



**NASA Langley Research Center
Municipal Separate Storm Sewer System (MS4)
Annual Report**

Covering the period of July 1, 2016 – June 30, 2017



Submitted to the Virginia Department of Environmental Quality (DEQ) in compliance with Permit No. VAR040092

NASA LaRC MS4 Annual Report

The following provides a summary of permit year (PY) four MS4 activities showcasing LaRC's compliance with the MS4 General Permit (VAR040092) and the Year Three Program Plan. An updated Program Plan covering PY five has been completed and is currently being implemented. A summary of Program Plan updates can be found at the end of this Annual Report.

Annual Report Format:

- Annual Reporting requirements listed in Section II E occur on pages 2 - 5.
- Annual reporting requirements on MCMs 1 – 6 occur on pages 6 - 25.
- Annual reporting requirements of Section One Special Condition / TMDL Action Plan occur on pages 26 - 27.
- MS4 Program Plan update summary and modification requests occur on pages 28 -29.
- Certification statement occurs on page 30.
- Supporting documentation for MCM 2 compliance occurs as an appendix to this report.

**Annual Reporting Requirements
GP Section II E (3)**

(a) Background Information.

- (1) The name and state permit number of the program submitting the annual report;
- (2) The annual report permit year;
- (3) Modifications to any operator's department's roles and responsibilities;
- (4) Number of new MS4 outfalls and associated acreage by HUC added during the permit year;
and
- (5) Signed certification;

(b) The status of compliance with state permit conditions, an assessment of the appropriateness of the identified best management practices and progress towards achieving the identified measurable goals for each of the minimum control measures;

(c) Results of information collected and analyzed, including monitoring data, if any, during the reporting period;

(d) A summary of stormwater activities the operator plans to undertake during the next reporting cycle;

(e) A change in any identified best management practices or measurable goals for any of the minimum control measures including steps to be taken to address any deficiencies;

(f) Notice that the operator is relying on another government entity to satisfy some of the state permit obligations (if applicable);

(g) The approval status of any programs pursuant to Section II C (if appropriate), or the progress towards achieving full approval of these programs; and

(h) Information required for any applicable TMDL special condition contained in Section I.

(a) Background Information:

(1) NASA Langley Research Center
General Permit Registration Number VAR040092

(2) Annual Report for PY 4 covering the period of July 1, 2016 – June 30, 2017.

(3) There have been no major modifications to any operator roles and/or responsibilities. In the current MS4 Program Plan, the Standard Practice and Environmental Engineering Branch (SPEEB) (referred to as NASA Environmental) is responsible for ensuring implementation of the MS4 Program Plan and Annual Reporting.

(4) A total of 16 outfalls exist (shown in Figure 1). No new MS4 outfalls have been added during the PY.

(5) The signed Certification Statement can be found on the last page of this Annual Report.

(b) The status of compliance with state permit condition is compliant. The official assessment of the appropriateness of the identified best management practices is that the permit requirements are being adequately addressed and achieved. Progress towards achieving the identified measurable goals for each of the minimum control measures is strong. For more specifics on this please see the section on MCM reporting in the remainder of the report.

(c) No monitoring data related to the MS4 program was collected and/or analyzed. LaRC does hold an individual VPDES permit (VA0024741) that requires monitoring and Discharge Monitoring Reports (DMR). All required monitoring results associated with that permit have been submitted to VADEQ's eDMR system.

(d,e) The following is a general overview of planned activities associated with the MS4 Program for Year 5:

MCM 1 - Three new high priorities have been selected and an associated education and training plan was developed. The three priorities for Year 5 are: (1) Fats, Oils, Greases, and Cleaning Products: Best Management Practices; (2) Litter and Pollution: Illicit Discharge Detection and Elimination; and (3) the Chesapeake Bay TMDL and LaRC's TMDL Action Plan. Planned outreach activities include educational articles, flyers, website resources, specific training classes, and promoting relevant local events. In May 2018, MS4 staff will solicit public feedback via the @LaRC announcement system on educational high priorities for Year 1 of the next permit cycle.

MCM 2 – As required, the PY4 Annual Report will be posted to the public webpage. LaRC will also continue to maintain an updated MS4 Program Plan online. Lastly, LaRC will participate, through promotion, sponsorship, or other involvement, in a minimum of four local events/activities. The activities shall be aimed at increasing public participation to reduce stormwater pollutant loads; improve water quality; and support local restoration and clean-up projects, programs, groups, meetings, or other opportunities for public involvement.

MCM 3 – LaRC has a robust GIS-based MS4 map, and LaRC completed the requirement to have a complete and updated storm sewer system map and information table within 48 months of permit coverage. LaRC's current storm sewer system map shows all conveyances channels, ditches, direction of flow, locations of MS4 outfalls with unique identifiers, required outfall information, topography, delineated drainage basins for each outfall, and the named water bodies. The MS4 map layer can be found at (inside firewall only): <https://gis-portal.ndc.nasa.gov/arcgis/home/webmap/viewer.html?webmap=3a47a3cece5543339c8ac7d47ce65e4a>

LaRC will continue to implement the existing Illicit Discharge Detection and Elimination (IDDE) Program. LaRC's IDDE Handbook is up-to-date and does not require an update. Adequate records will be kept on any illicit discharge found and eliminated to allow for accurate future annual reporting.

MCM 4 – LaRC will continue to implement our existing DEQ-approved Annual Standards and Specifications (AS&S) for Stormwater Management (SWM) and Erosion and Sediment Control (ESC) to ensure compliance with the MS4 Permit and Virginia Stormwater Management Program (VSMP) regulations. LaRC's Annual Standards and Specifications are currently approved through January 26, 2018. During the PY, it is anticipated that three (3) regulated land disturbing activities will occur. Two (2) of these activities currently have an open Construction General Permits (CGP), with one very close to

termination. Environmental staff will ensure these projects remain compliant until termination, and any new projects will be compliant through plan review and inspection.

Mrs. Andrea Remington received her Dual Combined Administrator certification for SWM and ESC in October, 2016. Additionally, Mr. Peter Van Dyke will maintain his Dual Combined Administrator certification during PY4.

MCM 5 – LaRC is planning to inspect all existing SWM facilities at least once during the PY as required. Also, LaRC will continue to work to ensure adequate maintenance of existing SWM facilities is completed. If any new SWM facilities come online during the PY, adequate documentation and records will be maintained for proper reporting to DEQ.

MCM 6 – LaRC will continue to implement the following best management practices during the PY: street sweeping, ditch/grass channel maintenance, equipment maintenance, proper salt/brine storage, outfall maintenance, catch basin maintenance/clean outs, and leaf collection. LaRC will continue to strictly limit the use of nutrients and fertilizer application on pervious turf areas. The use of multi-media environmental audits will also continue, in order to ensure facilities are operating within compliance of the MS4 permit.

A new training plan and schedule was incorporated into the latest Program Plan. LaRC will implement the training plan during the PY, which is consistent with MS4 permit requirements. Training classes are offered for broad or targeted audiences, depending on the topic. Training topics include, but are not limited to, illicit discharge detection and elimination, good housekeeping, stormwater pollution prevention, and spill response. Audiences targeted for the PY include maintenance contractors, grounds/landscaping staff, janitorial staff, contractors, civil servants, etc.

- (f) Not applicable. LaRC does not rely on another government entity to satisfy some of the state permit obligations.
- (g) Not applicable. LaRC does not have any such programs.
- (h) LaRC currently has no waste load reductions associated with any TMDLs except the Chesapeake Bay TMDL. A previous TMDL for the Back River (Bacteria) was completed in 2006, revised in 2014, and revised again in 2017. The TMDL is currently in draft form and the public comment period closed on April 17, 2017. NASA LaRC submitted public comments, and the final TMDL has not been published or implemented as of August, 2017. No updated TMDL action plans are required at this time. During the PY, LaRC will continue to implement the approved Chesapeake Bay TMDL Plan. For specific annual reporting on the TMDL Action Plan implementation please see the appropriate report section.

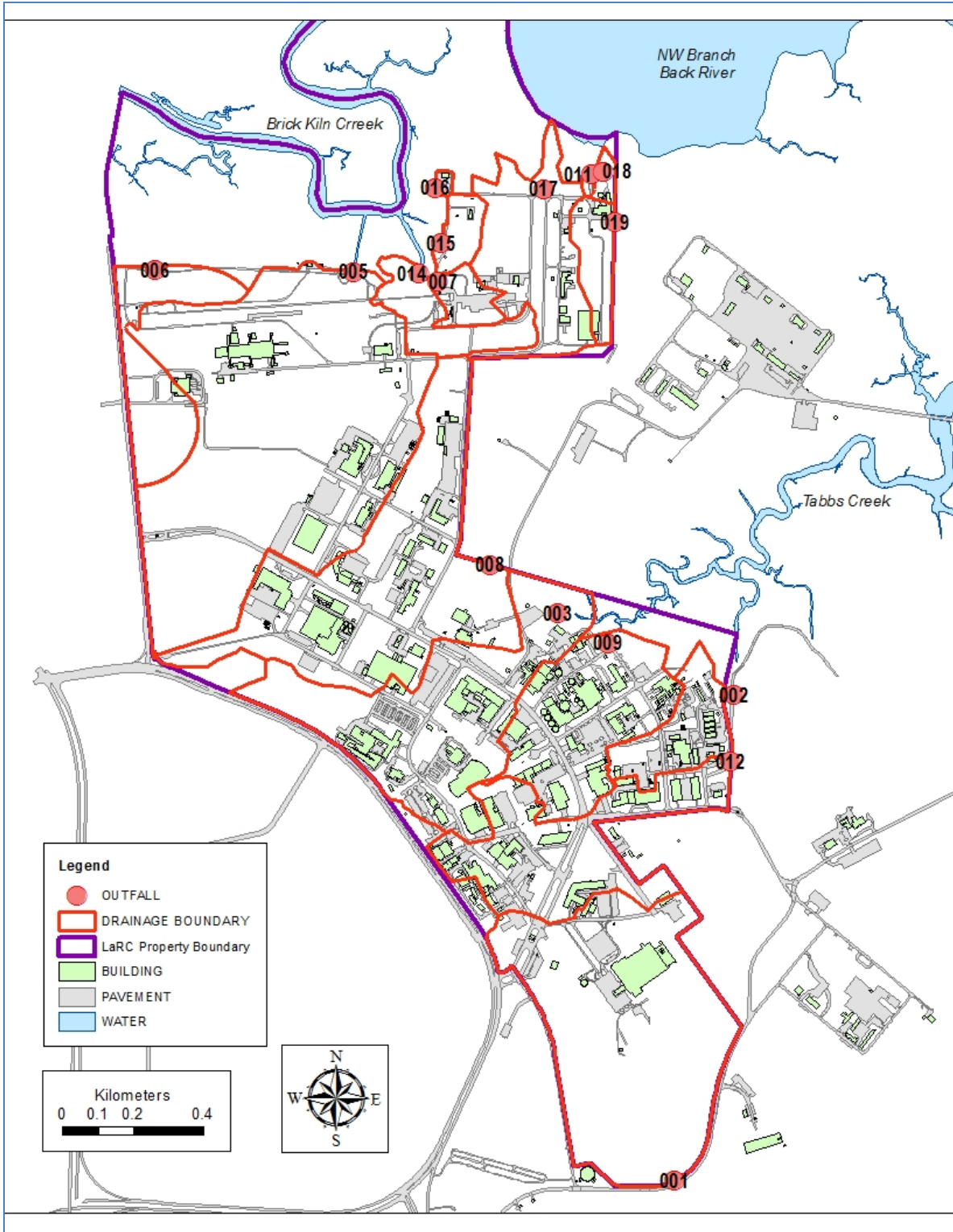


FIGURE 1 - LaRC OUTFALL AND OUTFALL DRAINAGE BASIN MAP

**Minimum Control Measure One – Public Education and Outreach
Annual Reporting Requirements – GP Section II B 1 (g)**

- (1) A list of the education and outreach activities conducted during the reporting period for each high-priority water quality issue, the estimated number of people reached, and an estimated percentage of the target audience or audiences that was reached.
- (2) A list of the education and outreach activities that will be conducted during the next reporting period for each high-priority water quality issue, the estimated number of people that will be reached, and an estimated percentage of the target audience or audiences that will be reached.

(1) The following details education and outreach activities during permit year 3:

High Priority 1: Construction Site Erosion and Sediment Control (ESC) Best Management Practices (BMPs)

Selected Audience: Maintenance Staff and Contractors (Approx. 150 people)

- Educational flyers for inlet protection and silt fencing techniques were published on 6/26/17. The flyers were advertised on the @LaRC system on 6/27/17, 6/28/17, 6/29/17, and 6/30/17 with 667, 675, 653, and 643 visitors (“hits”) respectively. The flyers reviewed tips and reminders for personnel installing inlet protection and silt fencing for erosion and sediment control.
- A new webpage was developed under the Environmental Website’s Water Program pages. The new page, titled *Education and Outreach*, houses MS4-Program related articles, presentations, and flyers/posters for LaRC facilities. The *Education and Outreach* page was reviewed and updated multiple times during the last Permit Year. These updates included adding recent articles, a training presentation, and the educational construction ESC flyers. In addition, the ESC webpage on the Environmental Website was updated twice during the permit year. One revision included listing the most recent version of the Annual Standards and Specifications, and the second revision updated the link to the Virginia Department of Environmental Quality (DEQ)’s webpage for Construction General Permits.
- A special training session, titled *Preventing Stormwater Pollution is Our Responsibility* was held on 7/6/16 with 31 attendees. This training was targeted towards personnel within the maintenance contract at NASA Langley, and focused on how to prevent, recognize, and report illicit discharges at construction sites and facility maintenance projects. Topics covered included proper procedures day-to-day tasks, outside storage of chemicals, secondary containment, good housekeeping, and getting proper environmental review of a project before work begins. All topics related to preventing pollutants from entering local waterways in order to maintain the health of the Chesapeake Bay.
- A specific stormwater Grounds Management Training, was held on 3/23/17 and had 10 total attendees. This training focused on several stormwater best management practices, including the management of grass clippings, removing sediment/debris from catch basins, and spill cleanup. Attendees were also given information on what illicit discharges might look like at LaRC, and how to report issues or concerns of water pollution to the Environmental Office.
- Facility Environmental Coordinator (FEC) Training was held on 7/14/16, 7/20/16, 6/6/17, and 6/15/17 with 10, 13, 28, and 4 attendees respectively. Additionally, 3 individuals who were unable to attend an in-person training viewed the FEC training course via video. The FEC training course goes into detail about stormwater pollution prevention and the importance of proper procedures for any water discharge, including erosion from construction sites. FECs are

asked to monitor their facilities for any illicit water discharge, to ensure the proper procedures are being followed by all personnel, and to report any water pollution concerns.

The total number of estimated people reached was 2,737. This represents 100% of the total targeted audience.

High Priority 2: Dumpster Maintenance: Illicit Discharge Detection and Elimination (IDDE)

Selected Audience: Employee Population (3000)

- An education article, titled *Preventing Water Pollution from Dumpsters*, was published on 3/27/17, 3/28/17, 3/29/17, 3/30/17, and 3/31/17 with 1151, 1171, 1121, 1138, and 1050 visitors (“hits”) respectively. The article defined an illicit discharge, and informed LaRC personnel on recognizing, preventing, and reporting water pollution from materials placed in dumpsters.
- An educational article, titled *What Can You Do to Prevent an Illicit Discharge?*, was published on 7/1/16 with 1741 visitors (“hits”). The article focused on defining, recognizing, preventing, and reporting illicit discharges at LaRC.
- A new webpage was developed under the Environmental Website’s Water Program pages. The new page, titled *Education and Outreach*, houses MS4-Program related articles, presentations, and flyers/posters for LaRC facilities. The *Education and Outreach* page was reviewed and updated multiple times during the last Permit Year. These updates included adding recent articles on recognizing and reporting illicit discharges, including an article on dumpster maintenance. In addition, the IDDE webpage on the Environmental Website was updated twice during the permit year. One revision included updating contact information for reporting illicit discharges, and the second revision was routine to make the webpage more user-friendly.
- A special training session, titled *Recognizing and Reporting Stormwater Pollution*, was held on Center 6/6/17 with 11 participants. This training educated personnel on how to recognize illicit discharges, including spills from dumpsters and illegal dumping, and how to report an illicit discharge at NASA Langley. Attendees also learned the impact illegal dumping has on the Chesapeake Bay, and how to prevent stormwater pollution from occurring by identifying best management practices they can follow.
- A specific stormwater Grounds Management Training, was held on 3/23/17 and had 10 total attendees. This training focused on several stormwater best management practices, including the management of grass clippings, removing debris from catch basins, and spill cleanup. Attendees were also given information on what illicit discharges might look like at LaRC, and how to report issues or concerns of water pollution to the Environmental Office.
- Annual Waste Management and Spill Response Training was held on 7/12/16, 7/21/16, 6/6/17, and 6/7/16 with 120, 72, 50, and 201 attendees. Additionally, 177 individuals who were unable to attend an in-person training viewed the training course via video. This annual training is mandatory for all Center employees that use, handle, or request disposal of hazardous materials, oils, or hazardous waste. Stormwater pollution prevention is covered in the training, along with spill response to prevent materials from reaching storm drains.
- Facility Environmental Coordinator (FEC) Training was held on 7/14/16, 7/20/16, 6/6/17, and 6/15/17 with 10, 13, 28, and 4 attendees respectively. Additionally, 3 individuals who were unable to attend an in-person training viewed the FEC training course via video. The FEC training course goes into detail about stormwater pollution prevention and the importance of proper procedures for any water discharge. FECs are asked to monitor their facilities for any illicit water discharge, to ensure the proper procedures are being followed by all personnel, and to report any water pollution concerns.

The total number of estimated people reached was 8,071. This represent 100% of the total targeted audience.

High Priority 3: Chesapeake Bay TMDL and LaRC's TMDL Action Plan

Selected Audience: Employee Population (3000)

- An educational article, titled *Steps for Healthy Lawns and a Healthy Bay*, was published on 9/27/16, 9/28/16, 9/29/16, and 9/30/16, with 1888, 3251, 3236, and 3201 visitors (“hits”) respectively. The article provided information on stormwater runoff into the Chesapeake Bay from nutrient rich sources, like lawns. It also provided guidance on reducing the pollutants, including phosphorus, eroding soil, bacteria, and toxins, from entering the Chesapeake Bay while still maintaining a healthy lawn. Tips included taking a soil test, applying fertilizer properly, selecting the recommended grass seed, and returning grass clippings to the lawn area.
- An educational article, titled *Some of LaRC's Ways to Save the Bay*, was published on 12/12/16, 12/13/16, 12/14/16, 12/15/16, and 12/16/16 with 2075, 2115, 2100, 2076, and 2053 visitors (“hits”) respectively. The article provided background on the Chesapeake Bay TMDL, and also educated personnel on the steps taken by LaRC staff to minimize sediment and pollutant runoff from a wide range of activities on Center.
- The Environmental Website's Public TMDL Page was reviewed and updated twice during the last Permit Year. Both updates were a routine update. The updates also included information on the most recent riparian buffer tree planting, and an additional tree box filter installed at LaRC.
- A special training session, titled *Recognizing and Reporting Stormwater Pollution*, was held on Center 6/6/17 with 11 participants. This training educated personnel on how to recognize illicit discharges, including spills and illegal dumping, and how to report an illicit discharge at NASA Langley. Attendees also learned the major impact illegal dumping has on the Chesapeake Bay, and how to prevent stormwater pollution from occurring by identifying best management practices they can follow. An overview of how NASA LaRC is taking steps to protect local waters and improve the health of the Chesapeake Bay was given.
- A specific stormwater Grounds Management Training, was held on 3/23/17 and had 10 total attendees. This training focused on several stormwater best management practices to prevent polluting the Chesapeake Bay, including the management of grass clippings, removing debris from catch basins, and spill cleanup. Attendees were also given information on what illicit discharges might look like at LaRC, and how to report issues or concerns of water pollution to the Environmental Office.
- Facility Environmental Coordinator (FEC) Training was held on 7/14/16, 7/20/16, 6/6/17, and 6/15/17 with 10, 13, 28, and 4 attendees respectively. Additionally, 3 individuals who were unable to attend an in-person training viewed the FEC training course via video. The FEC training course goes into detail about stormwater pollution prevention and the importance of proper procedures for any water discharge. FECs are asked to monitor their facilities for any illicit water discharge, to ensure the proper procedures are being followed by all personnel, and to report any water pollution concerns. All water quality education is tied to the effects water pollution has on the nearby waterways and the Chesapeake Bay.

The total number of estimated people reached was 22,074. This represent 100% of the total targeted audience.

- (2) The following is a list of education and outreach activities that will be conducted during the next reporting period including each high-priority water quality issue, the estimated number of people that will be reached, and an estimated percentage of the target audience or audiences that will be reached.

From 5/18/17 through 5/12/17, announcements were made for public input on selecting these education activities and high priorities. The announcements received 7150 hits. No public comment was received.

High Priority	Target Audience	Outreach Goal	Outreach Activities Planned - Permit Year 4 (July 1, 2016 – June 30, 2017)
Fats, Oils, Greases, and Cleaning Products: Best Management Practices (BMPs)	General Center Population -3000 FECs Janitorial staff	25% of audience annually	Educational Article - 1 x year BMP Flyer—Annual distribution SPEEB Environmental Website updates to IDDE and/or Education and Outreach pages – Reviewed, updated, and promoted 2x a year
Litter and Pollution: IDDE	General Center Population - 3000 FECs	25% of audience annually	Educational Article – 1 x year SPEEB Environmental Website’s Public IDDE Section - Reviewed, Updated and Promoted 2 x year
TMDL Education (Bay TMDL and LaRC’s Action Plan)	General Employee Population – 3000	50% of audience annually	Educational Articles – 2 x year BMP education via posted signs –6 signs SPEEB Environmental Website’s Public TMDL Website - Reviewed, Updated and Promoted via @LaRC 2 x year

Minimum Control Measure Two – Public Education and Participation
Annual Reporting Requirements - GP Section II B 2 (d)

- (1) A web link to the MS4 Program Plan and annual report; and
- (2) Documentation of compliance with the public participation requirements of this section.

(1) Web link to the primary public MS4 webpage where the Program Plans and Annual Reports can be viewed: <https://environmental.larc.nasa.gov/water/ms4/>

(2) Documentation of compliance with the public participation requirements of this section:

The following events were promoted on Center through promotion, sponsorship and/or involvement:

2017 VPPSA Household Chemical Collection – The Virginia Peninsula Public Service Authority (VPPSA) holds household chemical, computer and electronics collections throughout the year. These events help to keep these types of products out of local waterways from improper disposal. LaRC promoted some of the collection events via the @LaRC announcement page and encouraged employees to attend their local municipality’s event. LaRC promoted this event via posting to the @LaRC site. The announcements were posted on 7/4/16, 7/5/16, 7/6/16, 7/7/16, and 7/8/16 receiving 1719, 1693, 1674, 1652, and 1646 visitors (“hits”) respectively.

LaRC Plant Giveaway – One of the gardens at LaRC, the Cloverdale Garden, was relocated due to future demolition plans of the nearby building. Additionally, the garden was being transformed into a Monarch Waystation. The garden was overcrowded so many plants were given away to LaRC employees. Most of these plants were native species, and attendees who received the plants were educated on the benefits of native plants and how to care for them without using harmful fertilizers. LaRC promoted this event via the @LaRC announcement page and the public environmental blog. Announcements were posted to @LaRC on 7/7/16, 7/8/16, 7/11/16, 7/12/16, and 7/13/16 with 1911, 1737, 1851, 1846, and 1868 visitors (“hits”) respectively.

Chesapeake Recycles Day – The City of Chesapeake holds periodic household recycling days for old electronics, sensitive documents, and household hazardous waste. These events help to keep these types of products out of local waterways from improper disposal. LaRC promoted some of the collection events via the @LaRC announcement page and encouraged employees to attend their local municipality’s event. LaRC promoted this event via posting to the @LaRC site on 7/18/16, 7/19/16, 7/20/16, 7/21/16, and 7/22/16. The advertisements received 1667, 1654, 1635, 1624, and 2566 visitors (“hits”) respectively.

Hampton Roads 8th Go Green Expo – The Newport News, Hampton, and York County/Poquoson Master Gardeners hosted the 8th Annual Go Green Expo on September 10th. The event provided education on sustainable gardening and hosted rain barrel workshops. LaRC promoted this event via the @LaRC announcement page. The announcements were posted on 9/8/16 and 9/9/16 with 1889 and 1901 visitors (“hits”) respectively.

National Estuaries Week – Governor Terry McAuliffe proclaimed September 17-24, 2016 as National Estuaries Week in the Commonwealth of Virginia. LaRC advertised this event by providing education on the vital role of estuaries, and encouraging personnel to participate in local events. These events included beach clean-ups, hikes, canoe and kayak trips, workshops, and more. LaRC promoted this event via the

@LaRC announcement page. The announcements were posted on 9/19/16, 9/20/16, 9/21/16, 9/22/16, and 9/23/16 with 1810, 1782, 1765, 1750, and 1741 visitors (“hits”) respectively.

Chesapeake Bay Foundation (CBF) and City of Hampton Rain Gardens – The CBF and City of Hampton were seeking volunteers to assist with installing rain gardens at local city parks and schools in the fall of 2016. LaRC promoted the event via the @LaRC announcement page on 9/22/16, 9/23/16, 9/26/16, 9/27/16, 11/17/16, 11/18/16, and 11/21/16. The advertisements received 1757, 1765, 1849, 1828, 2387, 2331, and 2248 visitors (“hits”) respectively.

HRSD York River Treatment Plant Tour – NASA Langley provided an opportunity for interested personnel to attend a tour of the Hampton Roads Sanitation District (HRSD) York River Treatment Plant on 10/6/16. The HRSD York River Treatment Plant is designed to clean more than 15 million gallons of wastewater per day, and has received national awards for compliance with its environmental permits for more than 25 years. The tour was advertised on @LaRC and the public environmental blog. Announcements were posted on 9/27/16, 9/28/16, 9/30/16, 10/3/16, and 10/4/16 with 1917, 3314, 3274, 3507, and 3505 visitors (“hits”) respectively.

NASA Green Roof Restoration – An effort to restore a portion of the green roof on B2101, one of LaRC’s stormwater BMPs, was completed on October 21st. A group of 34 volunteers spend time to weed a 3,700 sqft plot and plant over 4,000 sedum plants. Additional areas of the green roof were restored as an Earth Day activity in April 2017, which included 74 volunteers and over 5,000 new sedums planted. This effort supports government-mandated requirements to promote the use of green-building technology and will improve water quality while decreasing water quantity discharging from the roof. The event was promoted via @LaRC and the public environmental blog. Announcements were posted to @LaRC on 10/17/16, 10/18/16, and 10/19/16 with 3194, 3256, and 3227 visitors (“hits”) respectively. Additional announcements were posted by staff coordinating the restoration efforts.

Newport News Rain Barrel Workshops – Newport News Waterworks partnered with the Newport News Master Gardeners, VA Cooperative Extension Office, and the Newport News Public Works to host several rain barrel making workshops. Rain barrel implementation has a positive effect on stormwater management and water conservation. LaRC received positive feedback from these events in the past and looks to continue supporting and promoting these workshops in the Hampton Roads community. LaRC promoted this event via posting to the @LaRC site. The announcement was posted on 2/13/17, 2/14/17, 2/15/17, 2/16/17, 2/17/17, 3/13/17, 3/14/17, 3/15/17, 3/16/17, 3/17/17, 4/17/17, 4/18/17, 4/19/17, 4/20/17, and 4/21/17 and received 1400, 1442, 1367, 1457, 1316, 1304, 1285, 1397, 1421, 1330, 857, 844, 808, 793, and 1696 visitors (“hits”) respectively.

Bay Star Homes Planting Workshop – Bay Star Homes sponsored a free workshop on landscaping and lawncare for the Hampton Roads Peninsula. The workshop included free trees, hands-on activities, rain barrel displays, and tips on natural lawn maintenance, all of which have a positive effect on stormwater management and reducing harmful pollutants from entering the Chesapeake Bay. LaRC advertised the event on @LaRC 2/16/17, 2/17/17, 2/17/17, 2/22/17, 2/23/17, and 2/24/17 and received 1404, 1315, 1309, 1341, 1237, and 1562 visitors (“hits”) respectively.

Rose Pruning Workshop – The Newport News Master Gardeners offered a free rose pruning workshop on 3/4/17. The workshop also featured a demonstration from Rosarian Matthew Globa. LaRC advertised the local event on 2/27/17, 2/28/17, 3/1/17, 3/2/17, and 3/3/17 and received 1590, 1669, 1571, 1553, and 1575 visitors (“hits”) respectively.

Recruiting Oyster Gardeners – The Chesapeake Bay Foundation recruits oyster gardeners to assist with oyster restoration in the Chesapeake Bay. Oysters play a key role in improving the Bay’s water quality.

LaRC promoted this event by advertising on the @LaRC site. The announcement was posted on 3/6/17, 3/7/17, 3/8/17, 3/13/17, and 3/14/17 and received 1471, 1450, 1415, 1363, and 1287 visitors (“hits”) respectively.

Volunteers Needed to Plant Trees – In observation of Earth Day and Arbor Day 2017, the LaRC Environmental Team planted almost 600 trees in the North 40 area of LaRC. A little over one acre of a grassy area was converted back to a forested state that will provide new habitat, reduce erosion, and improve water quality. This project also assisted LaRC in meeting TMDL goals. To keep costs low and improve community involvement, the project was completed by SPEEB and volunteers. Requests for volunteers were advertised on @LaRC sixteen (16) times, with 17,885 visitors (“hits”) respectively.

Poquoson Learning Garden Tour - NASA Langley provided an opportunity for interested personnel to attend a tour of the Poquoson Learning Garden on 4/12/17. The Virginia Cooperative Extension (VCE) York/Poquoson Master Gardeners provided a tour of the garden and spoke on various types of gardens, including vegetable and pollinator gardens. Attendees also had an opportunity to see a restoration site for the Longleaf Pine, a tree native to southeast Virginia, and learn about the importance of riparian buffers on the coastline. The tour was advertised on @LaRC and the public environmental blog. Announcements were posted on 3/29/17, 3/30/17, 3/31/17, 4/3/17, 4/4/17, 4/5/17, 4/6/17, 4/7/17, and 4/10/17 with 1204, 1106, 1051, 1090, 1017, 1042, 1053, 1039, and 957 visitors (“hits”) respectively.

Adopt the Planet – NASA celebrated Earth Day 2017 across the globe by hosting an “Adopt the Planet” event. Interested individuals were able to virtually adopt a piece of Earth as seen from space. Participants received a personalized adoption certificate featuring data from NASA’s Earth-observing satellites and information on learning more Earth science data. LaRC advertised the event on @LaRC on 4/17/17, 4/18/17, 4/19/17, 4/20/17, and 4/21/17. The advertisements received 822, 844, 817, 824, and 1703 visitors (“hits”) respectively.

NASA Langley’s Energy and Water Expo – LaRC held an on-Center Energy and Water Expo event on 10/19/16 in observance of Energy Action Month. The event featured several environmental education exhibits and displays from NASA Langley programs and local environmental groups. Exhibits featured information on Center programs for energy and water conservation, stormwater pollution prevention, and ways to conserve water at home. Participants were able to learn about rain barrels, green roofs, cisterns, sustainable building design, and more. The Expo was advertised through center-wide and the public environmental blog. The event had high attendance and participants were able to network and interact with exhibitors.

NASA Langley’s Main Earth Day/Arbor Day Event - LaRC held an on-Center Earth Day/Arbor Day event on 4/20/17. The event featured six (6) environmental interactive exhibits and displays from several NASA Langley programs and local environmental groups. Exhibits featured information on Center programs for energy and water conservation, sustainable design including LaRC’s Integrated Engineering Services Building, recycling, hazardous materials and waste management, stormwater pollution prevention, water and air quality, green purchasing, and cultural resources. The event had high attendance and guests were able to network and interact with exhibitors, participate in trivia games, and take home a plant for their office or garden. Promotion of this event was done on the @LaRC page and public environmental blog. The announcements were posted on 4/17/17, 4/18/17, 4/19/17, and 4/20/17 receiving 805, 807, 823, and 844 visitors (“hits”) respectively.

NASA Langley Plastic Bag Recycling – LaRC partnered with the York/Poquoson Master Gardeners to recycle plastic bags and film packaging. LaRC collected plastic bag material from Center personnel for 3 weeks during Energy Action Month 2016 in October, and for 4 weeks in observance of Earth Day and Arbor Day 2017. In total, 166 pounds of plastic material (estimated to be about 14,500 plastic bags) were

collected and prevented from entering our local waterways and landfills. All plastic material was donated for a composite bench that was given to the LaRC Child Development Center. The event was advertised on the @LaRC page and public environmental blog. Collection details and results were posted on the public environmental blog. Additionally, the events were advertised to @LaRC 34 times during PY 4, with 70,647 visitors (“hits”) respectively.

Annual Clean the Bay Day - Clean the Bay Day is an annual stream and shoreline cleanup program where citizen volunteers come out to remove litter and debris from Virginia creeks, streams, rivers, and the Chesapeake Bay. NASA LARC participated through promotion of the event via the @LaRC announcement page. The announcements were posted on 5/18/17, 5/22/17, 5/25/17, 5/30/17, 5/31/17, 6/1/17, and 6/2/17 with 1325, 1251, 1200, 1106, 1106, 1065, and 1063 “hits” (visitors) respectively.

Additional documentation for these events can be found as an attachment to this Annual Report.

**Minimum Control Measure Three – Illicit Discharge Detection and Elimination
Annual Reporting – GP Section II B 3 f**

- (1) A list of any written notifications of physical interconnection given by the operator to other MS4s;
- (2) The total number of outfalls screened during the reporting period, the screening results, and detail of any follow-up actions necessitated by the screening results; and
- (3) A summary of each investigation conducted by the operator of any suspected illicit discharge. The summary must include: (i) the date that the suspected discharge was observed, reported, or both; (ii) how the investigation was resolved, including any follow-up, and (iii) resolution of the investigation and the date the investigation was closed.

- (1) Langley Air Force Base (LAFB) is the only downstream MS4 that LaRC has interconnection with. Joint Base Langley-Fort Eustis is comprised of two geographically separate entities: LAFB in Hampton and Fort Eustis in Newport News. LAFB’s MS4 permit was issued in August 2016. Fort Eustis has an MS4 permit; however, is not physically interconnected to NASA LaRC.

NASA LaRC and LAFB communicate frequently regarding projects, NEPA Environmental Assessments, interconnections and possible project impacts. NASA LaRC also provided assistance to LAFB in preparing for their new MS4 permit. LaRC shared our MS4 Program Plan and past Annual Reports with LAFB to study. LaRC also gave feedback on MCM best management practices and an overview of our MCM 4 program.

- (2) NASA LaRC has 16 MS4 outfalls. The total number of outfalls screened during the reporting period included all 16 outfalls. Visual outfall inspections occurred weekly for a total of 429 total screenings spread across 8 “high risk” outfalls, and these inspections were recorded in an electronic logbook kept on file with NASA Environmental. Formal outfall inspection reports occurred quarterly (VPDES Permit requirement) across all 16 outfalls, and reports were stored electronically with NASA Environmental.

This robust screening program also ensures MS4 permit compliance as an annual MS4 outfall screening of all outfalls. The screening program utilizes a NASA developed MS4 screening form. The results of the specific MS4 screening program are summarized below:

Outfall ID	Date	Screening Result	Follow-up
001	3/22/17	No issues. Turtle visible in ditch.	--
002	3/22/17	No issues. Water is clear.	Grounds Maintenance routinely removes sediment from the outfall discharge points and the concrete-lined ditch in this area. All sediment is removed and properly disposed of.
003	3/22/17	No visible sheen in the Oil Water Separator (OWS).	--

Outfall ID	Date	Screening Result	Follow-up
		Absorbent pads in place (VPDES requirement) and water is clear at end of OWS. No concern. Frogs present.	
005	3/22/17	Phragmites inhibiting water flow.	Maintenance review recommended to clear debris from cages and increase water flow. Grounds removed vegetation and improved conditions in April 2017.
006	3/22/17	Pipe 90% full of sediment. Natural iron bacterial sheen present and water is stagnant.	Maintenance review recommended. The flow is very small and limited (low priority).
007	3/22/17	Vegetation inhibiting water flow; minor flooding in ditch upstream. Minnows and frogs present.	Maintenance review recommended to increase water flow (Low priority)
008	3/22/17	Minor bubbles from upstream flow – no concern. Splash pool has high accumulation of sediment and invasive vegetation.	Recommend maintenance for sediment and vegetation removal in splash pool and on banks. HIGH PRIORITY . Task was completed and area restored. Sediment and vegetation was removed.
009	3/22/17	Absorbent pads in place (VPDES requirement). Water is clear at end of OWS. Some trash present.	Recommend cleaning trash/debris out of OWS. Task completed.
011	3/22/17	Pipe 30% full of sediment. Construction site nearby – no impact.	The sediment has not been removed in this area yet. It is a low finding priority because this outfall is dry 99% of the time. Recommendation made to convert this area to BMP.
012	3/22/17	No issues.	Grounds Maintenance routinely removes sediment from the outfall discharge points and the concrete-lined ditch in this area. All sediment is removed and properly disposed of. Stream bank downstream is experiencing severe erosion – recommended repair.
014	3/22/17	No issues.	Debris removal would increase flow, but this is a low priority.
015	3/22/17	No issues.	--
016	3/22/17	Pipe 50% full of sediment.	The sediment has not been removed in this area yet. It is a

Outfall ID	Date	Screening Result	Follow-up
			low finding priority because this outfall is dry 99% of the time.
017	3/22/17	No issues.	--
018	3/22/17	No issues. Construction site nearby – no impact. ESC in place.	--
019	3/22/17	No issues. Construction site nearby – no impact. ESC in place.	--

3. The following is a summary of each investigation conducted by the operator of any suspected illicit discharge. The summary includes: (i) the date that the suspected discharge was observed, reported, or both; (ii) how the investigation was resolved, including any follow-up, and (iii) resolution of the investigation and the date the investigation was closed.

A total of 3 illicit discharges were suspected and 3 were found to be illicit discharges.

Illicit Discharge Investigation #1: B1215 Forklift Leak

- (i) Date observed: 11/17/2016
- (ii) How investigation was resolved, including follow-up: During a routine inspection of B1215, staff observed a dried, chalky white residue that had leaked from a forklift by nearby storm drain. The forklift leak was noticed by someone who placed an absorbent pad under the fork lift, but more liquid was present than the pad could contain. This storm drain discharges through Outfall 009 to Tabbs Creek. Staff immediately notified the B1215 Facility Environmental Coordinator (FEC) and requested that the liquid be identified, the spill be properly cleaned up and all waste material properly disposed of, and to notify the environmental staff when clean-up is complete.
- (iii) Resolution of the investigation: Facility personnel identified the discharge as sulfuric acid from overflowing the battery on the forklift. Although the spill reached the storm drain area, no liquid actually went into the drain or discharged to the Creek. The spill was cleaned up and materials were properly disposed of. The investigation was closed on 11/21/2016.

Illicit Discharge Investigation #2: Sand Bag Storage

- (i) Date observed: 10/28/2016
- (ii) How investigation was resolved, including follow-up: During a routine inspection of the Center, environmental staff noticed an abandoned sand bag storage area that was accumulating sand from deteriorating sand bags. There was evidence that sand had been washed into a nearby drop inlet after a recent rain event. Staff took photos of the area and followed-up with the responsible party for the sand bag storage area.
- (iii) Resolution of the investigation: The area was requested for cleanup via sweeping. Environmental staff also recommended relocating the pile to another area further from any storm drains and to dispose of deteriorated sand bags that can no longer be used. This report was resolved on 10/31/2016 and the area is no longer used to store abandoned or damaged sand bags.

Illicit Discharge Investigation #3: Steam Plant Investigation

- (i) Date observed: 3/20/2017
- (ii) How investigation was resolved, including follow-up: Environmental staff received an email from the Facility Environmental Coordinator at the Steam Plant (B1215) regarding a leaking valve during the chemical blow down process that might potentially be boiler water entering the storm drain. Although the leak was small, staff sampled the storm drain water to determine whether or not it was boiler water.
- (iii) Resolution of the investigation: The sample results revealed that boiler water was not entering the storm drain. The boiler water was leaking on top of the drain but not entering the system due to a tight seal around the drain. The results were also confirmed by an additional LaRC employee. The investigation was closed out on 3/20/17 and the Steam Plant staff followed all of the correct steps for recognizing and reporting a possible illicit discharge.

**Minimum Control Measure Four – Construction Site Stormwater Management
Annual Reporting - Section II B 4 (f)**

The operator shall track regulated land-disturbing activities and submit the following information in all annual reports:

- (1) Total number of regulated land-disturbing activities;
- (2) Total number of acres disturbed;
- (3) Total number of inspections conducted; and a summary of the enforcement actions taken, including the total number and type of enforcement actions taken during the reporting period.

- (1) The total number of regulated LDAS during the reporting year was three.
 - CRF Construction – VAR10G999
 - B1275/1283 Demolitions – VAR10J007
 - MSL Construction – VAR10J220
- (2) The total number of acres disturbed was 13.42 acres.
- (3) The total number of NASA (MS4 staff) inspections conducted was 97. The following is a summary of 7 issues that rose to the level of formal enforcement actions taken. All issues were closed once enforcement actions were taken. It should be noted that there were numerous minor issues noted in the field during the year. Per NASA Annual Standards and Specifications, for minor deficiencies with no environmental impacts the contractor may remedy the violation immediately and avoid a formal enforcement action (such as a signed *Corrective Action Notice or contract action*) being issued. Only issues that needed formal “enforcement” are reported below:

Project	# of Enforcement Actions	Type of Enforcement	Issues Driving the Enforcement
VAR10G999	2	Formal written Corrective Action Notices submitted to the contractor and project team	<ul style="list-style-type: none"> - Improper dewatering method (muddy water pumped directly into bioretention BMP via garden hose) - Concrete washout maintenance needed – washout water was leaking out of side of washout basin. - Non-compliant construction entrance (entrance was not

Project	# of Enforcement Actions	Type of Enforcement	Issues Driving the Enforcement
			constructed to specs and not identified in SWPPP)
VAR10J007	4	Formal written Corrective Action Notices submitted to the contractor and project team	<ul style="list-style-type: none"> - Inspections not being completed (or records not readily available) by operator or delegated authority. - Silt fence not being maintained (asked more than once for repair). - Location of SWPPP and contact info not posted.
VAR10J220	1	Formal written Corrective Action Notice submitted to the contractor and project team	<ul style="list-style-type: none"> - Inspections not being completed (or records not readily available) by operator or delegated authority. - Copy of permit coverage letter, including registration number, not posted at site entrance. Location of SWPPP and name/phone number of contact person not posted.

**Minimum Control Measure Five – Post Construction
Annual Reporting - Section II B 5 e**

- (1) The stormwater management facility type;
- (2) A general description of the facility's location, including the address or latitude and longitude;
- (3) The acres treated by the facility, including total acres, as well as the breakdown of pervious and impervious acres;
- (4) The date the facility was brought online (MM/YYYY). If the date is not known, the operator shall use June 30, 2005, as the date brought online for all previously existing stormwater management facilities;
- (5) The sixth order hydrologic unit code (HUC) in which the stormwater management facility is located;
- (6) The name of any impaired water segments within each HUC listed in the 2010 § 305(b)/303(d) Water Quality Assessment Integrated Report to which the stormwater management facility discharges;
- (7) Whether the stormwater management facility is operator-owned or privately-owned;
- (8) Whether a maintenance agreement exists if the stormwater management facility is privately owned; and
- (9) The most recent inspection of the stormwater management facility.

Per Guidance from DEQ’s James Davis-Martin and Bill Keeling, DEQ’s BMP Warehouse application should be used to meet this annual reporting requirements. NASA LaRC submitted information via the application (with Mr. Keeling’s assistance) for this year’s report. The approved submission was labeled as **20170928 .**

**Minimum Control Measure 6 – Pollution Prevention/Good Housekeeping
Annual Reporting - Measurable Goals - GP Section II B 6 g**

- (1) A summary report on the development and implementation of the daily operational procedures;
- (2) A summary report on the development and implementation of the required SWPPPs;
- (3) A summary report on the development and implementation of the turf and landscape nutrient management plans that includes:
 - (a) The total acreage of lands where turf and landscape nutrient management plans are required; and
 - (b) The acreage of lands upon which turf and landscape nutrient management plans have been implemented; and
- (4) A summary report on the required training, including a list of training events, the training date, the number of employees attending training and the objective of the training.

- (1) LaRC was required to complete the development and implementation of written procedures designed to minimize or prevent pollution within 24-months of permit coverage. LaRC has completed this task. Operational procedures and good housekeeping practices have been summarized in the Program Plan and written descriptions of how the work is accomplished has been included. The updated Program Plan goes into more specific detail on LaRC's programs and procedures for street sweeping, ditch and outfall maintenance, equipment maintenance, salt storage, outfall maintenance (booms, pads, etc.), catch basin maintenance, leaf collection, spill containment, and application, storage, transport and disposal of pesticides, herbicides, and fertilizers.
- (2) NASA LaRC has assessed all facilities on Center for their potential of discharging pollutants. In general, LaRC has a low risk for facilities discharging pollutants due to current procedures in place and LaRC's practice of material storage with no exposure to stormwater. Additionally, many facilities that would be covered under this MCM are already covered under LaRC's VPDES Permit (#VA0024741) or LaRC's General VPDES Permit for Vehicle Wash Facilities (#VAG750198). Facilities covered under a separate VPDES permit shall adhere to the conditions established in that permit and are excluded from this requirement. LaRC only identified one (1) area as high priority, which is the composting facility/grounds maintenance area.

The Center operates an informal composting area and landscape material storage area in the fields near Building 1285. The Grounds Maintenance Yard is approximately 4.5 acres, and consists of a leaf composting area, open green space, and a gravel area with storage and fueling operations. This area is primarily used for storing mulch, topsoil, and sand and well as for composting leaves and other landscaping debris (gumballs, small branches, etc.). There is limited infrastructure in the Grounds Maintenance Yard that discharges to the storm system, but the ditches and conveyance pipes that are in the area discharge through NASA LaRC Outfall 019. This is a MS4 outfall and is only permitted for stormwater runoff. The outfall discharges to a marshy area that drains into the NW Branch of the Back River. Existing source controls in the Grounds Maintenance Yard includes a posted spill plan, several spill kits, secondary containment and spill pallets, and additional preventative measures. The potential for any stormwater runoff is limited; however, this area has planned improvements to act as barriers around stockpiles of landscaping debris. Additionally, LaRC is interested in expanding its composting operation, so the risk to the MS4 could grow. LaRC developed and implemented a specific stormwater pollution prevention plan (SWPPP) for this high priority facility within 48 months of permit coverage as required by Table 1. A copy of the SWPPP

is kept within the office space of B1286. All SWPPP updates and inspections will be documented and stored in the SWPPP.

(3) LaRC will continue to strictly limit the use of nutrients and fertilizer application on pervious turf areas. LaRC's policy regarding the use of pesticides, herbicides and fertilizers is to follow Integrated Pest Management (IPM) practices whenever possible and to use the absolute minimum amount of pesticides, herbicides, and fertilizers on Center as necessary. LaRC has no applicable lands where nutrients are applied to a contiguous area of more than 1 acre. The total acreage of lands where turf and landscape nutrient management plans apply is zero. The acreage of lands upon which turf and landscape nutrient management plans have been implemented is zero.

(4) The following is a summary of completed training during the last PY:

Training Requirement	Applicable Audience(s)	Summary
<p>Training for applicable field personnel in the recognition and reporting of illicit discharges</p>	<p>Facility Environmental Coordinators</p>	<p>FECs are asked to monitor their facilities for illicit discharge concerns and are the primary “eyes and ears” for the Environmental Branch. The FEC training course goes into detail about stormwater pollution prevention and the importance of LaRC’s IDDE program. It also discussed how to make proper reports to NASA Environmental. FEC training was held on 7/14/16, 7/20/16, 6/6/17, and 6/15/17 with 10, 13, 28, and 4 attendees respectively. Additionally, 3 individuals who were unable to attend an in-person training viewed the FEC training course via video. A total of 58 FECs were trained.</p> <p>All FECs are also required to attend the Annual Waste Management and Spill Response Training. This annual training is mandatory for all Center employees that use, handle, or request disposal of hazardous materials, oils, or hazardous waste. Stormwater pollution prevention is covered in the training, along with spill response to prevent materials from reaching storm drains. The training was held on 7/12/16, 7/21/16, 6/6/17, and 6/7/16, and all FECs are required to attend one of the training sessions.</p>
	<p>Standard Practice and Environmental Engineering Branch (SPEEB) employees and Jacobs (primary Center contractor) Personnel</p>	<p>A special training session, titled <i>Preventing Stormwater Pollution is Our Responsibility</i> was held on 7/6/16 with 31 attendees. This training was targeted towards the maintenance contract personnel (Jacobs) at NASA Langley. The training focused how to prevent, recognize, and report illicit discharges at construction sites and</p>

Training Requirement	Applicable Audience(s)	Summary
		<p>facility maintenance projects. Topics covered included proper procedures for day-to-day tasks, outside storage of chemicals, secondary containment, good housekeeping, and getting proper environmental review of a project before work begins.</p> <p>A special training session, titled <i>Recognizing and Reporting Stormwater Pollution</i>, was held on Center 6/6/17 with 11 participants. This training educated personnel on how to recognize illicit discharges, including spills and illegal dumping, and how to report an illicit discharge at NASA Langley. Attendees also learned the impact illegal dumping has on the Chesapeake Bay, and how to prevent stormwater pollution from occurring by identifying best management practices they can follow.</p>
	Personnel who handle waste on Center.	<p>Annual Waste Management and Spill Response Training. This annual training is mandatory for all Center employees that use, handle, or request disposal of hazardous materials, oils, or hazardous waste. Stormwater pollution prevention is covered in the training, along with spill response to prevent materials from reaching storm drains. The training was held on 7/12/16, 7/21/16, 6/6/17, and 6/7/16 with 120, 72, 50, and 201 attendees. Additionally, 177 individuals who were unable to attend an in-person training viewed the training course via video. A total of 620 personnel were trained.</p>
Training for applicable employees in good housekeeping and pollution prevention practices that are to be employed during road, street, and parking lot maintenance	Grounds Maintenance Contractor	<p>A specific stormwater Grounds Management Training was held on 3/23/17 and had a total of 10 attendees. This training focused on several stormwater best management practices, including the management of grass clippings, removing debris from catch basins, and spill cleanup. Attendees were also given information on what illicit discharges might look like at LaRC, and how to report issues or concerns of water pollution to the Environmental Office.</p>
Training for applicable employees in good housekeeping and pollution prevention practices that	Facility Environmental Coordinators	<p>Certain FECs are employed to manage “public works-type” facilities on Center. The FEC training course goes into detail about stormwater</p>

Training Requirement	Applicable Audience(s)	Summary
<p>are to be employed in and around maintenance and public works facilities.</p>		<p>pollution prevention and the importance of good housekeeping principles in and around facilities. FEC training was held on 7/14/16, 7/20/16, 6/6/17, and 6/15/17 with 10, 13, 28, and 4 attendees respectively. Additionally, 3 individuals who were unable to attend an in-person training viewed the FEC training course via video. A total of 58 FECs were trained.</p>
	<p>Jacobs (primary Center contractor) Personnel</p>	<p>A special training session, titled <i>Preventing Stormwater Pollution is Our Responsibility</i> was held on 7/6/16 with 31 attendees. This training was targeted towards the maintenance contract personnel (Jacobs) at NASA Langley. The training focused how to prevent, recognize, and report illicit discharges at construction sites and facility maintenance projects. Topics covered included proper procedures for day-to-day tasks, outside storage of chemicals, secondary containment, good housekeeping, and getting proper environmental review of a project before work begins.</p>
<p>Ensure that employees, and require that contractors, who apply pesticides and herbicides are properly trained or certified in accordance with the Virginia Pesticide Control Act (§ 3.2-3900 et seq. of the Code of Virginia).</p>	<p>Grounds Maintenance Contractor</p>	<p>The Grounds Maintenance Contractor is responsible for the minor amounts of pesticides and herbicides applied on Center. The program is primarily need-based and done via spot treatments (ex. Someone calls in a wasp nest to be sprayed). NASA has required, through specific contract language, that the Grounds contract operator carry all necessary state licenses. This contract language ensures that this requirement is met or the operator can't work at NASA LaRC.</p>
<p>Ensure that employees and contractors serving as plan reviewers, inspectors, program administrators, and construction site operators obtain the appropriate certifications as required under the Virginia Erosion and Sediment Control Law</p>	<p>Standard Practice and Environmental Engineering Branch (SPEEB)</p>	<p>Mr. Peter Van Dyke serves as LaRC's Water Program Manager. Mr. Van Dyke is in charge of all ESC and SWM Plan reviews and inspection programs. Mr. Van Dyke has both ESC and SWM Combined Administrator certifications.</p> <p>Dual Combined Administrator #DCA0184 (Expires 4/17/2018)</p> <p>Mrs. Ande Remington provides contract support to LaRC's Water Program Manager. Support includes plan reviews and site inspections. . Mrs.</p>

Training Requirement	Applicable Audience(s)	Summary
		<p>Remington has both ESC and SWM Combined Administrator certifications.</p> <p>Dual Combined Administrator #DCA0291 (Expires 10/2/9/2019)</p>
<p>Training for applicable employees in good housekeeping and pollution prevention practices that are to be employed in and around recreational facilities.</p>	<p>Facility Environmental Coordinators</p>	<p>LaRC has very limited recreational facilities due to our small size. There are a few ball/soccer fields and tennis court areas, but no nutrients are applied. However, LaRC reviews good housekeeping and pollution prevention practices around Center, including these facilities, during annual FEC training. FEC training was held on 7/14/16, 7/20/16, 6/6/17, and 6/15/17 with 10, 13, 28, and 4 attendees respectively. Additionally, 3 individuals who were unable to attend an in-person training viewed the FEC training course via video. A total of 58 FECs were trained.</p>
<p>Emergency response employees shall have training in spill responses.</p>	<p>Waste Handling Center Personnel</p>	<p>Annual Waste Management and Spill Response Training was held on 7/12/16, 7/21/16, 6/6/17, and 6/7/16 with 120, 72, 50, and 201 attendees. Additionally, 177 individuals who were unable to attend an in-person training viewed the training course via video. This annual training is mandatory for all Center employees that use, handle, or request disposal of hazardous materials, oils, or hazardous waste. Stormwater pollution prevention is covered in the training, along with spill response to prevent materials from reaching storm drains. A total of 620 personnel were trained.</p>

Section One Special Condition - Chesapeake Bay TMDL

Annual Reporting - GP Section I C 4

- a. In accordance with Table 1, the operator shall submit the Chesapeake Bay Action Plan with the appropriate annual report.
- b. Each subsequent annual report shall include a list of control measures implemented during the reporting period and the cumulative progress toward meeting the compliance targets for nitrogen, phosphorus, and total suspended solids.
- c. Each subsequent annual report shall include a list of control measures, in an electronic format provided by the department, that were implemented during the reporting cycle and the estimated reduction achieved by the control. For stormwater management controls, the report shall include the information required in Section II B 5 e and shall include whether an existing stormwater management control was retrofitted, and if so, the existing stormwater management control type retrofit used.
- d. Each annual report shall include a list of control measures that are expected to be implemented during the next reporting period and the expected progress toward meeting the compliance targets for nitrogen, phosphorus, and total suspended solids.

- a. The Chesapeake Bay TMDL Action Plan was submitted with the Year 2 Annual Report as required. The Plan was reviewed and approved by DEQ's Allan Brockenbrough in a letter dated 12/11/215.
- b. The following is a list of control measures implemented during Year 4 and a summary of progress:
 - The Action Plan had proposed two land-use change BMPs of impervious to grass credit. Both of these projects, totaling 1.59 acres, were implemented during the PY. In total, these projects achieved reductions of 9.64 lbs TN/yr, 1.86 lbs of TP/yr and 683.70 lbs of TSS/yr.
 - The Action Plan proposed a land-use change BMP of 2.0 acres of pervious to forest in the 2017-2018 PY (Year 5). Some funding became available and this project was partially completed during the 2016-2017 PY (Year 4), and the remainder is planned for the present 2017-2018 PY. A one (1) acre grass area was converted to a forested condition by planting 500 pine tree seedlings and 100 hardwood tree seedlings. This project achieved reductions of 5.18 lbs TN/yr, 0.40 lbs of TP/yr and 78.30 lbs of TSS/yr. Additionally, this project can be credited as a forest buffer and earn the efficiency credit. An additional load reduction of 3.88 lbs TN/yr, 0.46 lbs of TP/yr and 72.28 lbs of TSS/yr was achieved.
 - The Action Plan proposed continuation of the street sweeping program, which is taking the annual mass load credit. This project was implemented during the PY. LaRC's annual mass load credit accounts for achieved reductions of 166.43 lbs of TN/yr, 66.57 lbs of TP/yr and 19,971 lbs of TSS/yr.

Cumulative Progress Report end of PY4:

Sub source	Pollutant	Load (lbs) Reduction Required by end of Permit	Load (lbs) Reduction Achieved at end of PY4	Total Load (lbs) Reduction Planned
Regulated Urban Impervious	TN	7.16	233.99	237.32
Regulated Urban Pervious		5.76	22.42	31.48
Regulated Urban Impervious	TP	2.63	79.93	80.57
Regulated Urban Pervious		.46	2.22	3.08
Regulated Urban Impervious	TSS	994.01	24876.45	25112.95
Regulated Urban Pervious		79.85	375.98	526.56

- c. NASA LaRC reported via DEQ’s BMP Warehouse application to meet the annual reporting requirements. The approved submission was labeled as **20170928**.
- d. The following is a list of control measures expected to be implemented during PY5 and a summary of expected progress:
- One land-use change removing 0.55 acres of impervious surface and converting to a grass condition is planned for PY5.
 - One land-use change converting 1.0 acres of pervious surface to forest condition is planned for PY5.
 - LaRC will continue the street sweeping program, annual mass load credit approach, during PY5.

Expected Cumulative Progress Report for end of PY5:

Sub source	Pollutant	Load (lbs) Reduction Required by end of Permit	Load (lbs) Reduction Planned at end of PY5	Total Load (lbs) Reduction Planned
Regulated Urban Impervious	TN	7.16	237.32	237.32
Regulated Urban Pervious		5.76	31.48	31.48
Regulated Urban Impervious	TP	2.63	80.57	80.57
Regulated Urban Pervious		.46	3.08	3.08
Regulated Urban Impervious	TSS	994.01	25112.95	25112.95
Regulated Urban Pervious		79.85	526.56	526.56

Program Plan Modifications Summary

LaRC has updated the MS4 Program Plan in compliance with the General Permit. All of the necessary 48-month updates listed in Table 1 of the General Permit have been addressed. Implementation of the new Program Plan began on July 1, 2017. Below is a snapshot of Program Plan updates:

48-Month Completed Objectives		
<i>Program Update Requirement</i>	<i>Permit Reference</i>	<i>Update Summary</i>
Outfall Map Completed – (Minimum Control Measure 3 – Illicit Discharge Detection and Elimination) –Applicable to new boundaries identified as “urbanized” areas in the 2010 Decennial Census	Section II B 3 a (3)	This action has been completed and is being included with the Permit Year 4 Annual Report. More information on the map can be found in MCM 3.
SWPPP Implementation – (Minimum Control Measure 6 – Pollution Prevention/Good Housekeeping for Municipal Operations)	Section II B 6 b (3)	This action has been completed. More information can be found in MCM 6.

MCM 1 - Three new high priorities have been selected and an associated education and training plan was developed. LaRC moved away from existing MCMs serving as high priorities, and selected more targeted priorities. The three priorities for Year 5 are: (1) Fats, Oils, Grease, and Cleaning Products: Best Management Practices; (2) Litter and Pollution: Illicit Discharge Detection and Elimination; and (3) the Chesapeake Bay TMDL and LaRC’s TMDL Action Plan. Prior to developing the Permit Year 5 Annual Outreach Plan, LaRC solicited public comment via the employee @LaRC announcement system. Notices ran from 5/8/17 through 5/12/17. The call asked employees what they felt were the most pressing stormwater issues the Center faced and where NASA Environmental should focus educational efforts. No public comment was received.

MCM 2 - This section of the Program Plan had no significant changes. The Program Plan was updated to include a link to the new Outreach and Education webpage, and to list more possible local opportunities for public involvement.

MCM 3 – This section of the Program Plan was updated to note several improvements LaRC has taken in stormwater mapping through the GIS system. A link for the stormwater map layer was provided, and LaRC has met the requirement to have a complete and updated storm sewer system map and information table within 48 months of permit coverage.

MCM 4 – This section of the Program Plan had no significant changes. Mrs. Andrea Remington became certified as an ESC and SWM Dual Combined Administrator during the PY. Mrs. Remington’s information was updated in the Program Plan.

MCM 5 – This section of the Program Plan had no significant changes outside of updating the spreadsheet for new permanent stormwater facilitates that came on-line during the PY.


MCM 6 – A new training plan and schedule was incorporated into the Program Plan. Updates also included information on LaRC’s High Priority Facility, the Grounds Maintenance Yard. LaRC has met the requirement to develop and implement a SWPPP for this high-priority facility within 48-months of MS4 permit coverage.

Special Condition/Chesapeake Bay TMDL Action Plan – One minor changes to the Action Plan is requested:

- (1) It was originally planned to convert 2.0 acres of grass area into a forested condition during PY5. During PY4, NASA was able to complete 1.0 acre of the 2.0 proposed acres of converting a grass area into a forested condition. The remaining 1.0 acres is planned to be converted to a forested condition in PY5. There is no net increase or decrease in pollutant load reductions. The requested change is only to adjust the remaining acres to be converted in PY 5.

Signed Certification Statement

“I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.”



Kristen Poultney, Environmental Branch Head

9/29/17

Date

VAR040092 NASA Langley Research Center
Permit Number MS4 Name



Figure 1 The NASA Langley Earth Day and Arbor Day event on 4/20/17 featured 6 environmental educational and interactive exhibits. Participants were able to interact with exhibitors, play trivia games, and learn about several environmental topics, including stormwater pollution prevention.



Figure 2 NASA LaRC's green roof on the Headquarters Building (B2101) was restored by volunteers. The roof helps improve water quality and reduce energy consumption.



Figure 3 In observance of Earth Day and Arbor Day 2017, volunteers assisted the Environmental Office with planting a one-acre area with 600 tree seedlings. This area was converted back to a forested state that will provide new habitat, reduce erosion, and improve water quality.

@LaRC NASA.gov (Langley)

Categorized | Employee engagement, Uncategorized

NASA Langley Employees Take Part in Environmental Projects

Posted on April 24, 2017.




Image credit: NASA/David C. Bowman

Many NASA Langley Research Center employees have been doing their part to help beautify grounds on center.

Pictured above, Langley engineer Scott Bartram, right, and his wife, Carol, participated April 13 in tree planting activities to celebrate Earth Day and Arbor Day.

Pictured right, Langley employees and volunteers work on weeding and planting new vegetation on the roof of the center's headquarters building. More than 80 volunteers have signed up to help weed, clean-up and plant new flowers on more than 8,400 square feet of the headquarters building, said Langley student trainee Jessica Snyder.




Image credit: NASA/George H. Homich Jr.

← NASA Langley Recognizes Employees' Inventions at Awards Ceremony

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Figure 4 Several environmental volunteer projects were highlighted by NASA NEWS for their positive impact to the environmental and to the Center.



Figure 5 LaRC personnel toured the Poquoson Learning Garden on April 12, 2017. Participants learned about various types of gardens, benefits of native plants, and the importance of riparian buffers.

Stormwater Related Posts on @LaRC

All Posts by Andrea Remington and Peter Van Dyke 7/1/16-6/30/17

Publish Date	Title	Approved?	Published?	Visits
6-30-2017	Erosion and Stormwater Management Tips for Construction Sites	APPROVED	PUBLISHED	643
6-29-2017	Erosion and Stormwater Management Tips for Construction Sites	APPROVED	PUBLISHED	653
6-28-2017	Erosion and Stormwater Management Tips for Construction Sites	APPROVED	PUBLISHED	675
6-27-2017	Erosion and Stormwater Management Tips for Construction Sites	APPROVED	PUBLISHED	667
6-2-2017	Clean the Bay Day 2017	APPROVED	PUBLISHED	1063
6-1-2017	Clean the Bay Day 2017	APPROVED	PUBLISHED	1065
5-31-2017	Clean the Bay Day 2017	APPROVED	PUBLISHED	1106
5-30-2017	Clean the Bay Day 2017	APPROVED	PUBLISHED	1106
5-25-2017	Clean the Bay Day 2017	APPROVED	PUBLISHED	1200
5-22-2017	Clean the Bay Day 2017	APPROVED	PUBLISHED	1251
5-18-2017	Clean the Bay Day 2017	APPROVED	PUBLISHED	1325
5-12-2017	Employee Input Needed on Outreach Development	APPROVED	PUBLISHED	1389
5-11-2017	Employee Input Needed on Outreach Development	APPROVED	PUBLISHED	1411
5-10-2017	Employee Input Needed on Outreach Development	APPROVED	PUBLISHED	1430
5-9-2017	Employee Input Needed on Outreach Development	APPROVED	PUBLISHED	1451
5-8-2017	Employee Input Needed on Outreach Development	APPROVED	PUBLISHED	1469
5-5-2017	Enviro-Tip of the Month: Know If You Need To Attend Waste Training 2017	APPROVED	PUBLISHED	1424
5-4-2017	Enviro-Tip of the Month: Know If You Need To Attend Waste Training 2017	APPROVED	PUBLISHED	1423
5-3-2017	Enviro-Tip of the Month: Know If You Need To Attend Waste Training 2017	APPROVED	PUBLISHED	1097
5-2-2017	Enviro-Tip of the Month: Know If You Need To Attend Waste Training 2017	APPROVED	PUBLISHED	1474
5-1-2017	Enviro-Tip of the Month: Know If You Need To Attend Waste Training 2017	APPROVED	PUBLISHED	1485
4-28-2017	Plastic Bag Recycling through April 28	APPROVED	PUBLISHED	1566
4-27-2017	Plastic Bag Recycling through April 28	APPROVED	PUBLISHED	1577
4-26-2017	Plastic Bag Recycling through April 28	APPROVED	PUBLISHED	1608
4-25-2017	Plastic Bag Recycling through April 28	APPROVED	PUBLISHED	1629
4-24-2017	Plastic Bag Recycling through April 28	APPROVED	PUBLISHED	1619
4-21-2017	Adopt the Planet	APPROVED	PUBLISHED	1703
4-21-2017	Upcoming Rain Barrel Workshop	APPROVED	PUBLISHED	1696
4-20-2017	Earth Day Expo TODAY 11-1	APPROVED	PUBLISHED	844
4-20-2017	Upcoming Rain Barrel Workshop	APPROVED	PUBLISHED	793
4-20-2017	Plastic Bag Recycling in April	APPROVED	PUBLISHED	831
4-20-2017	Adopt the Planet	APPROVED	PUBLISHED	824
4-19-2017	Earth Day Expo Apr 20th	APPROVED	PUBLISHED	823
4-19-2017	Upcoming Rain Barrel Workshop	APPROVED	PUBLISHED	808
4-19-2017	Adopt the Planet	APPROVED	PUBLISHED	817
4-18-2017	Earth Day Expo Apr 20th	APPROVED	PUBLISHED	807
4-18-2017	Upcoming Rain Barrel Workshop	APPROVED	PUBLISHED	844
4-18-2017	Adopt the Planet	APPROVED	PUBLISHED	844
4-17-2017	Earth Day Expo Apr 20th	APPROVED	PUBLISHED	805
4-17-2017	Adopt the Planet	APPROVED	PUBLISHED	822
4-17-2017	Upcoming Rain Barrel Workshop	APPROVED	PUBLISHED	857
4-17-2017	Plastic Bag Recycling in April	APPROVED	PUBLISHED	862
4-13-2017	Plastic Bag Recycling in April	APPROVED	PUBLISHED	946
4-11-2017	Volunteers Needed - Let's Plant Trees!	APPROVED	PUBLISHED	959
4-10-2017	Poquoson Learning Garden Tour April 12	APPROVED	PUBLISHED	957
4-10-2017	Volunteers Needed - Let's Plant Trees!	APPROVED	PUBLISHED	939
4-10-2017	Plastic Bag Recycling in April	APPROVED	PUBLISHED	959
4-7-2017	Poquoson Learning Garden Tour April 12	APPROVED	PUBLISHED	1039
4-7-2017	Volunteers Needed - Let's Plant Trees!	APPROVED	PUBLISHED	1031
4-6-2017	Poquoson Learning Garden Tour April 12	APPROVED	PUBLISHED	1053
4-6-2017	Volunteers Needed - Let's Plant Trees!	APPROVED	PUBLISHED	1019
4-6-2017	Plastic Bag Recycling in April	APPROVED	PUBLISHED	1033
4-5-2017	Poquoson Learning Garden Tour April 12	APPROVED	PUBLISHED	1042

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4-5-2017	Volunteers Needed - Let's Plant Trees!	APPROVED	PUBLISHED	1038
4-4-2017	Poguoson Learning Garden Tour April 12	APPROVED	PUBLISHED	1017
4-4-2017	Volunteers Needed - Let's Plant Trees!	APPROVED	PUBLISHED	1017
4-3-2017	Poguoson Learning Garden Tour April 12	APPROVED	PUBLISHED	1090
4-3-2017	Volunteers Needed - Let's Plant Trees!	APPROVED	PUBLISHED	1019
4-3-2017	Plastic Bag Recycling in April	APPROVED	PUBLISHED	1035
4-3-2017	Plastic Bag Recycling in April	APPROVED	PUBLISHED	1041
3-31-2017	Poguoson Learning Garden Tour April 12	APPROVED	PUBLISHED	1051
3-31-2017	Volunteers Needed - Let's Plant Trees!	APPROVED	PUBLISHED	1050
3-31-2017	Preventing Water Pollution from Dumpsters	APPROVED	PUBLISHED	1050
3-31-2017	Plastic Bag Recycling in April	APPROVED	PUBLISHED	1050
3-30-2017	Poguoson Learning Garden Tour April 12	APPROVED	PUBLISHED	1106
3-30-2017	Volunteers Needed - Let's Plant Trees!	APPROVED	PUBLISHED	1106
3-30-2017	Preventing Water Pollution from Dumpsters	APPROVED	PUBLISHED	1138
3-30-2017	Plastic Bag Recycling in April	APPROVED	PUBLISHED	1152
3-29-2017	Poguoson Learning Garden Tour April 12	APPROVED	PUBLISHED	1204
3-29-2017	Volunteers Needed - Let's Plant Trees!	APPROVED	PUBLISHED	1149
3-29-2017	Preventing Water Pollution from Dumpsters	APPROVED	PUBLISHED	1121
3-29-2017	Plastic Bag Recycling in April	APPROVED	PUBLISHED	1168
3-28-2017	Volunteers Needed - Let's Plant Trees!	APPROVED	PUBLISHED	1134
3-28-2017	Preventing Water Pollution from Dumpsters	APPROVED	PUBLISHED	1171
3-28-2017	Plastic Bag Recycling in April	APPROVED	PUBLISHED	1197
3-27-2017	Volunteers Needed - Let's Plant Trees!	APPROVED	PUBLISHED	1198
3-27-2017	Preventing Water Pollution from Dumpsters	APPROVED	PUBLISHED	1151
3-27-2017	Plastic Bag Recycling in April	APPROVED	PUBLISHED	1257
3-24-2017	Volunteers Needed - Let's Plant Trees!	APPROVED	PUBLISHED	1286
3-23-2017	Volunteers Needed - Let's Plant Trees!	APPROVED	PUBLISHED	1307
3-22-2017	Volunteers Needed - Let's Plant Trees!	APPROVED	PUBLISHED	1296
3-21-2017	Volunteers Needed - Let's Plant Trees!	APPROVED	PUBLISHED	1337
3-17-2017	Upcoming Rain Barrel Workshop	APPROVED	PUBLISHED	1330
3-16-2017	Upcoming Rain Barrel Workshop	APPROVED	PUBLISHED	1421
3-15-2017	Upcoming Rain Barrel Workshop	APPROVED	PUBLISHED	1397
3-14-2017	Upcoming Rain Barrel Workshop	APPROVED	PUBLISHED	1285
3-14-2017	Recruiting new oyster gardeners!	APPROVED	PUBLISHED	1287
3-13-2017	Upcoming Rain Barrel Workshop	APPROVED	PUBLISHED	1304
3-13-2017	Recruiting new oyster gardeners!	APPROVED	PUBLISHED	1363
3-8-2017	Recruiting new oyster gardeners!	APPROVED	PUBLISHED	1415
3-7-2017	Enviro-Tip of the Month: Fix a Leak	APPROVED	PUBLISHED	1454
3-7-2017	Recruiting new oyster gardeners!	APPROVED	PUBLISHED	1450
3-6-2017	Enviro-Tip of the Month: Fix a Leak	APPROVED	PUBLISHED	1519
3-6-2017	Recruiting new oyster gardeners!	APPROVED	PUBLISHED	1471
3-3-2017	Free Rose Pruning Workshop Mar 4	APPROVED	PUBLISHED	1575
3-3-2017	Enviro-Tip of the Month: Fix a Leak	APPROVED	PUBLISHED	1577
3-2-2017	Enviro-Tip of the Month: Fix a Leak	APPROVED	PUBLISHED	1560
3-2-2017	Free Rose Pruning Workshop Mar 4	APPROVED	PUBLISHED	1553
3-1-2017	Free Rose Pruning Workshop Mar 4	APPROVED	PUBLISHED	1571
2-28-2017	Free Rose Pruning Workshop Mar 4	APPROVED	PUBLISHED	1669
2-27-2017	Free Rose Pruning Workshop Mar 4	APPROVED	PUBLISHED	1590
2-24-2017	Free Planting Workshop March 23	APPROVED	PUBLISHED	1562
2-23-2017	Free Planting Workshop March 23	APPROVED	PUBLISHED	1237
2-22-2017	Free Planting Workshop March 23	APPROVED	PUBLISHED	1341
2-21-2017	Free Planting Workshop March 23	APPROVED	PUBLISHED	1309
2-17-2017	Free Planting Workshop March 23	APPROVED	PUBLISHED	1315
2-17-2017	Upcoming Rain Barrel Workshop	APPROVED	PUBLISHED	1316
2-16-2017	Free Planting Workshop March 23	APPROVED	PUBLISHED	1404
2-16-2017	Upcoming Rain Barrel Workshop	APPROVED	PUBLISHED	1457
2-15-2017	Upcoming Rain Barrel Workshop	APPROVED	PUBLISHED	1367
2-14-2017	Upcoming Rain Barrel Workshop	APPROVED	PUBLISHED	1442

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2-13-2017	Upcoming Rain Barrel Workshop	APPROVED	PUBLISHED	1400
1-11-2017	Enviro-Tip of the Month: Recycle Your Christmas Tree	APPROVED	PUBLISHED	1851
1-10-2017	Enviro-Tip of the Month: Recycle Your Christmas Tree	APPROVED	PUBLISHED	1841
1-9-2017	Enviro-Tip of the Month: Recycle Your Christmas Tree	APPROVED	PUBLISHED	1847
1-6-2017	Enviro-Tip of the Month: Recycle Your Christmas Tree	APPROVED	PUBLISHED	2026
1-5-2017	Enviro-Tip of the Month: Recycle Your Christmas Tree	APPROVED	PUBLISHED	2035
12-16-2016	Some of LaRC's Ways to Save the Bay	APPROVED	PUBLISHED	2053
12-15-2016	Some of LaRC's Ways to Save the Bay	APPROVED	PUBLISHED	2076
12-14-2016	Some of LaRC's Ways to Save the Bay	APPROVED	PUBLISHED	2100
12-13-2016	Some of LaRC's Ways to Save the Bay	APPROVED	PUBLISHED	2115
12-12-2016	Some of LaRC's Ways to Save the Bay	APPROVED	PUBLISHED	2075
12-7-2016	Enviro-Tip of the Month: Fight F.O.G.	APPROVED	PUBLISHED	1952
12-6-2016	Enviro-Tip of the Month: Fight F.O.G.	APPROVED	PUBLISHED	1983
12-5-2016	Enviro-Tip of the Month: Fight F.O.G.	APPROVED	PUBLISHED	2003
12-2-2016	Enviro-Tip of the Month: Fight F.O.G.	APPROVED	PUBLISHED	2324
12-1-2016	Enviro-Tip of the Month: Fight F.O.G.	APPROVED	PUBLISHED	2358
11-25-2016	Plastic Bag Recycling Results	APPROVED	PUBLISHED	2175
11-24-2016	Plastic Bag Recycling Results	APPROVED	PUBLISHED	2184
11-23-2016	Plastic Bag Recycling Results	APPROVED	PUBLISHED	2229
11-22-2016	Plastic Bag Recycling Results	APPROVED	PUBLISHED	2281
11-21-2016	Plastic Bag Recycling Results	APPROVED	PUBLISHED	2229
11-21-2016	City of Hampton Volunteer Oppurtunity - Rain Garden	APPROVED	PUBLISHED	2248
11-18-2016	City of Hampton Volunteer Oppurtunity - Rain Garden	APPROVED	PUBLISHED	2331
11-17-2016	City of Hampton Volunteer Oppurtunity - Rain Garden	APPROVED	PUBLISHED	2387
11-4-2016	Enviro-Tip of the Month: Your 3Rs for the Holidays	APPROVED	PUBLISHED	2855
11-3-2016	Stormwater Annual Report	APPROVED	PUBLISHED	2867
11-3-2016	Enviro-Tip of the Month: Your 3Rs for the Holidays	APPROVED	PUBLISHED	2874
11-2-2016	Stormwater Annual Report	APPROVED	PUBLISHED	2892
11-2-2016	Enviro-Tip of the Month: Your 3Rs for the Holidays	APPROVED	PUBLISHED	2898
11-1-2016	Stormwater Annual Report	APPROVED	PUBLISHED	2907
11-1-2016	Enviro-Tip of the Month: Your 3Rs for the Holidays	APPROVED	PUBLISHED	2934
10-31-2016	Stormwater Annual Report	APPROVED	PUBLISHED	2815
10-28-2016	Plastic Bag Recycling in October CONTINUES!	APPROVED	PUBLISHED	3005
10-28-2016	Stormwater Annual Report	APPROVED	PUBLISHED	2997
10-27-2016	Plastic Bag Recycling in October CONTINUES!	APPROVED	PUBLISHED	3032
10-26-2016	Plastic Bag Recycling in October CONTINUES!	APPROVED	PUBLISHED	3026
10-25-2016	Plastic Bag Recycling in October CONTINUES!	APPROVED	PUBLISHED	3052
10-24-2016	Plastic Bag Recycling in October CONTINUES!	APPROVED	PUBLISHED	3099
10-21-2016	Plastic Bag Recycling in October!	APPROVED	PUBLISHED	3154
10-20-2016	Plastic Bag Recycling in October!	APPROVED	PUBLISHED	3165
10-19-2016	Plastic Bag Recycling in October!	APPROVED	PUBLISHED	3178
10-19-2016	The NASA Green Roof Still Needs Your Help!	APPROVED	PUBLISHED	3227
10-18-2016	Plastic Bag Recycling in October!	APPROVED	PUBLISHED	3204
10-18-2016	The NASA Green Roof Still Needs Your Help!	APPROVED	PUBLISHED	3256
10-17-2016	Plastic Bag Recycling in October!	APPROVED	PUBLISHED	3243
10-17-2016	The NASA Green Roof Still Needs Your Help!	APPROVED	PUBLISHED	3194
10-14-2016	Plastic Bag Recycling in October!	APPROVED	PUBLISHED	3032
10-13-2016	Plastic Bag Recycling in October!	APPROVED	PUBLISHED	3084
10-12-2016	Plastic Bag Recycling in October!	APPROVED	PUBLISHED	3097
10-11-2016	Plastic Bag Recycling in October!	APPROVED	PUBLISHED	3125
10-8-2016	Plastic Bag Recycling in October!	APPROVED	PUBLISHED	3411
10-7-2016	Plastic Bag Recycling in October!	APPROVED	PUBLISHED	3493
10-6-2016	Plastic Bag Recycling in October!	APPROVED	PUBLISHED	1283
9-30-2016	Bay-Friendly Lawn Care Tips	APPROVED	PUBLISHED	3201
9-29-2016	Bay-Friendly Lawn Care Tips	APPROVED	PUBLISHED	3236
9-28-2016	Bay-Friendly Lawn Care Tips	APPROVED	PUBLISHED	3251
9-27-2016	Bay-Friendly Lawn Care Tips	APPROVED	PUBLISHED	1888
9-27-2016	Use Your Green Thumb to Lend a Hand!	APPROVED	PUBLISHED	1828

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9-26-2016	Use Your Green Thumb to Lend a Hand!	APPROVED	PUBLISHED	1849
9-23-2016	Happy National Estuaries Week!	APPROVED	PUBLISHED	1741
9-23-2016	Local Events: Plant Sales Sept 17 & 24	APPROVED	PUBLISHED	1765
9-23-2016	Use Your Green Thumb to Lend a Hand!	APPROVED	PUBLISHED	1765
9-22-2016	Happy National Estuaries Week!	APPROVED	PUBLISHED	1750
9-22-2016	Local Events: Plant Sales Sept 17 & 24	APPROVED	PUBLISHED	1776
9-22-2016	Use Your Green Thumb to Lend a Hand!	APPROVED	PUBLISHED	1757
9-21-2016	Happy National Estuaries Week!	APPROVED	PUBLISHED	1765
9-20-2016	Happy National Estuaries Week!	APPROVED	PUBLISHED	1782
9-19-2016	Happy National Estuaries Week!	APPROVED	PUBLISHED	1810
9-16-2016	Local Events: Plant Sales Sept 17 & 24	APPROVED	PUBLISHED	1977
9-15-2016	Local Events: Plant Sales Sept 17 & 24	APPROVED	PUBLISHED	2018
9-9-2016	Local Event: Go Green Expo! TOMORROW	APPROVED	PUBLISHED	1901
9-8-2016	Local Event: Go Green Expo! Saturday	APPROVED	PUBLISHED	1889
8-5-2016	Enviro-Tip of the Month: Green Your Commute	APPROVED	PUBLISHED	2403
8-4-2016	Enviro-Tip of the Month: Green Your Commute	APPROVED	PUBLISHED	2408
8-3-2016	Enviro-Tip of the Month: Green Your Commute	APPROVED	PUBLISHED	2422
8-2-2016	Enviro-Tip of the Month: Green Your Commute	APPROVED	PUBLISHED	2444
8-1-2016	Enviro-Tip of the Month: Green Your Commute	APPROVED	PUBLISHED	2333
7-22-2016	Local Event Tomorrow: Chesapeake Recycles Day	APPROVED	PUBLISHED	2566
7-21-2016	Local Event 7/23: Chesapeake Recycles Day	APPROVED	PUBLISHED	1624
7-20-2016	Local Event 7/23: Chesapeake Recycles Day	APPROVED	PUBLISHED	1635
7-19-2016	Local Event 7/23: Chesapeake Recycles Day	APPROVED	PUBLISHED	1654
7-18-2016	Local Event 7/23: Chesapeake Recycles Day	APPROVED	PUBLISHED	1667
7-13-2016	FREE PLANTS! LaRC Plant Giveaway TODAY!	APPROVED	PUBLISHED	1868
7-12-2016	FREE PLANTS! LaRC Plant Giveaway Tomorrow	APPROVED	PUBLISHED	1846
7-11-2016	FREE PLANTS! LaRC Plant Giveaway 7/13	APPROVED	PUBLISHED	1851
7-8-2016	Local Event Tomorrow: VPPSA Household Chemical Collection and E-Cycling	APPROVED	PUBLISHED	1646
7-8-2016	FREE PLANTS! LaRC Plant Giveaway 7/13	APPROVED	PUBLISHED	1737
7-7-2016	Local Event 7/9: VPPSA Household Chemical Collection and E-Cycling	APPROVED	PUBLISHED	1652
7-7-2016	FREE PLANTS! LaRC Plant Giveaway 7/13	APPROVED	PUBLISHED	1911
7-6-2016	Local Event 7/9: VPPSA Household Chemical Collection and E-Cycling	APPROVED	PUBLISHED	1674
7-5-2016	Local Event 7/9: VPPSA Household Chemical Collection and E-Cycling	APPROVED	PUBLISHED	1693
7-4-2016	Local Event 7/9: VPPSA Household Chemical Collection and E-Cycling	APPROVED	PUBLISHED	1719
7-1-2016	What Can You Do To Prevent An Illicit Discharge?	APPROVED	PUBLISHED	1741

Last Updated: 8-7-2017 at 12:00 AM
 Responsible NASA Official: Peter Ryan Van Dyke
 Page Curator: Larc-dl-atlarc-help@mail.nasa.gov

DUMPSTER MANAGEMENT

Illicit Discharge Detection and Elimination March 2017



Preventing Water Pollution

Learn how to stop pollutants from reaching the Chesapeake Bay

Almost every facility at NASA Langley Research Center (LaRC) generates waste and temporarily stores it on-site. Many facilities store the waste in dumpsters or bins outdoors and are often out of sight.

These bins can be a major source of stormwater pollution if they are not properly maintained. Open dumpsters may collect rain water that mixes with the contents of the dumpster. This polluted water can spill or leak from the container.

Additionally, rain may wash leaking materials, spills, and trash from the dumpsters into nearby storm drains. This runoff may contain grease, litter, bacteria, and chemicals that are harmful to our nearby creeks and streams. Properly maintained dumpsters can prevent stormwater pollution, while also preventing unsightly conditions and unpleasant odors.



Water that flows into storm drains in the streets and parking lots doesn't go through a treatment plant first – this water dumps directly into the creeks behind LaRC, and eventually into the Chesapeake Bay.

Only Rain Down the Drain

...

An illicit discharge is a big problem in some areas because it is not always easy to detect and can often go unnoticed. It is also a large source of pollution into our waterways. The first thing you can do is understand what an illicit discharge is:

ILLICIT DISCHARGE:
Any discharge (release) to the stormwater sewer system that is NOT composed entirely of stormwater.

Consider what materials and pollutants may be present when placing materials near storm drains. Only clean, unchlorinated water is allowed into the storm drain, which ends up in our local streams and the Chesapeake Bay.

...

Figure 6 Sample screenshot of the IDDE article published March, 2017. The article focused on defining, recognizing, preventing, and reporting illicit discharges from dumpsters at NASA Langley.



The screenshot shows a dark blue background with an orange border. At the top, there is a framed image of several autumn leaves in shades of red, orange, and yellow. Below the image is a white banner with the title "Steps for Healthy Lawns and a Healthy Bay" in a black serif font. The main text of the article is in white, starting with "Wouldn't we all love to have a lush, green lawn? However, a lush green lawn usually comes at a large environmental and public health cost." This is followed by a sub-header "But it doesn't have to be that way." in orange. The main text continues: "In this article, we'll cover how to achieve an attractive 'stormwater-friendly' lawn without excessive fertilizer, water, or labor. If you care about protecting water quality, keep reading to learn some of the best ways to make small changes in your lawn-care routine in order to reduce pollution in your local streams and the Chesapeake Bay." At the bottom, there is a red box containing a photo of a single red leaf on water and a quote: "A 'stormwater friendly' lawn is one that can absorb rainwater and does not harm local streams due to the over-application of chemicals." The quote is in orange text. On either side of this box are large orange double-headed arrow symbols. A small number "1" is in the bottom right corner of the screenshot.

Steps for Healthy Lawns and a Healthy Bay

Wouldn't we all love to have a lush, green lawn? However, a lush green lawn usually comes at a large environmental and public health cost.

But it doesn't have to be that way.

In this article, we'll cover how to achieve an attractive "stormwater-friendly" lawn without excessive fertilizer, water, or labor. If you care about protecting water quality, keep reading to learn some of the best ways to make small changes in your lawn-care routine in order to reduce pollution in your local streams and the Chesapeake Bay.

A "stormwater friendly" lawn is one that can absorb rainwater and does not harm local streams due to the over-application of chemicals.

1


Figure 7 Sample screenshot of the Chesapeake Bay TMDL article published in September, 2016. The article focused on steps to maintain a healthy lawn while also minimizing pollution into the Chesapeake Bay.



STORMWATER AND THE CONSTRUCTION INDUSTRY

Silt Fencing

Silt fencing is important for controlling erosion and sediment, and keeping our local waterways clean and clear. Making sure silt fencing is properly installed and maintained can make a big difference in how well it works and could even save money. When silt fencing is properly sited and installed, it should be able to withstand bad weather and other challenges.



- Inspect and maintain after each rainstorm.
- Make sure the bottom of the fence is buried in the ground (8 inches of fabric underground total):

- Securely attach the material to the stakes. Inspect and reattach the material after high winds.
- Make sure water is not flowing around or under the silt fence.
- Clean out sediment when it has reached half of the height of the silt fence.
- Replace any torn or damaged fabric.

Have questions? We're here to help!
Call the NASA LaRC Water Program Team
Peter Van Dyke (864-7517) or Ande Remington (864-2451)



Figure 8 Screenshot of one of the IDDE flyers created for construction and maintenance contractors at LaRC.

Environmental & Energy Program

NASA Langley Research Center

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- [What is NASA Langley Doing to Ensure a Healthy Chesapeake Bay?](#)
- [Bay-Friendly Lawn Care Tips](#)
- [What Can You Do To Prevent An Illicit Discharge?](#)
- [Green, Clean Car Washing](#)
- [Dirty Jobs and the Chesapeake Bay's Diet](#)

Presentations:

- [Recognizing and Reporting Stormwater Pollution](#) (For full presentation in ppt format with speaker notes, please email ande.remington@nasa.gov)
- [LaRC TMDLs](#)
- [Construction Manager Refreshers: Erosion, Stormwater, and Waste](#)

Facility Posters/Flyers:

- [Preventing Stormwater Pollution](#) (For best quality, print in color and on 11x17 paper)
- [Pressure Washing – The Pressure is on for Clean Water](#)
- [Healthy Lawn: Healthy Bay](#)

Links

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- [Enviro-Tip of the Month: Save Energy, Water & \\$\\$\\$ August 4th-6th! July 26, 2017](#)
- [Enviro-Tip of the Month: Summertime Energy Saving Tips June 30, 2017](#)
- [Erosion and Stormwater Management: Best Management Practices for Construction Sites June 26, 2017](#)
- [DIY Home Energy Audits 2017 June 13, 2017](#)
- [Enviro-Tip of the Month: Watts vs Lumens May 30, 2017](#)

Tags

action arbor day bay chesapeake chesapeake bay clean cleanup conservation earth earth day energy enviro-tip environment environmental event fall green lawn local month MS4 natural resources nature nutrients october outreach plant planting plastic pollution power recycling runoff save savings storm drain stormwater tour training trees volunteer waste water water quality wildlife

Figure 9 Screenshot of the new LaRC Water Program Education and Outreach webpage.