

Turf Reduction

Forrest Richardson, ASGCA
Forrest Richardson & Associates

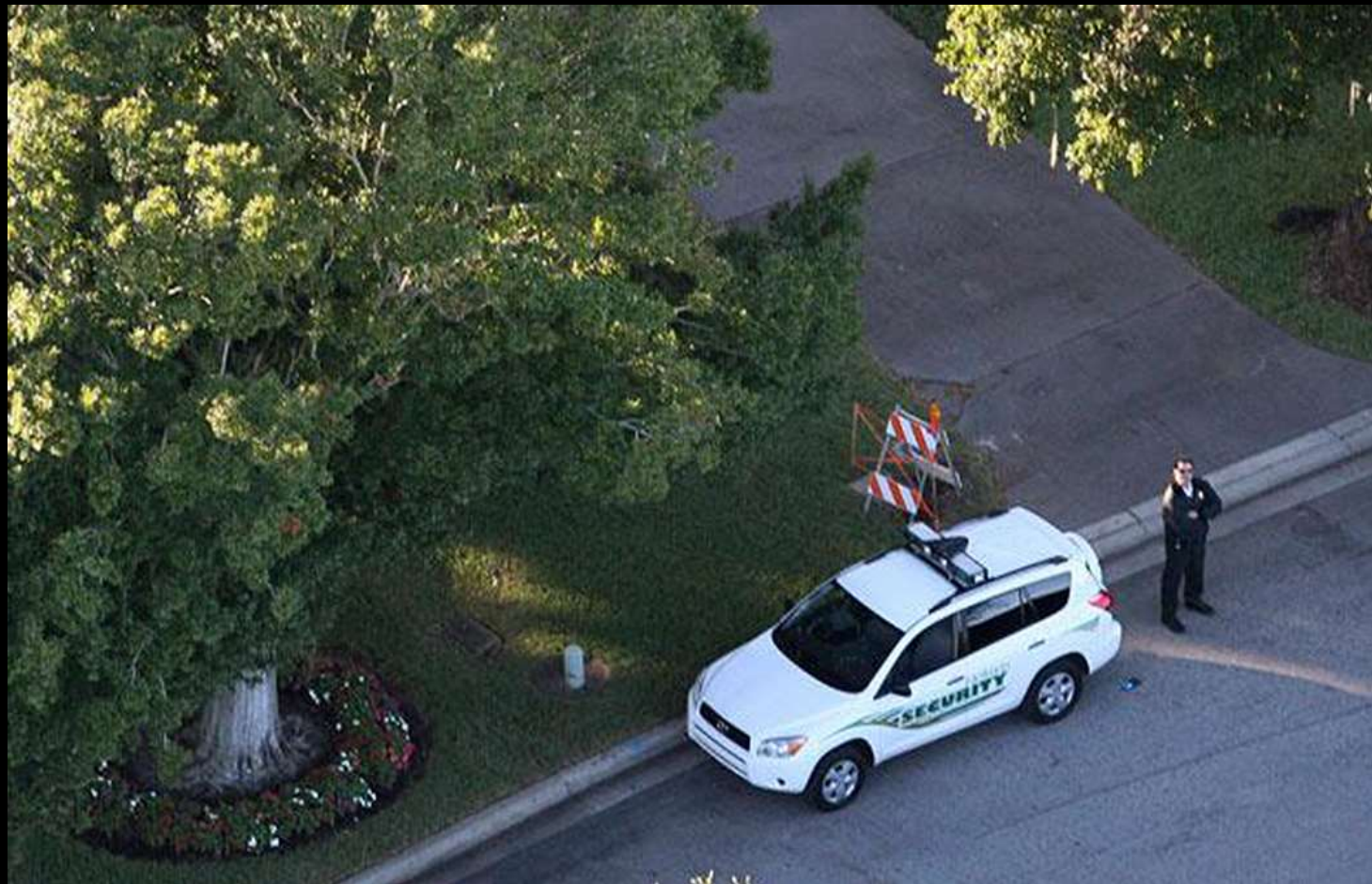


TURF REDUCTION
VS
WATER REDUCTION

What is the highest
water cost ever realized?

\$78,571 per gallon

\$ 25,602,438,921
per acre foot



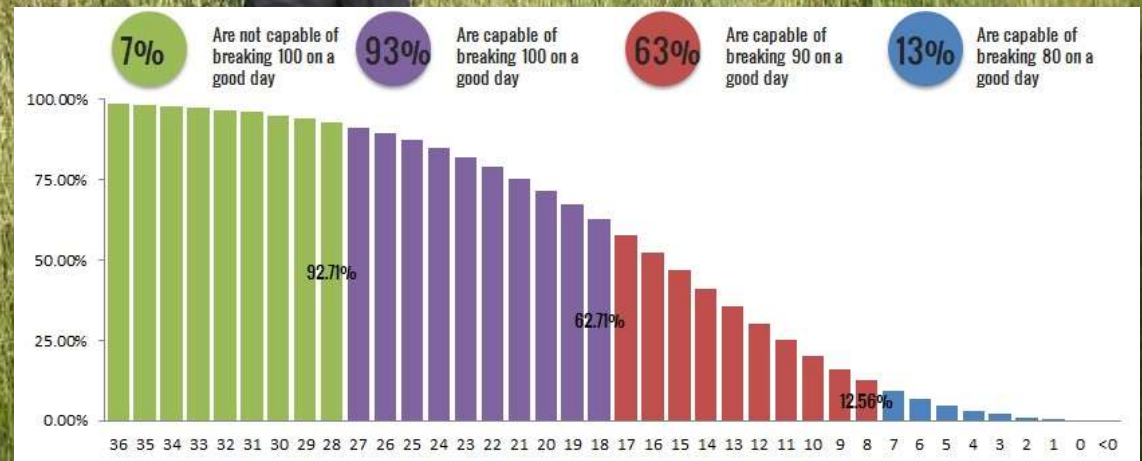


Gallons used: 1,400
Final Cost: \$110 million

TURF REDUCTION
VS
WATER REDUCTION

*With turf reduction
there are many considerations*

1. Playability



2. Strategy



3. Suitable Turf Replacement









5. Maintenance Impact





6. Revenue Impact



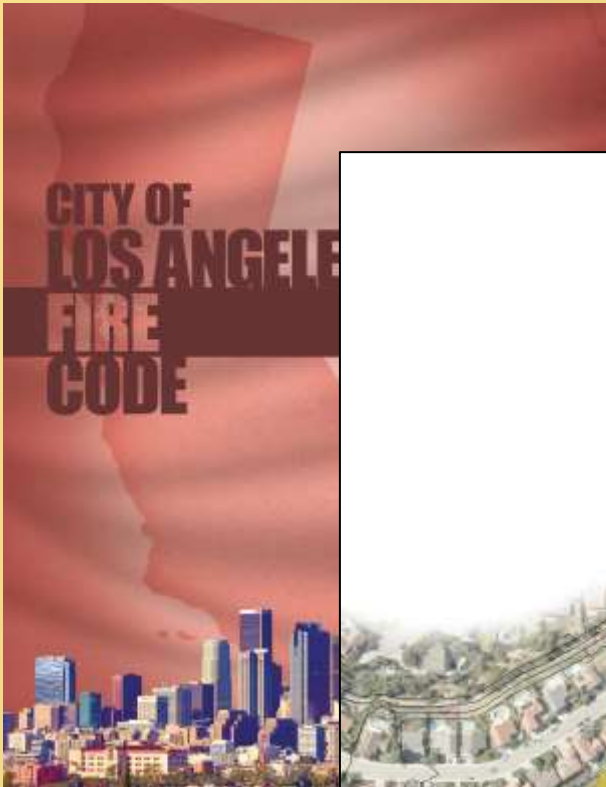
7. Air Quality







8. Legality



92 6468

owners or users of such portions of the Property as remain subject to this Declaration; and (ii) any other owner of property located within the Ahwatukee master planned community as defined on Exhibit "A" attached hereto.

E. By this Declaration, Declarant desires to amend and restate the Lakes Deed Restriction and the Country Club Deed Restriction.

F. By recording this Declaration, the Declarant intends to comply with the requirements and obtain the benefits of Arizona Revised Statutes Section 42-146 regarding the valuation and taxation of golf courses.

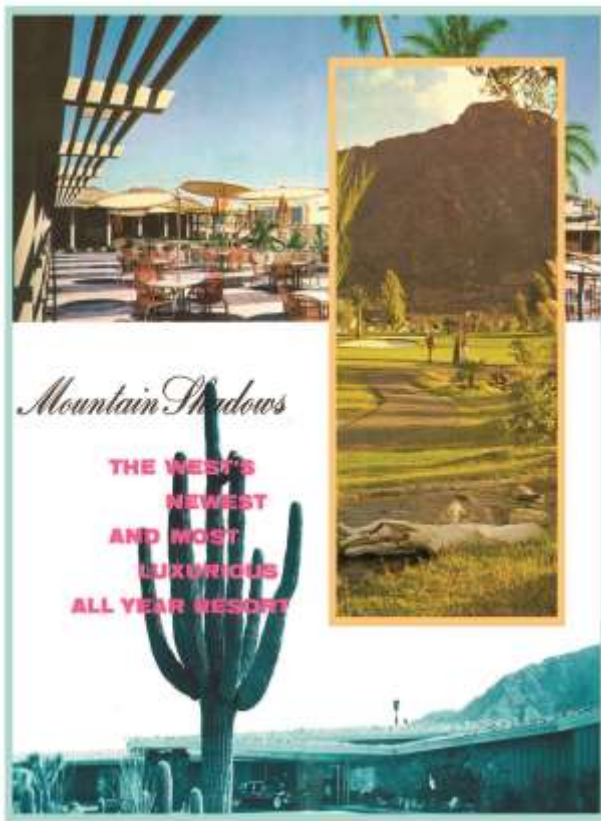
G. Further by this Declaration, Declarant desires to ratify, confirm and incorporate herein any and all prior existing agreements, covenants, conveyances and declarations, whether or not recorded, establishing easements over the Property for drainage purposes.

DECLARATION

1. Amendment to Lakes and Country Club Deed Declaration. This Declaration shall constitute an amendment to the Lakes Deed Restriction and the Country Club Deed Restriction.

2. Declaration of Use Restriction. Declarant, for the benefit of those persons or classes of persons described in Recital C above (hereafter, "Benefitted Persons"), hereby declares as follows:

The Property shall be used for no purposes other than golf courses and such improvements and facilities (including without limitation, clubhouses, restaurants, pro shops, overnight lodging facilities, resort and connected recreational facilities, bars, parking areas and golf cart trails) and uses as are reasonably related to, convenient for or in furtherance of golf course use or the accommodation of golf course patrons and guests; except that the Property may further be used for easements for ingress and egress (vehicular and otherwise), pedestrian trails and walks, cables, utilities, drainage and other similar easements and rights of way, and for the construction and maintenance of walls, fences and other boundary type protection, in each case reasonably related to the development and use of the Ahwatukee project, together with improvements reasonably related to said easements, uses and related services. No improvement shall be made, constructed, installed or located on the Property that is not reasonably related to, convenient for, or in furtherance of, the aforementioned purposes. Declarant on its behalf and on behalf of its successors and assigns, reserves the right to redesign or reconfigure the golf courses at the Property or remove, modify, alter, relocate, replace, expand, abandon, demolish, cease the use of or rebuild any of the improvements or facilities related to the use of the Property for golf courses, all at the



9. Neighborhood Reaction



10. Golfer Reaction

The Salt Lake Tribune

WWW.SLTRIB.COM

JAN 15, 2016

Residents decry plan for water-conserving dry rough at Bonneville up to their backyards

By **CHRISTOPHER SMART** | The Salt Lake Tribune | [COMMENT](#)

First Published May 19 2015 01:39PM | Last Updated May 19 2015 11:00 pm



11. Aesthetics





12. Drainage



13. Liability



14. Equipment Damage

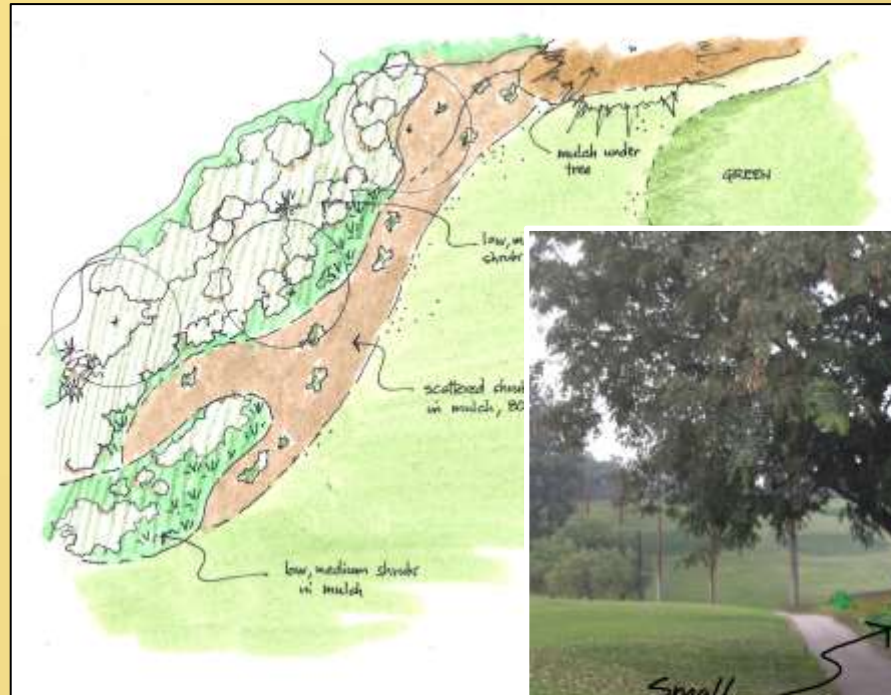


15. Critters





16. Irrigation Realities

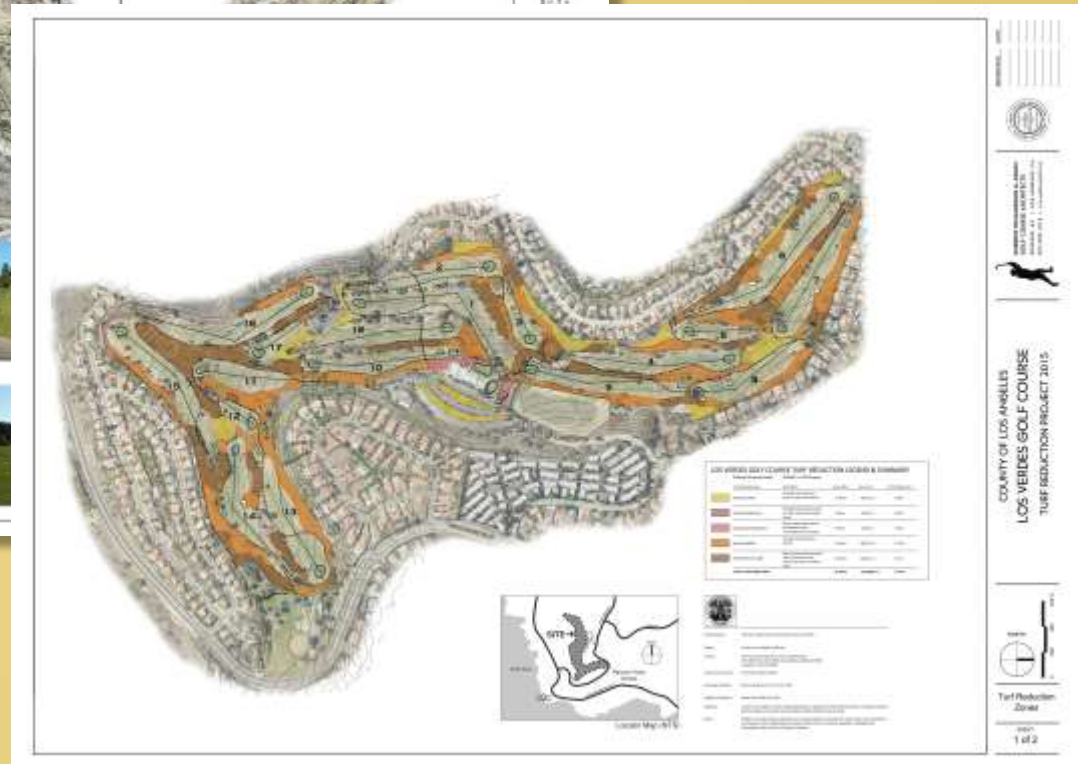


17. Pace of Play



The Six Cs

Figure 1 is a conceptual site plan for a proposed golf course. The plan shows a large area with numbered green fairways (1-18) and surrounding residential areas. Four inset photographs show various views of the golf course, including a green, a path, and a clubhouse area.



Contrast





Cover

Club Selection





Completion

Cumulation

BEWARE OF GOLF BALLS

Competition: Date:

Name A: Alon K H/C ☐ Name B: Peet H/C ☐

Hole	Yards	Index	Score		Hole	Yards	Index	Score	
			A	B				A	B
1	81	18	5	4	10	98	17	4	6
2	91	10	5	7	11	84	14	5	6
3	114	5	7	11	12	101	9	5	6
4	125	4	7	12	13	79	16	5	4
5	114	11	7	7	14	90	8	3	7
6	179	1	6	5	15	104	12	5	5
7	103	7	3	12	16	151	2	4	6
8	88	15	5	9	17	98	3	5	6
9	75	13	5	7	18	102	6	3	5
	970		50	74		907		39	51

Alon 13 Peet 3
Tie 2

1st Nine

2nd Nine

Gross

H/cap

Nett

Competitors Sig: Marker's Sig:

89/125

Water reduction
does not necessarily mean
turf reduction



Turf Varieties



USPP12625P2

(12) **United States Plant Patent**
Duncan

(10) **Patent No.:** **US PP12,625 P2**
(45) **Date of Patent:** **May 14, 2002**

(54) **SEASHORE PASPALUM PLANT 'SEA ISLE 2000'**

Primary Examiner—Bruce R. Campbell

Assistant Examiner—Annette H. Para

(74) *Attorney, Agent, or Firm*—Necole & Rosenberg, P.C.

(75) *Inventor:* **Ronny R. Duncan**, Griffin, GA (US)

(57) **ABSTRACT**

(73) *Assignee:* **University of Georgia Research Foundation**, Athens, GA (US)

A vegetatively reproduced seashore paspalum cultivar, selected as a mutation from the cultivar Adalayde, is named 'SEA ISLE 2000'. It is distinguished by high tolerance to salinity, dark green color, extremely fine leaf blades that are generally ≤ 1.5 mm in width, and the ability to tolerate mowing to $\frac{1}{2}$ inch height. These distinguishing characteristics make 'SEA ISLE 2000' particularly suitable as a turfgrass for lawns and golf courses, especially golf course greens.

(*) *Notice:* Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) *Appl. No.:* **09/552,104**

(22) *Filed:* **Apr. 19, 2000**

(51) *Int. Cl.:* **A01H 5/00**

(52) *U.S. Cl.:* **Plt./388**

(58) *Field of Search:* **Plt./388**

3 Drawing Sheets

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SUMMARY OF THE INVENTION

The present invention comprises a new and distinct plant of *Paspalum vaginatum* O. Swartz, which has been given the name 'SEA ISLE 2000'. The following traits have been repeatedly observed and are the most pronounced characteristics of this new cultivar when grown in Georgia, and in combination, they distinguish it from Adalayde, the most closely related variety:

1. High tolerance to salinity.
2. Dark green color and extremely fine blades (≤ 1.5 mm in width).
3. Can tolerate mowing to $\frac{1}{2}$ inch height.

BRIEF DESCRIPTION OF THE FIGURES

FIG. 1 shows a typical specimen of 'SEA ISLE 2000' with the inflorescences (commonly referred to as spikes) highlighted against a white paper background.

FIG. 2 shows two rows, each containing examples of young inflorescences (commonly referred to as spikes) and sheaths (with leaf blades trimmed) of 'SEA ISLE 2000'.

FIG. 3 shows SEA ISLE 2000 after planting and mowing. SEA ISLE 2000's dark green color, extremely fine blades and tolerance to close mowing are shown.

DETAILED DESCRIPTION

Background of the invention

Paspalum vaginatum O. Swartz is a grass in the Panicoideae subfamily which inherently colonizes saline ecosystems, e.g. along sea coasts and on brackish sands. Commonly referred to as "seashore paspalum", it is an ecologically aggressive, littoral warm-season perennial grass species. It is both rhizomatous and stoloniferous. Because it can tolerate waterlogged conditions and periodic, mono-saline flooding, it has been useful for erosion control on salinity-sensitive lands and areas subjected to tidal influences, e.g. for beach preservation. The grass occurs in the wild in both hemispheres. In the Americas, it is found

naturally almost exclusively along the Atlantic coastline in marshy, brackish ecosystems. In Australia, it is found in tropical heaths, tropical and subtropical rainforests, semi- and shrub woodlands, acacia shrublands, and mangrove swamps.

Generally, *P. vaginatum* is a self-incompatible, diploid species. The diploid chromosome number recognized for the species is 2n, and the genome of this species is the "D" genome. It has a C_4 method of carbon fixation, using the C_4 pathway, which is characteristic for grasses that occur in moist ecosystems.

P. vaginatum has been introduced into salt-affected areas as the need for forages, land reclamation and turf have increased. The variety Adalayde has been widely used in Australia as a lawngress, although its use on bowling greens was curtailed when superdwarf bermuda grasses were introduced to the country. *P. vaginatum* was identified on a marsh golf course at the Sea Island Golf Club in the southeastern United States, where the grass was already established along the golf course fairways when the course was built. *P. vaginatum* was introduced specifically throughout the 1970s and 1980s for golf course, fairways and home lawn use, and one variety from Australia became reasonably well-known in the United States, Adalayde (U.S. Plant Pat. No. 3,339). However, this variety was not managed effectively in the United States, and the lack of optimization of fertilization regimes and irrigation requirements led to disenchantment about its performance. With the introduction of the dwarf bermudagrasses and other warm season grasses, the use of a seashore paspalum variety as a turfgrass has been minimal. In the late 1980s a variety of seashore paspalum was introduced to the fairways of a golf course in Honolulu, HI, and is now referred to as 'Salam' (an unpatented variety).

With increasing pressures on golf course developers to use coastal venues and reclaimed water sources (or brackish water), there is a need for a high-quality seashore paspalum turfgrass not only for use on the fairways, but one that is specifically adapted for use on golf course greens, where it is subjected to extreme mowing and foot traffic stress. Prior to the selection and cultivation of SEA ISLE 2000, no

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Turf Management



Rate of Application



Method of Application

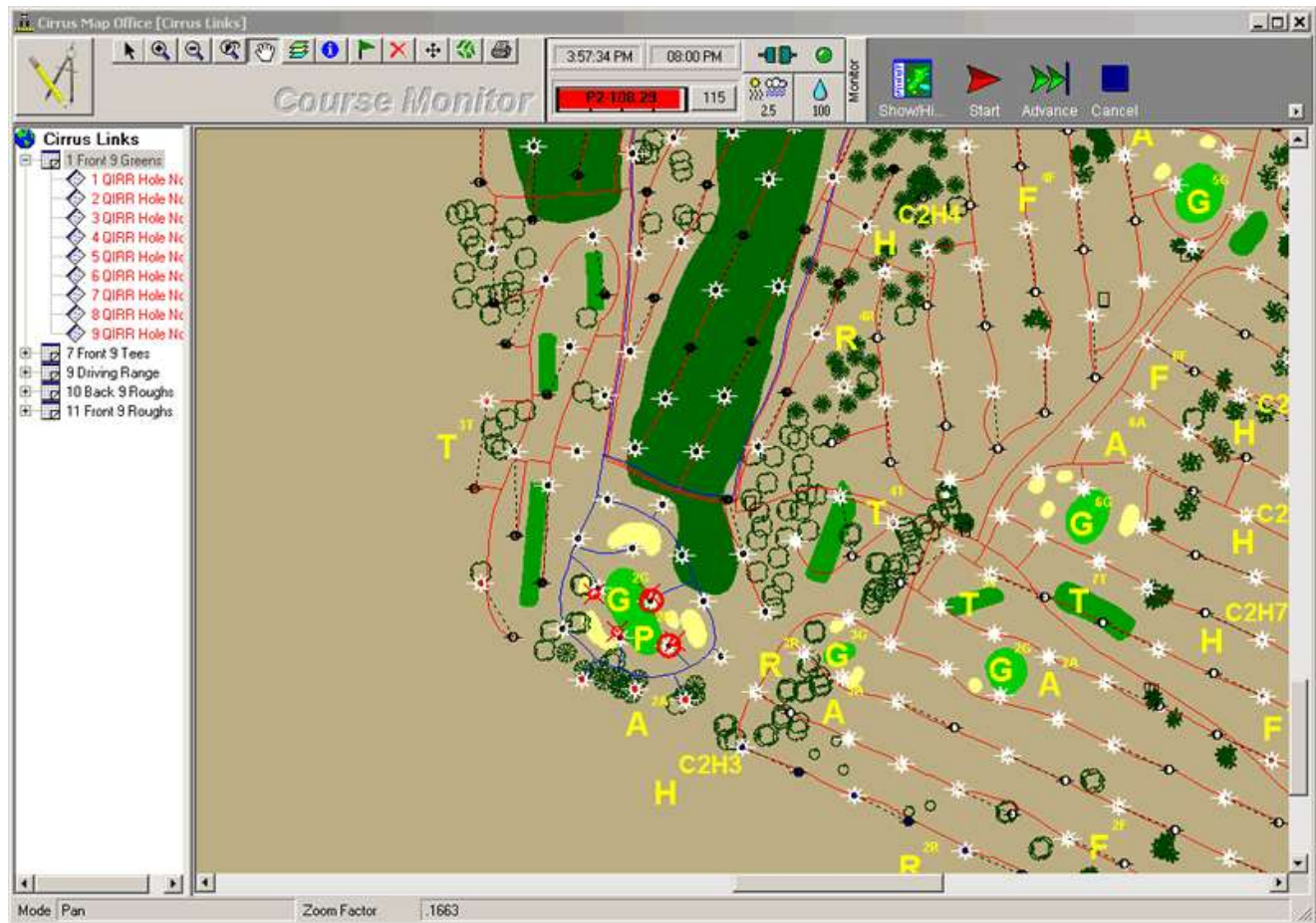


Making Golf Courses Smarter



Toro PrecisionSense





Finding Alternative Water Sources



Arbor Selection & Management



Review & Verify





Elimination of Lakes & Ponds



Outreach



*Water reduction
does not necessarily mean
turf reduction*

Mow what matters...



Think outside the box...





Remember: Golf has made a difference!



We don't use water...



...we borrow it!





FORREST RICHARDSON, ASGCA
Golf Course Architect

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