UF GOLF

LANDSCAPE MANAGEMENT PLAN (LMP)

HICKORY SINK STRATEGIC ECOSYSTEM

PHASE 1 SPECIAL AREA PLAN

Alachua County, Florida

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Prepared For:
University of Florida
Alachua County, Florida

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EXECUTIVE SUMMARY

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This Landscape Management Plan (LMP) establishes the landscape design, vegetation management, restoration, and long-term maintenance standards governing all landscaped and non-structural areas within the Phase 1 Special Area Plan (SAP) Institutional Use Property for the University of Florida (UF) Golf Course.

The LMP is one component of a coordinated suite of Best Management Plans (BMPs) prepared to satisfy the requirements of the Hickory Sink Strategic Ecosystem Special Area Study (SAS-01-22), the Alachua County Comprehensive Plan, and the Unified Land Development Code (ULDC). This Plan functions in direct coordination with:

- the Stormwater Best Management Plan (SWBMP), which governs stormwater treatment, Low Impact Development (LID), and karst-sensitive stormwater design;
- the Natural Resource & Karst Protection BMP Plan, which establishes conservation management, habitat protection, fuel management, invasive species control, and excavation limitations within karst and sensitive natural areas;
- the Nutrient Management & Water Quality Monitoring Plan (NMP), which governs fertilizer use, soil amendments, chemical inputs, turf nutrition, BMP certification, and surface and groundwater monitoring; and

Collectively, these plans provide an integrated regulatory framework addressing vegetation, hydrology, soils, nutrients, karst protection, and water quality. The Landscape Management Plan does not duplicate the technical standards contained in the other BMP documents; rather, it implements and reinforces those standards through vegetation-based strategies, land management practices, and restoration requirements.

Landscape systems within the UF Golf Course are intended to function as environmental infrastructure, supporting stormwater treatment, groundwater protection, habitat connectivity, and long-term ecological stability while minimizing irrigation demand, nutrient inputs, and maintenance intensity.

1. PURPOSE AND REGULATORY CONTEXT

1.1 Purpose

The purpose of this Landscape Management Plan (LMP) is to establish landscape design, vegetation management, restoration, and long-term maintenance standards governing all landscaped, non-structural areas within the Phase 1 SAP Institutional Use UF Property.

This Plan functions as an implementing document that works in concert with the Stormwater BMP, Natural Resource & Karst BMP, and Nutrient Management Plan. Together, these plans establish a unified framework governing vegetation, hydrology, nutrients, soils, and ecological protection for the UF Golf Course.

This LMP establishes landscape design and irrigation limits, vegetation management standards, and maintenance practices. It does not regulate golf play turf agronomy, stormwater treatment design, or nutrient application protocols, which are governed by the Stormwater BMP (SWBMP), and Nutrient Management Plan (NMP).

1.2 Regulatory Authority

This LMP implements and satisfies requirements of:

- Hickory Sink Strategic Ecosystem Special Area Study (SAS-01-22)
- Alachua County ULDC Sections 404.66.5 and 406.59.1(e)
- SAS Resolution Conditions #3, #4, #10, #11, #12, and #13
- Florida Department of Environmental Protection, *Best Management Practices for the Enhancement of Environmental Quality on Florida Golf Courses* (2021)
- UF/IFAS Florida-Friendly Landscaping™ principles
- UF-IFAS Green Industry Best Management Practices (GI-BMPs)
- Alachua County ULDC Chapter 77, Water Quality Code

Where conflicts occur among project BMPs, the most protective or restrictive standard shall apply.

2. ROLE OF LANDSCAPE WITHIN THE UF GOLF BMP FRAMEWORK

Landscape systems within the UF Golf Course serve four primary regulatory and functional purposes:

1. Vegetative buffering and filtration supporting stormwater LID systems;

2. Reduction of nutrient demand outside managed turf areas;
3. Protection of karst features and native soils through minimized disturbance; and
4. Habitat continuity between Conservation Management Areas (CMAs).

Accordingly, all landscape decisions shall prioritize functional ecological performance over ornamental value.

3. LANDSCAPE DESIGN STANDARDS

3.1 Vegetation Management Zones

Landscape areas shall be organized into the following management zones:

Zone	Governing Plan	Primary Function	Size Range (min/max acre range)	Annual Irrigation Allowance (in/acre/year)	Max. Allowable Annual Average Daily Withdrawal (MGD)
Conservation Management Areas (CMAs)	Natural Resource & Karst BMP	Permanent conservation	120-130 acres	0 in/acre/year	0 MGD
Non-Golf (Clubhouse, Entry Area, Event Lawns)	LMP + GI-BMP	Limited recreational use	40-60 acres	25 in/acre/year	0.112 MGD
Golf Area (turf, native roughs, transition buffers, LID edges, IFAS agronomy areas)	LMP, NMP, SWBMP	Managed agronomic performance, low input buffering, filtration and stabilization	200-270 acres	60 in/acre/year	1.205 MGD

Note: Acreages are subject to change and shall be determined at the time of Final Development Plan. No landscaped areas outside golf play turf and outside the limited landscaped areas associated with entry features, clubhouse and cottages/ hospitality spaces, research/educational spaces, and designated Event Lawns shall be designed or maintained as permanently irrigated.

3.2 Native and Drought-Tolerant Planting Requirements

- Landscaped areas outside play turf shall consist of a minimum of 75% Florida native plant palette, with the remainder from Florida-Friendly species that are adapted to the site conditions to thrive on rainfall alone.

- Vegetation adjacent to CMAs, natural drainage corridors, and LID features shall be 100% native.
- Florida friendly annual landscape plantings shall be permitted. Such landscaping is restricted to 1,500 square feet within these limited areas: monument signage, entrance features, clubhouse entry areas and shall also be designed in accordance with the water budget. In addition, temporary placement of annuals for events/tournaments are permitted five (5) days before and after each event. Temporary annuals shall be hand watered.

- Plant selection shall prioritize:
  - deep-rooted species;
  - low nutrient demand; and
  - high wildlife and pollinator value.

Species selection shall be consistent with Florida Native Plant Society (FNPS) lists, Florida-Friendly Landscaping™ guidance, and site-specific soil and hydrologic conditions.

4. IRRIGATION AND WATER USE

4.1 Irrigation Limitation and Sources

Permanent irrigation shall be limited to the following areas only:

1. Golf play turf areas, including greens, collars, approaches, tees, and fairways, as governed by the Nutrient Management Plan;
2. IFAS Agronomy Area; and
3. Non-play areas, as generally described in Section 3.1 above, consist of
   - the team and member clubhouse landscape,
   - cottages/ hospitality and gathering areas,
   - designated event lawns, and
   - primary entry and arrival landscapes.

No other landscaped areas shall receive permanent irrigation.

All landscaped areas outside of golf play turf and the limited areas identified above shall be designed to be self-sustaining following plant establishment and maintained without permanent irrigation.

1. All irrigation shall comply with the UF Golf Course Water Budget, including the annual irrigation allowance, which establishes irrigation demand limits, drought staging, and the following prioritized water sources:

1. Stormwater capture and reuse;
2. Reclaimed water; and
3. Emergency supplemental potable water and well use, only when other sources are not available. Emergency supplemental potable water use is defined to be the temporary backup supply when the utility provider's reclaimed water system is disrupted or unable to meet demand for a period exceeding 48 hours due to failure (e.g. infrastructure breakdown, power outage, or capacity shortfall).

Temporary irrigation may be used only during plant establishment, after which landscapes shall be self-sustaining through rainfall. Temporary irrigation may include in ground irrigation with water source removed after establishment.

4.2 Water Budget Plan Approach

In accordance with Policy 8.6.5.d, this water budget plan outlines how much water is needed, where it will come from, and how it will be used throughout the year. It accounts for factors such as evapotranspiration, rainfall, irrigation efficiency, turfgrass water requirements, and available water sources. By tracking these components, the plan helps golf course superintendents schedule irrigation more accurately and avoid unnecessary water use. A well-developed water budget also supports regulatory compliance by documenting water withdrawals and demonstrating responsible resource management. Ultimately, it ensures that turf performance and playability are maintained while protecting limited water supplies..

1. **Water Source Inventory for the UF Golf Course Project**
    a. Stormwater Capture - Golf course architects will use topographical and geotechnical data to design and incorporate lakes and water hazards that efficiently capture stormwater (rainwater) and maximize its reuse for irrigation.
    b. Reclaimed Water from Gainesville Regional Utilities – reclaimed wastewater will be used irrigate the golf course.
    c. Emergency Supplemental Well – a water well will be drilled to provide access to water should reclaimed wastewater become limited or unavailable. Emergency supplemental well use is defined to be the temporary backup supply when the utility provider's reclaimed water system is disrupted or unable to meet demand for a period exceeding 48 hours due to failure (e.g. infrastructure breakdown, power outage, or capacity shortfall).

2. **Irrigation System Evaluation and Efficiency**

Improving irrigation efficiency reduces overall water demand and helps delay the onset and severity of drought impacts. Best Management Practices will include routine irrigation system audits to assess distribution uniformity, catch-can performance, and head spacing accuracy across all irrigated areas. System performance will be maintained through proper pressure regulation, regular nozzle cleaning or replacement, and prompt leak repair. In addition, central control programming and all system sensors—including leak detection, soil moisture, evapotranspiration, and rain shutoff devices—will be routinely verified, with detailed pump-station records maintained to document flow rates, electrical consumption, and operating pressures for performance evaluation and regulatory reporting.

3. **Turfgrass Prioritization and Playing-Surface Triage**

During water shortages, prioritizing the maintenance of critical playing surfaces helps preserve playability while protecting long-term course assets. Best Management Practices will include ranking turf areas by irrigation priority, with greens, collars, and critical approaches designated as high priority; tees and fairways as moderate priority; and roughs, out-of-play turf, and naturalized areas as low priority. Areas where turf dormancy can be safely allowed will be clearly identified to reduce water demand without compromising turf recovery. Communication plans will be documented to clearly explain turf prioritization decisions to golfers, staff, and other stakeholders.

4. **Cultural Practices During Drought**

Adjusting cultural practices can significantly reduce water demand while minimizing turf stress during periods of limited water availability. Best Management Practices will include raising mowing heights to reduce evapotranspiration and encourage deeper rooting, along with reducing nitrogen applications to limit excessive growth and improve stress tolerance. Wetting agents will be used to enhance soil moisture uniformity and improve water infiltration, while traffic patterns will be modified to minimize localized wear and drought injury. In addition, disruptive cultural practices such as verticutting and aerification will be delayed when possible, unless needed to facilitate turf recovery.

5. **Operational Water-Reduction Measures**

Targeted irrigation adjustments can extend limited water supplies while maintaining essential turf function. Best Management Practices will include implementing evapotranspiration-based irrigation scheduling, supplemented by soil moisture sensor feedback where available. During advanced drought stages, irrigation will be limited to hand-watering of high-priority areas, and cycle-and-soak programming will be used to improve infiltration and prevent runoff on hydrophobic soils. Nonessential pond- or line-flushing cycles will be suspended unless required for salinity management, and irrigation will be restricted to permitted time windows to minimize evaporative losses.

6. Monitoring and Documentation

Reliable data supports informed decision-making and provides a defensible basis for water-use justification. Best Management Practices will include maintaining records of evapotranspiration, rainfall, soil moisture conditions, and irrigation output. Pump-station flow totals, well drawdown, and documented reductions in irrigation volume during drought conditions will be tracked to demonstrate responsible water management. Where available, visual scouting maps, NDVI imagery, and soil moisture mapping tools will be used to further guide irrigation decisions and document turf response.

7. Post-Drought Recovery Plan

Recovery from drought is a structured process designed to restore turf health and full operational capacity. Best Management Practices will include gradually reintroducing irrigation to prevent hydrophobic soil conditions and resuming fertility programs at rates appropriate for rebuilding turf density. As soil moisture becomes available, aerification, topdressing, and other recovery practices will be scheduled to support root growth and surface stability. Following recovery, long-term improvements such as expanded water storage, irrigation system upgrades, improved distribution uniformity, or turf conversion will be evaluated to enhance future drought resilience.

8. Special Area Plan Alignment

This water budget plan addresses Policy 8.6.5.d and Conditions #10 and #12 delineated in the Special Area Study for Hickory Sink Strategic Ecosystem.

Condition #10

The Special Area Plan shall identify water conservation and low-water use landscaping practices for all phases of the Special Area Plan and Phase 1 Institutional Uses (e.g., accessory clubhouse amenity, cottages, and maintenance area, <u>excluding the golf course</u>) such as, but not limited to:

a. *Set specific limits on permanent landscape irrigation (including reclaimed water), irrigable area, and adherence to a water budget*
    i. Team House, Clubhouse and entry road:

i. Irrigated turfgrass shall be excluded along entrance roads and within parking areas.
ii. Select native and well-adapted plant species that require less maintenance and irrigation.
iii. Incorporate "event lawns" that strategically tie into the clubhouse / golf course practice area features. The management of these areas should align with the management of the golf course.

ii. Cottages/ Hospitality:
i. Select native and well-adapted plant species that require less maintenance and irrigation.

b. *Prohibit permanently irrigated private residential lots*
i. Permanent potable water irrigation is prohibited. .

c. *Retain existing vegetation and design landscapes to mitigate impacts of climate change*
i. Select native and well-adapted plant species that require less maintenance and irrigation.
ii. Preserve trees and natural areas where possible and in alignment with the development plan

d. *Use of native vegetation in landscaping and promote no-mow landscaping*
i. Reducing turfgrass from the landscape areas eliminates the need for mowing.
ii. Select native and well-adapted plant species that require less maintenance and irrigation.
iii. Require 75% of new plantings to be native species.

Condition #12

The Special Area Plan shall address the requirements of Sections 404.66.5 and 406.59.1(e), ULDC, for the UF Golf Course and identify best management practices, utilizing Best Management Practices for the Enhancement of Environmental Quality on Florida Golf Courses (www.flgolfbmp.com) as a guide, such as but not limited to:

a. *Address how the golf course design and associated facilities conserve sensitive habitat and karst topography, retain native vegetation, protect wildlife corridors and habitat connectivity and protect natural drainage patterns.*
i. Golf course architects will use topographical and geotechnical data to design the golf course to maximize natural topography

and vegetation preservation while maintaining high-quality playability.

b. *Limit excavation and fill throughout the site to protect the shallow karst topography and prevent sinkhole formation.*
    i. Golf Course Architect will use topographical and geotechnical data to design the site to maximize natural topography and karst areas, following the geotechnical karst protection recommendations.

c. *Evaluate the feasibility of stormwater reuse for irrigation, and limit irrigation need for all water sources and specifically the supplemental well water.*
    i. Golf course architects will use topographical and geotechnical data to design lakes and water hazards that efficiently capture stormwater and maximize its reuse for irrigation.

d. *Account for all nutrient (e.g., fertilizer, reclaimed water, soil amendments, etc.) and chemical (pesticides, herbicides, fungicides, etc.) inputs in a comprehensive nutrient and chemical management plan for the golf course, with the goal of minimizing such inputs. Use soil and tissue tests to establish nutrient baseline levels and deviations from reported reference ranges when available.*
    i. See Nutrient Management & Water Quality Monitoring Best Management Plan

e. *Provide a plan for water quality monitoring consistent with Section 404.66.5(b). The plan should include appropriate parameters and sampling frequency to provide critical information on potential chemical impacts to groundwater and adjacent and downgradient property owners. An annual report shall be submitted to the County documenting water quality monitoring.*
    i. See Policy 8.6.5.h; and
    ii. See Nutrient Management & Water Quality Monitoring Best Management Plan

4.3 Irrigation System Design Standards for Landscaped Areas

Where irrigation is permitted for clubhouse, Cottages/hospitality, event lawn, or entry landscapes, systems shall be designed and operated to maximize efficiency and minimize water use, consistent with the Water Budget Plan and Florida Golf Course BMPs.

1. Allowed Irrigation Technologies

Permitted irrigation systems for landscaped (non-golf-play) areas are limited to high-efficiency systems, including:

- Allowed irrigation technologies will be pressure regulated;
- Drip irrigation (subsurface or surface);
- Micro-irrigation systems;
- Multi-stream, low-precipitation rotary nozzles (e.g., MP Rotator–style or equivalent nozzles installed on spray bodies);
- Low-volume shrub or tree bubblers with adjustable flow control;
- Other high-efficiency irrigation approaches and new technologies.
- Conventional high-precipitation spray heads are prohibited in landscaped areas outside golf play turf and designated Event Lawns.

2. Irrigation Controls and Scheduling

All permitted irrigation systems shall incorporate:

- Centralized control systems;
- Flow meters;
- Weather-based or evapotranspiration-based scheduling;
- Soil moisture sensors where feasible;
- Rain and flow shut-off devices;
- Pressure regulation and matched precipitation rates.

Irrigation schedules shall be adjusted seasonally and during drought conditions in accordance with the Water Budget Plan and documented drought staging criteria

5. SOIL MANAGEMENT AND AMENDMENTS

5.1 Soil Preservation

Preservation of in-situ soils is a priority consistent with SAS Resolution Condition #13(a), stormwater infiltration requirements, and karst protection standards. Disturbance of native soils shall be minimized in all non-structural areas.

5.2 Soil Amendments

Mineral fertilizer use is prohibited in landscaped areas outside golf play turf and event lawn areas. Where disturbance is unavoidable:

- Organic amendments such as compost may be incorporated to improve soil structure and moisture retention;
- Soil amendments/compost will be utilized in lieu of mineral fertilizer in landscaped areas outside of golf play turf and event lawn areas; and
- All amendments shall be documented and incorporated into nutrient accounting under the Nutrient Management Plan.

6. LANDSCAPE MAINTENANCE AND INPUT MINIMIZATION

6.1 Fertilizer, Compost, and Chemical Use

- Once established, fertilizer use is prohibited in landscaped areas outside golf play turf and event lawn areas..
- Compost may be used in landscape beds solely for soil health and plant establishment.
- Chemical use shall follow Integrated Pest Management (IPM) principles and be minimized through plant selection and soil health.

All nutrient and chemical inputs are governed by the Nutrient Management & Water Quality Monitoring Plan.

6.2 Fuel Load Reduction and Invasive Species Control

Consistent with the Natural Resource & Karst BMP Plan, landscape areas shall incorporate:

- fuel load reduction through prescribed fire where appropriate, or alternative methods such as mechanical thinning or selective vegetation removal; and
- invasive exotic plant control through mechanical removal, targeted herbicide use when necessary, and ongoing monitoring.

6.3 Mowing and Vegetation Management

Area	Mowing Frequency
Roughs	1–2 times per year
Transition Buffers	As needed for access

7.GOPHER TORTOISE BURROW SURVEY

A Gopher tortoise burrow survey *(100% coverage)* will be conducted within the limits of the golf landscape areas. The locations of active and inactive burrows will be located using a Global Positioning System (GPS) with coordinates and burrow status depicted on appropriate recent aerials. If impacts to occupied gopher tortoise burrows cannot be avoided, relocation shall be conducted in accordance with all applicable Florida Fish & Wildlife Conservation Commission (FWC) permitting requirements and relocation guidelines in effect at the time of relocation. Relocation activities shall be completed by authorized agents to approved recipient sites prior to any land and vegetation disturbance activities, and all required buffers, monitoring, and reporting shall be implemented to ensure compliance with FWC standards.

8. IMPLEMENTATION, INSPECTION, AND ADAPTIVE MANAGEMENT

8.1 Implementation

Landscape installation shall occur only after completion of major grading, stormwater infrastructure, confirmation of karst protection measures, and approval of stormwater and nutrient plans.

8.2 Inspection and Reporting

Landscape performance shall be evaluated through visual inspections, vegetation health assessments, and coordination with water quality monitoring results. Deficiencies contributing to erosion, nutrient transport, or invasive spread shall be corrected promptly.

8.3 Adaptive Management

Landscape practices shall be adjusted based on:

- water quality monitoring data;
- turf nutrient performance data;
- vegetation success or failure; and
- observed karst or hydrologic issues.

9. SUMMARY STATEMENT

This Landscape Management Plan (LMP) establishes landscape systems as functional environmental infrastructure, not ornamental features. When implemented alongside the Stormwater BMP, Natural Resource & Karst BMP, Nutrient Management Plan, and Water Budget Plan, the LMP ensures:

- reduced irrigation demand and documented water stewardship;
- minimal nutrient and chemical inputs outside managed turf;
- protection of karst features and groundwater resources;
- long-term vegetation stability and habitat connectivity; and
- regulatory consistency across all Phase 1 SAP implementation documents.