

CITY OF BOWIE
STATE OF THE ENVIRONMENT REPORT
FOR
FISCAL YEAR 2011

October 2011

Prepared by the Department of Planning
and Economic Development



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I. Introduction

The *2011 City of Bowie State of the Environment Report* is a summary of the City's environmental actions and initiatives undertaken during Fiscal Year 2011 (July 1, 2010 through June 30, 2011). The report tracks the performance measurements for environmental programs and activities identified in the City's Environmental Infrastructure Action Strategy Plan (EI Plan).

This report is organized into three sections. The first provides a list of accomplishments achieved during FY 2011. The second section presents specific progress made on objectives from the EI Plan. The final section of the report identifies some key findings, including some observations of the strengths, weaknesses and challenges for the City's environmental programs, as well as an overall conclusion about the City's environment.

It is important to note the recent Energy Efficiency and Conservation Strategy (EECS) developed under a grant from the US Department of Energy. The EECS is one of a series of plans, policies, and programs the City has undertaken since 2005 addressing the environment, climate change and sustainability. The EECS lists 34 strategies to manage energy use, promote energy efficiency, reduce greenhouse gas emissions, increase the use of renewable energy, and reduce material consumption. Because all of the elements identified in the City Council's Climate Change Resolution (R-47-09) are covered by the EECS, that process will be used to track progress of the climate change resolution.

II. Accomplishments

- A total of 412 volunteers cleaned four stream segments in October 2010 and eight stream segments in April 2011, removing a total of 2,675 pounds of trash and 2,300 pounds of recyclables.
- As of June 2011, 143 rain barrels have been registered with the City, most of which were purchased through the Bowie Lions Club.
- City staff began meeting with Prince George's County to create the Phase II Watershed Implementation Plan to meet required nutrient and sediment reductions of the Chesapeake Bay TMDL.
- City staff wrote an environmentally-themed article for each edition of the *Spotlight*.
- City staff worked with an Eagle Scout candidate to apply about 125 storm drain markers in the Pointer Ridge section that say "Do Not Dump, Drains to Waterway." This completed the Pointer Ridge area. Staff will continue working with Scouts and other volunteers to finish marking all storm drains in the Middle Collington subwatershed and then move into other subwatersheds.
- Planning Department staff substantially completed a GIS map of all storm drains and storm drain pipe connections across the City.

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- Preliminary engineering work has been completed for Phase I of the Bowie Heritage Trail. Additionally, a 1,200 linear foot hiker-biker trail was constructed at the Church Road Conservation Area and in the Devonshire subdivision, in partnership with MNCPPC.
- The City purchased a 10-acre parcel scheduled for residential development (the Mills property) and is keeping it in woodland conservation.
- The City was again designated as a Tree City USA community.
- The City and the Bowie Lions Club sponsored a Green Expo in April 2011 at the City's Parks and Grounds building. Attendees were able to visit a number of exhibitor booths and tour the green LEED[®] Silver features of the Parks and Grounds building.
- The City completed the Enhanced Nutrient Removal upgrade to the wastewater treatment plant. Bowie's treatment plant is now at the highest possible pollutant removal capacity technologically available.
- The City has developed an internal workgroup comprised of staff from departments across the City to implement the recommendations from the Energy Efficiency and Conservation Strategy.
- The City held its annual Arbor Day celebration in April 2011 at Acorn Hill Park, which was marked by a tree planting in honor of the holiday.
- The City issued 216 rebates for mulching lawn mowers. For FY2012, the program has been expanded to include electric and push-reel mowers, as well.
- The City planted 149 trees along City-owned streets and 11 trees within parks and on other City property. A breakdown of park trees planted is in Section 3.
- The City was awarded a grant from the Chesapeake Bay Trust to develop an Urban Greening Strategy and a new tree canopy goal.
- The City's Annual Drinking Water Report for calendar year 2010 was released. Again, there were no water quality concerns.
- The City's Environmental Advisory Committee attended a multi-jurisdictional meeting of environmental advising groups, including College Park, Gaithersburg, Greenbelt, Hyattsville and Rockville.
- The Environmental Advisory Committee sponsored an informational display at the International Festival and Bowiefest to promote environmental awareness.
- The new 79,950 square foot City Hall and Police Department building was completed. It was built with the goal of earning LEED[®] Silver rating from the U.S. Green Building Council. Documentation is being submitted to USGBC, and the verification process can take up to one year. City staff is completing an educational brochure available online and at City Hall that highlights some of these features.
- The number of properties designated as certified Backyard Wildlife Habitats by the National Wildlife Federation in the City increased from 83 to 91.

- The on-the-ground, GPS-based street tree inventory was substantially completed by the end of FY2011. As of August 20, 2011, a total of 16,258 trees line City-owned streets.
- The Planning Department held another Rain Barrel Workshop in conjunction with the Bowie Lions Club at the Bowie Chamber of Commerce with about 20 residents in attendance.
- Work in Middle Collington Branch continues – a consultant completed the Watershed Treatment Model to estimate nutrient and sediment loading from the subwatershed. This model is based on land use and impervious cover. It will be used in other subwatersheds across the City to help quantify the pollutant removal benefits of potential restoration projects.

III. Progress on EI Plan Objectives

This section provides an update on each Environmental Infrastructure (EI) Action Plan Performance Indicator along with a reference to the corresponding objective from the EI Plan. Appendix B provides a spreadsheet summary of fiscal years 2009, 2010 and 2011 progress on each EI Plan Performance Indicator for each objective. Appendix C provides additional updates and revisions on the Action Plans.

1. EI Plan Performance Indicators for Open Space Network

Urban Forest Management

- **Objective: Strive for 40% tree canopy coverage in 20 years (Action Plan 5).**
Progress--In its 2009 study, the University of Vermont showed Bowie's canopy coverage at 46%. The City Council is considering a new tree canopy goal, and the EECS recommended a tree canopy goal of 50%. A consultant is preparing an Urban Greening Strategy for the City. The consultant has briefed the Environmental Advisory Committee on its progress and has received input on possible goals. The draft report was delivered in early September, and the recommendations and a new goal will be presented to the City Council for adoption at an October meeting.
- **Objective: Afforest 20 acres of City property by 2012 (Action Plan 9).**
Progress--In FY2010, 4,000 trees were planted on 8 acres of Church Road Park. (Invasives removal and an additional 4,000 trees are planned for an additional 8 acres in FY2013.) A bid was awarded for the City-approved planting of 42.5 acres on 5 sites as part of the MD State Highway Administration's Intercounty Connector mitigation planting scheduled for Fall 2011. The City will achieve and exceed this objective.
- **Objective: Plant a minimum of 150 street trees annually (Action Plan 6).**
Progress--In FY2011, the City planted 149 trees along City-owned streets. The updated street tree inventory was completed in FY2012 (August 2011) and revealed that the City

has 16,258 street trees. The following list shows trees planted on City property in FY2011 but not along streets:

Acorn Hill Park: 7	Kenhill Center: 1
Allen Pond Park: 1	Sussex Lane Park: 1
Bowie Gymnasium: 1	

Environmental Restoration, Preservation and Conservation

- **Objective: Complete Land Preservation Plan by December 31, 2009 (Action Plan 8).**
Progress --The Plan was deferred due to lack of funding in Approved FY2010 City Budget. City staff completed a study of vacant lands in the City that identified 164 acres of privately-owned developable land and 63 acres of undevelopable land. Gaps in the City's Green Infrastructure network were included in the official Program Open Space Plan submitted to the MD Department of Natural Resources. MNCPPC drafted a Priority Preservation Area (PPA) for Bowie (see PPA Functional Master Plan for details).
- **Objective: Decrease areas mowed Citywide by at least 10% by 2012 (Action Plan 12).**
Progress-- Turf mowing has increased from the 202 acres in FY2010 to 232 acres in FY2011. This is due to a maintenance agreement under which the City will now mow turf located in the City but owned by both Prince George's County and the MD State Highway Administration. An analysis by the Community Services Department has not identified any other areas that can be given a "no-mow" designation.

2. EI Plan Performance Indicators for Green Infrastructure Network

Environmental Restoration, Preservation and Conservation

- **Objective: Increase the number of registered lots with certified backyard habitats to a minimum of 150 lots by 2012 (Action Plan 3).**
Progress—There are currently 91 certified habitats in the City including one place of worship, three schools, and 87 homes.
- **Objective: Convert at least seven (7) acres of publicly-owned turf to native landscaping by 2010 (Action Plan 12).**
Progress--3,000 square feet (0.07 acres) of land along Melling Lane were converted to native shrubs in FY2011. The total area of turf converted since 2007 is 13,500 square feet (or 0.30 acres). The City continues to look for opportunities to convert public turf areas to landscaping.
- **Objective: Increase the number of acres of protected land (Action Plan 8).**
Progress--The City acquired one acre of land adjacent to the Devonshire subdivision and 10 acres of a 21-acre woodland tract known as the Mills Property at the Northwest corner

of US 301 and Mitchellville Road. It had been approved for development of 14 single-family homes, which will not be built.

Alternative Means of Stormwater Management

- **Objective: Encourage three (3) stormwater management retrofits by 2012 (Action Plan 11).**

Progress--There were no stormwater retrofits installed in FY2011, though a drainage improvement project was completed near the Public Works yard. As development and redevelopment projects come in for review, City staff works with developers to install low-impact development practices. Additionally, City staff will be identifying potential stormwater management retrofits where treatment is not provided or is insufficient in order to meet the requirements under the Chesapeake Bay TMDL.

3. EI Plan Performance Indicators for Waste Management

- **Objective: Decrease tonnage of material landfilled from 1.3 tons-per-household to 1 ton-per-household by 2012 (Action Plan 2).**

Progress--Landfill tonnage went from 1.42 tons-per-household (FY2007)¹ to 0.99 tons-per-household, a 24% decrease. As of FY2011, this objective has been achieved.

- **Objective: Increase tonnage of recyclables from FY2007's percentage (24%) to 50% by 2012 (Action Plan 2).** (NOTE: The passage of the City Council's Climate Change Resolution established a more limited benchmark of 2% per year over the next five years, which results in a new goal of 35% by 2014.)

Progress--The recycling rate for FY2011 is 31%. The 65-gallon rolling recycle cart pilot project was completed. Public Works weighed the recycled material in the pilot neighborhoods (Chapel Forge, Overbrook, Idlewild, Yorktown, Saddlebrook East and Victoria Heights) prior to the large cart distribution (June 24 - September 10, 2010) and after cart distribution (September 30 - November 19, 2010). The amount of pre-cart distribution recycling was 111,946 pounds, and the post-cart distribution recycling weight was 142,920 pounds after. This 15.49 ton increase is a 28% increase in recycling in these pilot neighborhoods. City Council approved the purchase of additional rolling carts that will be delivered to the remainder of eligible homeowners across Bowie over the next two fiscal years.

- **Objective: Increase tonnage of yard waste recycling (Action Plan 2).**

Progress-- In FY2011, 3,617 tons of yard waste were recycled. This is an increase of 143 tons, or 4%, over 2007 level of 3,474. The number tends to fluctuate up or down in the interim years, and this may be attributed to the significant increase in mulching mower rebates provided during that time.

¹ This number was revised from the initial number of 1.3 tons shown in the EI Plan based on internal data adjustments.

- **Objective: Increase number of mulching mower rebates from 30 to 60 by 2012 (Action Plan 2).**

Progress--In FY2011, 216 mulching mower rebates were claimed. Starting in FY2012, the rebate program will be expanded to include push-reel mowers and electric mowers, in addition to mulching mowers. This objective has been achieved, and rebates will continue to be offered.

4. EI Plan Performance Indicators for Surface Water Protection

- **Objective: Establish a minimum of five (5) active stream teams by 2012 (Action Plan 1).**

Progress--During the October 2010 stream cleanup, four teams worked, and eight stream teams worked in April 2011. While this objective has been met each fiscal year, another cleanup for October 2012 is scheduled. The details of each cleanup are presented in the table below.

	Fall (October 2, 2010)	Spring (April 2, 2011)
Number of volunteers	177	235
Number of sites	4	8
Trash collected	1,025 lbs	1,650 lbs
Recyclables collected	975 lbs	1,325 lbs

- **Objective: Clean a minimum of 10 miles of stream annually (Action Plan 1).**
Progress—10.1 miles of stream were cleaned in FY2010 -- 4.2 miles in October 2010 and 5.9 in April 2011.
- **Install 150 rain barrels by 2012 (Action Plan 4).**
Progress--As of May 2011, 143 rain barrels have been registered with the City, although many more have been sold by the Bowie Lions Club. These barrels store 8,045 gallons of rooftop runoff and are found at 106 homes across the City. The majority of registered barrels (114) are still in the area of Bowie north of Route 50. This suggests the need for another rain barrel workshop to be held in the southern portion of the City in the spring of 2012.

IV. **Findings**

- A 28% increase in recycling was recorded in neighborhoods participating in the 65-gallon rolling recycling cart pilot project. If the pilot study is any indication of increased recycling, it could increase by as much as 25-30%.
- In FY2011, the City met its objective of decreasing tonnage of material landfilled to one ton per household by 2012.
- Only 164 acres of privately-owned, developable land remain in the City.
- The City continued to exceed its mower rebate program objective.
- The City has continued to meet and exceed its objective of cleaning 10 miles of stream annually.
- The City has not been able to convert any additional turf areas to native landscaping and did not meet the objective of converting seven acres by 2010.
- The City is 58% of the way toward achieving its backyard habitat objective of 150 lots by 2012.
- The City will exceed its goal of afforesting 20 acres of City property by 2012.
- The City's Stream Team cleanups have been very successful. In 7 cleanups since April 2008, 593 volunteers have collected 12,295 pounds of trash and 10,850 pounds of recycling and more than 5,000 pounds of scrap metal from 52 cleanup sites.
- The rain barrel program has been very popular and is over 95% toward the objective of 150 barrels installed by 2012.
- The recently completed street tree inventory confirmed that the City has 16,258 street trees. However, it has become apparent that the annual goal of 150 street trees is not adequate to keep up with the number of trees that are removed due to storm damage, disease, etc.
- There has been little progress toward achieving at least three stormwater management retrofits by 2012.
- While State funding has been eliminated in the past three fiscal years, the City's Program Open Space allocation for land acquisition from previous years is substantial and remains a viable funding source for open space preservation opportunities.
- In FY2011, the percentage of solid waste stream recycled was 32%, compared to only 25% in FY2005. The number of tons of white metal collected averaged 203 tons per year over the past seven (7) fiscal years.
- The amount of gasoline and diesel fuel used in City vehicles has grown appreciably, increasing over 41% since FY2005. The amount of gasoline used in FY2005 was 36% of total combined vehicle fuel usage, while diesel fuel accounted for 64%. By FY 2011, the vehicle fleet used 52% gasoline and 48% diesel fuel. In FY2009, gasoline surpassed diesel as the most used vehicle fuel, a trend that has continued.

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- The City maintains 396 miles of storm sewers, 101 acres of basins, outfalls and drainage areas, including 71 ponds and basins and 40 outfalls/drainage areas. In FY2011, the City cleaned over 5,800 linear feet of open channels.
- The Community Services Department saw the number of acres of grass maintained rise almost 15% from an annual average of 202 acres to 232 acres, due to the City taking over mowing on some County and State roads.
- The number of animals-running-at-large calls is increasing while the number of wildlife complaints is decreasing.
- The number of City vehicles has grown by more than 38% since FY2005 while the amount of vehicle miles driven has grown over 33%. This is primarily due to an increase in the City's police vehicle fleet growth - from 16 vehicles in FY2007 to 56 vehicles in FY2011.
- The number of City water system accounts averages about 7,700 residential customers and 220 commercial customers.
- The number of street trees planted (200) in FY2011 was almost 38% more than in FY2010 (145).
- The percentage of wastewater collection system cleaned has declined, especially in the past two fiscal years. Approximately 54% of collection mains were cleaned in FY2005. The percentage dropped to an all time low of 29% in FY2010 and rose slightly to 34% last fiscal year.
- The Public Works Department now sweeps over 1,800 curb miles of street annually.
- The tons of wastewater treatment plant sludge produced in FY2011 (2,800) is slightly below the annual average of 3,061 tons recorded over the previous four fiscal years. This corresponds to the slight decrease in gallons of wastewater treated, which was also recorded in FY2011.
- Based on recommendations in the EECS and by the consultant preparing an Urban Greening Strategy, in FY2012, City Council will consider a new canopy goal and receive an Urban Greening strategy designed to meet that goal. The highest potential for increasing the City's tree canopy coverage remains with private lot owners.

V. Conclusion

Assessment of the City's EI Plan objectives through the annual State of the Environment Report is one way to monitor the condition of the City's environment. The City's environmental programs and facilities remain in full compliance with all applicable laws and regulations. The information contained in this report demonstrates that the state of the City's environment is very good, and with continued implementation of the EI Plan, it will continue to improve. Specific areas to be targeted in the future include reducing vehicle miles traveled and fuel consumption,

reducing turf and increasing native vegetation, implementing stormwater retrofits, and continuing the City’s involvement in the TMDL process with the County and the State.

Appendix A: City Documented Measures

Animal Control

The Animal Control division of the Department of Community Services is responsible for wildlife complaints and general animal control in the City. This includes capturing any reported wild animals and pets that are either ‘running-at-large’ or are not leashed in public.

	<i>FY05</i>	<i>FY06</i>	<i>FY07</i>	<i>FY08</i>	<i>FY09</i>	<i>FY10</i>	<i>FY11</i>
Number of running-at-large calls	476	420	418	358	389	494	518
Number of wildlife complaints	300	452	516	423	355	377	395

Equipment Maintenance/Garage

Maintaining and repairing all City vehicles and equipment is the responsibility of the Equipment Maintenance and Garage division of the Department of Public Works.

	<i>FY05</i>	<i>FY06</i>	<i>FY07</i>	<i>FY08</i>	<i>FY09</i>	<i>FY10</i>	<i>FY11</i>
Number of vehicles in service	144	145	161	181	191	193	199
Total number of vehicle miles driven	1,211,963	1,265,000	1,412,910	1,597,810	1,588,905	1,615,000	1,613,500
Number of Police vehicles	-	-	16	36	48	50	56
Gallons of gasoline used in all vehicles	56,237	58,134	82,514	97,305	112,198	113,800	115,800
Gallons of diesel used in all vehicles	100,240	102,300	103,000	101,070	104,750	113,600	105,300

Solid Waste

The Solid Waste division of the Department of Public Works is responsible for the collection and disposal of the City's solid waste. This includes bulk trash pickup, glass, cans, newspaper, magazines, junk mail and yard waste pickup for recycling, twice weekly household refuse pickup, weekly pickup of special metals and tires, and processing of plastics. Some of the numbers below have changed from the FY2009 report, based on internal data adjustments.

	<i>FY05</i>	<i>FY06</i>	<i>FY07</i>	<i>FY08</i>	<i>FY09</i>	<i>FY10</i>	<i>FY11</i>
Number of households served	20,250	18,840	19,064	19,231	19,320	20,734	20,745
Total number of tons collected	37,527	37,517	35,717	33,896	31,696	29,865	28,969
Number of tons land filled	28,027	28,348	27,041	25,583	23,080	21,016	19,700
Number of tons recycled	9,500	9,169	8,676	8,313	8,616	8,849	9,269

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Percent of solid waste stream recycled	25%	24%	24%	24.53%	27.18%	29.63%	32%
Sales Revenues from Recyclables	\$121,093	\$99,445	\$98,464	\$53,665	\$48,343	\$30,000	\$29,000
Number of tons of white metal collected	200	301	270	177	121	173	180

Streets

The responsibilities of the Streets division of the Department of Public Works include all street and sidewalk maintenance as well as street and traffic signs, posts, snow removal and ice control on approximately 185 miles of City streets.

	<i>FY05</i>	<i>FY06</i>	<i>FY07</i>	<i>FY08</i>	<i>FY09</i>	<i>FY10</i>	<i>FY11</i>
Miles of street maintained	180	180	180	183	183.5	184.2	184.5
Square Yards of Streets Resurfaced	150,000	145,000	147,840	163,932	155,883	142,407	157,262
Miles of street resurfaced	7	8.6	9.06	9.31	8.56	9.90	9.10
Curb-miles of street swept	1,450	1,450	1,457	1,830	1,834	1,840	1,845
Miles of sidewalks maintained	122	124	124	124	127	127.9	128.4
Number of street lights maintained	4,910	5,100	5,263	5,348	5723	5,595	5,635

Public Buildings and Grounds

The Public Buildings and Grounds division of the Department of Community Services is responsible for the maintenance at all City owned buildings and facilities.

	<i>FY05</i>	<i>FY06</i>	<i>FY07</i>	<i>FY08</i>	<i>FY09</i>	<i>FY10</i>	<i>FY11</i>
Square feet of buildings cleaned/maintained	107,932	107,932	110,732	110,732	110,732	110,732	190,732

Parks and Grounds

The Parks and Grounds division of the Department of Community Services maintains all City ballfields, parks, bike trails, fences, play areas, play equipment and flower beds as well as all trees, shrubs, and lawns on City property and the fencing along Route 197.

	<i>FY05</i>	<i>FY06</i>	<i>FY07</i>	<i>FY08</i>	<i>FY09</i>	<i>FY10</i>	<i>FY11</i>
Number of acres of grass maintained	196	196	198	202	202	202	232
Average number of times mowed per year	32	32	32	24	32	32	32
Acres of R.O.W. and Parkland maintained	66	66	66	72	72	72	102
Acres of athletic field turf maintained	130	130	130	130	130	130	130
Number of fields maintained	78	78	78	78	78	65	65
Number of fields irrigated	26	26	26	26	26	26	26
Number of fields lighted	21	21	21	21	21	21	21
Miles of trail maintained	22.5	22.5	24	24	24	24	24
Number of trees in right of way inventoried	17,000	17,000	17,500	17,500	17,500	17,500	17,500
Number of trees maintained (pruned)	5,000	5,000	3,000	3,500	3,500	2,500	2,500
Number of trees planted in right of way	125	125	140	200	150	145	200
Number of annuals/color planted	5,000	5,000	5,000	3,500	5,000	5,000	5,000

Stormwater Management

The Stormwater Management division of the Department of Community Services currently provides stormwater facility management to the City's stormwater system.

	<i>FY05</i>	<i>FY06</i>	<i>FY07</i>	<i>FY08</i>	<i>FY09</i>	<i>FY10</i>	<i>FY11</i>
Miles of Storm Sewers	396	396	396	396	396	396	396
Total acres of basins, outfalls and drainage areas maintained	90	92	97	99	99	101	101
Number of SWM ponds and basins maintained	60	60	67	69	69	71	71
Number of SWM outfalls and drainage areas maintained	36	36	40	40	40	40	40
Open channels cleaned (in linear feet)	-	-	-	-	-	-	5,805

Water

The Water division of the Public Works Department is responsible for the production and purification of the water supply for the City which meets or exceeds all State and Federal health standards. The water is fluoridated for health purposes and the iron is removed by a filtration-flocculation aeration-sedimentation process. The cost of maintaining the water distribution system is included in this division.

	<i>FY05</i>	<i>FY06</i>	<i>FY07</i>	<i>FY08</i>	<i>FY09</i>	<i>FY10</i>	<i>FY11</i>
Miles of pipeline	90	90	90	90	90	90	90
Millions of gallons treated/delivered	692	800	779	798	743	769	775
Number of water/sewer customers-residential	7,690	7,700	7,700	7,700	7,700	7,716	7,716
Number of water/sewer customers-commercial	175	179	178	220	220	222	222
Customer complaints about water quality	15	9	6	10	10	12	15

Wastewater

The Wastewater division of the Public Works Department is responsible for the collection and treatment of raw sewage. This sewage is treated and returned to the Patuxent River in full compliance with State and EPA permit standards. The cost of maintaining the sewer collection system is included in this division.

	<i>FY05</i>	<i>FY06</i>	<i>FY07</i>	<i>FY08</i>	<i>FY09</i>	<i>FY10</i>	<i>FY11</i>
Miles of collection mains in the system	85	85	85	85	85	85	85
Miles of collection system cleaned	46	43	34	31	46	25	29
Million gallons of wastewater treated	684	704	711	708	721	715	694
Tons of sludge produced	3,406	2,974	3,036	3,028	3,155	3,025	2,800

Appendix B: EI Plan Performance Measures Tracking

Goals	Objectives	FY2009 actual	FY2010 actual	FY2011 actual
Waste Management	Recycling			
	Decrease the tonnage of material landfilled per household from the current 1.42 tons (FY2007) to 1 ton by 2012	23,029 (or 1.19 tons/hh)	21,726 (or 1.12 tons/hh)	20,559 (0.99 tons/hh)
	Increase the tonnage of recyclables from FY2007's 24% to 50% by 2012	8,616 (or 27.18%)	9,173 (or 30%)	9068 (or 31%)
	Increase the tonnage of yard waste recycling by 10% of 2007 levels by 2012. (3474)	3078	3301	3,617
	Increase the tonnage collected during special recycling events	no event held	10.65 tons	no event held
	Increase the # of rebates given for mulching mowers from 30 - 60 per year by 2012	225	188	216
Surface Water Protection	Stream Team			
	Establish a minimum of 5 active stream teams in Bowie by 2012.	9 for each cleanup	9 in Oct 2009 6 in Apr 2010	4 in October 2010 8 in April 2011
	<i>(additional indicator)</i> Tonnage of trash/recycling removed from streams	Oct 2008: 240 vols, 1525 lbs trash, 1110 lbs recycling. Apr 2009: 380 vols, 1745 lbs trash, 2135 lbs recycling	Oct 2009: 114 vols, 1925 lbs trash, 1125 lbs recycling. Apr 2010: 242 vols, 3250 lbs trash, 3000 lbs recycling, 4700 lbs scrap metal	Oct 2010: 177 vols, 1025 lbs trash, 975 lbs recycling. Apr 2011: 235 vols, 1650 lbs trash, 1325lbs recycling
	Clean a minimum of 10 miles of stream annually	12.6	12.8	10.1
	Rain Barrels			
Install 150 rain barrels by 2012. (each number presented is the total number in use at the end of the fiscal year)	70	97	143	

Goals	Objectives	FY2009 actual	FY2010 actual	FY2011 actual
Surface Water Protection, cont	Alternative Means of Stormwater Management			
	Encourage three (3) stormwater management retrofits by 2012.	✓	✓	✓
	Encourage installation of 5 green roofs by 2012.	✓	✓	1 partial green roof was installed on the new City Hall building
	NPDES			
	Investigate WRAS pipe outfall sites, unusual conditions, & exposed pipes in two subwatersheds and mitigate deficiencies by 2012.	-	Some initial investigations are underway in Middle Collington Branch	This work has begun but is on hold for the summer due to vegetation growth
	Begin regular water quality sampling at specific locations in one subwatershed by 2010.	Identification of sites is underway for taking a single round of grab samples to establish baseline conditions		Grab samples were collected at three sites in Middle Collington Branch. No water quality concerns were found.
	By the year 2012, install at least 1 continuous stream monitor in a subwatershed by 2012.	WQ monitoring strategy changed per advice from MD DNR. Continuous stream gage installation is not advised at this time.		
	Have one team of volunteers per subwatershed trained in outfall screening by 2012	0	0	City staff are working on a potential program
	WRAS			
	By 2012, make one (1) stream habitable by a fish population.	0	Awaiting updated MBSS data to determine if fish are present	
	Begin testing family-level benthic index of biotic integrity	0	Some initial investigations are underway in Middle Collington Branch	B-IBI scores are provided by MD DNR. Awaiting updated data before developing a local plan
	Complete investigations of 35 inadequate buffer sites	0		An initial desktop investigation has been conducted. Field verification to follow.
	Complete investigations of 21 channel alteration sites	0		This work has begun but is on hold for the summer due to vegetation growth
	Complete investigations of 78 fish barriers	0		Fish barriers that have been identified are not easily fixed (e.g., railroad track, culvert). Field review will continue this fall.

Goals	Objectives	FY2009 actual	FY2010 actual	FY2011 actual
	Establish new baseline of stream bank length with eroding banks	0	-	This work has begun but is on hold for the summer due to vegetation growth
Urban Forest Management	Urban Forest			
	Strive for 40% canopy coverage in 20 years.	-	46%	Objective met in FY2010. Additional urban tree canopy studies are underway.
	Street Trees			
	Plant a minimum of 150 street trees annually through 2012.	150	170	150
	Forest Mitigation Sites			
	Afforest 20 acres by 2012. (each number presented is the total number as of the end of that fiscal year)	8.98	51.5	51.5
Environmental Restoration, Preservation and Conservation	Land Preservation			
	Complete a Land Preservation Plan by 12/31/09.	This objective is indefinitely on hold due to budget constraints		
	Backyard Habitat			
	Increase the amount and stewardship of wildlife habitat on private property - minimum of 100 lots registered by 2012. (each number presented is the total number in place at the end of the fiscal year)	66	83	91
	Turf Reduction			
	Decrease the number of acres mowed Citywide by at least 10% by 2012. (total mowed area in 2007 = 202 ac)	202	202	232
	Convert 7 acres of publicly-owned turf to native landscaping (each year shows the total as of the end of that fiscal year)	7,000 sq ft	10,500 sq ft	13,500

Appendix C: Updates and Revisions to original EI Plan Objectives

Action Plan 1

Component: Pollution Prevention
Element: Surface Water Protection
Goal: Engage City residents, businesses and institutions in restoring and protecting the City's watersheds
Objectives: Establish a minimum of 5 active stream teams by 2012
 Have at least 6 trained volunteers in each sub-watershed by 2012
 Complete investigations of 27 trash dumping sites by March 2008
Action: Develop a Stream Team Program

Objective	FY2009 actual	FY2010 actual	FY2011 budget expectation	FY2011 Progress
Establish a minimum of 5 active stream teams in Bowie by 2012.	9 for each cleanup	9 in Oct 2009; 6 in Apr 2010	-	4 in Oct 2010; 8 in April 2011
Tonnage of material removed from streams (<i>additional indicator</i>)	Oct 2008: 240 vols, 1525 lbs trash, 1110 lbs recycling. Apr 2009: 380 vols, 1745 lbs trash, 2135 lbs recycling	Oct 2009: 114 vols, 1925 lbs trash, 1125 lbs recycling. Apr 2010: 242 vols, 3250 lbs trash, 3000 lbs recycling, 4700 lbs scrap metal	-	Oct 2010: 177 vols, 1025 lbs trash, 975 lbs recycling Apr 2011: 235 vols, 1650 lbs trash, 1325lbs recycling
Clean a minimum of 10 miles of stream annually	12.6	12.8	-	TBD

Action Plan 2

Component: Pollution Prevention
Element: Waste Management
Goal: Reduce resource consumption
Objectives: Increase the tonnage of recyclables from 24% to 50% or more by 2012
 Increase the tonnage of grass recycling by 10% by 2012
 Increase the number of rebates given by the City to residents using mulching lawnmowers from 30 to 60 per year or more by 2012
Action: Improve Recycling in the City

Objective	FY2009 actual	FY2010 actual	FY2011 budget expectation	FY2011 Progress
Decrease the tonnage of material landfilled per household from the current 1.42 tons (FY07) to 1 ton by 2012	23,029 (or 1.19 tons/ household)	21,726 (or 1.12 tons/hh)	22,200 (1.13 tons/hh)	20,559 (0.99 tons/hh)
Increase the tonnage of recyclables from FY 2007's 24% to 50% by 2012	8,616 (or 27.18%)	9,173 (or 30%)	9,000 (or 28.85%)	9,068 (31%)
Increase the tonnage of yard waste recycling by 10% of 2007 levels (3,474 tons) by 2012.	3,078	3,301	-	3,617
Increase the tonnage collected during special recycling events	no event held	10.65 tons	-	no event held
Increase the # of rebates given for mulching mowers from 30 - 60 per year by 2012	225	188	75	216

In FY2011, the City purchased and distributed 1,556 65-gallon wheeled recycling carts to residents in Chapel Forge, Overbrook, Idlewild, Yorktown, Saddlebrook East and Victoria Heights as part of a pilot project.

Public Works weighed the recycled material in the pilot neighborhoods prior to the large cart distribution (June 24 - September 10, 2010) and after cart distribution (September 30 - November 19, 2010). The pre-cart distribution recycling weight was 111,946 pounds, and the post-cart distribution recycling weight was 142,920 pounds after. This 15.49 ton increase is a 28% increase in recycling.

Action Plan 3

Component: Resource Conservation
Element: Environmental Restoration, Preservation and Conservation
Goal: Restore urban land to a more natural state
Objective: Increase the amount of and stewardship of wildlife habitat on private property by having a minimum of 150 lots registered by 2012
Action: Create a Backyard Habitat Program

Objective	FY2009 actual	FY2010 actual	FY2011 budget expectation	FY2011 Progress
Increase the amount and stewardship of wildlife habitat on private property - minimum of 100 lots registered by 2012. (each number presented is the total number in place at the end of the fiscal year)	66	83	-	91
<i>* This number is as of the latest update - May 11, 2011</i>				

Action Plan 4

Component: Pollution Prevention
Element: Surface Water Protection
Goal: Restore flow patterns in streams to mimic natural flows to the extent possible
Objective: Install 150 rain barrels by 2012
Action: Create a Rain Barrel Program

Objective	FY2009 actual	FY2010 actual	FY2011 budget expectation	FY2011 Progress
Install 150 rain barrels by 2012. (each number presented is the total number in use at the end of the fiscal year)	70	97	-	143
<i>* This number is as of May 2011</i>				

Action Plan 5

Component: Pollution Prevention
Element: Urban Forest Management
Goal: Improve air quality
Objective: Strive for 40% canopy coverage in 20 years
Action: Complete the Urban Forest Management Plan

Objectives	FY2009 actual	FY2010 actual	FY2011 budget expectation	FY2011 Progress
Strive for 40% canopy coverage in 20 years.	-	46%	-	See below

- In September 2010, the City received a Chesapeake Bay Trust grant to hire a consultant to create an Urban Greening Strategy and set a new urban tree canopy goal.
- An updated street tree inventory has been completed. The City has 16,528 street trees.
- Draft Urban Greening Strategy report was provided to City staff on September 2, 2011. The consultant presented its report to the EAC at its September meeting. The report will be finalized and presented to Council in October 2011.

Action Plan 6

Component: Pollution Prevention
Element: Urban Forest Management
Goal: Improve air quality
Objective: Plant a minimum of 150 street trees annually through 2012
Action: Implement the Street Tree Program

Objectives	FY2009 actual	FY2010 actual	FY2011 budget expectation	FY2011 Progress
Plant a minimum of 150 street trees annually through 2012.	150	170	150	149

Action Plan 7

Component: Pollution Prevention
Element: Surface Water Protection
Goal: Restore flow patterns in streams to mimic natural flows to the extent possible
Objectives: Implement 3 stormwater retrofit projects by 2012
 Encourage installation of 5 green roofs in Bowie by 2012
 Install a stream gage in at least 1 stream to measure water flow by 2012
Action: Encourage Alternative Means of Stormwater Management

Objectives	FY2009 actual	FY2010 actual	FY2011 budget expectation	FY2011 Progress
Encourage three (3) stormwater management retrofits by 2012.	✓	✓	-	✓
Encourage installation of five (5) green roofs by 2012.	✓	✓	-	✓ Installed partial green roof at new City Hall building

- Currently working with developers on three upcoming redevelopment projects to increase LID/ESD use on-site (FY2012)
- Completed City Hall construction with partial green roof (FY2011)

Action Plan 8

Component: Resource Conservation
Element: Environmental Restoration, Preservation and Conservation
Goal: Provide abundant open space and passive recreation land to accommodate existing and planned population growth and preserve environmentally sensitive areas
Objective: Complete a Land Preservation Plan by 12/31/09
Action: Create a Land Preservation Program

Objectives	FY2009 actual	FY2010 actual	FY2011 budget expectation	FY2011 Progress
Complete a Land Preservation Plan by 12/31/09.	This objective is indefinitely on hold due to budget constraints			

Action Plan 9

Component: Pollution Prevention
Element: Urban Forest Management
Goal: Improve air quality
Objective: Afforest 20 acres by 2012
Action: Implement the Forest Mitigation Sites Program

Objectives	FY2009 actual	FY2010 actual	FY2011 budget expectation	FY2011 Progress
Afforest 20 acres by 2012. (each number presented is the total number as of the end of that fiscal year)	8.98	51.5	-	51.5

The City is working with State Highway Administration to afforest approximately 30 acres as part of its mitigation requirements for the InterCounty Connector. Plantings are scheduled to begin in the fall of 2011.

Action Plan 10

Component: Pollution Prevention
Element: Surface Water Protection
Goal: Improve water quality
Objective: Investigate 213 pipe outfall sites, 37 unusual conditions, 21 exposed pipes and 13 DPW/ERM fieldwork 5/07 sites by 2012
 Begin water quality sampling at specific locations in each sub-watershed by 2010
 Install at least 1 continuous stream monitor in a sub-watershed by 2012
Action: Implement the NPDES Program

Objectives	FY2009 actual	FY2010 actual	FY2011 budget expectation	FY2011 Progress
Investigate WRAS pipe outfall sites, unusual conditions, & exposed pipes in two subwatersheds and mitigate deficiencies by 2012.	-	some initial investigations are underway in Middle Collington Branch	-	This work has begun but is on hiatus for the summer due to vegetation growth
Begin regular water quality sampling at specific locations in one subwatershed by 2010.	Identification of sites is underway for taking a single round of grab samples to establish baseline conditions		-	Some grab samples were collected at three sites in Middle Collington Branch. No water quality concerns were discovered.
By the year 2012, install at least 1 continuous stream monitor in a subwatershed by 2012.	WQ monitoring strategy changed per advice from MD DNR. Continuous stream gage installation is not advised at this time.			
Have one team of volunteers per subwatershed trained in outfall screening by 2012	0	0	-	Interns have been conducting these screenings for now*
* Assessing the feasibility of this as an off-shoot of stream teams				

Action Plan 11

Component: Pollution Prevention
Element: Surface Water Protection
Goal: Improve water quality in the City's streams
Objectives: By 2012, make one stream habitable by a fish population
 Complete investigations of 21 channel alteration sites by Dec. 2009
 Complete investigations of 35 inadequate buffer sites by Dec. 2009
 Begin testing family-level benthic index of biotic integrity by 2009
 Complete investigations of 78 fish barriers by Dec. 2010
 Establish new baseline of stream bank length with eroding banks by June 2008
Action: Implement the WRAS Program

Objectives	FY2009 actual	FY2010 actual	FY2011 budget expectation	FY2011 Progress*
By 2012, make one (1) stream habitable by a fish population.	0	Under investigation. MBSS data indicates that multiple streams are already inhabited by fish.	-	Awaiting updated MBSS data to determine if fish are present
Begin testing family-level benthic index of biotic integrity	0	Some initial investigations are underway in Middle Collington Branch	-	B-IBI scores are provided by MD DNR. Awaiting updated data before developing a local plan
Complete investigations of 35 inadequate buffer sites	0		-	An initial desktop investigation has been conducted. Field verification to follow.
Complete investigations of 21 channel alteration sites	0		-	This work has begun but is on hiatus for the summer due to vegetation growth
Complete investigations of 78 fish barriers	0		-	Fish barriers that have been identified are not easily fixed (e.g., railroad track, culvert). Field review will continue this fall.
Establish new baseline of stream bank length with eroding banks	0		-	This work has begun but is on hold for the summer due to vegetation growth

*In March 2011, the City hired two water resources interns from the University of Maryland to conduct a full outfall inventory and reassess WRAS sites and recommendations. The review is on hold until the fall when the vegetation dies back. During this time, though, a desktop analysis of WRAS buffer and Urban Tree Canopy GIS data has been conducted.

Action Plan 12

Component: Resource Conservation
Element: Environmental Restoration, Preservation and Conservation
Goal: Restore urban land to a more natural state
Objectives: Decrease the number of acres mowed Citywide by at least 10% by 2012
 Reduce turf at 7 sites totaling 7 acres by 2010
Action: Create a Turf Reduction Program

Objectives	FY2009 actual	FY2010 actual	FY2011 budget expectation	FY2011 Progress
Decrease the number of acres mowed Citywide by at least 10% by 2012. (total mowed area in 2007 = 202 ac)	202	202	232	232*
Convert 7 acres of publicly-owned turf to native landscaping (each number presented is the total number as of the end of that fiscal year)	7,000 sq ft	10,500 sq ft	-	13,500 sq ft

*Turf mowing increased for FY2011, as expected, due to acceptance of grass rights-of-way along County- and State-owned roads that the City will maintain from now on.