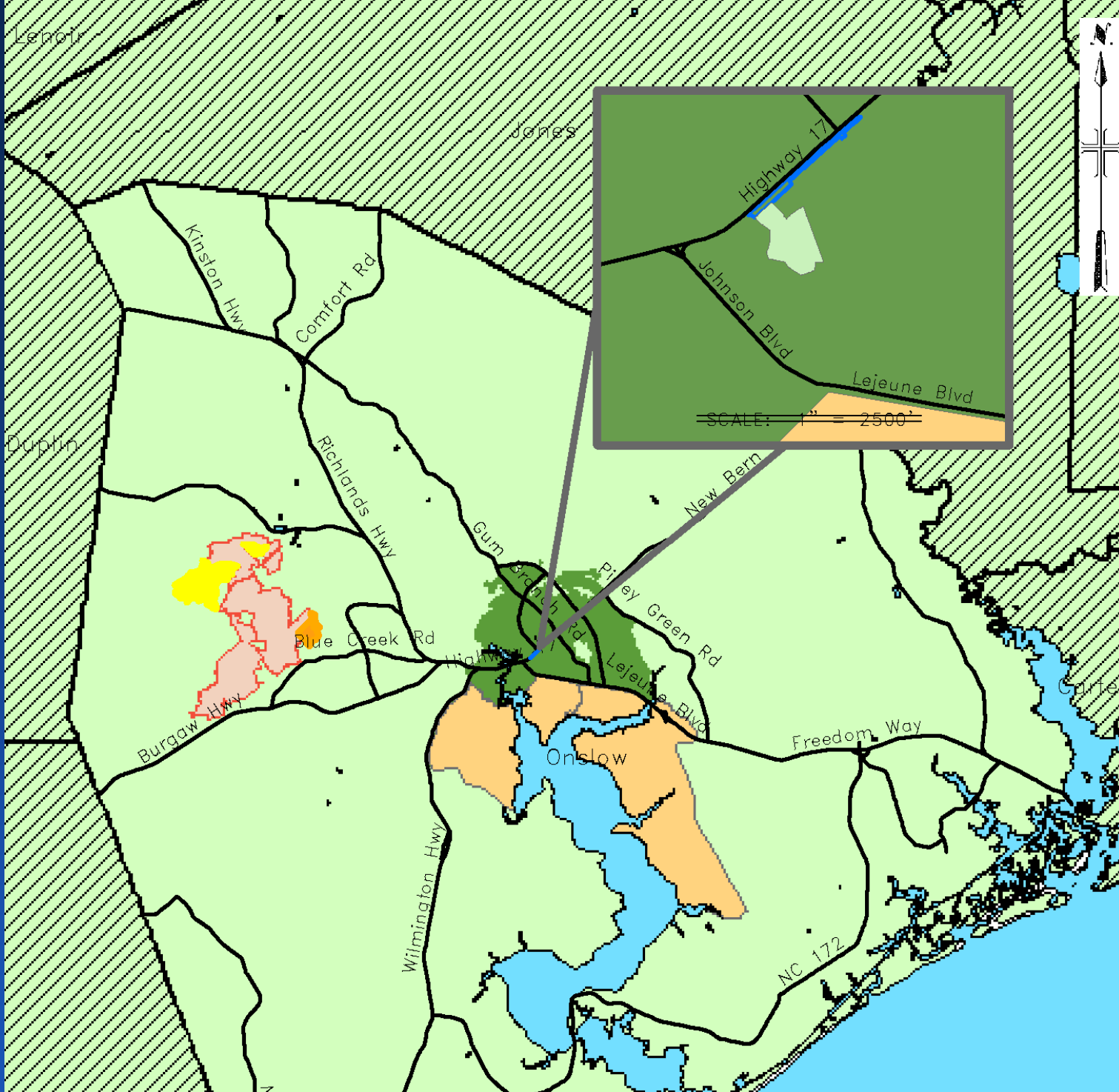




# **Preliminary evaluation of Atlantic White Cedar in a Wastewater Land Treatment System in Onslow County, North Carolina**

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**June 11, 2009**



**NC STATE UNIVERSITY**

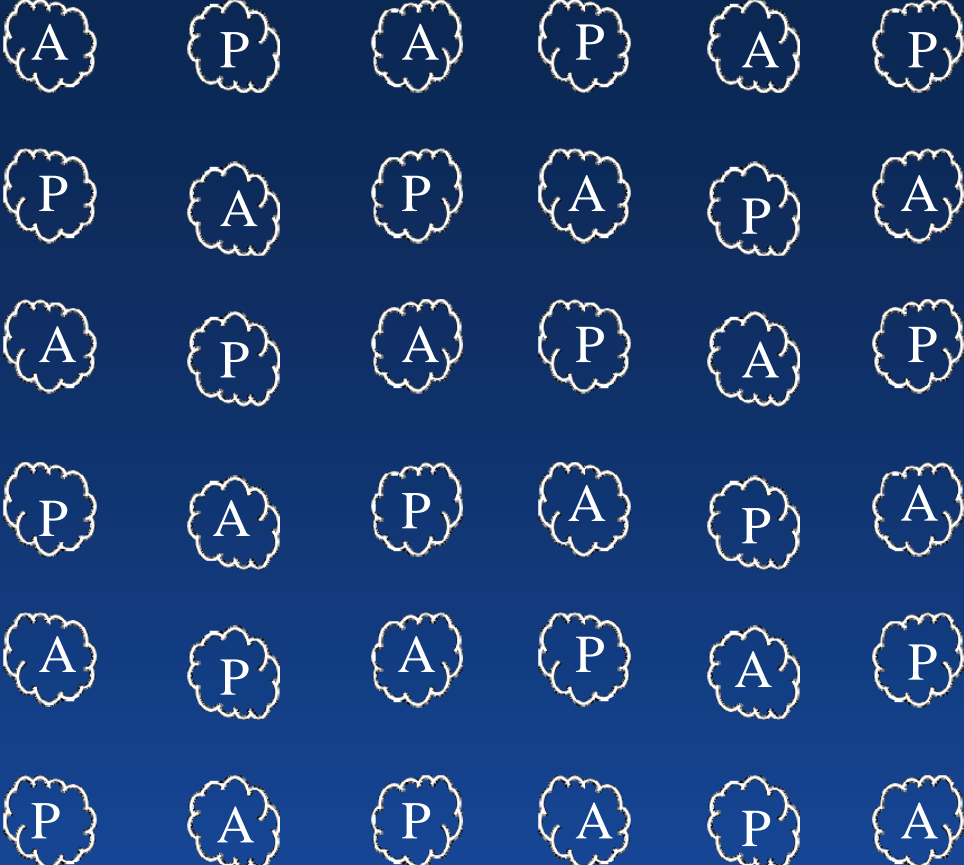




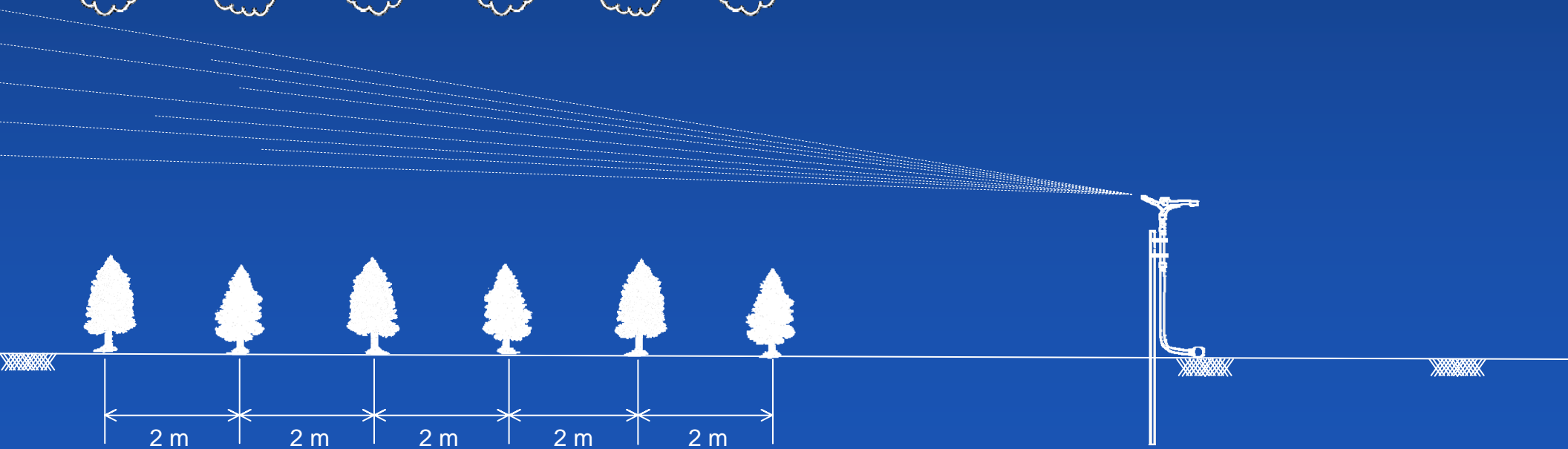
## Summary of Wastewater Effluent

pH	8.6 (7.5 - 9.7)
Ammonia	15.2 mg/l
Nitrite	1.0 mg/l
Nitrate	4.4 mg/l
Total Kjeldahl Nitrogen	12.5 mg/l
Total Phosphorus	3.1 ppm
Residual Chlorine	349.3 ug/l
Sodium	155.0 ppm
Magnesium	3.5 ppm
Sulfate	13.5 ppm
Potassium	16.2 ppm
Calcium	25.0 ppm
Manganese	0.02 ppm
Chloride	70.0 ppm
Total Organic Carbon	13.7 ppm

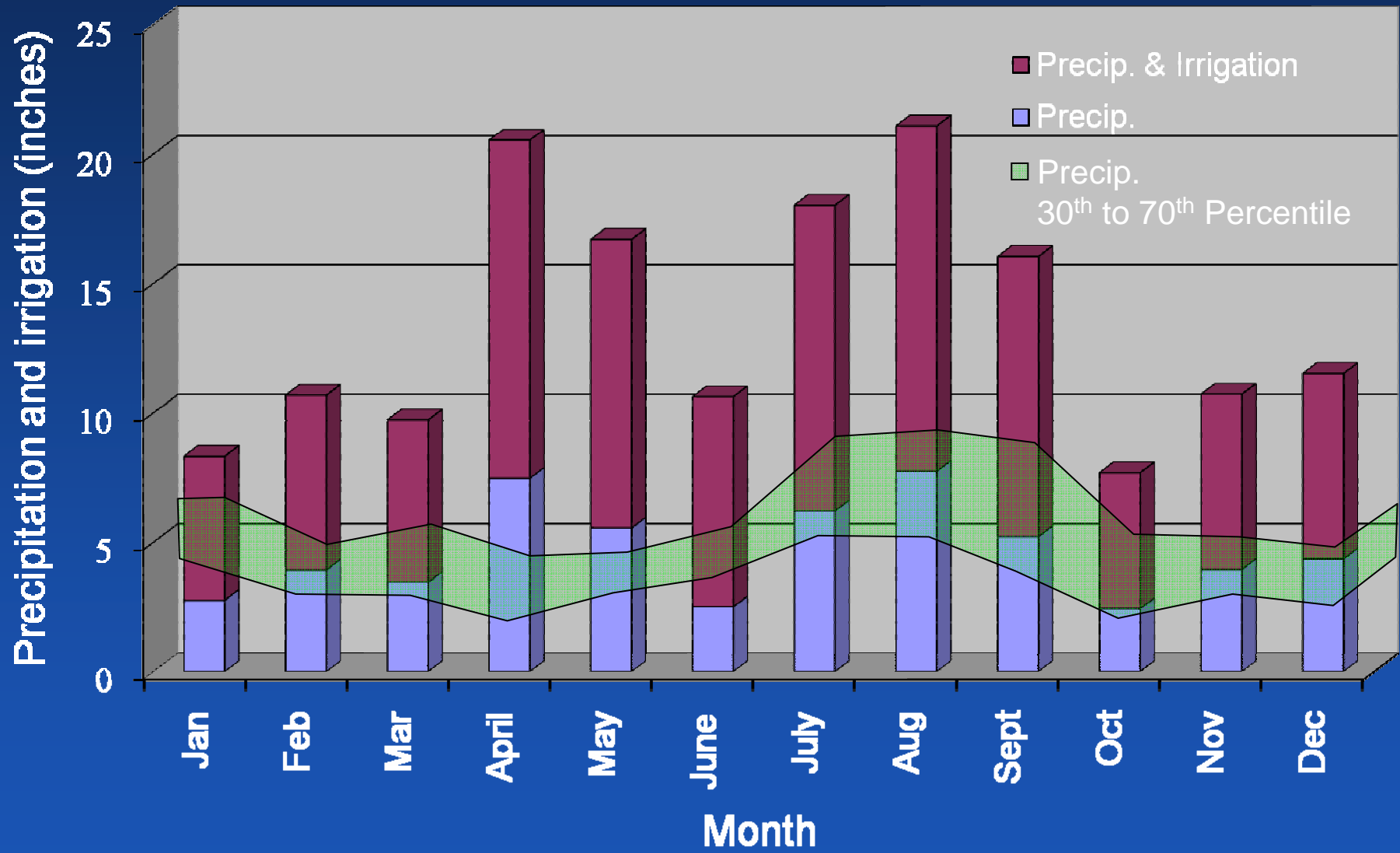
# Plan and Section of Typical Plot



3 sites  
4 plots / site



# Precipitation and Estimated Irrigation



March 2008

# Zone 5

## Norfolk loamy fine sand



January 2009



# Zone 7

## Baymeade fine sand

March 2008



January 2009



March 2008

# Zone 8

## Foreston loamy fine sand



January 2009





## Comparison of soil drainage classes, permeability and surface runoff.

Soil Series <sup>1</sup>	Location	Drainage Class	Permeability	Surface runoff
Norfolk loamy fine sand	Zone 5	Well drained	Moderate	Negligible to medium
Baymeade fine sand	Zone 7	Well drained	Moderately rapid	Slow
Foreston loamy fine sand	Zone 8	Moderately well drained	Moderately rapid	Slow
Pungo muck <sup>2</sup>	---	Very poorly drained	Slow	Ponded to very slow

<sup>1</sup> NRCS, Onslow County Soil Survey

<sup>2</sup> Pungo muck is shown for comparative purposes only and did not occur within study plots

# Percent Survival

	Zone 5	Zone 7	Zone 8	Total
AWC	84.7 %	77.8 %	81.9 %	81.5 %
Pine	52.8 %	65.3 %	91.7 %	69.9 %
Total	68.8 %	71.5 %	86.8 %	75.7 %



## Mean Growth in Centimeters and Standard Error

	Zone 5	Zone 7	Zone 8	Total
AWC	19.28 (1.86)	9.98 (1.51)	20.10 (1.54)	16.60 (1.01)
Pine	6.04 (1.05)	9.90 (1.65)	16.73 (1.58)	11.92 (0.97)



## Problems Encountered

- Herbicide Application – should have used Habitat
- Deer Browse



# Conclusions and Recommendations

- AWC survived better than loblolly pine
- On most sites, AWC produced more shoot growth than loblolly pines
- Additional work is needed

Side-by-side comparison of irrigated and not irrigated

Increased sample size

Site preparation – herbicide application, bedding

Varied irrigation rates and soils

Rain gauge



Questions?