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COMMONWEALTH of VIRGINIA
DEPARTMENT OF CONSERVATION AND RECREATION

July 29, 2021

Northern Virginia Community College Facilities Planning and Support Services
Northern Virginia Community College Loudoun Campus
8333 Little River Turnpike
Annandale VA 22003

Your nutrient management plan (NMP) dated 7/15/2021 for Northern Virginia Community College Loudoun Campus located in Loudoun County has been approved by the Virginia Department of Conservation and Recreation (DCR). The approved plan is for 50.80 acres.

This site has not been inspected by DCR and this approval is contingent upon field conditions being as stated in the NMP. Any revisions to this plan must be approved by DCR. Please note that this letter should be kept with the NMP and supporting documentation including nutrient application records. This plan expires on 7/15/2024. Please feel free to contact me with any questions or concerns regarding this approval.

Best regards,

A handwritten signature in cursive script that reads "Anita Tuttle".

Anita Tuttle
Urban Nutrient Management Coordinator
Division of Soil and Water Conservation
600 East Main Street, 24th Floor
Richmond VA 23219
(804) 513-5958

Nutrient Management Plan for the Loudoun Campus Northern Virginia Community College

Prepared for:

**Northern Virginia Community College
Facilities Planning & Support Services, CW312
8333 Little River Turnpike
Annandale, VA 22003**

Prepared By:

Sara J. Rilveria/Certified Nutrient Management Planner - Certification No. 943

WSSI, Inc.

**8525 Bell Creek Road
Mechanicsville, VA 23116**

Location Information	
Physical Address	<i>21200 Campus Drive</i>
City State Zip	<i>Sterling, VA 20164</i>
Coordinates	<i>+39 1' 41.36"</i>
NAD 83 Deg Min Sec	<i>- 77 23' 34.72"</i>
VAHU6 Watershed Code	<i>PL20 – Potomac River-Selden Island</i>
County	<i>Loudoun</i>
Square Footage of Management Areas	
Total	<i>50.80 acres (2,213,283 ft²)</i>
Area 1	<i>15.46 acres (673,660 ft²)</i>
Area 2	<i>35.34 acres (1,539,708 ft²)</i>
Plan Start Date	<i>July 15, 2021</i>
Plan End Date	<i>July 15, 2024</i>
Planner Signature	<i>Sara Rilveria</i>

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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 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, 2024 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 twelve environmentally sensitive areas including one stream, two retention basins, 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 March 16, 2021 from five (5) 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 environmentally 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 L+ to H+. Potassium levels ranged from M to H. Soil pH ranged from 5.6 to 6.1 all 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 15.46-acres and NMA 2 totals 35.34-acres. Both nutrient management areas include a mixture of main campus turf and 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 six weeks prior to the last spring average frost and six weeks after the first fall average frost 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 40 pounds per 1,000 square feet is recommended for soil sampling areas LA-1, LA-3, LO-1, LO-2 and 60 pounds per 1,000 square feet for areas LA-2 and LO-3 spread out into two applications of 30 pounds per 1000 square feet each. 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.

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

Twelve 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
- Bioretention facility under the LHEC building overhang
- Two retention basins located in the center portion of the main campus
- Two bioretention facilities are located north of the northeast parking lot
- Filterra east of the bioretention facilities north of the northeast parking lot
- Dry detention basin located north of the northeast parking lot
- Bioretention facility located west of LG1 building
- Bioretention facility located west of LD building
- Detention Basin on the west side of LA building
- Drainage features located in the northernmost portion of the athletic fields

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 – Reference the most recent Virginia Cooperative Extension’s *Virginia Turfgrass Variety Recommendations found online at <https://www.sites.ext.vt.edu/newsletter-archive/turfgrass/index.html>* 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. NMP Application record keeping forms are included in Appendix B for use for tracking fertilizer, lime, pesticide and herbicides.

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):

<https://www.dcr.virginia.gov/document/standardsandcriteria.pdf>

Urban Nutrient Management Handbook (August 16, 2019); 430-350: <https://resources.ext.vt.edu/>

A Spreadsheet-Based Soil Test Converter for Turfgrass Professionals and Nutrient Management Planning in Virginia (November 1, 2018); SPES-60P: <https://resources.ext.vt.edu/>

Soil Test Note #1 – Explanation of Soil Tests (December 1, 2018): <https://resources.ext.vt.edu/>

TABLES

Table 1: Soil Test Summary

Site:	Loudoun Campus - NOVA								
Testing Lab:	Waypoint Analytical (Formerly A&L Eastern Laboratories)								
Sample Date:	03/16/2021								
Soil Sampling Area ID	Square Feet	Soil pH	Buffer pH	P (Mehlich I) ppm	P (H/M/L)	K (Mehlich I) ppm	K (H/M/L)	Soil description	Turf Species
LA-1	349,346	5.9	6.80	16	M+	60	M	Dark Brown, Sandy Loam	cool season, fescue
LA-2	440,613	5.6	6.72	9	M-	67	M	Dark Brown, Sandy Loam	cool season, fescue
LA-3	497,679	5.9	6.77	5	L+	84	M+	Dark Brown, Sandy Loam	cool season, fescue
LO-1	475,775	6.1	6.79	7	M-	81	M+	Dark Brown, Sandy Loam	cool season, fescue
LO-2	324,314	6.1	6.78	46	H+	109	H	Dark Brown, Sandy Loam	cool season, fescue
LO-3	125,641	5.7	6.68	14	M	48	M-	Dark Brown, Sandy Loam	cool season, fescue

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 for Nutrient Management Area 1

Site: Loudoun Campus – NOVA

Begins: 7/15/2021 Expires: 7/15/2024

Nutrient Management Area: 1 (LA-1 & LO-2)

Square Feet: 673,660

Landscape Plants: Cool Season Turf (Fescue)

N-P-K Annual Nutrient Needs (lbs/1000 ft ²) ¹	Application Month/Day ^{1,2}	Amendment Material Notes	% Slow Release N	Total N (lbs/1000 ft ²)	Total P2O5 (lbs/1000 ft ²)	Total K2O (lbs/1000 ft ²)	Lime Recommendation (lbs/1000 ft ²) ³
2.8*-.5*-.75*	April 15-May 15	N – Fertilize & Lime	50% or greater	0.5	0	0	40 (LA-1 & LO-2)
	Sept 1	Aerate, Overseed & Fertilize	50% or greater	0.9	0.25	0.25	
	Oct 1	Fertilize	50% or greater	0.9	0.25	0.25	
	Nov 1	Fertilize & Lime	50% or greater	0.5	0	0.25	
	Totals:			2.8	.5	.75	

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. Up to 1.0 lb. of P2O5 per 1000 ft² is allowed per soil test results but only 0.5 lb. of P2O5 per 1000 ft² is recommended in this plan. Up to 1.5 lbs. of K2O per 1000 ft² is allowed per soil test results but only 0.75 lbs. of K2O 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. Apply 40 lbs. per 1000 ft² of lime for soil sampling areas LA-1 and LO-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. 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 15. Conditions must be met in Note 1.

Table 2b: Nutrient Application Worksheet for Nutrient Management Area 2

Site: Loudoun Campus – NOVA

Begins: 7/15/2021 Expires: 7/15/2024

Management Area: 2 (LA-2, LA-3, LO-1 & LO-3)

Square Feet: 1,539,708

Landscape Plants: Cool Season Turf (Fescue)

N-P-K Annual Nutrient Needs (lbs/1000 ft ²) ¹	Application Month/Day ^{1,2}	Amendment Material Notes	% Slow Release N	Total N (lbs/1000 ft ²)	Total P2O5 (lbs/1000 ft ²)	Total K2O (lbs/1000 ft ²)	Lime Recommendation (lbs/1000 ft ²) ³
2.8*-1.5*-1.0*	April 15-May 15	N – Fertilize & Lime	50% or greater	0.5	0	0	40 (LA-3 & LO-1) 30 (LA-2 & LO-3)
	Sept 1	Aerate, Overseed, Fertilize & Lime	50% or greater	0.9	0.5	0.50	30 (LA-2 & LO-3)
	Oct 1	Fertilize	50% or greater	0.9	0.5	0.25	
	Nov 1	Fertilize & Lime	50% or greater	0.5	0.5	0.25	
	Totals:			2.8	1.5	1.0	

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. Up to 2.0 lbs. of P2O5 per 1000 ft² is allowed per soil test results but only 1.5 lbs. of P2O5 per 1000 ft² is recommended in this plan. Up to 2.0 lbs. of K2O per 1000 ft² is allowed per soil test results but only 1.0 lbs. of K2O per 1000 ft² is recommended in this plan.

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. Apply 40 lbs. per 1000 ft² to soil sampling areas LA-3 and LO-1 and a total of 60 lbs. per 1000 ft² spread out over two applications of 30 lbs. per 1000 ft² each for soil sampling areas LA-2 and LO-3). 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.

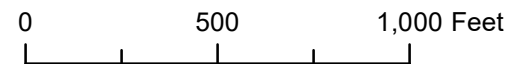
FIGURES

Figure 1: Project Location

 Loudoun Campus Boundary



Date: June 2021
Author: MGM
Source: Esri World Imagery Basemap
Projection: NAD 1983 StatePlane Virginia North FIPS 4501 Feet



Loudoun Campus
Figure 1: Project Location
NVCC NMP

Figure 2: Soil Sampling Areas



Loudoun Campus Boundary

Environmentally Sensitive Area

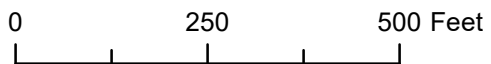
Construction Area. Removed from Active Management.

Soil Sampling Areas:

- LA-1
- LA-2
- LA-3
- LO-1
- LO-2
- LO-3

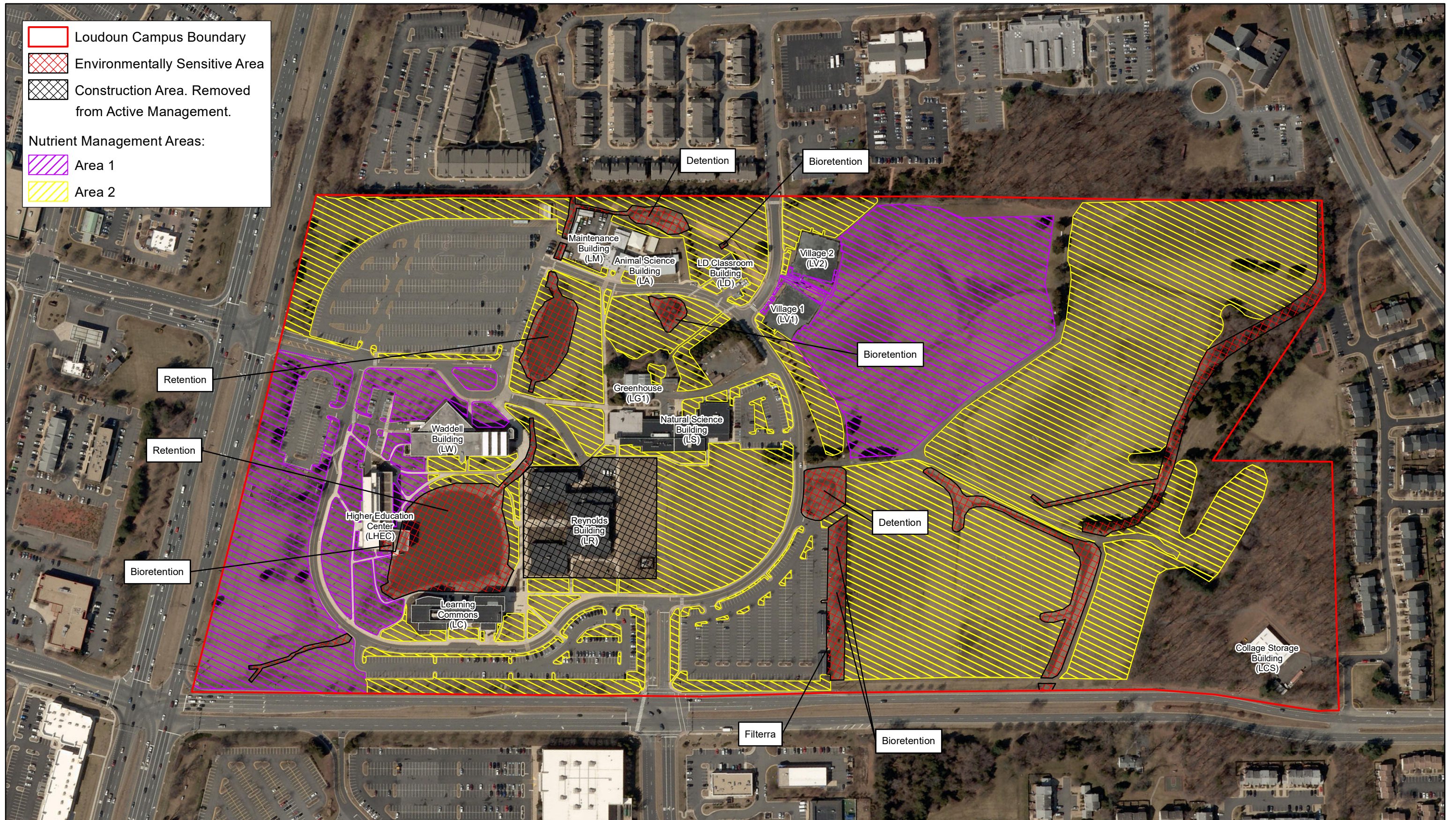


Date: June 2021
 Author: MGM
 Source: Esri World Imagery Basemap
 Projection: NAD 1983 StatePlane Virginia North FIPS 4501 Feet



Loudoun Campus
Figure 2: Soil Sampling Areas
 NVCC NMP

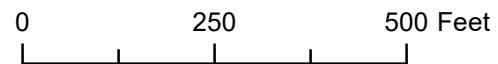
Figure 3: Nutrient Management Areas



Loudoun Campus Boundary
 Environmentally Sensitive Area
 Construction Area. Removed from Active Management.
Nutrient Management Areas:
 Area 1
 Area 2



Date: June 2021
 Author: MGM
 Source: Esri World Imagery Basemap
 Projection: NAD 1983 StatePlane Virginia North FIPS 4501 Feet



Loudoun Campus
Figure 3: Nutrient Management Areas
 NVCC NMP

Figure 4: Liming Areas



Loudoun Campus Boundary
 Environmentally Sensitive Area
 Construction Area. Removed from Active Management.

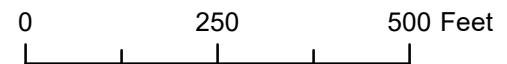
Liming Areas:

LA-1 & LO-2: 40 lbs
 LA-3 & LO-1: 40 lbs
 LA-2 & LO-3: 60 lbs*

*Multiple applications required. See Table 2 for amounts and timing.



Date: June 2021
 Author: MGM
 Source: Esri World Imagery Basemap
 Projection: NAD 1983 StatePlane Virginia North FIPS 4501 Feet



Loudoun Campus
Figure 4: Liming Areas
 NVCC NMP

APPENDICES

Appendix A: Laboratory Soil Test Results

Report Number: 21-078-0731

Account Number: 78934



7621 Whitepine Road, Richmond, VA 23237
 Main 804-743-9401 ° Fax 804-271-6446
 www.waypointanalytical.com

Send To: Wetlands Studies Solutions
 201 Church Street
 Suite C
 Blacksburg VA 24060

"Every acre...Every year."™

Grower: NVCC Loudoun
 21200 Campus Drive
 Sterling VA 20164

SOIL ANALYSIS REPORT

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

Date Received: 03/19/2021

Date Of Analysis: 03/22/2021

Date Of Report: 03/22/2021

Sample ID Field ID	Lab Number	OM	W/V	ENR	Phosphorus			Potassium	Magnesium	Calcium	Sodium	pH		Acidity	C.E.C
		% Rate	Soil Class	lbs/A	M3 ppm Rate	ppm Rate	ppm Rate	K ppm Rate	Mg ppm Rate	Ca ppm Rate	Na ppm Rate	Soil pH	Buffer Index	H meq/100g	meq/100g
LA-1	19571	4.6 M		131	42 M			84 L	125 M	1033 M		5.9	6.80	1.3	7.7
LA-2	19572	4.9 M		135	27 L			94 M	158 M	1064 M		5.6	6.72	2.1	9.0
LA-3	19573	5.4 H		144	19 L			118 M	170 M	1230 M		5.9	6.77	1.6	9.5
LO-1	19574	5.7 H		149	22 L			114 M	211 H	1386 M		6.1	6.79	1.4	10.4
LO-2	19575	5.7 H		148	107 VH			153 H	215 H	1488 M		6.1	6.78	1.5	11.1

Sample ID Field ID	Percent Base Saturation					Nitrate	Sulfur	Zinc	Manganese	Iron	Copper	Boron	Soluble Salts
	K %	Mg %	Ca %	Na %	H %	NO ₃ N ppm Rate	S ppm Rate	Zn ppm Rate	Mn ppm Rate	Fe ppm Rate	Cu ppm Rate	B ppm Rate	SS ms/cm Rate
LA-1	2.8	13.5	67.1		16.9								
LA-2	2.7	14.6	59.1		23.3								
LA-3	3.2	14.9	64.7		16.8								
LO-1	2.8	16.9	66.6		13.5								
LO-2	3.5	16.1	67.0		13.5								

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.

by: *Paucic Mc Groary*

Paucic Mc Groary Ph.D., CPAg

Report Number: 21-078-0731

Account Number: 78934



"Every acre...Every year."™

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 21200 Campus Drive
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SOIL ANALYSIS REPORT

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

Date Received: 03/19/2021

Date Of Analysis: 03/22/2021

Date Of Report: 03/22/2021

Sample ID Field ID	Lab Number	OM	W/V	ENR	Phosphorus			Potassium	Magnesium	Calcium	Sodium	pH		Acidity	C.E.C
		% Rate	Soil Class	lbs/A	M3 ppm Rate	ppm Rate	ppm Rate	K ppm Rate	Mg ppm Rate	Ca ppm Rate	Na ppm Rate	Soil pH	Buffer Index	H meq/100g	meq/100g
LO-3	19576	6.8 H		150	37 M			133 M	257 H	1348 M		5.7	6.68	2.5	11.7

Sample ID Field ID	Percent Base Saturation					Nitrate	Sulfur	Zinc	Manganese	Iron	Copper	Boron	Soluble Salts		
	K %	Mg %	Ca %	Na %	H %	NO ₃ N ppm Rate	S ppm Rate	Zn ppm Rate	Mn ppm Rate	Fe ppm Rate	Cu ppm Rate	B ppm Rate	SS ms/cm Rate		
LO-3	2.9	18.3	57.6		21.4										

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.

by: *Paucic Mc Groary*

Paucic Mc Groary Ph.D., CPAg

Appendix B: Application Record Forms

Fertilizer Application Records

Fertilizer Application Records									
Customer Information					Management Area Information				
Name:					Management Area ID:				
Address:					Management Area Size:				
					Target Species:				
					Notes:				
Date	Supervisor/Applicator	Weather Conditions			Fertilizer Analysis	Rate	Amount Fertilizer Used (1000 lbs/AC)	Application Equipment Used	
		Temp	Wind Speed	Precip					

When was the last time your fertilizer equipment was calibrated??? For information on calibration see Chapter 10 of the "Urban Nutrient Management Handbook". Available for download at <http://pubs.ext.vt.edu/430/430-350/430-350.html>

Lime Application Records

Lime Application Records									
Customer Information					Management Area Information				
Name:					Management Area ID:				
Address:					Management Area Size:				
					Notes:				
Date	Supervisor/Applicator	Weather Conditions			Lime Analysis	Rate	Amount Lime Used (1000 lbs/AC)	Application Equipment Used	
		Temp	Wind Speed	Precip					

When was the last time your fertilizer equipment was calibrated??? For information on calibration see Chapter 10 of the "Urban Nutrient Management Handbook". Available for download at <http://pubs.ext.vt.edu/430/430-350/430-350.html>

Herbicide Application Records

Herbicide Application Records									
Customer Information					Management Area Information				
Name:					Management Area ID:				
Address:					Management Area Size:				
					Target Species:				
					Notes:				
Date	Supervisor/Applicator	Weather Conditions			Herbicide Analysis	Rate	Amount Herbicide Used	Application Equipment Used	
		Temp	Wind Speed	Precip					

When was the last time your fertilizer equipment was calibrated??? For information on calibration see Chapter 10 of the "Urban Nutrient Management Handbook". Available for download at <http://pubs.ext.vt.edu/430/430-350/430-350.html>

Pesticide Application Records

Customer Information					Management Area Information			
Name:					Management Area ID:			
Address:					Management Area Size:			
					Target Species:			
					Notes:			
Date	Supervisor/Applicator	Weather Conditions			Pesticide Analysis	Rate	Amount Pesticide Used	Application Equipment Used
		Temp	Wind Speed	Precip				

When was the last time your fertilizer equipment was calibrated??? For information on calibration see Chapter 10 of the "Urban Nutrient Management Handbook". Available for download at <http://pubs.ext.vt.edu/430/430-350/430-350.html>