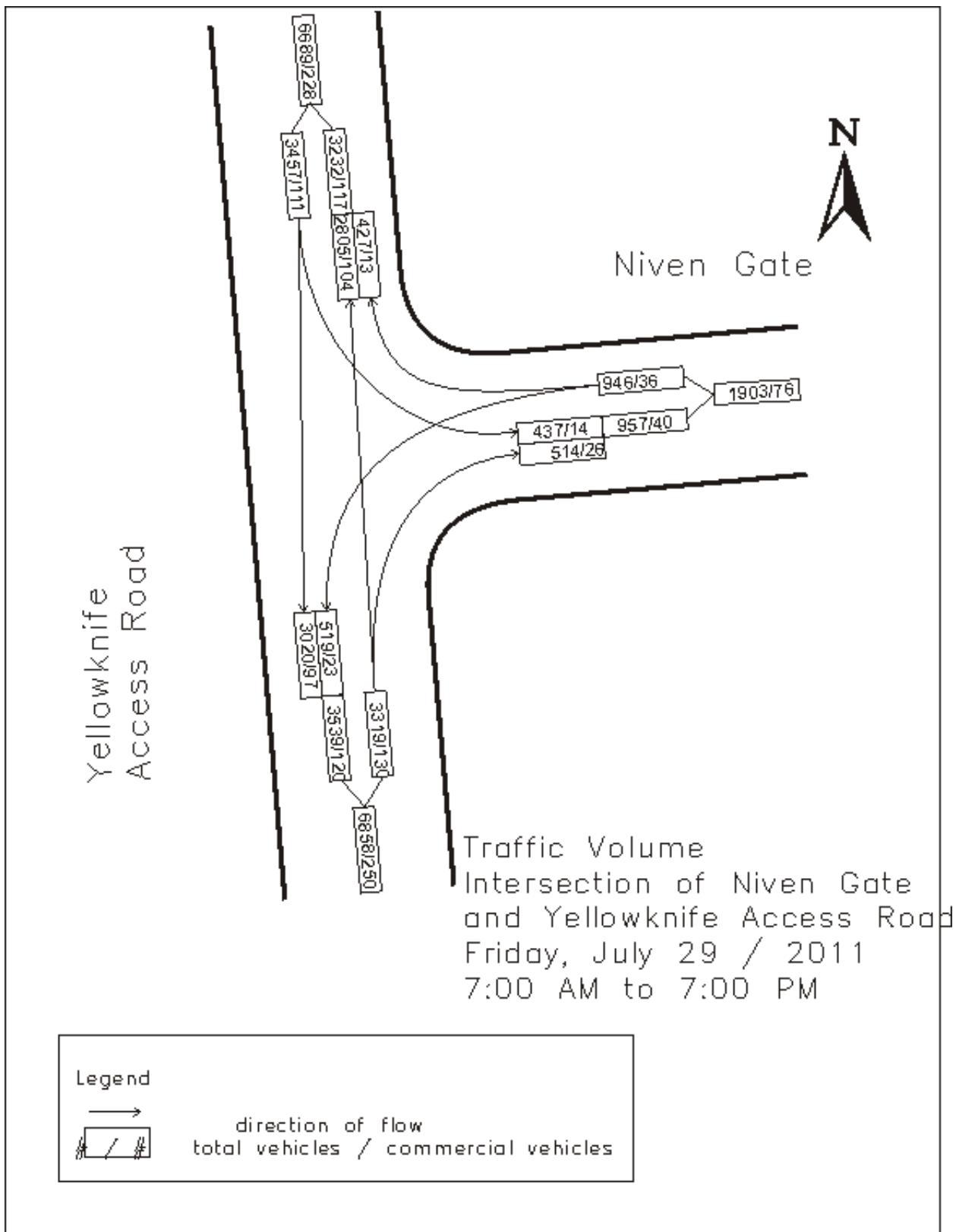


Figure 17 Short Term Traffic Counts – Highway #4 and Dettah Access Road

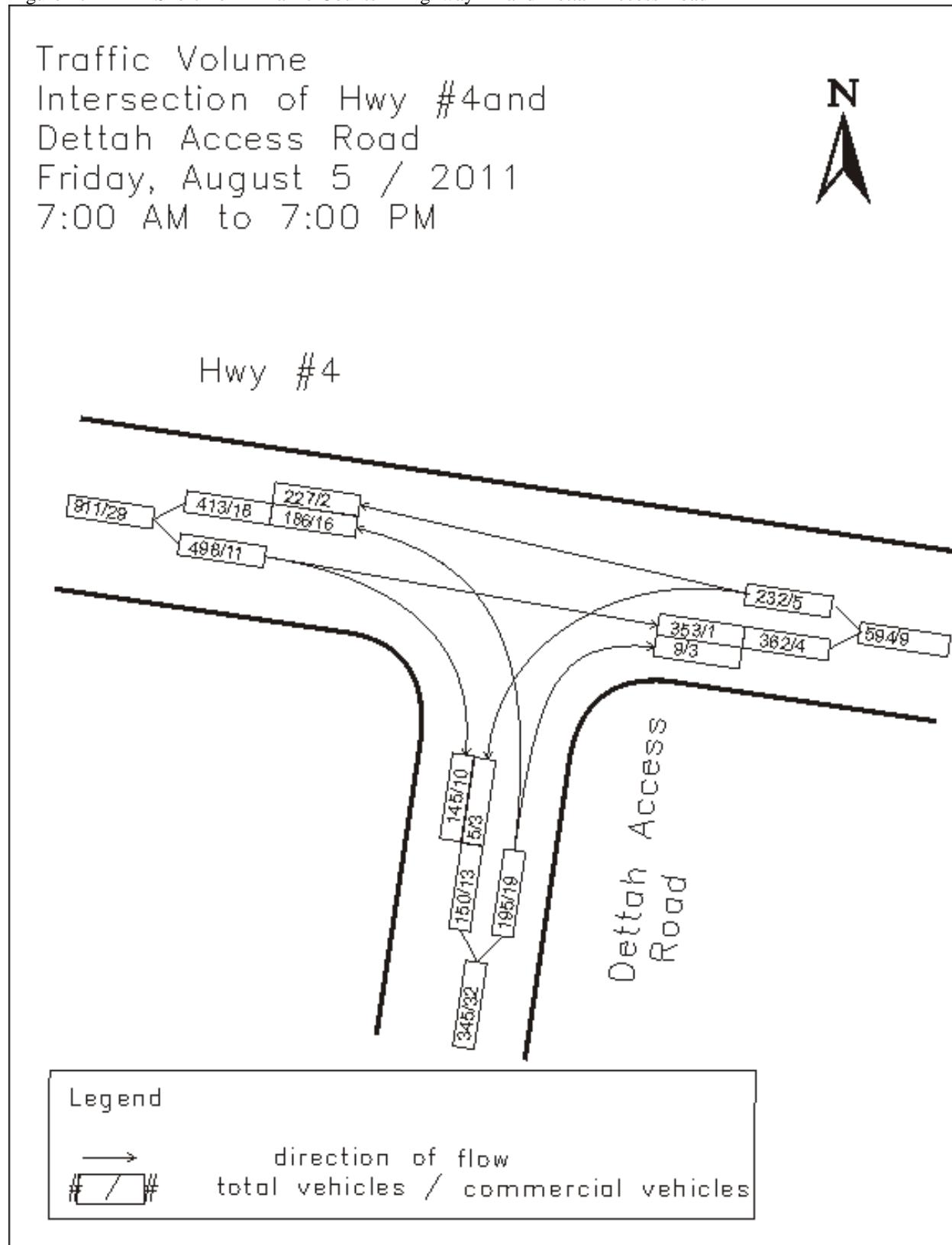
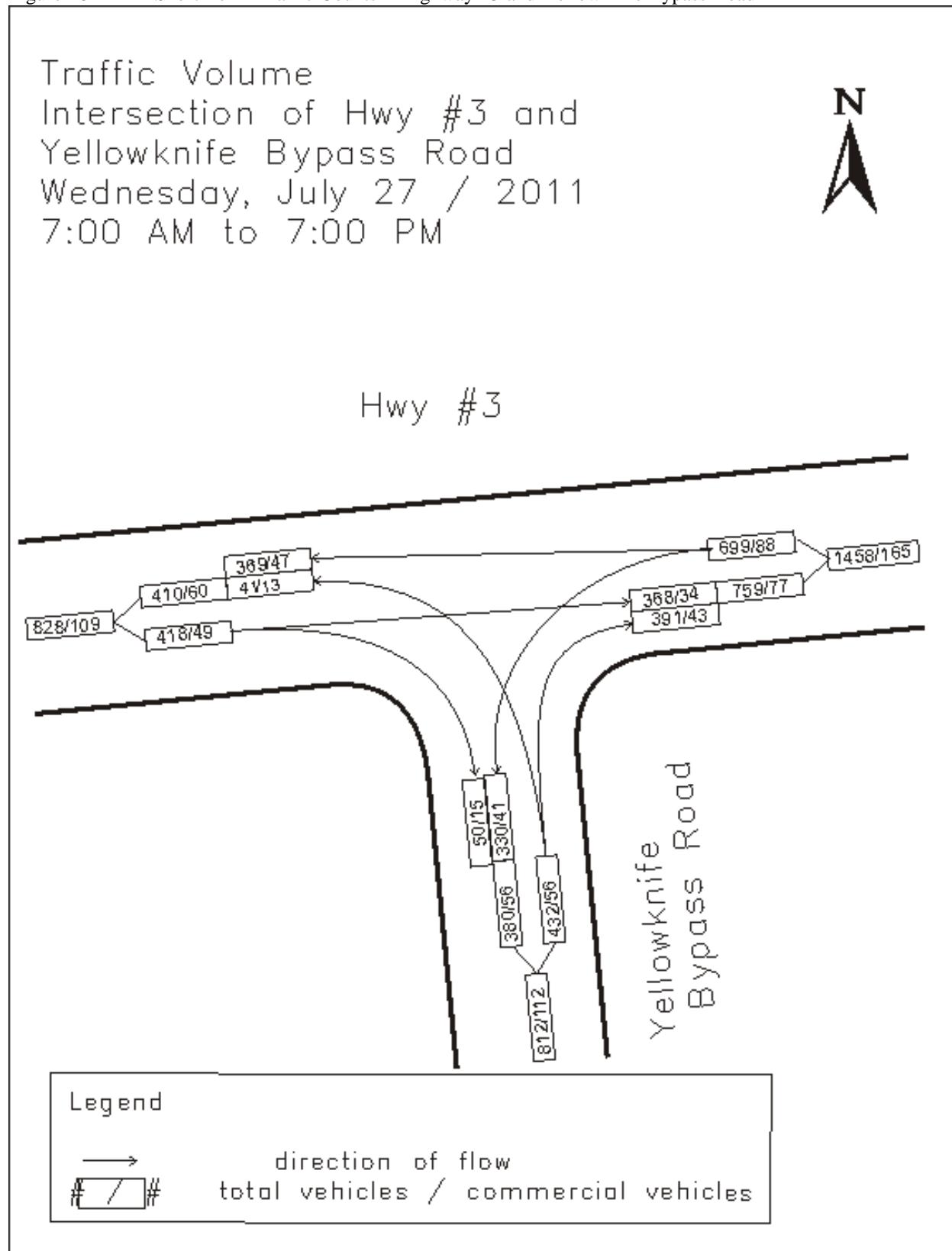


Figure 18 Short Term Traffic Counts – Highway #3 and Yellowknife Bypass Road



Appendix A

Historical Data

The Department has been actively collecting data since its formation in 1989. This Traffic Report shows the current state of the system only, however the following historical data is available:

- **Short-term Visual Counts** – Vehicles are classified and counted manually at various highway junctions throughout the territory. The data is used to enhance vehicle classification and AADT calculations.
- **Short-term Intersection Volume Counts** – Vehicles are counted by direction and turning movement, which gives an indication of overall traffic flow at selected intersections on the highway system.
- **Historical AADT** – Average daily traffic, broken down by month and year, is also available from 1989 through to 1992. AADT from 2000 through to the present is located in Table 3.

The Department will provide the above data upon request. Please refer to the acknowledgements section in the front of this report for contact information.

Appendix B

Data Processing Methodology

Data Processing Methodology

The primary goal in traffic data collection is to determine Average Annual Daily Traffic (AADT). The most concise way of doing this is to collect traffic data at a site for a year, sum the traffic counts over the year and then divide by 365 days. However, for a number of reasons including routine maintenance, breakdowns and faulty batteries and data modules, no counter runs at 100% operational capacity for an entire year. Therefore, adjustments must be made for gaps in the data.

Three steps are involved in the processing of traffic data. Step one is to fill in as much missing data as possible for the year in question. Step two involves applying an AADT formula to the data and step three consists of independently verifying the calculated AADT through other sources and previous experience. The following steps outline this process in more detail:

Step One

- If less than one week of data is missing, an average of the hourly count in the week prior and the week following is calculated and applied to the missing data.
- If over one week of data is missing but less than a month, the first step is to obtain the data from the previous year. If the data cannot be found, an average of the first prior week and the first following week is calculated and applied to the missing data.
- If over one month of data is missing, data from previous years is applied through a growth rate algorithm. The results are analysed for accuracy and completeness through comparisons with other traffic counter sites, data from other sources and previous experience.
- Growth rate is determined at each site by comparing available monthly average daily traffic from year to year and averaging over the last four years.

Step Two

- AADT is determined using an industry standard American Association of State Highway and Transportation Officials (AASHTO) formula (see below). After step one is applied there is a strong possibility that there will still be incomplete data for the year. The AASHTO formula directly accounts for missing data by computing an average of averages.

$$AADT = \frac{1}{7} \sum_{i=1}^7 \left[\frac{1}{12} \sum_{j=1}^{12} \left(\frac{1}{n} \sum_{k=1}^n VOL_{ijk} \right) \right]$$

Where:
Vol = daily traffic for day k, of day-of-week i, and month j
i = day of the week
j = month of the year
k = 1 when the day is the first occurrence of that day of the week in a month, 4 when it is the fourth occurrence.
n = the number of days of that day of week during that month (usually between 1 and 5, depending on the number of missing data).

Step Three

- Calculated AADT numbers are compared against previous years' values, other sources of traffic information such as ferry logs and Lupin Winter Road logs, upstream and downstream counter sites and previous experience.
- If results of the AADT algorithms appear to be abnormally high or low at a particular site, the AADT for the year will be estimated by applying an appropriate growth rate to the previous year's AADT.

Note: For counters located on access roads and winter roads no extra information is introduced. Only the data collected in the current year is presented.

For more detailed information, please contact the Planning, Policy and Environment Division of the Department of Transportation as listed in the Acknowledgements section of this report.