



# VILLAGE OF KEY BISCAIYNE

Office of the Village Manager

## MEMORANDUM

*Village Council*  
Mayra P. Lindsay, *Mayor*  
Edward London, *Vice Mayor*  
Franklin H. Caplan  
Luis F. de la Cruz  
Gary R. Gross  
Theodore Holloway  
Michael E. Kelly

*Village Manager*  
John C. Gilbert

**DATE:** April 26, 2016

**TO:** Honorable Mayor and Members of the Village Council

**FROM:** John C. Gilbert, Village Manager

**RE:** Village Green Playing Field Analysis Report

It is recommended that the Village Council review the attached Village Green Playing Fields Analysis provided by Alan Sigwardt, Senior Grounds Superintendent for the Miami Dolphins and Matthew Tacilaukaus, Superintendent for Palm Beach Country Club Golf Course, attached as Exhibit A.

The attached Analysis concludes that the corrective measures provided by the Contractor, Green Source Landscaping Sports Turf, Inc., is not feasible due to the inadequacies with the existing irrigation design and the inability to provide the intense maintenance required. In addition, the report addresses that the implementation of this corrective maintenance plan will only further delay the accessibility to an acceptable playing surface for this community. In order to maintain a successful natural surface playing field the cost to re-design and construct the irrigation system, re-sod and maintain the fields will total approximately \$1,019,860 (using professional level sod for both fields), see attached Exhibit B for further details. The implementation of the attached recommendations along with the hiring/procurement process may not be completed by this Fall due to the confined timeframe for the recommended growing season.

The alternative option to install an artificial surface on both playing fields was discussed by Council during the April 12<sup>th</sup> Council meeting. The estimated cost to install an artificial surface on both fields is \$1,180,000. The estimated time of completion to install artificial turf will be four (4) months from the date of Council approval.

## **Village of Key Biscayne Two Main Playing Fields Analysis**

By: Alan Sigwardt, Dolphins Senior Grounds Superintendent, Turf Grass Consultant &  
Matthew Tacilauskas, Dolphins Turf Grass Consultant.

Date: April 14, 2016

### Introduction

On Wednesday, March 9, 2016, Alan Sigwardt traveled with Matthew Tacilauskas to Key Biscayne to examine the condition of the playing fields in the Village of Key Biscayne.

We were briefed with a history of the last 12 months of construction and maintenance of the main two fields in question. Documents were produced at a later time. The last 12 months included new drainage, new soil profile and new celebration sod on the two main fields.

Time was spent walking the fields examining the turf looking at plant health, irrigation coverage, drainage design and overall maintenance practices being conducted by the current contractor. A detailed look at the turf health and soil structure was conducted. It included taking soil samples for basic nutrient analysis and organic content. The general overall appearance of the surrounding areas was observed and the irrigation system was observed while operating. We followed each zone as it came on to look for head to head coverage, pressure, irrigation breaks, etc.

Design & Drainage: A detailed as-built of the drainage system was presented to us. If the drainage was installed as designed we would say the drainage is more than adequate. The pitch designs of the fields also are adequate, with both fields showing good pitch from the center to the sidelines.

From our observation we feel no further work needs to be done on the drainage.

Soil Profile: The organic or peat content in the soil is very important for holding moisture and nutrients. The current volume of 90% sand 10% organic would be an appropriate mix if given professional care and an adequate irrigation system.

Soil test showed the actual organic weight content to be 1.4%. This is consistent with a volume mix of 90% sand 10% organic. This would be a manageable percentage using a well-designed irrigation system, operated by a skilled turf manager.

Irrigation Coverage: While operating the irrigation system it was observed that multiple heads were running outside the playing surface at the same time the irrigation was running on the new fields. All the heads were operating from the same valve. This is unacceptable. To better manage the moisture on the playing fields a separate system should be set up to run the playing fields surface only. A tighter spacing of the irrigation heads must be considered as well. Currently the irrigations heads are too far apart. The current irrigation design is not appropriate for newly designed fields of this level.

A professional irrigation contractor should be hired to design and install a more appropriate system before any more work is done on the fields.

Maintenance: First appearance of the fields and surrounding areas was poor at best. We noticed on our walk through: exposed irrigations heads, bare areas, weeds, lack of turf health, and extremely dry conditions.

Slicing a weak field will only damage the turf more. Celebration turf has a very aggressive lateral growth. Slicing when the turf is weak will cut off lateral growth, bury and kill the turf. A celebration stolon has been observed dying back 3-4” from the cutoff point. This should only be performed on very mature turf that has 5-6 weeks to recover. Only very light verti-cutting should be performed during this critical period.

Because of the lack of good turf, dry soil profile and unacceptable irrigation system, we would not currently recommend any granular fertilizer. If granular fertilizers are applied and not watered in correctly with a good irrigation system the chance of burn is very high. A more target based, safe application foliar fertilizer should be applied. Only when the irrigation system is adequate, should a granular fertilizer be used. All fertilizer applications should be factored according to soil nutrient testing results and only then should a fertilizer program be put in place.

Corrective Measure by Source One: The corrective measure’s put forward by Source One will only lead to further the delay of getting the fields ready for play. Sprigging is not an option because of the current irrigation and management set up. New sprigs require 5 minutes of water every hour for 10-12 hours a day for 2-3 weeks to get rooted and a further 14-16 weeks is needed to be established under skillful management. This cannot be achieved under the current management set up.



## Recommendations

Plant Health: Celebration is a good choice for this situation. Overall the Celebration was observed to be in very poor condition. The turf was observed to be weak, extremely dry and under fertilized. Severe dry conditions and under fertilization has caused the turf to be unplayable and would lead us to recommend re-sodding both the fields, but only after other factors have been amended.

Multiple areas were observed to have severe shade problems. Turf cannot grow healthy when shaded by trees.

Problem trees should be removed, if turf is the preferred surface. A tree removal schedule and a yearly root pruning program around each playing field should be conducted to allow for turf to grow without future competition from trees and tree roots.

Wear Problems: Observed on one of the playing fields were barriers to keep people off a certain field. Every effort should be made to continue protecting the weak fields. A serious plan should be made 4-6 months in advance for rotating the fields to match the playing and agronomic schedule. This might seem tedious, but it is critical to allow for conservative agronomical practices while the fields are being used. Time must be allowed to aerify, top-dress, and fertilize on a regular bases. The schedule must be realistic and agreed by all parties; the sports organizers, town officials and the grounds manager.

We were briefed on the budget and schedule of the maintenance company. Currently we understand the maintenance company works two to three days a week. This included time for the company traveling from Weston to The Village of Key Biscayne. These fields require full time attention. A decision should be made to hire an in house grounds manager and two part time staff. All equipment to operate and maintain the fields should be kept on site at all times. A plan should be executed outlining the staff, equipment, tools, fertilizer, and chemicals that will be needed to safely and successfully operate the fields. This should be done by a professional grounds manager who is experienced in operating fields of this standard.

Attention should have been made to the irrigation system pre-construction. If an appropriate irrigation system had been designed and installed, a much higher success rate would have been achieved. We could not imagine a more important factor for the success of this project. It should have been noted that heads running on the playing surface and outer areas or non-playing surface was unacceptable. These are two areas that require different irrigation management styles. Simply, the new fields that have much less organic matter and more sand, these new fields requires much more water to thrive than the outer areas with more organic soils. Every effort should be made to design an appropriate irrigation system concentrating on the newly constructed fields.

Once both fields have adequate irrigation they both should be stripped clean and laser leveled, soil amendments added and re-sodded. Please remember just laying sod does not guarantee it will be ready

for play. Once sod has been down long enough to establish 3-4" roots a top-dressing program applying 3-4 applications of sand will need to be applied. This should be done in accordance with a fertilizer program supplied by a turf grass professional. This will help create a solid soil and turf foundation for play. Only when the sod has created a solid base, should play be allowed on the fields. It should be strong enough to handle rugby, soccer, etc. Allowing play before the field is ready will only lead to more problems. This should be discussed with an expert in field management before opening.

The hiring of a landscape contractor is not an option to maintain these fields. Athletic field maintenance should not be a mow and go operation like landscape maintenance requires. Both fields are in need of full time care by a turf professional. Only an experienced Turf Grass Manager that is a town employee will take the time to care for these fields in a manner that is presentable. The Grounds Manager should have two part time workers that can help observe conditions 7 days a week. Every effort should be made to have an employee look at these fields every day. Turf grass does not know if it's Saturday, Sunday or a holiday. Fields of this profile require full time attention. Only then will they be successful.

Staff Recommendations with estimated cost:

1. Grounds Manager with full benefits, sports field's seminars and association membership and leased F150 work truck. \$80,000 per year salary, \$10,000 benefits - Total \$90,000

2. Two part time laborers \$20.00 x 32 hours per week each. \$66,560 wages, \$20,000 benefits - Total \$86,560

Equipment and basic operating recommendations with estimated cost:

- 5 - gang reel mower
- 1 - set verti-cut reels (5 reels)
- 1 - Toro Rake-O-Vac
- 1 - 175 gal. boom sprayer
- 1 - Toro workman utility vehicle
- 1 - 800 lb. Lely pull behind spreader

Purchase \$190,000 - 5 yr. lease \$4,200 per month - \$50,400 per year

Reel sharpening 4 times yr. - \$3,500 per year

Basic tools and box - \$2,000 per year

Aerated and top-dressed 3 times per year - \$25,500 per year

Leased work truck \$600 per month - \$7,200 per year

Edgers, weed eaters, hand tools - \$3,000 per year

Fertilizers, foliar and granular - \$40,000 per year

Chemicals - \$20,000 per year

Fuel - \$5,000 per year

Sprinkler repair parts inventory - \$3,000 per year

Consulting services with 4 visits per year, basic report and anytime phone call availability - \$4,000 per year

**Estimated Budget for all 4 fields - \$340,160**







**Distributor:** Trigon Turf Sciences/T Phillips  
**Client:** VILLAGE GREEN  
KEY BISCAWAYNE, FL 33149

**Date:** March 16, 2016  
**Info Sheet #:** 301683  
**Sample IDs:** F1 S  
**Lab IDs:** AU31815

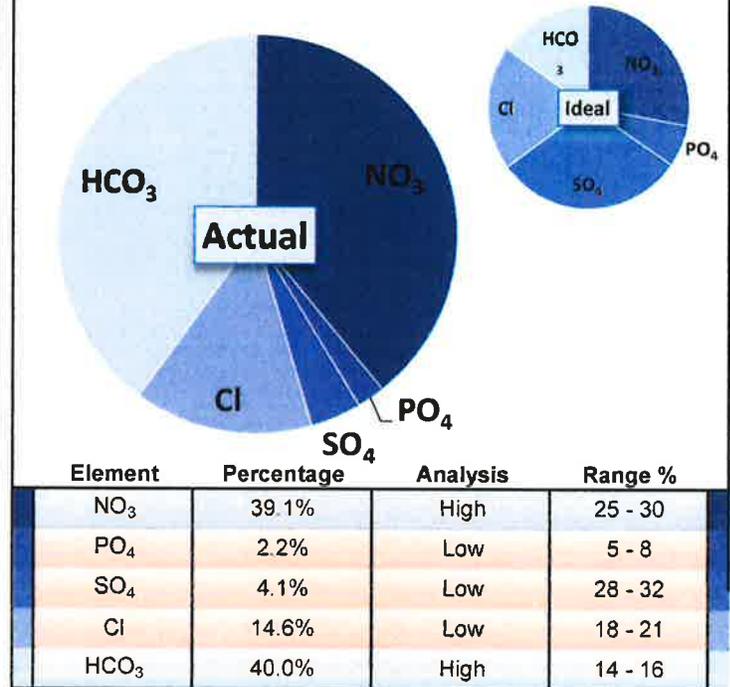
## BULK RECOMMENDATIONS

**Ca:** 433 lb/acre      **K:** 69 lb/acre  
**Mg:** 108 lb/acre      **P<sub>2</sub>O<sub>5</sub>:** 0 lb/acre

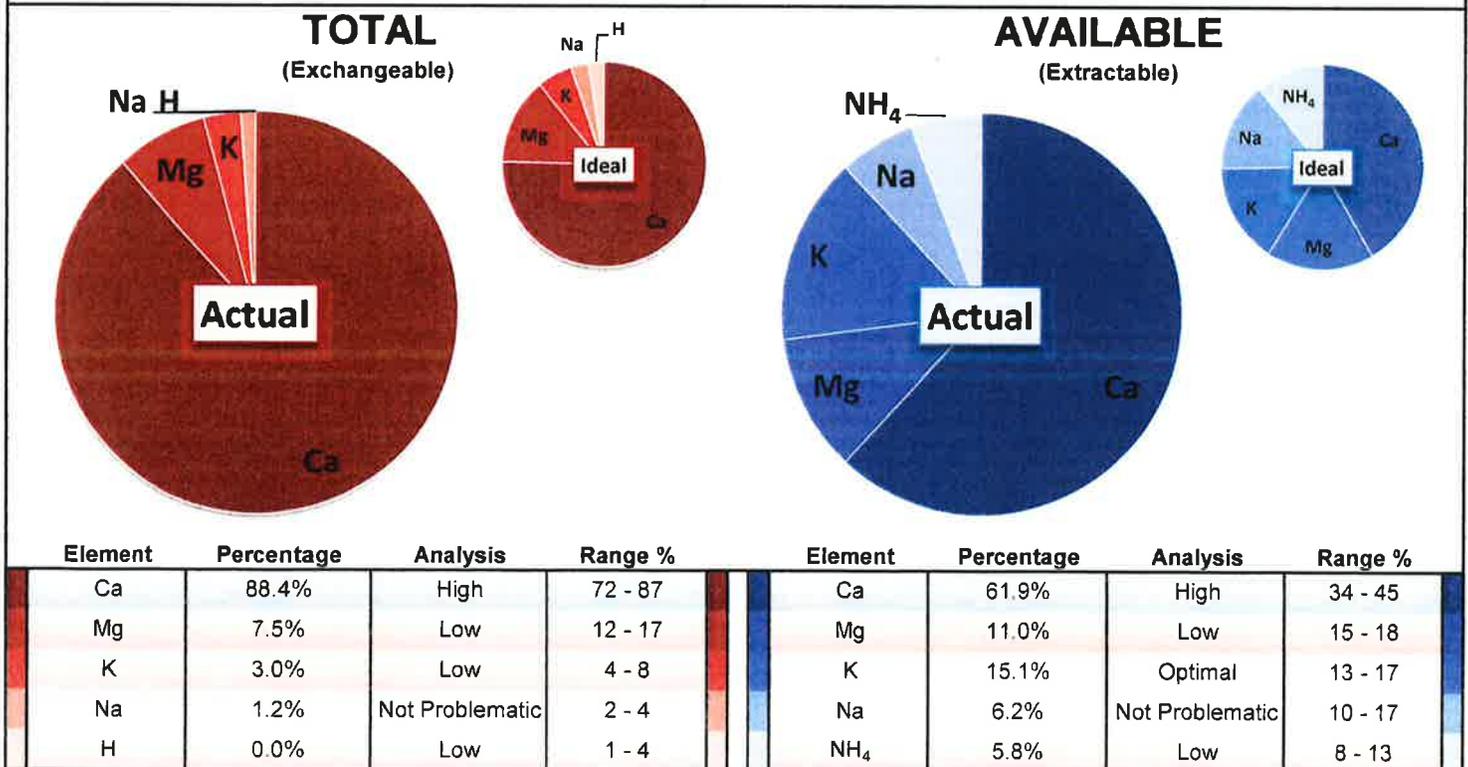
## CHALLENGES & SOLUTIONS

Challenge	Solution	Focus
Low Ca Availability	Trical 35-SP Perk Up	High
Low Total and Available K	Power 0-0-22 Quad K	High
High Total P	Renaissance, Astron Knife Plus, Free-15	High
High Cl and HCO <sub>3</sub> Availability	Calphlex, Propel Pervade	High
Low Total and Available Micronutrients	Astron, Per "4" Max Knife Plus, Renaissance	High
Low NH <sub>4</sub> Availability	Power 23-0-0, 24-0-0 Power 12-0-12, 12-6-0	Medium
Low Organic Matter	Maxiplex, Propel EON 75	Medium
Low Saturation Index	Retain Pro	Medium

## ANION RATIO



## CATION RATIOS





**Ana-Lync  
Golf**

# Nutrient Data

Testing Performed by Harris Labs, Lincoln, Nebraska  
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Laboratory Number	AU31815		Avg.	Target
Client ID	F1 S			
Organic Matter %	1.4		1.4	2.5
Saturation Index	0.72		0.72	1
pH	6.5		6.5	
Buffer pH	7.5			
Soluble Salts	0.2		0.2	0.37
Electrical Conductivity	0.89		0.89	1.3
Excess Carbonates	VL			
Calcium (Ca)	TOTAL PPM	920	920	1098
	AVAILABLE PPM	90	90	132
Magnesium (Mg)	TOTAL PPM	47	47	82
	AVAILABLE PPM	9.7	9.7	15
Ca:Mg Ratio	TOTAL PPM	20	20	
Potassium (K)	TOTAL PPM	60	60	94
	AVAILABLE PPM	43	43	69
Sodium (Na)	TOTAL PPM	14	14	
	AVAILABLE PPM	10	10	
Cation Exchange Capacity	5.2		5.2	
Percent Base	Ca %	88.4	88.4	72-87
Saturations	Mg %	7.5	7.5	12-17
	K %	3	3	4-8
	Na %	1.2	1.2	2-4
	H %	0	0	1-4
Phosphorus (P)	TOTAL PPM	46	46	28
	AVAILABLE PPM	1.9	1.9	3.7
EPR	lb P / 1000 sq ft	0.19	0.19	
Sulfur (S)	AVAILABLE PPM	2.1	2.1	8.9
Chloride (Cl)	AVAILABLE PPM	41	41	18
Bicarbonate (HCO <sub>3</sub> )	AVAILABLE PPM	196	196	49
Nitrate (NO <sub>3</sub> )	AVAILABLE PPM	44	44	40
Ammonium (NH <sub>4</sub> )	AVAILABLE PPM	7.6	7.6	22
ENR	lb N / 1000 sq ft	1.4	1.4	
Iron (Fe)	TOTAL PPM	32	32	43
	AVAILABLE PPM	0.03	0.03	4
Manganese (Mn)	TOTAL PPM	1.4	1.4	4
	AVAILABLE PPM	0.01	0.01	0.3
Zinc (Zn)	TOTAL PPM	1.9	1.9	6.5
	AVAILABLE PPM	0.01	0.01	0.14
Copper (Cu)	TOTAL PPM	0.4	0.4	3
	AVAILABLE PPM	0.01	0.01	0.12
Boron (B)	AVAILABLE PPM	0.086	0.086	2
Silicon (Si)	AVAILABLE PPM	1.9	1.9	28
Sand %				
Silt %				
Clay %				
Texture				

**Bulk Recommendations**

lb/acre

Calcium (Ca)		433
Magnesium (Mg)	This is the quantity required to achieve balance and overcome nutrient tie-ups. The amount required may not be economically feasible in a short time period.	108
Potassium Oxide (K <sub>2</sub> O)		69
Phosphorus Pentoxide (P <sub>2</sub> O <sub>5</sub> )		0

Exhibit B

**ESTIMATED COSTS  
VILLAGE GREEN PLAYING FIELDS W/ NATURAL SURFACE**

<b>DESCRIPTION</b>	<b>COST</b>	<b>SOURCE</b>
<i>*(1) Annual estimated staffing, equipment, supplies and contracted services</i>	\$340,160.00	Provided by Alan Sigwardt and Matthew Tacilauskas
Remove all of the old turf, add sand where needed, laser grade surface, and install owner supplied sod for 1.80 per square foot for 104,000 square foot playing surface	\$187,200.00	Provided by Alan Sigwardt, Matthew Tacilauskas and Briggs Golf and Construction
<i>*(2) Celebration Grass (same specification used previously) at \$.35 per square foot</i>	\$36,400.00	Provided by Alan Sigwardt
<i>*(3) Celebration Grass professional field specification at \$2.25 per square foot plus 35 delivery trucks from Georgia at \$3,100 each</i>	\$342,500.00	Provided by Alan Sigwardt and Bent Oak Farm (vendor for the Miami Dolphins)
<i>*(4) Irrigation system design and installation</i>	\$150,000.00	Provided by Rain Bird (approved irrigation design firm)

<i>Year 1 Project Estimate with (A) spec sod</i>
<i>Year 1 Project Estimate with (B) spec sod</i>

**Footnotes:**

- \* (1) Village Employee Benefits will increase the estimated cost by \$4,000
- \* (2) Year 1 Project Estimate with (A) spec sod
- \* (3) Year 1 Project Estimate with (B) spec sod
- \* (4) Modifications to the existing pump system are not included