

**Regional Municipality of Peel
Peel Integrated Waste Management Facility**

**Continuous Improvement Fund
Project Number 439**

**Material Recovery Facility Upgrades
Final Report**

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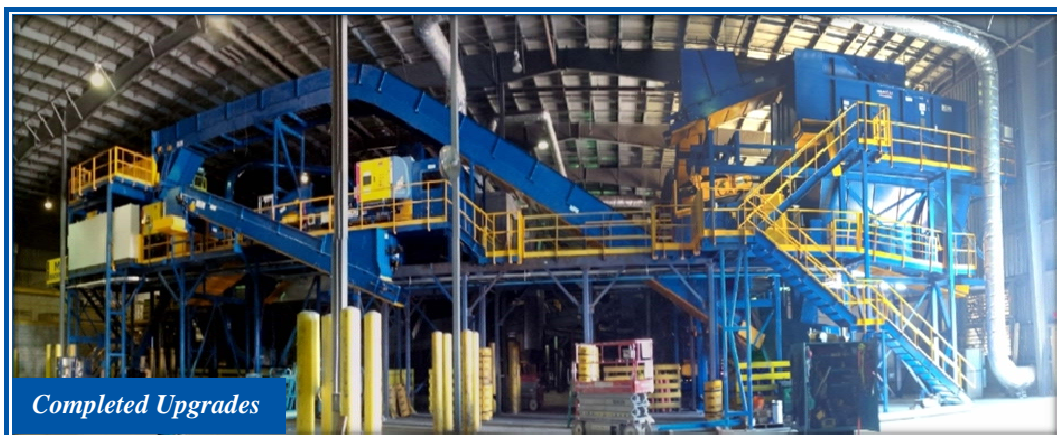
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1. EXECUTIVE SUMMARY

The Region of Peel is comprised of the Cities of Mississauga, Brampton and the Town of Caledon. With a population of over 1.4 million, the Region provides waste collection services to over 333,250 single-family households, 96,000 multi-residential units and 2,500 commercial and institutional properties.

In 2006, the Region began operating the Peel Integrated Waste Management Facility which consists of a material recovery facility for processing single-stream recycling, an organics composting facility and a waste transfer station.

With an aging material recovery facility operating near capacity, combined with the need to add new materials to its blue box program and the planned implementation of a bi-weekly cart-based collection system in 2016, the Region completed a material recovery facility capital upgrade in 2014, at a cost of \$3.1 million. The upgrade resulted in annual savings of \$612,600; annual avoided costs of \$2.15 million and extended the facility's operating life to 2020



2. BACKGROUND

The Region of Peel is located in southern Ontario, Canada, and is part of the Toronto metropolitan area. It is comprised of the Cities of Mississauga, Brampton and the Town of Caledon. With a population of over 1.4 million, the Region provides waste collection services to over 333,250 single-family households, 96,000 multi-residential units and 2,500 commercial and institutional properties.

In 2006, the Region began operating the Peel Integrated Waste Management Facility which consists of an organics composting facility, a waste transfer station and one of the largest Material Recovery Facilities (MRF) in Canada. The Region contracts out the operations and maintenance of the MRF to Canada Fibers Ltd. While Canada Fibers oversees the day-to-day operations and maintenance, the Region is responsible for improvements and upgrades to the MRF.

The Region manages over 100,000 metric tonnes of recyclable material each year and annual revenues associated with the sale of recovered recyclable material equate to over \$9.0 million. The Region takes an aggressive approach to resource recovery and is always looking for opportunities to enhance its recycling program. In 2013, the decision was made to add Mixed Rigid Plastic (MRP) to the program. Based on waste composition audits, it was estimated that there were approximately 3,600 metric tonnes of MRP in the Region's waste stream, of which 1,600 to 2,100 metric tonnes per year would be recovered. This represented an additional 4.0 to 5.25 kilograms per household per year and a 0.3 to 0.4 percent increase to the annual waste diversion rate.

As part of the process of adding MRP to the program, the Region retained an environmental consultant to conduct a study on current and future packaging and recycling trends within the Region. According to the study, the household generation rate of thermoform blister packaging and non-bottle plastic packaging would increase over the next decade, and MRP were increasingly becoming the material of choice for a variety of packaging applications.

The Region also canvassed several of the surrounding cities and municipalities. As a result of increasing volumes of MRP in the waste stream and the establishment of stable recycling end markets, the Cities of Toronto, Hamilton, Kingston and Ottawa, as well as the Regional Municipalities of York, Halton, Niagara, Waterloo and Durham have all added MRP to their blue box programs. These cities and municipalities were only able to accommodate the addition of MRP to their programs after completing upgrades to an existing MRF or completing construction of a new MRF with the capability to recover MRP.

The Region's waste collection and processing service providers were also consulted on the operational impacts of adding MRP to the recycling program. The waste collection contractors all indicated that the addition of MRP would not affect waste collection operations. Conversely, the Region's MRF operator indicated that the addition of MRP to the blue box program would have significant impacts at the MRF. Without the implementation of capital improvements the MRF would be required to operate at a reduced speed to accommodate the addition of MRP. The reduction in the material throughput would result in the MRF reaching its maximum processing capacity by 2016.

Maintaining the MRF capacity was critical as the Region would also be changing to a bi-weekly cart-based collection system in 2016. With the implementation of this new collection system, it is projected that the amount of recyclable material received at the MRF would further increase by 10,000 metric tonnes. This represents an additional 1.8 to 2 percent increase to the Region's annual waste diversion rate. With the addition of MRP to the Blue Box Recycling Program and anticipated changes to its waste collection system, the Region recognized the need to update its blue box processing technology in order to improve material recovery, increase throughput and extend the overall operating life of the MRF. The MRF capital upgrades contemplated replacing several high maintenance inefficient equipment components with state of the art size reduction and material separation technologies.

2.1. Proposed MRF Upgrades

After development of a business case supporting the addition of MRP to Blue Box Recycling Program and the MRF equipment upgrades, the project received formal approval from Regional Council on June 27, 2013. As per the MRF Operations and Maintenance Agreement, the Region would manage the MRF upgrade project through the MRF operator who would coordinate the equipment delivery and installation. Proposals were solicited from preselected MRF equipment vendors based on the following scope of work outline:

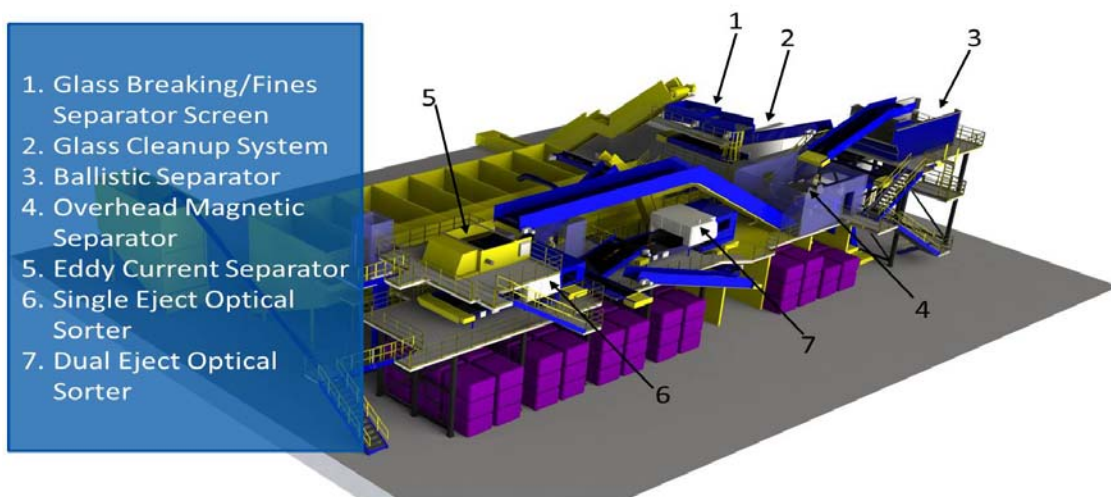
- Addition of a second optical sorter for recovery of MRP;
- Replacement of a magnetic trommel with a steel disc glass breaking screen and overhead magnet for improved separation of glass, metals and plastic;
- Addition of a secondary glass clean up system for improved glass quality;
- Addition of a finishing/polishing screen for final separation of fibre and containers; and,
- Modifications to chutes, conveyors and air blowers for efficient movement of materials.

Proposals and preliminary designs were received from two major MRF equipment vendors. As part of the design process, both vendors were consulted on optimizing material flows, space utilization, equipment specifications and overall design. Both vendors submitted several proposal options, equipment layouts and budgets. After reviewing the final proposals, Machinex Industries Inc. of Plessisville, Quebec was selected as the preferred vendor. The Machinex proposal met all requirements of the MRF upgrade and was within the approved budget for the project. The MRF upgrade project was scheduled to be completed by March 31, 2014 with a projected budget of \$3,107,500.

The Region received funding approval for CIF Project Number 439, Peel Region MRF Upgrades in December 2013, which would provide funding for the project up to \$1,511,528. The projected project payback was expected to be one to two years. Please refer to Appendix III for the CIF Project Grant for CIF Project Number 439.

2.2. Finalized MRF Upgrade Plan

The finalized design layout incorporates a seamless connection to the existing MRF equipment and effectively utilizes the existing building space by locating the new equipment over two levels. The material flow through the MRF upgrades is as follows:



1. Mixed containers coming from the existing CP Group V-Screen are conveyed to the new glass breaking disc/fines separator screen that breaks all glass bottles and jars. All material under the size of two and a half (2.5) inches is then directed to the existing glass sorting station and new glass cleanup system. The remaining containers are conveyed towards the new ballistic separator.
2. The new glass cleanup system incorporates a KRS ORSE screen. This screen vibrates the broken glass while air is blown over the

material. The vibrations cause the lighter material to rise above the glass and the air stream blows the material away.

3. The ballistic separator uses a series of stepping paddles to separate flat items from three-dimensional (3D) materials. Flat items move up an incline to a transfer conveyor while 3D materials tumble backward onto a new sorting conveyor where manual sorters can remove rejects or any remaining flat items.
4. After the manual sorting station, the container stream passes under a new overhead magnetic separator where ferrous containers are removed and transferred to a new quality control station. The ferrous containers are then conveyed to the existing storage bunker.
5. The container material then continues to a new eddy current separator for aluminum recovery. The recovered aluminum passes through a new quality control station where foil and residue is removed from the aluminum cans. The aluminum cans are then transferred to the existing storage bunker via a blower and pipe run.
6. Container material, now free of metals continues toward a new single eject optical sorter and its high speed conveyor that distributes material evenly before it passes through the unit. This optical sorter is for the recovery of PET containers. The recovered PET is directed to a new quality control station where residue is removed. The now clean PET is then transferred to an existing storage bunker with the help of a blower and pipe run.
7. The remaining container material is now conveyed to a new dual eject optical sorter. This optical sorter is for the recovery of tetrapak/gable top containers and mixed rigid plastic (#1, #3, #4, #5, #6 and #7) containers. Tetrapak/gable top containers are ejected upward and forwarded to an existing quality control conveyor. Mixed rigid plastics are ejected downward onto a new transfer conveyor. The recovered tetrapak/gable top and MRP containers then pass through quality control stations where residue and undesired containers are removed.

Following the quality control stations the tetrapak/table top and MRP containers are conveyed to existing storage bunkers. Non-ejected containers are forwarded onto an existing conveyor that brings the material into the existing container sorting room.

2.3. New MRF Equipment

The original MRF was designed and the processing equipment supplied by the CP Group. The Region now partnered with Machinex Industries Inc. to install the MRF's new equipment components. A total of 30 new equipment pieces were installed in this MRF upgrade. Besides new conveyors and air blowers, the following equipment pieces were installed:

Machinex Glass Breaking Disc/Fines Screen: The new glass breaking disc/fines screen was installed to replace the CP Group magnetic trommel that was originally installed to separate glass and recover ferrous containers.

The new screen is five (5) feet wide and 15 feet long and uses two (2) decks of six (6) inch diameter Hardox steel disks that are closely spaced together to maximize glass breakage and separate material smaller than two and a half (2.5) inches from the larger container materials. Utilizing one (1)



5HP high efficiency variable speed motor per deck, heavy-duty bearings, an automatic oiler and an automatic tensioner, the screen is capable of removing more than 95% of all glass at a throughput of 10 metric tonnes per hour; is low maintenance and has greatly reduced the amount of MRF downtime caused by numerous material jams associated with the original magnetic trommel.

Glass Cleanup System: With the installation of the new glass breaking disc/fines screen, the increased amount of non-glass material in the recovered glass required the installation of a new glass cleanup system. The

new system incorporates a KRS ORSE screen that is designed to separate materials with different specific weights. Using a vibration feeder, the flow of broken glass is transported against an air stream and the lighter-weight materials (paper, plastic caps, foils, plastics) are blown off the glass. The screen measures 49 inches by 98 inches in size and uses 6-pole unbalanced motors and a variable speed fan blower. The screen can process material at 6.5 metric tonnes per hour.

Machinex MACH Ballistic Separator:

The new ballistic separator was installed to replace an air drum separator and a cyclone that were originally installed in the MRF. This ballistic screen was the first installed in Ontario and a number of local municipalities and MRF operators have shown an interest in its operation. The screen is 19 feet long, 10 feet wide and 10.5 feet tall and utilizes eight (8) paddles to separate up to 9.5 metric tonnes per



Ballistic Separator



Ballistic Paddle Configuration

hour of material based on physical properties. The friction created between the paddles and any flat or flexible materials (newspaper, film plastic) combined with the motion of the paddles push the flat or flexible materials up the steep incline, while formed and rigid material (round, square containers) bounce down the deck. Hydraulic cylinders and a variable speed high efficiency motor on the screen allow for angle adjustments to compensate for changes in material composition and quality. When compared to the old MRF equipment or new finishing screens that utilize rubber disks to separate material, the ballistic screen has recovered over 95% of all paper and film plastic from the containers, has increased the overall quality of the recovered material and has reduced operation and maintenance costs.

Steinert Overhead Magnet Separator:

The new overhead magnet separator was installed to replace the MRF's original magnetic trommel ferrous recovery system. The separator is installed inline and can be suspended up to 19 inches above the container stream without losing any magnetic



efficiency. The overhead magnet separator recovers greater than 98% of the ferrous containers with less than one (1) percent contamination at 7.5 metric tonnes per hour.

Steinert Eddy Current Separator: As part of the upgrade, a larger and more efficient eddy current separator was installed. An eddy current separator operates by creating a rapidly rotating magnetic field. These magnetic fields create eddy currents in an electrical conductor such as aluminum. When an aluminum container enters the magnetic field, an eddy current is created that causes the container to be repelled away from the magnetic field. The aluminum container is repelled over a baffle that separates it from the other container material. The separator feed conveyor is 78 inches wide and can operate at speeds of up to eight (8) feet per second. The eddy current separator recovers over 98% of the non-ferrous material at greater than 96% purity with a throughput of six (6) metric tonnes per hour.

Pellenc Mistral 2G Optical Sorters: Pellenc Selective Technologies supplied the two new optical sorters installed during the MRF upgrade. Both optical sorters are Mistral 2G models that use high speed Near Infra-Red Spectrometry (NIR) to measure what an individual container is made from and then eject specific containers using air jets. These units are capable of 300,000 measurements per second, have a resolution of a sixteenth of a square inch, have a superior signal to noise ratio compared to other optical technology, and have synchronization between detection and ejection of one (1) millisecond. The first optical sorter is a single eject unit for the recovery of

PET containers. This optical sorter is 94.5 inches wide and has a throughput of up to seven (7) metric tonnes per hour. It recovers over 94% of the PET containers at greater than 95% purity. The second optical sorter replaces an older MSS Inc. Sapphire optical sorter and is a dual eject unit for the recovery of tetrapak/gable top containers and mixed rigid plastics. This unit is 78 inches wide and has a throughput of up to six (6) metric tonnes per hour. It recovers over 92% of the tetrapak/gable top and MRP containers at greater than 90% purity.



Optical Sorter



PET Container Recovery

2.4. MRF Upgrade Costs

The finalized design layout incorporates a seamless connection to the existing MRF equipment and effectively utilizes the existing building space by locating the new equipment over two levels. See Table 1 – MRF Upgrade Cost Summary for a breakdown of the equipment and installation costs.

Table 1 – MRF Upgrade Cost Summary

Description	Item Cost
MRF Equipment	\$ 1,578,036
Steel Package	\$ 313,485
Mechanical Installation	\$ 492,524
Controls	\$ 199,402
Wiring	\$ 206,260
Freight	\$ 29,610
PLC Reprogramming	\$ 75,680
Project Administration	\$ 212,503
Total	\$ 3,107,500

A tender was released for the disposal of the old MRF equipment. This equipment had been in operation since 2006 and was sold as is, where is. There were a total of two (2) bidders on the equipment. The equipment was sold for a total of \$10,600.

During the initial planning of the MRF Upgrades, the equipment supplier indicated that the existing air compressor system would be adequate; however, once the upgrade was completed the air system was found to be operating continuously at its maximum limits. As a result, a new Boge screw compressor system was installed as the lead air supply system and the existing Atlas system reworked to provide a redundant air supply for the MRF. The new compressor system includes:

- Boge Air Cooled Rotary Screw Compressor – 40 hp, 183 cfm @ 125 psig
- Walker Filtration Desiccant Dryer
- Boge In Line Water Separator – 250 cfm @ 100 psig
- Air Receiver Tank – 400 gallon vertical tank
- Various Drains, Valves and Gauges

See Table 2 – Boge Air System Cost Summary for a breakdown of the costs associated with the new compressor system.

Table 2 – Boge Air System Cost Summary

Description	Item Cost
Compressor System	\$ 25,628
Enclosure Structure	\$ 15,165
Mechanical Installation	\$ 8,880
Electrical	\$ 4,500
Total	\$ 54,173

3. PROJECT MONITORING

This project was monitored through the results of numerous material composition audits measuring the performance of the MRF upgrades. A comparison of the pre-upgrade and post-upgrade material compositions, material recovery rates,

material quality, costs and revenues was utilized to measure the success of the project.

4. FINDINGS

When developing the business case for this project, several factors were included in the analysis. These factors included processing costs, residue management costs, maintenance costs, MRP revenues, MRF downtime, MRF throughput, and equipment amortization. The business case proved that the project was viable and would result in significant savings to the Region. Since completion of the MRF upgrades, the original business case for the project was found to be valid. Material audits and testing show that the MRF new equipment meets, and often exceeds the performance requirements and contractual recovery requirements.

4.1. MRF Operations

4.1.1. Material Throughput

Prior to the upgrades the MRF processed material at an average of 31 metric tonnes per hour. Since completion of the upgrades, the MRF now averages in excess of 35 metric tonnes per hour. This is over a 12% increase processing capacity, which will enable the Region to manage its processing requirements until 2020, at a minimum.

The impact of MRF downtime is significant. Downtime directly translates into a decrease in material throughput and increased operational and maintenance costs. In an attempt to limit MRF downtime and identify potential issues before they occur, the Region ensures that all recommended equipment preventative maintenance is completed on a timely basis. Even with an aggressive preventative maintenance program, the downtime associated with the original magnetic trommel system was a concern. Frequent material jams and broken drive chains resulted in an average of 68.3 hours of downtime per year. This equated to

approximately 18% of all facility downtime. Since the magnetic trommel was replaced with the new glass breaking disc/fines screen, downtime associated with this area of the MRF process has fallen by 73%. The replacement of the old equipment with the new MRF processing equipment has resulted in an overall decrease of five (5) percent in MRF downtime.

4.1.2. Material Recovery

Since the completion of the MRF upgrades the recovery impact to specific individual materials has been observed and measured. See Table 3 – Recovery Rate Impact Summary for the impact on MRF recovery rates since completion of the MRF upgrades. The decreases in the Mixed Glass and Steel recovery are the direct result of less contaminated material now being recovered.

Table 3 – Recovery Rate Impact Summary

Material	Recovery Improvement
3.7 Mixed Plastics	N/A
Aluminum	1.09%
Mixed Glass	-3.31%
PET	7.01%
Polycoat Containers	12.61%
Steel	-1.70%

4.1.3. Material Quality

During the equipment commissioning the new MRF equipment was tested to verify that it was capable of meeting the minimum performance requirements, including specific material recovery and quality specifications. See Table 4 – Equipment Commissioning Results for a summary of the performance testing for the new MRF equipment:

Table 4 – Equipment Commissioning Results

Glass Breaking Disc/Fines Screen	<ul style="list-style-type: none">•Performance Target: >95% of Glass Recovered•Actual Performance: 98.3% of Glass Recovered
Glass Cleanup System	<ul style="list-style-type: none">•Performance Target: <10% Non-Glass Material in Recovered Glass•Actual Performance: 8.8% Non-Glass Material in Recovered Glass
Ballistic Separator	<ul style="list-style-type: none">•Performance Target: >95% of Fibre and Film Plastic Recovered•Actual Performance: 98.2% of Fibre and Film Plastic Recovered
Overhead Magnet Separator	<ul style="list-style-type: none">•Performance Target: >98% of Ferrous Recovered with 99% Purity•Actual Performance: 99.2% of Ferrous Recovered with 99.8% Purity
Eddy Current Separator	<ul style="list-style-type: none">•Performance Target: > 98% of Non-Ferrous Recovered with 96% Purity•Actual Performance: 98.1% of Non-Ferrous Recovered at 96.4% Purity
Single Eject Optical Sorter	<ul style="list-style-type: none">•Performance Target: >94% of PET Recovered with 95% Purity•Actual Performance: 96.5% of PET Recovered with 96% Purity
Dual Eject Optical Sorter	<ul style="list-style-type: none">•Target: >92% of Tetrapak/Gable top and Mixed Plastics Recovered with 90% Purity•Actual: 92.9% of Tetrapak/Gable top, 85.8% of MRP Recovered with 97.6%, 90.2% Purity

Since the completion of the MRF upgrades and over the first year of operations, the recovered material quality has improved significantly. When the quality audit results are compared to the market specifications as outlined in the Region's MRF Operations and Maintenance Agreement, the recovered material quality often exceeds or is comparable to quality requirements. See Table 5 – Material Quality Summary for the material quality audit results since completion of the MRF upgrades. It should be noted that the Mixed Plastic quality specification only allows limited amounts of PET and HDPE bottles within the recovered Mixed Plastic material. When the recovered Mixed Plastic material is audited for quality, it only fails the audit due to the amount of PET and HDPE bottles being over the specification limit.

Table 4 - Material Quality Summary

	Aluminum	Steel	PET	Polycoat	Mixed Plastic	Glass
Apr-14	Pass	Fail	Fail	Pass	Fail	Fail
May-14	Pass	Pass	Pass	Pass	Fail	Fail
Jun-14	Fail	Pass	Pass	Pass	Fail	Pass
Jul-14	Pass	Pass	Pass	Pass	Fail	Pass
Aug-14	Fail	Pass	Pass	Pass	Fail	Pass
Sep-14	Fail	Pass	Fail	Pass	Fail	Fail
Oct-14	Pass	Pass	Fail	Pass	Fail	Pass
Nov-14	Pass	Pass	Fail	Pass	Fail	Pass
Dec-14	Pass	Pass	Pass	Pass	Fail	Pass
Jan-15	Pass	Pass	Fail	Pass	Fail	Pass
Feb-15	Pass	Pass	Pass	Fail	Fail	Pass
Mar-15	Pass	Pass	Fail	Pass	Fail	Pass

4.2. Financial Impacts

A comparison of the pre-upgrade and post-upgrade material compositions, material recovery rates, material quality, costs and revenues was utilized to measure the success of the project. The business case anticipated a potential annual savings of \$233,000; annual avoided costs of \$2,150,000 and a payback of only 1.3 years.

4.2.1. Operating Costs

The majority of the business cases identified savings that were related to the avoided costs from eliminating the additional staffing and processing shifts that would have been required if MRP were added to the recycling program without the MRF upgrades.

With the completion of the MRF upgrades, the Region has saved approximately \$110,000 in Residue management costs with Mixed Plastics no longer in the Residue stream, \$25,000 in equipment maintenance costs, while the capital amortization costs added \$15,000 to the annual operating costs. The Region also avoided potential increased

costs of approximately \$2,150,000 with the completion of the MRF upgrades by not having to add additional sorting staff or run additional processing shifts.

4.2.2.Revenues

Over the 12 month period since completion of the MRF upgrades, over 1,265 metric tonnes of MRP have been recovered. This equates to approximately \$88,500 in marketing revenues for the sale of this material. One item not factored into the original business case was the additional revenue resulting from the increased efficiency of the new MRF equipment. Over the first year of operation since the completion of the MRF upgrades, over 500 metric tonnes of additional recyclable material was recovered. This results in additional revenues of over \$390,000. See Table 5 – Material Recovery Summary for the individual material tonnage impacts and the revenue impacts resulting from the MRF upgrades.

Table 5 – Material Recovery Summary

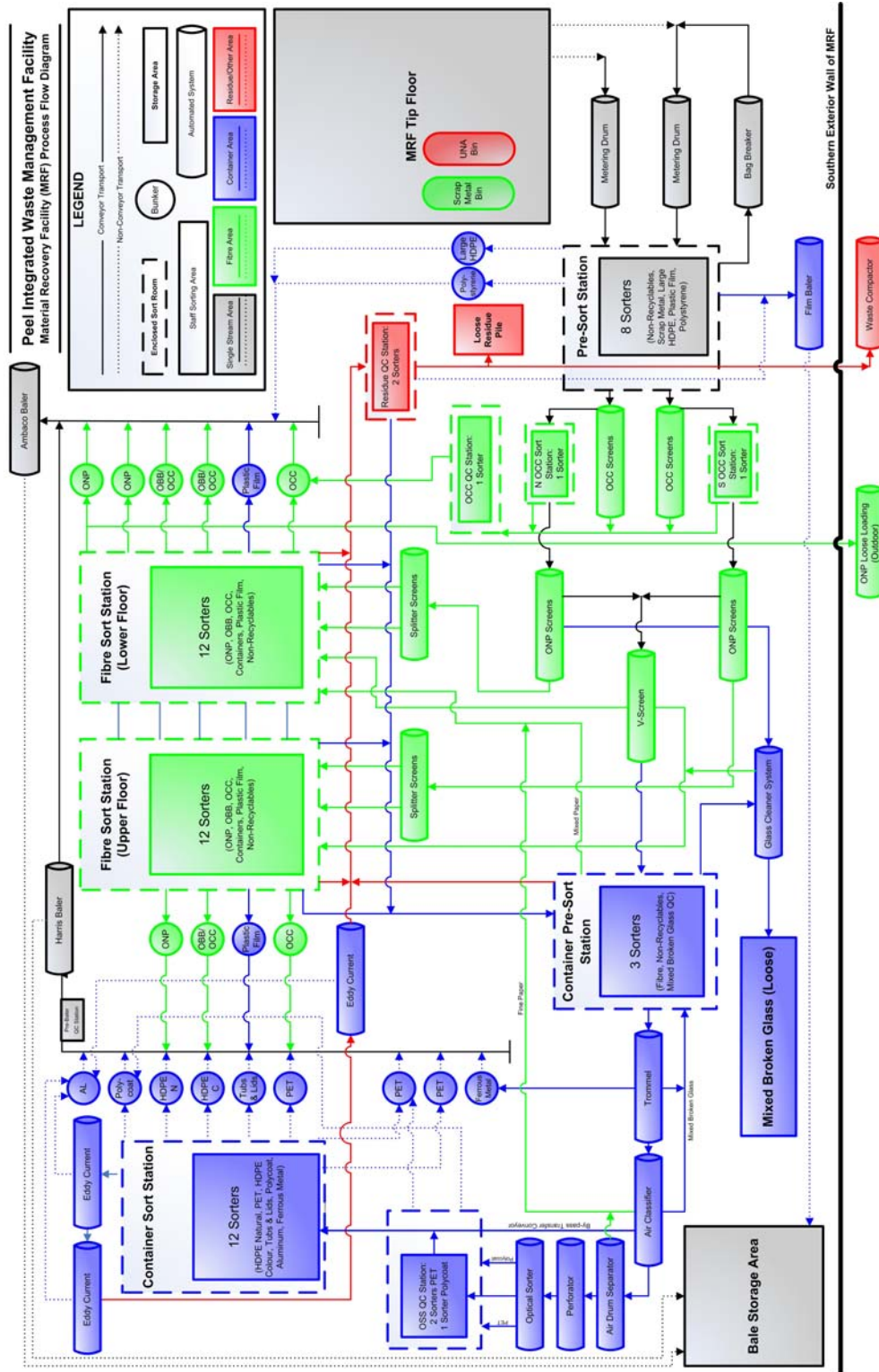
Material	Tonnage Impact	\$ Impact
3.7 Mixed Plastics	1,265	\$ 88,500
Aluminum	15	\$ 25,300
Mixed Glass	(463)	\$ 15,500
PET	978	\$ 389,000
Polycoat Containers	117	\$ 14,300
Steel	(135)	\$ (55,000)
Total	1,777	\$ 477,600

5. EVALUATION AND CONCLUSION

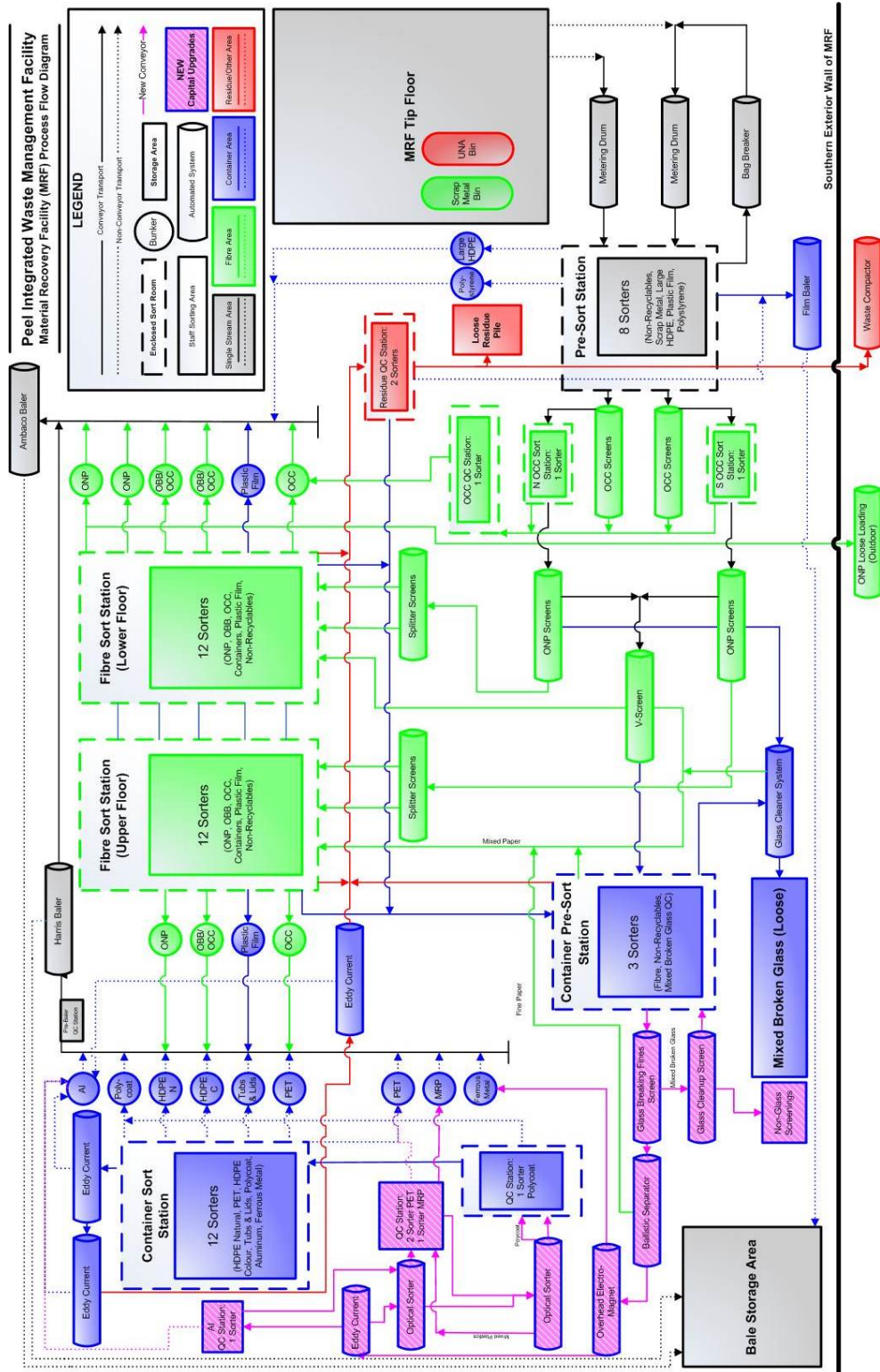
A comparison of the pre-upgrade and post-upgrade material compositions, material recovery rates, material quality, costs and revenues was utilized to measure the success of the project. The business case anticipated a potential 2,000 tonnes of Mixed Plastics being recovered resulting in an annual savings of \$233,000; annual avoided costs of \$2,150,000 and a payback of only 1.3 years.

The actual tonnage of Mixed Plastics recovered was 1,265 tonnes; however, 500 tonnes of additional recyclable materials were also recovered. This resulted in actual annual savings over the first year since completion of the MRF upgrades of \$612,600 and adjusted the project payback period to 1.1 years.

APPENDIX I – OLD PIWMF MRF Process Flow



APPENDIX II – NEW PIWMF MRF Process Flow



APPENDIX III - CIF Project Grant, CIF Project Number 439

CIF Project Grant Award

Date: December 10, 2013

Recipient:

Region of Peel
Public Works Department/Waste Management
10 Peel Centre Dr., Ste. A, 4th Fl.
Brampton, ON L6T 4B9

Contact:

Travis Richards, Technical Analyst
Kevin Mehlenbacher, Specialist Waste Collection & Processing

CIF Project No.: 439

Project Title: Peel Region MRF Upgrades

Approved Funding Limits:

Funding percentage of blue box related project cost: **48%**

Maximum funding limit: **\$1,511,528 (includes 1.76% non-recoverable taxes)**

Where the project is completed under budget, the *funding percentage* applies. Where a project's costs exceed the budget, the *maximum funding limit* applies. Funding is contingent upon proof of expenditures and completion of the project terms to the satisfaction of the CIF.

Funding is contingent upon:

- The submission and approval of a monitoring and measurement plan before commissioning.

General:

A **draft** of the Project Grant is herein provided for your review. Once agreed upon by both parties, a final document will be forwarded for your signature.

The **final** Project Grant must be completed and executed *within three months* of release of this approval or the offer of funding will be withdrawn.

A fully executed final Project Grant is required prior to the distribution of any funding for the project.

The CIF reserves the right to terminate this project for lack of adherence to the specified terms and conditions of this Grant including adherence to the timelines set out in the Application or in this Grant (subject to any delay which may be acceptable to the CIF). In this instance, the CIF may require Recipients to return all or part of any funding received.

Recipient:

Please refer to the CIF Funding web page: **<http://cif.wdo.ca/funding>** - *Project Implementation through to Completion*, for instructions on implementing, monitoring, reporting and invoicing for your project.



PROJECT GRANT -

CIF Project Number 439 - Peel Region MRF Upgrades

DATE: December 10, 2013

TO: Region of Peel (the “Recipient”)

WHEREAS:

- A. Waste Diversion Ontario, a corporation incorporated by the *Waste Diversion Act, 2002* (Ontario) (“WDO”), maintains a fund known as the Continuous Improvement Fund, that funds improvements in recycling practices by Ontario municipalities, comprised of a portion of the fees paid to municipalities by stewards under the Blue Box Program Plan.
- B. The Continuous Improvement Fund (“CIF”) is a committee of Waste Diversion Ontario, and has been established through an agreement among the Associations of Municipalities of Ontario, the City of Toronto, Stewardship Ontario and WDO under the Blue Box Program Plan.
- C. Stewardship Ontario, a corporation continued under the *Waste Diversion Act, 2002* (Ontario), acts as custodian of the CIF monies and is to provide funding to the Recipient.
- D. The Recipient made an application to the CIF for a grant to assist in the cost of their project entitled: Peel Region MRF Upgrades (the “Project”). A copy of this application is attached hereto as Schedule “A” (the “Application”).
- E. The CIF has agreed to provide the grant to the Recipient to assist in financing the cost of the Project as set out below:

1. **Grant**

Based on the Application, WDO and Stewardship Ontario hereby agree to provide a grant from the CIF to the Recipient in the aggregate amount of 48% of the blue box related Project costs up to a maximum of \$1,511,528, inclusive of any applicable taxes, government levies or governmental imposts of any kind (the “Grant”), to be applied by the Recipient toward the cost of the Project.

The Project shall be carried out by the Recipient in consultation with the CIF Managing Director. The Recipient shall devote a sufficient amount of staff time and other resources to carry out the Project in accordance with the timelines, budget and other contingencies

set out in the appendices hereto. The Recipient shall act in accordance with any policy established by the CIF related to the completion of project grants.

2. **Budget**

The Grant is based upon the budget for the development and implementation of the Project set out in Schedule “B” hereto.

3. **Disbursement of Grant**

The Grant will be disbursed by the CIF to the Recipient as the Project progresses, in accordance with the schedule set out in Schedule “C” hereto. The Recipient shall make a written request to the CIF for each disbursement of a portion of the Grant not less than thirty (30) days prior to the proposed disbursement date and will provide such documentation, to substantiate any such request, as the CIF may reasonably require. Disbursement requests are to be addressed to the CIF Managing Director at the address noted below. Satisfactory completion of the Project report and final disbursement shall be at the sole discretion of the CIF acting reasonably.

4. **No Transfer or Encumbrance of the Project**

The Recipient shall not sell, assign or transfer the Project to a third party nor mortgage, charge or otherwise encumber the Project without the prior written approval of the CIF or repayment of the Grant.

5. **Repayment of Grant**

In the event of any material breach by the Recipient of the terms of the Application or this Agreement which is not remedied within thirty (30) days following written notice by the CIF to the Recipient or any failure by the Recipient to carry out the Project in accordance with the timetable set out in the Application or in this Agreement (subject to any delay which may be acceptable to Waste Diversion Ontario acting reasonably), the Recipient shall repay all amounts received on account of the Grant and WDO and Stewardship Ontario shall be relieved of any obligation to disburse any remaining unutilised portions of the Grant.

6. **Notices**

All notices, requests, demands or other communications (collectively “Notices”) by the terms hereof required or permitted to be given by one party to any other party, or to any other person shall be given in writing by personal delivery or registered mail (postage prepaid), by facsimile transmission, or by email to such other party as follows:

Waste Diversion Ontario
4711 Yonge Street, Suite 1102
Toronto, ON M2N 6K8
Attention: Michael Scott, Chief Executive Officer

Tel: 416-226-5113 Fax: 416-226-1368 Email: michaelscott@wdo.ca

With a copy to:

Continuous Improvement Fund
92 Caplan Avenue, Suite 511
Barrie, ON L4N 0Z7
Attention: Mike Birett, Managing Director
Tel: 905-936-5661 Email: mbirett@wdo.ca

To Stewardship Ontario at:

Stewardship Ontario
1 St. Clair Avenue West, 7th Floor
Toronto, On M4V 1K6
Attention: Lyle Clarke, Executive Vice President
Tel: 416-323-0101 ext. 154 Fax: 416-323-3185 Email: lclarke@stewardshipontario.ca

To the Recipient at:

Region of Peel
Public Works Department/Waste Management
10 Peel Centre Dr., Ste. A, 4th Fl.
Brampton, ON L6T 4B9
Attention: Travis Richards, Technical Analyst
Tel: 905-791-7800 x 4760 Fax: 905-791-2398 Email: travis.richards@peelregion.ca

Or at such other address as may be given by any such person to the other Parties hereto in writing from time to time.

7. General

- (a) The Parties recognize the importance of making information about the Project available for public use. The Recipient shall cooperate fully in providing information which is not of a commercially confidential nature on the Project, as requested by the CIF Managing Director, for publication by the CIF on websites, at conferences and in newsletters.
- (b) The Recipient shall, at their own cost, present the results and learnings from their project at a public event organized by the CIF within 12 months of submission of their project report if so requested by the CIF Managing Director. The CIF may elect to provide financial assistance to remote municipalities toward the cost of such presentations.
- (c) The Recipient shall recognize and state in an appropriate manner, as approved by the CIF Managing Director, the support offered by CIF, WDO and Stewardship

Ontario under this Grant. Unless the Recipient has received written notice to the contrary from the CIF Managing Director, the following shall be incorporated into the reports and other documents produced by the Recipient and any sub-contractor in connection with the Project:

This Project has been delivered with the assistance of the 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 CIF, Waste Diversion Ontario and Stewardship Ontario accept no responsibility for these views.

- (d) It is understood and agreed that neither WDO nor Stewardship Ontario has any ownership interest in the Project and neither WDO nor Stewardship Ontario has any responsibility for or liability with respect to the operations of the Project.
- (e) There is no relationship of partnership, agency, joint venture or independent contractor between or among WDO, Stewardship Ontario and/or the Recipient and none of them has any right to bind any of the others to any contractual obligation.

DATED this ____ day of _____, 2013

STEWARDSHIP ONTARIO

By: _____
Name: Lyle Clarke
Title: Executive Vice President

*** *** ***

DATED this ____ day of _____, 2013

WASTE DIVERSION ONTARIO

By: _____
Name: Michael Scott
Title: Chief Executive Officer

ACKNOWLEDGEMENT AND AGREEMENT

The undersigned hereby acknowledges and accepts the Grant on the terms set out above. The undersigned further agrees to indemnify and hold WDO and Stewardship Ontario harmless in respect of any losses, costs, claims, damages or expenses incurred by either of them in respect of the funding or operation of the Project.

DATED this ____ day of _____, 2013

Regional Municipality of Peel

By: _____
Name: _____
Title: _____

By: _____
Name: _____
Title: _____

SCHEDULE "A"
APPLICATION FOR GRANT

FORM 1: Applicant General Information

Municipality or Program Name: Region of Peel

Project Contact (name and title): Travis Richards, Technical Analyst
Kevin Mehlenbacher, Specialist Waste Collection & Processing

Mailing Address: Public Works Department/Waste Management
10 Peel Centre Drive, Suite A, 4th Floor
Brampton, Ontario
L6T 4B9

Email Address: travis.richards@peelregion.ca

Phone Number: 905-791-7800 ext. 4760

Fax Number: 905-791-2398

URL (if applicable): www.peelregion.ca/waste

Check which project(s) you are applying for:

<input type="checkbox"/>	FORM 2	Projects Related to MIPC Study
<input checked="" type="checkbox"/>	FORM 3	Projects Achieving Cost Savings
<input type="checkbox"/>	FORM 4	Blue Box Harmonization Projects
<input type="checkbox"/>	FORM 5	Projects Increasing Curbside Collection Capacity
<input type="checkbox"/>	FORM 6	Promotion and Education Projects
<input type="checkbox"/>	FORM 7	Ideas and Requests for the Centre of Excellence Initiatives

Work through the Form(s) to fill in as many details as you can. **Contact a CIF staff member, as needed to complete remaining portions.** Be sure to review the Form(s) and that you have filled in every field not marked as "Optional" and that all information is complete and correct. Please check which (if any) supporting documentation is attached to this submission that will help describe or support your project.

Please note that projects are expected to be completed within the timelines stated in your application form(s). CIF reserves the right to terminate projects and cease funding for projects not completed on time.


Supporting documentation attached:

- | | |
|---|--|
| <input type="checkbox"/> Collection records | <input checked="" type="checkbox"/> Staff reports (to Council, etc.) |
| <input type="checkbox"/> Processing records | <input type="checkbox"/> Council resolutions |
| <input type="checkbox"/> Contracts or agreements | <input type="checkbox"/> Other – please specify _____ |
| <input checked="" type="checkbox"/> Waste Management planning documents | Other – please specify _____ |

Dated at May , 6 , 2013
(Month) (Day) (Year)

I/We have the authority to bind the
Corporation

Travis Richards
(Project Contact)


(Signature of Authorized Signing Officer)


(Position of Authorized Signing Officer)

FORM 3: Projects Achieving Cost Savings

Work through the Form to fill in as many details as you can. Contact a CIF staff member, as needed to complete remaining portions.

Section 1 – Form 3 Details

1. Is this project:

- ☐ A new submission in response to the 2013 REOI?
- ☒ An updated 2011 REOI submission?
- ☐ A 2011 REOI submission with no updates?

2. Project Description: What are the key features of the project? (Tip: Add your initial thoughts, then complete the remainder of the Form, and come back to finish this response.)

3. Which element(s) of your recycling program does this project address?

- | | |
|---|--|
| <input type="checkbox"/> Enhanced Communication | <input checked="" type="checkbox"/> Technology/Capital Efforts |
| <input type="checkbox"/> Best Practices | <input checked="" type="checkbox"/> Hard-to-Market/New Materials |
| <input type="checkbox"/> Innovation | <input type="checkbox"/> Other (please specify):
_____ |

Section 2 – Blue Box Program Costs & Cost-Effectiveness

When this project is fully implemented (i.e. completely operational), how will it affect your blue box program costs and costs per tonne?

1. How will this project save your municipality money on an annual or amortized basis? Please attach a copy of the draft budget showing both capital and operating impacts over the planning period.

Maintaining the Region's MRF capacity and with the addition of MRP to the Blue Box it is estimated that with the introduction of bi-weekly garbage collection, blue box recyclable material will increase by 10,000 tonnes per year. The completion of the proposed MRF capital improvements will not only maintain the MRF's current material throughput, material recovery and material quality, but also extend the overall life of the MRF. Based on waste composition audit data, Peel staff estimates that this is approximately 3,600 tonnes of MRP currently in Peel's waste, of which, 1,600 to 2,100 tonnes per year would be captured if MRP was added to the Blue Box program. See attached May 1, 2013 Council Report.

2. How will you monitor and measure project effects on your program's cost-effectiveness?

Monitored through contractual MRF throughput, recovery targets and residue audits indicates the MRF operator's effectiveness to recover blue box materials. MRP will have an 80% recovery target.

Additional comments:

This project would reduce the tonnage of MRP discarded in the residential waste stream and increase the capture rate of MRP monitored through regularly scheduled residential waste audits.

Section 3 – Blue Box Diversion

What effect will this project have on your program's overall blue box diversion (i.e. tonnes of blue box materials sent to market)?

1. Describe any potential implications that this project will have on overall blue box diversion for your program and neighbouring programs (if applicable).

Based on waste composition audit data, Peel staff estimates that this is approximately 3,600 tonnes of MRP currently in Peel's waste, of which, 1,600 to 2,100 tonnes per year would be captured if MRP was added to the Blue Box program. This represents an additional 4.0 to 5.25 kilograms per household per year and a 0.3 to 0.4 % increase to Peel's annual waste diversion rate. Neighbouring programs have either added or are in the process of adding MRP to their blue box programs thus promoting Blue Box harmonization and increased market volumes of this specific recyclable material.

Section 4 – Program Improvements and Regionalization Benefits

What other effects will this project have on your program or on other communities? Use this section to describe whether you plan to work with other communities to develop and deliver the project, how the costs/savings might compare with other similar undertakings.

1. Will the proposed project (please select all that apply):

- ☒ Help your program adapt to changes in the material mix (i.e. manage seasonal variations, prepare for future materials)?
- ☒ Process new materials?
- ☒ Be transferable to other communities?
- ☐ None of the above

2. What other effects will this project have?

Increased tonnage of MRP from Ontario municipalities will improve long term viability of markets.

3. Will you work with other municipalities/partners to develop and deliver this project?

- ☒ Yes ☐ No

If no, please explain why not:

If yes, what municipalities will you work with and how will they benefit?

Residents of the City of Toronto, City of Hamilton, Regions of Durham, Halton, York, Niagara and Waterloo will benefit with a coordinated communications campaign to place MRP in the blue box, thereby, increasing capture and recovery rates of this new blue box material.

4. How do you plan to share costs or savings with partner municipalities?

Coordinated target E&E outreach campaign to be shared with municipal partners.

5. What stage are you at in planning your work with other municipalities? Please select your choice below to respond.

- ☐ preliminary discussions ☐ awaiting council approval
☐ draft agreement ☐ agreement in place
☒ other: Received proposal from CFL and going to Council in June, 2013.

Additional comments:

Section 5 – Project Costs and Payback Period

How much will it cost to implement the project and how long is its expected payback period?

1. What is the total cost of completing the proposed project? \$3,107,500
2. What is the total funding request to CIF? 50%
3. What is the project payback period for CIF support (in years)? N/A per discussion with M.B. May 6, 2013

Additional comments:

Proposed capital improvements: TITech Optical Sorter \$600K; O/H Magnet \$200K; Glass breaking fine screen \$300K; Glass Clean-up screen \$175K; Air Screen belts \$150K; various conveyors & air conveyance components \$600K; Installation \$800K; Administrative Costs CFL \$282,500.

Section 6 – Project Management and Implementation

In this section, provide as much information as you can about project management, timing and monitoring.

1. Please identify staff and consultants who will be responsible for this project.

Project Manager

Name: Travis Richards

Title: Technical Analyst

Affiliation: Region of Peel Waste Management Division

Role in project: Client Coordinator

Related experience: Waste Management Planning Division Client Services

2. Additional project team members: please identify key staff/consultants, their roles and related experience (optional).
Kevin Mehlenbacher, Specialist, Waste Collection and Processing (MRF Contracts and Quality)
Mariano Singzon, Supervisor, Waste Collection & Processing (MRF Operations)
Ben Shepherd, P.Eng., Manager, Waste Collection & Processing
Erwin Pascual, P.Eng., Manager, Waste Program Planning
Jake Westerhof, Vice President, Operations, Canada Fibers Ltd. (CFL)
3. Project Timing: Upon project approval, how soon can this project be ready to start-up? Please select your choice below to respond.
- ☐ Budget approved by council & project underway
- ☐ Budget approved by council; project not yet started
- ☒ Awaiting budget and/or council approval
- ☐ Other, please describe: _____

4. How many months will it take to complete the proposed project from start to finish? One: Construction

Additional comments:

CFL has indicated that all proposed MRF capital improvements can be completed by the fall of 2013. During the construction process, it is anticipated that the MRF would be unavailable for processing for nine days. This would cover a full week plus weekends prior and post construction. During this shutdown period, CFL will accommodate the Region's blue box material at their Arrow Road MRF, thereby ensuring the proper processing of this material.

**SCHEDULE “B”
BUDGET**

MRF Upgrade Project Budget		
Item #	Work Package	Budget
1	MRF Equipment	\$ 1,575,785
2	Mechanical Installation	\$ 491,024
3	Wiring and Controls	\$ 495,214
4	Freight	\$ 29,493
5	Steel Structures	\$ 323,485
6	Administration	\$ 192,500
Totals		\$ 3,107,500

**SCHEDULE “C”
DISBURSEMENT OF GRANT**

The Grant will be disbursed as follows upon compliance with the contingencies outlined in your funding award, i.e.:

- The submission and approval of a monitoring and measurement plan before commissioning.

Milestones	Tasks / Description	Anticipated Completion Date	Grant Contribution (includes 1.76% non-recoverable taxes)
1 – Monitoring & Measurement Plan	Submission of a Monitoring & Measurement Plan. Please refer to CIF guidance document.	November 21, 2013	
2 - Purchase and Installation	<p>Purchase of:</p> <ul style="list-style-type: none"> • Two optical sorters • Overhead magnet • Glass breaking fines screen • Glass clean-up system • Air screen belts • Various conveyors <p>Proof of purchase & installation of equipment - Photos demonstrating that the equipment has been delivered to the site and documentation confirming that capital expenditures have been incurred in connection with the purchases.</p>	March 31, 2014	48% of project cost up to \$750,000
3 - Commissioning	Complete performance testing - Provide the CIF with confirmation that the equipment commissioning meets the installation and testing specifications outlined by the vendor.	April 30, 2014	48% of project cost up to \$300,000

Milestones	Tasks / Description	Anticipated Completion Date	Grant Contribution (includes 1.76% non-recoverable taxes)
4 – Monitoring Report	Submission of a monitoring report six months post commissioning	September 30, 2014	\$83,648
5 - Final Report (25% of approved funding)	Submission of final report summarizing Project, including performance, impact, savings and learnings.	March 31, 2015	\$377,880
TOTAL GRANT			\$1,511,528