

## REPORT: ANCHORAGE TESTING OF 4" GREENSTAKE™ VS. 6" WIRE PINS

### Background and Purpose:

To carry out tests that would measure the anchorage force of the 4-inch GreenStake® and the 6-inch wire staple used to pin RECPs. Traditionally, 6-inch wire staples have been used to pin RECPs. Whereas much testing has been carried out on erosion control fabric to measure its performance characteristics, no testing has been done, until now, on the pins used to hold the fabric in place. The following summarises the independent tests carried out to compare the anchorage force of 4-inch GreenStake™ against that of the industry standard 6-inch U-shaped metal staples.

### Test Facility:

TRI/Environmental, Inc. (TRI), Austin, Texas, independent testing and research services to the international erosion control and geosynthetics industry.

### Materials Tested:

- Item 1. 4" GreenStake™
- Item 2. 6"x6"x1" Wire Staple



### Test Approach:

The index anchorage tests were performed using the following protocol:

- 200mm diameter x 150mm deep pots (as in pictures) were filled with silty sand compacted to  $90 \pm 3\%$  of Standard Proctor density, at a soil moisture within  $\pm 3\%$  of optimum moisture content per ASTM D-698. Note: The sand and the associated compaction criteria are the same used in standard RECP tests.
- Each anchor was machine "forced" vertically down into the soil to the prescribed depth at a rate of 2 inches per minute. The GreenStake® was pushed to the prescribed depth of 4 inches and the wire staple was pushed to the prescribed depth of 6 inches. See attached test photos.
- After one minute, the anchor was "extracted" vertically upward at a rate of 2 inches per minute while measuring/recording the force required.
- 3 tests were done on each anchor and each test was conducted on freshly prepared cores.

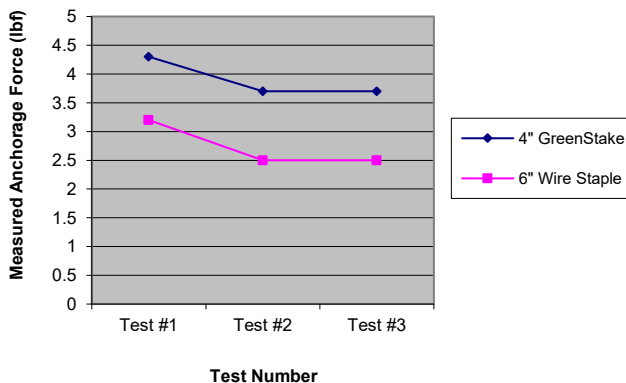
### Summary of Test Results:

Summary of Test Results			
	Test # 1	Test # 2	Test #3
	Anchorage Force	Anchorage Force	Anchorage Force
4" GreenStake®	4.3 lbf	3.7 lbf	3.7 lbf
6" Wire Staple	3.2 lbf	2.5 lbf	2.5 lbf

### Conclusion:

The 4" GreenStake® has on average 45% more anchoring force than 6" Wire Staple.

MEASURED ANCHORAGE FORCE  
4" GREENSTAKE™ VS. 6" WIRE STAPLE



4" GREENSTAKE™ % GREATER ANCHORAGE FORCE  
TO 6" WIRE STAPLE

