

# The City of Edmonton

## LITTER AUDIT

### 2011

PREPARED FOR

**City of Edmonton**  
**Community Services Department**

PREPARED BY

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Osoyoos, BC  
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Final Report  
October 13, 2011



# Executive Summary

The City of Edmonton retained MGM Management, a British Columbia based environmental consulting firm to conduct a baseline litter audit throughout the city in 2007. This base-line litter audit was followed-up with repeat litter audits in 2009, 2010 and in 2011.

MGM Management has conducted 21 litter audits for North American municipalities and provincial authorities since 2002, including this litter audit for Edmonton in 2011. MGM Management has accumulated a litter database of nearly 84,000 litter observations from these litter audits.

In July 2011, the City conducted its fourth litter audit. Within this study litter is classified as “large” for those items over 25 sq. cm. (4 square inches) in size or as “small” litter for items less than 25 sq. cm. (4 sq. in.). Eighty-four sub-categories of large and sixteen sub-categories for small litter were examined.

A total of 2,134 items of large litter were observed by auditors on Edmonton streets during the 2011 litter audit. The same one hundred and twenty-three sites that were audited in 2009 and 2010 were examined during this audit, from July 4 – 11, 2011. The 2011 litter audit averaged 17.3 large litter items per site compared to 19 items per site in 2010, 27 items per site in 2009 and 25 items of large litter per site observed in 2007.

**Table ES 1 – 2011 Litter vs. Previous Audits**

<b>Summary of Large Litter Results (2011, 2010, 2009, 2007)</b>				
	<b>2011</b>	<b>2010</b>	<b>2009</b>	<b>2007</b>
Total Large Litter	2,134	2,378	3,361	2,650
Number of sites audited	123	123	123	106
Average large items / site	17.3	19.3	27.3	25.0
Reduction in Large Litter from 2010	10%			
Reduction in Large Litter from 2009	37%			
Reduction in Large Litter from 2007	31%			

Examining large litter in Edmonton during the 2011 audit it was apparent that the streets were cleaner as compared to the 2010 and much cleaner than the 2009 audit. Evidence of major community clean-ups were apparent in some locations such as the 107a Ave west of 97 St; where the site is on the north side of the street, starting at NW corner at 98 St. (N 53 33.148 / W 113 29.460). Another site showing significantly less litter than in 2010, 2009 and 2007 was site # 41, on Yellowhead Trail ramp to 82 Street. Nine litter sites were observed to have no large litter on them.



Site # 46 – Improvements  
(107a Ave west of 97 St)



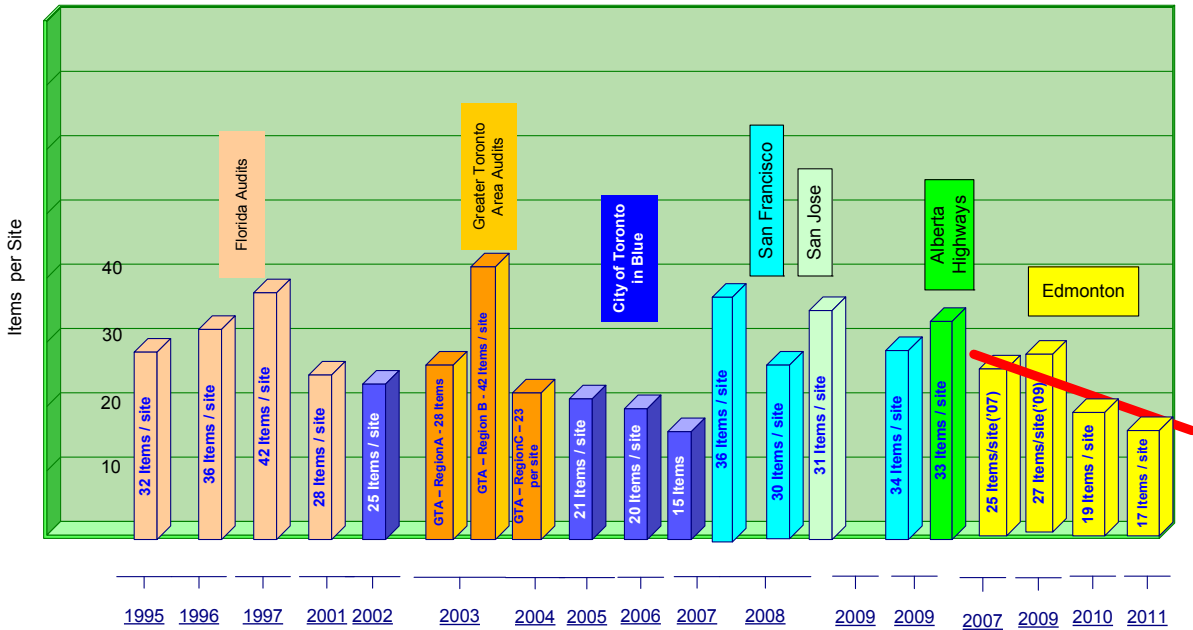
Site # 41 – Improvements  
(Yellowhead Trail ramp to 82 Street)

Figure ES-1, on the next page illustrates how litter results in the Edmonton audits compare with other jurisdictions where audits have been conducted using the same methodology.

Litter in Edmonton in 2011 was observed to be the second lowest large litter rate for all cities where litter audits have been conducted by the consultant using this audit method. Only Toronto in 2007 had a lower large litter rate, however the consultant cannot comment upon whether that city has maintained its low litter rate as no follow-up litter audits have been conducted since 2007.

Figure ES1 – Edmonton vs. Other Litter Audit Results

### Large Litter – Edmonton 2011 vs. Other Litter Audits



Tobacco packaging was the largest identifiable sub-category of large litter observed at 230 items or 10.8% of total large litter, similar to the 10.4% of total large litter noted in 2010, and compared to 9.2% in 2009, and 7.4% in 2007.

Miscellaneous paper was again a significant contributor to large litter in Edmonton at 7.8%, followed closely by non-branded napkins at 163 items, or 7.6% of total large litter, compared to 11.6% in 2009, and 8.2% in 2007. Miscellaneous plastic litter which was observed at 140 litter pieces, or 6.6% of total large litter, compared 6.9% in 2010, 9.7% in 2009, and 14.1% in 2007, continues to be a significant category of litter on streets.

These four sub-categories combined to represent over 1/3 of all large litter observed in Edmonton during the audit (33%).

**Table ES 2 – Top 20 Subcategories of Litter**

<b>Top 20 Litter Categories Equal 82% of Litter in 2011</b>					
		2011 Results	2010 Results	2009 Results	2007 Baseline
2011 Top 20	<b>Large Litter</b>	Total Items	Total Items	Total Items	Total Items
1	Tobacco packaging	229.5	248.5	310	197
2	Misc. Paper	166	137.5	337.5	296
3	No Brand Name Towels / Napkins	162.5	232.5	389.5	217
4	Misc. Plastic	140	164.5	326	374
5	Printed material (newspapers etc.)	128.5	171.5	220	137.5
6	Candy bar wraps	110	161	160	106
7	Home Articles	97	105	135	91.5
8	Construction debris	81.5	82	69	111.5
9	Cup Lids, Pieces lids	81	60.5	86.5	97.5
10	Plastic packaging other	79.5	69.5	125	53.5
11	Vehicle & Metal Road Debris	76	61.5		
12	Paper Cups (Hot)	67	73.5	79.5	59.5
13	Receipts (forms, bus tickets etc.)	54.5	55.5	60.5	84
14	Paper cups (cold)	54		51	
15	Condiment packaging	43.5	46	66	47.5
16	Gum wrappers	42	38	76	44
17	Misc. Cardboard	36	73.5	76	50
18	Misc. Paperboard	34	42	88.5	63.5
19	Paper Food Wrap	31.5			
20	Paper packaging other	30.5			
Items in Top 20 Sub-categories		1,745	1,823	2,656	2,030
% of Total Large Litter (Top 20)		82%	77%	79%	84%

In Table ES-3 & ES-4 and Figure ES-2 & ES-3 below, we describe the make up of both fibre and plastic litter. Together fibre and plastic material litter account for 80% of the large litter observed.

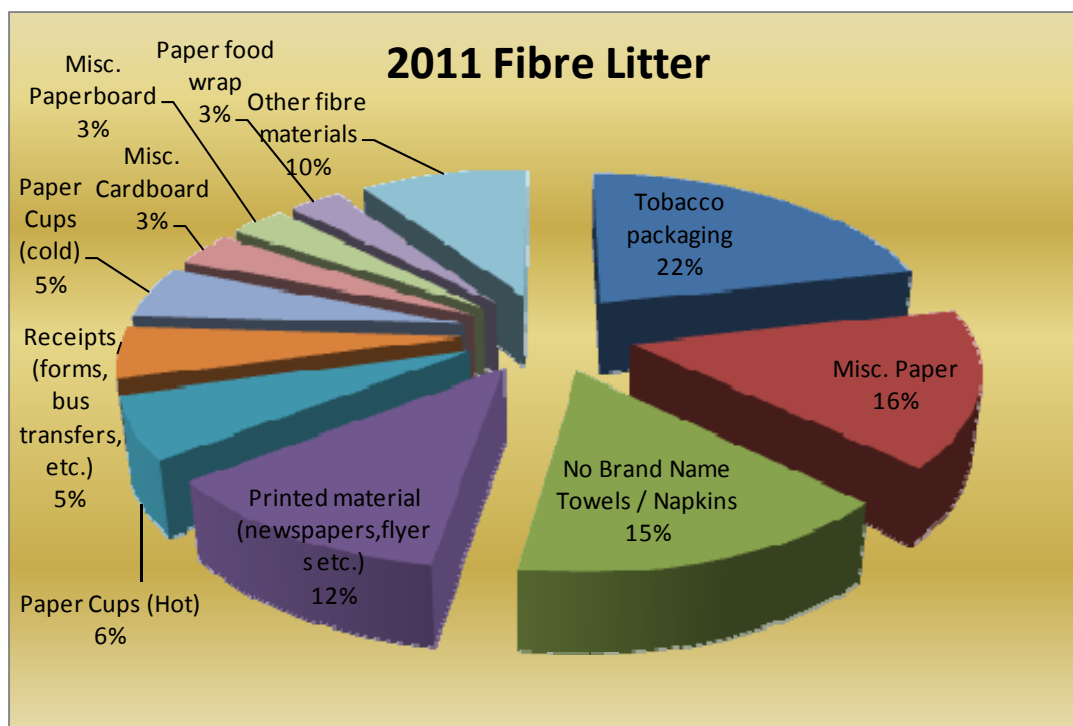
Fibre litter is comprised of miscellaneous paper, paper packaging, printed paper, paperboard, cardboard, newspapers and advertisement flyers which all combine to make fibre litter a significant contributor to the litter on Edmonton streets. Twenty-four sub-categories of fibre litter account for 50% of the total large litter observed in 2011.

Plastic litter is also a significant material type of large litter observed in Edmonton. These materials include, candy bar wrappers, other plastic packaging, condiment packaging, plastic cups and plastic bags, and contributed 30% of total large litter observed during the audit.

**Table ES – 3 - Composition of Fibre Litter**

<b>2011</b>		
<b>Composition of Fibre Litter</b>		
	2011	2011
	Items	% of Fibre Litter
Tobacco packaging	229.5	21.6%
Misc. Paper	166	15.6%
No Brand Name Towels / Napkins	162.5	15.3%
Printed material (newspapers, flyers etc.)	128.5	12.1%
Paper Cups (Hot)	67	6.3%
Receipts (forms, bus transfers, etc.)	54.5	5.1%
Paper Cups (cold)	54	5.1%
Misc. Cardboard	36	3.4%
Misc. Paperboard	34	3.2%
Paper food wrap	31.5	3.0%
Other fibre materials		9.4%
Paper Packaging other	30.5	2.9%
Paper bags - fast food	21	2.0%
Paperboard (food type)	20	1.9%
All remaining fiber litter	18	1.6%
Stationary	11.5	1.1%
Total Fibre large litter	1,064	109%
% of total large litter	50%	

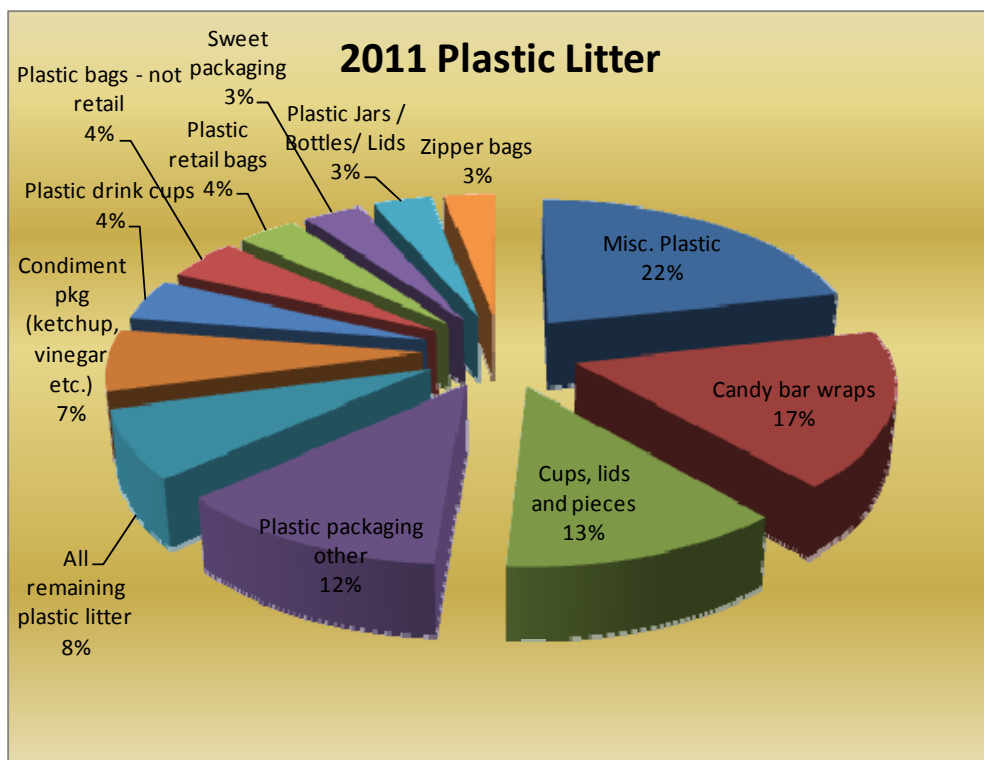
**Figure ES – 2 Make-up of Fibre Litter**



**Table ES – 4 - Composition of Plastic Litter**

2011 Composition of Plastic Litter		
	2011	2011
	Items	% of Plastic Litter
Misc. Plastic	140	22%
Candy bar wraps	110	17%
Plastic packaging other	79.5	12%
Cups, lids and pieces	81	13%
Condiment pkg (ketchup, vinegar etc.)	43.5	7%
Plastic drink cups	29	4%
Plastic bags - not retail	28.5	4%
Plastic retail bags	23.5	4%
Sweet packaging	22.5	3%
Plastic Jars / Bottles/ Lids	22.5	3%
Zipper bags	19.5	3%
All remaining plastic litter	48.5	7%
<b>Total plastic large litter</b>	<b>648</b>	<b>100%</b>
<b>% of total large litter</b>	<b>30%</b>	

**Figure ES – 3 - Composition of Plastic Litter**



**Table ES – 5: Edmonton Large Litter vs. 18 Audits**

Edmonton Litter Audits vs. Other Jurisdictions (2002 - 2011) <sup>1</sup>						
	Observations - 2002 to 2011 (21 litter audits)	% of Total Litter 2002 to 2011 (21 litter audits)	Edmonton July 2011	Edmonton June 2010	Edmonton June 2009	Edmonton June 2007
		% of total large litter	% of total large litter	% of total large litter	% of total large litter	% of total large litter
		Average all Audits				
Other Miscellaneous	28,285	33.7%	29.7%	28.4%	33.1%	39.9%
Printed & Fiber Mat'l	15,856	18.9%	16.8%	19.6%	20.3%	17.4%
Cups	6,602	7.9%	11.6%	9.0%	8.4%	9.8%
Confectionary	7,427	8.8%	8.6%	10.2%	9.1%	8.0%
Other Packaging	4,899	5.8%	6.2%	6.4%	6.7%	4.6%
Bags	2,759	3.3%	4.6%	4.4%	3.5%	2.7%
Tobacco Products	4,895	5.8%	10.8%	10.4%	9.2%	7.4%
Take-Out Extras	2,073	2.5%	2.5%	2.3%	2.4%	2.4%
Beverage Containers	5,000	6.0%	3.7%	2.5%	1.8%	3.8%
Wraps	1,847	2.2%	1.9%	1.9%	1.3%	1.3%
Other Containers	1,999	2.4%	1.4%	1.3%	1.3%	0.7%
Boxes	1,045	1.2%	1.0%	1.9%	1.4%	1.0%
Textiles	1,113	1.3%	1.2%	1.4%	1.3%	0.8%
Trays	161	0.2%	0.0%	0.1%	0.0%	0.1%
	83,956	100%	100%	100%	100%	100%
1. Aggregated litter data, Litter audits by MGM Management including: City of Toronto, Canada (2002, 2003, 2004 (2 audits), 2005, 2006 Regional Municipality of Peel, Canada (2003) Regional Municipality of York, Canada (2003) Regional Municipality of Durham, Canada (2003) and San Francisco (2007, 2008, 2009) San Jose (2008) Alberta Transportation (2009) City of Winnipeg & City of Brandon (2010) Edmonton (2007, 2009, 2010, 2011)						
2. Other miscellaneous sub-category includes: Miscellaneous paper, Miscellaneous plastic, Construction debris, Home articles, Vehicle & Metal Road debris, Miscellaneous Paperboard, Miscellaneous cardboard, Miscellaneous Glass and Tire & Rubber debris.						

As Table ES 4 above shows that for the most part the litter composition in Edmonton is similar to that observed in 21 other litter audits in various jurisdictions in North America. Whereas the overall litter rate in Edmonton has decreased steadily since the 2009 audit, there are some interesting exceptions such as tobacco products which have continually risen in their proportion of total litter from the average of 7.4% in 2007, to 9.2% in 2009, 10.4% in 2010 to 10.8% of large litter in 2011. This category of litter may warrant special attention in the City's efforts to reduce large litter in the future.

# Small Litter Observations

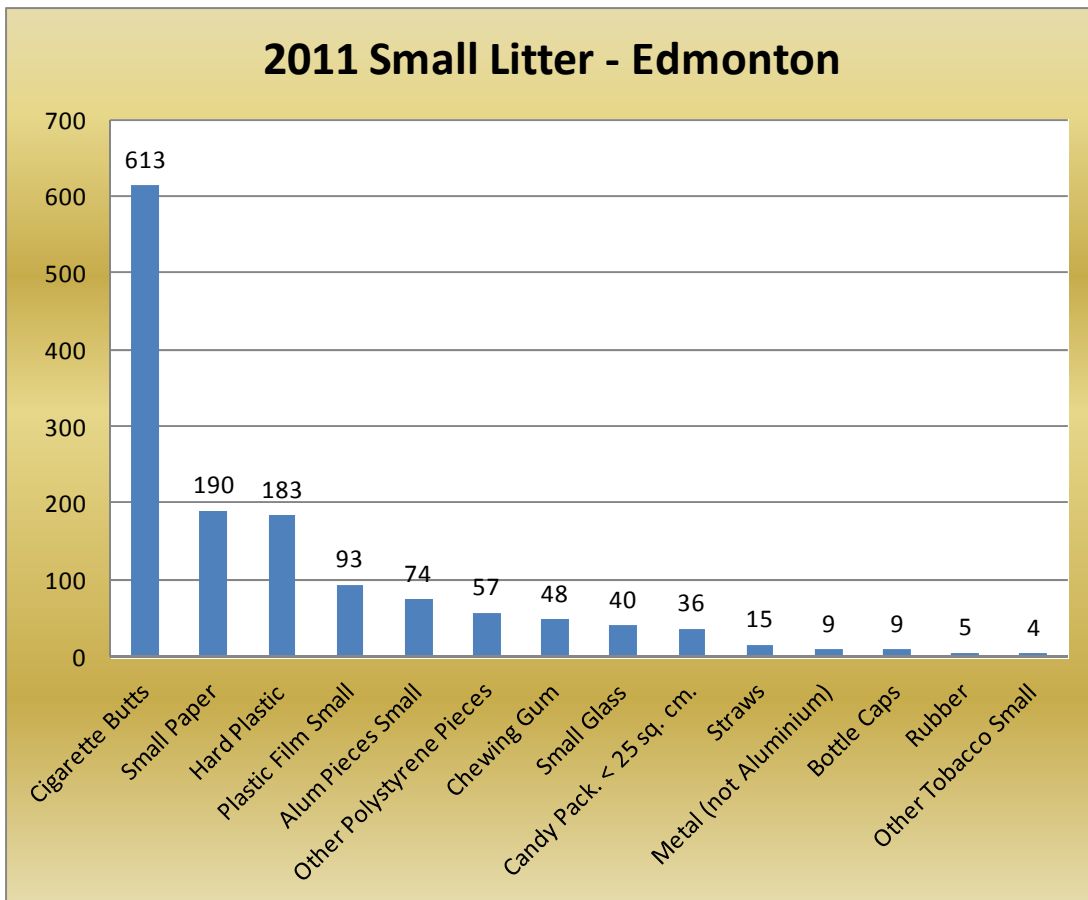
Observations of small litter made during the Edmonton audit continue to reveal a relatively low occurrence of small litter on city streets, and almost identical results to those observed in 2010, with 11 items / site in 2011 vs. 10 small litter items per site in 2010.

In the 2011 audit we observed 1,376 small litter items, with the average of small litter of 11 items per site. These results compare to 10 items / site in 2010, 17 items per site in 2009, and 13 items per site in 2007.

When contrasted against the 21 small litter items / site observed for the City of Toronto, in 2006, or the 23 items per site reported in San Francisco in 2007; the small litter occurrence in Edmonton is much lower.

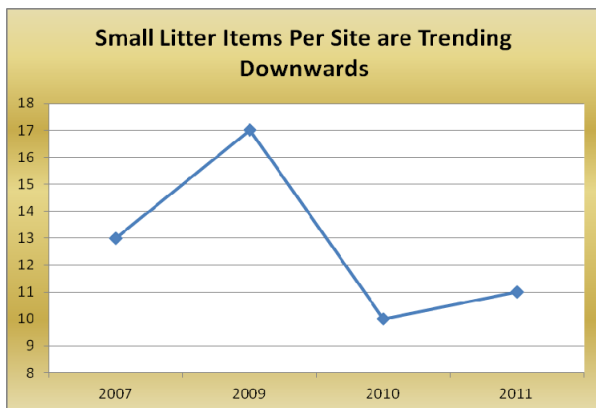
Small litter is difficult to control, in that it is “manufactured” by a combination of degradation (weather) and man-made activities (vehicle traffic, mowing, etc.).

The small litter results for the Edmonton audit sites are described in the chart below, and Table ES-6 – Small Litter Summary on the following page.

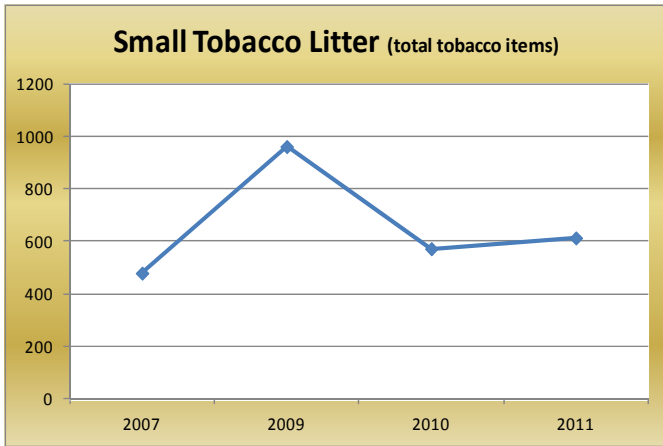


**Table ES – 6 - Small Litter Summary**

<b>2011 Edmonton Small Litter Summary</b>				
Description of Sub-Category	2011 Edmonton Small Items Observed	2010 Edmonton Small Items Observed	2009 Edmonton Small Items Observed	2007 Edmonton Small Items Observed
Cigarette Butts	613	572	961	479
Small Paper	190	164	383	279
Hard Plastic	183	104	232	103
Plastic Film Small	93	67	108	107
Alum Pieces Small	74	47	72	17
Other Polystyrene Pieces	57	49	113	108
Chewing Gum	48	76	40	61
Small Glass	40	16	90	101
Candy Pack. < 25 sq. cm.	36	42	31	6
Straws	15	11	16	11
Metal (not Aluminium)	9	13	7	8
Bottle Caps	9	12	9	4
Rubber	5	5	10	7
Other Tobacco Small	4	10	2	24
Other Materials	0	19	33	24
Polyfoam Peanuts	0	13	7	2
Small litter items observed	1,376	1,220	2,114	1,341
Average small litter per site	11	10	17	13
Sites audited	123	123	123	106



.... But small tobacco litter continues to be an issue



## Additional Observations – 2011 Litter Audit

The results of the 2011 Edmonton Litter audit continue to provide encouraging evidence that litter rates are decreasing in the City.

The litter audit team reports that overall the streets were noticeably cleaner than they recalled when doing the 2010 and 2009 litter audits. In 2009, the streets were particularly littered, with overall large litter rates that year peaking at 27 large items / site, and small litter rates being recorded as 17 small items per site. Contrasting those data are the 2011 results of 17 large and 11 small items per site.

In some area's activities by the City were noted. Site #46 is located in the inner city at 107a Ave west of 97 St. In past audits this site was particularly littered, with debris being deposited likely from the large transient population frequenting this neighbourhood. In 2011, this area had been greatly improved with litter being picked up, mulch being laid down, landscape plantings added and the site generally improved. It is clear that making such improvements was beneficial to reducing litter at this site.



Site #46 - 107a Ave west of 97 St.

As in 2010, the litter audit field team noted more street cleaning activities than previously observed during audits in 2009 and 2007. Litter pick-up and street and sidewalk cleaning efforts were being carried out by city workers, but also by private businesses cleaning in front of their establishments.

As noted in the 2010 audit, business cleaning of the sidewalks was noted again in the 82nd Avenue (Whyte Avenue) area where some businesses are taking an active role in cleaning up the sidewalk and curb area. The vicinity around Rexall Place, was noticeably less littered in the 2011 litter audit compared to 2010 and 2009.

The Capital City Clean Up program is continuing to have a positive effect on reducing litter in the city.

## **Acknowledgements**

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