



STA-1E PSTA DEMONSTRATION PROJECT

**U.S. Army Corps of Engineers
Jacksonville District**



Introduction

Part 1: STA-1E Demonstration Project

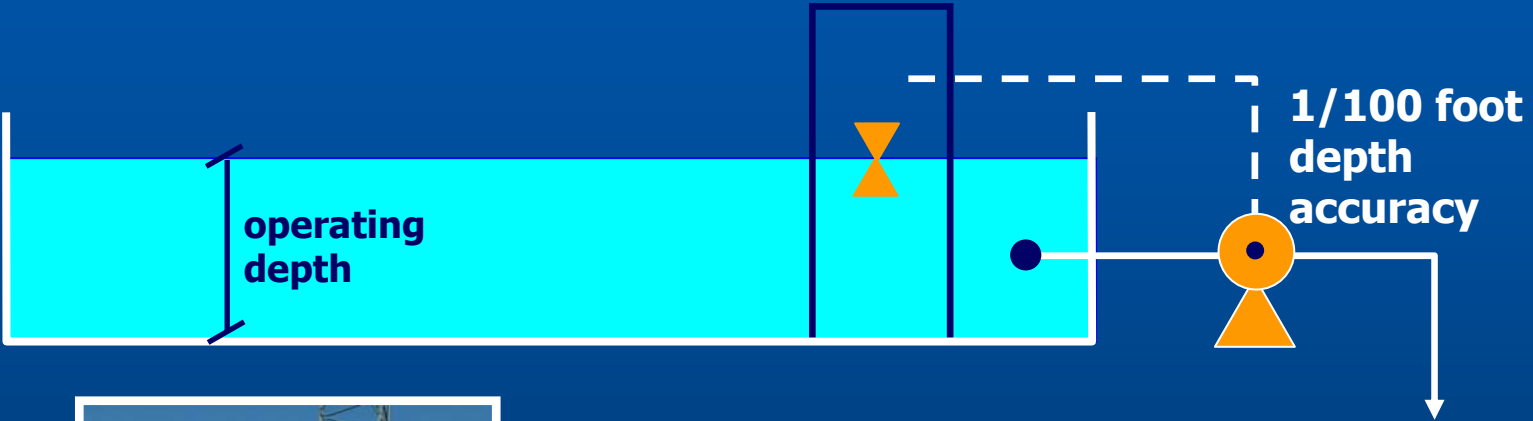
- STA-1E PSTA Test Facility
- Monitoring
- Results
- Summary

Part 2: STA-1E Project Status

- STA-1E Field Scale Conceptual Plan

PSTA Test Facility

Feed:
1-11
cms/day
measured
w/rotameter



water
budget

rainfall and
evaporation
monitoring



composite
sampling
(200 hrs; 1400 hrs)

PSTA Test Facility

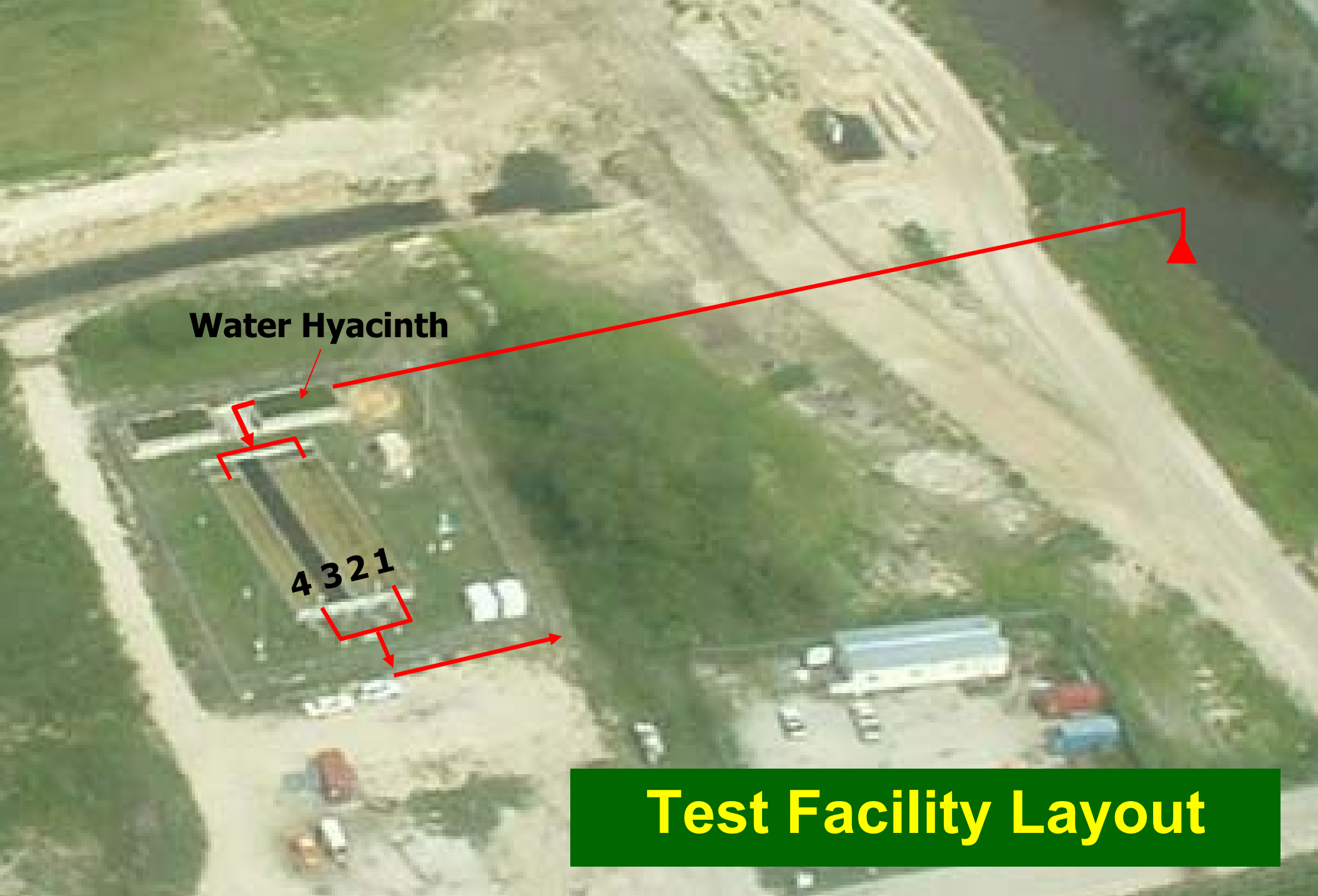
- 10 ft x 100 ft, maximum operating depth: 3 ft
- Cell 1 – riviera sand, 4 cu in/m² lime sludge
- Cell 2 – limerock
- Cell 3 – peat
- Cell 4 – limerock over peat



Water Hyacinth

4 3 2 1

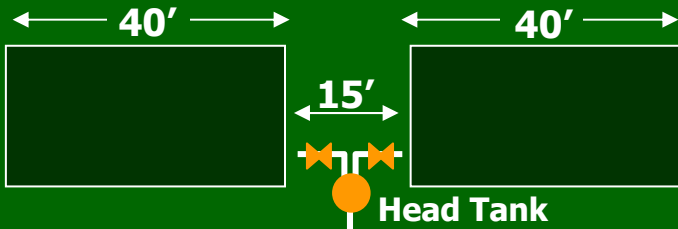
Test Facility Layout



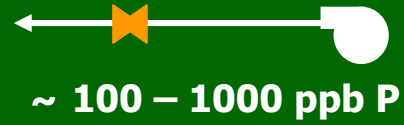
PSTA

Water Hyacinth

PRE-TREATMENT POOLS



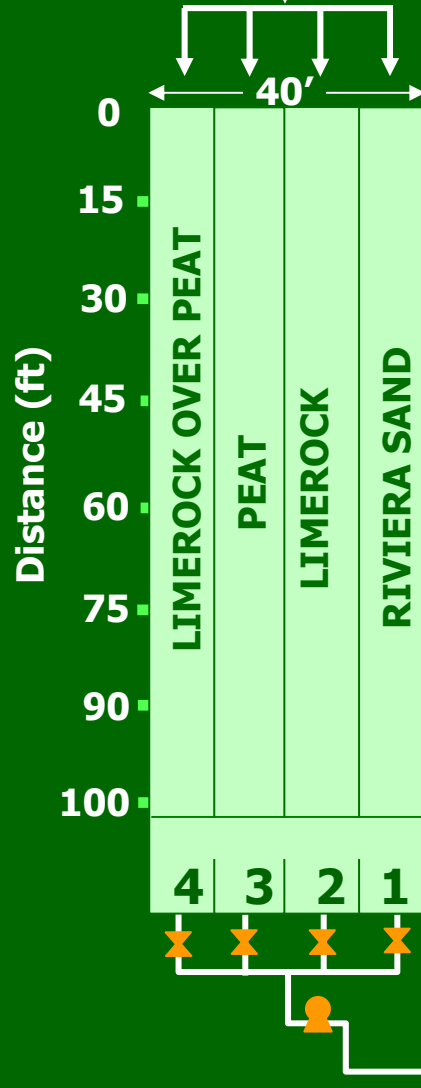
C-51



Periphyton mat



Calcareous Periphyton Mat (Cells 4 & 2)



Agricultural Ditch

Monitoring

- Influent and effluent composite samples – 2 samples per day, analyzed in duplicate weekly
- 4 hydro labs for continuous analysis (DO, conductivity, pH, eH, temperature)
- 5 week cell transects

Sampling



**Growth
tile**

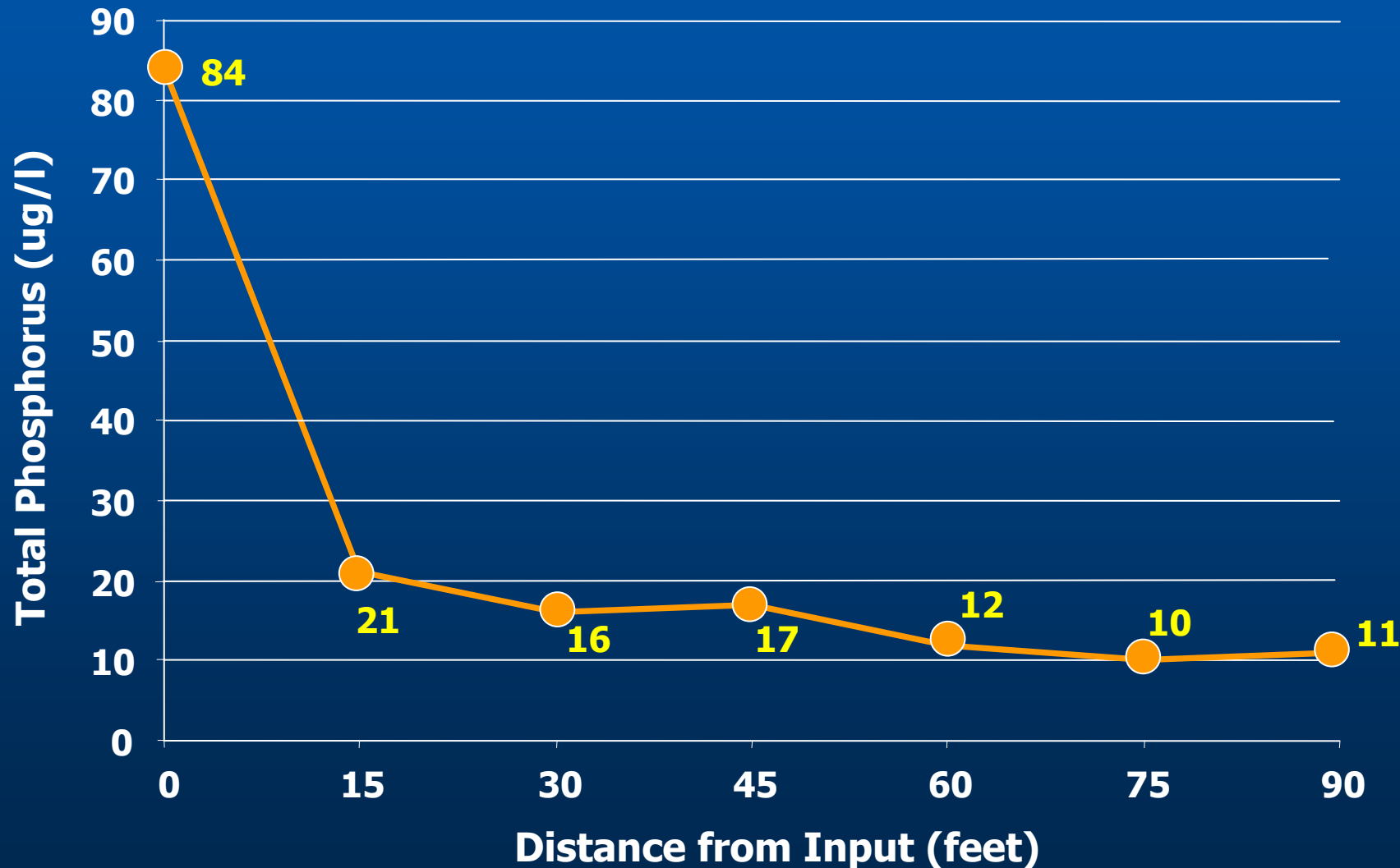


Calcareous Periphyton Mat Development

- Cycle cell - wet and dry
- 6 – 8 weeks community is ready for treatment
- Operate cell at 20-30 ppb P , excess P will shift community

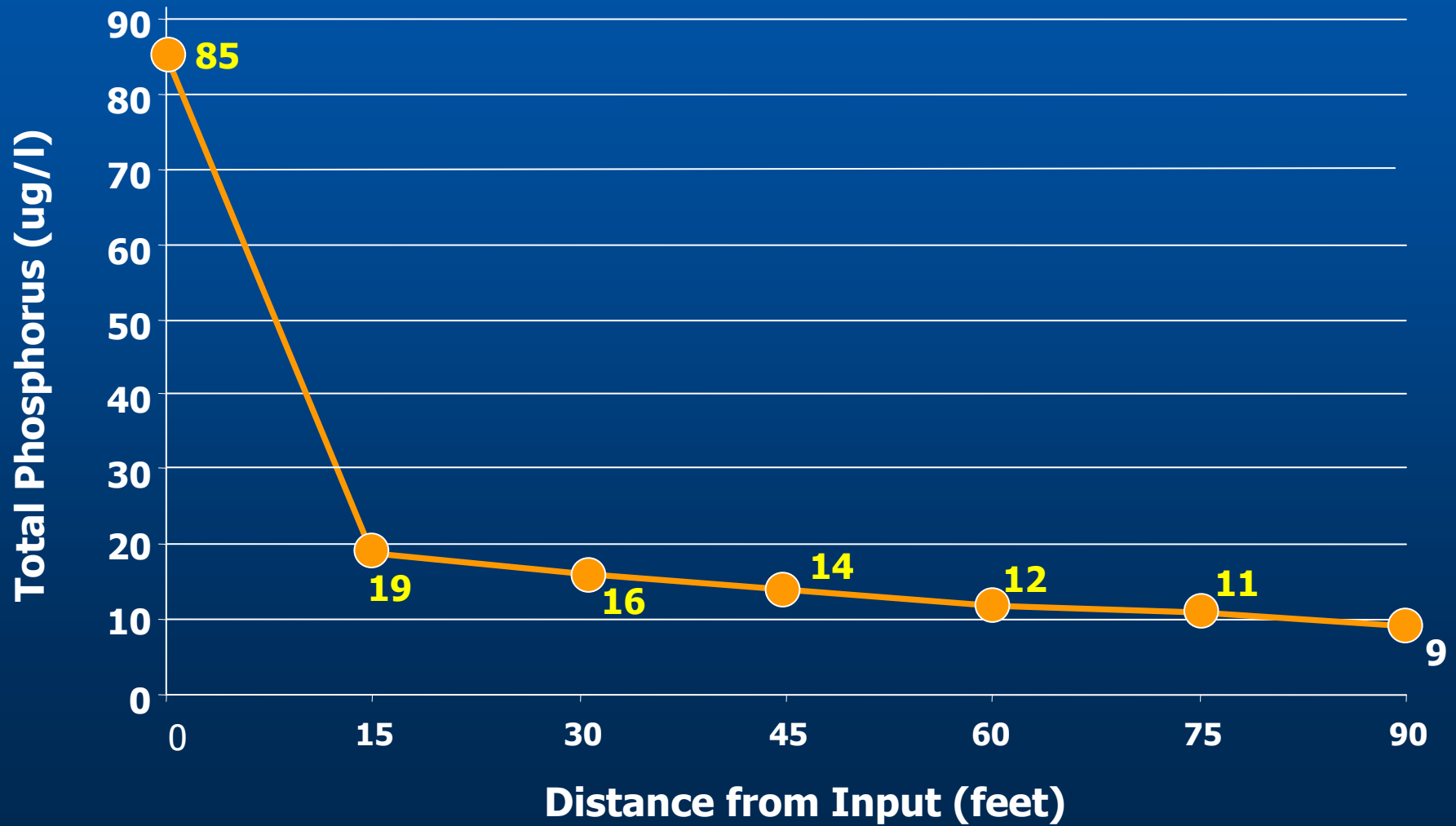
Cell 1 Phosphorous Transect

6" depth, 14 day HRT – 4/25/03



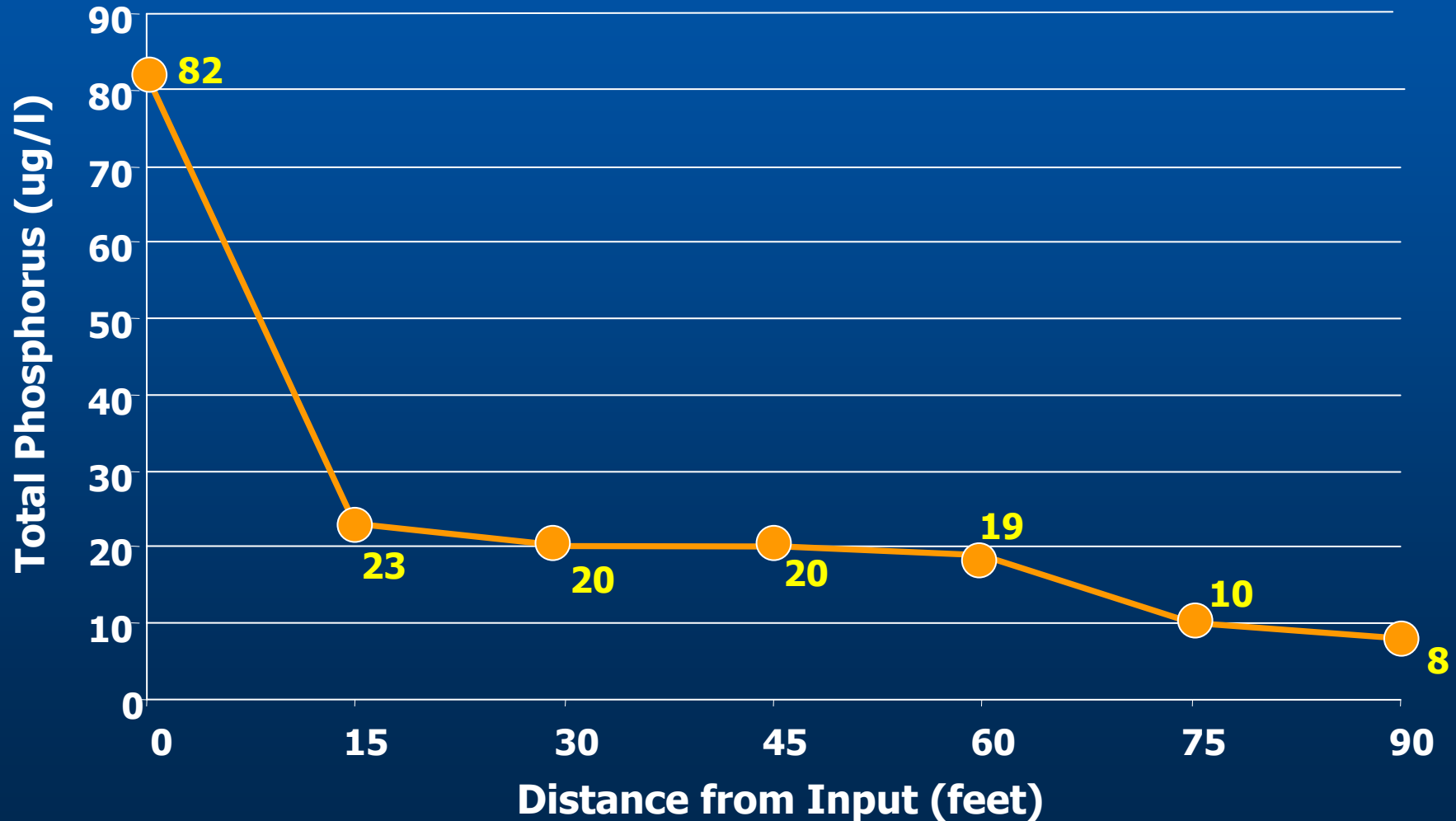
Cell 2 Phosphorous Transect

6" depth, 14 day HRT – 4/25/03



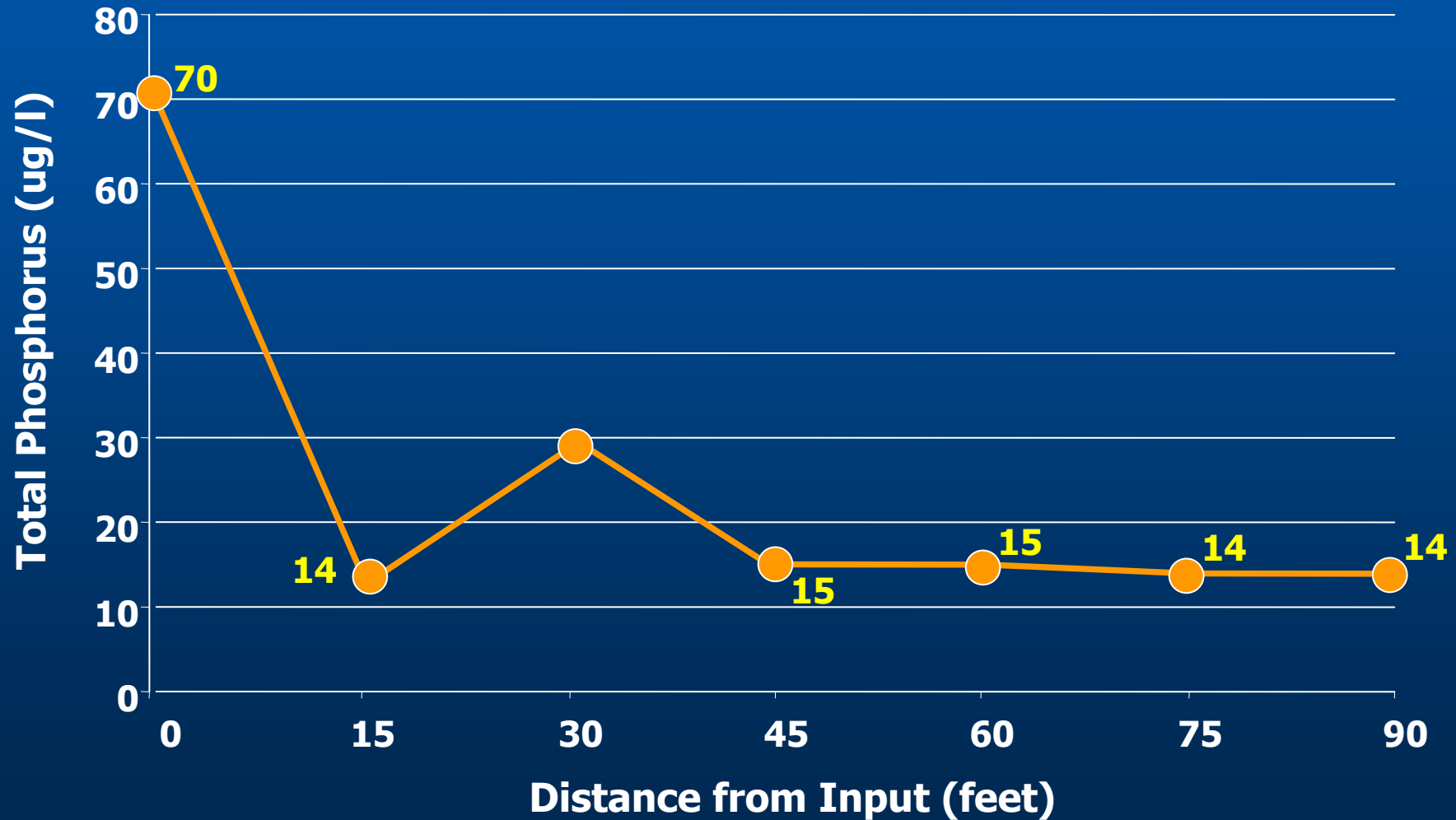
Cell 4 Phosphorous Transect

6" depth, 14 day HRT – 4/25/03



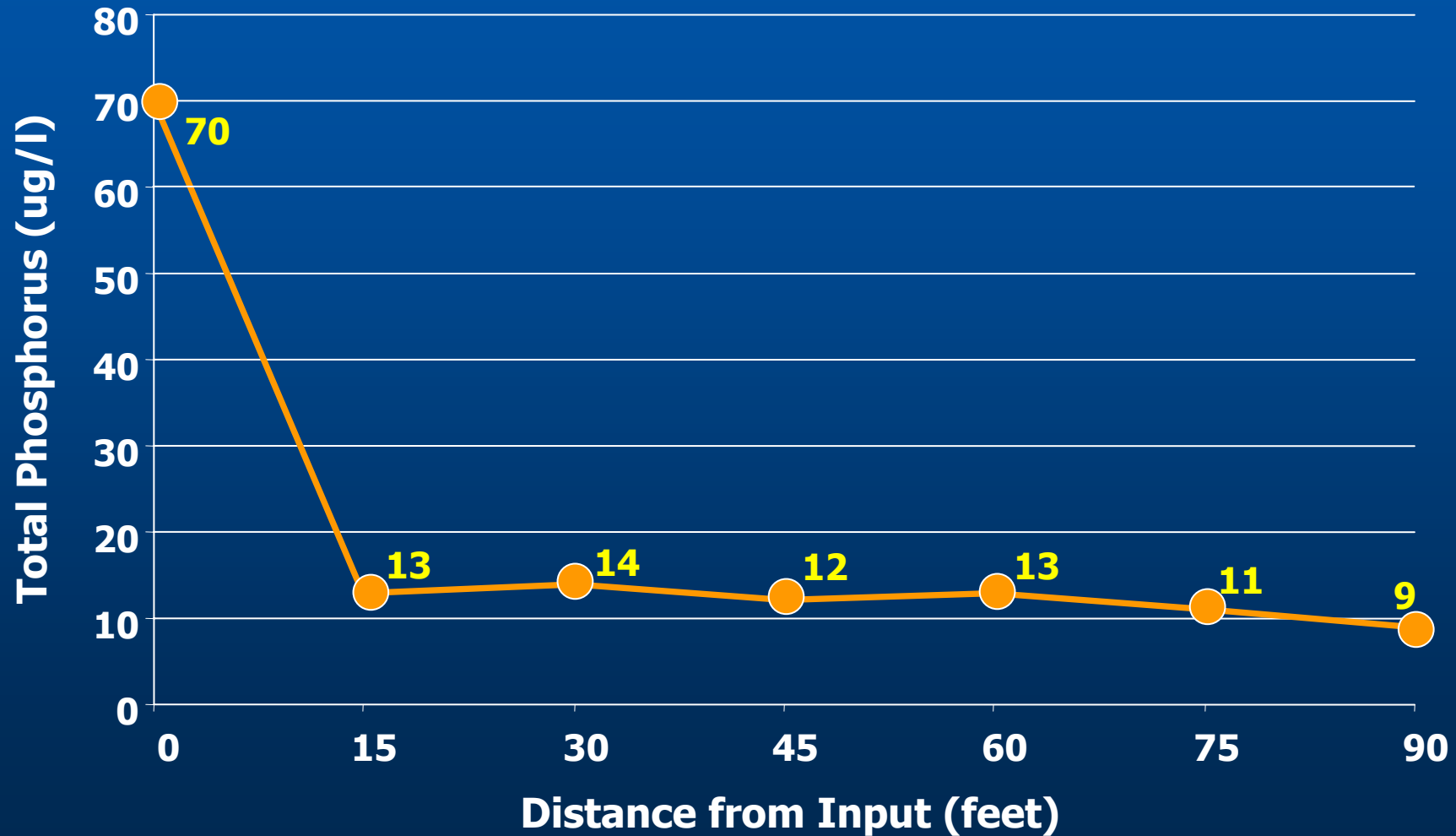
Cell 1 Phosphorous Transect

1' depth, 14 day HRT – 6/06/03



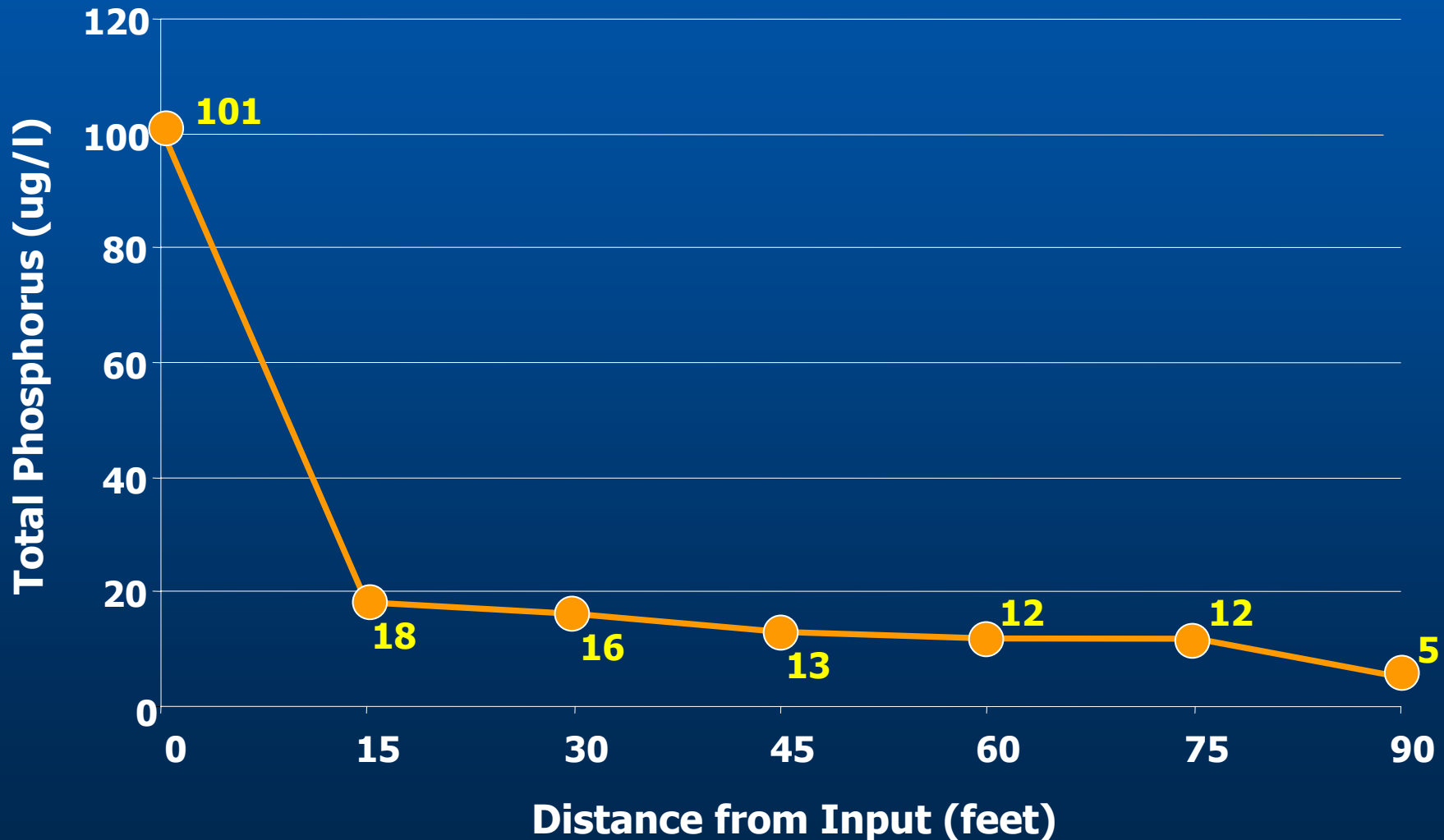
Cell 2 Phosphorous Transect

1' depth, 14 day HRT – 6/06/03



Cell 4 Phosphorous Transect

1' depth, 7 day HRT – 6/06/03



Summary

- PSTA can achieve 10 ppb P or less
- Calcareous periphyton mat can be established in 6-8 weeks



STA-1E Project Status



S-319



S-362



STA-1E East View

CENTRAL AND SOUTHERN FLORIDA PROJECT

West Palm Beach Canal (C-51) / STA 1E

PROJECT COSTS

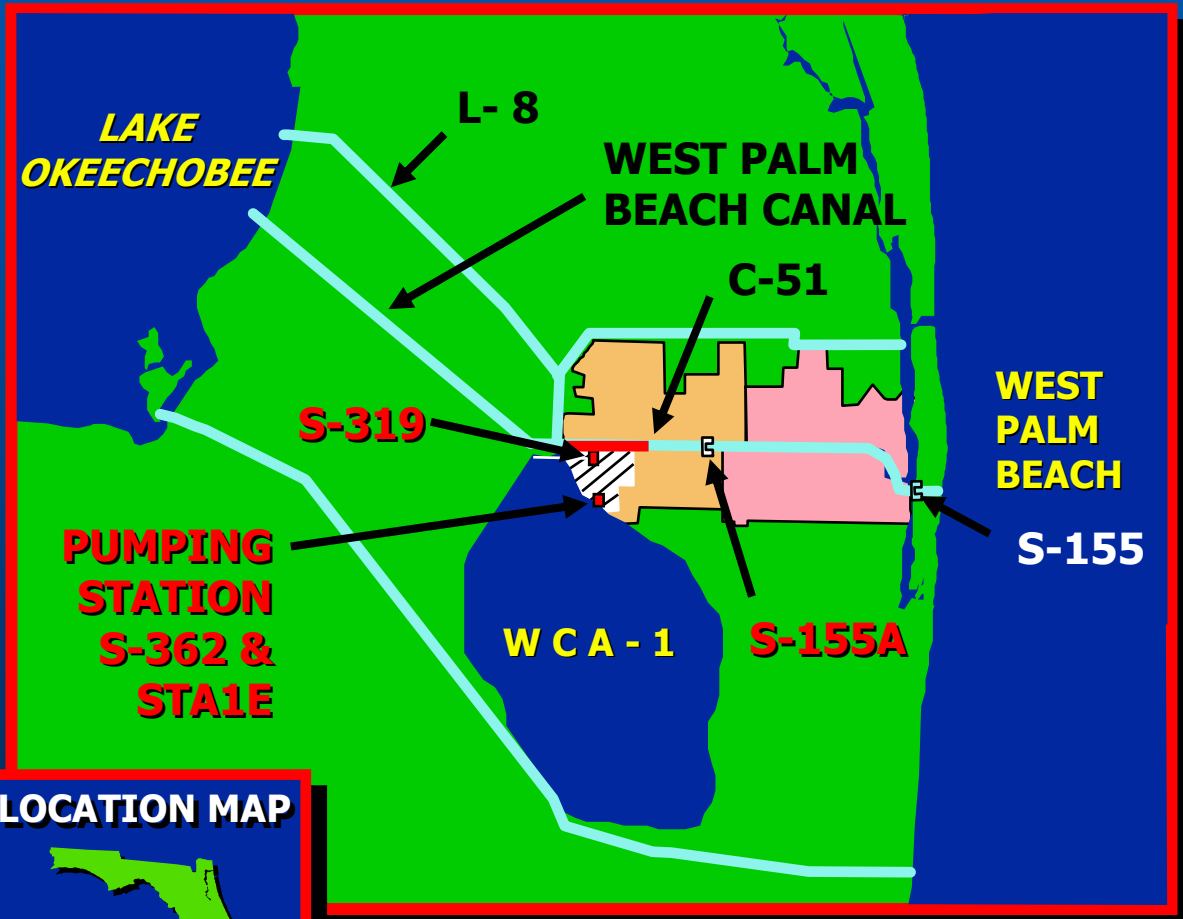
PED	\$ 22,482,000
Real Estate	\$ 60,440,000
Construction	\$192,578,000
Total	\$275,500,000
Federal	\$249,700,000
Non-Fed	\$ 25,800,000

COST SHARING: 91/9

SPONSOR: SFWMD

PURPOSE: Flood Control,
Water Quality, Water Supply

STATUS: Under Construction,
7 contracts underway



STA-1E

Conceptual Plan to Achieve 10 ppb Phosphorus



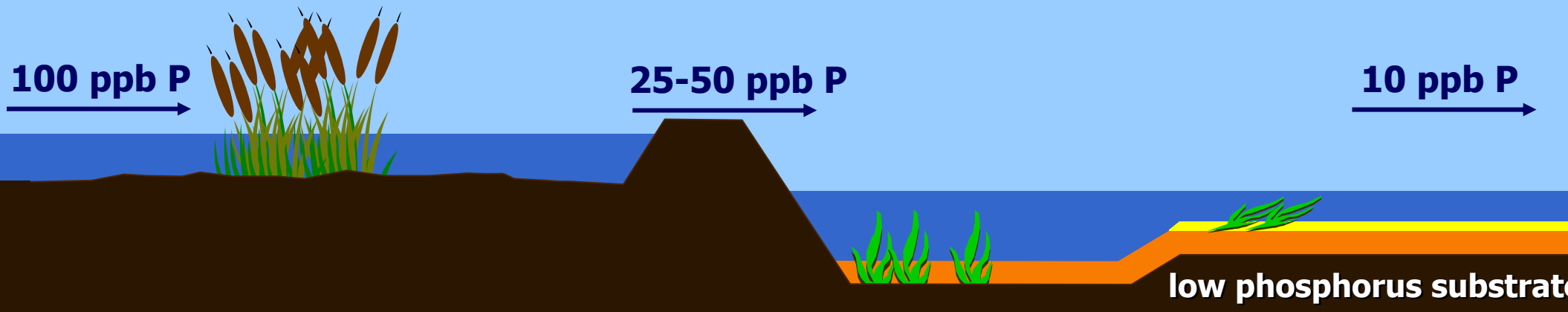
Emergent Growth



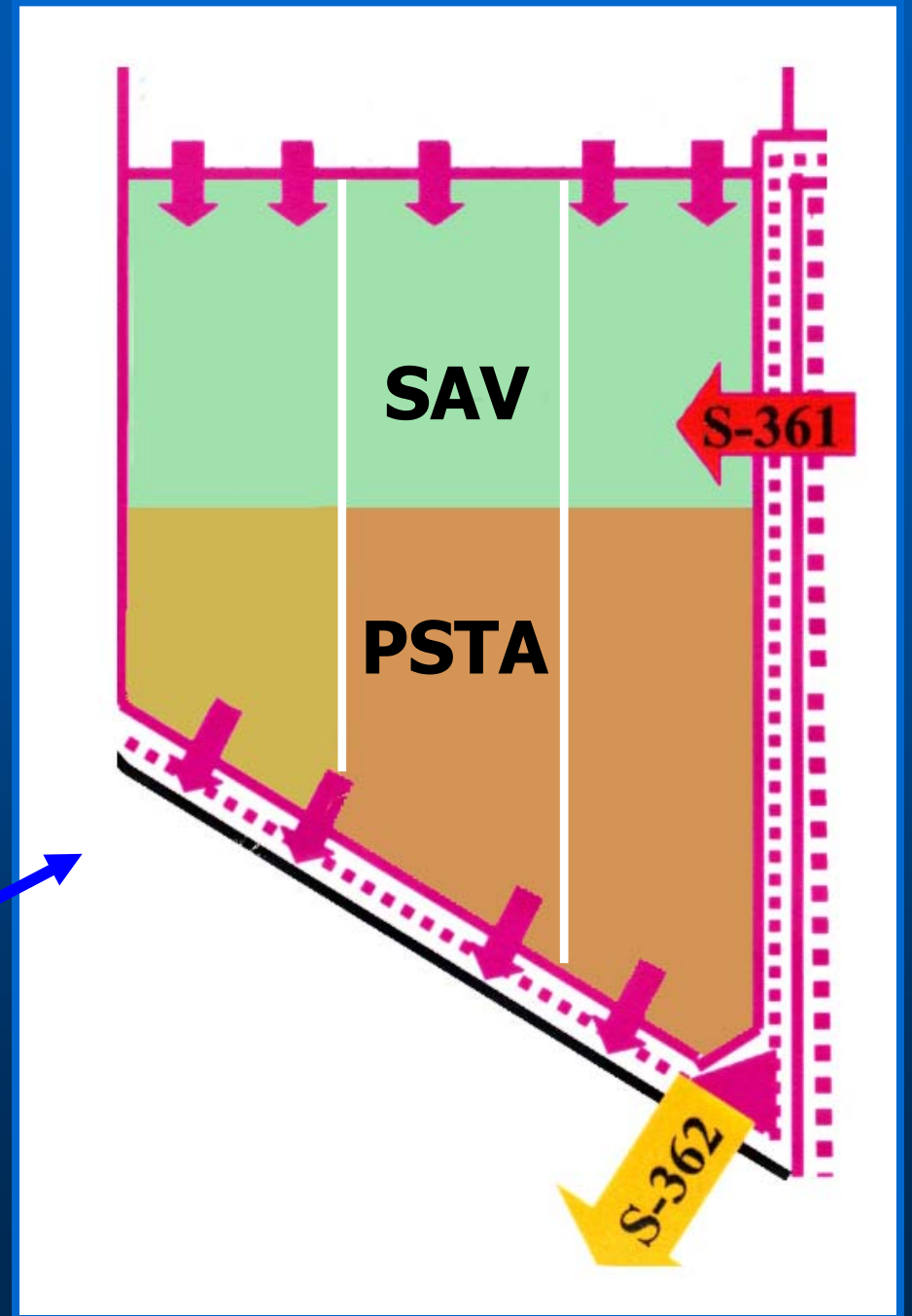
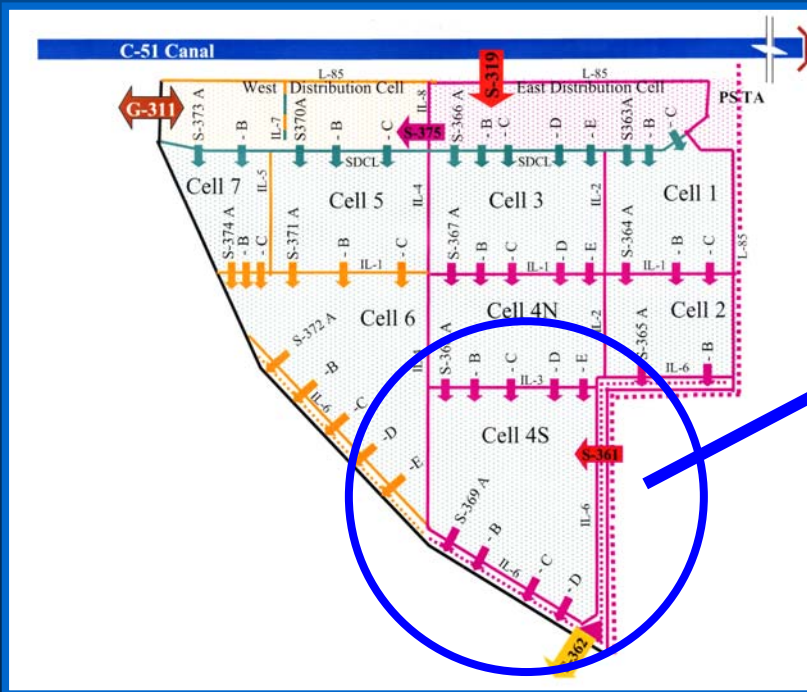
Submerged Aquatic Vegetation (SAV)



Periphyton (PSTA)



STA-1E Cell 4S





Riviera Sand

**Riviera Sand
w/Lime Sludge**

Limerock

S-362

**STA-1E PSTA Field
Scale Conceptual Plan**