



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

Covering the period of July 1, 2019 – June 30, 2020



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

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Annual Reporting Requirements
Part I D 2

The annual report shall include the following general information:

- a. The permittee, system name, and permit number;
- b. The reporting period for which the annual report is being submitted;
- c. A signed certification as per Part III K;
- d. Each annual reporting item as specified in an MCM in Part I E; and
- e. An evaluation of the MS4 program implementation, including a review of each MCM, to determine the MS4 program's effectiveness and whether changes to the MS4 program plan are necessary.

General information:

- a. NASA Langley Research Center, VAR040092
- b. The reporting period for this annual report is July 1, 2019 through June 30, 2020
- c. The signed Certification Statement can be found on the last page of this annual report
- d. Each annual reporting item as specified in an MCM in Part I E can be found on pages 5-18
- e. A Program evaluation can be found on pages 3 – 4.

Part I D 2 e - Evaluation of MS4 Program Implementation

The Program Plan has guided NASA Langley Research Center (LaRC) in effectively implementing the requirements of the permit. MS4 program effectiveness was evaluated through the LaRC Environmental Management Office (EMO) internal review process considering public input. Opportunities for improvement were evaluated and the program's implementation was determined to be effective, thus no major changes were necessary. A review of each MCM is included below:

MCM 1 – Three high priorities were selected based on the most pressing stormwater-related issues at LaRC. LaRC continued to advertise educational outreach on the public website, through distribution of articles, flyers and targeted e-mails, and numerous training sessions. LaRC has successfully reached a diverse audience with information on how to reduce stormwater pollution and protect and improve the water quality of local waterways. This component of the program was evaluated for effectiveness through EMO internal review process and public input. It was found to be very effective and no changes are necessary.

MCM 2 – LaRC solicits public input via the employee @LaRC announcement system in order to improve the Program Plan. Additionally, public input is encouraged at any time through our public environmental webpage. Reporting of illicit discharges is encouraged continuously during trainings, on our public website, and through outreach articles and flyers that are distributed quarterly. Personnel can contact EMO staff or fill out an online form or visit the public site for information on LaRC's IDDE program. LaRC's environmental team coordinates a variety of internal events and advertises external events to encourage public involvement. This component of the program was evaluated for effectiveness through EMO internal review process and public input. LaRC took advantage of new IT features, such as Microsoft Forms to facilitate reporting and streamline public input. A potential opportunity for improvement includes evaluating improved methods for tracking complaints and participation in events. The Program Plan will be updated should these improvements occur.

MCM 3 – Illicit discharges are prohibited at LaRC and are addressed primarily through LaRC's IDDE Handbook, the Langley Procedural Requirements (LPR) 8500.1, LaRC's approved Annual Standards and Specifications for Stormwater Management and Erosion and Sediment Control (AS&S), and annual trainings offered to personnel. Under a VPDES industrial permit, LaRC also implements a DEQ approved Operations and Maintenance (O&M) manual to minimize or prevent pollutant discharges. This component of the program was evaluated for effectiveness through EMO internal review process. This program was found to be effective and no Program Plan changes are needed.

MCM 4 – This component of the program is implemented primarily through LaRC's DEQ approved AS&S and LaRC's Environmental Construction Specifications Section 01 35 40.00 41. The AS&S provides detailed information on LaRC's stormwater construction program and ensure compliance with all regulatory requirements as well as Part I E 4 a 3 of the permit. The AS&S are evaluated annually by DEQ, while this component of the program was evaluated for effectiveness through EMO internal review process. This program was found to be effective. No Program Plan changes are needed.

MCM 5 – This component of the program is implemented primarily through LaRC's approved AS&S. Projects also comply with LaRC's Environmental Construction Specifications Section 01 35 40.00 41 and NASA Environmental Design Standards. The EMO also provides continuous feedback during design and construction to ensure compliance. In addition, LaRC's Green Infrastructure Maintenance Handbook has been developed to ensure adequate long-term operation and maintenance of SWM facilities. This component of the program was evaluated for effectiveness through EMO internal review process. This program was found to be effective and no Program Plan changes are needed.

MCM 6 – LaRC uses a variety of operational and maintenance BMPs to prevent and minimize pollutant discharge during Center operations. Appropriate control measures and pollution prevention practices are implemented primarily through language in procedural documents, including the Environmental and Energy Program Manual (LPR 8500.1), LaRC’s AS&S and LaRC’s IDDE Handbook. The Center also utilizes a robust training plan that includes targeted training for contractors completing maintenance and construction tasks. LaRC also enforces the use of the Langley Form 461 (LF461), the “Environmental Project Planning Form”, that allows EMO to review projects and provide feedback or requirements to reduce negative environmental impacts. LaRC has met the requirement to develop and implement a SWPPP for the high-priority facility, Grounds Maintenance Yard, and continues to monitor and inspect the facility. This component of the program was evaluated for effectiveness through EMO internal review process. The program was found to be effective. An opportunity for improvement includes evaluating potential improvements in written procedures. The Program Plan will be updated should these improvements occur.

TMDL Special Conditions– LaRC submitted its Chesapeake Bay Phase Two Action Plan to DEQ on October 31, 2019. The program has been found to be effective and LaRC is ahead of project load reductions needed. Additionally, LaRC has been allocated a waste load reduction for the Back River TMDL. LaRC will develop and initiate implementation of an action plan to meet conditions of the Part II of the draft General Permit, no later than 30 months after the permit effective date. The action plan will be maintained and implemented by EMO, and a copy will be available upon request once complete.

**Minimum Control Measure One – Public Education and Outreach
Annual Reporting Requirements – Part I E 1 g**

- (1) A list of the high-priority stormwater issues the permittee addressed in the public education and outreach program; and
- (2) A list of strategies used to communicate each high-priority stormwater issues.

The table below lists the high-priority stormwater issues addressed and the communication strategies used:

(1) High-Priority Stormwater Issues Addressed	(2) Strategies Used to Communicate
<p>Water Quality and Winter Precipitation: Best Management Practices (BMPs)</p>	<p>Media materials- an educational article <i>Make Winter’s Passage a Green One</i>, was published on 12/16/2019 to the public environmental website, and advertised via @LaRC. The article discussed strategies to reduce the use of deicer and tips on properly maintaining LaRC’s permeable pavements in the winter.</p> <p>An educational Reference Folder is sent annually to FECs to provide relevant information and policy reminders for maintaining environmental compliance. The reference folder was sent on 09/19/2019 and covered various environmental media programs including educational flyers on LaRC’s IDDE program, pollution prevention practices, and proper hazardous waste disposal.</p>
<p>Litter Prevention: Illicit Discharge Detection and Elimination (IDDE)</p>	<p>Media materials- an educational article, <i>Prevent Litter From Reaching Our Waterways</i>, was published on 03/31/2020 to the public environmental website, and advertised via @LaRC. The article discussed small actions to take to help mitigate litter in our waterways. The article highlighted the ubiquity of cigarette butts in litter across the world.</p> <p>An educational Reference Folder is sent annually to FECs to provide relevant information and policy reminders for maintaining environmental compliance. The reference folder was sent on 09/19/2019 and covered various environmental media programs including educational flyers on LaRC’s IDDE program, pollution prevention practices, and proper waste disposal.</p> <p>Speaking engagements- a detailed list of training events conducted in accordance with Part I E 6 m can be found under MCM 6 section. The following training sessions covered topics on stormwater pollution prevention, detecting and reporting illicit discharges, and spill response: <i>Recognizing and Reporting Stormwater Pollution</i>, held on 06/30/2020; <i>Environmental Refreshers: Erosion, Stormwater, and Waste</i>, held on 06/17/2020; <i>Annual FEC trainings</i>, held on 07/11/2019, 07/16/2019 and 08/07/2019; <i>Annual Waste Management and Spill Response Training</i>, held on</p>

(1) High-Priority Stormwater Issues Addressed	(2) Strategies Used to Communicate
	07/10/2019, 08/08/2019, 05/06/2020, 05/13/2020, 05/19/2020, and 06/01/2020.
Chesapeake Bay and Back River TMDL Education	<p>Media materials- an educational article, <i>The Chesapeake Bay Pollution Diet</i>, was published on 06/28/2020 to the public environmental website, and advertised via @LaRC. The article explained how the Chesapeake Bay TMDL will help restore water quality, outlined the pollutants of concern and their negative environmental impacts, and provided information on BMPs implemented at LaRC to intercept, treat, and reduce stormwater runoff.</p> <p>An educational article, <i>The Back River Bacteria Diet</i>, was published on 06/28/2020 to the public environmental website, and advertised via @LaRC. The article discussed the sources and types of bacteria that are used as water quality indicators of fecal contamination, and BMPs implemented by LaRC and Hampton Roads to reduce bacteria loads such as green infrastructure, investing in city improvements, public education such as “no discharge” facilities in marinas, and pet waste disposal stations.</p> <p>Speaking engagements- a detailed list of training events conducted in accordance with Part I E 6 m can be found under MCM 6 section. The following training sessions covered topics on LaRC’s TMDLs, pollutants of concern, and stormwater pollution prevention: <i>Recognizing and Reporting Stormwater Pollution</i>, held on 06/30/2020; <i>Environmental Refreshers: Erosion, Stormwater, and Waste</i>, held on 06/17/2020; <i>Annual FEC trainings</i>, held on 07/11/2019, 07/16/2019, and 08/07/2019; <i>Annual Waste Management and Spill Response Training</i>, held on 07/10/2019, 08/08/2019, 05/06/2020, 05/13/2020, 05/19/2020, and 06/01/2020.</p>

**Minimum Control Measure Two – Public Education and Participation
Annual Reporting Requirements – Part I E 2 f**

- (1) A summary of any public input on the MS4 program received (including stormwater complaints) and how the permittee responded;
- (2) A webpage address to the permittee's MS4 program and stormwater website;
- (3) A description of the public involvement activities implemented by the permittee;
- (4) A report of the metric as defined for each activity and an evaluation as to whether the activity is beneficial to improving water quality; and
- (5) The name of other MS4 permittees with whom the permittee collaborated in the public involvement opportunities.

(1) LaRC requests public input on the MS4 program via the @LaRC announcement system (accessible to all employees). Additionally, public input is encouraged at any time through our environmental public webpage (which is also routinely promoted). The following is a summary of public input received on the MS4 program:

Public Input Received	Response and Implementation
Received request for guidance on proper disposal of chemical and household products, as well as local disposal/collection events.	A household chemical collection event was advertised on 07/09/2019. LaRC has participated in promoting hazardous waste collection events in the past and will continue to support these events by promoting through @LaRC announcements.

(2) The LaRC MS4 program and stormwater website: <https://environmental.larc.nasa.gov/water/ms4/>.

(3,4) Public involvement activities implemented during the reporting year are described below. Each subsection lists the metric defined for each and an evaluation of the activity benefits. All events were promoted on Center through promotion, sponsorship, and/or involvement.

Category of Public Involvement Opportunity – Educational Events

1) Williamsburg Wastewater Treatment Plant Tour

Activity Description: LaRC provided an opportunity for personnel to attend a tour of the Williamsburg Wastewater Treatment Plant on 10/01/2019. The Wastewater Treatment Plant demonstrated how wastewater is treated before discharging to state waterways.

Metric and Evaluation of Water Quality Benefits: This tour was coordinated by EMO staff, and announcements were posted on the @LaRC page, public environmental blog, and center-wide emails. The @LaRC announcements received 217 visitors from 09/19/2019 through 09/30/2019. Nine (9) LaRC

employees participated in this tour where they had the opportunity to learn about wastewater management, and HRSD's efforts to improve sustainability.

2) NASA Langley's Earth Day/Arbor Day Expo

Activity Description: EMO hosted the annual Earth Day and Arbor Day Expo virtually from 04/01/2020 to 05/08/2020. The virtual event was comprised of webinars, virtual local tours, virtual expo, and a nature photo contest. The expo featured eight websites including LaRC programs and local environmental groups, such as AskHRgreen, Elizabeth River Project, and EarthDay.org. These sites linked to daily environmental challenges, education, outreach flyers, and sustainability tips.

Metric and Evaluation of Water Quality Benefits: The event was coordinated by EMO staff, and announcements were posted on the @LaRC page, public environmental blog, and center-wide emails. The @LaRC announcements received 1,340 visitors from 04/13/2020 to 05/15/2020. The nature photo contest received 339 entries and the Alien Insects Invading Virginia webinar had nearly 90 participants. The virtual format of the event was well received. Attendees were able to learn about energy conservation, proper recycling rules, where stormwater washes lawn fertilizer, as well as participate in river clean-up projects and simple acts to go green.

3) Invasive Species in Virginia Event – Master Gardener Speaker

Activity Description: LaRC virtually hosted an environmental speaker in recognition of Earth Day 2020. On 04/22/2020, Greg Hajos, a LaRC retiree and York/Poquoson Master Gardener, presented *Alien Insects Invading Virginia*, an educational presentation focused on three insects impacting Virginia and the impacts on other insects, small animals, trees, and crops.

Metric and Evaluation of Water Quality Benefits: The event was coordinated by EMO staff, and announcements were posted on the @LaRC page, public environmental blog, and center-wide emails. The @LaRC announcements received 127 visitors from 04/21/2020 through 04/22/2020. Ninety (90) attendees participated in the virtual presentation WebEx. After the presentation, the WebEx presentation was made available and advertised on the @LaRC page. The @LaRC announcements received 423 visitors from 05/01/2020 through 05/15/2020. Attendees learned how to identify and mitigate the three invasive insect species.

Category of Public Involvement Opportunity – Disposal or Collection Events

1) NASA Langley Plastic Bag Recycling

Activity Description: LaRC continued its partnership with the York/Poquoson Master Gardeners to recycle plastic bags and film packaging. LaRC collected plastic bag material from Center personnel for 4 weeks in observance of Energy Action Month in October 2019. All plastic material collected on Center was donated to the York/Poquoson Master Gardeners to make composite benches for community parks, schools, or learning gardens.

Metric and Evaluation of Water Quality Benefits: The event was coordinated by EMO staff, and announcements were posted on the @LaRC page, public environmental blog, and center-wide emails during the month of October 2019. The @LaRC announcements received 479 visitors. Collection details and results were posted on the public environmental blog. The recycling efforts were effective and strong employee participation resulted in the diversion of 307 pounds of plastic bags and films.

2) Curbside Recycling

Activity Description: The Virginia Peninsulas Public Service Authority (VPPSA) curbside residential recycling program provides collection of household recyclable materials. LaRC has received positive feedback on these events in the past and looks to continue supporting and promoting curbside recycling and hazardous waste collection events in the Hampton Roads community.

Metric and Evaluation of Water Quality Benefits: LaRC participated in this event through promotion of a VPPSA flyer via @LaRC announcements. The flyer provided guidelines for curbside recycling following the holiday season. The @LaRC announcements received 243 visitors from 01/13/2020 through 01/17/2020. By advertising VPPSA recycling guidance, LaRC improve public awareness of recycling practices. Curbside recycling helps divert waste from landfills and prevents dumping.

3) Christmas Tree Recycling

Activity Description: The Virginia Peninsulas Public Service Authority (VPPSA) residential program provides curbside collection of Christmas trees. The trees are mulched or composted at the VPPSA Composting Facility and the compost/mulch is available for public purchase. LaRC has received positive feedback on these events in the past and looks to continue supporting and promoting curbside recycling and hazardous waste collection events in the Hampton Roads community.

Metric and Evaluation of Water Quality Benefits: LaRC participated in this event through promotion of a VPPSA flyer via @LaRC announcements. The flyer providing guidelines for curbside tree pick up after the holiday season. The @LaRC announcements received 123 visitors from 01/06/2020 through 01/13/2020. Recycling diverts waste from landfills and converts the trees to a valuable organic material that helps conserve soil moisture and keep plants healthy.

Category of Public Involvement Opportunity – Restoration

1) The Great American Cleanup Event

Activity Description: Keep America Beautiful's *The Great American Cleanup* is the largest community improvement program and occurred on 03/27/2020 and 03/28/2020. This is a two-day event to remove litter and improve community appearance in Hampton Roads.

Metric and Evaluation of Water Quality Benefits: LaRC participated through promotion of this event via @LaRC announcements. The @LaRC announcements received 217 visitors from 03/04/2020 through 03/10/2020. By advertising *The Great American Cleanup* event, LaRC improve public awareness for environmental restoration activities and promotes community participation. The event ranges from removing litter from neighborhoods and waterways to strengthening green infrastructure by planting flowers and trees.

2) Hampton Roads 11th Go Green Expo

Activity Description: The Newport News, Hampton, and York County/Poquoson Master Gardeners hosted the 11th Annual Go Green Expo on 09/07/2019. The Go Green Expo is Hampton Roads' premier horticultural, sustainability, indoor event.

Metric and Evaluation of Water Quality Benefits: LaRC participated through promotion of this event via @LaRC announcements. The @LaRC announcements received 132 visitors from 08/29/2019 through 09/05/2019. The event featured speakers, workshops for rain barrels and sustainable gardening, and a

farmer's market. Participants learned about eco-friendly products and pollution prevention practices that can be incorporated into daily activities to help improve water quality. By advertising the Go Green Expo event, LaRC improved public awareness on local environmental activities and promotes community participation.

Category of Public Involvement Opportunity – Pollution Prevention

1) Home Gardening with Native Plants Lectures

Activity Description: The Newport News Master Gardener Association hosted a new lecture Series, *Home Gardening Mini-Course*. Eight (8) lectures covered a variety of horticultural topics and featured native plants. Native plants are essential for a healthy watershed as they are adapted to local climate and soils. LaRC participated in educating the public through promotion of local gardening workshops via @LaRC announcements.

Metric and Evaluation of Water Quality Benefits: The lectures were advertised via @LaRC announcements and received 260 visitors from 02/24/2020 through 02/28/2020. By advertising native plants lectures, LaRC encourages the use native species, improve awareness of local pollinators, and promotes sustainable gardening practices. Native plants reduce the need for fertilizing (a pollutant of concern for the Chesapeake Bay), require less watering, and provide natural habitat for wildlife.

2) Online Vegetable Gardening Classes

Activity Description: The Virginia Cooperative Extension hosted a vegetable gardening class every Sunday in April 2020. Attendees learned about garden plans, crop families, crop rotation, pests and pesticide use, and harvesting. LaRC received positive feedback on these events in the past and looks to continue supporting and promoting similar workshops in the Hampton Roads community.

Metric and Evaluation of Water Quality Benefits: LaRC promoted this event via @LaRC announcements and received 431 visitors from 04/03/2020 through 04/09/2020. By advertising horticulture classes, LaRC encourages environmental stewardship at home. This outreach can potentially alleviate excessive use of pesticides and fertilizers, keeping unnecessary pollutants out of the stormwater system.

3) Watershed Hacks for the Home Webinar

Activity Description: The Chesapeake Stormwater Network and Friends hosted the webinar '*Victory*' *Rain Gardens and Meadows* on 04/17/2020. Attendees learned how to build a rain garden or revitalize an older one. Attendees also learned how to grow native and edible plants to attract birds and pollinators and to treat runoff. LaRC received positive feedback on these events in the past and looks to continue supporting and promoting similar workshops in the Hampton Roads community.

Metric and Evaluation of Water Quality Benefits: LaRC promoted this event via posting to the @LaRC announcements and received 83 visitors from 04/16/2020 through 04/17/2020. By advertising native plants classes, LaRC encourages the use native species, improve awareness of local pollinators, and promotes sustainable gardening practices. Native plants reduce the need for fertilizing (a pollutant of concern for the Chesapeake Bay), require less watering, and provide natural habitat for wildlife.

**Minimum Control Measure Three – Illicit Discharge Detection and Elimination
Annual Reporting Requirements – Part I E 3 e**

- (1) A confirmation statement that the MS4 map and information table have been updated to reflect any changes to the MS4 occurring on or before June 30 of the reporting year;
- (2) The total number of outfalls screened during the reporting period as part of the dry weather screening program; and
- (3) A list of illicit discharges to the MS4 including spills reaching the MS4 with information as follows:
 - (a) The source of illicit discharge;
 - (b) The dates that the discharge was observed, reported, or both;
 - (c) Whether the discharge was discovered by the permittee during dry weather screening, reported by the public, or other method (describe);
 - (d) How the investigation was resolved;
 - (e) A description of any follow-up activities; and
 - (f) The date the investigation was closed.

- (1) **Confirmation Statement:** LaRC's MS4 map and information table have been updated to reflect any changes to the MS4 occurring on or before 06/30/2020. LaRC will continue to maintain a robust GIS-based MS4 map that includes a storm sewer map and information table.
- (2) NASA LaRC has 16 MS4 outfalls. All 16 outfalls were inspected quarterly, totaling 64 inspections during the reporting period. Additionally, visual outfall inspections often occur weekly for several outfalls in the core industrial area. Screening reports are stored physically and electronically with the EMO.
- (3) A total of four (4) illicit discharges were reported and investigated:

Illicit Discharge Investigation #1: Sewage Release

- (a) Illicit discharge of sewage from sanitary sewer in crawlspace of B1219;
- (b,c) Observed and reported by LaRC personnel on 10/10/2019;
- (d-f) Incident was cleaned up with no sewage reaching state waters. The investigation was closed on 10/17/2019.

Illicit Discharge Investigation #2: Utility Sink Discharge

- (a) Personnel in B1251 unknowingly cleaned latex paint brushes in a utility sink plumbed to a sump pit that discharges to the storm sewer system;
- (b,c) Reported by LaRC personnel on 02/10/2020;
- (d-f) Maintenance crew was immediately notified. The sump water was removed by shop vacuums and sump floor was cleaned. The work to replumb the utility sink to the sanitary sewer was completed on 02/26/2020. The investigation was closed on 02/26/2020.

Illicit Discharge Investigation #3: Hydraulic Oil Spill

- (a) A hydraulic oil system was activated to provide lubricant to the wind tunnel motor drive pumps at NASA's Transonic Dynamic Tunnel. 15 minutes after activation, oil was observed spewing from pipes exiting above the roof.
- (b-c) The discharge was observed on 2/24/20 and reported by facility personnel

(d-f) Maintenance and LaRC Environmental were immediately notified. Facility staff took immediate action by blocking drains and adding absorbent pads to the roof and ground where oil was visible. For the next two days, personnel rotated pads in the drain system while vacuuming out water that was blocked in the storm drain system. The entire system was flushed with clean water on 2/25/20, and vacuum trucks skimmed the discharge. Fresh pads were added to the system to treat any lingering oil. The faulty hydraulic oil connections on the roof were also fixed to prevent future spills.

Illicit Discharge Investigation #4: Grease Discharge

(a) Illicit discharge of kitchen grease in a storm sewer grate behind of the B1248 (Fire Department);

(b,c) LaRC Environmental Staff observed the grease on the drain cover and reported the issue to the Fire Chief on 04/14/2020;

(d-f) Fire Department personnel pulled the grate cover and scrapped/vacuumed out the kitchen grease. The grate cover was cleaned as well. Corrective actions were completed on 4/14/20, the date of the discovery. The Fire Chief reminded staff of proper grease disposal practices. The investigation was closed on 4/14/20.

**Minimum Control Measure Four – Construction Site Stormwater Runoff Control
Annual Reporting Requirements – Part I E 4 d**

- (1) If the permittee implements a construction site stormwater runoff program in accordance with Part I E 4 a (3):
 - (a) A confirmation statement that land disturbing projects that occurred during the reporting period have been conducted in accordance with the current department approved standards and specifications for erosion and sediment control; and
 - (b) If one or more of the land disturbing projects were not conducted with the department approved standards and specifications, an explanation as to why the projects did not conform to the approved standards and specifications.
- (2) Total number of inspections conducted; and
- (3) The total number and type of enforcement actions implemented and the type of enforcement actions.

- (1) NASA LaRC implements a construction site stormwater runoff program in accordance with Part I E 4 a (3).
 - (a) **Confirmation Statement:** Land disturbing projects that occurred during the reporting period have been conducted in accordance with the current Department approved standards and specifications for erosion and sediment control and stormwater management.
 - (b) Not applicable.
- (2) The total number of NASA LaRC (MS4 staff) inspections conducted was 43 for the reporting year.
- (3) Per approved LaRC Annual Standards and Specifications, the contractor may remedy minor deficiencies that have no environmental impacts without formal enforcement action, if this is done in a timely manner and not a recurring issue. One (1) issue required formal enforcement action, through a signed *Corrective Action Notice* form.

Project	No. of Enforcement Actions	Type of Enforcement	Issues Driving the Enforcement
VAR10J220	1	Formal written Corrective Action Notice (CAN) submitted to the contractor and project team.	08/09/2019 – Illicit discharge of chemicals from improper chemical storage.

**Minimum Control Measure Five – Post Construction Stormwater Management
Annual Reporting Requirements – Part I E 5 i**

- (1) Implementation of a Virginia Stormwater Management Program in accordance with Part I E 5 a (1) and (2); (a) & (b)
- (2) Total number of inspections conducted on stormwater management facilities owned or operated by the permittee;
- (3) A description of the significant maintenance, repair, or retrofit activities performed on the stormwater management facilities owned or operated by the permittee to ensure it continues to perform as designed. This does not include routine activities such as grass mowing or trash collection;
- (4) A confirmation statement that the permittee submitted stormwater management facility information through the Virginia Construction Stormwater General Permit database for those land disturbing activities for which the permittee was required to obtain coverage under the General VPDES Permit for Discharges of Stormwater from Construction Activities in accordance with Part I E 5 f or a statement that the permittee did not complete any projects requiring coverage under the General VPDES Permit for Discharges of Stormwater from Construction Activities; and
- (5) A confirmation statement that the permittee electronically reported BMPs using the DEQ BMP Warehouse in accordance with Part I E 5 g and the date on which the information was submitted.

(1) Not applicable. LaRC does not implement a Virginia SWM Program in accordance with Part I E 5 a (1) and (2). LaRC's SWM program fits Part I E 5 a (3).

(2) Nineteen (19) formal inspections were conducted, once for each of the 19 stormwater management facilities operated at LaRC. EMO and the support contractor also conduct SWM facility inspections during construction as part of the ESC inspection process.

(3) The majority of the maintenance done on the SWM facilities was routine. The following significant maintenance was performed:

Paver Maintenance at Administration/Headquarters Building (B2101) – LaRC's pavers located at B2101 underwent major maintenance and restoration on 10/01/2019. The west end walkway beneath the canopy had been undermined by ants and needed repair.

(4) **Confirmation Statement:** LaRC did not complete any projects requiring coverage under the General VPDES Permit for Discharges of Stormwater from Construction Activities.

(5) **Confirmation Statement:** LaRC electronically reported BMPs using the DEQ BMP Warehouse on 08/23/2019. The approved submission was labeled as 20190823.

**Minimum Control Measure Six – Pollution Prevention/Good Housekeeping
Annual Reporting Requirements – Part I E 6 q**

- (1) A summary of any operational procedures developed or modified in accordance with Part I E 6 a during the reporting period;
- (2) A summary of any new SWPPPs developed in accordance Part I E 6 c during the reporting period;
- (3) A summary of any SWPPPs modified in accordance with Part I E 6 f or the rationale of any high priority facilities delisted in accordance with Part I E 6 h during the reporting period;
- (4) A summary of any new turf and landscape nutrient management plans developed that includes:
 - (a) Location and the total acreage of each land area; and
 - (b) The date of the approved nutrient management plan
- (5) A list of the training events conducted in accordance with Part I E 6 m, including the following information:
 - (a) The date of the training event;
 - (b) The number of employees who attended the training event; and
 - (c) The objective of the training event.

- (1) LaRC has not developed any new or modified any existing operational procedures during the reporting period. Existing written procedures are in accordance with Part I E 6 a, and are summarized in the MS4 Program Plan.
- (2) No new SWPPPs were developed during the reporting period. One existing SWPPP continued to be implemented.
- (3) No SWPPP modifications were needed or implemented. The one high priority facility was not delisted during the reporting period.
- (4) No new turf and landscape nutrient management plans were developed during the reporting period. LaRC has no applicable lands where nutrients are applied to a contiguous area of more than one (1) acre.
- (5) The following is a summary of completed training during the reporting year:

Training Requirement/ Objective	Selected Audience	Summary
<p>(1) Field personnel receive training in the recognition and reporting of illicit discharges no less than once per 24 months</p>	<p>Facility Environmental Coordinators (FECs)</p>	<p>Annual FEC Training – Training was held on 07/11/2019, 07/16/2019, and 08/07/2019 with 16, 12, and 8 attendees, respectively. A total of 36 FECs were trained. FECs are asked to monitor their facilities for illicit discharge concerns and are the primary “eyes and ears” for the EMO. The FEC training course goes into detail about stormwater pollution prevention and the importance of LaRC’s IDDE program. It also discusses how to make proper reports to the EMO.</p> <p>Annual Waste Management and Spill Response Training – Training was held on 07/10/2019, 08/08/2019, 05/06/2020, 05/13/2020, 05/19/2020, and 06/01/2020 with 151, 125, 200, 205, 86, and 73 attendees, respectively. This annual training is mandatory for all Center employees (including FECs) that use, handle, or request disposal of hazardous materials, oils, or hazardous waste. A total of 840 Center employees were trained. Stormwater pollution prevention is covered in the training, along with spill response to prevent materials from reaching storm drains.</p>
	<p>Environmental Management Office (EMO) employees, Jacobs (primary Center contractor) Personnel, and any interested LaRC personnel</p>	<p>Illicit Discharge/Stormwater Management Training – A special training session, titled <i>Recognizing and Reporting Stormwater Pollution</i>, was held on 06/30/2020 with 48 attendees. This training educated personnel on stormwater runoff pollution, impacts on water quality, and possible sources of pollution in the workplace. The training also provided tips on how to recognize illicit discharges, and resources available at LaRC to report an illicit discharge.</p>
	<p>Personnel who handle waste on Center.</p>	<p>Annual Waste Management and Spill Response Training – Training was held on 07/10/2019, 08/08/2019, 05/06/2020, 05/13/2020, 05/19/2020, and 06/01/2020 with 151, 125, 200, 205, 86, and 73 attendees, respectively. This annual training is mandatory for all Center employees (including FECs) that use, handle, or request disposal of hazardous materials, oils, or hazardous waste. A total of 840 Center employees were trained. Stormwater pollution prevention is covered in the training, along with spill response to prevent materials from reaching storm drains.</p>

Training Requirement/ Objective	Selected Audience	Summary
<p>(2) Employees performing road, street, and parking lot maintenance receive training in pollution prevention and good housekeeping associated with those activities no less than once per 24 months</p>	<p>Grounds Maintenance Contractor</p>	<p>Grounds Management Training – This training is delivered biannually. The most recent training was held on 06/04/2019 and had a total of 11 attendees. The training is focused on several stormwater best management practices specific to their daily workload, 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 EMO.</p>
	<p>Jacobs (primary Center contractor) Personnel, and any interested LaRC personnel</p>	<p>Maintenance Stormwater Management Training – A special training session, titled <i>Recognizing and Reporting Stormwater Pollution</i>, was held on 06/30/2020 with 48 attendees. This training educated personnel on stormwater runoff pollution, impacts on water quality, and possible sources of pollution in the workplace. The training also provided tips on how to recognize illicit discharges, and resources available at LaRC to report an illicit discharge.</p>
<p>(3) Employees working in and around maintenance, public works, or recreational facilities receive training in good housekeeping and pollution prevention practices associated with those facilities no less than once per 24 months</p>	<p>Facility Environmental Coordinators (FECs)</p>	<p>Annual FEC Training – Certain FECs are employed to manage “public works-type” facilities on Center. LaRC reviews good housekeeping and pollution prevention practices around Center, including these facilities, during annual FEC training. Training was held on 07/11/2019, 07/16/2019, and 08/07/2019 with 16, 12, and 8 attendees, respectively. A total of 36 FECs were trained. The FEC training course goes into detail about stormwater pollution prevention and the importance of good housekeeping principles in and around facilities.</p>
	<p>Jacobs (primary Center contractor) Personnel</p>	<p>Maintenance Stormwater Management Training – A special training session, titled <i>Environmental Refreshers: Erosion, Stormwater, and Waste</i>, was held on 06/17/2020 with 39 attendees. This training was targeted towards Jacobs PMs and CMs at LaRC. The training focused how to prevent, recognize, and report illicit discharges at construction sites and</p>

Training Requirement/ Objective	Selected Audience	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>Grounds Maintenance Contractor</p>	<p>Grounds Management Training – This training is delivered biannually. The most recent training was held on 06/04/2019 and had a total of 11 attendees. The training is focused on several stormwater best management practices specific to their daily workload, 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 EMO.</p>
<p>(4) Employees and contractors hired by the permittee who apply pesticides and herbicides are trained or certified in accordance with the Virginia Pesticide Control Act.</p>	<p>Grounds Maintenance Contractor</p>	<p>LaRC has very limited recreational facilities due to its 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 Grounds Management Training. The Grounds Maintenance contract is responsible for the minor amounts of pesticides and herbicides applied on Center. The program is primarily need-based and done via spot treatments (e.g., someone calls in a wasp nest to be sprayed). LaRC has required, through specific contract language, that the Grounds Maintenance contract operator carry all necessary state licenses. This contract language ensures that this requirement is met, or the operator can't work at LaRC.</p>
<p>(5) 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>Environmental Management Office (EMO)</p>	<p>Mr. Peter Van Dyke serves as LaRC's Water Program Manager. Mr. Van Dyke oversees all ESC and SWM Plan reviews and inspection programs. Mr. Van Dyke has ESC and SWM Combined Administrator certifications.</p> <p>Dual Combined Administrator #DCA0184 (Expires 4/17/2021)</p> <p>Ms. Jazmin Argarin provides contract support to LaRC's Water Program Manager. Support includes</p>

Training Requirement/ Objective	Selected Audience	Summary
<p>and its attendant regulations; and (6) Employees and contractors implementing the stormwater program obtain the appropriate certifications as required under the Virginia Stormwater Management Act and its attendant regulations;</p>		<p>site inspections and conducting multi-media field inspections of construction sites and maintenance tasks. Ms. Argarin is a dual combined inspector for ESC and SWM. She is also provisionally certified as a SWM plan reviewer.</p> <p>Dual Combined Inspector #DIN0965 (Expires 8/11/2021)</p>
<p>(7) Employees whose duties include emergency response have been trained in spill response. Training of emergency responders such as firefighters and law-enforcement officers on the handling of spill releases as part of a larger emergency response training shall satisfy this training requirement and be documented in the training plan.</p>	<p>All applicable Center Personnel</p>	<p>Annual Waste Management and Spill Response Training – Training was held on 07/10/2019, 08/08/2019, 05/06/2020, 05/13/2020, 05/19/2020, and 06/01/2020 with 151, 125, 200, 205, 86, and 73 attendees, respectively. This annual training is mandatory for all Center employees that use, handle, or request disposal of hazardous materials, oils, or hazardous waste. A total of 840 Center employees were trained. Stormwater pollution prevention is covered in the training, along with spill response to prevent materials from reaching storm drains.</p>
	<p>Emergency responders such as firefighters and law-enforcement officers</p>	<p>Emergency responders receive training on the handling of spill releases as part of a larger emergency response training.</p>

Part II TMDL Summaries	
TMDL Special Conditions – Chesapeake Bay TMDL Annual Reporting Requirements – Part II A 13	
a.	A list of BMPs implemented during the reporting period but not reported to the DEQ BMP Warehouse in accordance with Part I E 5 g and the estimated reduction of pollutants of concern achieved by each and reported in pounds per year;
b.	If the permittee acquired credits during the reporting period to meet all or a portion of the required reductions in Part II A 3, A 4, or A 5, a statement that credits were acquired;
c.	The progress, using the final design efficiency of the BMPs, toward meeting the required cumulative reductions for total nitrogen, total phosphorus, and total suspended solids; and
d.	A list of BMPs that are planned to be implemented during the next reporting period.

- a. All BMPs implemented during the reporting period were reported to the DEQ BMP Warehouse in accordance with Part I E 5 g. Submission ID was 20190823.
- b. Not applicable. NASA LaRC did not acquire credits to meet required reductions.
- c. The cumulative progress is identical to last year. The tasks scheduled for PY2 were annual street sweeping, catch basin cleaning and land conversion via demolition for B1194. Due to COVID, the demolition has been moved to PY3. The following table outlines the progress toward meeting the required cumulative reductions for total nitrogen, total phosphorus, and total suspended solids.

Cumulative Progress Report end of PY2:

Sub source	Pollutant	Load Reduction Required by 2023 (end of permit cycle)	Total Load Reduction Achieved to Date	Remaining Load Reductions Planned Permit Cycle	Cumulative Load Reductions Planned/Achieved through 6/30/2023
Regulated Urban Impervious	TN	57.28	237.32	200.67	437.99
Regulated Urban Pervious		46.04	31.48	18.12	49.6
Regulated Urban Impervious	TP	21.03	80.57	73.17	153.74
Regulated Urban Pervious		3.71	3.08	1.72	4.8
Regulated Urban Impervious	TSS	7952.08	25112.95	22400.50	47513.45
Regulated Urban Pervious		638.79	526.56	301.16	827.72

- d. The following is a list of control measures expected to be implemented during PY3:
- Two facilities are proposed to be demolished and will equate to a land-use change removing 0.92 acres of impervious surface and converted to a grass condition.
 - LaRC will continue the street sweeping program, annual mass load credit approach, during PY3.
 - LaRC will continue to implement a catch basin cleaning program.
 - LaRC will continue to implement ESC controls on land disturbing activities.

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

Date

VAR040092 NASA Langley Research Center
Permit Number MS4 Name