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## **1 SNOW AND ICE REMOVAL PLAN 2023**

Beginning in 2019, DOEE began coordinating with the District of Columbia Department of Public Works (DPW) to design a pilot project that would evaluate different strategies to reduce road salt use in the District. The goal of the project is to test alternative treatment scenarios that could be incorporated into standard snow removal practices. During the 2021-2022 winter season, there was only one qualifying snow event, and the pilot project was implemented successfully during that event. During the 2022-2023 winter season, there were no qualifying snow events. The pilot will continue in the 2023-2024 winter season with a goal of implementing the pilot for 2-3 additional events. DOEE has communicated this need to EPA and received permission to continue the project in 2023-2024.

In addition to the one successful test run of the pilot, DOEE and DPW accomplished the following during the current reporting year:

- DOEE and DPW held bi-weekly planning meetings through the fall/winter of 2022-2023.
- DPW held an in-person training for the truck drivers detailed to this pilot on January 10<sup>th</sup>, 2023.

The following page provides a current overview of the road salt pilot as of the date of this report's submission.

## **District of Columbia Deicing Alternatives Pilot Overview “Road Salt Reduction Pilot”**

**Background:** The 2018 District of Columbia Government Municipal Separate Stormwater Sewer System (MS4) Permit requires the District to pilot salt alternatives and incorporate its findings into the District’s snow removal strategy. This Road Salt Reduction Pilot will be continued during the FY23 Snow Season, provided favorable weather conditions occur.

**Goal:** DOEE will compare the effectiveness of alternative deicing practices including the use of a salt alternative, Calcium Magnesium Acetate (CMA) and the use of brine, with the existing deicing practice of dry road salt application (control scenario).

**Selection of Alternatives:** The deicing alternatives that were selected for this study represent treatment options that have shown success at reducing salt use in other jurisdictions. Calcium Magnesium Acetate (CMA) has been shown to be a more environmentally friendly alternative to road salt, while still protecting public safety in deicing operations. The use of brine has also shown the ability to reduce the use of salt in deicing operations, since brine is less likely to bounce off the road.

**Qualifying Events:** To best target the effectiveness of each deicing treatment scenario, the pilot will only be deployed during events where plowing will not be needed. The qualifying weather conditions are listed below:

- Ice, freezing rain, slush, and winter mix
- Trace to 2 inches of snow

**Test Design:** DOEE and DPW have identified 6 snow plow routes (specifically the primary road portions of these routes) to execute the pilot testing during winter weather events. The three treatment scenarios (Control, brine, and CMA) will be run in duplicate for each event. It is anticipated that this pilot test will be deployed on the identified routes during as many qualifying events as feasible during the 2022-2023 snow season. It is the goal of this project to deploy and evaluate the treatment scenarios described in this pilot plan during at least 3 events beyond the initial “test” event. Limitations such as quantity of deicing chemicals and qualifying events will ultimately determine the total number events captured by this pilot.

**Evaluation of Alternatives:** DOEE anticipates using a variety of data points collected during the pilot test to evaluate the effectiveness of each treatment alternative including:

- Cost of treatment
- Weather and road conditions after product application
- District Snow Team - Road Conditions Rating after application
- Feedback on implementation procedures and product effectiveness from snow plow drivers, Tetra Tech staff, and the public

## **2 EVALUATION OF THE STORMWATER MANAGEMENT PROGRAM**

The District's MS4 Annual Report, Section 4.6, requires a data synthesis of programmatic and watershed indicators.

### **4.6.1 Programmatic Indicators**

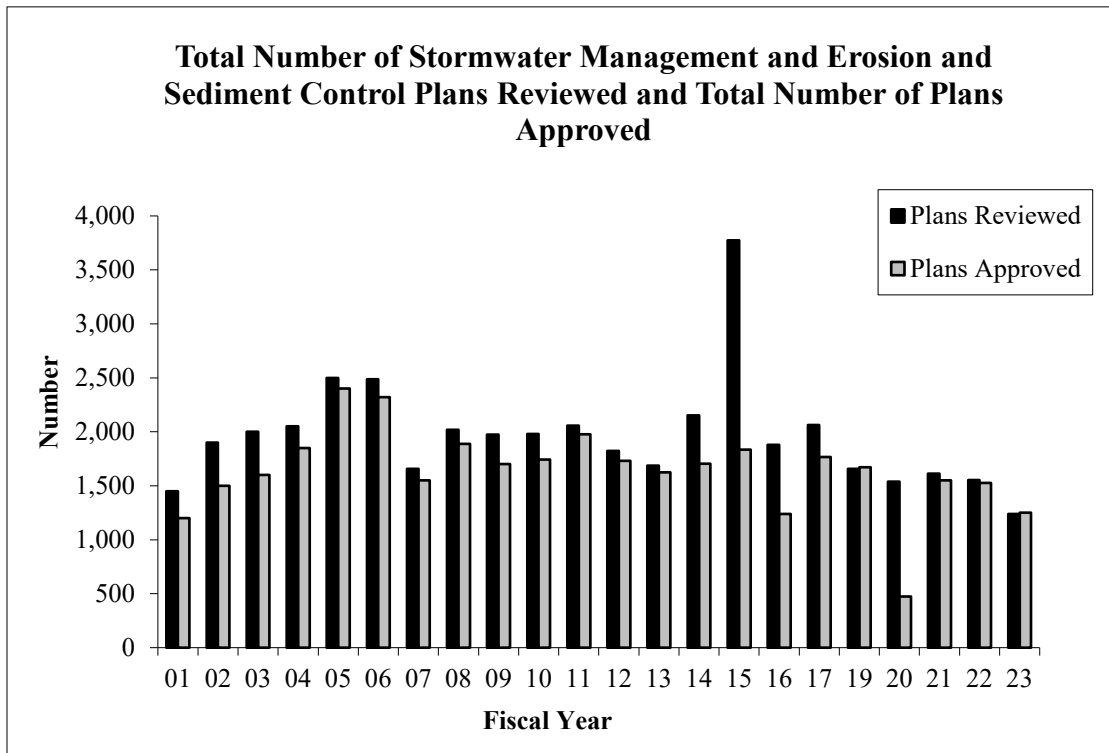
*The Permittee shall evaluate the effectiveness of the SWMP using multiple programmatic indicators linked to the requirements in Part 3 of this permit. The Annual Reporting Template in Appendix A of this permit identifies the programmatic indicators used to evaluate the success of implementing stormwater control measures.*

As required by Section 4.6.1, the effectiveness of the Stormwater Management Program is evaluated using the programmatic indicators found in Part 3 of the MS4 Permit. The Annual Report describes implementation of these programs in this reporting year. In interest of doing a complete synthesis, indicators are being reviewed over the life of multiple permit terms. As seen in the text and figures below, major program indicators have seen a steady progression in implementation.

#### ***Catch Basin Cleaning Activities (Section 3.3.4)***

Through the development of the DC Water Catch Basin Cleaning App, DOEE has increased the resolution at which it can report catch basin cleaning within the District. In previous permit terms DOEE was limited to reporting the number of catch basins cleaned over the entire jurisdiction. Now DOEE is able to report the number of catch basins that were cleaned specifically within the area of the city serviced by the MS4. Using data from the DC Water Catch Basin Cleaning App, DOEE has determined that there are 16,800 total catch basins within the MS4 area of the District. The number of catch basins cleaned in the MS4 area of DC was 12,473 in reporting year 2020, 11,859 in reporting year 2021, 13,967 in reporting year 2022 and 13,735 in reporting year 2023. These values represent the number of unique catch basins that were cleaned, not the number of cleaning events. It should be noted that some catch basins were cleaned more than once during the reporting year, which is not reflected in the numbers reported. The reduction in the number of catch basins cleaned in reporting year 2021 is due to a temporary pause in cleanings due to COVID-19.

**Construction Activities (Section 3.5)**



**Figure 1 Total Number of Stormwater Management and Erosion and Sediment Control Plans Reviewed and Total Number of Plans Approved Over Time**

### Targeted Trash and Litter Pollutant Controls (Section 3.7)

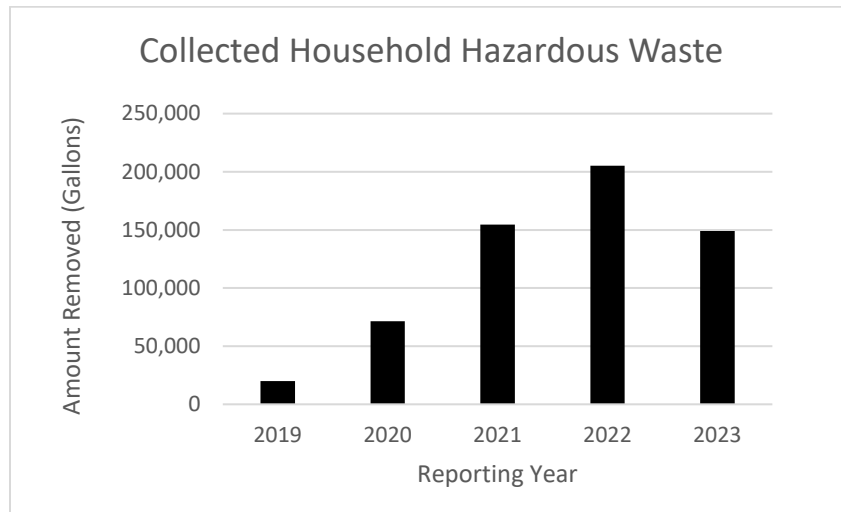


Figure 2 Annual Household Hazardous Waste Collected Over Time

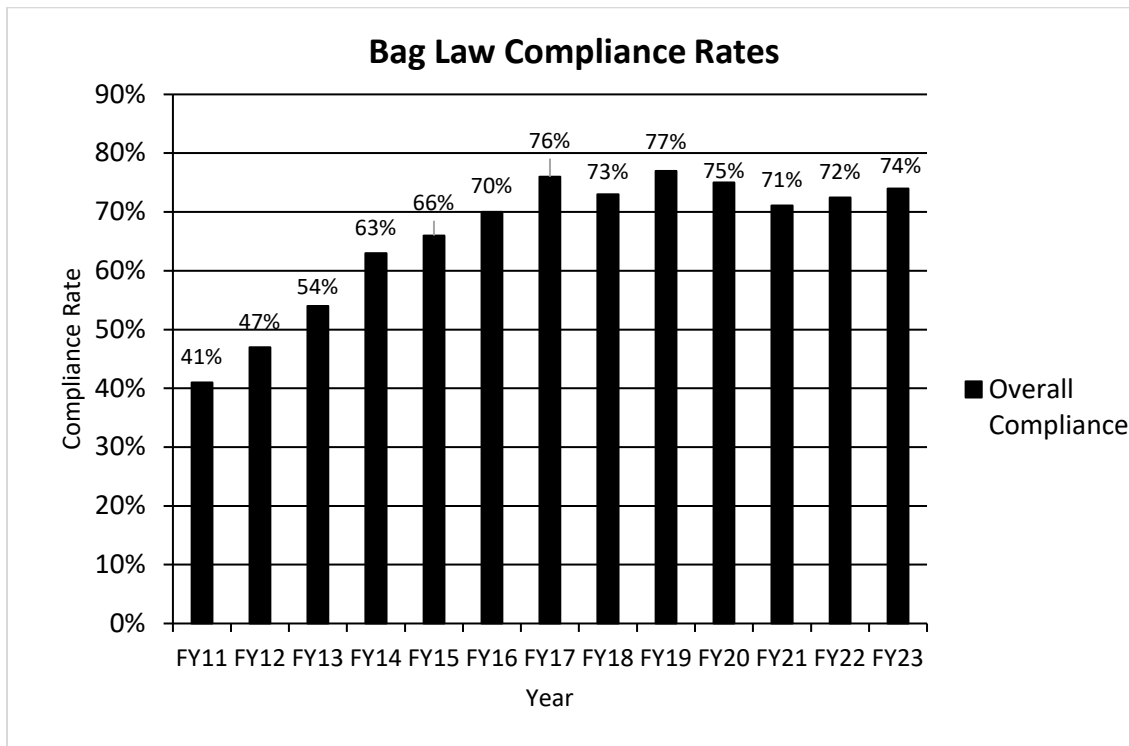
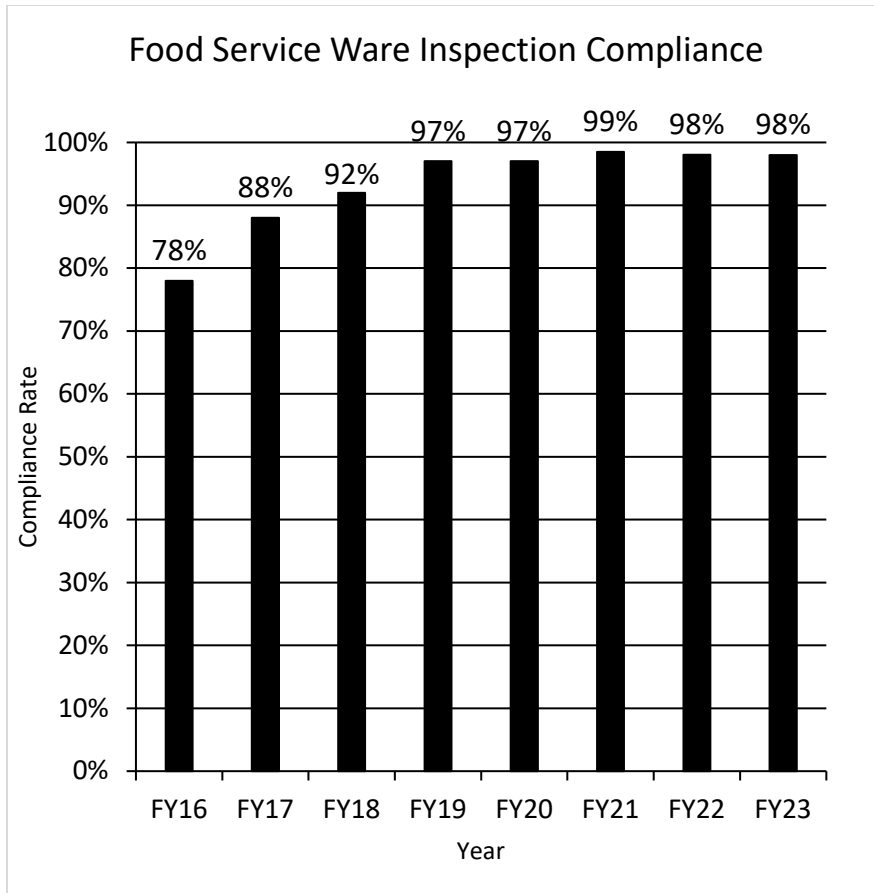


Figure 3 Bag Law Compliance Rates Over Time



**Figure 4 Food Service Ware Inspection, including foam ban, Compliance Rates**

**Table 1 Coal Tar Pavement Sealant Ban Inspections and Compliance Rates**

Fiscal Year	Inspections	Positive CT Field Tests	Overall Compliance (%)
FY11	36	13	66.7
FY12	79	2	96.21
FY13	163	6	97.6
FY14	190	9	99.48
FY15	83	1	100
FY16	60	0	100
FY17	64	4*	100
FY18	60	6*	100
FY19	63	1	100
FY20	63	0	100

<b>Fiscal Year</b>	<b>Inspections</b>	<b>Positive CT Field Tests</b>	<b>Overall Compliance (%)</b>
<b>FY21</b>	45	0	100
<b>FY22</b>	<b>60</b>	<b>0</b>	<b>100</b>
<b>FY23</b>	<b>60</b>	<b>0</b>	<b>100</b>
<b>TOTALS:</b>	1,026	42	

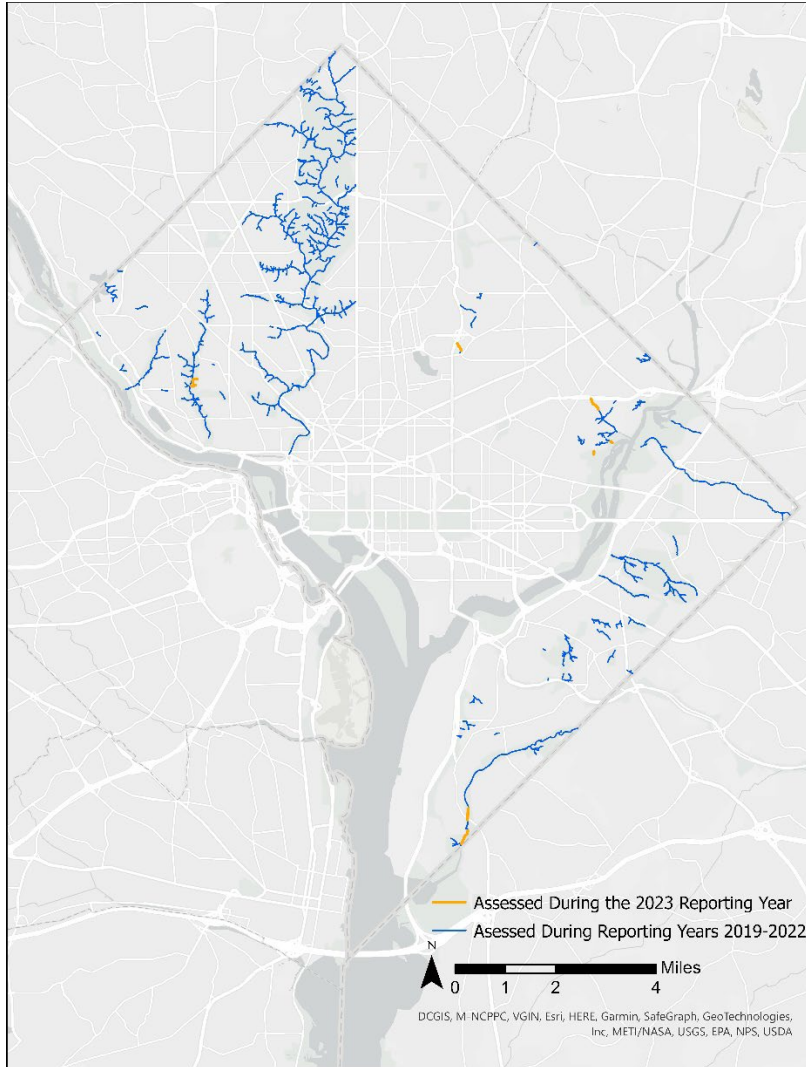
#### 4.6.2 Watershed Indicators

*The Permittee shall also evaluate the effectiveness of the SWMP using multiple watershed indicators linked mostly to the assessment requirements of Part 4 of this permit, and the synthesis of those data through analysis and modeling.*

In the 2023 reporting year, DOEE continued implementing the Receiving Waters Assessment Program as required in Section 4.3 of the District’s MS4 Permit. As part of this program, DOEE has developed a Rapid Stream Assessment. The intent of the Rapid Stream Assessment (RSA) is to collect information to provide a high-level overview of the entire wadeable stream network within the District. This information can help identify potential issues as well as locations that may warrant follow-up inspections or more in-depth evaluations. The information from the RSA can also serve as a baseline with which to compare information from these assessments in the future. All data collected as part of this program is housed in ArcGIS.

DOEE has assessed over 90 miles of streams within the District since the Rapid Stream Assessments began in 2019. DOEE field teams surveyed approximately 1.3 miles of stream during the 2023 reporting period, completing all remaining baseline stream assessments. Figure 5 shows all assessed streams to date, highlighting those assessed during the 2023 reporting year in orange. In addition to completing a baseline assessment of all wadeable streams in the District, DOEE conducted significant programmatic upgrades during the 2023 reporting year including migration to an Enterprise database and performance of robust quality assurance and quality control. These upgrades improve the usability of the existing dataset and provide the basis for enhanced data management moving forward. As a result of these programmatic upgrades, DOEE staff will now be able to collect data documenting both spatial and attribute changes to streams in the future – a cornerstone feature of the Rapid Stream Assessment Program’s future.





**Figure 5 Rapid Stream Assessment Achievements**

#### **4.6.2.1 Estimate Annual Cumulative Pollutant Loadings**

*The Permittee shall estimate annual cumulative pollutant loadings for all pollutants listed in Table 7 of this permit.*

DOEE continues to implement a wet weather monitoring program at representative outfalls, Table 2. The minimum number of three wet weather sampling events per site could not be achieved at all monitoring sites. The limitations encountered include:

- Lack of sufficient qualifying wet weather events.
  - This was an uncharacteristically dry reporting year. NBC reported on June 13<sup>th</sup> that 2023 was the fourth driest year on

record: <https://www.nbcwashington.com/news/local/low-potomac-river-flow-levels-triggers-daily-drought-monitoring/3366218/>. Also see, <https://www.potomacriver.org/news/junes-water-supply-outlook/>.

- Additionally, in recent years, the intensity, frequency, duration, and spatial distribution over the MS4 Permit Area have not met EPA’s guidance for qualifying rainfall. The rainfalls are more intense, less frequent, and of short duration. It is common that rain will occur in one part of the city but not in areas where out outfalls are scheduled for sample collection.
- Excessive invasive species vegetation overgrowth hindering outfall access have presented frequent challenges. DOEE is working to update contract requirements to address these and future limitations regarding wet weather sampling.
- Occasional field equipment or laboratory failures have precluded some data collected.

The wet weather sampling summary data for the required monitoring parameters is detailed in Table 3, Table 4, and Table 5. The geometric mean for each parameter was calculated to represent the event mean concentration (EMC).

**Table 2 Monitoring Site Information**

Site	Outfall	Watershed
SW1	Outfall 999 - Gallatin	Anacostia
SW2	Outfall 124* - Oxon Run	Potomac
SW3	Outfall 851 - Soapstone Creek	Rock Creek
SW4	Outfall 1035 - Kenilworth and Douglas	Anacostia
SW5	Outfall 260 - 53 <sup>rd</sup> and Dix Street	Anacostia
SW6	Outfall 950 - Potomac Tributary	Potomac
SW7	Outfall 103 - Oxon Run	Potomac
SW8	Outfall 825 - Tilden and Reno	Rock Creek
SW9	Outfall 901 - Tributary to Pinehurst Br.	Rock Creek

\*Outfall 124 has been reported as Outfall 123 in past annual reports (typographical error).

**Table 3 Potomac Watershed Wet Weather Sampling Data 2022-2023, geometric mean**

Potomac River Watershed				
Parameter	Unit	SW2	SW6	SW7
E. Coli	MPN/100ml	56.67	191.83	56.57
Cadmium	mg/L	0.00	0.00	0.00
Copper	mg/L	0.13334	0.012247	0.022450
Lead	mg/L	0.0021	0.0023	0.0032
Zinc	mg/L	0.0505	0.0536	0.1186

Total Suspended Solids	mg/L	14.97	12.66	27.96
Phosphorus, Total	mg/L	0.2857	0.1817	0.9450
Nitrogen, Total	mg/L	2.83	2.08	6.94

n=2

Note: where value is < (less than) or non-detect, the Detection Limit (DL) value is used

**Table 4 Anacostia Watershed Wet Weather Sampling Data 2022-2023, geometric mean**

Anacostia River Watershed				
Parameter	Unit	SW1	SW4	SW5
E. Coli	MPN/100ml	1600.00	1600.00	1600.00
Cadmium	mg/L	0.00	0.00	0.00
Copper	mg/L	0.0188266	0.003500	0.002400
Lead	mg/L	0.0045	0.0010	0.0010
Zinc	mg/L	0.0952	0.0194	0.0291
Total Suspended Solids	mg/L	30.00	1.40	12.00
Phosphorus, Total	mg/L	0.4960	0.1800	0.3800
Nitrogen, Total	mg/L	4.55	2.87	1.68

n=1, except SW1 where n=2

Note: where value is < (less than) or non-detect, the Detection Limit (DL) value is used

**Table 5 Rock Creek Watershed Wet Weather Sampling Data 2022-2023, geometric mean**

Rock Creek Watershed				
Parameter	Unit	SW3	SW8	SW9
E. Coli	MPN/100ml	136.08	191.83	65.97
Cadmium	mg/L	0.00	0.00	0.00
Copper	mg/L	0.027498	0.018078	0.012124
Lead	mg/L	0.0064	0.0033	0.0015
Zinc	mg/L	0.0836	0.0504	0.0343
Total Suspended Solids	mg/L	29.56	9.47	10.47

Phosphorus, Total	mg/L	0.4258	0.3562	0.2008
Nitrogen, Total	mg/L	2.94	1.77	1.55

n=3 except SW8, which is n=2

Note: where value is < (less than) or non-detect, the Detection Limit (DL) value is used

Table 6 provides the annual cumulative pollutant load occurring in the three main watersheds within the District.

**Table 6 Annual Cumulative Pollutant Load in Each Watershed**

<b>63. Per Subsection 4.6.2.1, Estimated Annual Cumulative Pollutant Loads in this Reporting Year. Reporting Year July 2022- June 2023</b>					
	<b>Rock Creek</b>	<b>Anacostia River</b>	<b>Potomac River</b>	<b>Total</b>	<b>Units</b>
Cadmium	7.47	30.37	12	50	Pounds/yr
Copper	681	1866	720	3267	Pounds/yr
Lead	152	451	114	717	Pounds/yr
Zinc	2040	4449	3343	9832	Pounds/yr
Phosphorus, Total (as P)	11037	25264	22839	59140	Pounds/yr
Total Suspended Solids	667651	1280781	868018	2816450	Tons/yr
Nitrogen, Total as N	71968	262830	216275	551073	Pounds/yr
E. Coli	1.82E+13	9.37E+14	8.0E+13	1.04E+15	MPN/yr

DOEE calculated the potential pollutant load and volume reductions achieved through the annual BMP implementation, Table 7. The load and volume reduction estimates were developed using the District’s Implementation Plan Modeling Tool (IPMT). With the permit’s green roof installation requirement being met this reporting period, DOEE has also included the square footage of green roofs installed in each watershed to date, Table 8.

**Table 7 Pollutant Load Reductions, 07/01/2022 - 06/30/2023**

<b>Watershed</b>	<b>Runoff Retained (gallons)</b>	<b>TN (lbs)</b>	<b>TP (lbs)</b>	<b>TSS (lbs)</b>	<b>Copper (lbs)</b>	<b>Lead (lbs)</b>	<b>Cadmium<sup>1</sup> (lbs)</b>	<b>Zinc (lbs)</b>	<b>E. coli (Billion MPN)</b>
Anacostia	35,054,723	1,051	121	23,759	16.61	5.11	5.59	38.37	7,900
Rock Creek	16,535,441	474	54	7,646	7.39	2.24	2.45	14.22	3,488
Potomac River	21,099,185	642	75	9,023	10.24	3.20	3.51	19.90	4,907
<b>Total</b>	<b>72,689,350</b>	<b>2,167</b>	<b>250</b>	<b>40,429</b>	<b>34.2</b>	<b>10.6</b>	<b>11.6</b>	<b>72.49</b>	<b>16,294</b>

1. An EPA report (402-R-99-004B- linked below) that reviewed several studies with varied site conditions has documented mean partition coefficients for metals. DOEE used these metal-specific partition coefficients (Kd) and associated particle associated fraction (fp) values to model pollutant reduction for these metals through BMP

implementation. Since many of the relevant low impact development (LID) practices have similar removal rates for lead and cadmium, the relationship between these two metals, their fp values, and the areas retrofitted were used to estimate cadmium reductions achieved through the Retrofit Program. DOEE will continue to use this methodology to estimate the pollutant load reduction for cadmium in Annual Reports.

EPA Report: <http://www.epa.gov/sites/production/files/2015-05/documents/402-r-99-004b.pdf>

2. Note that summations include MS4, Direct Drainage, and CSS areas.

**Table 8 Square Feet of Green Roofs Installed in Each Watershed**

	2018-2019	2019-2020	2020-2021	2021-2022	2022-2023	Total
Anacostia	89,378	214,551	257,529	88,494	<b>58,092</b>	708,044
Rock Creek	15,895	217	101,182	76,125	<b>53,352</b>	246,771
Potomac	62,912	60,754	53,643	21,461	<b>55,233</b>	254,003
Total	<b>168,185</b>	<b>275,522</b>	<b>412,354</b>	<b>186,080</b>	<b>166,677</b>	1,208,818

As required, DOEE has attached all WLA benchmarks to this annual report, Table 11. This table provides a watershed scale summary that includes load reductions MS4 and direct drainage area for each non-CSS watersheds. The color coding indicates whether the Wasteload Allocation (WLA) has been achieved for that waterbody/pollutant combination, Table 10.

**Table 9 Table Key**

Green cells indicate that the WLA has already been achieved for that waterbody and pollutant combination.
Blue cells indicate that the benchmark load reduction was achieved or exceeded for that waterbody and pollutant combination.
Orange cells indicate that the benchmark load reduction was not achieved for that waterbody and pollutant combination.
Grey cells indicate that there is no MS4 WLA for that waterbody and pollutant combination, and therefore no benchmark has been established. Load reductions are provided for informational purposes only.

**Table 10 Overall Summary of WLA Benchmark Achievements, 07/01/2022 - 06/30/2023**

WLA Achieved	26
Benchmark Achieved	31
Benchmark Not Achieved	105
No WLA or benchmark	894

**Table 11 Pollutant Load Reductions from BMP Implementation with WLA Benchmarks, 07/01/2022 to 06/30/2023**

Watershed	Runoff Retained (gallons)	TN (lbs)	TP (lbs)	TSS (lbs)	Fecal Coliform (billion MPN)	BOD (lbs)	Oil and Grease (lbs)	Arsenic (lbs)	Copper (lbs)	Lead (lbs)	Cadmium <sup>1</sup> (lbs)	Mercury (lbs)	Zinc (lbs)	Chlordane (lbs)	DDD (lbs)	DDE (lbs)	DDT (lbs)	Dieldrin (lbs)	Heptachlor Epoxide (lbs)	PAH1 (lbs)	PAH2 (lbs)	PAH3 (lbs)	TPCB (lbs)	E. coli (Billion MPN)	Trash (lbs)
Anacostia	16,581,405	51 8.3 3	59. 92	11, 792 .9	9,682	5,0 21	598. 6	.3E- 01	.1E+ 0	.5E+ 0	2.8 E+	.9E- 02	.9E+ 0	.4E- 03	.6E- 04	.1E- 03	.3E- 03	.0E- 05	.3E- 04	.1E- 02	.1E- 01	.3E- 01	1.2 E- 02	3,885 .7	-
Anacostia Lower	3,808,725	10 9.7 7	12. 57	2,4 49. 0	2,051	1,1 42	116. 1	.0E- 02	.7E+ 0	.3E- 01	5.8 E-	.2E- 03	.0E+ 0	.2E- 04	.9E- 05	.4E- 04	.1E- 03	.2E- 06	.0E- 05	.1E- 02	.3E- 01	.9E- 02	2.6 E- 03	823.3	-

Anacostia Upper	12,772,680	40 8.5 7	47. 35	9,3 43. 9	7,631	3,8 79	482. 5	.8E- 01	6 4E+0 0	2 .0E+0 0	2.2 E+ 00	.3E- 02	.5E+0 1	.1E- 03	.6E- 04	.6E- 03	.2E- 03	.1E- 05	.0E- 04	.1E- 02	.8E- 01	.4E- 01	9.6 E- 03	3,062 .4	-
ANATF_DC	13,540,478	31 0.6 0	37. 45	6,9 30. 7	5,981	2,6 22	463. 3	.4E- 01	4 .9E+0 0	1 .6E+0 0	1.7 E+ 00	.7E- 02	.1E+0 1	.7E- 04	.8E- 04	.3E- 03	.3E- 03	.1E- 05	.0E- 05	.9E- 02	.4E- 01	.8E- 01	7.3 E- 03	2,400 .4	-
ANATF_M D	4,630,847	87. 42	9.8 0	1,8 45. 7	1,527	81 1	86.5	.7E- 02	3 .3E+0 0	1 .0E- 01	4.3 E- 01	.6E- 03	.0E+0 0	.3E- 04	.3E- 05	.3E- 04	.4E- 04	.5E- 06	.2E- 05	.5E- 02	.8E- 02	.7E- 02	2.0 E- 03	612.8	-
Battery Kemble Creek	972,226	26. 94	3.0 8	341 .3	503	22 8	27.2	.2E- 02	4 .3E- 01	1 .3E- 01	1.4 E- 01	.5E- 03	.2E- 01	.0E- 05	.4E- 05	.1E- 04	.8E- 04	.4E- 06	.8E- 06	.3E- 03	.4E- 02	.2E- 02	6.5 E- 04	202.0	-
Broad Branch	1,314,047	37. 85	4.2 7	652 .6	680	26 0	45.5	.7E- 02	5 .8E- 01	1 .7E- 01	1.9 E- 01	.1E- 03	.1E+0 0	.1E- 04	.3E- 05	.5E- 04	.8E- 04	.2E- 06	.0E- 05	.2E- 03	.6E- 02	.9E- 02	8.8 E- 04	273.1	-
C&O Canal	1,350,762	37. 67	4.3 0	474 .2	699	31 7	37.8	.7E- 02	6 .0E- 01	1 .8E- 01	2.0 E- 01	.1E- 03	.1E+0 0	.1E- 04	.4E- 05	.5E- 04	.9E- 04	.3E- 06	.1E- 05	.4E- 03	.7E- 02	.0E- 02	9.1 E- 04	280.7	-
Dalecarlia Tributary	1,818,113	52. 69	6.0 2	682 .7	986	44 4	50.8	.4E- 02	8 .3E- 01	2 .6E- 01	2.8 E- 01	.0E- 03	.6E+0 0	.5E- 04	.7E- 05	.1E- 04	.4E- 04	.4E- 06	.5E- 05	.0E- 02	.4E- 02	.3E- 02	1.3 E- 03	395.7	-
Dumbarton Oaks	19,030	0.5 3	0.0 6	9.5	10	4	0.7	.4E- 04	8 .4E- 03	2 .5E- 03	2.8 E- 03	.0E- 05	.6E- 02	.6E- 06	.8E- 07	.1E- 06	.4E- 06	.6E- 08	.5E- 07	.0E- 04	.6E- 04	.3E- 04	1.3 E- 05	4.0	-
Fenwick Branch	113,578	3.4 4	0.3 8	56. 4	59	22	3.9	.5E- 03	5 .0E- 02	1 .5E- 02	1.7 E- 02	.8E- 04	.6E- 02	.3E- 06	.8E- 06	.3E- 05	.2E- 05	.7E- 07	.1E- 07	.2E- 04	.9E- 03	.5E- 03	7.6 E- 05	23.6	-
Fort Chaplin Tributary	39,536	1.2 7	0.1 4	24. 2	20	12	1.2	.1E- 04	5 .7E- 02	1 .3E- 03	5.8 E- 03	.3E- 05	.0E- 02	.2E- 06	.9E- 07	.4E- 06	.1E- 05	.6E- 08	.2E- 07	.2E- 04	.4E- 03	.9E- 04	2.7 E- 05	8.2	-
Fort Davis Tributary	38,035	1.1 7	0.1 3	23. 3	20	11	1.2	.9E- 04	4 .7E- 02	1 .1E- 03	5.5 E- 03	.0E- 05	.8E- 02	.1E- 06	.5E- 07	.2E- 06	.1E- 05	.2E- 08	.0E- 07	.1E- 04	.3E- 03	.5E- 04	2.6 E- 05	7.9	-
Fort Dupont Tributary	17,419	0.4 8	0.0 6	10. 7	9	5	0.5	.2E- 04	7 .7E- 03	2 .3E- 03	2.5 E- 03	.8E- 05	.8E- 02	.4E- 06	.4E- 07	.9E- 06	.0E- 06	.2E- 08	.4E- 07	.6E- 05	.0E- 04	.9E- 04	1.2 E- 05	3.6	-

<b>Fort Stanton Tributary</b>	40,687	1.1 3	0.1 3	24. 9	21	12	1.2	<sup>5</sup> .2E- 04	<sup>1</sup> .8E- 02	<sup>5</sup> .4E- 03	5.9 E- 03	<sup>6</sup> .5E- 05	<sup>4</sup> .1E- 02	<sup>3</sup> .3E- 06	<sup>1</sup> .0E- 06	<sup>4</sup> .5E- 06	<sup>1</sup> .2E- 05	<sup>9</sup> .8E- 08	<sup>3</sup> .3E- 07	<sup>2</sup> .2E- 04	<sup>1</sup> .4E- 03	<sup>9</sup> .1E- 04	2.7 E- 05	8.5	-
<b>Foundry Branch</b>	187,294	17. 70	2.3 1	509 .4	546	27 2	5.2	<sup>9</sup> .8E- 03	<sup>4</sup> .0E- 01	<sup>1</sup> .6E- 01	1.7 E- 01	<sup>1</sup> .2E- 03	<sup>8</sup> .9E- 01	<sup>3</sup> .0E- 05	<sup>2</sup> .3E- 05	<sup>1</sup> .2E- 04	<sup>2</sup> .9E- 04	<sup>4</sup> .5E- 07	<sup>1</sup> .5E- 06	<sup>1</sup> .0E- 03	<sup>1</sup> .7E- 02	<sup>3</sup> .0E- 02	5.4 E- 04	219.0	-
<b>Hickey Run</b>	900,971	33. 13	4.4 7	872 .1	683	27 9	110. 3	<sup>1</sup> .6E- 02	<sup>5</sup> .6E- 01	<sup>1</sup> .8E- 01	2.0 E- 01	<sup>1</sup> .9E- 03	<sup>1</sup> .3E+0 0	<sup>8</sup> .3E- 05	<sup>3</sup> .2E- 05	<sup>1</sup> .5E- 04	<sup>3</sup> .8E- 04	<sup>2</sup> .2E- 06	<sup>7</sup> .2E- 06	<sup>5</sup> .0E- 03	<sup>3</sup> .8E- 02	<sup>3</sup> .2E- 02	8.2 E- 04	274.1	-
<b>Kingman Lake</b>	460,107	13. 98	1.6 1	322 .5	265	13 8	14.0	<sup>6</sup> .4E- 03	<sup>2</sup> .2E- 01	<sup>6</sup> .9E- 02	7.6 E- 02	<sup>7</sup> .9E- 04	<sup>5</sup> .2E- 01	<sup>3</sup> .9E- 05	<sup>1</sup> .3E- 05	<sup>5</sup> .7E- 05	<sup>1</sup> .5E- 04	<sup>1</sup> .1E- 06	<sup>3</sup> .7E- 06	<sup>2</sup> .5E- 03	<sup>1</sup> .7E- 02	<sup>1</sup> .2E- 02	3.4 E- 04	106.5	-
<b>Klinge Valley Run</b>	737,182	20. 93	2.3 9	376 .6	390	14 6	25.5	<sup>9</sup> .6E- 03	<sup>3</sup> .3E- 01	<sup>1</sup> .0E- 01	1.1 E- 01	<sup>1</sup> .2E- 03	<sup>6</sup> .4E- 01	<sup>6</sup> .1E- 05	<sup>1</sup> .9E- 05	<sup>8</sup> .4E- 05	<sup>2</sup> .1E- 04	<sup>1</sup> .8E- 06	<sup>5</sup> .9E- 06	<sup>4</sup> .1E- 03	<sup>2</sup> .6E- 02	<sup>1</sup> .7E- 02	5.0 E- 04	156.4	-
<b>Lower Beaverdam Creek</b>	507,912	17. 35	2.0 7	453 .8	358	18 8	21.9	<sup>8</sup> .3E- 03	<sup>3</sup> .0E- 01	<sup>9</sup> .5E- 02	1.0 E- 01	<sup>1</sup> .0E- 03	<sup>7</sup> .0E- 01	<sup>4</sup> .6E- 05	<sup>1</sup> .7E- 05	<sup>7</sup> .8E- 05	<sup>2</sup> .0E- 04	<sup>1</sup> .2E- 06	<sup>4</sup> .1E- 06	<sup>2</sup> .8E- 03	<sup>2</sup> .1E- 02	<sup>1</sup> .6E- 02	4.4 E- 04	143.6	-
<b>Luzon Branch</b>	1,577,092	44. 38	5.0 5	784 .2	817	31 2	54.6	<sup>2</sup> .0E- 02	<sup>7</sup> .0E- 01	<sup>2</sup> .1E- 01	2.3 E- 01	<sup>2</sup> .5E- 03	<sup>1</sup> .3E+0 0	<sup>1</sup> .3E- 04	<sup>4</sup> .0E- 05	<sup>1</sup> .8E- 04	<sup>4</sup> .5E- 04	<sup>3</sup> .8E- 06	<sup>1</sup> .3E- 05	<sup>8</sup> .7E- 03	<sup>5</sup> .5E- 02	<sup>3</sup> .5E- 02	1.1 E- 03	328.0	-
<b>Melvin Hazen Valley Branch</b>	99,496	2.7 6	0.3 2	49. 4	52	20	3.4	<sup>1</sup> .3E- 03	<sup>4</sup> .4E- 02	<sup>1</sup> .3E- 02	1.4 E- 02	<sup>1</sup> .6E- 04	<sup>8</sup> .4E- 02	<sup>8</sup> .2E- 06	<sup>2</sup> .5E- 06	<sup>1</sup> .1E- 05	<sup>2</sup> .8E- 05	<sup>2</sup> .4E- 07	<sup>7</sup> .9E- 07	<sup>5</sup> .5E- 04	<sup>3</sup> .5E- 03	<sup>2</sup> .2E- 03	6.7 E- 05	20.7	-
<b>Nash Run</b>	170,941	5.5 6	0.6 1	109 .4	92	51	5.2	<sup>2</sup> .3E- 03	<sup>7</sup> .8E- 02	<sup>2</sup> .4E- 02	2.6 E- 02	<sup>2</sup> .8E- 04	<sup>1</sup> .8E- 01	<sup>1</sup> .4E- 05	<sup>4</sup> .4E- 06	<sup>2</sup> .0E- 05	<sup>5</sup> .0E- 05	<sup>4</sup> .1E- 07	<sup>1</sup> .4E- 06	<sup>9</sup> .4E- 04	<sup>6</sup> .0E- 03	<sup>4</sup> .0E- 03	1.2 E- 04	36.8	-
<b>Normanstone Creek</b>	51,788	1.4 4	0.1 6	25. 7	27	10	1.8	<sup>6</sup> .7E- 04	<sup>2</sup> .3E- 02	<sup>6</sup> .9E- 03	7.5 E- 03	<sup>8</sup> .2E- 05	<sup>4</sup> .4E- 02	<sup>4</sup> .2E- 06	<sup>1</sup> .3E- 06	<sup>5</sup> .7E- 06	<sup>1</sup> .5E- 05	<sup>1</sup> .3E- 07	<sup>4</sup> .1E- 07	<sup>2</sup> .8E- 04	<sup>1</sup> .8E- 03	<sup>1</sup> .2E- 03	3.5 E- 05	10.8	-
<b>Northwest Branch</b>	4,076,545	<sup>12</sup> 3.9 <sup>3</sup>	<sup>14</sup> 03	<sup>2,6</sup> 75. <sup>4</sup>	2,231	<sup>1,2</sup> 23	128. 3	<sup>5</sup> .5E- 02	<sup>1</sup> .9E+0 0	<sup>5</sup> .8E- 01	6.3 E- 01	<sup>6</sup> .7E- 03	<sup>4</sup> .3E+0 0	<sup>3</sup> .4E- 04	<sup>1</sup> .1E- 04	<sup>4</sup> .8E- 04	<sup>1</sup> .2E- 03	<sup>9</sup> .9E- 06	<sup>3</sup> .3E- 05	<sup>2</sup> .2E- 02	<sup>1</sup> .5E- 01	<sup>9</sup> .8E- 02	2.9 E- 03	895.2	-
<b>Oxon Run</b>	7,573,225	22 5.5 3	25. 85	2,9 20. 9	4,181	1,7 75	211. 8	<sup>1</sup> .0E- 01	<sup>3</sup> .5E+0 0	<sup>1</sup> .1E+0 0	1.2 E+ 00	<sup>1</sup> .3E- 02	<sup>6</sup> .8E+0 0	<sup>6</sup> .3E- 04	<sup>2</sup> .0E- 04	<sup>9</sup> .0E- 04	<sup>2</sup> .3E- 03	<sup>1</sup> .8E- 05	<sup>6</sup> .0E- 05	<sup>4</sup> .2E- 02	<sup>2</sup> .7E- 01	<sup>1</sup> .9E- 01	5.3 E- 03	1,677 .8	-



<b>Pinehurst Branch</b>	196,622	6.14	0.67	97.7	102	39	6.8	.5E-03 <sup>2</sup>	.7E-02 <sup>8</sup>	.6E-02 <sup>2</sup>	2.9E-02	.1E-04 <sup>3</sup>	.7E-01 <sup>1</sup>	.6E-05 <sup>1</sup>	.9E-06 <sup>4</sup>	.2E-05 <sup>2</sup>	.6E-05 <sup>5</sup>	.8E-07 <sup>4</sup>	.6E-06 <sup>1</sup>	.1E-03 <sup>1</sup>	.8E-03 <sup>6</sup>	.4E-03 <sup>4</sup>	1.3E-04	40.9	-
<b>Piney Branch</b>	7,929	0.22	0.03	3.9	4	2	0.3	.0E-04 <sup>1</sup>	.5E-03 <sup>3</sup>	.1E-03 <sup>1</sup>	1.2E-03	.3E-05 <sup>1</sup>	.7E-03 <sup>6</sup>	.5E-07 <sup>6</sup>	.0E-07 <sup>2</sup>	.8E-07 <sup>8</sup>	.3E-06 <sup>2</sup>	.9E-08 <sup>1</sup>	.3E-08 <sup>6</sup>	.4E-05 <sup>4</sup>	.8E-04 <sup>2</sup>	.8E-04 <sup>1</sup>	5.3E-06	1.6	-
<b>Pope Branch</b>	42,273	1.46	0.17	33.1	27	13	1.3	.3E-04 <sup>6</sup>	.2E-02 <sup>2</sup>	.0E-03 <sup>7</sup>	7.7E-03	.8E-05 <sup>7</sup>	.2E-02 <sup>5</sup>	.7E-06 <sup>3</sup>	.3E-06 <sup>1</sup>	.8E-06 <sup>5</sup>	.5E-05 <sup>1</sup>	.0E-07 <sup>1</sup>	.4E-07 <sup>3</sup>	.3E-04 <sup>2</sup>	.6E-03 <sup>1</sup>	.2E-03 <sup>1</sup>	3.3E-05	10.7	-
<b>Portal Branch</b>	13,207	0.37	0.04	6.6	7	3	0.5	.7E-04 <sup>1</sup>	.8E-03 <sup>5</sup>	.8E-03 <sup>1</sup>	1.9E-03	.1E-05 <sup>2</sup>	.1E-02 <sup>1</sup>	.1E-06 <sup>1</sup>	.3E-07 <sup>3</sup>	.5E-06 <sup>1</sup>	.8E-06 <sup>3</sup>	.2E-08 <sup>3</sup>	.1E-07 <sup>1</sup>	.3E-05 <sup>7</sup>	.6E-04 <sup>4</sup>	.0E-04 <sup>3</sup>	8.9E-06	2.7	-
<b>Potomac Lower</b>	11,555,566	336.02	38.49	4,319.1	6,243	2,709	323.1	.5E-01 <sup>1</sup>	.3E+00 <sup>5</sup>	.6E+00 <sup>1</sup>	1.8E+00	.9E-02 <sup>1</sup>	.0E+01 <sup>1</sup>	.6E-04 <sup>9</sup>	.0E-04 <sup>3</sup>	.3E-03 <sup>1</sup>	.4E-03 <sup>3</sup>	.8E-05 <sup>2</sup>	.2E-05 <sup>9</sup>	.4E-02 <sup>6</sup>	.1E-01 <sup>4</sup>	.7E-01 <sup>2</sup>	8.0E-03	2,505.4	-
<b>Potomac Middle</b>	1,589,920	67.50	8.83	1,066.0	1,335	405	154.8	.9E-02 <sup>2</sup>	.1E+00 <sup>1</sup>	.7E-01 <sup>3</sup>	4.0E-01	.6E-03 <sup>3</sup>	.2E+00 <sup>2</sup>	.4E-04 <sup>1</sup>	.1E-05 <sup>6</sup>	.9E-04 <sup>2</sup>	.1E-04 <sup>7</sup>	.8E-06 <sup>3</sup>	.3E-05 <sup>1</sup>	.8E-03 <sup>8</sup>	.6E-02 <sup>6</sup>	.5E-02 <sup>6</sup>	1.5E-03	536.0	-
<b>Potomac Upper</b>	5,789,172	177.38	20.56	2,545.5	3,516	1,604	161.9	.3E-02 <sup>8</sup>	.9E+00 <sup>2</sup>	.3E-01 <sup>9</sup>	1.0E+00	.0E-02 <sup>1</sup>	.7E+00 <sup>5</sup>	.9E-04 <sup>4</sup>	.7E-04 <sup>1</sup>	.6E-04 <sup>7</sup>	.9E-03 <sup>1</sup>	.4E-05 <sup>1</sup>	.6E-05 <sup>4</sup>	.2E-02 <sup>3</sup>	.1E-01 <sup>2</sup>	.6E-01 <sup>1</sup>	4.4E-03	1,410.9	-
<b>POTTF DC</b>	27,037,087	529.28	60.69	7,725.3	9,972	4,228	532.0	.4E-01 <sup>2</sup>	.4E+00 <sup>8</sup>	.6E+00 <sup>2</sup>	2.8E+00	.0E-02 <sup>3</sup>	.6E+01 <sup>1</sup>	.5E-03 <sup>1</sup>	.8E-04 <sup>4</sup>	.1E-03 <sup>2</sup>	.5E-03 <sup>5</sup>	.3E-05 <sup>4</sup>	.4E-04 <sup>1</sup>	.8E-02 <sup>9</sup>	.4E-01 <sup>6</sup>	.4E-01 <sup>4</sup>	1.3E-02	4,002.3	-
<b>POTTF MD</b>	2,063,604	46.94	5.38	618.1	879	385	43.7	.1E-02 <sup>2</sup>	.4E-01 <sup>7</sup>	.3E-01 <sup>2</sup>	2.5E-01	.6E-03 <sup>2</sup>	.4E+00 <sup>1</sup>	.3E-04 <sup>1</sup>	.2E-05 <sup>4</sup>	.9E-04 <sup>1</sup>	.8E-04 <sup>4</sup>	.8E-06 <sup>3</sup>	.2E-05 <sup>1</sup>	.6E-03 <sup>8</sup>	.6E-02 <sup>5</sup>	.9E-02 <sup>3</sup>	1.1E-03	352.7	-
<b>Rock Creek Lower</b>	1,969,114	55.66	6.36	994.7	1,033	389	68.2	.6E-02 <sup>2</sup>	.8E-01 <sup>8</sup>	.7E-01 <sup>2</sup>	2.9E-01	.2E-03 <sup>3</sup>	.7E+00 <sup>1</sup>	.6E-04 <sup>1</sup>	.0E-05 <sup>5</sup>	.2E-04 <sup>2</sup>	.7E-04 <sup>5</sup>	.8E-06 <sup>4</sup>	.6E-05 <sup>1</sup>	.1E-02 <sup>1</sup>	.9E-02 <sup>6</sup>	.5E-02 <sup>4</sup>	1.3E-03	414.4	-
<b>Rock Creek Upper</b>	9,786,840	275.90	31.42	4,879.1	5,081	1,934	339.0	.3E-01 <sup>1</sup>	.3E+00 <sup>4</sup>	.3E+00 <sup>1</sup>	1.4E+00	.6E-02 <sup>1</sup>	.3E+00 <sup>8</sup>	.0E-04 <sup>8</sup>	.5E-04 <sup>2</sup>	.1E-03 <sup>1</sup>	.8E-03 <sup>2</sup>	.4E-05 <sup>2</sup>	.8E-05 <sup>7</sup>	.4E-02 <sup>5</sup>	.4E-01 <sup>3</sup>	.2E-01 <sup>2</sup>	6.6E-03	2,039.4	-

Soapstone Creek	6,020,782	16 7.4 5	19. 15	2,9 95. 1	3,121	1,1 90	208. 6	7 .7E- 02	2 .7E+0 0	8 .0E- 01	8.8 E- 01	9 .6E- 03	5 .1E+0 0	4 .9E- 04	1 .5E- 04	6 .7E- 04	1 .7E- 03	1 .5E- 05	4 .8E- 05	3 .3E- 02	2 .1E- 01	1 .3E- 01	4.1 E- 03	1,252 .6	-
Texas Avenue Tributary	38,061	1.2 8	0.1 4	23. 3	20	11	1.2	4 .9E- 04	1 .7E- 02	5 .1E- 03	5.5 E- 03	6 .0E- 05	3 .8E- 02	3 .1E- 06	9 .5E- 07	4 .2E- 06	1 .1E- 05	9 .2E- 08	3 .0E- 07	2 .1E- 04	1 .3E- 03	8 .5E- 04	2.6 E- 05	7.9	-
Tidal Basin	1,265,728	40. 37	4.6 9	547 .8	758	30 3	38.8	1 .8E- 02	6 .3E- 01	2 .0E- 01	2.2 E- 01	2 .2E- 03	1 .2E+0 0	1 .1E- 04	3 .6E- 05	1 .6E- 04	4 .2E- 04	3 .1E- 06	1 .0E- 05	7 .0E- 03	4 .6E- 02	3 .4E- 02	9.5 E- 04	304.2	-
Washington Ship Channel	324,192	27. 13	4.1 4	518 .2	577	10 2	116. 1	1 .1E- 02	4 .4E- 01	1 .7E- 01	1.8 E- 01	1 .4E- 03	9 .4E- 01	3 .7E- 05	2 .5E- 05	1 .3E- 04	3 .0E- 04	7 .8E- 07	2 .6E- 06	1 .8E- 03	2 .0E- 02	3 .1E- 02	6.0 E- 04	231.7	-
Watts Branch	2,046,650	68. 68	7.8 9	1,6 05. 5	1,294	61 4	62.4	3 .1E- 02	1 .1E+0 0	3 .4E- 01	3.7 E- 01	3 .8E- 03	2 .5E+0 0	1 .8E- 04	6 .1E- 05	2 .8E- 04	7 .1E- 04	5 .0E- 06	1 .6E- 05	1 .1E- 02	7 .8E- 02	5 .8E- 02	1.6 E- 03	519.4	-
Watts Branch - Lower	1,005,540	38. 58	4.5 0	968 .2	755	30 2	30.6	1 .7E- 02	6 .2E- 01	2 .0E- 01	2.2 E- 01	2 .1E- 03	1 .5E+0 0	9 .3E- 05	3 .5E- 05	1 .6E- 04	4 .1E- 04	2 .4E- 06	8 .0E- 06	5 .6E- 03	4 .2E- 02	3 .5E- 02	9.2 E- 04	303.0	-
Watts Branch - Upper	1,041,110	30. 10	3.3 9	637 .3	539	31 2	31.7	1 .3E- 02	4 .6E- 01	1 .4E- 01	1.5 E- 01	1 .7E- 03	1 .1E+0 0	8 .5E- 05	2 .6E- 05	1 .2E- 04	3 .0E- 04	2 .5E- 06	8 .3E- 06	5 .7E- 03	3 .6E- 02	2 .3E- 02	7.0 E- 04	216.3	-
CSS - Anacostia	18,473,318	53 3.0 5	61. 20	11, 966 .4	10,001	5,6 16	588. 5	2 .5E- 01	8 .5E+0 0	2 .6E+0 0	2.8 E+ 00	3 .0E- 02	1 .9E+0 1	1 .5E- 03	4 .8E- 04	2 .1E- 03	5 .5E- 03	4 .5E- 05	1 .5E- 04	1 .0E- 01	6 .5E- 01	4 .4E- 01	1.3 E- 02	4,013 .8	-
CSS - Potomac	2,164,527	60. 80	6.9 6	1,0 92. 6	1,133	42 8	75.0	2 .8E- 02	9 .6E- 01	2 .9E- 01	3.2 E- 01	3 .5E- 03	1 .9E+0 0	1 .8E- 04	5 .5E- 05	2 .4E- 04	6 .2E- 04	5 .2E- 06	1 .7E- 05	1 .2E- 02	7 .5E- 02	4 .9E- 02	1.5 E- 03	454.7	-
CSS - Rock Creek	4,779,488	14 2.5 2	16. 14	1,7 72. 2	2,576	1,1 20	133. 7	6 .3E- 02	2 .2E+0 0	6 .7E- 01	7.3 E- 01	7 .8E- 03	4 .2E+0 0	4 .0E- 04	1 .2E- 04	5 .5E- 04	1 .4E- 03	1 .2E- 05	3 .8E- 05	2 .6E- 02	1 .7E- 01	1 .1E- 01	3.3 E- 03	1,033 .8	-

Note that summations include MS4 and Direct Drainage areas. There is no distinction between runoff draining into a water body and runoff that is conveyed in collection system within the three CSS segments.

"" indicates no reductions resulted from BMP implementation.

1. An EPA report (402-R-99-004B- linked below) that reviewed several studies with varied site conditions has documented mean partition coefficients for metals. DOEE used these metal-specific partition coefficients ( $K_d$ ) and associated particle associated fraction ( $f_p$ ) values to model pollutant reduction for these metals through BMP implementation. Since many of the relevant low impact development (LID) practices have similar removal rates for lead and cadmium, the relationship between these two metals, their  $f_p$  values, and the areas retrofitted were used to estimate cadmium reductions achieved through the Retrofit Program. DOEE will continue to use this methodology to estimate the pollutant load reduction for cadmium in Annual Reports. <http://www.epa.gov/sites/production/files/2015-05/documents/402-r-99-004b.pdf>.

**4.6.2.2 Estimate Progress Towards all Numeric Limits**

*The Permittee shall estimate annual progress towards all numeric limits in Subsection 1.5.3.1 of this permit for acres managed and pounds of trash in the Anacostia River.*

The District continues to implement and enforce its Stormwater Management Program in accordance with the MS4 Permit and the Revised Stormwater Management Plan. This reporting year, the District has achieved and surpassed the numeric limits of section 1.5.3.1 of the District’s MS4 Permit (Table 13, Table 19).

DOEE has achieved the Acres Managed requirements of Section 1.5. Table 12 shows the acres managed reported in the 2022 annual report. Table 13 provides the updated acres managed numbers for the 2023 annual report. Since this is the final reporting year, DOEE reran acres managed numbers for all years. Rerunning the analysis this year resulted in a two acre decrease in 2019, one additional acre in 2020, 12 additional acres in 2021, and 32 additional acres in 2022 due to updated BMP records. The acres managed include stream restoration and outfall repair equivalencies. The progress achieved during the 2023 reporting period is outlined in Table 14. Table 15 outlines the updated progress toward acres managed for the 2022 reporting period. Table 16 shows the updated progress toward acres managed for the 2021 reporting period. Table 17 shows the progress toward acres managed for 2020. Table 18 shows the progress for 2019 and gap year reporting period.

**Table 12 Acres Managed Table (As Published in 2022 MS4 Annual Report)**

	<b>2019 plus gap year</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>
Date Range	10/01/17-06/30/2019	07/01/19 - 06/30/20	07/01/20 - 06/30/21	07/01/21 - 06/30/22	07/01/22 - 06/30/23
Anacostia River	148	86	76	61	
Potomac River	134	126	40	24	
Rock Creek	55	24	37	26	
Public Right-of-Way	25	108	19	72	
Total	362	344	172	183	

\*DOEE continuously reviews and updates BMP records in the Surface and Groundwater System.

**Table 13 2023 Revised Acres Managed Table**

	<b>2019 plus gap year</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>
Date Range	10/01/17-06/30/2019	07/01/19 - 06/30/20	07/01/20 - 06/30/21	07/01/21 - 06/30/22	07/01/22 - 06/30/23
Anacostia River	161	87	78	64	39
Potomac River	131	126	41	33	59
Rock Creek	52	24	37	27	27
Public Right-of-Way	16	106	28	91	16

Total	360	345	184	215	140
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**Table 14 Annual Progress Towards Numeric Limits of the MS4 Permit for Acres Managed, 07/01/2022 - 06/30/2023**

Major Drainage Basin	Sewershed	Regulated PROW (square feet)	Regulated Non-PROW Parcels (square feet)	Voluntary Retrofits (square feet)	Total (square feet)	Total (acres)	TMDL IP Target (acres)
Anacostia	CSS	390,266	1,687,107	392,238	2,469,612	57	
	MS4	544,078	1,067,259	611,817	2,223,154	51	110
	MS4 + CSS	934,344	2,754,366	1,004,056	4,692,766	108	
Rock Creek	CSS	4,328	138,955	365,092	508,375	12	
	MS4	79,296	912,461	255,458	1,247,215	29	30
	MS4 + CSS	83,624	1,051,416	620,550	1,755,590	40	
Potomac	CSS	27,863	180,749	50,472	259,084	6	
	MS4	71,179	2,337,891	230,657	2,639,727	61	67
	MS4 + CSS	99,042	2,518,640	281,129	2,898,811	67	
TOTAL	CSS	422,457	2,006,811	807,802	3,237,070	74	-
	MS4	694,553	4,317,611	1,097,933	6,110,096	140	208
	MS4 + CSS	1,117,010	6,324,422	1,905,735	9,347,167	215	-

**Table 15 Annual Progress Towards Numeric Limits of the MS4 Permit for Acres Managed, 07/01/2021 - 06/30/2022**

Major Drainage Basin	Sewershed	Regulated PROW (square feet)	Regulated Non-PROW Parcels (square feet)	Voluntary Retrofits (square feet)	Total (square feet)	Total (acres)	TMDL IP Target (acres)
Anacostia	CSS	417,022	1,842,093	425,590	2,684,705	62	
	MS4	396,543	1,412,794	1,876,918	3,686,255	85	110
	MS4 + CSS	813,565	3,254,887	2,302,508	6,370,959	146	
Rock Creek	CSS	465,943	1,364,845	644,858	2,475,645	57	

	<b>MS4</b>	230,215	832,023	412,208	<b>1,474,446</b>	<b>34</b>	<b>30</b>
	<b>MS4 + CSS</b>	696,158	2,196,868	1,057,066	<b>3,950,092</b>	<b>91</b>	
<b>Potomac</b>	<b>CSS</b>	720	302,814	114,568	<b>418,102</b>	<b>10</b>	
	<b>MS4</b>	1,150,889	897,865	749,680	<b>2,798,434</b>	<b>64</b>	<b>67</b>
	<b>MS4 + CSS</b>	1,151,609	1,200,678	864,248	<b>3,216,536</b>	<b>74</b>	
<b>TOTAL</b>	<b>CSS</b>	883,685	3,509,752	1,185,015	<b>5,578,452</b>	<b>128</b>	<b>-</b>
	<b>MS4</b>	1,777,647	3,142,682	3,038,806	<b>7,959,135</b>	<b>183</b>	<b>208</b>
	<b>MS4 + CSS</b>	2,661,332	6,652,434	4,223,821	<b>13,537,587</b>	<b>311</b>	<b>-</b>

**Table 16 Annual Progress Towards Numeric Limits of the MS4 Permit for Acres Managed, 07/01/2020 - 06/30/2021**

<b>Major Drainage Basin</b>	<b>Sewershed</b>	<b>Regulated PROW (square feet)</b>	<b>Regulated Non-PROW Parcels (square feet)</b>	<b>Voluntary Retrofits (square feet)</b>	<b>Total (square feet)</b>	<b>Total (acres)</b>	<b>TMDL IP Target (acres)</b>
<b>Anacostia</b>	<b>CSS</b>	245,030	2,076,261	367,428	<b>2,688,719</b>	<b>62</b>	
	<b>MS4</b>	663,803	2,650,187	888,413	<b>4,202,404</b>	<b>96</b>	<b>110</b>
	<b>MS4 + CSS</b>	908,833	4,726,448	1,255,842	<b>6,891,123</b>	<b>158</b>	
<b>Rock Creek</b>	<b>CSS</b>	19,453	312,049	344,602	<b>676,104</b>	<b>16</b>	
	<b>MS4</b>	2,016	1,073,969	495,804	<b>1,571,789</b>	<b>36</b>	<b>30</b>
	<b>MS4 + CSS</b>	21,469	1,386,018	840,406	<b>2,247,893</b>	<b>52</b>	
<b>Potomac</b>	<b>CSS</b>	9,830	223,282	60,793	<b>293,905</b>	<b>7</b>	
	<b>MS4</b>	174,413	905,698	799,590	<b>1,879,702</b>	<b>43</b>	<b>67</b>
	<b>MS4 + CSS</b>	184,244	1,128,980	860,383	<b>2,173,607</b>	<b>50</b>	
<b>TOTAL</b>	<b>CSS</b>	274,313	2,611,592	772,823	<b>3,658,728</b>	<b>84</b>	<b>-</b>
	<b>MS4</b>	840,232	4,629,854	2,183,807	<b>7,653,894</b>	<b>176</b>	<b>208</b>
	<b>MS4 + CSS</b>	1,114,546	7,241,446	2,956,631	<b>11,312,623</b>	<b>260</b>	<b>-</b>

**Table 17 Annual Progress Towards Numeric Limits of the MS4 Permit for Acres Managed, 07/01/2019 - 06/30/2020**

Major Drainage Basin	Sewershed	Regulated PROW (square feet)	Regulated Non-PROW Parcels (square feet)	Voluntary Retrofits (square feet)	Total (square feet)	Total (acres)	TMDL IP Target (acres)
Anacostia	CSS	727,035	2,494,569	676,268	3,897,872	89	
	MS4	184,450	2,943,193	1,473,297	4,600,940	106	110
	MS4 + CSS	911,485	5,437,762	2,149,565	8,498,813	195	
Rock Creek	CSS	471,870	1,613,312	298,394	2,383,576	55	
	MS4	2,833,729	241,283	1,227,236	4,302,248	99	30
	MS4 + CSS	3,305,600	1,854,595	1,525,629	6,685,824	153	
Potomac	CSS	146,836	250,074	390,284	787,194	18	
	MS4	509,443	5,202,178	384,843	6,096,464	140	67
	MS4 + CSS	656,279	5,452,252	775,127	6,883,658	158	
TOTAL	CSS	1,345,742	4,357,954	1,364,946	7,068,642	162	-
	MS4	3,527,622	8,386,654	3,085,376	14,999,653	344	208
	MS4 + CSS	4,873,364	12,744,609	4,450,321	22,068,294	507	-

**Table 18 Annual Progress Towards Numeric Limits of the MS4 Permit for Acres Managed, 10/1/2017 - 06/30/2019**

Major Drainage Basin	Sewershed	Regulated PROW (square feet)	Regulated Non-PROW Parcels (square feet)	Voluntary Retrofits (square feet)	Total (square feet)	Total (acres)	TMDL IP Target (acres)
Anacostia	CSS	137,224	3,459,475	895,614	4,492,313	103.13	
	MS4	882,142	4,288,673	2,177,371	7,348,185	168.69	110
	MS4 + CSS	1,019,366	7,748,148	3,072,984	11,840,498	271.82	
Rock Creek	CSS	488,901	1,134,972	491,841	2,115,715	48.57	
	MS4	51,868	1,894,974	616,521	2,563,363	58.85	30
	MS4 + CSS	540,770	3,029,947	1,108,362	4,679,078	107.42	
Potomac	CSS	52,384	597,453	90,762	740,599	17.00	
	MS4	41,509	3,281,355	2,534,410	5,857,274	134.46	67
	MS4 + CSS	93,893	3,878,808	2,625,172	6,597,873	151.47	
TOTAL	CSS	678,509	5,191,901	1,478,217	7,348,626	168.70	-
	MS4	975,520	9,465,002	5,328,301	15,768,823	362.00	208
	MS4 + CSS	1,654,028	14,656,903	6,806,518	23,117,449	530.70	-

**Table 19 Annual Progress Towards Numeric Limits of the MS4 Permit for Trees Planted, Green Roofs Installed, and Trash Removed**

Numeric Requirement	Achievement During Reporting Year	Percent Complete	Achievement During Permit Term
Achieve a minimum net increase of 33,525 trees in the MS4 Permit Area	6,100 trees	119%	37,758 trees
Install 350,000 square feet of green roofs within the MS4 Permit area	166,677 square feet	345%	1,208,818 square feet
Remove 108,347 pounds of trash annually from the Anacostia River	1,914,980 pounds	NA	Meeting annual trash reduction goal



#### 4.6.2.3 Multi-faceted Suite of Indicators

*Using all other data and information collected per the water quality assessment requirements of Part 4 of this permit, the Permittee shall establish a multi-faceted suite of indicators to be reported over multiple permit terms. These indicators shall address discharge quality as well as receiving water quality. These indicators shall balance current status with long-term trends in order to determine elements of the program that are effective and those needing additional improvement. This suite of indicators shall be developed in consultation with EPA and other stakeholders and finalized with submittal of the updated SWMP submitted to EPA as part of the application package for permit renewal per Section 2.10 of this permit. These indicators shall be established as long-term metrics for the SWMP and may be included as requirements in future permits.*

DOEE is on track to meet this permit requirement and will be working with EPA and stakeholders to develop a multi-faceted suite of indicators that address discharge and receiving water quality.

#### 4.6.3 Synthesis of Strengths and Areas of Improvement

*In each annual report the Permittee shall provide a short synthesis of areas of the program deemed effective with ongoing effort, and areas where additional strategies are needed to effectively address certain pollutants or sources, supported by interpretation of both programmatic and watershed indicators. Conclusions shall be based on interpretations of the indicators.*

##### ***Strengths***

DOEE has had continued success implementing many stormwater management programs. Notable achievements include:

1. Since the expiration of the last permit and through the end of this reporting period, the District has retrofitted 1,243 acres in the MS4 Permit area.
2. The District has installed 166,677 square feet of green roof this reporting year and 1,208,818 square feet of green roof area during the permit term.
3. Planted 6,100 net trees in MS4 area during this reporting period (accounting for mortality). The District has achieved and exceeded annual benchmarks toward the District's 40% tree canopy goal.
4. Installed 28.04 acres of green infrastructure through the Stormwater Retention Credit (SRC) Price Lock Program, with another 6.34 acres in design, permitting, and/or construction this permit term. Over the five-year permit term, The District has installed 112.39 acres of green infrastructure through the SRC Price Lock Program.
5. Created and published a [public dashboard for water quality data](#).
6. Completed a baseline assessment of all wadable streams in the District as part of the Rapid Stream Assessment program.
7. Conducted a Microbial Source Tracking Study in the Anacostia and Rock Creek watershed to track human, dog, ruminant, and avian sources.
8. Continued the targeted trash and litter source control programs that include any food service product designed for single use, which includes foam and straws.

9. Steady increase in compliance rates for bag law, foam ban, and coal tar ban inspections.
10. Submitted and received approval from EPA on an outfall restoration equivalency for Acres Managed. This will help meet the District's Acres Managed requirement.
11. Continued macroinvertebrate, fish, habitat, and ambient water quality monitoring each year.
12. DOEE established a green infrastructure maintenance team to take on maintenance of GI on District property.

### *Areas of Improvement*

DOEE has identified several program areas that could be improved: wet weather monitoring and pollution prevention.

The District has experienced limited qualifying weather events for our wet weather monitoring program and snow pilot implementation. This has created a limited number of outfall samples and a delayed pilot program. The District is responding to these challenges in innovative ways:

1. While there have been no qualifying snow events to test the snow pilot program, DOEE is working with the Center for Watershed Protection to develop a Smart Salting Training for winter maintenance staff.
2. DOEE and DPW are working together to choose locations for snow storage during extreme events that minimize impacts on waterways.
3. DOEE is pursuing changes to the outfall monitoring program to address challenges to qualifying weather events.
4. Since the last permit, the District has made large strides in District Pollution Prevention implementation. All District critical source facilities have an approved SWPPP. However, not all sister agencies are meeting all compliance requirements. Strategies that DOEE is using to improve this program are: O&M compliance performance measures, at least quarterly interagency coordination, targeted Stormwater Pollution Prevention Plan development efforts, increased municipal staff training, and mock inspections and site walkthroughs.
5. The District has previously not included equity in the development of stormwater management programs. DOEE has conducted a preliminary analysis to determine where green infrastructure is being implemented in comparison with census demographic data. DOEE plans to incorporate equity into the future development of all stormwater programs that work in the MS4 area.
6. DOEE has continuously updated data capture and analysis methods for BMP installations, tree plantings, and acres managed. This ensures the most accurate and up-to-date are being reported.

### **3 EPA CONSENT AGREEMENT REPORTING**

As required, DOEE is posting the Consent Order Status Report concurrently with the MS4 Annual Report. This report will be posted to DOEE's website by December 23, 2022 and will be found at: <https://doee.dc.gov/publication/ms4-discharge-monitoring-and-annual-reports>.