APPENDIX A: GHG EMISSIONS FROM A RAW MATERIALS EXTRACTION VIEWPOINT.

The analyses conducted in the main body of this report are based on a life-cycle perspective that starts at the moment a material is discarded. EPA took this approach because expert review of the first edition indicated that the "waste-generation" approach would be more useful and comprehensible to waste managers, at whom this report is chiefly aimed. This is in contrast to a typical life-cycle analysis, which takes a "cradle-to-grave" approach. Emission factors from raw materials extraction and manufacturing perspective are presented here for those who find this viewpoint more useful.

Exhibit A-1
Net GHG Emissions from Source Reduction and MSW Management Options - Emissions Counted from a Raw Materials Extraction Reference Point (MTCE/Ton)

Material	Source Reduction[a]	Recycling[b]	Composting[b]	Combustion[b]	Landfilling[b]
Aluminum Cans	0.00	-1.46	NA	2.26	2.26
Steel Cans	0.00	0.38	NA	0.45	0.88
Copper Wire	0.00	0.66	NA	2.02	2.01
Glass	0.00	0.08	NA	0.17	0.17
HDPE	0.00	0.11	NA	0.74	0.50
LDPE	0.00	0.16	NA	0.87	0.63
PET	0.00	0.15	NA	0.87	0.58
Corrugated Cardboard	-1.29	-0.61	NA	0.06	0.34
Magazines/Third-class Mail	-1.90	-0.38	NA	0.33	0.38
Newspaper	-0.80	-0.24	NA	0.32	0.29
Office Paper	-1.90	-0.49	NA	0.11	0.81
Phonebooks	-1.04	-0.04	NA	0.48	0.44
Textbooks	-1.90	-0.25	NA	0.43	1.13
Dimensional Lumber	-0.50	-0.62	NA	-0.16	-0.08
Medium-density Fiberboard	-0.50	-0.57	NA	-0.11	-0.03
Food Discards	NA	NA	-0.05	-0.05	0.20
Yard Trimmings	NA	NA	-0.05	-0.06	-0.06
Mixed Paper					
Broad Definition	NA	-0.67	NA	0.11	0.39
Residential Definition	NA	-0.68	NA	0.11	0.36
Office Paper Definition	NA	-0.05	NA	0.72	1.01
Mixed Metals	NA	-0.16	NA	0.98	1.29
Mixed Plastics	NA	0.13	NA	0.81	0.55
Mixed Recyclables	NA	-0.41	NA	0.22	0.42
Mixed Organics	NA	NA	-0.05	-0.05	0.06
Mixed MSW as Disposed	NA	NA	NA	-0.03	0.12
Carpet	0.00	-0.87	NA	1.20	1.10
Personal Computers	0.00	14.51	NA	15.07	15.14
Clay Bricks	0.00	0.08	NA	0.08	0.09
Concrete	NA	0.00	NA	NA	0.01
Fly Ash	NA	-0.24	NA	NA	0.01
Tires	0.00	2.07[c]	NA	3.86	3.82

Note that totals may not add due to rounding, and more digits may be displayed than are significant.

NA: Not applicable, or in the case of composting of paper, not analyzed.

[a]Source reduction assumes initial production using the current mix of virgin and recycled inputs.
[b]Includes emissions from the initial production of the material being managed, except for foodwaste, yard waste, and mixed MSW.

[c] Recycling of tires, as modeled in this analysis, consists only of retreading the tires.

Exhibit A-2
Net GHG Emissions from Source Reduction and MSW Management Options - Emissions Counted from a Raw Materials Extraction Reference Point ($MTCO_2E$/Ton)

Material	Source Reduction[a]	Recycling[b]	Composting[b]	Combustion[b]	Landfilling[b]
Aluminum Cans	0.00	-5.34	NA	8.29	8.27
Steel Cans	0.00	1.38	NA	1.64	3.21
Copper Wire	0.00	2.42	NA	7.39	7.38
Glass	0.00	0.29	NA	0.62	0.61
HDPE	0.00	0.39	NA	2.72	1.82
LDPE	0.00	0.57	NA	3.20	2.31
PET	0.00	0.56	NA	3.18	2.13
Corrugated Cardboard	-4.73	-2.25	NA	0.21	1.26
Magazines/Third-class Mail	-6.96	-1.38	NA	1.22	1.39
Newspaper	-2.95	-0.87	NA	1.18	1.06
Office Paper	-6.96	-1.81	NA	0.41	2.98
Phonebooks	-3.83	-0.16	NA	1.75	1.62
Textbooks	-6.96	-0.90	NA	1.58	4.15
Dimensional Lumber	-1.84	-2.28	NA	-0.60	-0.31
Medium-density Fiberboard	-1.84	-2.10	NA	-0.40	-0.11
Food Discards	NA	NA	-0.20	-0.18	0.72
Yard Trimmings	NA	NA	-0.20	-0.22	-0.22
Mixed Paper					
Broad Definition	NA	-2.47	NA	0.41	1.41
Residential Definition	NA	-2.48	NA	0.41	1.31
Office Paper Definition	NA	-0.17	NA	2.65	3.71
Mixed Metals	NA	-0.60	NA	3.60	4.70
Mixed Plastics	NA	0.48	NA	2.97	2.02
Mixed Recyclables	NA	-1.52	NA	0.79	1.54
Mixed Organics	NA	NA	-0.20	-0.20	0.24
Mixed MSW as Disposed	NA	NA	NA	-0.12	0.42
Carpet	0.00	-3.19	NA	4.38	4.03
Personal Computers	0.00	53.21	NA	55.27	55.51
Clay Bricks	0.00	0.28	NA	0.28	0.32
Concrete	NA	-0.01	NA	NA	0.04
Fly Ash	NA	-0.87	NA	NA	0.04
Tires	0.00	7.57[c]	NA	14.15	14.01

Note that totals may not add due to rounding, and more digits may be displayed than are significant.

NA: Not applicable, or in the case of composting of paper, not analyzed.

[a]Source reduction assumes initial production using the current mix of virgin and recycled inputs.
[b]Includes emissions from the initial production of the material being managed, except for foodwaste, yard waste, and mixed MSW.

[c] Recycling of tires, as modeled in this analysis, consists only of retreading the tires.