

CIF #340

Essex- Windsor Solid Waste Authority Public Space Recycling: Phase 1



Interim Report, January 17 2013

EWSWA

CIF Project number 340

Acknowledgement:

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EXECUTIVE SUMMARY

This interim report presents the results of The City of Windsor's Public Space Recycling implementation. The implementation Public Space Best Practices in the Essex-Windsor recycling program is part of a larger overall strategy to increase capture rates and diversion. The City of Windsor Public Spaces Program was co-sponsored by the Essex-Windsor Solid Waste Authority (EWSWA), The City of Windsor and Waste Diversion Ontario's Continuous Improvement Fund (CIF) to implement recycling services in three of the City of Windsor's largest parks: Riverfront, Ganatchio, and Mic Mac.

A total of 90 Alpha maxi30 recycling bins were installed in the City parks. The large volume of these containers (2.5-3 cubic metres) allowed City staff to minimize service frequency (~4 times per season) and control operational costs. Communication materials were developed, including stickers and signs, which focused on the capture of "beverage containers only" and the reduction of contamination in the public space recycling bins.

As part of the CIF's funding requirements, EWSWA developed and implemented a measuring, monitoring and reporting plan for this project. As a component of this plan, EWSWA contracted AET Consultants to conduct three waste audits in the City of Windsor parks throughout the summer of 2013. In addition to the waste audits, EWSWA and City of Windsor staff completed an operational efficiency analysis to evaluate the costs of servicing the public space recycling program.

Overall, an estimated 6 metric tonnes of recyclable material, an additional 19.4%, is now diverted from landfill through public space recycling in the City of Windsor. The 2013 waste audits indicate that the capture rate of recyclables is 68% with a contamination rate of 28%. The total costs to implement the public space recycling program in the City parks was \$143,390. The 2013 net costs to operate the City's public space recycling program was approximately \$5,400.

The implementation of public space recycling in the City of Windsor parks has succeeded in improving the park's user experience, encouraging and reinforcing at-home recycling behaviour, and increasing diversion from landfill. EWSWA and City of Windsor staff have completed an evaluation of the public space recycling program and are planning on implementing additional containers, refining P&E to improve the program's performance, and continuing to develop operational cost monitoring systems.

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1 INTRODUCTION

The City of Windsor Public Spaces Program was co-sponsored by the Essex-Windsor Solid Waste Authority (EWSWA), The City of Windsor and the Continuous Improvement Fund (CIF).

The total cost of the Public Spaces Project (i.e. recycling receptacles, signage, audits, reports etc.) was approximately \$143,390. CIF provided funding, in the form of a Waste Diversion Ontario (WDO) grant of \$76,320.00, the schedule of the grant is as follows:

Monitoring and Measuring Strategy	\$ 7,632	(10% of funding)
Purchase of Recycling Receptacles & Signage	\$ 49,608	(65% of funding)
Monitoring, Data Analysis, Final Report & Project Evaluation	\$ 19,080	(25% of funding)
Total	\$76,320	

The City of Windsor funded the remaining portion of the recycling receptacles, signage and all production costs of program materials. The design of all signage and program material was funded by the EWSWA (i.e. metal signs and recycling receptacle stickers). The EWSWA placed recycling labels on all recycling receptacles and was responsible for the monitor and measuring strategy, the CIF interim report, and was the main contact for AET the consulting company hired to conduct all waste audits. The program included strategically-placed recycling bins twinned with existing garbage bins, bin stickers and metal signs in the three parks in high traffic areas (i.e. parking lots, washrooms, picnic areas, playgrounds and trails).

1.1 Project Purpose

The primary purpose of the project was to create opportunities for residents and visitors of The City of Windsor to recycle while enjoying and attending city parks and to identify if the recycling receptacles would be used properly and not highly contaminated with non-recyclables.

Therefore, diverting commonly generated recyclables from landfill in highly utilized city parks.

1.1.1 Key elements included:

1. Partnering with the City of Windsor to provide infrastructure for public space recycling.
2. Purchasing and installing recycling receptacles in three designated city parks to capture containers i.e. (beverage containers).
3. Using Best Practice for bin placement and signage design.
4. Waste audits to identify quantities of recyclables in the waste stream prior to installation.
5. Waste Audits to identify if there is a reduction in recyclables in the waste stream after installation of the recycling receptacles.
6. Waste audits to identify the amount of contamination in the recycling receptacles following installation of the recycling receptacles.
7. Waste audits to identify quantities of recyclables within the recycling stream that are being captured.

1.2 Project Alignment with CIF Priorities

This project aligns with the following CIF priorities:

1. The implementation of the City of Windsor Public Spaces Recycling Program is another step in following the City of Windsor Environmental Master Plan and will directly and indirectly increase the City of Windsor's residential recycling rate. It will also contribute to the EWSWA Essex-Windsor target of 60% diversion.
2. Increase the collection and processing of the Blue Box materials that were not captured/recycled prior to implementation of the project.
3. Social marketing and outreach to maximize program participation and minimize contamination rates. This will affect program performance and align with Best Practice.
4. Mechanisms to increase behaviour change in order to facilitate participation in the recycling program, increase capture rate and reduce contamination. These include:
 - Recycling program monitoring, assessments and feedback; and
 - Follow Public Spaces Recycling Program Best Practice produced by CIF when possible.

1.3 Project Partners and Bin Information

Public space recycling and garbage are the responsibility of The City of Windsor Parks staff. The City of Windsor is responsible for all operations within city parks. The EWSWA owns and operates the MRF where all recyclable material will be delivered and is responsible for all waste reduction and waste diversion programs within the City of Windsor. The EWSWA partnered with the City of Windsor to implement a container stream recycling program at three of their most utilized parks in the City of Windsor. The EWSWA applied on behalf of the City of Windsor and submitted a CIF application to receive funding. As a result of the funding received from CIF and money earmarked in the City of Windsor budget for public spaces recycling the total cost of the project was covered. As a result a total of 90 Alpha Maxi30 containers were installed and twined with existing garbage bins in the three parks (Mic Mac Park, Riverfront Park and Ganatchio Park). An example of the Alpha Maxi30 and the metal signs is shown in Figure 1.

2 IMPLEMENTATION

2.1 Program Tasks

The EWSWA Waste Diversion Specialist and City of Windsor Environmental Coordinator determined the quantity and type of public space recycling receptacles required and the best parks for placement. The Alpha Maxi30 was chosen because the City of Windsor was already using these bins as their garbage receptacles within city parks. Therefore, all the equipment for installation and collection was available and no training was required on how to install and service the receptacles. The EWSWA and the City of Windsor coordinated the waste audits, ordering, delivering and installation of all the recycling receptacles. The EWSWA developed all communication materials and installed all stickers on the recycling receptacles. City of Windsor staff installed all recycling receptacles and metal park signs. The recycling receptacles are emptied by City of Windsor parks staff and the material is brought to the EWSWA MRF.

AET Consultants were hired to conduct all waste audits and calculate the results of the waste audits. EWSWA staff prepared the final CIF report.

2.2 Communication Materials

Communication materials for the Public Space Recycling Program were designed to:

- Align with Best Practice
- Maximize recycling program participation
- Reduce contamination in the recycling receptacles
- Encourage and reinforce at-home recycling behaviour

The communication materials utilized for the City of Windsor Public Space Recycling Program were bin labels (stickers) and metal signs. The purpose of the bin labels were to promote and capture all blue box containers that are accepted in the Essex-Windsor recycling program with an emphasis on beverage containers. One bin label was placed on the front of every container and one Mobius loop sticker was placed on the back side of the lids of every container. The rationale for the Mobius loop on the back of the containers was so it was noticeable from the front or the back that the receptacle was for recycling. The purpose of the metal signs was to inform residents and visitors that recycling is available at the park. The metal signs were placed in high traffic areas such parking lots, entrances and exits. A total of 25 signs were placed in the three parks. The City of Windsor also advertised the new program on city trail maps.

The bin labels with graphics were produced twice. One reason was due to the fact that they wouldn't stick onto the containers and the second reason being that EWSWA added new materials to the recycling program so the stickers needed to be updated to include those materials. The first version "Thank You for Recycling!" and a second version "We Can Recycle More!" that included the new materials that EWSWA added to the recycling program such as plastic cups. Two version of the Mobius loop stickers were also produced because the first

version did not stick on the container. It was later discovered that the Alpha Maxi30 containers are coated with silicone so they can easily pop out of the mold when manufactured. As a result the first versions of the labels with graphics and the Mobius loop sticker fell off and would not adhere to the Alpha Maxi30. Therefore, a second version needed to be purchased. After discussing the issue with the manufacture it was revealed that the area the labels were going to be placed needed to be wiped down with acetone first to remove the silicone before anything would stick to it.

The bin labels include the following items:

- “Thank You For Recycling!” version one
- “We Can Recycling More!” version two
- Both version included photo of Mobius loop
- Photos of acceptable materials
- Mobius Loop only stickers (two versions) for backside of receptacles

The materials that were targeted:

- #1 PET beverage bottles
- #2 HDPE beverage bottles
- Glass bottles and jars
- Aluminum Cans
- Tetra-paks
- Gable Tops
- Plastic Cups

The metal signs included the following item:

- “We Recycle”
- Mobius Loop



Figure 1. Alpha Maxi 30 and Metal “WE RECYCLE” sign

2.3 Program Costs

Table 1: Public Space Program Implementation Budget Breakdown

Item	Total Program Budget	WDO Grant	EWSWA/City of Windsor	Actual Program Cost
Alpha Recycling Containers	\$ 112,378.50	\$ 44,951.40	\$ 67,427.10	\$ 112,378.50
Signage & Labels	\$ 52,680.30	\$ 21,072.12	\$ 31,608.18	\$ 16,500.41
Monitoring and Measuring	\$ 21,780.00	\$ 8,712.00	\$ 13,068.00	\$ 21,962.00
Total	\$ 186,838.80	\$ 74,735.52	\$ 112,103.28	\$ 150,840.91

*Initially Lexan wraps were intended to be installed on all bins to facilitate signage and P&E

2.4 Monitoring and Assessment

2.4.1 Waste Sampling Process

City of Windsor parks staffs were responsible for collecting garbage and recycling samples and delivering them to the designated sort site on each of the associated waste audit days. City of Windsor park staff collected and delivered 4 Alpha garbage bins from each of the three parks which represented two weeks of waste for the baseline audit. The second and third follow-up audits consisted of City of Windsor parks staff collecting and transporting 4 garbage Alpha bins and 4 recycling Alpha Maxi30 bins from each of the three parks. Bags of waste and recycling that were collected from these bins and delivered contained two week's representation of waste and recycling.

Crew members from AET were not involved in the collection process; rather AET was responsible for auditing the samples being provided by city employees. City of Windsor parks staff conducted the collection during the early morning hours so the material was available for AET to sort in the afternoon on each designated audit day. City of Windsor parks waste material was collected a total of three times for auditing throughout 2011 and 2012. The waste collection dates and associated audited material can be viewed in Table 1. The first audit included garbage waste only from the City of Windsor Parks. The second and third audit included both garbage and recycling waste as these audits were conducted after the installation of recycling Alpha Maxi30 containers and corresponding signage for the diversion of recyclable waste materials.

Table 2: Waste Material Collection Dates and Material Audited

Audit	Collection Date	Waste Material Audited
Baseline Audit	29-Jun-12	Garbage Only
Follow-up Audit 1	04-Jul-12	Garbage and Recycling
Follow-up Audit 2	09-Aug-12	Garbage and Recycling

2.4.2 Waste Sorting Process

All of the material collected during the sampling period was sorted and weighed at the Recycling Centre located at 3560 North Service Road East, Windsor, Ontario. Garbage and recyclables were sorted and weighed separately for each of the audit days and for each park. At the conclusion of each of the waste audit days, the results were combined to yield an accurate representation of garbage and recyclables for each of the Windsor City Parks.

Samples were sorted into 4 major waste groups, consisting of 11 individual categories during the first audit, and 13 individual categories during the second and third. A difference in the amount of individual sort categories between the first audit (June 29, 2011) and the second audit (July 4, 2012), was due to certain materials that were added to the Essex-Windsor Recycling program as acceptable items.

The large garbage bag lining and the liquid from PET bottles in both the garbage and recycling alpha containers was removed from each sample and disregarded. However, the bags and liquid from PET bottles were weighed separately. The justification for this was when the liquid was added to "Other Waste" for the recycling audits it was considered contamination in the recycling

stream. Therefore, skewing the results to create the appearance that the recycling stream was highly contaminated. When in fact the EWSWA has a MRF with a perforator and this material would not be designated as contamination.

While sorting the recycling and garbage stream of each park, there were a few categories that were also taken under special consideration. For instance, the “Recyclable Fibres” were kept separate from “Other Waste” and became its own material category to help determine the potential for adding a fibre recycling program in public spaces in the future. These materials are not accepted in the container only recycling receptacles that were installed for this project. However, they are accepted in the Essex-Windsor curbside recycling program. Further, “Mixed Clear Recyclable Plastic Clamshells / Cups” and “Composite Cans” were added to “Recyclable Containers” for follow up audits #1 and #2 due to the fact that they were added to the Essex-Windsor recycling container stream. The full list of sort categories can be seen in table 3.2. A full breakdown by pre-implementation waste audit and follow-up audits is presented for garbage waste (table 3.2) and the recycling waste stream (table 3.3).

2.5 Analysis of Public Space Recycling Operations

City of Windsor staff completed an analysis of the public space recycling services in the City parks recycling program. The analysis is comprised of two parts: First, the costs to implement public space recycling infrastructure, and second, the costs to operate the recycling program. City staff broke part 2 of the analysis into components of: costs to service, revenue generated from the sale of recyclables, and tipping fee cost avoidance.

Table 3: Garbage Waste Stream Breakdown by Audits 1(pre-implementation), 2&3 (post recycling implementation)

Location	Audit	Measure	PET Bottles	#2 HDPE Bottles	Mixed Recyclable Plastic	Clear Plastic Clamshell/cups	Composite cans	Milk Cartons & Tetra Packaging	Aluminum Food & Beverage Cans	Other Recyclable Metal	Glass Food and Beverage Bottles	Hazardous Waste	Other Waste	Recyclable Fibre	Recyclable Containers	Non-Recyclable Materials	Total
Mic Mac	1	Mass (kg)	6.6	0.3	1.0	0.0	0.0	0.4	3.6	0.2	17.1	3.8	199.57	37.7	29.08	241.1	270.17
		Percent tot. waste (%)	2.4%	0.1%	0.4%	0.0%	0.0%	0.1%	1.3%	0.1%	6.3%	1.4%	73.9%	14.0%	10.8%	89.2%	100.0%
	2	Mass (kg)	0.59	0.00	0.06	0.35	0.12	0.07	0.24	0.00	0.00	0.0	9.77	2.14	1.43	11.9	13.34
		Percent tot. waste (%)	4.4%	0.0%	0.4%	2.6%	0.9%	0.5%	1.8%	0.0%	0.0%	0.0%	73.2%	16.0%	10.7%	89.3%	100.0%
	3	Mass (kg)	1.14	0.20	0.00	1.53	0.00	0.63	1.22	0.00	0.28	0.0	45.49	10.60	5.00	56.1	61.09
		Percent tot. waste (%)	1.9%	0.3%	0.0%	2.5%	0.0%	1.0%	2.0%	0.0%	0.5%	0.0%	74.5%	17.4%	8.2%	91.8%	100.0%
River Front	1	Mass (kg)	5.04	0.40	1.15	0	0	0.47	2.75	0.35	5.68	0.05	58.44	25.27	15.84	83.8	99.60
		Percent tot. waste (%)	5.1%	0.4%	1.2%	0.0%	0.0%	0.5%	2.8%	0.4%	5.7%	0.1%	58.7%	25.4%	15.9%	84.1%	100.0%
	2	Mass (kg)	5.19	0.13	0.33	5.16	0.32	0.45	2.66	0.14	2.28	0.8	48.29	30.32	16.66	79.4	96.06
		Percent tot. waste (%)	5.4%	0.1%	0.3%	5.4%	0.3%	0.5%	2.8%	0.1%	2.4%	0.8%	50.3%	31.6%	17.3%	82.7%	100.0%
	3	Mass (kg)	5.18	0.14	0.23	5.84	0.03	0.45	2.20	0.23	4.19	0.0	41.93	17.84	18.49	59.8	78.26
		Percent tot. waste (%)	6.6%	0.2%	0.3%	7.5%	0.0%	0.6%	2.8%	0.3%	5.4%	0.0%	53.6%	22.8%	23.6%	76.4%	100.0%
Ganatachio	1	Mass (kg)	10.15	0.51	1.44	0.00	0.00	0.66	3.21	0.32	15.47	0.0	266.49	35.64	31.76	302.1	333.89
		Percent tot. waste (%)	3.0%	0.2%	0.4%	0.0%	0.0%	0.2%	1.0%	0.1%	4.6%	0.0%	79.8%	10.7%	9.5%	90.5%	100.0%
	2	Mass (kg)	0.44	0.06	0.01	0.77	0.00	0.11	0.13	0.00	0.80	0.0	18.31	2.24	2.32	20.6	22.90
		Percent tot. waste (%)	1.9%	0.3%	0.0%	3.4%	0.0%	0.5%	0.6%	0.0%	3.5%	0.1%	80.0%	9.8%	10.1%	89.9%	100.0%
	3	Mass (kg)	0.77	0.00	0.03	0.82	0.00	0.14	0.97	0.00	0.46	0.0	38.78	10.06	3.19	48.8	52.03
		Percent tot. waste (%)	1.5%	0.0%	0.1%	1.6%	0.0%	0.3%	1.9%	0.0%	0.9%	0.0%	74.5%	19.3%	6.1%	93.9%	100.0%

Table 4: Recycling Stream Breakdown by Audits 1 (pre-implementation), 2&3 (post recycling implementation)

Location	Audit	Measure	PET Bottles	#2 HDPE Bottles	Mixed Recyclable Plastic	Clear Plastic Clamshell/cups	Composite cans	Milk Cartons & Tetra Packaging	Aluminum Food & Beverage Cans	Other Recyclable Metal	Glass Food and Beverage Bottles	Hazardous Waste	Other Waste	Recyclable Fibre	Recyclable Containers	Non-Recyclable Materials	Contamination	Total
Mic Mac	2	Mass (kg)	2.47	0.00	0.00	0.43	0.00	0.18	1.36	0.21	1.31	0.0	2.72	1.27	5.96	4.0	4.0	9.95
		Percent tot. waste (%)	24.8%	0.0%	0.0%	4.3%	0.0%	1.8%	13.7%	2.1%	13.2%	0.0%	27.3%	12.8%	59.9%	40.1%	40.1%	100.0%
	3	Mass (kg)	11.69	0.16	0.19	0.83	0.11	0.60	8.02	0.00	5.02	0.5	6.70	1.19	26.62	8.4	8.4	35.01
		Percent tot. waste (%)	33.4%	0.5%	0.5%	2.4%	0.3%	1.7%	22.9%	0.0%	14.3%	1.4%	19.1%	3.4%	76.0%	24.0%	24.0%	100.0%
River Front	2	Mass (kg)	11.08	0.20	0.12	2.42	0.00	0.24	5.11	0.06	5.79	0.0	5.75	6.91	25.02	12.7	12.7	37.68
		Percent tot. waste (%)	29.4%	0.5%	0.3%	6.4%	0.0%	0.6%	13.6%	0.2%	15.4%	0.0%	15.3%	18.3%	66.4%	33.6%	33.6%	100.0%
	3	Mass (kg)	7.41	0.09	0.12	1.81	0.00	0.23	4.70	0.24	1.69	0.0	3.63	3.15	16.29	6.8	6.8	23.07
		Percent tot. waste (%)	32.1%	0.4%	0.5%	7.8%	0.0%	1.0%	20.4%	1.0%	7.3%	0.0%	15.7%	13.7%	70.6%	29.4%	29.4%	100.0%
Ganatachio	2	Mass (kg)	2.79	0.00	0.00	0.18	0.00	0.00	0.72	0.00	1.99	0.0	0.65	0.34	5.68	1.0	1.0	6.67
		Percent tot. waste (%)	41.8%	0.0%	0.0%	2.7%	0.0%	0.0%	10.8%	0.0%	29.8%	0.0%	9.7%	5.1%	85.2%	14.8%	14.8%	100.0%
	3	Mass (kg)	2.29	0.05	0.00	0.27	0.00	0.02	0.69	0.00	2.08	0.0	1.42	0.51	5.40	1.9	1.9	7.33
		Percent tot. waste (%)	31.2%	0.7%	0.0%	3.7%	0.0%	0.3%	9.4%	0.0%	28.4%	0.0%	19.4%	7.0%	73.7%	26.3%	26.3%	100.0%

3 RESULTS

3.1 Analysis of Waste Audit Information

The average results from each of the three waste audits were compiled to determine an annual weight per bin and an average recycling capture and contamination rate per bin, as presented in table 3.1. It should be noted that the capture rate calculation is based on the assumption that the garbage and recycling generation periods were the same within each park (i.e. garbage and recycling containers in each individual park had been accumulating material for the same period of time since their previous collection date).

Table 5: Annual Materials Generation, Capture, and Contamination for City of Windsor Public Space Waste Management in City Parks

City of Windsor Park	No. of Bins	Annual Tonnes Generated per Bin		Total Annual Tonnes Generated		Recyclables	
		Garbage	Recycling	Garbage	Recycling	Capture (%)	Contamination (%)
Mic Mac Park	18	0.111	0.067	2.00	1.20	82.50	32.05
River Front Park	49	0.261	0.091	12.79	4.46	53.50	31.50
Ganatachio Park	23	0.112	0.021	2.58	0.48	67.00	20.50
Total:	90	0.48	0.18	17.36	6.14	67.66	28.01

Based on the results of these audits, the following observations have been made:

- The implementation of twinning garbage with recycling bins has resulted in the capture of an additional 6 metric tonnes of recyclable materials per year for the City of Windsor
- The new recycling program has improved diversion to 19.1% from City parks
- The average capture of recyclable containers is 68%
- The average contamination of the recycling stream is 28%
- Total amount of garbage collected in the City parks has decreased since implementation

3.2 Analysis of Operations

The following represents a financial breakdown of the costs, revenue, and cost avoidance implications of the City's public space recycling program.

The costs to implement recycling container capacity in the City parks required: staff to select & purchase containers, staff to select and prepare site for implementation, staff to operate trucks, trailer, and equipment. The total costs to purchase and install the public space recycling collection containers was \$143,389.80; an approximate cost of \$1,593.22 for the purchase and installation of each recycling container.

Annually, the recycling bins in City parks are serviced 4 times. To service the public space recycling program, the City requires the use of a municipal staff person, a new bag for the recycling container, and the use of a packing refuse truck. The amount of staff time required to service each container is approximately 20 minutes. Cost related to the use of the truck (fuel, etc) are included in the cost hourly use rate. City staff estimate that the annual cost to service the City’s public space recycling program is approximately \$10,900; the cost to service each container is approximately \$121.21 annually.

The City profits from the sale of recyclable materials. City staff have tracked the weight of materials captured through the recycling system in the City parks and have estimated that revenues generated through the public space recycling program are approximately \$4,836. The City of Windsor regularly pays to tip waste from the garbage stream collected in the City’s parks at landfill. The cost for a single tip is \$32.44. The City has realized a cost savings of approximately \$616.36 in tipping fees (19 tips) as a result of public space recycling.

The annual net cost for operating the public space recycling program in City of Windsor parks is estimated at \$5,456.72. For a full breakdown of these costs, please see table below.

Table 6: Operational Analysis Breakdown

Item	Subtotal	Total
Annual operating costs		
Staff @ \$26.85/hr	\$3,189.78	
1 bag @ \$7.50	\$2,700.00	
1 Packing refuse truck @ \$42.25/hr	\$5,019.30	
Total annual operating costs		\$10,909.08
Revenue generated from sale of recyclable materials		
4 MT of PET containers @ \$446.00	\$1,784.00	
2 MT of Aluminum containers @ \$1,526.00	\$3,052.00	
Total revenue generated		\$4,836.00
Cost avoidance		
less: 19 tip fees @ \$32.44/tip	\$616.36	
Total costs avoided with diversion from recycling		\$616.36
Net costs for operation of City's public space recycling program		\$5,456.72

4 CONCLUSIONS

4.1 Lessons Learned

The following steps are recommended for any Public Spaces Recycling program implementation:

Consistency between Recycling Programs

The results of the waste audits revealed that a large portion of the contamination in the recycling stream was “recyclable fibre” this material is accepted in the local two stream curbside recycling program. As a result patrons wanting to recycle their fibre placed these materials into the container recycling stream thinking that the material is accepted and will be recycled; even though the container labels identified the fibre products as not recyclable. Municipalities implementing public space recycling programming should take into consideration all materials that are included in the local municipal program instead of adding them at a later date.

Evaluation of Service Frequency

Fullness audits were not completed for this project. Adding fullness audits would have improved our ability to assess the service frequency and adequacy of the current public space recycling service. Weights do not represent the full picture especially when it comes to waste audits due to the fact that the majority of acceptable recyclable containers are made from plastic which is very light and unaccepted materials such as food and pet waste are much heavier. Additionally, materials from overflowing garbage receptacles often make their way into the recycling stream which impacts the quality of materials captured; this may partially explain the high levels of contamination in some park areas.

Project Management Team

The implementation of public space recycling in the City of Windsor’s parks was a feat accomplished by stakeholders from the City, the EWSWA, AET, and the CIF. Retrospectively, this would have been a smoother process had a clear project leader been selected & identified, the full scope of the project & timeline been articulated, and planning for staff turnover and leaves been accounted for in a more thorough manner. For municipalities completing similar project it is suggested that before any materials and products are purchased convey a meeting with everyone who will be involved in the project i.e. labourers, supervisors and management. What may seem easy, doable or a good idea to one department or organization may not be the case for another department or organization.

It is also recommended that if consultants are going to be hired to preform waste audits, take the time to understand their methodology and what specific data you require. Invite the consultants to tour your local MRF to understand how all the material is managed. The project leader should then be onsite for the first couple of waste audits to ensure that the separation and categories being sorted are consistent with all parties understanding. For this project, what qualified as contamination to the consultants was not consistent with that of the other parties. This misunderstanding was corrected by making changes to the waste audit summary spreadsheets, at the cost of staff time.

Collection Containers

The original project envisioned Lexan wraps that would wrap around the Alpha recycling receptacles with the ability to place and change the message on the wraps as programs change or specific targets change. Unfortunately, the Alpha recycling receptacles were not ordered with slats, because the container manufacturer did not make it clear that slats were required if a Lexan wrap was going to be placed on their containers. The receptacles could not be retro fitted with screws to drill the Lexan wrap on because the screws tear the plastic bag liners when the receptacles are being serviced. Likely, involving the City of Windsor collection staff in initial selection and vision for the receptacles would have identified this issue. Furthermore, staff identified that similar wraps used in the past have been set on fire and changing the message inside the Lexan wraps was in their opinion to labour intensive.

Clear custom plastic bag liners were chosen over the option of reusable liners for the Alpha Maxi. The plastic disposable liners were already being utilized for the City of Windsor Alpha waste receptacles. The clear liners were less expensive and also made it easy to keep the material separate at the MRF and easily identifiable as public spaces recycling and gave staff the ability to clearly identify the contents of the bag. The only potential issue with the liners could be if anything were drilled into the Alpha Maxi leaving contents of the screw on the inside of the container it will catch on the liner and tear it when servicing.

It was discovered that the Alpha Maxi30 containers are coated with silicone so they can easily pop out of the mold when manufactured. As a result the first versions of the labels with graphics and the Mobius loop sticker fell off and would not adhere to the Alpha Maxi30. Therefore, a second version needed to be purchased. After discussing the issue with the manufacturer it was revealed that the area the labels/stickers were going to be placed needed to be wiped down with acetone first to remove the silicone before anything would adhere.

The Alpha Maxi30 was ordered with a metal handle on the area where you would push to open the receptacle to deposit recyclables. Normally on these containers it can sometimes be difficult to push open because they are made to be animal proof making it especially difficult for children and seniors. The handle is highly recommended because it makes it much easier to open and you don't have to touch the area that would normally get dirty to deposit your recycling.

4.2 Next Steps

The City of Windsor Environmental Coordinator will request for money in the budget to City of Windsor Council to continue to twin the remaining alpha waste receptacles with alpha recycling receptacles in all parks and to make it best practice if any new alpha waste receptacles are installed in parks that at the same time it will be twined with an alpha recycling receptacle. This will cut cost and save time instead of having to go back at another time to install the second receptacle and have another locate for wires etc. conducted.

Follow-up surveys will be conducted to the public to determine their level of acceptance of the program. The EWSWA partnering with the City of Windsor will work together to provide an official launch of the program the 2014 summer. The City did not previously promote and advertise the installation of the new program in the three parks. The program will be advertised in municipal calendars, EWSWA envirotips, City of Windsor and EWSWA websites and Facebook pages etc. Follow-up waste audits a few months after the official launch, and then on an annual basis will be conducted.

The City of Windsor staff are continuing to evaluate and develop the measuring and monitoring strategy used for the public space recycling program. This strategy will include an evaluation of bin fullness and cleanliness surrounding the waste collection area for the upcoming 2014 season.