CIF # 230

Recycling Program and Facilities Evaluation
Municipality of West Nipissing

Final Report

August 2010

Prepared by:

451 Ferndale Avenue, London ON
Mary Little Tel: 905-372-4994,
Email: mary@2cg.ca

Executive Summary

Under the direction of the Continuous Improvement Fund (CIF), Project 230 was undertaken in the spring of 2010, to undertake an evaluation of the blue box program and facilities at the request of the Municipality of West Nipissing.

This report has presented detailed information on the following objectives:

1. Review the current recycling program, inclusive of the MRF processing operations, the curbside blue box system, and the permanent drop off depots within the municipality;
2. Options and recommendations for the recycling program to increase capture of overall blue box material, and minimize handling costs ; and
3. Recommend some Best Practices (BP) and identify opportunities to access the CIF for implementation of recycling program enhancements.

The following recommendations were presented:

- Negotiate a more favorable revenue share with the processing contractor to reduce MRF operating costs. Inquire if the collection of additional non-marketed material (plastics) is negatively impacting the revenue rebate.

- Apply to CIF for assistance to a promotion and education campaign with emphasis on implementing an annual calendar for all residents.

- Explore long-term costs associated with converting the existing MRF to a blue box transfer station.

- The curbside program represents the largest contributor of blue box tonnages collected from the West Nipissing program. Consider enhancing the curbside collection system with extra capacity blue boxes to residents to extend capture of material over the two week period. Apply for funding from CIF to help offset purchase costs of additional boxes. Expand the curbside program from bi-weekly to weekly collection with consideration to trial the program in a selected area to determine impact on operations.

- Support the expanded curbside program with enforcement mechanisms such as bag limits for waste (i.e.; 3 bag limit), mandatory recycling, and clear bags for waste, with supporting curbside enforcement (stickers, leaving bags at curb).

- Conduct a curbside set out study to determine participation rates of blue box program in the various urban areas currently receiving collection.

Table of Contents

This Project has been delivered with the assistance of Waste Diversion Ontario's Continuous Improvement Fund, a fund financed by Ontario municipalities and stewards of blue box waste in Ontario. Notwithstanding this support, the views expressed are the views of the author(s), and Waste Diversion Ontario and Stewardship Ontario accept no responsibility for these views.

1.0 Introduction and Project Objectives

Under the direction of the Continuous Improvement Fund (CIF), Project 230 was undertaken in the spring of 2010, by 2cg Inc., to undertake an evaluation of the blue box program and facilities at the request of the Municipality of West Nipissing.

The objective of this project is to prepare an evaluation report outlining the current blue box program and provide recommendations of practical options and associated costs for mechanisms to enhance the program development.

To meet the project objective, information was gathered by 2cg from municipal staff, and supported by a site evaluation conducted in May 2010. To meet this objective, the following tasks were preformed:

1. A review of West Nipissing's current recycling program with specific reference to an examination of current processing operations, outlining costs and efficiency of MRF operations;
2. Develop options and recommendations for the recycling program to increase efficiency and meet best practices; and
3. Identify opportunities to access CIF funds for implementation of recycling program enhancements.

The following report outlines the outcome of the program review.

2.0 Program Background

Demographic and Geographic Information

West Nipissing is a town in northeastern Ontario on Lake Nipissing in the Nipissing District. It was formed January 1, 1999, with the amalgamation of seventeen and a half former towns, villages, townships and unorganized communities, including, but not limited to, Cache Bay, Crystal Falls, Desauliniers, Field, Kipling, Lavigne, North Monteville, River Valley, Sturgeon Falls and Verner.

The Municipality is accessible via Trans Canada Highway 17 along the north shore of Lake Nipissing, approximately 40 km west of North Bay and 90 km east of Sudbury. Travel time to Toronto represents approximately 4 to 5 hours. West Nipissing is commonly associated with the Town of Sturgeon Falls, representing the largest population centre within the municipality located directly off of Highway 17.

Figure 1 depicts the geographic location of West Nipissing.

Figure 1 Geographic Location of West Nipissing

The reported population (2009) for West Nipissing is approximately 13,400 people or 7,045 households representing 4,900 households on curbside blue box collection and 2,145 households serviced by a depot program.

Table 1 depicts the demographics of West Nipissing urbanized areas.

Table 1 Household Count of West Nipissing Urban Area

West Nipissing Urban Areas	Approximate Household Count
Sturgeon Falls	4,000
Verner	315
Field	310
Cache Bay	310
Total	4,935

Organization of Waste Management

Waste management services provided by the Municipality include the following:

- Weekly garbage collection for Sturgeon Falls, and surrounding areas of Springer, Field, and Cache Bay;
- Public access to attended recycling depots at the municipally owned waste disposal sites and unattended centrally located depot sites offering unlimited hours of operation;
- Bi-weekly curbside blue box collection of two stream materials set out in blue boxes including the following;

Fibres

- Corrugated cardboard, newspapers, boxboard, phone books, magazines, hard& soft cover books, shredded office paper, and office mix

Containers

- Steel and aluminum food and beverage containers, all plastic bottles and jugs and wide mouth containers (#1-#7) clear & coloured glass, film plastic and empty paint cans.

- Municipally owned and operated MRF located at the waste disposal site in Sturgeon Falls;
- Seasonal leaf and yard waste collection;
- Special events recycling programs;
- Dedicated municipal collection vehicle from the Industrial, Commercial and Institutional (IC&I) sector for recyclables;
- Scrap Metal, Tire and Waste Electronic recycling at the disposal sites; and
- Access to household hazardous special waste depots in North Bay.

Blue Box Tonnages and Diversion Rate

There are no weigh scales at the disposal sites therefore all waste quantities are estimates, generated from survey contours that are converted to tonnages for the reporting purposes of the WDO Datacall. Recorded weights are available for the recycling program and are reflected as an overall marketed tonnes in the Datacall. The 2008 WDO Datacall reports 3,598 tonnes of waste disposed by the Municipality and 1,205 total tonnes (blue box, scrap tires and metal) was diverted, yielding an overall residential waste diversion rate of approximately 25% and a residential blue box diversion rate of 23%.

Table 2.1 depicts population and waste quantity data for 2008.

Table 2.1 West Nipissing Household and Waste Quantity Data (2008)

Municipality (2008 WDO Datacall)	Households	Total Residential Waste Generated		Total Residential Waste Diverted		Total Residential Waste Disposed		Res. BB Diverted	Res. Organics Diverted	Res. MHSW	Total Res. Diversion Rate	Total Res. Disposal Rate
		Tonnes	Kg/Cap	Tonnes	Kg/Cap	Tonnes	Kg/Cap	%	%	%	%	%
West Nipissing	7,045	4,804.04	356.77	1,205.37	89.52	3598.67	267.26	23.59%	0.00%	0.00%	25.09%	74.91%

West Nipissing is classified as `Rural Collection North' by Waste Diversion Ontario (WDO). Comparably the 31 municipal programs within this category have a slightly lower average blue box diversion rate of 20% and an overall diversion rate of 24%.

Table 2.2 depicts demographic and tonnage details of the 31 municipal blue box programs in the Rural Collection North category:

Table 2.2 Rural Collections North (2008 WDO Datacall Details)

Rural Collection - North (2008 WDO Datacall)	Households	Blue Box Tonnes Marketed	Kilograms Marketed	Kilograms Marketed Per Household	Total Gross Costs	Gross Costs Per Tonne
ARMOUR, TOWNSHIP OF	2,611	258.70	258,700.00	99.08	$160,256.76	$619.47
ATIKOKAN, TOWNSHIP OF	1,598	54.43	54,430.00	34.06	$52,219.72	$959.39
BALDWIN, TOWNSHIP OF	351	17.24	17,236.72	49.11	$12,099.35	$701.95
TOWNSHIP OF	1,300	49.63	49,631.65	38.18	$60,371.13	$1,216.38
BLIND RIVER, TOWN OF	2,812	456.08	456,075.60	162.19	$53,902.18	$118.19
CALLANDER, MUNICIPALITY OF	1,542	205.77	205,768.41	133.44	$44,694.79	$217.21
CENTRAL MANITOULIN, TOWNSHIP OF	1,552	404.50	404,496.52	260.63	$58,608.47	$144.89
CHISHOLM, TOWNSHIP OF	584	75.46	75,463.32	129.22	$23,171.35	$307.05
DRYDEN, CITY OF	3,482	560.94	560,937.79	161.10	$297,464.91	$530.30
EAST FERRIS, TOWNSHIP OF	1,894	336.53	336,532.71	177.68	$59,051.80	$175.47
ELLIOT LAKE, CITY OF	2,427	705.63	705,628.88	290.74	$94,171.92	$133.46
ESPANOLA, TOWN OF	2,403	455.43	455,429.58	189.53	$68,068.66	$149.46
FORT FRANCES, TOWN OF	3,393	387.71	387,713.89	114.27	$189,385.50	$488.47
HEAD, CLARA AND MARIA	339	27.15	27,151.84	80.09	$21,716.19	$799.81
KENORA, CITY OF	6,628	1,237.73	1,237,730.00	186.74	$416,289.45	$336.33
KIRKLAND LAKE, TOWN OF	2,800	340.99	340,989.35	121.78	$140,935.45	$413.31
MAGNETAWAN, MUNICIPALITY OF	1,911	163.14	163,144.96	85.37	$81,201.81	$497.73
MARATHON, TOWN OF	1,491	216.50	216,502.96	145.21	$102,963.74	$475.58
NAIRN & HYMAN, TOWNSHIP OF	295	15.92	15,916.58	53.95	$10,404.80	$653.71
NORTHEASTERN MANITOULIN & ISLANDS, TOWN OF	2,065	358.14	358,141.81	173.43	$123,192.03	$343.98
PAPINEAU-CAMERON, TOWNSHIP OF	537	39.61	39,613.86	73.77	$31,313.06	$790.46
POWASSAN, MUNICIPALITY OF	1,331	315.26	315,260.67	236.86	$65,234.20	$206.92
PRINCE, TOWNSHIP OF	446	127.43	127,426.28	285.71	$16,812.60	$131.94
RAINY RIVER FIRST NATIONS	98	5.60	5,598.89	57.13	$17,667.83	$3,155.59
SABLES-SPANISH RIVERS, TOWNSHIP OF	1,758	133.53	133,530.76	75.96	$66,280.50	$496.37
[illegible] MANAGEMENT COUNCIL	4,009	24.80	24,804.54	6.19	$58,768.82	$2,369.28
SIOUX LOOKOUT, TOWN OF	2,055	124.27	124,270.23	60.47	$121,573.63	$978.30
SPANISH, TOWN OF	421	88.62	88,617.91	210.49	$4,345.84	$49.04
TIMMINS, CITY OF	18,401	2,863.39	2,863,393.04	155.61	$400,421.48	$139.84
TRI-NEIGHBOURS	1,312	217.43	217,429.87	165.72	$21,496.50	$98.87
WEST NIPISSING, MUNICIPALITY OF (2009 Data)	**5,000**	**496.00**	**496,000.00**	**99.20**	**$110,509.00**	**$222.80**
Totals		**10,763.57**			**$2,984,593.47**	
Total Municipalities >		**31**	**Average>**	**133**	**Average >**	**$578.11**

Overall blue box quantities have been steadily increasing since 2006.

Table 2.3 depicts the estimated blue box tonnages diverted from disposal since program inception.

Table 2.3 Overall Recycling Tonnages

Year	2006	2007	2008	2009
Estimated Tonnages	689	774	843	918

Tonnages are not tracked as they enter the Sturgeon Falls MRF. It is anticipated by staff that the majority of the tonnages are generated by the residential curbside program. All office paper and 80% of the inbound corrugated cardboard is estimated as IC&I materials.

Table 2.4 depicts the estimated tonnes captured by the various blue box collection methods.

Table 2.4 Estimated Blue Box Tonnages (2009)

Material	Depot	Residential Collection	ICI Collection	Total	Composition (%)
Containers	21	121	0	142	15%
OCC	52	59	235	345	38%
ONP	18	104	0	123	13%
Clean Office Paper	0	0	59	59	6%
Hard Pack	37	212		249	27%
Total	**129**	**496**	**294**	**918**	**100%**

Comparatively, Table 2.5 depicts the reported composition of blue box material marketed (WDO 2008).

Table 2.5 WDO Marketed Blue Box Composition (2008)

2008 WDO BB Marketted Material Category	2008 Tonnes	2008 Composition (%)
Printed Paper	503,712.00	54.19%
OCC/OBB	184,257.00	19.82%
Polycoat	3,957.00	0.43%
Aluminum	9,222.00	0.99%
Steel	29,435.00	3.17%
Mixed Metal	787.00	0.08%
Flint	8,511.00	0.92%
Colour	4,916.00	0.53%
Mixed Glass	71,433.00	7.68%
PET	24,846.00	2.67%
HDPE	13,828.00	1.49%
Plastic Film	3,713.00	0.40%
Tubs & Lids	4,436.00	0.48%
Polystrene	683.00	0.07%
Mixed Plastic	2,395.00	0.26%
CoMingled	63,390.00	6.82%
Total Tonnes	**929,582.00**	**100%**

3.0 Current Recycling Program

MRF Operations (Sturgeon Falls)

The MRF is sited at the rear of the municipally owned and operated Sturgeon Falls waste disposal site. The MRF operates as both a point of transfer for the comingled containers and as a processing operation for the fibre material. There are two full time staff and one part time staff (1 operator, 1 full time labourer and 1 part time labourer) who work at the MRF. Duties include sorting fibre materials, baling fibre, loading trucks and trailers. The Municipality receives 100% revenue for the sale of all processed fibre material including corrugated cardboard, hardpack blend, office paper mix and grade 8 newspapers. Collected container material is tipped into a three sided structure that is attached to the MRF. All containers are transferred to R&D Recycling located along highway 17, 10 Km east of North Bay, ON. R&D Recycling does not charge a processing fee and submits to the Municipality a monthly transportation reimbursement ($300/month).

The MRF is a heated, metal clad Butler building equipped with three phase power,

concrete flooring, approximately 8,000 square feet with three overhead doors. The facility does not have a weigh scale. The labour and layout of the MRF currently meets the needs of the Municipality. Material is processed an average of 4 days per week with one day for maintenance and other recycling related duties (delivering blue boxes, loading outbound trailers, etc). The access road and property is not paved but dust generated from inbound trucks has not been a concern due to facility location. Rolling stock for this facility includes a Komatsu Forklift (2001), Case Skidsteer (2003) Bobcat Skidsteer (1995) and an older Allis Chalmers forklift with clamp forks. The municipality owns all equipment and facilities at the MRF with no outstanding debt associated with equipment amortization.

Photos 1 and 2 depict the MRF.

Photo 1 Sturgeon Falls MRF

Photo 2 Door Capacity at MRF

Photos 3 and 4 depict the fibre processing and container storage areas of the MRF.

Photo 3 Processing Operations

Photo 4 Container Storage Area

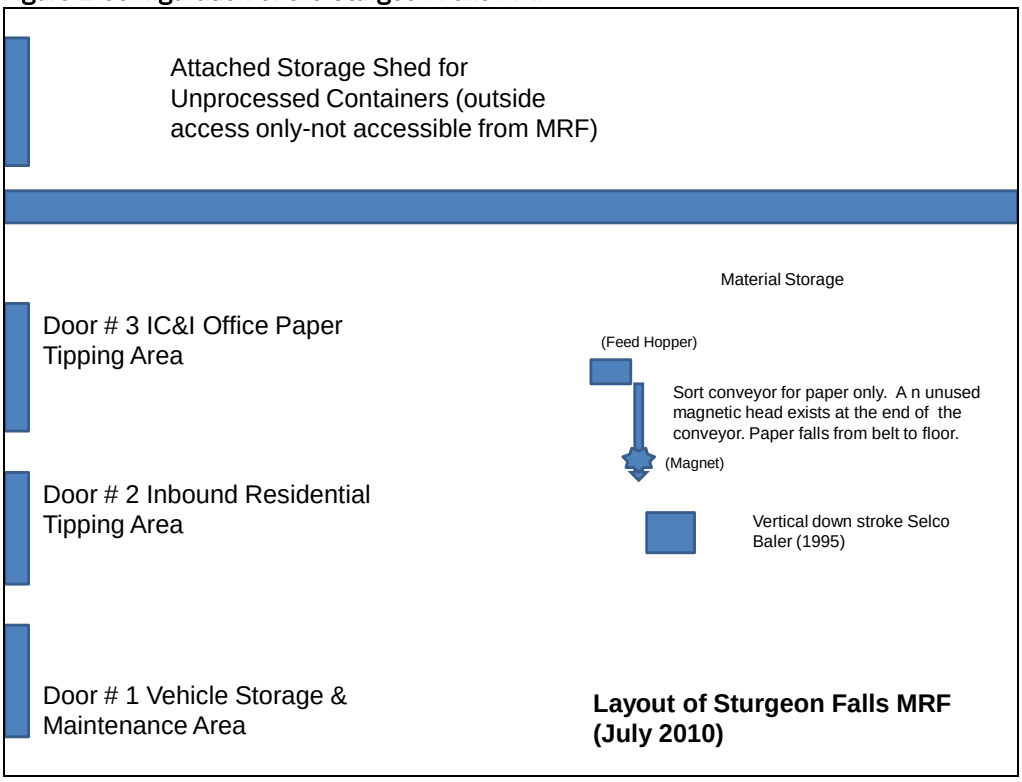
Additional bale storage is located adjacent to the MRF. A Coverall structure houses blue boxes, and baled material to be shipped to market. The Municipality contracts a material brokerage firm (RECANEX) to market processed fibres. Photos 5 and 6 depict the bale storage area.

Photo 5 Bale Storage Area

Photo 6 Grade # 8 News Bales

Figure 2 depicts the current layout of the MRF operations.

Figure 2 Configuration of the Sturgeon Falls MRF

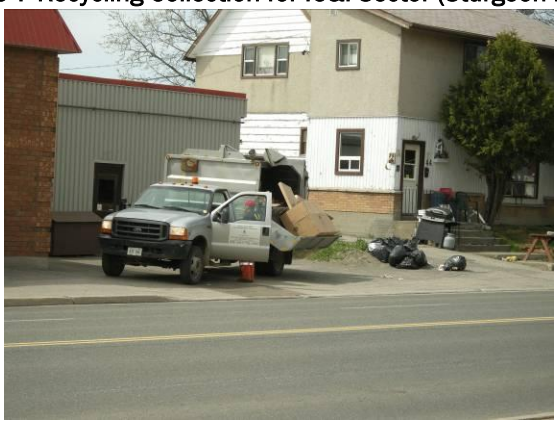


Curbside Program

Unique to West Nipissing is the provision of weekly collection of corrugated cardboard and office paper from the IC&I sectors. The program has been operating for approximately four years. The collection service is conducted by Environmental Services staff using a Haul-All side gate collection vehicle. The service is provided to the IC&I sector at no charge.

Photo 7 depicts the Ford F350 with the side loading Haul All collection body.

Photo 7 Recycling Collection for IC&I Sector (Sturgeon Falls)



Curbside Program

The bi-weekly service is conducted with a crew of two Environmental Services staff using a right hand drive 30 cubic yard Labrie (2006) vertical split truck (60/40). The collection truck is operational on a weekly basis (Tuesdays to Thursdays) to service the various urban areas within West Nipissing. Collected areas are sectioned off into Wards (1-6) with the collection vehicle operating on a weekly basis to capture all the communities. Mondays are dedicated to leaf and yard waste collection, delivery of blue boxes, composters, WEEE consolidation, etc., and Fridays are dedicated to maintenance and related Environmental Services activities. Residents are asked to use blue boxes, clear plastic bags or clearly marked containers for curbside materials.

Photo 8 depicts the curbside collection program.

Photo 8 Recycling Collection for Residential Sector (Urban Areas)

Recent staff observations indicated that many residents who participate in the blue box program average 2-3 bags of household waste per week. Currently, the Municipality has a six bag limit for curbside collected waste with no rejection of contaminated recyclables at the curb. The rationale for collecting all recyclables is to encourage participation.

Attended Rural Depots

Waste disposal sites (Sturgeon Falls, Field, Verner, Lavigne, Badgerow, Kipling and River Valley) within the Municipality offer attended recycling depot service to permanent and seasonal residents in rural locations not serviceable by curbside collection (approximately 2,000 households). The Municipality uses Haul All HL 6 depot containers for collecting fibre and container material and used sea containers for the storage of bulky recyclables. The Haul All bins were purchased used from the Municipality of East Ferris.

Photo 9 depicts recycling depot. The Municipality recently received funding from CIF for the purchase of new signage at the depot sites.

Photo 9 and 10 Attended Depots at Waste Disposal Sites

The used sea containers are loaded onto the depot collection vehicle; all other material is hydraulically tipped into the truck.

Unattended Central Recycling Depots

To accommodate rural and seasonal residents, the Municipality has four unattended Haul All HL6 depot sites located in centralized areas throughout the area (Verner Arena, Crystal Falls Boat Launch, Montville Fire hall, Field grocery store area). The sites increase accessibility for residents coming to the various communities to do their shopping etc. The sites experience moderate contamination and some illegal dumping of materials beside the bins.

Photo 11 depicts a 24 depot site located at the Verner Arena parking lot.

Photo 11 Unattended Depot Site

The depot sites (both attended and unattended) are serviced by an aging Haul All

side load truck (1998), depicted in Photo 12.

Photo 12 Depot Truck

4.0 Baseline Cost Data

Baseline cost information collected from municipal staff for the recycling programs are outlined in detail in this section.

4.1 MRF Processing Costs

Table 4.1 depicts the 2009 operational costs incurred at the Sturgeon Falls MRF. Annual costs are approximately $160,000 to process 918 tonnes of material.

Table 4.1 Sturgeon Falls MRF Processing Costs (2009)

Item	Cost
Facility Maintenance	$3,152.00
Furnace Oil	$10,900.00
Utilities	$7,848.00
Baling Wire	$2,351.00
Insurance	$2,500.00
Propane	$1,560.00
Forklift Maintenance	$3,500.00
MRF Staff Cost	$116,792.00
MRF Admin/Management*	$11,709.00
Total MRF Operating Costs	$160,312.00
Total Inbound Tonnes (Res. & ICI)	918.00
Total Residential Curbside Tonnes	496.00
Total Residential Depot Tonnes	129.00

*1/3rd of Administration costs

The gross processing costs to manage all inbound material (918 tonnes) are approximately $175/tonne or $22/household.

MRF Revenue

The Municipality administers the marketing of the fibre material and tracks market pricing of container material sold through R&D Recycling. In 2009, market pricing diminished within the Province. To reflect revenues received from material sales prior to the market drop, Table 4.2 depicts 2008 and 2009 revenues received from sale of materials.

Table 4.2 Sturgeon Falls MRF Material Sales (2008 & 2009)

Material	2008 Tonnages	2008 Revenues	2009 Tonnages	2009 Revenues
OCC	218.77	$17,266.24	344.71	$7,038.01
ONP	345.56	$32,789.39	122.84	$16,985.00
Hard Pack	136.50	$8,270.13	249	$6,505.07
Office Paper	0.00	$0.00	59.45	$1,101.00
Containers	142.24	$3,492.00	142.24	$3,492.00
Total	**843.07**	**$61,817.76**	**918.24**	**$35,121.08**

The average basket of goods (BOG) pricing from fibre material sales in 2008 was $83/tonne, and $24/tonne for containers. The decline in market pricing in 2009 depicts the BOG at $40/tonne for fibre and $24/tonne for containers.

Table 4.3 depicts the Net overall processing costs of the MRF operations in 2009. Net processing costs average $136/tonne or $17/household with an overall BOG of $38/tonne.

Table 4.3 Sturgeon Falls MRF Net Processing Costs (2009)

Revenue from Blue Box Material Sales	$35,121.00
Net Operating Costs (918 tonnes)	$125,191.00
Net Operating Cost per Total Tonnes (Res. & ICI)	**$136.37**
Net Operating Cost per Total Household (7,000 HH)	**$17.88**

Comparably, Ontario market pricing (2009-2010) show average BOG pricing for containers at approximately $400/tonne reflecting high aluminum pricing ($1486/tonne) and rising prices received from high density plastic ($500/tonne). Fibre BOG pricing for the province (2009-2010) averages $90/tonne which is comparable to pricing received by the marketing initiative conducted by the Municipality.

Figure 3 depicts the recent Ontario Market Price Trend Sheet (June 2010) generated monthly by Stewardedge. Back issues are available at http://stewardedge.ca/pricesheet/. To receive monthly electronic versions of the Price Sheet, please contact John Dixie at jdixie@stewardedge.ca

Figure 3 Ontario Price Sheet

The Price Sheet

Ontario Market Price Trends for June 2010

MONTHLY AVERAGES (CDN$/Metric Tonne)

	Mar 2009	April 2009	May 2009	June 2009	July 2009	Aug 2009	Sept 2009	Oct 2009	Nov 2009	Dec 2009	Jan 2010	Feb 2010	Mar 2010	April 2010	May 2010	June 2010
Aluminum Cans	972	1059	1116	1116	1215	1374	1362	1303	1418	1542	1640	1562	1604	1706	1599	1486
Steel Cans	23	27	53	56	74	100	159	163	140	179	229	251	282	285	246	265
Glass (clear)	27	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
Glass (mixed)	(19)	(18)	(18)	(18)	(18)	(18)	(18)	(18)	(18)	(18)	(17)	(15)	(14)	(17)	(16)	(17)
PET (mixed)	167	176	200	222	243	191	189	214	231	238	277	325	414	447	448	438
HDPE (mixed)	341	264	299	313	325	311	320	407	384	361	365	405	470	541	615	627
Plastic Tubs & Lids	40	35	24	16	23	26	24	17	20	22	27	32	32	41	76	62
Film Plastic	(10)	0	3	12	10	13	11	14	9	10	10	16	16	16	14	15
Polystyrene	75	75	75	75	75	75	75	75	75	75	75	0	0	0	0	0
Newspaper (ONP #8)	58	69	64	69	68	73	93	90	93	101	107	104	99	92	98	95
Corrugated (OCC)	48	51	55	71	82	78	96	88	88	88	116	159	195	157	140	136
Hardpack (OBB/OCC)	27	37	35	42	51	45	59	56	57	59	71	91	96	88	72	71
Boxboard (OBB)	15	19	17	28	30	30	41	39	39	44	47	50	72	69	69	70
Polycoat Containers	30	30	34	31	31	31	37	58	64	68	79	91	105	103	110	113
Composite Index	**62**	**70**	**71**	**77**	**81**	**84**	**101**	**100**	**102**	**110**	**122**	**131**	**139**	**132**	**132**	**129**

YEARLY AVERAGES (CDN$/Metric Tonne)

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Aluminum Cans	1731	2045	2045	1827	1595	1608	1893	1700	1709	1619	1772	1763	2169	2065	1904	1215	1600
Steel Cans							52	26	47	76	191	116	141	168	245	89	260
Glass (clear)	47	48	47	47	49	50	50	31	29	34	38	36	36	33	27	26	25
Glass (mixed)			0	(4)	(25)	(20)	(15)	(15)	(15)	(19)	(12)	(31)	(31)	(31)	(24)	(18)	(16)
PET (mixed)	181	650	650	155	300	144	326	324	166	278	432	507	314	368	352	187	391
HDPE (mixed)	259	345	356	447	226	211	373	257	233	364	428	683	565	524	573	320	504
Plastic Tubs & Lids		100	100	76	66	3	5	5	0	12	51	104	128	146	204	22	45
Film Plastic	40	40	40	(4)	(5)	(12)	7	26	0	8	55	148	137	51	35	3	14
Polystyrene	88	110	125	125	125	125	125	125	75	75	75	75	75	75	75	75	13
Newspaper (ONP8)	80	214	159	31	48	76	118	76	100	99	114	101	89	118	121	72	99
Corrugated (OCC)	94	159	214	97	73	99	112	55	106	89	114	95	80	131	111	68	151
Hardpack (OBB/OCC)	38	159	120	5	17	20	65	38	63	62	75	68	50	89	76	42	82
Boxboard (OBB)										43	62	53	41	70	62	26	63
Polycoat Containers		189	198	99	26	24	83	57	58	64	67	66	59	84	75	39	100
Composite Index							**134**	**95**	**113**	**114**	**131**	**124**	**111**	**145**	**150**	**80**	**131**

Notes:

1) Prices are for baled post-consumer residential materials (except glass, which is loose).
2) Prices are FOB the municipality except for glass and polystyrene which are delivery to mill / industry
3) Prices are compiled from a range of municipal programs across Ontario combined with information from industry representatives. Prices may not be the same as actual prices being paid in any given program.
4) The Composite Index is calculated using the overall composition of residential Blue Box material recovered and marketed in Ontario as reported from the approved 2008 WDO Datacall with some additional allocations to material categories. It does not include mixed plastics. Mixed glass includes coloured glass. ONP8 includes a quantity of lower grade papers sold at lower prices. Composition figures are updated annually. Details available upon request.

For more information please contact:
John Dixie at 647-777-3366 (Toll-Free: 888-277-2762, Ext. 3366) email: jdixie@stewardedge.ca
StewardEdge, 26 Wellington Street East, Suite 601, Toronto, Ontario, M5E 1S2
Past editions of the Price Sheet are archived on the StewardEdge website at http://stewardedge.ca/pricesheet/

4.2 Curbside Residential Recycling Costs

Table 4.4 depicts the costs associated with conducting curbside recycling collection for the Municipality of West Nipissing.

Specific to West Nipissing, the area serviced by curbside represents 8 different collection Wards. The distances between stops are low but the travel time to each Ward is somewhat high. Currently, there is one truck, 2 operators, devoted to the residential curbside recycling program operating 52 weeks per year (for bi-weekly services), capturing an average of 99 kilograms of blue box material per collection period at a rate of $222/tonne or $22/household.

Table 4.4 Curbside Collection Costs (2009)

Item	Cost
Municipal Curbside Contract Cost-Sturgeon Falls	$98,800.00
Collection Admin/Management	$11,709.00
Total Collection Costs	$110,509.00
Total Curbside Residential Tonnes	$496.00
Residential Curbside Cost Per Tonne	**$222.80**
Operating Cost (Total Inbound) Per Household (5000)	**$22.10**

Comparably, the 31 curbside programs in the Rural Collection North category average 133 kg/hh/yr (inclusive of West Nipissing data) with an average cost per tonne of $578/tonne. To quantify, a few outlier programs exceed $1,000/tonne skewing overall data. In general, West Nipissing costs reflect the average costs of curbside programs servicing more than 5,000 households.

4.3 Depot Collection Costs

The depot collection costs for the Municipality are split among all attended and unattended sites. On average, the depot program captures approximately 64kg/hh/ year of blue box material at a rate of $476/tonne ($30/household).

Table 4.5 depicts the costs associated with the depot sites.

Table 4.5 Depot Collection Costs (2009)

Item	Cost
Municipal Contract Cost-Surrounding Hamlets (Depots)	$49,335.00
Collection Admin/Management	$11,709.00
Total Depot Collection Costs	$61,044.00
Total Depot Tonnes	128
Cost Per Tonne	**$476.91**
Total Households	2,000
Operating Cost Per Household	**$30.52**

Comparably, Provincial program information gathered on the WDO website (2008) report northern rural depot programs to average 84kg per household per year at a cost of $568/tonne or $48/household.

Table 4.6 depicts data extrapolated from the 2008 WDO website.

Table 4.6 Rural Depot North Costs (2008)

Rural Depot North (2008 Data)	HH	Marketed Tonnages	Marketed Kgs	Kgs Per HH	Costs	Cost Per HH	Cost Per Tonne
BONFIELD, TOWNSHIP OF	1,005	53.65	53,654.97	53.39	$24,775.18	$24.65	$461.75
CALVIN, MUNICIPALITY OF	300	19.86	19,862.41	66.21	$9,389.92	$31.30	$472.75
CARLING, TOWNSHIP OF	1,678	96.80	96,800.00	57.69	$104,472.09	$62.26	$1,079.26
CASEY, TOWNSHIP OF	154	39.18	39,178.54	254.41	$4,093.26	$26.58	$104.48
CHARLTON AND DACK, MUNICIPALITY OF	280	3.99	3,986.14	14.24	$4,073.08	$14.55	$1,021.81
COCHRANE TEMISKAMING	19,691	1,326.50	1,326,500.00	67.37	$654,489.63	$33.24	$493.40
CONMEE, TOWNSHIP OF	298	11.80	11,797.00	39.59	$5,754.39	$19.31	$487.78
EMO, TOWNSHIP OF	628	45.22	45,221.82	72.01	$10,214.50	$16.27	$225.88
GILLIES, TOWNSHIP OF	208	7.21	7,209.28	34.66	$14,313.25	$68.81	$1,985.39
HARLEY, TOWNSHIP OF	219	39.18	39,178.54	178.90	$4,723.26	$21.57	$120.56
HILLIARD, TOWNSHIP OF	140	20.10	20,101.71	143.58	$9,129.22	$65.21	$454.15
HUDSON, TOWNSHIP OF	319	13.91	13,910.00	43.61	$3,612.14	$11.32	$259.68
HURON SHORES, MUNICIPALITY OF	1,338	132.15	132,154.44	98.77	$22,482.15	$16.80	$170.12
JOHNSON, TOWNSHIP OF	450	120.45	120,451.07	267.67	$8,620.50	$19.16	$71.57
KEARNEY, TOWN OF	1,030	100.30	100,300.00	97.38	$78,691.32	$76.40	$784.56
KERNS, TOWNSHIP OF	137	9.30	9,303.84	67.91	$2,303.10	$16.81	$247.54
MACDONALD, MEREDITH & ABERDEEN ADDITIONAL	967	60.50	60,501.74	62.57	$7,416.00	$7.67	$122.57
MACHAR, TOWNSHIP OF	854	67.96	67,963.80	79.58	$14,884.58	$17.43	$219.01
MCDOUGALL, MUNICIPALITY OF	1,708	122.27	122,270.00	71.59	$158,083.71	$92.55	$1,292.91
MCKELLAR, TOWNSHIP OF	1,440	75.00	74,995.19	52.08	$90,170.28	$62.62	$1,202.35
MCMURRICH/MONTEITH, TOWNSHIP OF	783	52.32	52,318.74	66.82	$43,289.68	$55.29	$827.42
NEEBING, MUNICIPALITY OF	1,251	76.89	76,886.45	61.46	$23,790.34	$19.02	$309.42
OCONNOR, TOWNSHIP OF	280	17.69	17,694.36	63.19	$9,268.82	$33.10	$523.83
OLIVER PAIPOONGE, MUNICIPALITY OF	2,297	247.18	247,175.15	107.61	$53,760.00	$23.40	$217.50
PERRY, TOWNSHIP OF	1,545	176.42	176,422.92	114.19	$105,444.89	$68.25	$597.68
RAINY RIVER, TOWN OF	410	21.60	21,595.14	52.67	$11,302.50	$27.57	$523.38
SAGAMOK ANISHNAWBEK FIRST NATION	341	43.34	43,339.92	127.10	$48,940.59	$143.52	$1,129.23
SEGUIN, TOWNSHIP OF	4,685	385.37	385,370.00	82.26	$208,296.68	$44.46	$540.51
SERPENT RIVER FIRST NATIONS	125	9.53	9,531.22	76.25	$35,730.21	$285.84	$3,748.75
SHUNIAH, MUNICIPALITY OF	2,460	38.86	38,855.18	15.79	$40,775.88	$16.58	$1,049.43
SIOUX NARROWS NESTOR FALLS, TOWNSHIP OF	844	13.36	13,360.00	15.83	$36,569.93	$43.33	$2,737.27
ST.CHARLES, MUNICIPALITY OF	921	67.70	67,704.61	73.51	$34,649.83	$37.62	$511.78
STRONG, TOWNSHIP OF	1,091	186.09	186,090.00	170.57	$94,932.51	$87.01	$510.14
TARBUTT & TARBUTT ADDITIONAL, TOWNSHIP OF	2,553	354.85	354,846.14	138.99	$24,425.10	$9.57	$68.83
THE ARCHIPELAGO, TOWNSHIP OF	3,224	172.71	172,710.00	53.57	$340,401.15	$105.58	$1,970.94
WHITESTONE, MUNICIPALITY OF	1,678	104.87	104,871.55	62.50	$87,947.03	$52.41	$838.62
Totals	58,568	4,337.61	4,337,611.85	74.06	$2,464,541.43		
Total Municipalities		**37**	**Average**	**84 kg/hh**	**Average**	**$48.14/hh**	**$568/tonne**

4.4 Summary of Overall Residential Recycling Program Costs

The overall costs associated with the Municipal recycling program are depicted in Table 4.7.

Table 4.7 Overall Residential Recycling Costs (2009)

Item	Cost
MRF Processing	$160,312.00
Residential Curbside Collection	$110,509.00
Residential Depot Collection	$61,044.00
Total	**$331,865.00**
Total Tonnes	918.00
Total Cost Per Tonne	**$361.51**
Total Households	7,000.00
Total Cost per Household	**$47.41**

Dispersing overall costs and capture rates for serviceable households (curbside and depot), West Nipissing captures a total of 163kg per household of blue box material at a rate of $47/household or $360/tonne.

Baseline data indicators depict West Nipissing curbside collection as the largest contributor to the overall performance of the recycling program boosting capture rates above the provincial average for Rural Collection North programs. Reflecting cost and capture rates, the depot program offers the lowest capture rate and highest program costs.

5.0 Applying Best Practices

The following section offers various suggestions to improve overall capture and quality of blue box recyclables for the:

- The MRF
- The Curbside Collection Program
- The Rural Depot Program

5.1 Continuous Improvement Fund

As part of a joint initiative between WDO, the Association of Municipalities of Ontario, the City of Toronto and Stewardship Ontario, the Continuous Improvement Fund (CIF) was formed in 2008. The CIF provides municipalities with an opportunity for

financial support in identifying and implementing programs that will result in best practices and/or innovation specific to the blue box program. The overall goal of the CIF is to identify opportunities for a more cost effective blue box program that maximizes material recovery.

In 2008, the CIF began operating under a 3 year mandate to direct grants and loans towards eligible municipal blue box projects. During 2009, approximately $25 million dollars of funding was made available through CIF. Approximately 70% of these funds were allocated to projects that promote efficiency (i.e. geographic optimization, technology improvements), while the remaining 30% was set aside for projects that promote effectiveness (i.e. increase capture of existing and new materials). Priority areas for CIF funding, which have various funding levels, include:

- Best practices;
- Innovation;
- Emerging technology; and
- Communication and education.

The success of waste diversion and recycling is dependant primarily upon the participation of the residents and businesses that generate the material. A diversion rate provides a measure of the overall success of the efforts aimed at reducing the pressure on landfills for waste disposal. A diversion rate is calculated as follows:

$$\text{Diversion Rate [\%]} = \frac{\text{Waste Diverted}}{\text{Waste Disposed + Waste Diverted}} \times 100$$

Specific to West Nipissing, opportunities exist to boost the current blue box diversion rate of 23%. Currently, funds are available from CIF to assist municipal programs with improvements on:

- Promotion and Education Materials
- Capital investments for accessible depot containers
- Capital investments to increase capture of curbside recyclables and reduce the overall cost per tonne

The following sections outline possible program enhancements based on current program demographics and geographic location. Long-term costing of these options may be explored further through the recycling planning tool; A Waste Recycling Strategy (2010). A Waste Recycling Strategy is used to forecast recyclable material generations, establish effective monitoring tools for the program and review long term operational costs associated with enhancements to the program.

5.2 Enhancing Blue Box Processing Operations

Currently, operations at the Sturgeon Falls MRF are cost effective and the facility has sufficient capacity to manage existing tonnages. Essentially, the facility operations represent partial transfer and partial processing of material. Container material has minimal associated processing costs and fibre material receives revenue to offset much of the handling costs. It is understood that R&D provides transfer and processing services at no charge to the Municipality and that the service has met the needs of the Municipality on a routine basis. The risk associated with this arrangement is in the event that R&D has operational constraints that may force closure for unspecified period of time. This occurred during the downturn of the market prices whereby without notice, R&D ceased collecting material from West Nipissing for several weeks.

Current Rebates and Processing Limitations

The $300/month rebate received from R&D Recycling is for transportation reimbursement reflecting no material sales rebate to the Municipality for the high value commodities (aluminum, high density plastics). Within Ontario, many of the two stream MRF's charge processing fee to customers ranging $65-$90/tonne (fibres and containers) based on annual tonnages. Rebates for material sales vary. The Ontario Price Sheet (June 2010) reports average BOG pricing for containers at $400/tonne. Specific to West Nipissing, it can be estimated that the current container processor (R&D Recycling) incurs a processing fee of approximately $100/tonne. If the 140 tonnes of container material has a processing cost of $100/tonne, the contractor is still recovering an average of $300/tonne revenue from the sale of the West Nipissing material. Specific to the collection structure of West Nippising, residents are instructed to include all grades of plastic in their blue box as a method of encouraging participation. R&D Recycling only markets #1, #2 and tubs and lids. The remaining plastics (polystyrene, #3, and #7) are considered residue. R&D Recycling incurs a cost for managing the residual items that are not marketed.

Processing Enhancement Options

- Option 1-Upgrade the MRF to be capable of processing container material and retain full revenue.
- Option 2-Convert existing MRF to blue box transfer station.
- Option 3-Establish a new blue box transfer station.

Currently, the North Bay MRF (operated by Miller Waste) is at capacity, with the alternative Sudbury MRF representing 1.5 hour hauling distance (by truck). Short-term transfer solutions may be to determine if additional processing capacity can be negotiated with R&D Recycling in North Bay with considerations for longer term

planning to transfer to either Sudbury or alternative processors within the area as they become available.

The following provides capital and estimated operating cost for the three options.

Option 1 - MRF Upgrade

To process containers on site requires moderate upgrades to the facility with consideration to glass management (inside or outside facility). Based on current volumes, it is recommended to bunker glass outside using concrete blocks. The facility has an operational magnet but requires additional sort conveyors and space to sort material. It is anticipated that two additional staff would be required to sort the various grades of plastic (#1, #2 and mixed plastics). The existing compliment of operators and rolling stock would remain constant. Baling PET (#1) plastic in a vertical down-stroke has limitations. It is possible to bale this material with the current baler but the consultant team's past experience has found the task time consuming and often leads to bale breakage and subsequent double handling of material and market downgrades. Investing in a larger horizontal baler with supporting infeed conveyor and plastic perforator ($ 450,000) is the common solution for managing plastics but would be impractical for West Nipissing based on current inbound tonnages and facility footprint. To that end, it is important to examine the impact processing plastic has on the existing processing infrastructure.

Option 1 - Estimated Capital Investment for MRF Upgrade

The anticipated investment to convert the Sturgeon Falls MRF to a fully operational MRF is anticipated to be in the range of $400,000. The cost estimates include the installation of an industrial weigh scale to be either shared with the disposal site or located at the existing MRF site. Capital costs do not include related site and costs for weigh scales, or processing equipment configurations.

Table 5.1 depicts estimated costs to upgrade the existing MRF to a fully operational MRF (using new equipment).

Table 5.1 Option 1 Capital Cost Estimates

Item	Estimated Cost
Industrial Weigh Scale & Software	$180,000
Conveyor Structures	$ 80,000
Concrete Bunkers for Glass	$10,000
Enclosure for Container Material	$100,000
Total	**$ 370,000**

Specific to West Nipissing, it is anticipated that average plastic bale weights generated by the existing baler would not exceed 200kg (400 pounds) for HDPE or mixed plastics and 120kg (260 pounds) for PET bales. To reflect current container

tonnes, the following assumptions are depicted in Table 5.2 referencing the 2008 WDO BB data to determine plastic composition and projected bale quantities.

Table 5.2 Option 1 Plastic Composition and Bale Generation Estimates

West Nipissing Material	WDO Composition (%)	Tonnes	# of Bales
PET	2.67 %	3.7	30
HDPE	1.49 %	2	10
Tubs & Lids	0.48 %	1	5
Total	4.64 %	5.7 Tonnes	45-50 Bales

Approximately 1 bale of plastic per week (52 weeks), at a rate of 60 minutes per bale is estimated. Operators may chose to bale PET at the end of the day and leave the material in the baling chamber overnight to ensure bale stability. Residential plastic volumes typically increase seasonally (July-August). This material would require adequate tipping floor capacity during the peak season. Further, it will be important to determine if sufficient storage capacity (40-50 bales/outbound truck). It is recommended to consider marketing a mixed bale of plastic or blending loads to gain efficiencies.

Option 1 - Estimated Operational Investment for MRF Upgrade

Specific to staffing, it is anticipated that one-two additional staff would be required to sort metals and plastic container material (140 tonnes). Container material represents 15% of the total tonnes entering the MRF. Table 5.3 depicts the estimated additional operating costs associated with processing the container material.

Table 5.3 Option 1 - MRF Upgrade Operational Cost Estimates

Item	Estimated Additional Annual Costs
Additional Staff (2 @ $21/hour 260 days)	$87,000.00
Facility Maintenance*	$472.80
Utilities	$1,177.20
Baling Wire	$352.65
Propane	$234.00
Forklikft Maintenance	$525.00
Gross Additional Costs	$89,761.65
Revenue ($400/140 tonnes)	$56,000.00
Net Additional Costs	$33,761.65

* For budgeting purposes, upgrade cost estimates reflect 15% increase to actual MRF operating costs

Table 5.4 depicts comparative operational costs between the existing system and the MRF upgrade costs. Current BOG revenues for June 2010 are depicted for consistency ($140/tonne containers + $90/tonne fibres).

Table 5.4 Option 1 – Overall MRF Costs with Upgrade

Item	Costs
Current System	$160,312.00
Upgraded System	$89,761.00
Combined Operational Costs	$250,073.00
Combined Revenue ($400/t x 140 t container, $97/t x 778 fibre)	$131,466.00
Total Combined System Costs	**$118,607.00**
Total Inbound Tonnes	**918**
Option 1- MRF Upgrade Net Cost Per Tonne	**$129.20**
Existing Net Cost per Tonne	**$44.63**
Difference	**$84.57**

Costs do not reflect annual cost of living increases or associated employee benefits. Cost savings may be realized by contracting out the MRF operation to a private contractor or perhaps a neighbouring municipality. It is understood that the facility provides employment in the area and the decision to operate as a municipal system is preferable to the Municipality at this time. Future consideration to investigate available processing capacity within the vicinity of Sturgeon Falls may offer dispersion of overall processing costs and reduce long term operational costs.

Option 2 - Conversion of MRF to Transfer Station

To establish comparative system costs between upgrading the existing MRF and transferring blue box tonnages to a third party processor, the following has been considered for budgetary purposes;

- Point of transfer (Sturgeon Falls),
- Method of transfer (Roll-off with stationary compactor),
- Current tonnages to transfer (Approx. 900 tonnes),
- Processing fees for local third party processors (R&D Recycling and Sudbury).

The one-time capital cost to convert the Sturgeon Falls MRF to a blue box transfer site is estimated to be in the range of $200,000. Using the existing infrastructure of the building, property and rolling stock, reduces overall conversion costs. Concrete blocks can be incorporated to act as push walls and bunker walls.

Table 5.5 depicts the estimated costs to convert the Sturgeon Falls MRF into a transfer station. Costs include installation of feed hopper and conveyor to load one stationary compactor. Roll-off bins are not included with anticipation that bins would be owned by a private hauler. Existing rolling stock can continue to be used. Blue box weights can be received from third party processors reducing the requirements for an on-site weigh scale. Future installation of a weigh scale at the Sturgeon Falls waste disposal site may offer shared costs savings between the disposal and MRF operations. Opportunities to purchase used light duty compactors or leasing compactors from waste hauling companies provides opportunities to further reduce capital investment costs.

Table 5.5 depicts estimated costs to convert the existing MRF into a transfer station.

Table 5.5 Option 2 – Capital Costs

Item	Estimated Cost
Concrete Blocks (50 x $150/block)	$ 7,500
Hopper/Conveyor	$30,000
Stationary Compactor for Recyclables	$60,000
Dismantling, Installation & Electrical	$80,000
Total	**$180,000**

Option 3 - Greenfield Transfer Station

Table 5.6 depicts estimated costs to establish a new transfer station at a Greenfield site owned by the municipality and zoned for industrial use. Weigh scales would be recommended at this site to offer opportunities for future growth and potential to maximize site operations to include public drop points for WEEE, MHSW and other related diversion activities.

Table 5.6 Option 3 – Capital Costs

Item	Estimated Cost
5,000 ft^2 Building ($150/$ft^2$)	$ 750,000
Hopper/Conveyor	$ 30,000
Weigh Scales and Software	$180,000
Stationary Compactor for Recyclables	$ 60,000
Installation, Engineering & Electrical	$150,000
Total	**$1,150,000**

Site costs (inclusive of engineering, surveying, permitting, paving and fencing) are additional considerations.

Option 2 & 3 Operational Costs

To estimate annual operating costs, it is anticipated that one equipment operator is required to attend the transfer station. To project potential trip frequencies based on annual blue box composition, it is anticipated an annual average of 750 tonnes of fibre and 150 tonnes of containers (17 tonnes/week =12 tonnes fibre and 5 tonnes containers). A 40 yard roll-off supported by a stationary light duty compactor averages 6-8 tonnes per load for fibre and 3-4 tonnes per load for containers. To estimate frequency of loads the following has been estimated to reflect current tonnages:

- 2 trips of fibre per week;
- 1 trip of containers per week;
- Average hauling rates for roll-off systems = approximately $130/hour;
- Hauling /unloading time to R&D Recycling in North Bay = approximately 1 hour;
- Hauling /unloading time to Sudbury = approximately 2 hours;
- R&D two stream MRF = 3 trips/week=156 trips x $130/trip=$20,280/yr;
- Sudbury single stream MRF=2 trips/week=104 trips x $260/trip=$27,040/yr;
- Processing costs at R&D = $0 (to be negotiated); and
- Processing costs at Sudbury @$89/tonne=$81,700 (to be negotiated).

Table 5.7 depicts a summary of potential operating costs to transfer material to Sudbury or R&D MRF's.

Table 5.7 Option 2 & 3 Operational Costs

Item	Sudbury	R&D
Material Transfer	$27,000	$ 20,000
Processing	$82,000	$ -
On-Site Operator @ Sturgeon Falls $	$40,000	$ 40,000
Utilities, Maintenance	$30,000	$ 30,000
Total	**$179,000**	**$90,000**

Observing the two processing destinations, the average transfer operating costs are approximately $135,000 per year. These costs reflect estimates and do not factor in back haul opportunities, or B train capabilities to transfer material (2 roll-offs on one trip). Negotiations with the third party MRF's are required to determine revenue rebates and processing costs based on material composition. Processing fees depicted reflect current rates charged to programs in the area and are for budget purpose only.

Processing Enhancement Summary

Table 5.8 summarizes the three processing enhancement options outlined within this report.

Table 5.8 Processing Enhancement Summary

System	Capital Costs	Annual Operational Costs (Gross)
Status Quo	$0.00	$160,000.00
Option 1	$370,000.00	$250,000.00
Option 2	**$180,000.00**	**$135,000.00**
Option 3	$1,100,000.00	$135,000.00

Status Quo costs represent the lowest costs based on capital investment. Considering the age of the facility, maintenance and equipment replacement costs are expected. Option 2 MRF conversion to a blue box transfer station proposes low capital investment and use of the existing facility with a reduction in annual operational costs of approximately $25,000 per year.

Recommendations

For the immediate; negotiate a more favorable revenue rebate share with R&D Recycling to offset overall MRF costs. Inquire if the additional non-marketed material is impacting the revenue rebate to determine next steps for public education. For longer term planning; consider converting the existing MRF to a blue box transfer station to reduce overall operational costs and increase marketability of material

(plastics).

5.3 Enhancing Curbside Recycling Program

The curbside recycling program is the largest contributor to the blue box tonnages diverted from disposal in West Nipissing. Residents understand the program and it appears they are choosing diversion before disposal based on the observed set out rates of waste at the curbside. Municipal staff outlined the steady increase in tonnages and volume of recyclable materials collected by the curbside program in particular during the summer season.

Curbside collection costs are cost effective but capture rates are below average. To increase participation of the recycling program, consider conducting a weekly collection trial from a designated Ward to capture material that may be entering the waste stream. The trial allows for observation of staff time associated with the weekly curbside program to determine if it is feasible to expand weekly recycling collection with existing staff and collection infrastructure over time based on adjustments to collection scheduling. During the trial, observe curbside set out rates and track tonnages marketed to determine overall participation. Support the trial with the use of a promotional flyer mailed to all residents.

To reference some best practices, the KPMG and RW Beck Blue Box Program Enhancements (2007) concluded that programs in Ontario with weekly collection of recyclables and household organics and bi-weekly collection of waste were the most efficient in terms of waste diversion. Specific to West Nipissing, available capacity for residential organic material is limited and would prove costly to the program. However, programs reported to have alternating weeks of fibres and containers co-collected with wastes were effective in areas having low population densities. What makes co-collection appealing is the ability to use one driver and one pass by a household on a weekly basis to avoid duplication of non-productive time (one truck per route instead of two).

Typically, weekly collection costs are higher than bi-weekly costs. It has been observed that blue box collection costs with respect to collection frequency average a 7% less for bi-weekly compared to weekly collection.

Table 5.9 depicts average blue box collection costs per tonne (weekly vs. bi-weekly) for Rural Collection South programs (2007) extrapolated from the Guidebook for Municipal Waste Recycling Strategy (March 2010).

Table 5.9 Average Blue Box Collection Costs (Weekly vs. Bi-Weekly)

Collection Frequency	Average Collection Costs Per Tonne
Bi-Weekly	$ 208.21/tonne
Weekly	$ 280.70/tonne
Weekly – alternating Fibres and Containers	$ 224.09/tonne
Average of Weekly Systems	$259/tonne
Difference of Average Weekly and Bi-Weekly	$15.88/tonne (7%)

Currently, West Nipissing costs reflect two drivers devoted to bi-weekly collection. Observations made during the trial of a designated Ward may suggest enhancements to the collection fleet with either purchasing an additional curbside recycling truck or consideration of co-collecting waste and alternating fibres and recyclable. Data (2007) from the Rural Collection South programs reflect costs per tonne similar to current bi-weekly costs of West Nipissing and it is anticipated that the recycling collection costs can be dispersed over the waste collection program.

To cite recent (2009) examples of rural collection programs that have increased capture of blue box material through weekly recycling co-collection;

- City of Kawartha Lakes conducts alternating fibre and container recycling with co-collection of wastes using a 60/40 split truck (30 cubic yards) with one operator per truck for a 10 hour day four days per week (Tuesday to Friday). The program averages 500 stops per route with 3 tonnes per load (2 tonnes waste 1 tonnes recyclables. Costs reflect an average of $350/tonne but are dispersed over waste and recycling collection. Tonnage collected in 2009 was 6,608 tonnes for 35,000 households represents 188kg/hh/yr capture of blue box material.

- Region of Durham, servicing rural areas in Scugog, Port Perry, and Uxbridge, switched from bi-weekly to weekly blue box collection in 2006. In the urban areas they average 1,100-1,200 households per route using the Expert 2000 truck (6 tonnes for the load of waste and recyclables) and 800 households in the rural areas using the Top Select truck (2 tonnes per load of waste and recyclables). Both trucks are one person operators, right hand side drive operating five days per week approximately 9 hours per day. The program immediately found a 25% increase in participation rate of the blue box program. The program received extensive promotion campaign and was complemented by a phased in approach to bi-weekly waste collection (2009) and an organics program (2007 & 2008). The Region also has a $1.50/bag user pay fee and a four bag limit of waste material.

In general, curbside collection costs are impacted by the following factors:

- Total distance travelled between stops;
- The number of stops on a route;
- Total distance travelled to central processor;
- Number of curbside sorts (co-collection waste and recyclables vs. varying curbside recyclable sorts);
- Frequency of collection periods (weekly vs. bi-weekly);
- Cost of fuel;
- Style of trucks (one or two person operator, and size of vehicle);
- Level of compaction;
- Composition and tonnage of material collected; and
- Method of curbside set-out (all on same side of road vs. collection on both side of the road or box vs. bag or cart).

Once the weekly collection trial has been observed and proves to be successful, consideration of implementing supporting infrastructures such as mandatory recycling by-laws, and bag limits should be encouraged. Another consideration is to comingle material into a single stream and transfer to the Sudbury MRF for processing. Converting to single stream at the curb offers additional opportunities for streamlining the collection system and establishing flexibility for co-collecting waste and single stream recyclables with one pass per household per week and dispersing overall collection costs.

When considering co-collection or enhancing to a weekly blue box program, it is anticipated that staff costs would shift from waste to recycling with supporting increases in waste diversion and overall diversion rates.

Recommendations

Bi-weekly collection is less costly than weekly collection as a standalone method of collection. To enhance this method of collection, provisions of larger capacity householder storage containers offers extra containment option to reduce instances of residents opting to dispose of recyclable in the waste stream.

For longer term planning, weekly collection benefits higher diversion rates through the curbside blue box program. Initially, consider conducting a summer trial of weekly curbside collection in an urban area to determine feasibility of collecting recyclables on a weekly basis. Explore long term collection costs by converting to single stream recycling (transferring to Sudbury MRF) and co-collecting waste and recyclables on a weekly basis. Increase the level of promotion for the new curbside program with assistance from the CIF for promotional material and funds to `Re-launch' the new program.

5.3 Enhancing the Rural Depot Recycling Program

Participation at the rural depot sites is moderate. Currently, the municipality does not have a mandatory recycling by-law or bag restrictions for waste material. Additionally, signage on the depot bins is limited to small text on the side of the bins. The accessibility to the depot (storage trailers) is somewhat awkward for residents and debris collected alongside of the depot may detract residents from using the bin.

A report commissioned by WDO through the Effectiveness and Fund entitled; Best Practices for Rural Depot Recycling (2006), outlines the following key factors for effective rural recycling depots:

- **Depot Accessibility** – clean, easy to load depot containers with sufficient turning radius for vehicular traffic and an area separate from congestion of waste disposal traffic;
- **Supportive infrastructure to reduce contamination and increase participation**- including provisions of blue boxes to seasonal residents to segregate recyclables at the cottage, illegal dumping and mandatory recycling by-laws, the use of clear bags and bag limits for waste;
- **Entrance signage at the depot site and simple messaging** on the depot container-using graphics and minimal text for easy reading;
- **Depot attendant actively involved in monitoring recycling depot** –hand out literature to new residents, sell blue boxes at the depot site for residents;

When considering the levels of financial investment required for improving depot participation, municipal staff outlined there is a very limited budget available to the recycling program. Lack of funds for a small rural municipal program is common across the province. As a result, consideration to phasing various initiatives over time may be undertaken and possibly reviewed in more detail within a Recycling Strategy. Currently, opportunity exists to enhance rural depot participation through CIF in the form of public education funding for signage and flyers, as well as capital funding for new recycling depot containers.

Examples of various rural recycling depots are depicted in the following photos.

Photo 17 Central Depot Site at French River-Using Six HL6 Depot Units on Gravel Pad

Purchase Price: (2010-New) approximately $9000/unit, and refurbished approximately $4,500 to $5,000

Photo 18 Collecting from HL6 Depot System Using Haul- All RP240 Truck Body

Purchase Price: (2010) approximately $185,000

Photo 19 Compartmentalized Depot Container serviced by Roll-Off Truck

Purchase Price (2001) approximately $25,000/container

Photo 20- 8 yard Front-End Depot Bin Serviced by Front-End Compacting Truck System

Purchase Price: (2009) Truck Body approximately $200,000 and 8 Yd Bin approximately $950/bin (E&E Program 2009)

Photo 21 Example of Graphic Messaging for Depot Bins

(County of Peterborough- E&E Program 2009)

Recommendations

The new signage at the depot site can be complimented with graphic decals on the front of the depot bins. Further, participation at the depot site can be enhanced by implementing infrastructure such as waste bag limits, mandatory recycling, clear bags for waste, and waste disposal bans of material (cardboard) to increase capture of recyclable material. Further, establishing improved collection infrastructures to reduce handling costs at the depot site and internal transfer costs of the collected material can be reviewed in detail through a Waste Recycling Strategy.

5.5 Enhancing Promotion Program

Many municipalities in Ontario distribute calendars to the community is a proven best practice method for communicating a variety of messages. These calendars contain recycling information, garbage related information and sometimes many other environmental or civic issues. Some areas mark on the calendar the waste and recycling pickup days, and provide other tips or information in the margins or at the bottom of pages. Some contain a variety of facts, tips and hints.

On the Recyclers Knowledge Network, which is accessed at http://vubiz.com/stewardship/Welcome.asp various E&E funded reports are listed including, Identifying Best Practices in Municipal Blue Box Promotion and Education'. This document outlines information collected from focus groups commenting on recycling education calendars. In sessions where time permitted, the participants were asked to examine some example recycling information calendars.

Comments received from the focus groups on preferred calendars include the following:

- The most popular size – 8.5 x 11
- The most popular images – large nature photos.
- The most popular content – brief facts, tips and general environmental information, recyclable materials lists, pick-up schedules.

In conjunction with the enhancement initiatives outlined for the curbside and depot programs, the West Nipissing recycling program could effectively be "Re-launched" and supported by an education campaign designed to inform the residents of the new initiatives and reinforce proper recycling procedures. Promotion and Education (P&E) is a key element of a successful blue box program. It was rated as a fundamental Best Practice in the 2007 report Blue Box Program Enhancement and Best Practices Assessment Project. Moreover, municipalities know that the best way to convince residents to recycle and to do it properly is with strong and consistent promotion and education program.

Specific to West Nipissing, it is understood that staffing and budgets are constrained. In Ontario, more than 180 programs market less than 5,000 tonnes per year and are considered to be "small" programs. To address budget constraints for smaller communities, CIF has recently prepared a promotion and education planning tool kit with available graphics for municipalities to access on line http://www.wdo.ca/cif. Other shared resources for promotion and education include the WDO AD bank located on the WDO website (www.wdo.ca). Another site, www.blueboxmore.ca is a web-based tool for Ontario programs.

The "tool kit" includes a communications plan template that municipalities can use to develop a basic communications plan (a key best practice), other customizable templates for standard P&E materials and basic information on best practices in

communications and monitoring. The toolkit is complete and available by contacting CIF.

Further suggestions to enhance the West Nipissing promotion and education program:

- Regularly have attendants hand out information flyers at the landfill sites (particularly in the summer)
- Offer information flyers at all commercial establishments in West Nipissing (LCBO, grocery stores, resorts, marinas)
- Continue to work with the school board in the area to promote the new changes

Recommendations

Once enhancement initiatives have been selected based on examination of long-term operational costs, consider applying for CIF funding to assist with the `Re-launch' of the current program and use best practice tools such as calendars and promotional flyers.

6.0 Summary and Conclusions

This report has presented detailed information on the following objectives:

1. A review the current recycling program, inclusive of the MRF processing operations, the curbside blue box system, and the permanent drop off depots within the municipality;

2. Options and recommendations for the recycling program to increase capture of overall blue box material, and minimize handling costs ; and

3. Recommend some Best Practices (BP) and identify opportunities to access the CIF for implementation of recycling program enhancements.

Next steps may be a review of the long term operational costs and public response to the various best practice recommendations as part of the long term recycling plan of West Nipissing.

A common element from all the reported best practices is that a recycling system is only as effective as the people who use it and use it properly. In summary, the following enhancement opportunities are recommended to boost the overall diversion rate:

- Negotiate a more favorable revenue share with the processing contractor to reduce MRF operating costs. Inquire if the collection of additional non-marketed material (plastics) is negatively impacting the revenue rebate.

- Apply to CIF for assistance to a promotion and education campaign with emphasis on implementing an annual calendar for all residents.

- Explore long-term costs associated with converting the existing MRF to a blue box transfer station.

- The curbside program represents the largest contributor of blue box tonnages collected from the West Nipissing program. Consider enhancing the curbside collection system with extra capacity blue boxes to residents to extend capture of material over the two week period. Apply for funding from CIF to help offset purchase costs of additional boxes.

- Expand the curbside program from bi-weekly to weekly collection with consideration to trial the program in a selected area to determine impact on operations.

- Support the expanded curbside program with enforcement mechanisms such as bag limits for waste (i.e.; 3 bag limit), mandatory recycling, and clear bags for waste, with supporting curbside enforcement (stickers, leaving bags at curb).

- Conduct a curbside set out study to determine participation rates of blue box program in the various urban areas currently receiving collection.