7.0 Permit Requirements

D. Management Programs

5. Property Management and Maintenance

a. Baltimore County shall ensure that a Notice of Intent (NOI) has been submitted to MDE and a pollution prevention plan developed for each County-owned municipal facility requiring NPDES stormwater general permit coverage. The status of pollution prevention plan development and implementation for each County-owned facility shall be reviewed, documented, and submitted to MDE annually.

b. The County shall implement a program to reduce pollutants associated with maintenance activities at County-owned facilities including parks, roadways, and parking lots. The maintenance program shall include these or MDE approved alternative activities:

i. Street sweeping;

ii. Inlet inspection and cleaning;

iii. Reducing the use of pesticides, herbicides, fertilizers, and other pollutants associated with vegetation management through the use of integrated pest management;

iv. Reducing the use of winter weather deicing materials through research, continual testing and improvement of materials, equipment calibration, employee training, and effective decision-making; and

v. Ensuring that all County staff receive adequate training in pollution prevention and good housekeeping practices.

The County shall report annually on the changes in any of the maintenance practices and the overall pollutant reductions resulting from the maintenance program. Within one year of permit issuance, an alternative maintenance program may be submitted for MDE approval indicating the activities to be undertaken and associated pollutant reductions.

7.1 Introduction

Baltimore County has a number of county owned facilities that are required to have NPDES stormwater general permit coverage (Section 7.2). The Department of Environmental Protection and Sustainability (EPS) has identified these sites and is assisting various departments in developing their stormwater pollution prevention plans, which includes good housekeeping and best management practices to prevent contaminants from leaving the site during rainstorms or a spill.

Baltimore County has established programs to reduce the amount of pollution that reaches the stream systems. Both the Storm Drain Cleaning Program (Section 7.3.1) and the Street Sweeping Program (Section 7.3.2) are the responsibility of the Baltimore County Department of Public Works (DPW) (Section 7.3). 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.

The County tracks its use of chemicals involved in vegetation maintenance (herbicides, pesticides, fertilizers) and deicing materials for winter weather conditions (Section 7.3), as well as Household Hazardous Waste (Section 7.4).

EPS coordinates with other county agencies through the NPDES Management Committee (Section 7.5).

7.2 General Permit for Stormwater Discharges Associated with Industrial Activity - Compliance of County Facilities with the General Industrial Stormwater Discharge Permit

The State of Maryland's current General Permit for Stormwater Discharges Associated with Industrial Activities went into effect on January 1, 2014. It is also referred to as the General Discharge Permit No. 12-SW, or simply "12-SW". It is administered by Maryland Department of Environment (MDE).

7.2.1 Regulated County Facilities - Status of NOIs and SWPPPs

County-owned industrial facilities requiring NPDES stormwater general permit coverage include general government sites such as highway shops, utility yards, vehicle/equipment maintenance and fueling facilities. Other public industrial sites, such as school bus yards and college campus maintenance facilities are also covered under this permit. These municipal industrial operations fall under various county agencies, including Public Works, Property Management, Public Schools, and the Baltimore County Community College.

7.2.1.1 Status of General Government Sites

The Department of Public Works (DPW) has assumed responsibility for ensuring that regulated general government facilities comply with the new permit requirements. Consultants conducted stormwater assessments on industrial sites, developed Stormwater Pollution Prevention Plans (SWPPPs), and designed restoration plans to address untreated impervious surface area as required by the county's NPDES-MS4 permit.

Table 7-1 shows the status of county facility compliance with the General Permit for Industrial Stormwater Discharge (12-SW) by agency or bureau. In FY 2015, there were a total of 26 permits in effect for general government industrial activities. A few sites have multiple permits due to multiple industrial uses on a shared site. Each industrial operator is responsible for maintaining their own permit and related requirements.

At the time of this report preparation, there were five new permits pending: three Property Management maintenance sites (Texas, Sparrows Point, and Inwood), Fullerton Utilities, and Fullerton EOM. A Notice of Termination (NOT) was issued in June 2015 for the Gilroy Utilities/EOM site. It was moved to the Fullerton Utilities site.

EPS provides guidance to county agencies on preparation of the Notice of Intent (NOI) or No Exposure Certification (NEC), and the Stormwater Pollution Prevention Plan (SWPPP) as needed. In accordance with the requirements of the 12-SW permit, NOIs and SWPPPs have been prepared and submitted to MDE for all regulated general government sites. A Letter of Coverage

from MDE states that all of these sites are covered, effective October 1, 2014. All Baltimore County municipal sites are in compliance.

DPW has contracted with the Maryland Environmental Service (MES) to conduct monitoring, maintenance, and updating of SWPPPs, handling of corrective actions, maintenance of data, tracking and reporting data, and training of staff at the regulated general government sites. MES has developed a customized database for tracking the data, and for generating notifications and work orders to established contacts when issues arise.

7.2.1.2 Status of Other County Agencies

This group includes public sites managed separately by Baltimore County Public Schools (13 sites) and the Community College of Baltimore County (3 campuses). All BSPS and CCBC sites are in compliance. These sites are also included in Table 7-1.

Table 7-1: General SW Discharge Permit (12-SW) – FY 2015 Compliance Status of Baltimore County Industrial Sites

County Department	Facilities	Notice of Intent (NOI) & Stormwater Pollution Prevention Plan (SWPPP) Established
Department of Public Works - Highways (includes Equipment Operation and Maintenance, and the DPW Training Academy)	16 Shops/Salt Domes: Bosley Avenue (Shop 5) Brady Avenue (Shop 1) Clarks Lane (Shop 3) Emala Ave (Shop 8) Glen Arm (EOM) Hydes Road (Shop 7-2) Industry Lane (Salt Dome) Longview (Shop 6) Middletown Road (Shop 4-2) Perry Road (Shop 7-1) Pikesville (Salt Dome) Ridge Road (Shop 4-1) Sparrows Point (Shop 9) Training Academy White Hall (Shop 4-3) Windsor Mill (Shop 2)	Yes
Department of Public Works - Utilities	3 Shops: Brady Avenue Essex Pikesville	Yes
Department of Public Works - Traffic Engineering	1 Site: Glen Arm	Yes
Office of Budget and Finance - Vehicle Operations and Maintenance	3 Maintenance Shops: Essex Gilroy (moved in June 2015) Randallstown	Yes
Office of Budget and Finance - Property Management	3 Maintenance Shops: Chesterwood Park Double Rock Park Special Forces	Yes
Baltimore County Public Schools - Transportation and Grounds	13 Facilities: Arbutus Bus and Grounds Cockeysville Transportation and Grounds Hopkins Creek Bus	Yes

	Inwood Transportation Kenwood Larchmont Grounds Loch Raven Grounds North Point Transportation, Bus and Grounds Parkton Bus Providence Road Bus Rosedale Bus Wabash Bus Windsor Mill Bus	
Community College of Baltimore County	3 Campuses: Catonsville Dundalk Essex	Yes

7.2.2 Restoration Plans for Permitted Sites (General Government)

Phase One restoration projects to assist towards meeting the impervious surface area treatment requirement of the NPDES-MS4 permit were completed in 2014. Phase Two sites are underway at some of the county's industrial sites. MES is under contract to maintain the BMPs implemented at the general government sites. See Section 10 for the list of restoration projects, the pollutant load reductions, and impervious surface credit calculations.

7.2.3 Employee Training

Training of on-site employees is an essential part of compliance with the 12-SW permit. All county industrial sites are required to conduct regular training and to keep a record of the training with their SWPPP at the site.

7.2.3.1 Department of Public Works (DPW)

At DPW's Mid-Level Managers' Meeting in October 2014, a presentation was given on Stormwater Pollution Prevention to approximately 90 supervisors from all DPW bureaus.

DPW conducted two staff training sessions on compliance of the General Stormwater Discharge Permit for general government sites. The first training was held at the county's Brady Avenue facility (southern county) on November 20, 2014. The second was held at the county's Safety and Training Academy in Phoenix (northern county) on December 10, 2014. Each training was held from 7:30 a.m. to 12:00 p.m., and each was attended by about 55 personnel. Sign in sheets for each facility represented are stored at the facility as required. Training was conducted by Maryland Environmental Service (MES) with support from DPW. The PowerPoint presentation given is included in the "Miscellaneous Documents" folder, submitted to MDE electronically with this report. Future staff trainings will take place on site, facility by facility.

7.2.3.2 Baltimore County Public Schools (BCPS)

BCPS employs over 1,000 bus drivers that work at various sites around the county. At the end of the school year, bus drivers have annual meetings. The BCPS Department of Facilities developed a Power Point presentation to train bus drivers on permit requirements and their role in maintaining a clean site. The presentation was given at all the bus driver meetings in June 2015. The presentation is included in the "Miscellaneous Documents" folder, submitted to MDE electronically with this report.

7.2.4 Site Inspections by MDE

MDE inspected 18 county facilities for 12-SW permit compliance in the 2015 fiscal year. Adjustments to the new record keeping requirements posed the greatest challenge. Four of eight Highway shops inspected were found to be noncompliant due to lack of proper record keeping; documentation was completed and put in place at the sites. One VOM and two Utilities sites were inspected and found to be compliant. Seven BCPS Transportation and Grounds sites were inspected; five were compliant; the other two had issues that were addressed and passed follow up inspections.

7.3 Pollution Reduction Due to County Maintenance Programs

7.3.1 Storm Drain Cleaning

The Baltimore County DPW stormdrain geodatabase is still being compiled, and will be updated via field investigations, quality control, and compilation from recent storm drain drawings. A copy of this geodatabase accompanies this report. Below are totals from DPW's stormdrain geodatabase as of 9/18/2015.

The Baltimore County storm drain system consists of approximately 1,591 miles of storm drain pipes, channels, and swales, 53,107 inlets, 29,091 manholes, 20,061 in-network structures, and 8,367 outfalls. This is a conservative estimate from DPW's storm drain geodatabase (included in this report, see Section 2), which continues to grow as field investigations, quality control, and compilation of recent storm drain drawings continue.

In order to keep the entire storm drain system clean of trash, debris, and sediment, the Department of Public Works Bureau of Utilities 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, reduces the amount of trash and sediment from entering streams, 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 sheets are sent to EPS, where the data is entered into a database. The database facilitates reporting for NPDES purposes.

The DPW Bureau of Highways also has three inlet cleaning trucks that cover the eastern, western, and central county. The Bureau of Highways purchased three Elgin Megawind Sewer Catch Basin trucks and operator training was conducted on October 9, 2014 with several operator meetings after the training. The material collected from the inlets is dumped in the street sweeping debris dumpster and weighed at the landfill. That data is included with the Street Sweeping Program and not with the inlet cleaning data in this section.

7.3.1.1 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.

The removal rates for 1993 through 2015 are presented in Table 7-2. 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. Figure 7-1 shows a yearly comparison of the number of inlets cleaned and the total volume of material removed. Figure 7-2 shows the mean volume of debris removed per inlet. Figure 7-3 shows a yearly comparison of the length of pipe cleaned and the amount of material removed, and Figure 7-4 shows the mean volume of debris removed per linear foot of pipe.

Table 7-2: 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
2010	354	313	1.13	172	13,310	0.0129
2011	466	605	0.77	441	28,069	0.0157
FY 2012*	407	619	0.66	434	25,761	0.0168
FY 2013	221	286	0.77	229	14,342	0.0160
FY 2014	260	209	1.24	439	19,372	0.0226
FY 2015	407	854	0.48	645	42,615	0.0151
Totals	**18,361**	**25,989**	**0.706**	**15,611**	**953,184**	**0.0164**

* The analysis for 2012 was projected in terms of the 2012 fiscal year using data from January-June 2012, which was added to the ½ the value of the 2011 data.

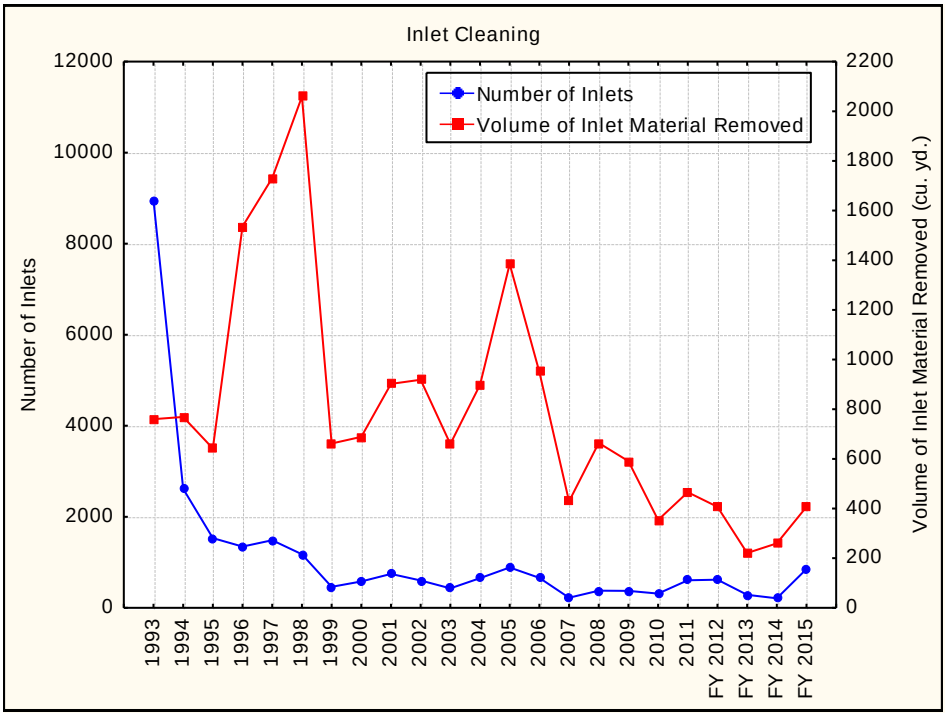

Figure 7-1: Inlets Cleaned and Volume of Material Removed per Year

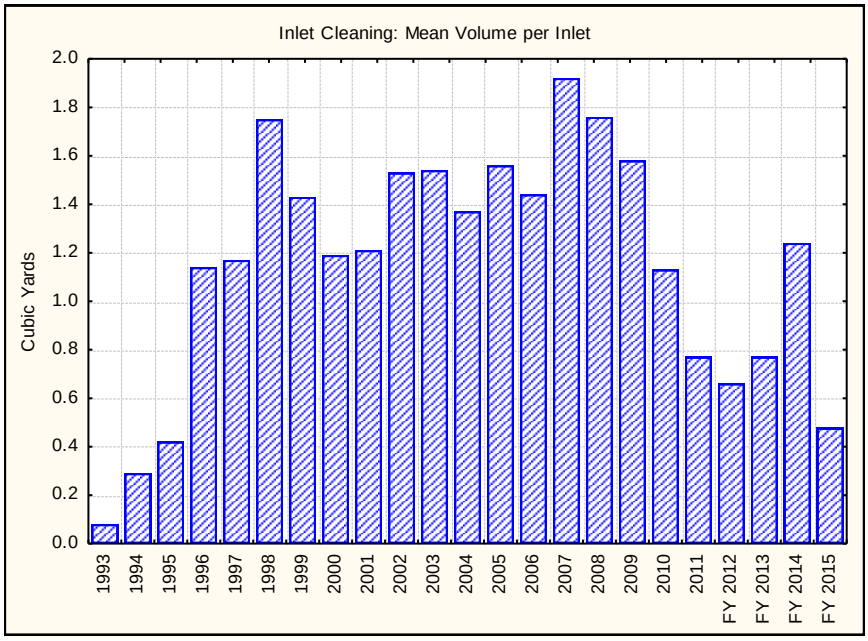

Figure 7-2: Annual Inlet Debris Removal Rates

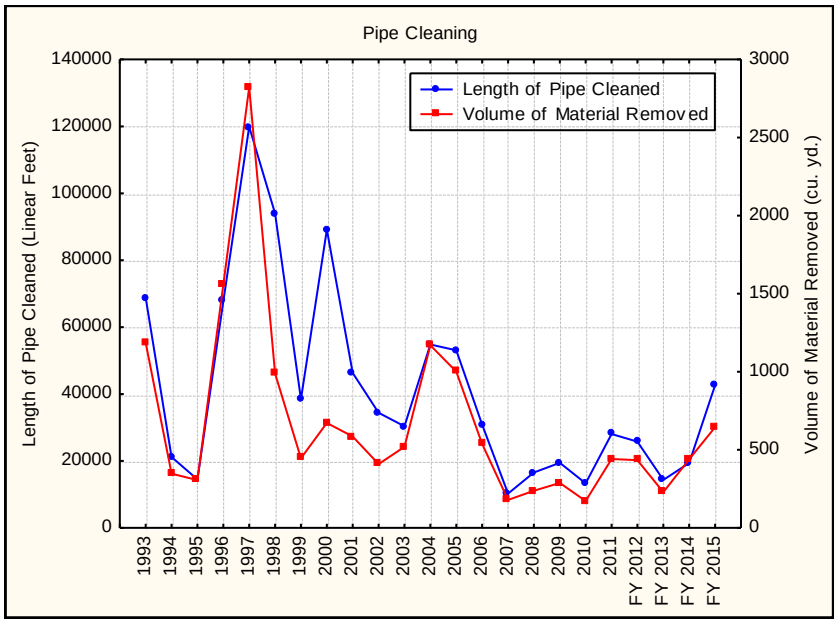

Figure 7-3: Length of Pipe Cleaned and Volume of Material Removed per Year

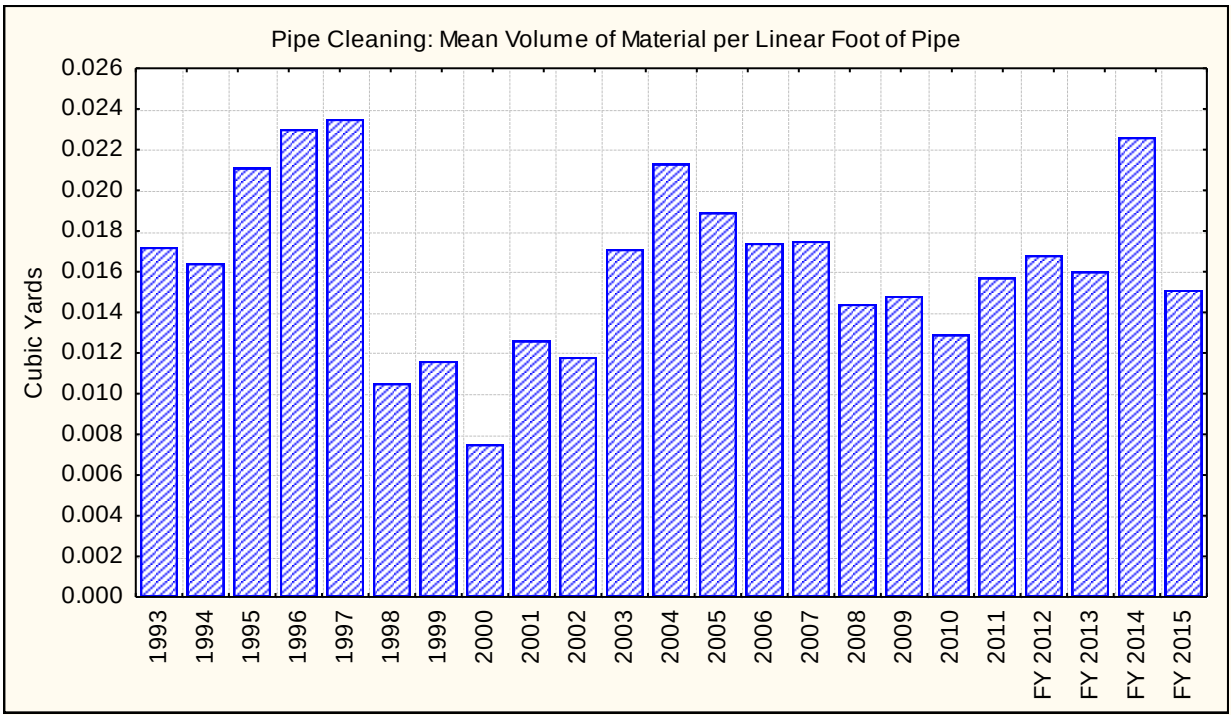

Figure 7-4: Annual Pipe Debris Removal Rates

The number of inlets cleaned remained fairly steady between 1999 and 2006, with a decrease between 2007 and 2010. While the 2011 and 2012 data showed an increase in the number of inlets cleaned, data for the 2013 and 2014 fiscal years shows a slight decrease. The number of inlets cleaned increased significantly in FY 2015 to 854. For the period from 1993 through 1998, the average number of inlets cleaned was ~2,850 per year in contrast to ~627 per year in the 1999-2006, ~418 in the 2007-2012 time periods, and ~240 during 2013-2014. The volume of

material removed per inlet has also been variable throughout the years. The average amount of material removed per inlet increased from ~0.8 cubic yards per inlet to ~1.4 cubic yards per inlet between 1998 and 2006, decreased slightly to ~1.3 cubic yards per inlet between 2006 and 2010, declined further to ~0.86 cubic yards per inlet between 2011 and FY 2014, and decreased again to ~0.48 cubic yards per inlet in FY 2015. 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 storm drain cleaning program includes routine cleaning as budget permits of storm drains with known problems, in addition to responding to comments or complaints received via phone and web requests from citizens. There are also emergency based cleanings due to pipes or inlets being clogged. During the winter months (November – March), the Department of Public Works responds only to emergencies when the temperature is below freezing. Therefore, the numbers of pipes and inlets cleaned after 1995 varies each year, depending in part on the temperature.

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 7-1). The total amount of material removed was lower for the years 1999 through 2003. There was an upward trend in 2004 and 2005 after which the volume of material removed has been consistently lower except in FY 12 when it rose slightly. However in the 2014 and 2015 Fiscal Years the amount of inlets cleaned and material removed rose substantially, although the removal of material per inlet decreased.

The largest amount of material removed from pipes was in 1997. This was also the greatest length of pipe cleaned (see Figure 7-4). The volume of material removed from pipes has steadily declined from an average of ~1,200 cubic yards between 1993 and 1998, ~667 cu. yd. between 1999 and 2006, and down to ~365 cu. yd. between 2007 and 2015. The average volume of material removed from pipes cleaned in these time periods has also declined with ~64,500 linear ft. from 1993 to 1998, ~47,000 ft. from 1999 through 2006, and ~21,000 ft. from 2007 to 2015. The volume removed per linear foot decreased from 0.019 cubic yards between 1993 and 1999 to 0.015 cu. yd. for 1999-2009, but increased to 0.17 cubic yards for FY2009-2015. Over the years the assumption of how full the pipe was before cleaning has been revised. In FY 2015 it was assumed the pipe was 50% full before cleaning and then the volume of debris was determined. In previous years, 100% and 75% assumptions have been used.

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. In general, it's typically smaller diameter pipes that get clogged and need cleaning whereas larger pipes receive more volume of water and are able to flush the debris more easily.

7.3.1.2 Storm Drain Cleaning Data by Watershed

The Storm Drain Cleaning data for the 2015 fiscal year, 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 7-3.

Table 7-3: FY 2015 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	0.0	0.0
Prettyboy Reservoir	0	0.0	0	0.0	0.0
Loch Raven Reservoir	57	21.2	2,085	29.4	50.6
Lower Gunpowder Falls	52	22.6	2,858	31.7	54.3
Little Gunpowder Falls	3	0	295	4.5	4.5
Bird River	27	25.5	1,035	8.8	34.4
Gunpowder River	7	2.1	1,189	35.3	37.4
Middle River	58	19.4	2,112	31.1	50.5
Upper Western Shore Totals	**204**	**90.9**	**9,574**	**140.8**	**231.7**
Patapsco/Back River					
Liberty Reservoir	2	0.6	0	0	0.6
Patapsco River	84	55.1	3,289	75.4	130.6
Gwynns Falls	181	102.3	7,010	102.5	204.8
Jones Falls	125	45.6	8,311	70.3	115.9
Back River	171	75.3	9,670	187.1	262.5
Baltimore Harbor	87	37.6	4,761	68.4	106.0
Patapsco/Back River Totals	**650**	**316.6**	**33,041**	**503.7**	**820.3**
County Totals	**854**	**407.4**	**42,615**	**644.6**	**1,052.0**

Around 78% of the material removed from the storm drain system was removed from the heavily urbanized Patapsco/Back River Basin, with Gwynns Falls, Jones Falls, and Back River 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.worldsweeper.com/Street/Studies/CWPStudy/CBStreetSweeping.pdf

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. Materials were not dried before weighing, and were collected from a mix of wet and dry inlets. The study found that trash accounted for 8.9% of the weight of debris from inlets, while sediment and organic material made up 91.1% of the weight of debris. Trash debris is not eligible for nutrient and sediment reductions. An ANOVA based on a 2 x 2 x 2 factorial design (land use, physiographic province, and 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 tons of material per cubic yard:

331 pounds/cubic yard x 0.0005 tons/pound = 0.166 tons/cubic yard

The derived tons/cubic yard was then multiplied by the total cubic yards of material removed from each watershed in FY 2013 to determine the total tons of material removed. We conservatively assume that the tons of material represents wet weight, and therefore estimate the dry weight by multiplying the tons by 70%, as per the document *Accounting for Stormwater Wasteload Allocations and Impervious Acres Treated* (MDE, 2014).

The pollutant load reduction was then calculated using the following figures, from MDE (2014): pounds of pollutant per ton of collected dry material are 5 lbs/ton total nitrogen, 2 lbs/ton total phosphorus, and 600 lbs/ton total suspended solids. Weight of wet material can be converted to dry weight by multiplying by 70% (MDE 2014, 46).

The amount of each pollutant removed and urban impervious area treated from each major watershed in the county during the 2015 Fiscal Year is shown in Table 7-4. Impervious Urban Area Treated was calculated by multiplying the tons of material removed by 0.40 as per MDE (2014). The pollutants removed from the Patapsco/Back River Basin watersheds were about five times the amounts removed from the Upper Western Shore watersheds.

Table 7-4: FY 2015 Storm Drain Cleaning Program Pollutant Removal (Pounds) and Impervious Urban Acres Treated

Watershed	Debris (Cu. yd.)	Debris, non-trash (Tons)	TN Pounds	TP Pounds	TSS Pounds	EIUA[1]
Deer Creek	0.00	0.00	0.00	0.00	0.00	0.00
Prettyboy Reservoir	0.00	0.00	0.00	0.00	0.00	0.00
Loch Raven Reservoir	50.63	7.66	26.80	10.72	3,215.50	2.14
Lower Gunpowder River	54.27	8.21	28.73	11.49	3,447.20	2.30
Little Gunpowder Falls	4.46	0.67	2.36	0.94	283.49	0.19
Bird River	34.37	5.20	18.19	7.28	2,183.19	1.46
Gunpowder River	37.43	5.66	19.81	7.93	2,377.63	1.59
Middle River	50.53	7.64	26.75	10.70	3,209.57	2.14
UWS Totals	**231.70**	**35.04**	**122.64**	**49.06**	**14,716.57**	**9.81**
Liberty Reservoir	0.63	0.10	0.33	0.13	40.02	0.03
Patapsco River	130.57	19.75	69.11	27.64	8,293.02	5.53
Gwynns Falls	204.75	30.96	108.37	43.35	13,004.70	8.67
Jones Falls	115.88	17.52	61.34	24.53	7,360.26	4.91
Back River	262.49	39.70	138.93	55.57	16,672.07	11.11
Baltimore Harbor	105.98	16.03	56.09	22.44	6,731.17	4.49
Patapsco/Back River Totals	**820.30**	**124.05**	**434.18**	**173.67**	**52,101.24**	**34.73**
County Totals	**1,052.00**	**159.09**	**556.82**	**222.73**	**66,817.81**	**44.55**

[1]EIUA = Equivalent Impervious Urban Acres

7.3.1.3 Program Summary – Storm Drain Cleaning

Over the past twenty-two years, the storm drain cleaning program has removed ~33,972 cubic yards of material from the Baltimore County storm drain system. At 331 pounds per cubic yard, that amounts to approximately 11.2 million pounds. Without intervention, this material would have eventually entered our waterways.

7.3.2 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 mechanical street sweepers managed by the Bureau of Highways. A significant increase in street sweeping occurred near the end of FY 2014 and continued into FY 2015. Using Stormwater Remediation Fee funds, the county increased its fleet of street sweepers to nine. An additional contracted sweeper started working full time in the Essex and Dundalk area after new equipment started arriving in May 2014.

The data on how many street miles are swept and tonnage collected is recorded by the Department of Public Works and submitted to EPS on an annual basis. Table 7-5 shows this data for each year from 1991-2015. Figure 7-5 provides graphic displays of the information contained in Table 7-5. The removal rates or productivity is also expressed in a tons-per-mile ratio for each year in the table. Approximately 0.5 tons 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 0.5 tons/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 at approximately 0.11 tons/mile. Since then the efficiency has been stable at about 0.30 tons/mile. The analysis for 2012 only reflects data collected between January and June 2012. The data for this time period is significantly lower than previous years, and was not extrapolated to represent the full fiscal year. This could be due to variations in street sweeping activities throughout the seasons. Note: Revised data was provided by the Bureau of Highways for street sweeping in 2012 and 2013.

Table 7-5: 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
2010	3,937	1,181	0.30
2011	3,107	932	0.30
*2012	3,638	1,091	0.30
FY 2013	2,569	771	0.30

Year	Miles Swept	Tons Collected	Tons/Mile
FY 2014	N/A	2,166	N/A
FY 2015	N/A	1,854.4	N/A

Prior to April 2015, data was provided as miles swept and tons collected and productivity could be determined as tons per mile swept. Productivity of tons swept per mile showed a decline of about two-thirds of the rate in later years compared to 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. Without 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. Please note data is now provided as tons collected per highway shop as described in 7.3.2.1 and we can no longer calculate a rate of tons per mile.

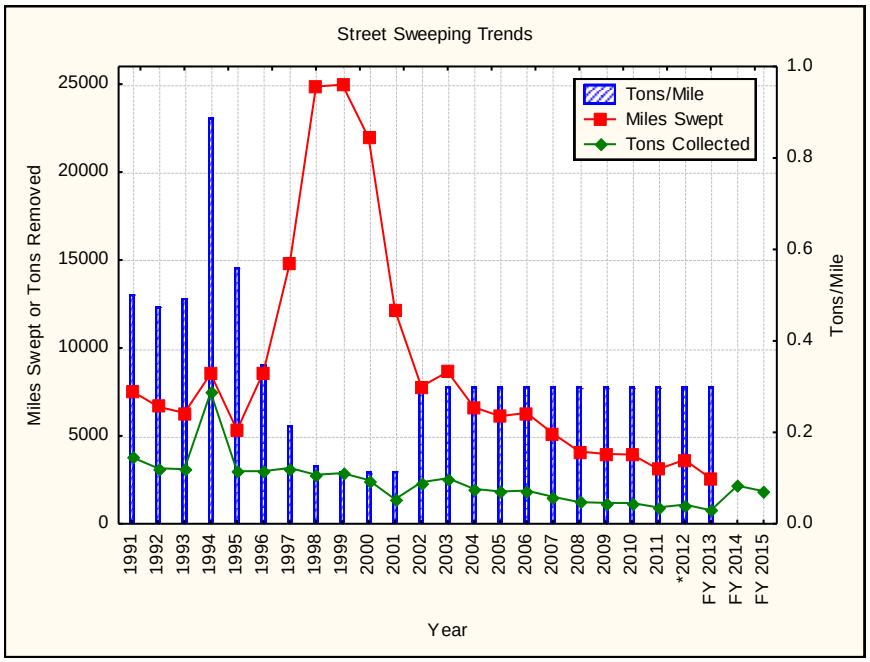

Figure 7-5: Miles of Street Swept, Tons of Material Removed, and Tons/Mile Swept

7.3.2.1 Street Sweeping by Watershed

Street sweeping data is reported as tons collected per highway shop. There are 11 highway shops in Baltimore County. Street sweeping is conducted only on roads with curb and gutters. Some alleys, County parking lots, and open roadways (without curb and gutter) are swept when requested. State Routes such as S.R. 45 (York Road) are not handled by the County; State Highway Administration is responsible those roads.

According to DPW, areas serviced by highway shops 8 and 9 (Essex area) are swept approximately three times a year where there's a dedicated, contracted street sweeper: all other areas are swept one to one and a half times per year. Street sweeping does not occur when the

temperature is below freezing, when there's snow on the ground, or during heavy rain. However, it is done year round when possible.

Tonnage of debris collected is reported as tons per highway shop (debris weighed at landfill). An assumption is made that the street sweeping is distributed evenly across the eligible road miles in each highway shop's territory. The percent of highway shop road miles in each watershed is used to distribute the street sweeping debris collections among watersheds. The miles per watershed per highway shop are displayed in Table 7-6.

Table 7-6: Street Sweeping Program – Proportion of Swept Miles by Highway Shop

Highway Shop	1		2		3		4-2		4-3	
Watershed	Miles	%	Miles	%	Miles	%	Miles	%	Miles	%
Back R.	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Balt. Harbor	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Bird R.	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Gunpowder R.	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Gwynns Falls	40.4	14.0%	345.0	71.9%	339.4	62.6%	0.0	0.0%	0.0	0.0%
Jones Falls	0.0	0.0%	9.6	2.0%	172.1	31.8%	0.0	0.0%	0.0	0.0%
Liberty	0.0	0.0%	0.0	0.0%	13.7	2.5%	0.0	0.0%	0.0	0.0%
Little Gun. F.	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Loch Raven	0.0	0.0%	0.0	0.0%	10.3	1.9%	0.0	0.0%	5.4	100.0%
Lower Gun. F.	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Middle R.	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Patapsco R.	247.3	86.0%	125.2	26.1%	6.4	1.2%	0.0	0.0%	0.0	0.0%
Prettyboy	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.4	100.0%	0.0	0.0%
Grand Total	287.6	100.0%	479.8	100.0%	541.9	100.0%	0.4	100.0%	5.4	100.0%

Highway Shop	5		6		7-1		7-2		8		9	
Watershed	Miles	%	Miles	%	Miles	%	Miles	%	Miles	%	Miles	%
Back R.	170.9	38.6%	0.0	0.0%	163.3	51.9%	0.0	0.0%	135.8	53.4%	50.3	20.4%
Balt. Harbor	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	196.4	79.6%
Bird R.	19.8	4.5%	0.0	0.0%	143.5	45.6%	37.8	18.0%	22.4	8.8%	0.0	0.0%
Gunpowder R.	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	25.4	10.0%	0.0	0.0%
Gwynns Falls	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Jones Falls	106.1	24.0%	71.9	17.7%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Liberty	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Little Gun. F.	0.0	0.0%	0.4	0.1%	0.0	0.0%	26.8	12.8%	0.0	0.0%	0.0	0.0%
Loch Raven	52.9	12.0%	333.3	82.2%	0.0	0.0%	28.7	13.7%	0.0	0.0%	0.0	0.0%
Lower Gun. F.	92.7	20.9%	0.0	0.0%	7.7	2.5%	116.8	55.6%	0.1	0.0%	0.0	0.0%
Middle R.	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	70.6	27.8%	0.0	0.0%
Patapsco R.	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Prettyboy	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%
Grand Total	442.5	100.0%	405.5	100.0%	314.5	100.0%	210.1	100.0%	254.2	100.0%	246.6	100.0%

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 quantified. Street sweeping materials are not dried before weighing, so MDE's wet weight to dry weight conversion is applied (MDE 2014). Using pollutant concentrations from MDE (2014),

the distribution of pounds of pollutants removed and Impervious Urban Acres Treated in the 2013 Fiscal Year from each of the major watersheds in the county was calculated and is shown in Table 7-7. Impervious Urban Area Treated was calculated by multiplying the tons of material removed by 0.40 as per MDE (2014).

Table 7-7: FY 2015 Street Sweeping Program Pollutant Removal (Pounds) and Impervious Urban Acres Treated

Watershed	Debris (Tons)	TSS Pounds	TN Pounds	TP Pounds	EIUA[1]
Deer Creek	0.0	0.0	0.0	0.0	0.0
Prettyboy Reservoir	0.0	0.0	0.0	0.0	0.0
Loch Raven Reservoir	201.2	84,517.0	704.3	281.7	56.3
Lower Gunpowder Falls	117.1	49,201.5	410.0	164.0	32.8
Little Gunpowder Falls	17.8	7,485.3	62.4	25.0	5.0
Bird River	159.77	67,093.4	559.1	223.6	44.7
Gunpowder River	35.9	15,074.9	125.6	50.2	10.0
Middle River	99.8	41,931.6	349.4	139.8	28.0
UWS Totals	**631.7**	**265,303.6**	**2,210.9**	**884.3**	**176.9**
Liberty Reservoir	4.4	1,839.0	15.3	6.1	1.2
Patapsco River	123.77	51,957.2	433.0	173.2	34.6
Gwynns Falls	257.5	108,162.4	901.4	360.5	72.1
Jones Falls	133.22	55,943.1	466.2	186.5	37.3
Back River	434.55	182,485.3	1,520.7	608.3	121.7
Baltimore Harbor	269.44	113,165.9	943.0	377.2	75.4
P/Back River Totals	**1,222.7**	**513,553.0**	**4,279.6**	**1,711.8**	**342.4**
Annual County Totals	**1,854.2**	**778,856.6**	**6,490.5**	**2,596.2**	**519.2**

[1]EIUA = Equivalent Impervious Urban Acres

7.3.2.2 Program Summary - Street Sweeping

From 1991 to June of 2015, the Street Sweeping program removed 58,880 tons of debris from Baltimore County streets (Table 7-5). 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.

7.3.3 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 FY 2015 (July 1, 2014 – June 30, 2015) by individual agencies are presented in Table 7-8. The

amounts used by the entire county annually since 1999 are presented in Table 7-9, along with number of winter storms and snowfall in inches.

Table 7-8: July 1, 2014 – June 30, 2015 County Agency Fertilizer, Pesticide and Deicing Materials Use (in Pounds)

Golf Courses	Fertilizer	Pesticide	Deicing
Diamond Ridge	23,929	5,638	375
Greystone	11,100	5,052	500
Rocky Point	25,994	9,684	175
Fox Hollow	28,420	5,387	350
Woodlands	33,586	7,962	375
Golf Course Total	**123,029**	**33,723**	**1,775**
Agency	**Fertilizer**	**Pesticide**	**Deicing**
Catonsville Community College	0	0	471,900
Essex Community College	10	2	140,140
Dundalk Community College	0	5	106,800
County Public Schools	3,500	261	356,900
DPW - Bureau of Utilities	0	24	0
DPW - Bureau of Highways	0	1,164	203,786,000
DPW – Bureau of Solid Waste[1]	6,000	21	80,000
Environmental Protection and Sustainability[1]	400	118	0
Property Management (athletic fields)	131,950	1,602	381,500
Non-Golf Course Total	**141,860**	**3,197**	**205,323,240**
Total County Pounds	**264,889**	**36,920**	**205,325,015**

[1]Data included for the first time in FY 2015.

A few additional sources of chemical treatments by the county are included for the first time in this report, namely DPW – Solid Waste (landfill grounds), and Environmental Protection and Sustainability (reforestation nursery operations, reforestation site maintenance, stormwater management facility maintenance, and in restoration projects to control invasive plants and establish new plantings for stabilization). It was also confirmed that all Recreation and Parks sites are maintained by Property Maintenance, and that DPW's forestry practices are included under the reporting for the Bureau of Highways.

7.3.3.1 Fertilizer

In 1998, the Maryland Legislature passed the Water Quality Improvement Act, also known as the nutrient management law. This law requires farms to develop and implement nutrient management plans for application of fertilizer, animal manure and sludge. Non-agricultural nutrient applicators, including commercial lawn care companies, landscapers, golf course managers and public groundskeepers, are required by law to follow Maryland Cooperative Extension guidelines when applying nutrients to lawns, athletic fields or other landscapes ten acres or greater in size. Nutrient management plans were required to be developed by December 31, 2001 and implemented by December 31, 2002. Since implementation of the Water Quality Improvement Act, there has been an overall downward trend in fertilizer use by county agencies, with the recent exception of Property Management as it is enhancing its athletic fields (described below). In 1999, the first year that data was reported and just prior to the start of implementation

of the Water Quality Improvement Act, a total of over 275,000 pounds of fertilizer was applied. From 2005 through 2011, the average amount of fertilizer used annually was about 150,000 pounds, which is 44% less than the 1999 high point, Baltimore County's data generally reflects the decrease in fertilizer use expected by this law.

In 2011, Maryland passed the Fertilizer Use Act of 2011, an environmental law designed to reduce the amount of nutrients washing into the Chesapeake Bay from lawns, recreation areas, golf courses, parks, and other non-agricultural areas. The law limits the amount of phosphorus contained in lawn fertilizer products sold to the public, establishes a training, certification and licensing program for people who are hired to apply fertilizer to non-agricultural landscapes, limits fertilizer amounts applied to turf, and requires the implementation of a homeowner education program about best management practices to be followed when using fertilizers. While certain restrictions on fertilizer use and application have been in place for farmers since 2001, only limited restrictions applied to commercial lawn care applicators and no restrictions applied to homeowners prior to the Fertilizer Use Act. The law was fully implemented by October 1, 2013. The Act contains new content requirements and labeling instructions for all lawn fertilizer products sold in Maryland. These changes are designed to help homeowners maintain healthy lawns without applying unnecessary amounts of certain nutrients. (From the Maryland Department of Agriculture, Fact Sheet: Fertilizer Use Act of 2011) For the full fact sheet: http://mda.maryland.gov/resource_conservation/Documents/fertilizerwebpage.pdf

In addition to the effects of the Water Quality Improvement Act of 1998, a number of factors have contributed to the highs and lows of fertilizer application, such as the number of county golf courses in operation (either five or six depending on the year) and whether agency data was reported. Among the county agencies that apply fertilizer products, golf courses were consistently the biggest users of these materials until FY 2015 when they lost the title to Property Management who tends the county's athletic fields. The 2015 fiscal year has also brought a new milestone, the highest overall fertilizer use since 1999, exceeding the past high in 2004 by over 37,000 pounds. The all-time high year for fertilizer application remains 1999 at 275,400 pounds. It was in 2004, that the Department of Recreation and Parks reported using an unusually high quantity of fertilizer, over 68,000 pounds. There were also six county golf courses in operation in 2004. The greatest amount of fertilizer used by a single golf course in a year was documented in FY 2013 at 53,078 pounds by Woodlands; the second highest of 50,000 was in 2004. The average amount of fertilizer used by a county golf course is roughly 30,000 pounds per year, however it was 24,600 pounds on average for 2015. In 2005 and 2006, there were five golf courses in operation, but also of note is that there was no data reported by the Department of Recreation and Parks in each of those years. From 2007 through FY 2013, Recreation and Parks (sites now maintained by Baltimore County Property Management) reported using from 550 pounds (2013) to over 10,000 pounds (2009) of fertilizer, a small fraction of the 68,000 pounds used in 2004. However, due to a turf enhancement program begun in FY 2014 by Property Management, a significantly higher amount of fertilizer has been applied. Over 69,000 pounds of fertilizer was applied to improve the condition of the county athletic fields in 2014, and nearly 132,000 pounds in 2015 (exceeding the 2015 golf course total by 8,900 pounds). Property Management follows MDA guidelines and University of Maryland fertilizer specifications. In 2015, golf courses applied 123,029 pounds of fertilizer, and the county total was 264,889 pounds. This is about 118,000 pounds higher than the average annual county total from 2005 to the 2013 (January – June 2012 data excluded) of 146,353 pounds, prior to the athletic field enhancement program. In contrast, the average quantity of fertilizer used in the six previous

years (1999-2004) was 221,536 pounds. The average annual county total from the past two years since the athletic field enhancement program began is 231,889 pounds of fertilizer applied. In FY 2015, Property Management was responsible for applying 50% of the total amount of fertilizer used by the county.

7.3.3.2 Pesticides

The chemicals that make up the category known here as "pesticides" include herbicides, insecticides, and fungicides. Golf courses are the largest users of pesticides. There is not a distinct trend in pesticide use. Over the years, reported pesticide use by county agencies has ranged from 21,000 to nearly 39,000 pounds, with 2014 topping the charts at 38,979 pounds. Of that total amount, golf courses have reported collectively using from 19,000 to 36,000 pounds. In 2004, when the Gunpowder Falls Golf Course opened, an unusually high amount of pesticide was applied to that site (13,000 pounds), which accounts for the spike in pesticide use that year. Otherwise, there does not appear to be a relationship between the number of golf courses in operation and the amount of pesticide used. From 1999 to 2015, non-golf course use of pesticide ranges from 1,735 to 4,373 pounds per year. The spike of 2006 is due to the Dundalk campus of CCBC applying 1,200 pounds of pesticide. This is an unusually high amount for this campus, where the second highest year was only 120 pounds, and all other years did not exceed 48 pounds (2013). In 2015, the non-golf course total was 3,197 pounds. Golf courses reported higher than average pesticide application in 2009, 2010, 2013, 2014, and 2015 (all between 32,000 and 36,000 pounds) contributing to the high totals for those years. In 2015, golf courses applied 33,723 pounds of pesticide, followed by 1,602 pounds by Property Management, and 1,164 pounds by the Bureau of Highways.

7.3.3.3 Deicing

Deicing materials (road salts) are used by several county agencies. As expected, because of its responsibility to clear roads, the DPW Bureau of Highways remains the biggest user of deicing materials. In 2015, the Bureau of Highways applied 203,786,000 pounds, or 99.3% of the road salt applied by the county. Efforts will continue to be made to reduce the amount of deicing materials used through research, testing, equipment calibration, employee training, and effective decision making. *The analysis for 2012 only reflects data collected between January and June 2012.

The amount of deicing materials used depends not only on accumulation of snow, but also the number of winter weather events. 2014 broke the record on the amount of deicing material used with 249,938,000 pounds applied. A total of 39 inches of snow fell in 20 separate storms that winter. Icy road conditions are not tracked at this time. The January – June 2012 deicing data was included in the graph; although not a full year, autumn snow is uncommon in Baltimore County.

Table 7-9 shows the annual usage of fertilizer, pesticides and deicing material from 1999 through June 2015. Snowfall data is obtained from NOAA's online preliminary monthly weather data archive. The number of winter weather events is attributable to the events with measurable snowfall ("heavy snow" and "snow" categories); the number of winter storms does not include "freezing rain" events, although road salt may be applied for these storms as well. Figure 7-6 shows data for Fertilizer and Pesticide Trends and Figure 7-7 shows the data for Deicer and Snowfall. The analysis for 2012 only reflects data collected between January and June 2012; this

data was intentionally not included in the graph, as it does not represent an entire growing season. Since 2013, data is reported by the fiscal year (July 1 – June 30), not the calendar year.

Table 7-9: Annual Fertilizer, Pesticide and Deicing Materials Used By County Agencies (in Pounds)

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
2010	181,573	38,587	162,724,620	58.1	7
2011	158,866	29,778	133,892,760	13.2	7
2012*	90,546	14,878	23,162,196	1.8	3
2013 FY	170,644	37,244	65,614,500	8.0	3
2014 FY	198,889	56,325	251,133,425	39.0	20
2015 FY	264,889	36,920	205,325,015	28.7	20
Totals					

*2012 data is for January – June only

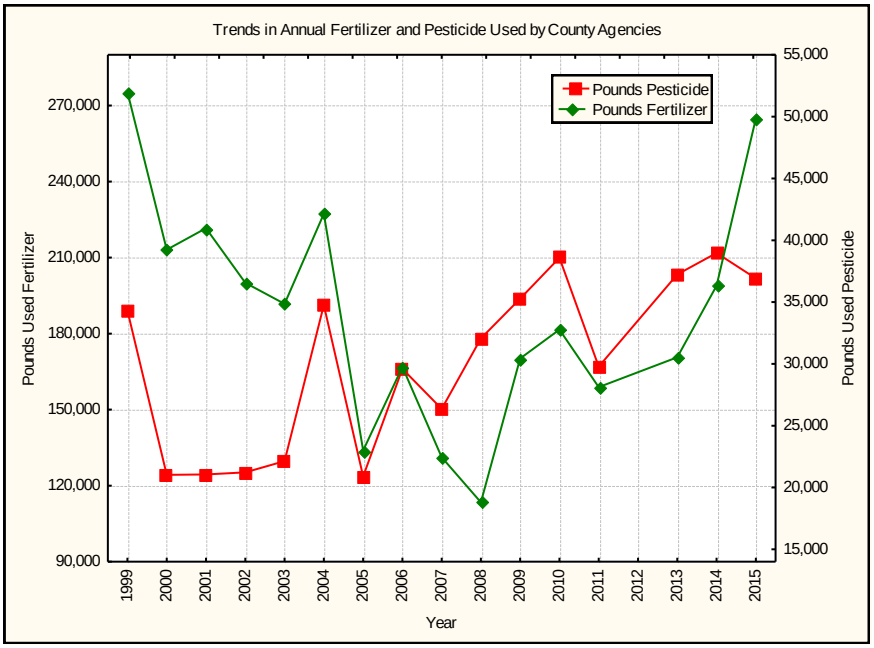

Figure 7-6: Trends in Annual Fertilizer and Pesticide Used by County Agencies

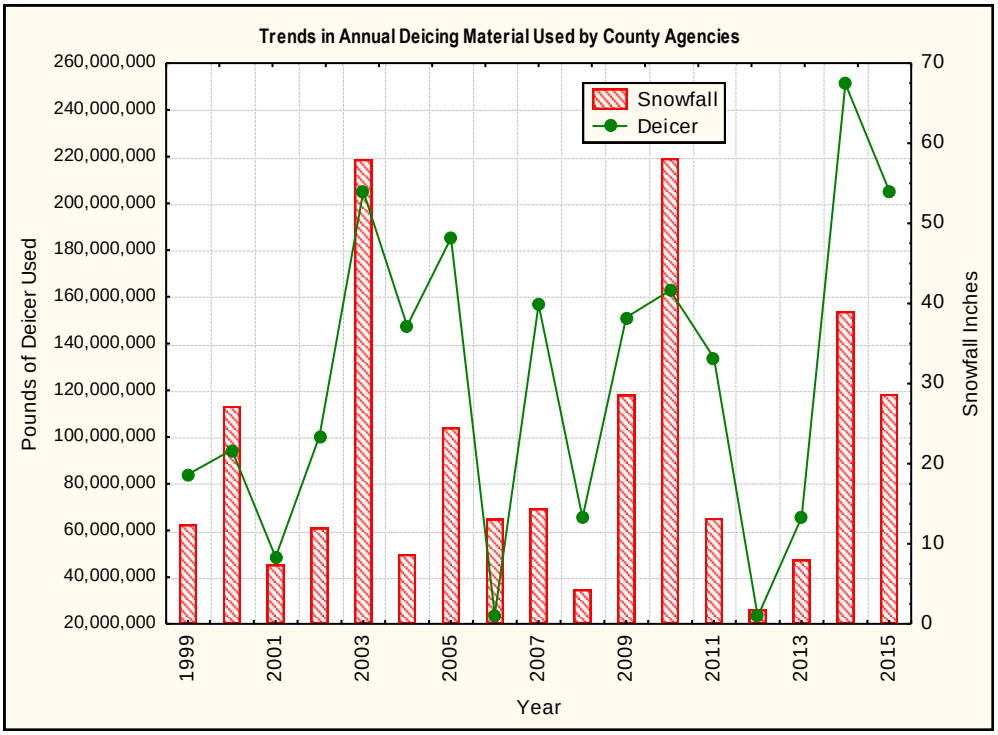

Figure 7-7: Trends in Annual Deicing Material Used by County Agencies

7.4 Household Hazardous Waste

There is one permanent drop off center at the Eastern Sanitary Landfill Solid Waste Management Facility, where Baltimore County citizens can drop off all household hazardous waste (HHW) materials year round (paints, automotive fluids, solvents, pesticides and herbicides, swimming pool chemicals, corrosive materials, rechargeable batteries, fluorescent light bulbs, mercury thermometers and thermostats, etc.). The landfill and on-site HHW collection facility is operated by the Department of Public Works (DPW).

There are also two permanent satellite collection facilities at the Central Acceptance Facility (CAF) in Cockeysville, and Western Acceptance Facility (WAF) in Halethorpe that accept some household hazardous waste materials year round (motor oil, anti-freeze, rechargeable batteries, fluorescent light bulbs, mercury thermometers and thermostats). Recently, gasoline collection year round was added at the CAF, and one day a year we collect all household hazardous waste materials at each of these two facilities. The spring collection day is at CAF, and the fall collection day is at WAF. These satellite locations are operated by MES, under contract with DPW. EPS oversees all three facilities, pays for the contractors, equipment and supplies. Table 7-10 provides a listing of material collected from all the facilities, including the one-day events, over the past eight years (2008-2015). Older reports have data from prior years.

Table 7-10 was modified in 2015 to more closely follow the reporting of materials collected as it comes to EPS. A number of the category names have been changed to more accurately reflect the materials in that category. The listing has been alphabetized. There are a few entities (agencies and contractors) responsible for reporting amounts of materials collected. It is common for significant lag times occur between collection of materials and reporting of data to the EPS. Ultimately, over 25 different vendors are engaged in the recycling and disposal of household

hazardous waste materials. To avoid data gaps, amounts have been estimated in some cases as indicated.

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

Table 7-10: Household Hazardous Waste Recycled (2008-2015)

Material Type	2008	2009	2010	2011	2012*	2013 FY	2014 FY	2015 FY
Liquid Materials (gallons)								
Ammonia	****	****	****	****	****	****	****	****
Antifreeze	5,926	4,548	6,906	3,238	2,876	5,752	4,546	4,500
Gasoline	2,884	3,607	4,235	4,663	1,912	4,158	6,240	5,340
Motor oil	75,676	81,353	113,166	55,108	56,602	113,204	103,143	100,000
Paint (Latex)	11,555	13,560	13,690	18,905	9,303	12,793	14,130	20,454
Solvents/Oil Based Paint	5,885	7,260	7,975	9,460	4,305	6,340	9,400	6,215
Liquid Totals (gallons)	101,926	110,328	145,972	91,374	74,998	142,247	137,459	136,509
Solid and Liquid Materials (pounds)								
Asbestos Waste	***	***	111,180	119,940	63,000	126,000	81,380	69,240
Batteries (auto)	91,840	176,320	131,800	80,220	37,920	75,840	68,160**	72,460
Batteries (rechargeable)	6,372	1,238	2,089	2,169	2,453	5,253	5,433	4,471
Corrosives, combined	8,698	11,681	7,400	7,200	3,550	6,201	15,300	*****
Corrosives/acid								5,700
Corrosives/base								9,900
Electronics	***	2,386,580	4,488,940	3,496,060	1,843,590	3,687,180	425,640	800,000
Explosives/ Fireworks								6
Freon (white goods)	773	742	863	1,018	392	784	1,224**	877
Medicines (Pharmaceuticals)	***	***	***	***	120	240	1,735	520
Mercury	22	42	54	51	95	120	102	50
Oxidizers	1,747	1,796	500	1,370	500	731	1,262	1,124
PCB Oil	5	1	1,690	2,310	1,836	2,081	2,298	1,100
Pesticides	13,685	11,031	6,870	10,400	5,275	9,987	27,135	19,600
Propane Cylinders	23,820	14,560	11,460	14,400	4,000	8,000	7,160**	6,000
Reactives	18	21	1	5	25	25	42	30
Toxics	257	12	61	0	36	41	86	20
Solid/Liquid Totals (pounds)	147,237	2,604,024	4,762,908	3,735,143	1,962,792	3,922,483	560,413**	991,098
Number of Items								
Ammunition, Rounds	400	815	2,779	2,026	1,015	2,029	125	1,033
Flares, Road/ Marine								55
Fluorescent Light Bulbs	7,945	22,449	46,767	69,615	30,388	50,102	59,289	69,153
Number Totals	**8,345**	**23,264**	**49,546**	**71,641**	**31,403**	**52,131**	**59,414**	**70,241**

* 2012 data is only for Jan. – June, due to transition to fiscal year reporting
** Updated or newly added data from a previous year; data was not available at the time of the previous report
*** Not recorded for these years
**** Ammonia is now being included with the corrosives – base
***** Corrosives are reported separately as acid or base, as of 2015
Numbers in red are estimates based on past collection results; data was not available at the time of the report

7.4.1 Materials Reported in Gallons

In addition to the liquid materials described in this section, there are other liquids reported in pounds due to methods of collection and transport, such as corrosives and pesticides.

7.4.1.1 Ammonia

Starting in 2008, ammonia was combined with corrosive liquids (base). It is disposed through the waste water treatment system.

7.4.1.2 Antifreeze

Collection of antifreeze has ranged from about 3,000 to 7,000 gallons over the past ten years. An estimate was made for antifreeze for FY 2015 (4,500 gallons), since data was not available. Antifreeze is recycled throughout the county at drop-off facilities operated by DPW, in cooperation with the Maryland Environmental Service (MES). Over 100,000 gallons of anti-freeze have been recycled in Baltimore County since 1991.

7.4.1.3 Gasoline

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. With the exception of 2012 (half year data), over 4,000 gallons of gasoline has been collected each year since 2010 with an all-time high of 6,240 gallons (2014). 5,340 gallons were reported for 2015.

7.4.1.4 Motor Oil

Motor oil remains the most frequently recycled household hazardous waste. Motor oil is recycled throughout the county at drop-off facilities operated by DPW, in cooperation with the Maryland Environmental Service (MES). Statistics for recycled motor oil for all participating collection facilities have been reported since 1991. Oil and antifreeze recycling is reported through MES, 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. EPS 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.

As can be seen in Figure 7-8, the recycling of motor oil was typically between 90,000 and 100,000 gallons from 1998 to 2005. It was between 75,000 and 85,000 for the following four years. In 2010 and FY 2013, motor oil collection reached a high of over 110,000 gallons. A total of over 2,000,000 gallons of motor oil has been collected for recycling since 1991. Since data was not yet available, an estimate of 100,000 gallons was made for the quantity of motor oil collected in 2015.

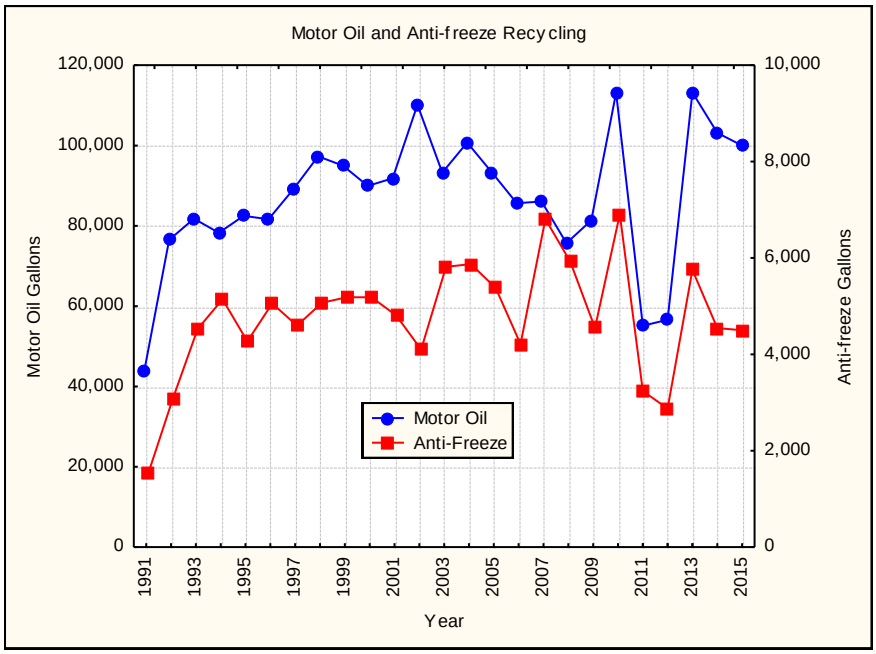

Figure 7-8: Motor Oil and Anti-freeze Recycled from 1991 through FY 2015
* 2012 data reflects on January – June of that year

7.4.1.5 Paint (Latex)

Collected water-based paints are distributed for re-use through the Loading Dock in Baltimore City, a non-profit building materials re-use facility. An all-time high was reached in 2015 of over 20,000 gallons.

7.4.1.6 Solvents/Oil Based Paint (includes flammables)

In previous reports this category was reported as "flammables". The materials in this category are all combustible, however they are not all flammable, as determined by a substance's flash point temperature. Paint sludge is now bulked together into the same drums with other combustible material (solvents). Over the past ten years, the amount of solvents collected has ranged between about 4,000 and 9,000 gallons per year. In 2015, 6,215 gallons were collected.

7.4.2 Materials Reported in Pounds

7.4.2.1 Asbestos

Asbestos waste has been handled appropriately since the 1980's, however it was not reported as household hazardous waste until 2010. From 2010 to 2013, over 110,000 pounds of asbestos were collected each year (data for the 2012 column is only half the year). In 2014, the quantity dropped considerably to 81,000 pounds, then again in 2015 to 69,000 pounds.

7.4.2.2 Batteries – Auto

There was a decrease in auto batteries recycled in 2008 likely 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, but there has been a sharp decline since then with only 75,000 pounds collected in FY 2013. Data was not available in time for the 2014 report, but has been added in for this report (68,160 pounds). In 2015, 72,460 pounds were collected.

7.4.2.3 Batteries – Rechargeable

Generally, there has been an increase in rechargeable batteries collected for recycling with over 5,200 pounds collected in 2013 and 2014. In 2015, the amount was somewhat less at 4,500 pounds.

7.4.2.4 Corrosives

There are acid and base corrosives. These are liquid materials, but they are reported in pounds due to collection and transport methods, including partially filled containers. As of this report, the acid and base corrosives are shown separately, instead of being combined. Acid corrosives are stabilized and disposed of in the landfill (5,700 pounds in 2015). Base corrosives, which includes ammonia, are disposed through the waste water treatment system (9,900 pounds in 2015).

7.4.2.5 Electronics

Beginning in October 2009, it became illegal in Baltimore County for residents to dispose of household electronics as trash. Collection of unwanted electronics for recycling began that year and very quickly became a major source of material to be diverted from the waste stream. Electronics contain mercury, lead, cadmium, and arsenic which should not go into a landfill or waste-to-energy facilities. Types of electronics collected for recycling include computer equipment, VCRs, DVD players, telephones, stereos, fax machines, and video display devices. Televisions were excluded from the collection in 2015, due to market factors. In 2010, the quantity of electronics collected was 4,488,940 pounds, a near doubling of the amount collected in the fall of 2009. Roughly, 3,500,000 pounds per year were collected from 2011 through 2013, however only 435,000 pounds were reported for FY2014. Since data was not available in time for the report, an estimate of 800,000 pounds was included for electronics. Three drop off centers accept electronics throughout the year.

7.4.2.6 Explosives/Fireworks

Only 6 pounds were collected in 2015. Explosives and fireworks are destroyed by the Baltimore County Police Bomb Squad.

7.4.2.7 Freon from White Goods

All refrigerators and air conditioners are separated out at the landfill and transfer stations for the Freon to be removed for recycling. Over the past nine years since Freon was collected, between 400 and 1,000 pounds have been recycled per year. Data was not available in time for the 2014 report, but has been added in for this report (1,224 pounds). In 2015, 877 pounds of Freon were collected.

7.4.2.8 Medicines (Pharmaceuticals)

Beginning in 2009, expired and un-wanted medicines were collected for proper disposal by the Police Department at one-day events. Initially, approximate weights of the materials collected were included in the "toxics" category. In 2012, medicines were shifted to a separate category for tracking. As of September 2013, unwanted/expired medicines were accepted at police stations in outdoor locked drop-off boxes, which has resulted in a big jump in the amount of material collected. Approximately 1,735 pounds of medicines were collected in FY 2014, several times more than were collected the two years before. In 2015, 520 pounds were collected for incineration.

7.4.2.9 Mercury

Mercury TMDLs are in effect for the Prettyboy and Loch Raven Reservoirs in fish tissue. Liberty Reservoir has been de-listed for mercury due to an adequate reduction of mercury in fish tissue samples, so the Liberty mercury TMDL is no longer in effect. Future fish tissue sampling may also lead to de-listing in Prettyboy and Loch Raven. Although mercury contamination is mainly attributed to atmospheric deposition, the Household Hazardous Waste Program helps to meet the reduction of mercury that could potentially end up in our waterways. Mercury was added to the list of household hazardous wastes in 2001, when 168 pounds were collected. Since then, collected amounts have ranged from 22 to 125 pounds per year. In FY 2015, 50 pounds were collected for recycling.

7.4.2.10 Oxidizers

Between 500 and 1,800 pounds of oxidizers have been collected per year over the past ten years. In 2015, 1,124 pounds of oxidizers were collected. This material is stabilized and landfilled.

7.4.2.11 Polychlorinated Biphenyl Oil (PCBs)

TMDLs are in effect for PCBs in the Jones Falls, Back River and Baltimore Harbor watersheds. There is PCB oil and PCB ballasts from fluorescent bulbs. Variation from year to year for PCB ballasts is in part due to the limited collection amount and timing of shipping a drum to the recycler/disposer. A drum is only shipped out when it is full. In 2015, there were no PCB ballasts collected, and 1,100 pounds of PCB oil. From 2010 to 2014, there were from 1,700 to 2,300 pounds collected each year, so this year's collected amount is comparatively low. Ballasts are recycled, and oil is incinerated.

7.4.2.12 Pesticides

TMDLs for chlordane, a pesticide banned since 1988, are in effect for the Back River and Baltimore Harbor watersheds. The Jones Falls has been de-listed for chlordane, so its chlordane TMDL is no longer in effect. The quantity of pesticides collected has varied greatly over time with a high of 27,000 pounds collected in 2014. The previous high was 18,256 pounds in 2007. In 2010, just 6,870 pounds of pesticides were collected. In 2015, 19,600 pounds of pesticide were collected. Solid and liquid pesticides are collected, but both are reported in pounds. There is no differentiation of types of pesticides collected. These chemicals are disposed by incineration.

Figure 7-9 displays the estimated statistics for recycled flammables, gasoline and pesticides.

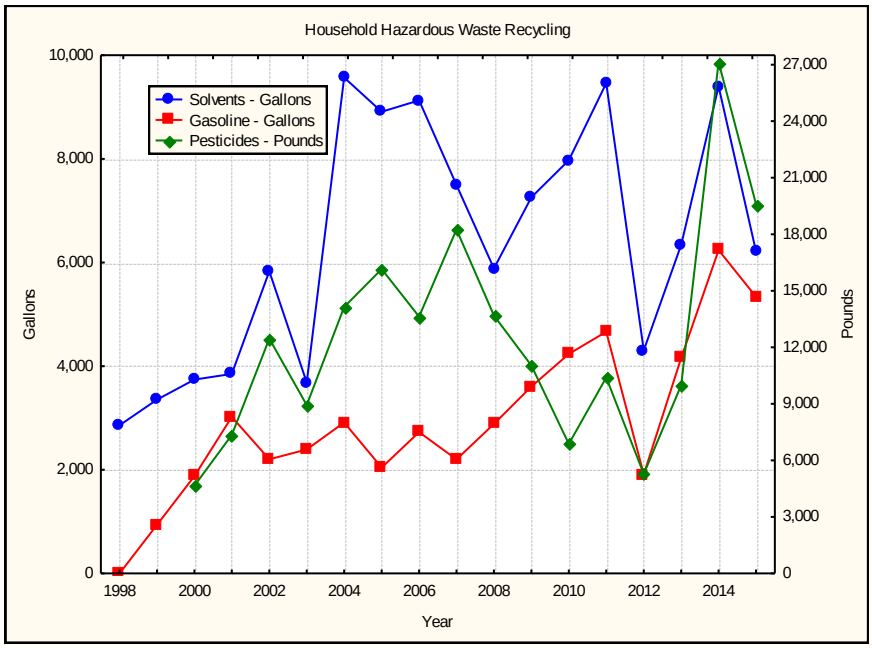

Figure 7-9: Household Hazardous Waste Recycling of Solvents, Gasoline, and Pesticides from 1998 to FY 2015
* Only one collection event held in 2003; fall collection was cancelled due to a hurricane.
** 2012 data reflects on January – June of that year

7.4.2.13 Propane Cylinders

Between 4,000 and 42,000 pounds of propane cylinders have been collected per year over the past ten years. Data was not available in time for the 2014 report, but has been added in for this report (7,160 pounds). In 2015, 6,000 pounds were collected. The cylinders are recycled.

7.4.2.14 Reactives

Between one and 42 pounds of reactive materials have been collected per year over the past ten years. Thirty pounds were collected in 2015 for incineration.

7.4.2.15 Toxics

Up to 257 pounds of toxic materials have been collected in a year. In 2015, 20 pounds were collected for incineration.

7.4.3 Materials Reported by Number

7.4.3.1 Ammunition Rounds

The Baltimore County Police Department Bomb Squad destroys ammunition that is brought to the Household Hazardous Waste collections. Over the past ten years, from about 100 to 2,800 rounds of ammunition were collected. In 2015, there were 1,033 rounds of ammo collected.

7.4.3.2 Flares, Roadside/Marine

Various types of flares are destroyed either at the Eastern Sanitary Landfill, or by the Bomb Squad (one day events). Fifty-five flares were collected in 2015. There is no data on flares prior to this year. It was either combined with explosives (by weight) or flares were not collected.

7.4.3.3 Fluorescent Light Bulbs

In 2010, fluorescent light bulbs from county buildings were included in the Household Hazardous Waste tallies, which more than doubled the quantity of the previous year. The highest collection of these bulbs was in 2011 at 69,615. Over 69,000 fluorescent bulbs were collected in FY 2015 for recycling.

7.5 NPDES Management Committee

This committee is composed of representatives from several county agencies with responsibility for property management and maintenance of county facilities. The committee meets periodically to discuss issues related to NPDES-MS4 compliance. In the upcoming year, it is our intent to meet with the committee to discuss regulation of fertilizer and pesticide use, and potential ways to reduce the amount used.

There was not a general committee meeting in FY 2015, however the Department of Environmental Protection and Sustainability was in close contact with other agencies throughout the development of over twenty-two Total Maximum Daily Load Implementation Plans, which were submitted to MDE at the end of 2014.

7.6 Sanitary Sewer Repair Tracking

In Baltimore County the population that lives inside the metropolitan district is primarily supported by the sanitary sewer system. The county has been making repairs to the sewer system, and these are expected to reduce bacteria entering our waterways. This section outlines the sanitary sewer repairs and our method of tracking these repairs.

7.6.1 Data Sources and Methodology

Bacteria monitoring locations were used as reference points to summarize the records of sewer repairs. Drainage areas for these locations were digitized in GIS using ArcHydro and manual delineation using topography and county and city digital elevation model (DEM) data. Map 7-1 below shows the locations of the bacteria monitoring points used to summarize the data in this section. Monitoring locations that have drainage areas entirely outside the metropolitan district are not included in this section as well as areas that do not have any sewer repair data. These areas include the following watersheds: Prettyboy Reservoir, Liberty Reservoir, Little Gunpowder Falls, Lower Gunpowder Falls, Bird River, Gunpowder River, Middle River and Baltimore Harbor and portions of the Loch Raven Reservoir, Jones Falls and Gwynns Falls.

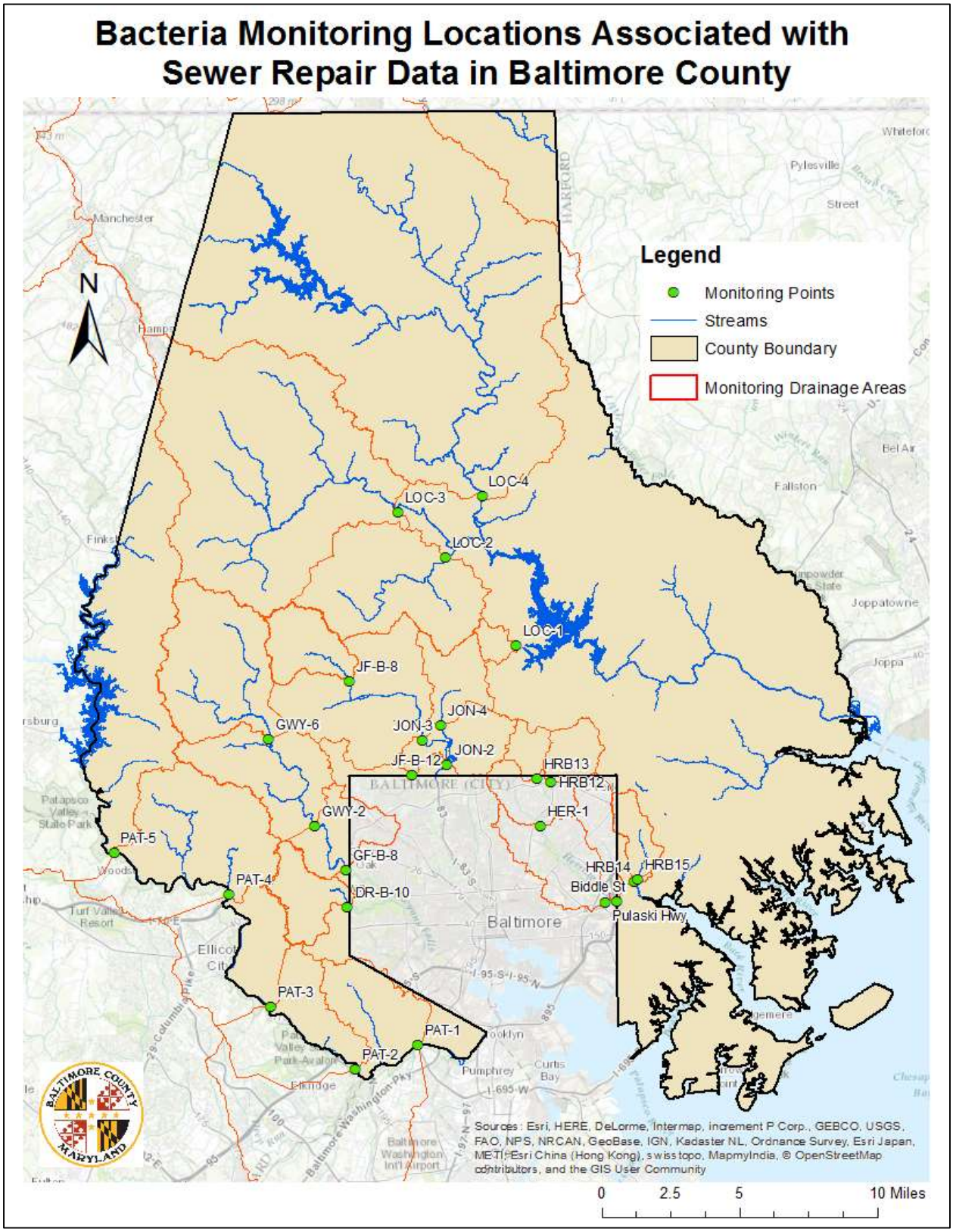

Figure 7-10: Baltimore County Bacteria Monitoring Locations with Sewer Repair Data

The consent decree mandated in 2005 by the EPA and MDE requires the county to complete repairs to sanitary sewer overflow structures (SSOs) and pump station structures. Using data compiled from the Department of Public Works and consent decree appendices we summarized the progress of these repairs. We completed an overlay analysis of the SSO repairs to each of our bacteria monitoring drainage areas to get the count and status of repairs. SSOs were either substantially completed with the overflow pipe plugged (completed) or substantially complete with the overflow pipe open (to be completed). Pumping stations labeled as substantially complete were tallied for the complete 'pump station repairs' column of the tables below. There were no incomplete pump station repairs in the consent decree appendices.

The development and implementation of sewer replacement, repair, and rehabilitation (SRRR) plans is also required as a part of the consent decree. SRRR plan information was taken from the consent decree monthly report from June 2015 and assigned to the corresponding sewershed in order to associate each SRRR plan with an area in the county, creating a SRRR plan feature class. Using the bacteria monitoring drainage areas and sewer SRRR plan feature class, an implementation date for each drainage area was recorded and is shown in the tables below. Multiple sewersheds can fall within a monitoring drainage area, and therefore multiple SRRR plans with varying implementation dates can be associated with the same drainage area. The 'SRRR Plan Imp. Date' is the last implementation date of the SRRR plans that fall within that drainage area.

The CAPs geodatabase developed by the Bureau of Utilities is a compilation of sewer line and manhole repairs specified by the SRRR plans including: repair type, status of repair, and repair location. This data was used to derive the total number of sewer line and manhole repairs completed and proposed (to be completed) within the drainage areas of each of the county's bacteria monitoring locations. The types of sewer repairs tallied for the 'sewer pipe repair' column in the tables below include the following: grout, grout lateral, pipe replacement, open cut point repair, segmental liners, t- liner, upsize 6" to 8" PVC, lining, and pipe bursting. 'Manhole repairs' include: frame seal, cementitious lining, chimney seal, rebuild bench and channel, replace, reset frame and cover and replace frame and cover. These repairs were intersected to drainage areas using overlay analysis in GIS. From this analysis we were able to get a count of manhole and sewer line repairs in each bacteria monitoring drainage area shown in Table 7-11 through 7-20 below.

7.6.2 Summary of Sewer Repairs Associated with Bacteria Monitoring

The status of sanitary sewer system repairs and plans is presented in this section, organized by watershed.

7.6.2.1 Lower North Branch Patapsco Watershed

The Lower North Branch Patapsco watershed has five sampling locations for the bacteria monitoring program. The drainage areas for these monitoring points are all nested meaning they fall within each other and there is an overlap in repairs for each area. PAT-1 has the largest drainage area and includes the area of PAT -5 through PAT-2 and areas downstream of PAT-2. Repairs in PAT-1 include all repairs in PAT-2 through PAT-5, repairs in PAT-2 include all repairs in PAT-3 through PAT-5, and so on. All pump stations and SSO repairs in the Lower North Branch Patapsco watershed set out by the consent decree have been completed. As shown in Table 7-11 and 7-12 all the pumping stations and the SSO's required by the consent decree have been repaired and all SRRR plans should be implemented by September 6, 2021.

Table 7-11: Lower North Branch Patapsco River – Completed Sanitary Sewer Repairs

Monitoring Stations					Overflow Pipe Plugged	Pumping Station Repairs	Manhole Repairs	Sewer Pipe Repairs	SRRR Plan Imp. Date
Downstream	Nested 1	Nested 2	Nested 3	Nested 4					
PAT-1					3	7	0	0	9/6/2021
	PAT-2				3	6	0	0	9/6/2021
		PAT-3			2	2	0	0	9/6/2021
			PAT-4		1	2	0	0	9/6/2021
				PAT-5	0	0	0	0	9/6/2018

Table 7-12: Lower North Branch Patapsco River – To Be Completed Sanitary Sewer Repairs

Monitoring Stations					Overflow Pipe Plugged	Pumping Station Repairs	Manhole Repairs	Sewer Pipe Repairs
Downstream	Nested 1	Nested 2	Nested 3	Nested 4				
PAT-1					0	0	186	922
	PAT-2				0	0	118	506
		PAT-3			0	0	80	281
			PAT-4		0	0	1	0
				PAT-5	0	0	0	0

7.6.2.2 Jones Falls Watershed

The Jones Falls watershed has five bacteria monitoring locations that fall within the county boundaries. Monitoring site JON-2 has the largest drainage area which encompasses the drainage areas for JON 3-4 and JF-B-8. The drainage area for JF-B-12 does not overlap with the other Jones Falls monitoring drainage areas. Tables 7-13 and 7-14 show that six SSO's detailed in the consent decree still need to be plugged and 137 manhole repairs and 97 sewer pipe repairs still need to be completed in the Jones Falls.

Table 7-13: Jones Falls – Completed Sanitary Sewer Repairs

Monitoring Stations				Overflow Pipe Plugged	Pumping Station Repairs	Manhole Repairs	Sewer Pipe Repairs	SRRR Plan Imp. Date
Downstream	Nested 1	Nested 2	Nested 3					
JON-2				3	2	0	22	*
	JON-3			0	2	0	0	*
		JON-4		1	0	0	0	*
			JF-B-8	0	0	0	0	9/6/2019
JF-B-12				0	0	0	0	9/6/2019

* The SRRR plan for this area is still being developed and an implementation date has not been set yet.

Table 7-14: Jones Falls – To Be Completed Sanitary Sewer Repairs

Monitoring Stations				Overflow Pipe Plugged	Pumping Station Repairs	Manhole Repairs	Sewer Pipe Repairs
Downstream	Nested 1	Nested 2	Nested 3				
JON-2				0	0	137	97
	JON-3			0	0	66	12
		JON-4		0	0	0	13
			JF-B-8	0	0	0	0
JF-B-12				0	0	0	3

7.6.2.3 Gwynns Falls Watershed

There are four bacteria monitoring locations in the Gwynns Falls watershed in the county. Two additional locations for Gwynns Falls fall in the city potion of the watershed and are not included

in our data for this section. The most downstream and largest drainage area is GF-B-8, the two other monitoring drainage areas GWY-2 and GWY 6 fall within its area. The DR-B-10 drainage area is not nested with the other areas. Six overflow pipes still need to be plugged for the GF-B-8 drainage area and 149 sewer pipe repairs need to be completed for DR-B-10 as shown in Tables 7-15 and 7-16.

Table 7-15: Gwynns Falls –Completed Sanitary Sewer Repairs

Monitoring Stations				Overflow Pipe Plugged	Pumping Station Repairs	Manhole Repairs	Sewer Pipe Repairs	SRRR Plan Imp. Date
Downstream	Nested 1	Nested 2	Nested 3					
GF-B-8				5	1	0	6	9/6/2019
	GWY-2			4	1	0	0	9/6/2019
		GWY-6		0	1	0	0	9/6/2018
DR-B-10				2	0	62	5	9/6/2021

* The SRRR plan for this area is still being developed and an implementation date has not been set yet.

Table 7-16: Gwynns Falls –To Be Completed Sanitary Sewer Repairs

Monitoring Stations				Overflow Pipe Plugged	Pumping Station Repairs	Manhole Repairs	Sewer Pipe Repairs
Downstream	Nested 1	Nested 2	Nested 3				
GF-B-8				6	0	0	0
	GWY-2			2	0	0	0
		GWY-6		0	0	0	0
DR-B-10				0	0	0	149

7.6.2.4 Loch Raven Reservoir Watershed

In the Loch Raven Reservoir watershed the county has seven bacteria monitoring locations. Four of these (LOC 1- 4) include area that is served by the sewer system and are included in the table below, the other 3 (LOC 5-7) are served by septic systems and are not included. The drainage areas for these four areas that are served by the sewer system are not nested. As shown in Tables 7-17 and 7-18 Loch Raven has two manhole repairs to be completed in LOC-2.

Table 7-17: Loch Raven Reservoir –Completed Sanitary Sewer Repairs

Monitoring Stations				Overflow Pipe Plugged	Pumping Station Repairs	Manhole Repairs	Sewer Pipe Repairs	SRRR Plan Imp. Date
Downstream	Nested 1	Nested 2	Nested 3					
LOC-1				0	0	0	0	*
LOC-2				0	0	0	0	*
LOC-3				0	0	0	0	9/6/2018
LOC-4				0	0	0	0	*

* The SRRR plan for this area is still being developed and an implementation date has not been set yet.

Table 7-18: Loch Raven Reservoir – To Be Completed Sanitary Sewer Repairs

Monitoring Stations				Overflow Pipe Plugged	Pumping Station Repairs	Manhole Repairs	Sewer Pipe Repairs
Downstream	Nested 1	Nested 2	Nested 3				
LOC-1				0	0	0	0
LOC-2				0	0	2	0
LOC-3				0	0	0	0
LOC-4				0	0	0	0

7.6.2.5 Back River Watershed

The Back River watershed has seven bacteria monitoring locations. The HER-1 monitoring location is downstream of HRB-12 & 13 and is nested within the Pulaski Hwy monitoring drainage area that is the farthest downstream. The monitoring location for HRB 14 is located downstream of the HRB 15 monitoring location and therefore its drainage area is nested within HRB 14. Biddle Street monitoring location is not nested within any other monitoring drainage areas. Tables 7-19 and 7-20 below show that two pump station repairs have been completed and four overflow pipes still need to be plugged in Back River.

Table 7-19: Back River –Completed Sanitary Sewer Repairs

Monitoring Stations				Overflow Pipe Plugged	Pumping Station Repairs	Manhole Repairs	Sewer Pipe Repairs	SRRR Plan Imp. Date
Downstream	Nested 1	Nested 2	Nested 3					
Pulaski Hwy				2	0	0	0	*
	HER 1			2	0	0	0	*
		HRB 12		2	0	0	0	9/6/2024
			HRB 13	0	0	0	0	*
HRB-14				0	0	0	0	*
	HRB 15			0	0	0	0	*
Biddle St				0	0	0	0	*

* The SRRR plan for this area is still being developed and an implementation date has not been set yet.

Table 7-20: Back River –To Be Completed Sanitary Sewer Repairs

Monitoring Stations				Overflow Pipe Plugged	Pumping Station Repairs	Manhole Repairs	Sewer Pipe Repairs
Downstream	Nested 1	Nested 2	Nested 3				
Pulaski Hwy				4	0	29	245
	HER- 1			4	0	29	236
		HRB-12		2	0	18	104
			HRB-13	0	0	11	130
HRB-14				0	0	0	0
	HRB-15			0	0	0	0
Biddle St				0	0	0	2