# Nutrient Management Plan

## for the

### Loudoun Campus

**Northern Virginia Community College**

Prepared for:

**Northern Virginia Community College**  
Facilities Planning Division, Rm. 314B  
8333 Little River Turnpike  
Annandale, VA 22003

**Paul W. Leeger/Certified Nutrient Management Planner - Certification No. 830**

**EEE Consulting, Inc.**  
8525 Bell Creek Road  
Mechanicsville, VA 23116

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### Location Information

<p>| | |</p>
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<tr>
<td>Physical Address</td>
<td>21200 Campus Drive</td>
</tr>
<tr>
<td>City State Zip</td>
<td>Sterling, VA 20164</td>
</tr>
<tr>
<td>Coordinates</td>
<td>+39 1’ 41.36”</td>
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<tr>
<td>NAD 83 Deg Min Sec</td>
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<tr>
<td>VAHU6 Watershed Code</td>
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<td>County</td>
<td>Loudoun</td>
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### Square Footage of Management Areas

<p>| | |</p>
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<tr>
<td>Total</td>
<td>51.87 acres (2,259,494 ft²)</td>
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<tr>
<td>Area 1</td>
<td>21.98 acres (957,432 ft²)</td>
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<tr>
<td>Area 2</td>
<td>29.89 acres (1,302,062 ft²)</td>
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<tr>
<td>Plan Start Date</td>
<td>July 15, 2018</td>
</tr>
<tr>
<td>Plan End Date</td>
<td>July 15, 2021</td>
</tr>
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Planner Signature: [Signature]

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1.0 INTRODUCTION AND SITE DESCRIPTION

1.1 Introduction

This Nutrient Management Plan (NMP) is for the Loudoun Campus of the Northern Virginia Community College (NOVA) located in the northwestern corner of Loudoun County, Virginia (Figure 1).

This NMP addresses only the nutrient management of turfgrass. Management of other vegetated areas containing trees, flowering ornamentals, small shrubs and groundcovers, is performed by each facility and their landscape contractor based on very site specific conditions including but not limited to the type and status of vegetated areas, annual soil testing, and the occurrence of pests and weeds. This NMP is effective for three years (until July 15, 2021) or until major renovation or other changes to maintenance practices occur. This NMP should be used as a resource for planning the quantity and timing of turfgrass nutrient application based on sound agronomic practices.

1.2 Site Description

The 99-acre Loudoun Campus contains turfgrass in many areas within the campus grounds, including around campus buildings, along roadways and around and within parking lots. The Loudoun Campus contains a large athletic field complex located at the northern end of the campus. All turf areas have been seeded with a tall fescue blend and are therefore categorized as cool season turf.

Turf is generally in good to very good condition for the main campus turf areas. Many of the athletic fields showed wear patterns in the main areas of activity, but the outside areas of athletic fields were in good condition.

The only irrigated turf areas are surrounding the large pond, fronting buildings LC, LR and LW. None of the athletic fields are irrigated.

There are eight environmentally sensitive areas including one stream, two retention ponds, and several other stormwater management facilities on the Loudoun Campus as shown on Figure 2. Section 4 addresses environmentally sensitive areas.

1.3 Current and Future Turf Maintenance

All turf maintenance is performed by NOVA’s landscaping contractor including mowing, herbicide, fertilizer and lime applications, as well as aeration and overseeding.
A landscaping maintenance contractor will be performing most turf management including all nutrient applications. It will be the responsibility of the Landscape Supervisor and the campus Facility Manager to ensure the management plan is followed.

2.0 SOIL SAMPLING AND ANALYSIS

Although most of the soils in the turf areas have been modified by cut and fill activities, many areas still retain some of the characteristics from the USDA soil survey and may still be classified as silty loams with fairly flat topography. Many of the soils in the athletic complex were originally very flat with poor drainage characteristics and slow infiltration rates. There has been much cut and fill activity in this area and stormwater drainage structures installed to aid in drainage.

Soil samples were collected on February 20, 2018 from six (6) different turfgrass areas across the campus and athletic fields and submitted for laboratory analysis including pH, buffer pH, phosphorus and potassium, and other soil properties. Figure 2 shows the locations of the soil sampling areas as well as environmental sensitive areas and Table 1 presents the laboratory results. Appendix A presents the soil laboratory data. No sampling was performed within wooded or landscaped areas.

Soil laboratory results were converted into nutrient management ratings based on the Virginia Nutrient Management Standards and Criteria (VNMS&C). Soil phosphorous levels ranged from Low- to Medium-. Potassium levels ranged from Medium- to High-. Soil samples were generally acidic, averaging 6.1, slightly below the pH target level of 6.2 for cool season turf.

3.0 NUTRIENT MANAGEMENT AREAS

Based on the soil test results, current turf conditions, the intensity of use, and overall visibility and aesthetic considerations, two Nutrient Management Areas (NMAs) at the Loudoun Campus have been established for this NMP. The number of nutrient management areas was kept to a minimum to facilitate effective management and still protect water quality and maintain healthy turf. Figures 3 and 4 show the two nutrient management areas and liming areas, respectively. Tables 2a and 2b present the application schedule for the nutrient management and liming areas, discussed in greater detail in Section 3.1 below.

NMA 1 totals 21.98-acres and includes all the main campus turf. NMA 2 total 29.89-acres and includes the athletic fields located on the northern portion of the campus.

3.1 Nutrient and Liming Applications

3.1.1 Nitrogen, Phosphorous and Potassium

Nitrogen, phosphorous (P2O5) and potassium (K2O) are the three macronutrients essential for
healthy turf and, along with lime applications, are the central focus of the NMP. Phosphorous and potassium recommendations are based on the soil laboratory results. Nitrogen recommendations are based on the turfgrass needs, not soil test results, which vary based on the type of turfgrass (cool vs. warm season) and level of management (standard vs. intensive). Recommended rates and timing of all three macronutrients are based on the VNMS&C. This NMP uses the most restrictive application rate for each NMA based on individual sample results where multiple sampling areas are part of the same NMA.

The acceptable window for nitrogen application for cool season fescue turf at the Loudoun Campus is from March 4 until December 1. Although aggressive spring and summer nitrogen fertilization can result in lush, dark green foliage, this occurs at the expense of the turf’s root system. Turf with an inadequate root system will then struggle in the summer heat and moisture conditions. Additionally, too much nitrogen in spring and summer for cool season turf can result in leaching or runoff to nearby waterbodies. For these reasons, only 0.5 pounds of slow release nitrogen (per 1000 ft²) is recommended during April to May for the campus to provide a sustained growth response without a flush in shoot growth at the expense of the roots. The bulk of nitrogen should be applied in monthly increments from September through November.

As phosphorous and potassium are not as mobile as nitrogen and generally reside in soil for longer periods of time, the application timing of these two macronutrients is not as critical as nitrogen. Incremental applications of these nutrients from September to November are recommended.

### 3.1.2 Lime and pH

Soil acidity is critical to plants because it affects the availability of nutrients in the soil and potential leaching of nutrients from the soil. Cool season fescue prefers a soil pH that is slightly acidic, at a level of approximately 6.2 Standard Units (SU). Periodic lime applications are necessary for many Virginia soils to correct low pH, add buffering capacity, to provide secondary nutrients calcium and magnesium as well as some micronutrients. Liming rates are based on the soil test pH and the buffer indices. Based on the soil samples, a single lime application of 25 pounds per 1,000 square feet is recommended for soil sampling areas LA-1, LA-2, LA-3, LC-1, and LC-2. Soil sampling area LC-3 does not require lime for the first year of this NMP. Tables 2a and 2b list the liming schedule and application rates and Figure 4 shows the areas that require lime for the first year of this NMP. The soil should be tested for soil pH and Buffer pH in the late fall to winter in each year and if necessary liming should continue annually.

### 3.2 Problem Turfgrass Areas and Temporarily Inactive Nutrient Management Areas

If poor turf conditions are observed during the implementation of this NMP, the problem areas should be temporarily removed from nutrient management and considered for corrective action.
Corrective action options will vary by area but may include additional soil amendments (compost/topsoil), aeration or shallow tilling, and the use of mulch, turf mats and blankets. Alternative landscaping such as pavers, and other hardscape treatments may be the best alternative for some areas. If turfgrass is the desired vegetative cover, the soil should be resampled and analyzed for pH and buffer pH and adjusted accordingly with limestone as part of corrective action.

3.3 Selection of Fertilizers

Specific fertilizers have not been selected as a part of this NMP to provide greater flexibility and cost savings. The landscape contractor has the option to select either commonly used fertilizer blends that they may already have in stock or are readily available, or they can use custom blends, a common practice in the commercial landscaping industry. Slow release nitrogen containing fertilizers are recommended. This NMP will require revision should the landscape contractor and the campus Facility Manager decide to use animal manures or Class B biosolids (not of exceptional quality).

Provided the maximum rate of nitrogen per application and the total annual rates of all three nutrients are not exceeded as detailed in Tables 2a and 2b, the landscape contractor may use their discretion with the exact ratio of nutrients applied per application.

3.4 Pre- and Post-Emergent Herbicides

Weed control is a necessary requirement for healthy turf and has been implemented in the past at the Loudoun Campus. In the previous NMP period, pre and post emergent herbicides containing nitrogen fertilizers were applied in spring and early summer months for the campus grounds. As presented in Section 3.1.1, only one application of slow release nitrogen is recommended in the late spring. Therefore, additional straight application of herbicides without nitrogen additives may be required. The Virginia Cooperative Extension (VCE) Publication 430-532 presents a more detailed discussion of pre and post emergent herbicides for cool season turf.

3.5 Precautions for Fertilizer Applications

General precautions for fertilizer application include:

- Avoid applying fertilizers on steep slopes 48-hours prior to a rain event.
- Do not apply fertilizers to frozen or snow covered ground, nor should they ever be used as ice melt.
- Avoid/minimize application of fertilizers to impervious areas such as parking lots, roads, and sidewalks, and within 25 feet of environmentally sensitive areas and stormwater collection/management facilities.
• Remove any granular materials that land on impervious surfaces by sweeping and collecting, and either put the collected material back in the bag or spread it onto the turf.

4.0 ENVIRONMENTALLY SENSITIVE AREAS AND RECOMMENDED BUFFERS

Eight environmentally sensitive areas including stormwater management facilities were identified on the Loudoun Campus as shown on Figures 2, 3, and 4:

• Intermittent stream located in the southeastern corner of the campus
• Two manmade lakes, located in the center portion of the main campus
• Linear bio-retention basins are located to the north of the North Parking lot
• Dry detention pond located directly to the west
• Bio-retention basin located just west of the greenhouse.
• Bio-retention basin located just west of the Classroom Building.
• Detention Basin on the west side of the Animal Science Building
• Drainage features located in the northern end of the athletic field portion of the property.

A no-fertilizer/pesticide application buffer area of at least 25 feet and preferably 50 feet should be established around these sensitive areas. Where practicable, native vegetation may be an alternative to turf in the buffer areas. The large lake contains virtually no vegetated buffer. It is recommended that a vegetated buffer be installed around the lake to improve water quality. Turf in and around the detention basins should be mowed at a greater height.

5.0 OTHER TURF MANAGEMENT CONSIDERATIONS

Aeration - Extensive core cultivation/aeration in the late summer to early fall is recommended for the Loudoun campus. Core aeration is very disruptive to surface smoothness, but it is the best way to relieve the physical effects of soil compaction and increase soil oxygen levels.

Grass Seed Type – VCE 2014-2015 - Virginia Turfgrass Variety Recommendations https://www.sites.ext.vt.edu/newsletter-archive/turfgrass/index.html - (most recent year) should be referenced when selecting seed mix for over-seeding. The type should be suitable to environmental conditions of the Northern Virginia Transition zone. A general recommendation for the Loudoun Campus is 90% Tall Fescue possibly blended with 10% Kentucky Bluegrass for turf in primarily sunny locations. Fine fescue blends may be more appropriate for shadier turf areas.

Iron - Iron applications (particularly foliar applications) may periodically be used for enhanced greening as an alternative to nitrogen. These applications are most beneficial if applied in late spring through summer for cool season grasses and in late summer/fall applications for warm-season grasses. Since iron is a micronutrient, its application levels are very low. The color
response is short-lived (typically two to three weeks) because the iron-induced color response in
the leaves is removed by mowing.

**Returning and Management of Grass Clippings** - The recycling of grass clippings on turf should
be encouraged as an effective means of recycling nitrogen, phosphorus, and potassium. Where
aesthetics allow, all clippings from mowing events should be returned to the turf rather than
discharging them onto sidewalks or streets. Clippings should not be blown onto impervious
surfaces or surface waters, dumped down stormwater drains, or piled outside where rainwater will
leach out the nutrients creating the potential for nutrient loss to the environment.

**Spreader Equipment Calibration** - Spreader equipment calibration is critical to NMP
implementation. The landscape contractor should supply equipment calibration records to the
campus Facility Manager on a routine basis.

### 6.0 RECORDKEEPING

Proper NMP implementation requires diligent record keeping of fertilizer, lime and herbicide
applications, and turfgrass conditions. Important information to retain with the plan includes soil
tests reports; spreader settings; calibration results, dates of fertilizer application and rates applied;
seeding or renovation; and unusual stresses caused by disease, drought, and pests. This
information will also provide the background needed for future plan revisions.

### 7.0 REFERENCES

Nutrient Management Training and Certification Regulations 4VAC50-85 (effective date
November 23, 2014)

Virginia Nutrient Management Standards and Criteria (Revised July 2014):

Spring and Summer Lawn Management Considerations for Cool-Season Turfgrasses 430-532:

Winter Management and Recovery Tips to Optimize Athletic Field Safety and Performance for
Spring Sports, VCE Publication 430-408: (http://pubs.ext.vt.edu/430/430-408/430-408_pdf.pdf)

Virginia Cooperative Extension Publication 2014-2015 - Virginia Turfgrass Variety
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<th>Soil Sampling Area ID</th>
<th>Square Feet</th>
<th>Soil pH</th>
<th>Buffer pH</th>
<th>P (Mehlich I) ppm</th>
<th>P (H/M/L)</th>
<th>K (Mehlich I) ppm</th>
<th>K (H/M/L)</th>
<th>Soil description</th>
<th>Turf Species</th>
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<td>LA-1</td>
<td>369,525</td>
<td>6.1</td>
<td>6.81</td>
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<td>55</td>
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<td>cool season, fescue</td>
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<td>LA-2</td>
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<td>LC-1</td>
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<td>6.81</td>
<td>6</td>
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<td>93</td>
<td>H-</td>
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<td>LC-3</td>
<td>140,685</td>
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<td>DNC*</td>
<td>2</td>
<td>L</td>
<td>105</td>
<td>H-</td>
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<td>cool season, fescue</td>
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Notes: SU = Standard Units; ppm = parts per million; P and K ratings are from Virginia Nutrient Management Standards & Criteria. DNC* = Buffer pH did not compute because the pH was above 6.2, according to Waypoint Analytical personnel.
Table 2a – Nutrient Application Worksheet - Nutrient Management Area 1

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<th>N-P-K Annual Nutrient Needs (lbs/1000 ft²)¹</th>
<th>Application Month/Day¹,²</th>
<th>Amendment Material Notes</th>
<th>% Slow Release N</th>
<th>Total N (lbs/1000 ft²)</th>
<th>Total P205 (lbs/1000 ft²)</th>
<th>Total K20 (lbs/1000 ft²)</th>
<th>Lime Recommendation (lbs/1000 ft²)³</th>
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<tr>
<td>2.8*-2-1</td>
<td>April 15-May 15</td>
<td>N – Fertilize &amp; Lime</td>
<td>50% or greater</td>
<td>0.5</td>
<td>0</td>
<td>0</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>Sept 1</td>
<td>Aerate, Overseed &amp; Fertilize</td>
<td>50% or greater</td>
<td>0.9</td>
<td>1.0</td>
<td>0.50</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Oct 1</td>
<td>Fertilize</td>
<td>50% or greater</td>
<td>0.9</td>
<td>0.50</td>
<td>0.25</td>
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<tr>
<td></td>
<td>Nov 1</td>
<td>Fertilize &amp; Lime</td>
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<td>0.50</td>
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<td>Totals:</td>
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<td></td>
<td>2.8</td>
<td>2.0</td>
<td>1.0</td>
<td></td>
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Notes:
- * Up to 3.5 lbs of nitrogen per 1000 ft² is allowed for this NMA per the VNMS&C, but for consistency across all NMAs only 2.8 lbs per 1000 ft² is recommended in this plan.
- 1. Fertilizer recommendations are flexible if the following conditions are met: a) no more than 0.7 pounds of Water Soluble N per 1000 ft² is applied within a 30-day period; b) no more than 0.9 pounds of Total N (per 1000 ft²) may be applied within a 30-day period; and c) Total annual fertilizer amounts for each nutrient should not exceed the Annual Nutrient Needs listed in column 1.
- 2. The month and day designations are a general guideline. Apply as close to the month as possible, using the day designation to determine the interval between applications.
- 3. Lime areas are shown on Figure 4. 25 lbs per 1000 ft² of lime is recommended for portions of Nutrient Management Area 1. Lime applications are for the first year of soil sampling only. Liming for successive years should be based on additional soil pH and buffer pH testing.
- 4. Do not apply inorganic fertilizers on frozen or snow-covered ground, or on denuded areas. Any fertilizer that makes its way onto impervious surfaces should be swept or blown back into pervious turfgrass – covered areas. Do not use fertilizers as ice melt.
- 5. Use a drop spreader for application of inorganic fertilizers on turf areas less than 10 feet wide or on slopes greater than 2%.
- 6. Apply pre- and or post-emergent herbicides as needed, but do not use fertilizer containing herbicide prior to April 15th and conditions must be met in Note 1.
Table 2b - Nutrient Application Worksheet-Nutrient Management Area 2

**Site:** Loudoun Campus – NOVA  
**Begins:** 7/15/2018  
**Expires:** 7/15/2021  
**Management Area:** 2 – Athletic Fields  
**Square Feet:** 1,302,062  
**Landscape Plants:** Cool Season Turf (Fescue)

<table>
<thead>
<tr>
<th>N-P-K Annual Nutrient Needs (lbs/1000 ft²)¹</th>
<th>Application Month/Day¹,²</th>
<th>Amendment Material Notes</th>
<th>% Slow Release N</th>
<th>Total N (lbs/1000 ft²)</th>
<th>Total P2O5 (lbs/1000 ft²)</th>
<th>Total K2O (lbs/1000 ft²)</th>
<th>Lime Recommendation (lbs/1000 ft²)³</th>
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<tr>
<td>2.8-2.0-1.0</td>
<td>April 15-May 15</td>
<td>N – Fertilize &amp; Lime</td>
<td>50% or greater</td>
<td>0.5</td>
<td>0</td>
<td>0</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td>Sept 1</td>
<td>Aerate, Overseed &amp; Fertilize</td>
<td>50% or greater</td>
<td>0.9</td>
<td>1.0</td>
<td>0.50</td>
<td>25</td>
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<tr>
<td></td>
<td>Oct 1</td>
<td>Fertilize</td>
<td>50% or greater</td>
<td>0.9</td>
<td>0.50</td>
<td>0.25</td>
<td>25</td>
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<tr>
<td></td>
<td>Nov 1</td>
<td>Fertilize &amp; Lime</td>
<td>50% or greater</td>
<td>0.5</td>
<td>0.50</td>
<td>0.25</td>
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<tr>
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<td><strong>Totals:</strong></td>
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<td><strong>2.8</strong></td>
<td><strong>2.0</strong></td>
<td><strong>1.0</strong></td>
<td></td>
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</table>

**Notes:**
1. Fertilizer recommendations are flexible provided the following conditions are met: a) no more than 0.7 pounds of Water Soluble N per 1000 ft² is applied within a 30-day period; b) no more than 0.9 pounds of Total N (per 1000 ft²) may be applied within a 30-day period; c) the April 15-May 15 and the November 1 nitrogen applications should not exceed 0.5 lbs per 1000 ft²; and d) Total annual fertilizer amounts for each nutrient should not exceed the Annual Nutrient Needs listed in column 1. Soluble nitrogen rates of 0.25 pounds per 1000 ft² or less which may be a component of a pesticide or minor element application may be applied at any time the turf is actively growing, but must be considered with the total annual nitrogen application rate.
2. The month and day designations are a general guideline. Apply as close to the month as possible, using the day designation to determine the interval between applications.
3. Lime areas are shown on Figure 4. 25 lbs per 1000 ft² of lime is recommended for all of Nutrient Management Area 2. Lime applications are for the first year of soil sampling only. Liming for successive years should be based on additional soil pH and buffer pH testing.
4. Make the April – May application only if turf use warrants additional nitrogen for sustaining desired growth and/or color.
5. Do not apply inorganic fertilizers on frozen or snow-covered ground, or on denuded areas. Any fertilizer that makes its way onto impervious surfaces should be swept or blown back into pervious turfgrass – covered areas. Do not use fertilizers as ice melt.
6. Use a drop spreader for application of inorganic fertilizers on turf areas less than 10 feet wide or on slopes greater than 2%.
7. Apply pre and or post emergent herbicides as needed, but do not use fertilizer containing herbicide prior to April 15th and conditions must be met in Note 1.
FIGURES
Figure 1: Loudoun Campus–Project Location
Figure 2: Loudoun Campus-Soil Sampling Areas
Figure 3: Loudoun Campus-Nutrient Management Areas
Figure 3: Loudoun Campus
Nutrient Management Areas
NVCC NMP

Drainage Features
Retention Pond
Bioretention Basin
Bioretention Facility
Detention Basin

Date: July, 2018
Author: KMM
Source: 2017 VBMP Imagery
Projection: NAD 1983 StatePlane Virginia North FIPS 4901 Feet

Northern Virginia Community College (NVCC)
Environmental Sensitive Area

Nutrient Management Areas
Area 1
Area 2

Retention Pond
Bioretention Basin
Detention Basin
Figure 4: Loudoun Campus Liming Requirements
APPENDICES
### SOIL ANALYSIS REPORT

**Analytical Method(s):** SMP Buffer pH, Mehlich 3, Loss On Ignition, Water pH

<table>
<thead>
<tr>
<th>Sample ID</th>
<th>OM % Rate</th>
<th>W/V</th>
<th>ENR</th>
<th>Soil Class</th>
<th>Phosphorus</th>
<th>Potassium</th>
<th>Magnesium</th>
<th>Calcium</th>
<th>Sodium</th>
<th>pH</th>
<th>Acidity</th>
<th>C.E.C</th>
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| LA-1  | 4.2 M      | 122 | 17 L | 77 L       | 149 M      | 1163 M    | 6.1       | 6.81    | 1.2    | 8.5
| LA-2  | 4.3 M      | 125 | 7 VL  | 63 L       | 159 H      | 963 M     | 5.8       | 6.78    | 1.5    | 7.8
| LA-3  | 4.0 M      | 116 | 10 VL | 116 M      | 182 H      | 1365 M    | 6.1       | 6.79    | 1.4    | 10.0
| LC-1  | 4.2 M      | 124 | 9 VL  | 97 M       | 146 H      | 879 M     | 5.9       | 6.81    | 1.2    | 7.1
| LC-2  | 4.3 M      | 123 | 21 L  | 131 H      | 202 H      | 1149 M    | 6.1       | 6.81    | 1.2    | 9.0

### Percent Base Saturation

<table>
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<tr>
<th>Sample ID</th>
<th>K %</th>
<th>Mg %</th>
<th>Ca %</th>
<th>Na %</th>
<th>H %</th>
<th>NO₃-N ppm Rate</th>
<th>S ppm Rate</th>
<th>Zn ppm Rate</th>
<th>Mn ppm Rate</th>
<th>Fe ppm Rate</th>
<th>Cu ppm Rate</th>
<th>B ppm Rate</th>
<th>SS ms/cm Rate</th>
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</tbody>
</table>

Values on this report represent the plant available nutrients in the soil. Rating after each value: VL (Very Low), L (Low), M (Medium), H (High), VH (Very High). ENR - Estimated Nitrogen Release. C.E.C. - Cation Exchange Capacity.

Explanation of symbols: % (percent), ppm (parts per million), lbs/A (pounds per acre), ms/cm (milli-mhos per centimeter), meq/100g (milli-equivalent per 100 grams). Conversions: ppm x 2 = lbs/A, Soluble Salts ms/cm x 640 = ppm.

This report applies to sample(s) tested. Samples are retained a maximum of thirty days after testing.

Analysis prepared by: Waypoint Analytical Virginia, Inc.

Pauric McGroarty

---

*Send To: EEE Consulting Inc
201 Church Street
Suite C
Blacksburg VA 24060*

*Grower: NVCC- Loudoun
21200 Campus Dr*

*“Every acre...Every year.”™*

*Report Number: 18-046-0756
Account Number: 78934*
### SOIL FERTILITY RECOMMENDATIONS

<table>
<thead>
<tr>
<th>Sample ID</th>
<th>Field ID</th>
<th>Intended Crop</th>
<th>Yield Goal</th>
<th>Lime Tons/A</th>
<th>Nitrogen N lb/A</th>
<th>Phosphate P₂O₅ lb/A</th>
<th>Potash K₂O lb/A</th>
<th>Magnesium Mg lb/A</th>
<th>Sulfur S lb/A</th>
<th>Zinc Zn lb/A</th>
<th>Manganese Mn lb/A</th>
<th>Iron Fe lb/A</th>
<th>Copper Cu lb/A</th>
<th>Boron B lb/A</th>
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</table>

**Comments:**

Sample(s) : LA-2, LA-3, LC-1, LC-2 Crop: Lawn

- Apply the amount of lime recommended in first page to raise pH
- For a more in depth explanation of the soil test and recommendations, go to our website www.aleastern.com and select the "Lawn and Garden" tab at the top of home page. Under the "How to Understand a Soil Test Report" header you will find the link to the article "Soil Test Report & Fertilizer Recommendation Explained".

The amount of fertilizer recommended on the first page is the total amount needed for the entire growing season. Split into 3-4 applications to keep the lawn green and prevent fertilizer loss. You should not apply more than 0.7 lbs of soluble nitrogen per 1000 square feet in a 30 day period. Or more than 0.9 lbs of nitrogen per 1000 square feet if you are using a slow or controlled release product in a 30 day period. Custom blend is best to meet exactly the requirement, if this is impossible, the above specific fertilizer application is a general guideline, if the specified grades can not be found, replace with fertilizer having similar N:P:K ratio. The best time to apply fertilizer for cool season grass (bluegrass, fescue, ryegrass) is in the Fall when the grass is growing. For Mid-Atlantic region the time is from late August to November. For Northeast region the time is from mid August to October. Fall application should start as soon as the day time high temperature is below 80-85F, apply with the interval of one month. If you start application late in the Fall and do not finish all three applications, repeat the same applications in the Fall of next year. Spring application is recommended when exceptional fertilizer loss due to heavy spring rain leaching and the grasses look pale green. Spring application can start as soon as the grass starts to grow in April. In the case of exceptional warm spring, the application can be made earlier.

"The recommendations are based on research data and experience, but NO GUARANTEE or WARRANTY expressed or implied, concerning crop performance is made."

---

Pauric McGroary

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**SOIL ANALYSIS REPORT**

**Analytical Method(s):** SMP Buffer pH  Mehlich 3  Loss On Ignition  Water pH

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<thead>
<tr>
<th>Sample ID</th>
<th>Field ID</th>
<th>OM %</th>
<th>W/V</th>
<th>ENR</th>
<th>Phosphorus</th>
<th>Potassium</th>
<th>Magnesium</th>
<th>Calcium</th>
<th>Sodium</th>
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<th>Sample ID</th>
<th>Field ID</th>
<th>Soil Class</th>
<th>% Base Saturation</th>
<th>Nitrate</th>
<th>Sulfur</th>
<th>Zinc</th>
<th>Manganese</th>
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</table>

Comments:

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