

3.0 Permit Requirements

E.5. County Property Management

Baltimore County shall identify all county-owned facilities requiring NPDES stormwater general permit coverage and submit Notices of Intent (NOI) to MDE for each. The status of pollution prevention plan development and implementation shall be submitted annually.

E.6. Road Maintenance

A plan to reduce pollutants associated with road maintenance activities shall be developed and implemented. At a minimum, an annual progress report shall be submitted that documents the following activities:

- a. Street sweeping;
- b. Inlet cleaning;
- c. Reducing the use of pesticides, herbicides, fertilizers, and other pollutants associated with roadside vegetative management practices through the use of integrated pest management (IPM); and
- d. Controlling the overuse of winter weather deicing materials through continual testing and improvement of materials, equipment calibration, employee training, and effective decision-making.

3.1 Introduction

Baltimore County has established several programs to control the amount of pollution that reaches the stream systems and landfills: a Storm Drain Cleaning Program, a Street Sweeping Program, and a Hazardous Waste Collection Program. Baltimore County DEPRM has also identified those county owned sites that require a NPDES stormwater general permit and is assisting them in preparing Pollution Prevention Plans. These include good house keeping and best management practices to prevent contaminants from leaving the site during rainstorms or a spill.

Both the Storm Drain Cleaning Program and the Street Sweeping Program are the responsibility of the Baltimore County Department of Public Works (DPW). Within the Department of Public Works, the Bureau of Utilities handles the Storm Drain Cleaning program. The Storm Drain Cleaning Program was originally created to remove the sediment from the storm drain systems in the watersheds of dredged tidal creeks, thereby increasing the longevity of the original dredging. The program has since been expanded to clean the county's entire storm drain system, including the drain inlets, connecting pipes and outfalls. Debris, sediment, and pollutants can also be taken off the streets before they enter the storm drain system. This is accomplished with the Street Sweeping Program that is managed by the Bureau of Highways.

The Hazardous Waste Collection Program is the responsibility of the Baltimore County DEPRM Environmental Health Section. Citizens can come and drop off unwanted household chemicals, paints, pesticides, medicines, mercury thermometers, fluorescent bulbs, rechargeable batteries, computers and home electronics, ammunition and automotive fluids for recycling or proper

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disposal. These items are accepted at the Eastern Landfill from April until November. There are also two collection events in the fall and spring at additional locations. Medicines, which could include narcotics and other regulated substances, are accepted at the collection events only.

3.2 County Property Management

Over the last few years, three meetings of the Baltimore County NPDES Management Committee were held. The first meeting in December 2005 presented the requirements of the renewed NPDES permit to the Management Committee, including the requirement that certain County owned facilities acquire an NPDES Industrial Stormwater General Permit. A NPDES Management Committee meeting in February 2006 covered how to fill out the Notice of Intent (NOI) and the elements of the Pollution Prevention Plan (PPP). A third meeting in May 2006 covered in more detail the elements of a PPP, and used a highway shop to demonstrate how to conduct a site assessment and the types of controls that should be considered in the PPP. In December 2009, a meeting was held with Baltimore County Public Schools to get the status on NOIs and PPPs for school sites. Planned for 2010, is an advisory meeting with Baltimore County Vehicle Operation and Maintenance on NOIs and PPPs.

3.2.1 County Facility NPDES Permit Compliance

Baltimore County DEPRM has been assisting other County Departments to gain compliance with NPDES general stormwater permit requirements. Table 3-1 shows the status of county facilities that we have started assisting. DEPRM is still identifying all county-owned facilities requiring NPDES stormwater general permit coverage. DEPRM estimates approximately 30 facilities may be included. As facilities are identified, we will assist them in submitting a NOI to MDE and assist in the preparation of a PPP.

Table 3-1: NPDES Permit Compliance Status

County Department	Facility Name	Notice of Intent (NOI)	Pollution Prevention Plan (PPP)
Community College of Baltimore County	Catonsville, Essex, and Dundalk Campuses	Yes	Yes
Department of Public Works Highways	All 11 Shops	Yes	Yes
Baltimore County Public Schools	All 11 Bus Lots	Yes – for 10 of 11	In progress

3.3 Storm Drain Cleaning Program

3.3.1 Storm Drain Cleaning Overview

The Baltimore County storm drain system consists of approximately 2,040,000 linear feet (388 miles) of storm drainpipe, 14,400 inlets, and 3,460 outfalls. In order to keep the entire system clean of trash, debris, and sediment, the Department of Public Works maintains three storm drain cleaning vehicles and employs three crews of two men each on a daily basis to clean the storm drains and pipes. Removing the material from the storm drain system reduces street flooding, a potential safety hazard, and aids in the detection of illicit connections.

Each time a crew cleans an inlet or pipe the amount of debris removed is recorded on a data sheet that typically contains all cleaning records for that particular location. Completed data

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sheets are sent to the Department of Environmental Protection and Resource Management (DEPRM), where the data is entered into a database. The database facilitates reporting for NPDES purposes.

3.3.2 Storm Drain Cleaning Data Analysis

The data entered into the database are analyzed for a number of measures, including the amount of material removed per inlet, the amount of material removed per linear foot of pipe cleaned, total amount of material removed by watershed, and the amount of pollutants removed as a result of the program.

Inlet data are reported as the average annual cubic feet of material removed per inlet, and pipe data are reported in cubic feet of material removed per linear foot of pipe. The removal rates for 1993 through 2009 are presented in Table 3-2. Figure 3-1 shows a yearly comparison of the number of inlets cleaned and the total volume of material removed. Figure 3-2 shows the mean volume of debris removed per inlet. Figure 3-3 shows a yearly comparison of the length of pipe cleaned and the amount of material removed, and Figure 3-4 shows the mean volume of debris removed per linear foot of pipe.

Table 3-2: Removal Rates of Inlet and Pipe Cleaning by Year

Year	Inlet Vol. Cu. Yd.	# Inlets	Vol. / Inlet Cu. Yd	Pipe Vol. Cu. Yd.	Length in feet	Vol. / Ft. Cu. Yd.
1993	760	8,955	0.08	1,186	68,830	0.0172
1994	769	2,615	0.29	347	21,193	0.0164
1995	642	1,532	0.42	306	14,491	0.0211
1996	1,536	1,347	1.14	1,558	67,676	0.0230
1997	1,731	1,485	1.17	2,822	119,900	0.0235
1998	2,059	1,178	1.75	988	93,918	0.0105
1999	662	462	1.43	446	38,451	0.0116
2000	689	580	1.19	672	89,145	0.0075
2001	902	746	1.21	585	46,319	0.0126
2002	919	602	1.53	409	34,384	0.0118
2003	660	428	1.54	519	30,374	0.0171
2004	898	653	1.37	1,169	54,795	0.0213
2005	1,385	888	1.56	1,001	53,069	0.0189
2006	950	659	1.44	538	30,891	0.0174
2007	429	223	1.92	179	10,257	0.0175
2008	664	377	1.76	238	16,572	0.0144
2009	591	373	1.58	288	19,450	0.0148
Totals	16,246	23,103		13,251	809,715	

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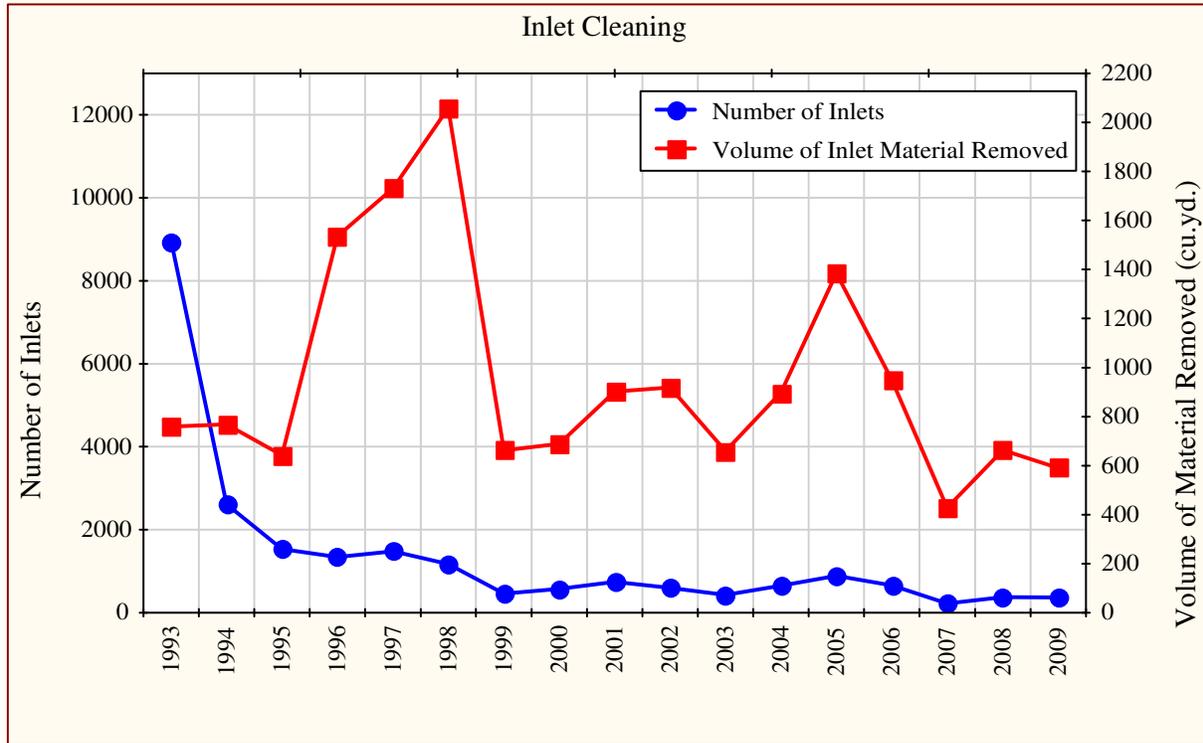


Figure 3-1: Summary Report for Inlets

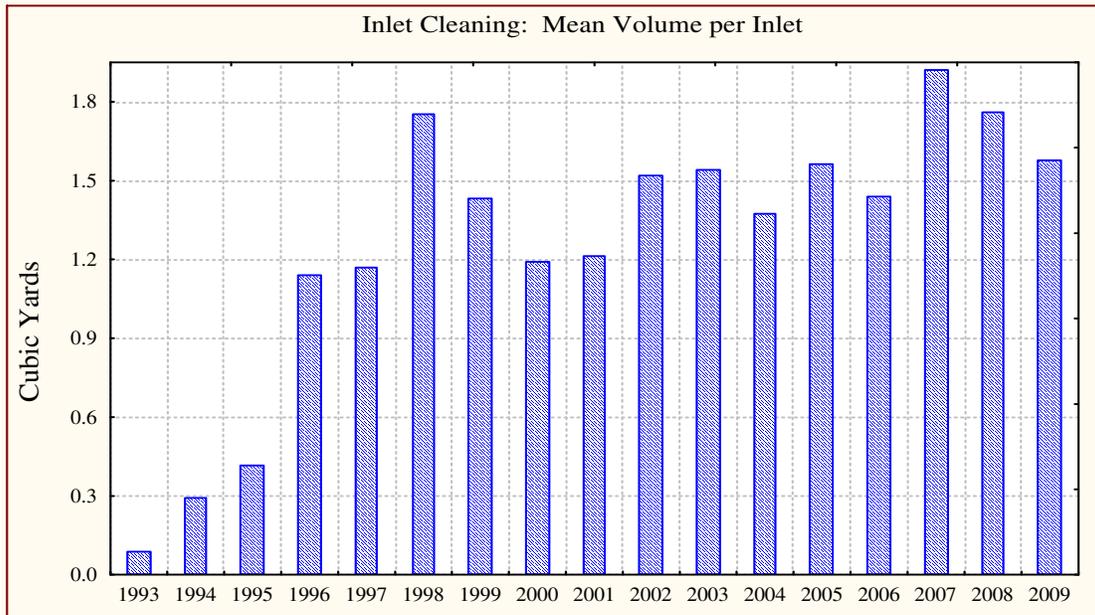


Figure 3-2: Annual Inlet Debris Removal Rates

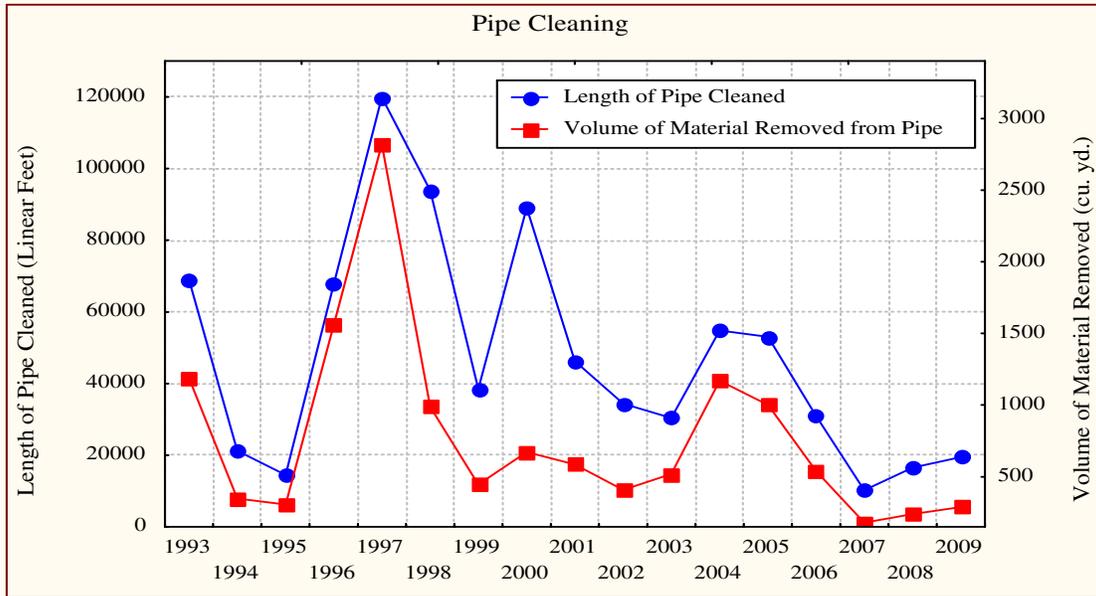


Figure 3-3: Summary Report for Pipes

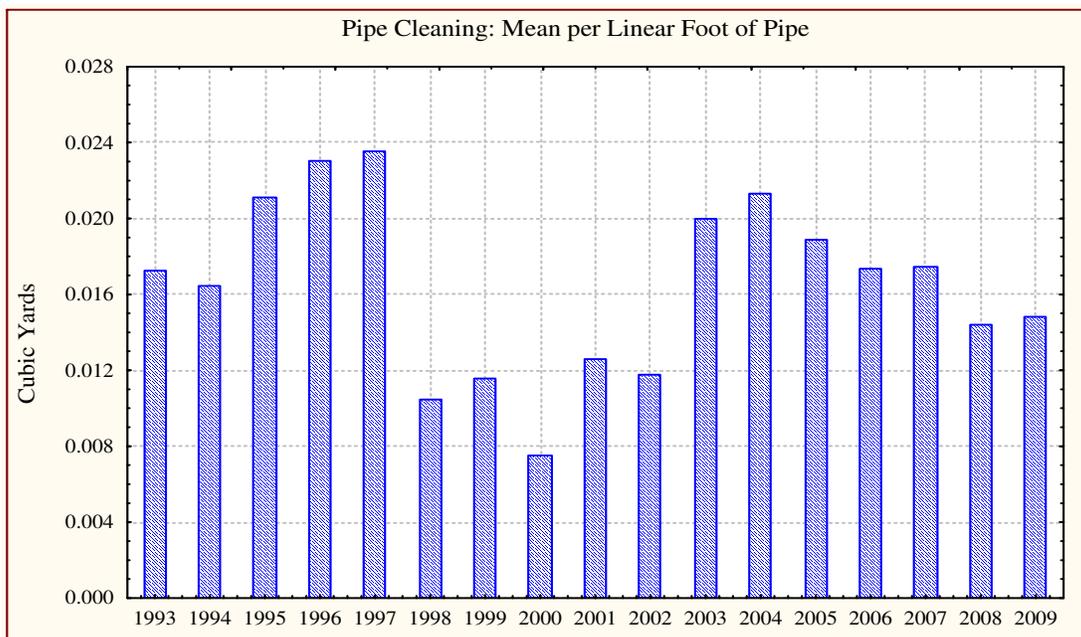


Figure 3-4: Annual Pipe Debris Removal Rates

While the number of inlets cleaned has remained fairly steady since 1998, the volume removed per inlet has been more variable. For the period from 1993 through 1998, the average number of inlets cleaned was ~2,850 per year in contrast to ~545 per year in the 1999-2009 time period. The average amount of material removed per inlet increased from ~0.8 cubic yards per inlet to ~1.5 cubic yards per inlet for the same two time periods. In the early years of the program (1993-1995), all inlets within the county were cleaned, some with little or no accumulation of material. This resulted in low volumes of material removed per inlet cleaned. This method was changed after 1995. The current method does not include routine cleaning of storm drains; however, known problem inlets and pipes are regularly cleaned, in addition to being cleaned based on comments or complaints received from citizens. During the winter months (November

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– March), the Department of Public Works responds only to emergencies due to the temperature. Therefore, the numbers of pipes and inlets cleaned after 1995 varies each year.

The volume of material removed from inlets grew beginning in 1993 and peaked in 1998, at over 2,000 cubic yards of material removed (Figure 3-1). The total amount of material removed was lower for the years 1999 through 2003. There was an upward trend in 2004 and 2005, and a downward trend between 2008 and 2009.

The largest amount of material removed from pipes was in 1997. This was also the greatest length of pipe cleaned (see Figure 3-4). The average length of pipe cleaned in the time period 1993 through 1998 was ~64,500 linear feet compared to ~38,000 linear feet in the 1999 through 2009 time period. The volume removed per linear foot decreased from 0.019 cubic yards to 0.015 cubic yards for those two time periods.

It should also be noted that drought conditions from 1999 through 2002 might have resulted in less material being washed into the storm drain system. That material was likely removed by street sweeping. Conversely, the increase in removal rates in the 2003 to 2005 period was probably due to above average levels of precipitation.

3.3.3 Storm Drain Cleaning Data by Watershed

The Storm Drain Cleaning data for 2009, showing the total number of inlets and lengths of pipe cleaned for each of Baltimore County’s fourteen (14) major watersheds, are displayed in Table 3-3.

Table 3-3: 2009 Material Removed in Cubic Yards by Watershed

Watershed	Inlets Cleaned	Inlet Volume Cleaned (Cu. yd.)	Length of Pipe Cleaned (Ft.)	Pipe Volume Cleaned (Cu. yd.)	Total Volume (Cu. yd.)
Upper Western Shore					
Deer Creek	0	0	0	0	0
Prettyboy Reservoir	0	0	0	0	0
Loch Raven Reservoir	23	31.9	1,125	15.75	47.7
Lower Gunpowder River	11	19.4	597	11.51	30.9
Little Gunpowder Falls	1	3.1	110	4.12	7.3
Bird River	13	20.1	675	7.96	28.0
Gunpowder River	6	2.9	225	2.29	5.1
Middle River	15	20.4	1,115	12.49	32.9
UWS Totals	69	97.8	3,847	54.12	151.9
Patapsco/Back River					
Liberty Reservoir	0	0	0	0	0
Patapsco River	43	77.8	1,611	25.17	103.0
Gwynns Falls	107	211.2	4,493	76.17	287.4
Jones Falls	17	35.1	1,260	20.07	55.2
Back River	66	79.5	3,071	35.21	114.7
Baltimore Harbor	71	90.1	5,168	77.23	167.3
Patapsco/Back River Totals	304	493.7	15,603	233.84	727.6
County Totals	373	591.5	19,450	287.96	879.5

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Around 82% of the material removed from the storm drain system was removed from the heavily urbanized Patapsco/Back River Basin with Gwynns Falls and Baltimore Harbor having the highest amounts removed.

In the fall of 2005, a study was initiated on the pollutant removal effectiveness of street sweeping and storm drain cleaning. This study was funded by the Chesapeake Bay Program and led by the Center for Watershed Protection and UMBC. Both Baltimore County and Baltimore City were partners in this research effort. Baltimore County specifically looked at the storm drain cleaning portion of the study by measuring monthly accumulation rates for 100 inlets in coastal plain commercial/industrial and residential and piedmont commercial/industrial and residential. Baltimore County conducted sampling and chemical analysis of the material from a subset of the inlets. The results from this study are used to estimate pollutant load reductions from street sweeping and storm drain cleaning activities. The study, entitled “Deriving Reliable Pollutant Removal Rates for Municipal Street Sweeping and Storm Drain Cleanout Programs in the Chesapeake Bay Basin”, is available for free download at http://www.cwp.org/Resource_Library/Restoration_and_Watershed_Stewardship/municipal.htm

The composition of 16 inlets sampled in spring and fall of 2006 was divided into three categories; sediment, leaves (organic matter), and trash. The weight and volume of each component was determined for each inlet sampled. In the spring, sediment accounted for 63.5%, leaves 28.8%, and trash 7.7% of the material accumulated in the inlets. In the fall, sediment accounted for 61.3%, leaves 31.0%, and trash 7.7% of the material accumulated in the inlets. An ANOVA based on a 2 x 2 x 2 factorial design (land use, physiographic province, sampling round) was conducted. This analysis found no significant differences between the design factors. The average bulk density for the spring was 330.7 pounds/cubic yard of material and for the fall 331.4 pounds/cubic yard of material. The following formula was used to determine kilograms of material per cubic yard:

$$331 \text{ pounds/cubic yard} \times 0.45 \text{ kilograms/pound} = 148.95 \text{ kilograms/cubic yard}$$

The derived kilograms/cubic yard was then multiplied by the total cubic yards of material removed from each watershed in 2009 to determine the total kilograms of material removed. These results were then multiplied by the average concentrations for each pollutant, based on the results from the study above, to determine the milligrams of pollutant removed. The concentrations used were **1,825.92 mg/kg total nitrogen and 707.95 mg/kg total phosphorus**. Finally, the milligrams of pollutant were back calculated for pounds of pollutant removed using the conversion of $2.205 \times 10^{-6} \text{ lbs/mg}$.

The amount of each pollutant removed and urban impervious area treated from each major watershed in the county during 2009 is shown in Table 3-4. Impervious Urban Area Treated was calculated by dividing the pounds of pollutant removed per watershed by the Chesapeake Bay Program per acre pollutant loading rate for impervious urban area, which, based on the Phase 5.2 Watershed Model, is 14.1 lbs/acre for total nitrogen and 2.26 lbs/acre for total phosphorous. The pollutants removed from the Patapsco/Back River Basin watersheds were nearly five times the amounts removed from the Upper Western Shore watersheds.

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Table 3-4: 2009 Storm Drain Cleaning Program Pollutant Removal (Pounds) and Impervious Urban Acres Treated

Watershed	TN #s	Impervious Urban Acres Treated for TN	TP #s	Impervious Urban Acres Treated for TP	TSS
Upper Western Shore					
Deer Creek	0	0	0	0	0
Prettyboy Reservoir	0	0	0	0	0
Loch Raven Reservoir	28.6	2.0	11.1	4.9	15,785
Lower Gunpowder River	18.5	1.3	7.2	3.2	10,219
Little Gunpowder Falls	4.4	0.3	1.7	0.7	2,402
Bird River	16.8	1.2	6.5	2.9	9,283
Gunpowder River	3.1	0.2	1.2	0.5	1,702
Middle River	19.7	1.4	7.6	3.4	10,881
UWS Totals	91.1	6.5	35.3	15.6	50,272
Patapsco/Back River					
Liberty Reservoir	0	0	0	0	0
Patapsco River	61.8	4.4	23.9	10.6	34,087
Gwynns Falls	172.3	12.2	66.8	29.6	95,118
Jones Falls	33.1	2.3	12.8	5.7	18,257
Back River	68.8	4.9	26.7	11.8	37,965
Baltimore Harbor	100.3	7.1	38.9	17.2	55,382
Patapsco/Back River Totals	436.3	30.9	169.2	74.9	240,809
County Totals	527.4	37.4	204.5	90.5	291,801

3.3.4 Program Summary – Storm Drain Cleaning

In sixteen years, the storm drain-cleaning program has removed ~28,600 cubic yards of material from the Baltimore County storm drain system. At 331 pounds per cubic yard, that amounts to approximately 9.5 million pounds. Without intervention, this material would have eventually entered our waterways.

3.4 Street Sweeping

3.4.1 Street Sweeping Overview

Removing materials such as trash, sediment, and debris, from public streets also results in a reduction of the pollutant load (toxins and nutrients) that could have entered waterways. Baltimore County removes these materials by utilizing a street sweeping program managed by the Bureau of Highways. Seven employees operate seven sweepers on a daily basis, following prescribed routes.

The data on how many street miles are swept and tonnage collected is recorded by the Department of Public Works and submitted to DEPRM on an annual basis. Table 3-5 shows this data for each of the past eighteen years. Figure 3-5 provides graphic displays of the information contained in Table 3-5. The removal rates or productivity is also expressed in a tons-per-mile ratio for each year in the table. Approximately ½ ton of material was collected each mile from 1991 through 1995, with a spike to 0.88 in 1994. In 1994, during a particularly severe winter, the county experienced a salt shortage and found it necessary to utilize slag to provide traction on the icy roads. Subsequently, the material removed per mile spiked to the highest-ever that year. In 1996, the one half ton per mile average began to decrease, reaching its lowest point of 0.112 tons/mile in 1998. The decreasing trend began in 1996 and leveled off between 1998 and 2001

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at approximately 0.11 tons/mile. Since then the efficiency has been stable at about 0.30 tons/mile.

Table 3-5: Annual Street Sweeping Summary

Year	Miles Swept	Tons Collected	Tons/Mile
1991	7,566	3,792	0.50
1992	6,663	3,161	0.47
1993	6,300	3,108	0.49
1994	8,532	7,473	0.88
1995	5,333	2,990	0.56
1996	8,605	2,990	0.35
1997	14,785	3,177	0.21
1998	24,863	2,792	0.11
1999	24,968	2,880	0.12
2000	21,949	2,491	0.11
2001	12,147	1,395	0.12
2002	7,800	2,364	0.30
2003	8,640	2,592	0.30
2004	6,617	1,985	0.29
2005	6,126	1,838	0.30
2006	6,306	1,892	0.30
2007	5,133	1,540	0.30
2008	4,110	1,233	0.30
2009	3,972	1,192	0.30
Totals	186,443	49,693	19 yr avg. = 0.33

The current productivity is about two-thirds of the rate in the first five years of the program. The decline in productivity does not necessarily indicate a serious problem. It may simply indicate that the bulk of sediment and debris accumulated over many years was removed during the early years of the program, as might be expected. Absent any major sediment influx (e.g. more cinders used for snow removal), street sweeping efficiency may have reached a maintenance level where it is simply keeping up with the average annual loading. Optimizing the program's performance may now depend mostly on fine-tuning the interrelated activities, for example a route analysis could lead to prioritizing and redefining the sweeping routes, and concentrating efforts more on the commercial areas.

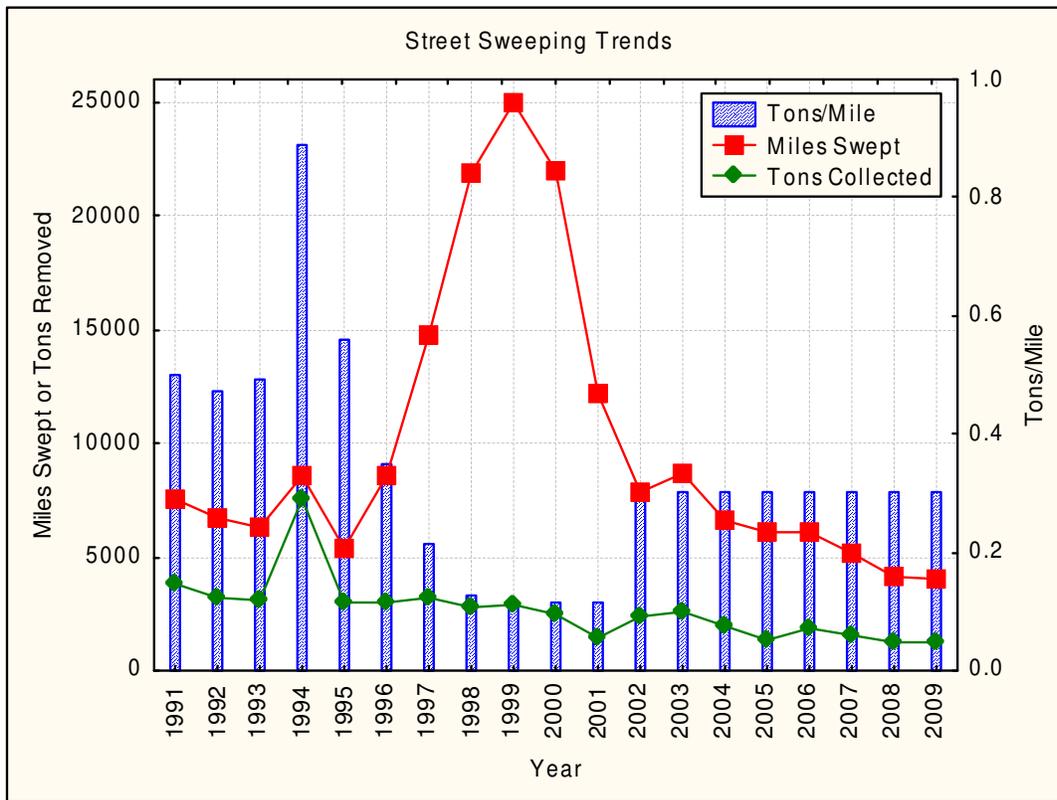


Figure 3-5: Miles of Street Swept, Tons of Material Removed and Tons/Mile Swept

3.4.2 Street Sweeping by Watershed

Utilizing the same methodology used to calculate Storm Drain Cleaning Program pollutant removal rates, the reduction in pollutant loading attributable to the Street Sweeping Program was also quantified. The tonnage of material removed is reported on a countywide basis. In order to determine the material removed by watershed, it is assumed that the pollutant loading per pound of debris did not vary among watersheds or land uses. The street sweeping routes were digitized into a GIS map and then overlaid with the watershed boundaries to determine the proportion of swept miles per watershed. The tonnage of swept material per watershed was then determined by multiplying the total tonnage by the proportion of miles in each watershed. The results are displayed in Table 3-6. The breakdown into watersheds is based on the actual miles available for sweeping, without regard to the number of repeat visits.

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Table 3-6: 2009 Street Sweeping Program – Tons Removed from Watersheds

Watershed	Route Miles (1 circuit)	Percent of Total Miles	Tons Removed
Upper Western Shore Watersheds			
Deer Creek	0	0	0
Prettyboy Reservoir	0	0	0
Loch Raven Reservoir	142.8	11.5	137.1
Lower Gunpowder Falls	78.8	6.4	76.3
Little Gunpowder Falls	17.0	1.4	16.7
Bird River	72.6	5.9	70.3
Gunpowder River	7.7	0.6	7.2
Middle River	27.2	2.2	26.2
UWS Totals	346.1	28%	333.8
Patapsco/Back River Watersheds			
Liberty Reservoir	6.9	0.6	7.2
Patapsco River	170.0	13.8	164.5
Gwynns Falls	321.4	26.0	309.9
Jones Falls	68.3	5.5	65.6
Back River	229.0	18.5	220.5
Baltimore Harbor	93.8	7.6	90.6
Patapsco/Back River Totals	889.4	72%	858.3
Totals	1,235.5	100%	1,192

Unlike the Storm Drain Cleaning Program program, the exact location where the material is collected is not known. A basic assumption was made that material swept from the county's streets was the same, as far as pollutants are concerned, to the material that washes off the streets and into its storm drains. Using the pollutant concentrations from the Street Sweeping- Inlet Cleaning study, the distribution of pounds of pollutants removed and Impervious Urban Acres Treated in 2009 from each of the major watersheds in the county was calculated and is shown in Table 3-7. Impervious Urban Area Treated was calculated by dividing the pounds of pollutant removed per watershed by the Chesapeake Bay Program per acre pollutant loading rate for impervious urban area.

Table 3-7: 2009 Street Sweeping Program Pollutant Removal (Pounds) and Impervious Urban Acres Treated

Watershed TN	TN #s	Impervious Urban Acres Treated for TN	TP #s	Impervious Urban Acres Treated for TP
Upper Western Shore				
Deer Creek	0	0	0	0
Prettyboy Reservoir	0	0	0	0
Loch Raven Reservoir	500.7	35.5	194.1	85.9
Lower Gunpowder River	278.6	19.8	108.0	47.8
Little Gunpowder Falls	61.0	4.3	23.6	10.5
Bird River	256.9	18.2	99.6	44.1
Gunpowder River	26.1	1.9	10.1	4.5
Middle River	95.8	6.8	37.1	16.4
UWS Totals	1,219.0	86.5	472.7	209.1
Patapsco/Back River				
Liberty	26.1	1.9	10.1	4.5
Patapsco River	600.8	42.6	232.9	103.1
Gwynns Falls	1,132.0	80.3	438.9	194.2
Jones Falls	239.5	17.0	92.8	41.1
Back River	805.4	57.1	312.3	138.2

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Baltimore Harbor	330.9	23.5	128.3	56.8
Patapsco/Back River Totals	3,134.7	222.3	1,215.4	537.8
Annual County Totals	4,353.7	308.8	1,688.0	746.9

3.4.3 Program Summary - Street Sweeping

From 1991 to 2009, the Street Sweeping program removed almost 49,300 tons of debris from Baltimore County streets (Table 3-5). Without this program, this debris would have entered waterways.

The Street Sweeping program appears to have reached a maintenance level and now needs to be evaluated to determine where the most significant amounts of sediments are consistently collected. The number of times each route is swept each year, the land use, and other variables need to be factored into the program to increase its efficiency.

Both the Storm Drain Cleaning and Street Sweeping programs make a contribution to the County's overall goal of reducing sediment and other pollutants, including toxics and nutrients that enter the waters of the State. The tonnage collected by the street sweepers and storm drain cleaning trucks is not just pollutant-laden sediment, but includes significant amounts of paper, plastic, glass, wood, aluminum cans, and metal objects. During rainy weather the lighter, more floatable debris is washed into the storm drains, which is then removed by the Storm Drain Cleaning program instead of by the street sweepers.

3.5 Household Hazardous Wastes (HHW)

Household hazardous wastes are specifically exempted from the Maryland State Recycling Act. The Household Hazardous Waste Recycling Program was initiated by Baltimore County DEPRM in response to numerous requests from citizens and elected officials concerned with disposal of hazardous wastes from their own homes.

Baltimore County citizens can drop off household hazardous waste materials for recycling or proper disposal at a permanent processing facility located at the Eastern Sanitary Landfill Solid Waste Management Facility. This facility is operated by DEPRM, in cooperation with the Department of Public Works (DPW), Monday through Saturday, from April through November. Materials dropped off for processing include unwanted household chemicals, such as paints, flammable cleaning solvents, automotive fluids, pesticides, pool chemicals, acids, mercury thermometers, gasoline, corrosive material, etc. Table 3-8 provides a listing of material collected and amounts since 2003. In addition, DEPRM holds two one-day collection events annually, in the spring and fall, at different locations around Baltimore County.

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Table 3-8: Household Hazardous Waste Recycled (2003-2009)

Material Type	2003	2004	2005	2006	2007	2008	2009
<i>Total Liquids (gallons)</i>							
Flammables	3,685	9,570	8,910	9,130	7,495	5,885	7,260
Ammonia	5	2	7	22	5	****	****
Corrosive	495	**	**	**	**	**	**
PCBs						**	**
Gasoline	2,393	2,914	2,043	2,727	2,202	2,884	3,607
Motor oil	93,251	100,735	93,277	85,565	86,055	75,676	81,353
Antifreeze	5,815	5,874	5,378	4,214	6,808	5,926	4,548
Paint (Latex)	5,815	14,480	16,060	12,685	12,445	11,555	13,560
(Liquid) Totals		133,575	125,675	114,343	115,010	101,926	110,328
<i>Total Solids (pounds)</i>							
Corrosive		5,250	5,744	8,860	8,740	8,698	11,681
Pesticides	8,930	14,140	16,150	13,630	18,256	13,685	11,031
Batteries (auto)	280,000	294,300	160,920	358,040	219,640	91,840	176,320
Batteries (rechargeable)		***	***	***	578	6,372	1,238
Cylinders (propane)	79,480	38,980	29,720	42,420	28,660	23,820	14,560
Mercury	168	125	50	40	112	22	42
Reactives	10	40	15	19	15	18	21
Toxics	40	360	105	14	199	257	12
Oxidizers	459	1,240	1,985	1,423	1,664	1,747	1,796
Freon		***	***	***	923	773	742
PCBs		**	**	**	**	5	1
Electronics							2,386,580
(solids) totals		354,435	214,689	424,446	278,787	147,237	2,604,024
<i>Total Solids (number of items)</i>							
Fluorescent Light bulbs		***	***	***	2,564	7,945	22,449
Ammunition (rounds, explosives, fireworks)		***	***	***	1,011	400	815
(solids) totals		***	***	***	3,575	8,345	23,264

** Changed from reporting in gallons to pounds

*** Not recorded for these years

**** Ammonia is now being included with the corrosives

Motor oil remains the most abundant and frequently recycled household hazardous waste. Motor oil and antifreeze are recycled throughout the county at drop-off facilities operated by the Baltimore County Department of Public Works (DPW), in cooperation with the Maryland Environmental Service (MES). Statistics for recycled motor oil and anti-freeze for all participating collection facilities have been reported since 1991. Oil and antifreeze recycling is reported through Maryland Environmental Service, local government, and private facility partnership efforts. Additional unreported recycling of oil and anti-freeze occurs through a network of 65 private sector collection centers across the county, most of which are neighborhood gas/service stations. DEPRM provided assistance in establishing the motor oil and antifreeze recycling program at the DPW facilities. County drop-off sites include landfills, transfer stations, two rural DPW Highways shops, and the Bowley's Quarters Marina.

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Access for citizens to recycle household hazardous waste expanded in 2007 with the opening of two drop off centers, one in Cockeysville and the other in Halethorpe. This coincided with the ability to accept fluorescent light bulbs. The decrease in auto batteries recycled in 2008 may be due to the sluggish economy; people may have sold their batteries to salvage yards, instead of dropping them off at the landfill. Also in 2008, auto batteries were being stolen from the landfill, and as a result the area was fenced and locked. In 2009, the quantity of batteries collected returned to a more typical level.

The various industries that reuse the materials, recycled oils and metals in particular, pay the market-based price for them. Because people that recycle essentially donate the material, the current rates generate sufficient revenue to pay the administrative costs of the program, which is facilitated by MES. Individual commercial facilities that do not participate in the program, such as garages, gasoline stations, and tire and auto centers, are not included. They are typically paid directly by scheduled collectors.

Figure 3-6 displays the estimated statistics for recycled flammables, gasoline and pesticides. Of note is the sharp drop in the amount of flammables and pesticides collected in 2003. Only one single-day event was held that year; the fall event was cancelled due to hurricane Isabel.

With the exception of 2003, collection of flammables increased steadily from 1998 to 2004. Paint sludge is now bulked together into the same drums with other flammable material. The greatest volume of flammables collected for recycling was 9,570 gallons in 2004. The low since 2004 was 5,885 gallons in 2008.

After three years of steady increases, the amount of recycled gasoline had remained relatively steady in a range of 2,000 to 3,000 gallons per year, until 2009 when over 3,600 gallons were collected.

The quantity of pesticides collected reached an all time high in 2007 of 18,256 pounds, and has shown declines for the two subsequent years. In 2009, 11,031 pounds of pesticides were collected.

Mercury was added to the list of solid wastes in 2001; 42 pounds were collected this year. There are mercury TMDLs for the Prettyboy, Liberty and Loch Raven Reservoirs and this program helps to meet the reduction of mercury that could potentially end up in our waterways.

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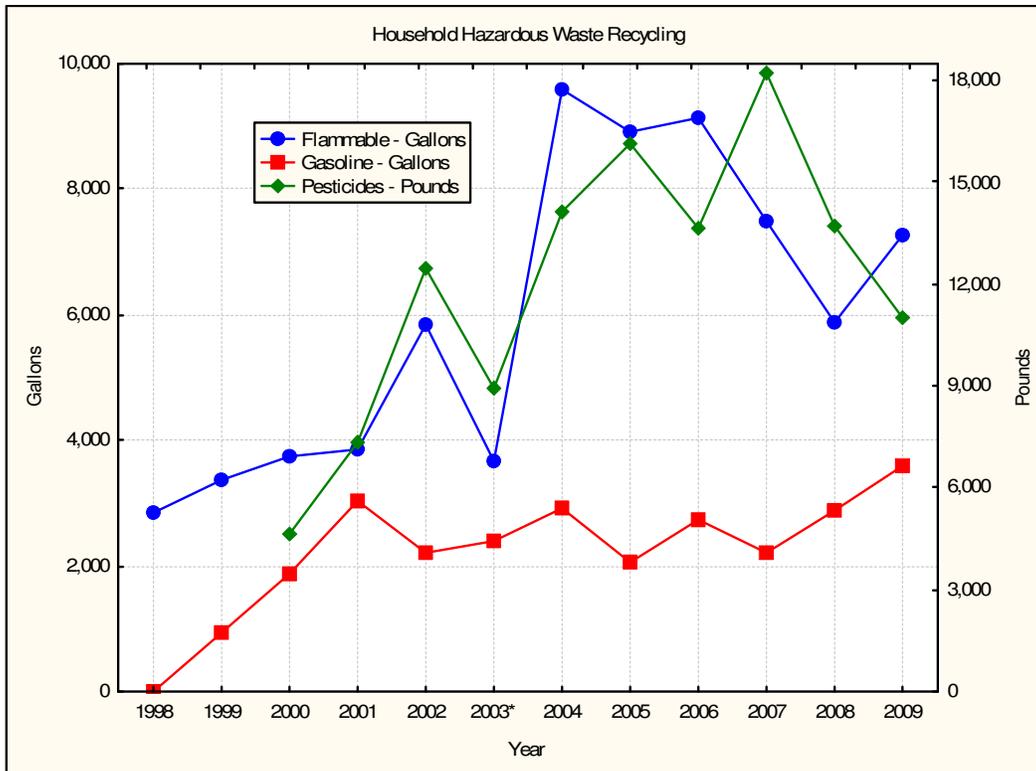


Figure 3-6. Household Hazardous Waste Recycling of Flammables, Gasoline, and Pesticides from 1998 to 2009
 * Only one collection event held in 2003; fall collection was cancelled due to a hurricane.

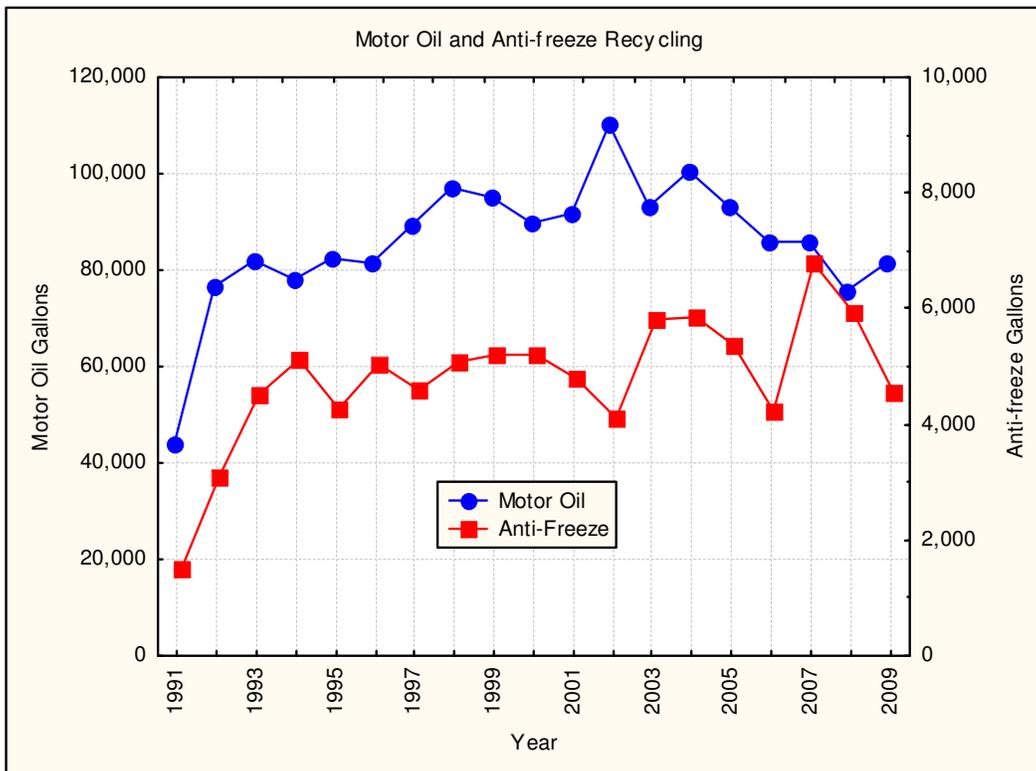


Figure 3-7. Waste Oil and Anti-freeze Recycled from 1991 through 2009

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As can be seen in Figure 3-7, the recycling of motor oil was typically between 90,000 and 100,000 gallons from 1998 to 2005. It has been between 75,000 and 85,000 for the past four years. A total of over 1,600,000 gallons of motor oil has been collected for recycling since 1991. Since 1993, the annual volume of recycled anti-freeze, has typically been between 5,000 to 6,000 gallons. The exceptions are 2006 (4,214 gallons) and 2009 (4,548 gallons). Over 90,000 gallons of anti-freeze have been recycled in Baltimore County since 1991.

As evidenced by the continued citizen participation, DEPRM's recycling program for Household Hazardous Wastes continues to be a successful program. The contribution to reducing nonpoint source pollution remains significant.

Other sources of hazardous waste are also diverted from the waste stream. In 2009, a total of 9,143 fluorescent light bulbs were recycled from county buildings, and public schools generated 60 gallons of paint for recycling/disposal. (These figures, from small generators of hazardous waste, are not included with the Household Hazardous Waste data.)

3.6 Fertilizer, Pesticide, and Deicing Statistics

Members of the Baltimore County NPDES Management Committee have submitted statistics for usage of fertilizers, pesticides and deicing materials. Quantities of fertilizers and pesticides are reported in pounds, tons, gallons, and ounces. All results have been converted to pounds for this report. Fluid measure is assumed to have a density of 7.0 pounds per gallon. The statistics for 2009 by individual agencies are presented in Table 3-9. The amounts used by the entire County are presented in Table 3-10.

Among the County agencies that fertilize and use pesticides, golf courses are consistently the biggest users of these materials. Deicing materials are also used throughout County agencies. Logically, because of its responsibility to clear roads, the DPW– Bureau of Highways remains the biggest user of deicing materials. In 2009, the Bureau of Highways accounted for 99.4% of the deicer material used.

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Table 3-9: 2009 County Agency Fertilizer, Pesticide and Deicing Materials Use (in Pounds)

Golf Courses	Fertilizer	Pesticide	Deicing
Diamond Ridge	37,769	5,131	300
Greystone	21,195	4,881	0
Gunpowder Falls – closed 12.31.08	0	0	0
Rocky Point	33,164	11,936	450
Longview	20,575	3,312	75
Woodlands	45,422	7,249	0
Golf Course Totals	158,125	32,509	825
Agency			
Catonsville Community College	0	0	387,720
Essex Community College	0	6	169,000
Dundalk Community College	1,400	32	93,400
County Public Schools	0	581	112,450
Bureau of Utilities	0	12	0
Bureau of Highways	0	2,100	150,302,000
Recreation and Parks	10,650	36	142,650
Non-Golf Course Totals	12,050	2,769	151,207,220
Totals Pounds =	170,175	35,279	151,208,045

Table 3-10 shows the annual usage of fertilizer, pesticides and deicing material from 1999 through 2009. Figure 3-8 shows data for Fertilizer and Pesticide Trends and Figure 3-9 shows the data for Deicing Material and Snowfall.

Table 3-10: Annual Fertilizer, Pesticide and Deicing Materials Used By County Agencies (in Pounds)

Calendar Year	Fertilizer	Pesticide	Deicing Mat.	Snowfall (in.)	Number of Winter Weather Events
1999	275,400	34,320	83,978,000	12.4	8
2000	213,114	21,028	94,467,750	27.2	7
2001	221,609	21,509	48,566,400	7.4	5
2002	200,060	21,229	100,437,859	12.0	7
2003	191,726	22,137	205,164,341	58.0	8
2004	227,309	34,762	147,537,040	8.7	5
2005	133,881	20,899	185,118,740	24.5	7
2006	166,870	29,607	23,888,950	13.1	1
2007	131,191	26,362	156,690,026	14.4	11
2008	113,435	32,059	65,456,420	4.3	15
2009	170,175	35,279	151,208,045	28.6	9
Totals	2,044,770	299,191	1,262,513,571		

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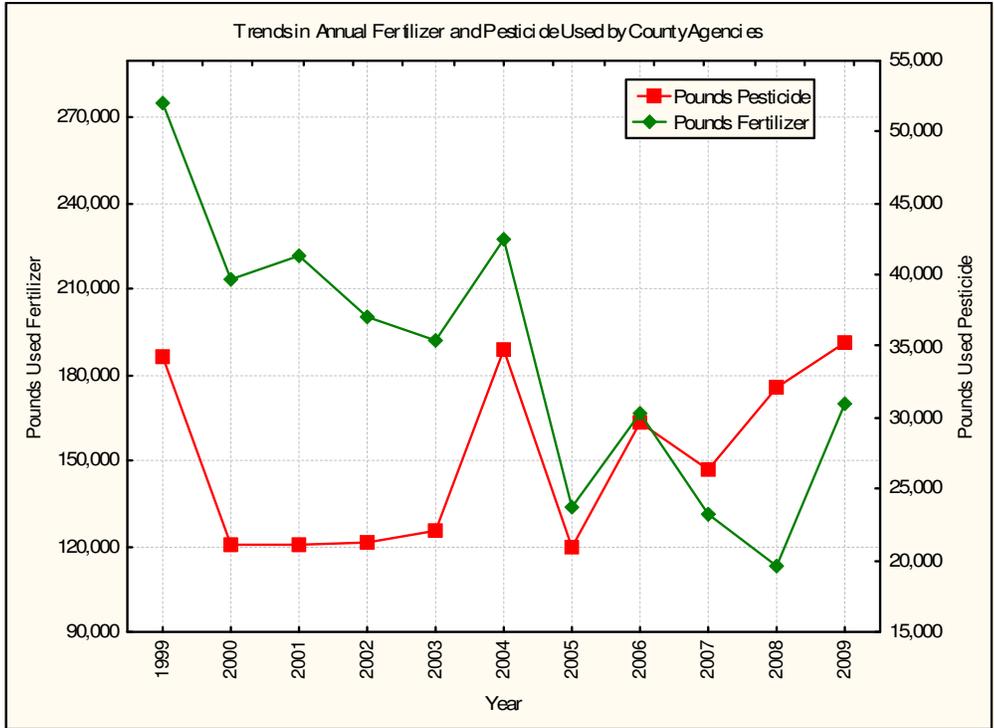


Figure 3-8: Trends in Annual Fertilizer and Pesticide Used by County Agencies

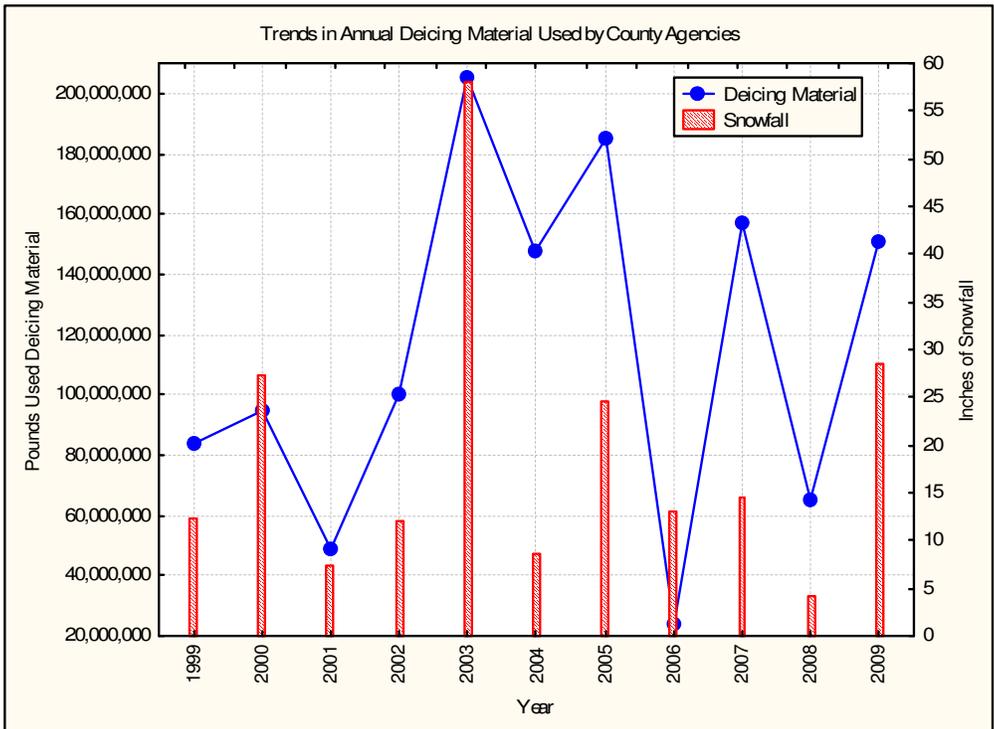


Figure 3-9: Trends in Annual Deicing Material Used by County Agencies

The 58 inches of snow in the calendar year 2003 resulted in the highest salt usage recorded. The amount of deicing materials used depends not only on accumulation of snow, but also the number of events. Freeze and thaw conditions are not tracked at this time.