BUREAU DE NORMALISATION DU QUÉBEC

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VERIFICATION REPORT FOR A REDUCTION OF GREENHOUSE GAS EMISSIONS PROJECT

PLASTREC INC.: JOLIETTE PLANT

BNQ FILE NO: 38568-1

SUBMITTED TO:

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Project Title:
Quantification of Net CO_2 eq. Emission Reductions from Polyethylene Terephtalate (PET) and Polypropylene (PP) Recycling Operations by Plastrec Inc. (2002-2006)

Report drafted by:

Isabelle Landry, Verifier — Date : 2008-05-01

Report reviewed by:

Jaques Blanchet — Date: 2008-05-01

1. OBJECTIVES, SCOPE, CRITERIA AND LEVEL OF ASSURANCE

The initiative to assess the documentation regarding the greenhouse gas (GHG) assertion by Plastrec Inc., along with the verification carried out at the Joliette plant on January 15, 2008, aimed at giving the BNQ a reasonable level of assurance allowing them to issue a verification report concerning GHG reduction, as presented in the enterprise's project report (April 15, 2008).

The verification was carried out according to standard ISO 14064-3:2006, "Specification with guidance for the validation and verification of greenhouse gas assertions". The verification report conclusions are formally presented in Section 6. It is however important to note that the entirety of this verification report should be considered before a decision is made regarding the project.

2. VERIFICATION TEAM

The verification team was made up of the following people:

- Isabelle Landry, Verifier
- Jacques Blanchet, Assessor

3. INFORMATION ON THE PROJECT

The project and baseline scenarios, the types of GHG involved and their sources, and the period covered by the project were clearly stated in the project report. It was not deemed necessary to go over this information in great detail once again. Nevertheless, the brief description below should give the reader a good grasp of the project.

Project

Post-consumer plastic polyethylene terephtalate (PET) and polypropylene (PP) recycling by transforming materials recovered from Municipal Recycling Facilities into flakes. Flakes are sold to manufacturing plants as input to produce new products such as bottles and new fiber products. The project report states: "[...] the reduction is accounted for by a large difference in the process energy involved when choosing between recycled inputs and virgin inputs". This mainly concerns $C0_2$.

Project Location (information from project report)

Plastrec Inc. manages all of its administrative and production activities in one building owned by the company and located at the following address:
1461 Lépine Street,
Joliette (Québec)
Canada J6E 4B7

Project boundaries are:
Longitude: 73°27'04.57" W
Latitude: 46°00'22.00" N

Baseline Scenario

The baseline scenario is described in the project report as: "[...] the material (PET or PP) being manufactured into products from virgin inputs, disposed of and managed as waste for disposal in a landfill site".

GHG Emission Sources (table found in project report)

Emission/Sink/Offset	**Baseline Scenario**	**Project Scenario**
1. Extraction and production of raw materials used in preparing virgin resin materials, including transport to refining plant ***Note: not considered***	This portion of the life cycle is upstream from the starting point of the selected baseline ("waste generation" or "waste diversion") and will not be considered.	Same.
2. Process Energy for production process of PET/PP	GHG Source from production of 100 % virgin PET/PP	GHG Source from production of 100 % recycled PET/PP
3. Transportation-energy-related emission sources	▪ From resin manufacturer to final product manufacturer ▪ From final product manufacturer to retailer ▪ From retailer to consumer ▪ From waste collection to landfill	▪ From waste collection to MURF ▪ From MURF to broker to recycling plant ▪ From recycling plant to final product manufacturer ▪ From final product manufacturer to retailer ▪ From retailer to consumer ▪ From recycling plant to landfill or other waste recycling facilities (waste other than PET or PP)
4. Waste-management-related emissions	No emissions	No emissions

Project Period

2002 to 2006.

GHG Declaration by the Organization (from project report)

(a) Year	(b) Product	(c) Production (MT)	(d) Baseline scenario emissions (MTCO2e)	(e) Project scenario emissions (MTCO2e)	(f) Project net reductions before scale-up (MTCO2e)	(g) Project net reductions after scale-up (MTCO2e)
2002	PET	15,853	30,122	3,171	(26,951)	(34,878)
	PP	148	281	30	(251)	(325)
2003	PET	18,545	35,235	3,709	(31,526)	(40,798)
	PP	51	96	10	(86)	(112)
2004	PET	19 348	36,761	3,870	(32,891)	(42,565)
	PP	810	1,540	162	(1,378)	(1,783)
2005	PET	20,962	39,828	4,192	(35,634)	(46,116)
	PP	984	1,870	197	(1,673)	(2,165)
2006	PET	20,162	38,307	4,032	(34,275)	(44,356)
	PP	545	1,035	109	(926)	(1,198)
Total	**PET**	**94,870**	**180,253**	**18,974**	**(161,277)**	**(208,713)**
	PP	**2,538**	**4,822**	**508**	**(4,314)**	**(5,583)**
2002	PET+PP	16,001	30,403	3,201	(27,202)	**(35,203)**
2003	PET+PP	18,595	35,331	3,719	(31,612)	**(40,910)**
2004	PET+PP	20,158	38,301	4,032	(34,269)	**(44,348)**
2005	PET+PP	21,946	41,698	4,389	(37,307)	**(48,281)**
2006	PET+PP	20,706	39,342	4,141	(35,201)	**(45,554)**
2002-2006	PET+PP	97,406	185,075	19,482	(165,591)	**(214,296)**

4. VERIFICATION PROCESS

The BNQ was appointed by Plastrec Inc. to carry out the verification. The final version of the enterprise's project report was therefore forwarded to the BNQ on April 15, 2008 (following corrections made after preliminary review) and the Joliette plant was surveyed on January 15, 2008.

Documentation Preliminary Review and Amendments

A preliminary review was carried out and forwarded on December 20, 2007. Seven corrective action requests were delivered along with eight clarification requests. **The documents were corrected by the Quantifier, as requested by the BNQ, and were assessed and judged satisfactory**.

On-Site Verifying Method

In accordance with the verification plan, the on-site verification consisted of:

- Visit of the entire site and facilities;
- Interviews;

- Inspection of many documents.

Drafting the Verification Report

The Verification Report was drafted following the documentation review and on-site survey, considering: 1) The amendments proposed by Plastrec to the project report to address corrective action requests; 2) The modified project report (April 15, 2008).

5. PROJECT FINDINGS FOR THE GHG QUANTIFICATION METHOD

Standards Used

According to the information supplied by Plastrec, the project report was largely based on ISO 14064-2 Standard and Voluntary Carbon Standard 2007. The report however states that Plastrec's project has not been submitted to any formal GHG reduction program.

Quantification Method, Selection of Relevant GHG Sources and Types

The quantifying method used by the project team relies on a waste diversion approach, by which the plastics are recovered and recycled instead of being land-filled. The approach originates from a United States Environmental Protection Agency (EPA) study entitled Solid Waste Management and Greenhouse Gases, A Life-Cycle Assessment of Emissions and Sinks (September 2006). While the study was conducted in an effort to compare various waste management means in terms of greenhouse gas emissions, it is nevertheless mentioned in the foreword that "[...] the results (of the document) are sufficiently accurate to support their use in voluntary programs".

The GHG quantification method chosen for the project is therefore based on a net emission reduction factor, combined with certain activity data to quantify GHG emissions for every year from 2002 to 2006. Reductions were expressed in t CO_2 e. When several directly monitored and measured emission data are not available, **this method is considered to be appropriate**.

In order to make sure the method does not overestimate reductions, Plastrec compared emission ratios calculated from plant energy consumption (electricity and natural gas) with those conveyed in the study, leading to the conclusion that the EPA method proves to be conservative. Based on the quantification procedures carried out in the project, **this statement is appropriate**.

Other renowned information sources were also consulted by the quantifiers to make sure the study and its content are the best possible reference available; the references consulted are clearly identified in the project report.

The emission sources and GHG considered in the project report **seem to be the most relevant**. When certain emission sources or GHG were excluded from the computations, **appropriate justification was made**. Moreover, survey of the premises confirmed this information.

Baseline Scenario

The baseline scenario used for the project was chosen by Plastrec since, according to the information gathered, the greater part of the plastics which could be processed into new products is not recovered through recycling and is ultimately land-filled. Based on data from the National Association for PET Container Resources (U.S.) cited in the project report, "[,,,] a large fraction of PET (76.5%) remains off the recycling stream and ends up in litter and is eventually land-filled ».

Alternate scenarios were assessed for the GHG project; however the Plastrec scenario seems to be the most representative of the real plastic waste management situation.

Within the scope of the verifiers' current knowledge on the subject, the scenario is therefore considered to be appropriate.

Activity Data for the Enterprise

During the survey of the facilities, the information, data and documents relevant to this verification and related to the items listed below were reviewed and assessed:

- Procedures and operations
- Weighing equipment (scales) for finished-product bags
- Laboratory tests on finished products
- Identification of finished-product bags
- Certificate of authorization issued by the *ministère du Développement durable, de l'Environnement et des Parcs*
- Equipment preventive maintenance and repairs
- Energy consumption (electricity and natural gas)
- Traceability and conservation of data
- Reduction computations
- GHG project management and additionality compared with common practice

The principal activity data used for quantification refer to the weighing of finished-product bags (flakes). Bags are weighed on a 5,000-pound load cell and weigh between 2,200 and 2,300 lbs. The load cell is calibrated by Measurement Canada annually. In addition, the load cell is checked two or three times a day by Plastrec using a 1,404.5-pound steel weight. The **scale calibration method is therefore satisfactory** and the weight quantities used for quantification of inputs **seem reliable** (although it would have been more suitable to use a calibration weight close to that of the bags).

Assessment and Uncertainty Considerations

Where working hypotheses and calculation methods are concerned, the EPA study mentioned earlier is considered to be (by the EPA) accurate enough to support GHG emission quantification for projects registered in these voluntary programs. It however has some limitations, notably as it refers to averaged industrial energy consumption values in the United States; meaning that there can be variability from between locations. The project report however justifies the use of the American data, which they nevertheless consider appropriate for their project.

Concerning the quantification method used in the study, the EPA explains that the information needed for precise statistical processing of data uncertainty and variability was not available.

Data Quality Management for the Project and Document Conservation

The Plastrec Inc. activity data and documents are kept in a structured and secure manner. We consider that the error margin in terms of data handling and transfer is **very low**.

Additionality

The quantification report conveys information to show that the project is additional to the baseline (additionality tests), in a well-structured and convincing fashion. In fact, in common practice, the vast majority of the recycled PET going back to bottles comes from bales of returnable bottles. Plastrec, on the other hand, produces high quality PET flakes from Municipal Recycling Facility PET bales. In addition, in common practice, a greater part of plastics such as PET is not recovered through recycling and is ultimately land-filled.

Because raw materials from Municipal Recycling Facilities have special cleaning requirements, Plastrec has designed new equipment. Plastrec has therefore invested considerable money into their process, notably since the start-up of the Joliette plant.

Ownership

Reliable documents pertaining to ownership are shown in Appendix of the quantification report.

6. VERIFICATION REPORT CONCLUSIONS

As concerns the GHG assertion by Plastrec Inc., and the information herein, we conclude with a reasonable level of assurance that:

- The information given is true, precise, and supported, that is to say the emissions for the years 2002 to 2006 total about 214 296 t CO_2 e, considering the uncertainty factor and in relation to it (see section above on uncertainty);
- The relevance, completeness, consistency, accuracy, transparency and conservativeness principles were respected;

CONFIDENTIALITY
The BNQ guarantees the confidentiality of the information received during the verification and of the documents supplied by the enterprise, which will be kept on file thereafter. No information relative to this verification will be revealed to a third party other than the organization that governs the BNQ (in need be) without the written authorization of the client. Moreover, the contents of the Notice of Verification herein cannot be used in whole or in part without BNQ authorization.