A Special Wetland
Eversource Energy's Atlantic White Cedar Mitigation Project - The 1st Year

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EVERSOURCE ENERGY

THE PROJECT:
Eastern Connecticut Reliability Zone 5
400/500 Lines Rebuild

- Eastern Connecticut (ECT) Solutions Study – Conducted by ISO-NE (June 2020)
- Engineering evaluation determined that structures were degraded due to rot, cracks, woodpecker holes, and corroded hardware
- Project consists of:
  - Wood H-frame 400 Line structures replaced with steel monopole structures in a new alignment
  - 500 Line structures removed
  - Upgraded and converted to a 115 kV operation

Overview of the 400/500 Lines Rebuild Project

- Replacing existing wood structures with weathering steel monopoles
- Upgrade the conductor (wire) and replace shield wire with OPGW
- Replace all attachment hardware, insulators, grounding, counterpoise
- Improve or construct access roads and work pads
- Remove or trim trees and vegetation to accommodate the work or to meet the required clearances

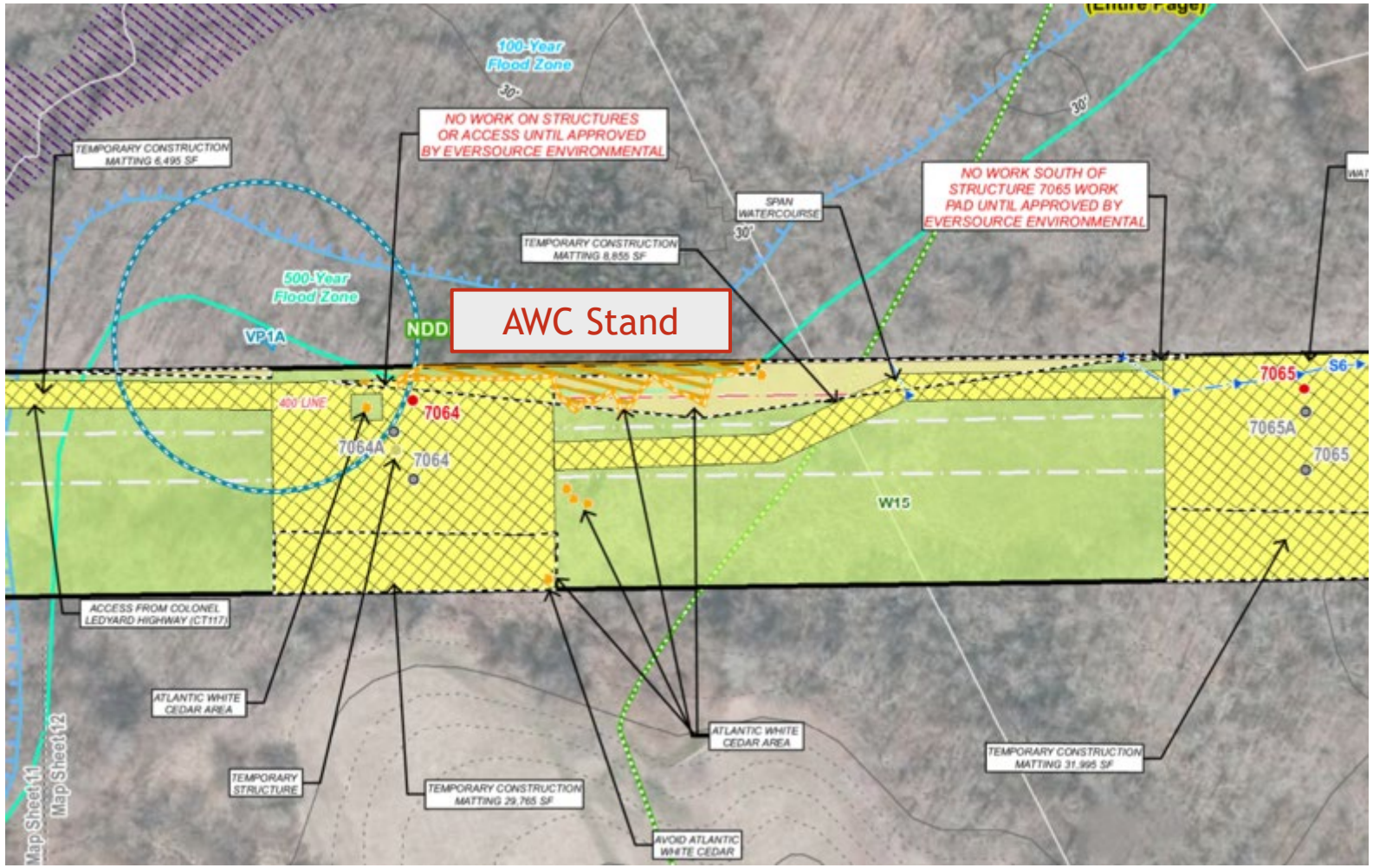
Project Purpose

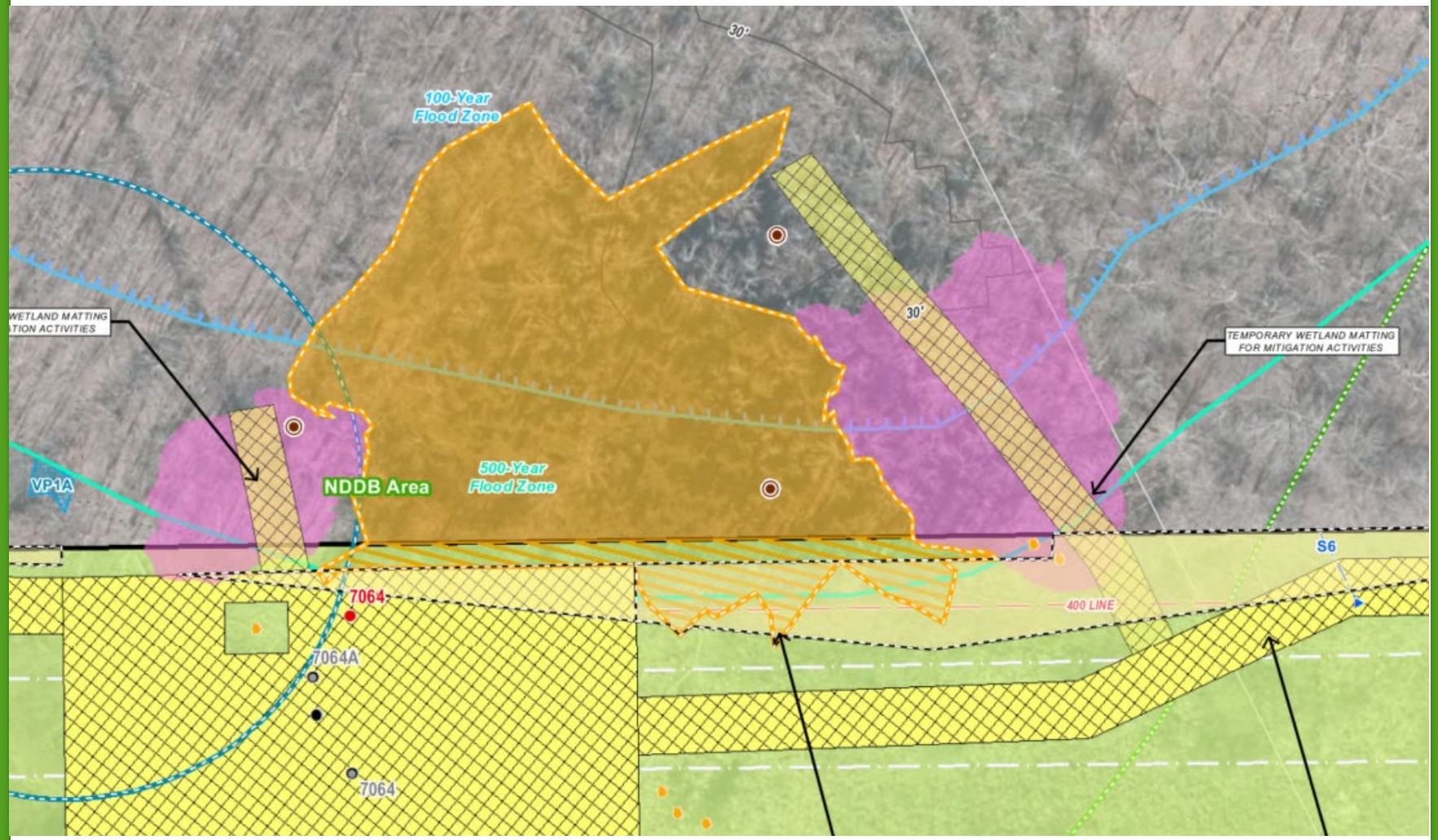
- Upgrade the line from 69 kV to 115 kV
- Improvements to system reliability replacing old and degraded infrastructure and address high and low voltage areas
- Place the line in a new alignment
- Accommodate for future growth

The Special Wetland

- Atlantic white cedar (*Chamaecyparis thyoides*) were identified within and adjacent to the 400/500 lines Right-of-Way (ROW)
- CT DEEP classifies Atlantic White Cedar Swamps as **"Special Wetlands"**
- Woody, evergreen native to the eastern United States
- Cypress family
- Round branchlets bearing the leaves and bluish-green color
- Fruits are small and spherical

Project Overview Continued




30'
100-Year
Flood Zone
30'
WETLAND MATTING
TION ACTIVITIES
TEMPORARY WETLAND MATTING
FOR MITIGATION ACTIVITIES
VP1A
NDDB Area
500-Year
Flood Zone
S6
7064
400 LINE
7064A
7064

Proposed Impacts to AWC

- Tree clearing and selective vegetation removal/mowing required for:
  - access road installations and improvements
  - work pads and pull pad installation
  - conductor (wire) clearances
- Non-compatible trees, those above 15 feet in height, need to be removed from under the proposed relocated transmission lines.
- Trees adjacent to the transmission line also needed to be removed to prevent hazard trees from falling on the proposed lines in accordance with required electric safety codes.
- **As a result, 39 Atlantic White Cedars needed to be removed.**

Feller-bunchers were used to extract AWC without causing disturbance to the surrounding areas.

PERMITTING REQUIREMENTS

Permit List
CT DEEP NDDB Determination
CT DEEP Section 401 Individual Water Quality Certification
CT DEEP General Permit for Discharge of Stormwater and Dewatering Wastewaters from Construction Activities (SWPCP)
Connecticut Siting Council – Petition for Declaratory Ruling
US Army Corps of Engineers General Permits

The Atlantic White Cedar Mitigation Plan

Protective Measures and Best Management Practices

- A forester was onsite during tree work.
- No roots were removed and shrub understory remained in place.
- Clearances reduced from 35 feet to 25 feet.
- Temporary construction work pads were prioritized to minimize their presence to the extent practicable.
- Matting for access and work pads were reduced by approximately 1/3 in size as the retired Structures 7064 and 7064A were removed. Only the remaining pad needed to support the installation of new Structure 7064 and wire pulling was left in place.
- All matting was removed once the work was complete.
- Vegetation management activities were conducted only on temporary construction matting.

PROPOSED MITIGATION PLAN

Enhancement

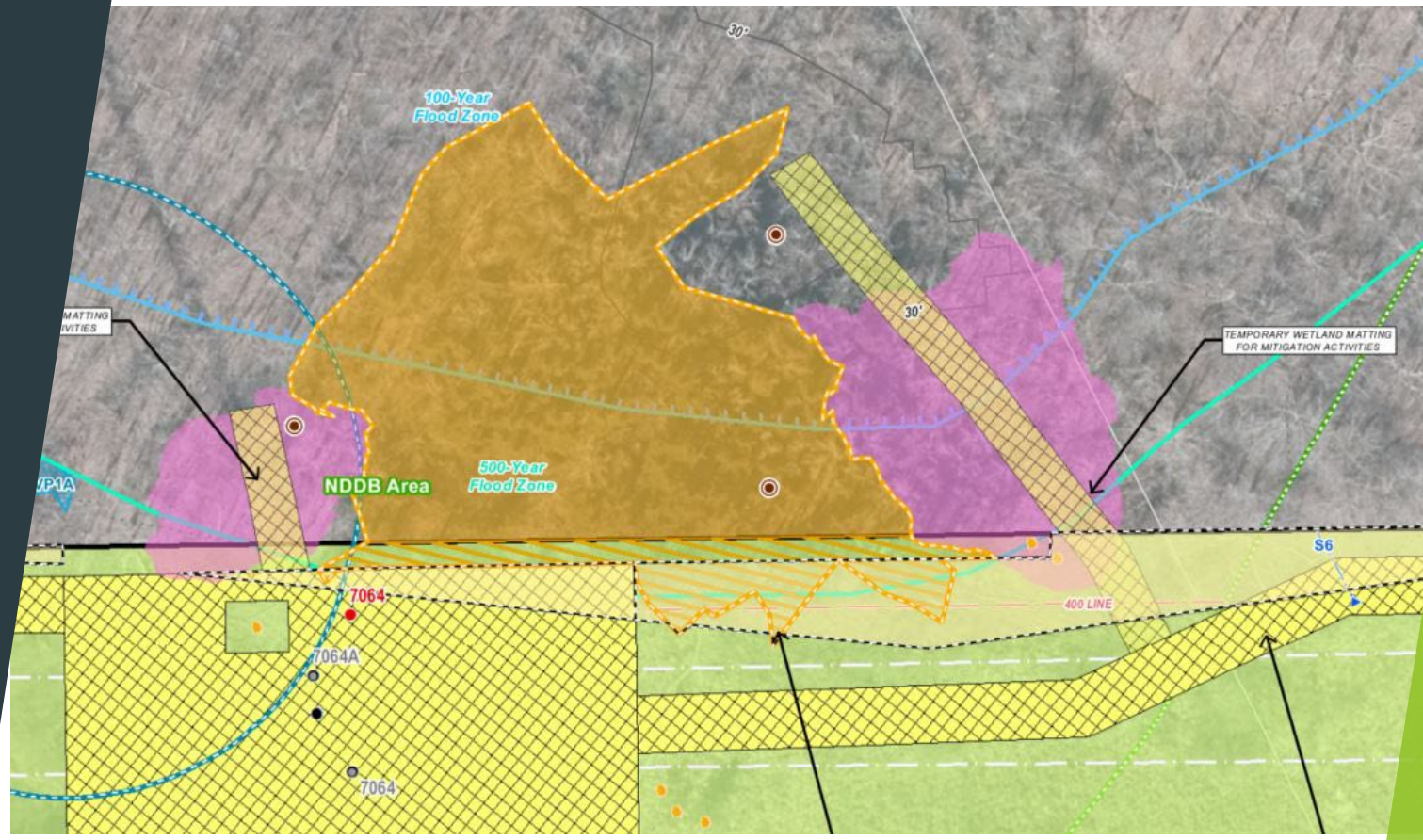
Stand Improvement/ Management Measures (**Orange** Shaded Area)

A. Thinning of the existing AWC Stand: removal/felling of woody vegetation
B. Girdling of the competing red maples within the existing stand

Creation

Expansion using natural and artificial regeneration (**Pink** Shaded Areas)

A. Planting sapling cedars
B. Deer browse protection installation
C. Monitoring for 8-10 years



AWC plantings to occur in the early spring following non-commercial thinning activity.

All AWC seedlings:

Bare-root stock, tubelings, or potted individuals

Sourced from a nursery that provides local genotype

Grown within +/- one (1) USDA Plant Hardiness Zone

A minimum 50% of the seedlings planted seed-grown

No cultivars allowed.

The seedlings protected from deer browse and buck rubbing using 1 of the 2 approved fencing methods:

Alternative 1:
Installation of an 8 ft high polypropylene fencing around groups of the transplanted AWC.

Alternative 2:
Installation of Galvanized Welded-Wire 2-inch mesh sizes cages a minimum of 8 ft high and minimum of 4 ft in diameter around each individual transplanted AWC.

CT DEEP Section 401 Individual Water Quality Certification Conditions

CT DEEP Section 401 Individual Water Quality Certification – Monitoring Requirements

Monitor the AWC at least 1x a year at the end of the growing season for 5 years to:

a. Assess and document the health and growth of both natural and transplanted AWC regeneration.
b. Hand-pull or cut invasive and non-native plant species as well as any other species that pose risk to the growth of the plantings.
c. Document any potential further management efforts recommended for the site.
d. Prepare and submit an annual report to CT DEEP by Nov 15th for 5 years.

Protective fencing removal cannot be removed until BOTH of the following conditions have been met:

a. Planted AWC have reached 10 feet in height
b. Qualified expert determines the trees can survive buck rubbing and deer browse and approved by CT DEEP.

AWC MITIGATION PLAN IMPLEMENTATION STEP 1: ENHANCEMENT

Hardwood tree felling and girdling conducted to promote the health of the existing stand.

AWC MITIGATION PLAN IMPLEMENTATION STEP 2: CREATION

- Tree removal conducted to enhance the saplings' chances of survival by decreasing competition and promoting natural regeneration.
- Areas with microtopography (i.e. tussocks) were flagged for appropriate planting locations.

Installation of 8-ft tall polypropylene deer enclosure fencing

Five suitable planting areas were identified and fenced off

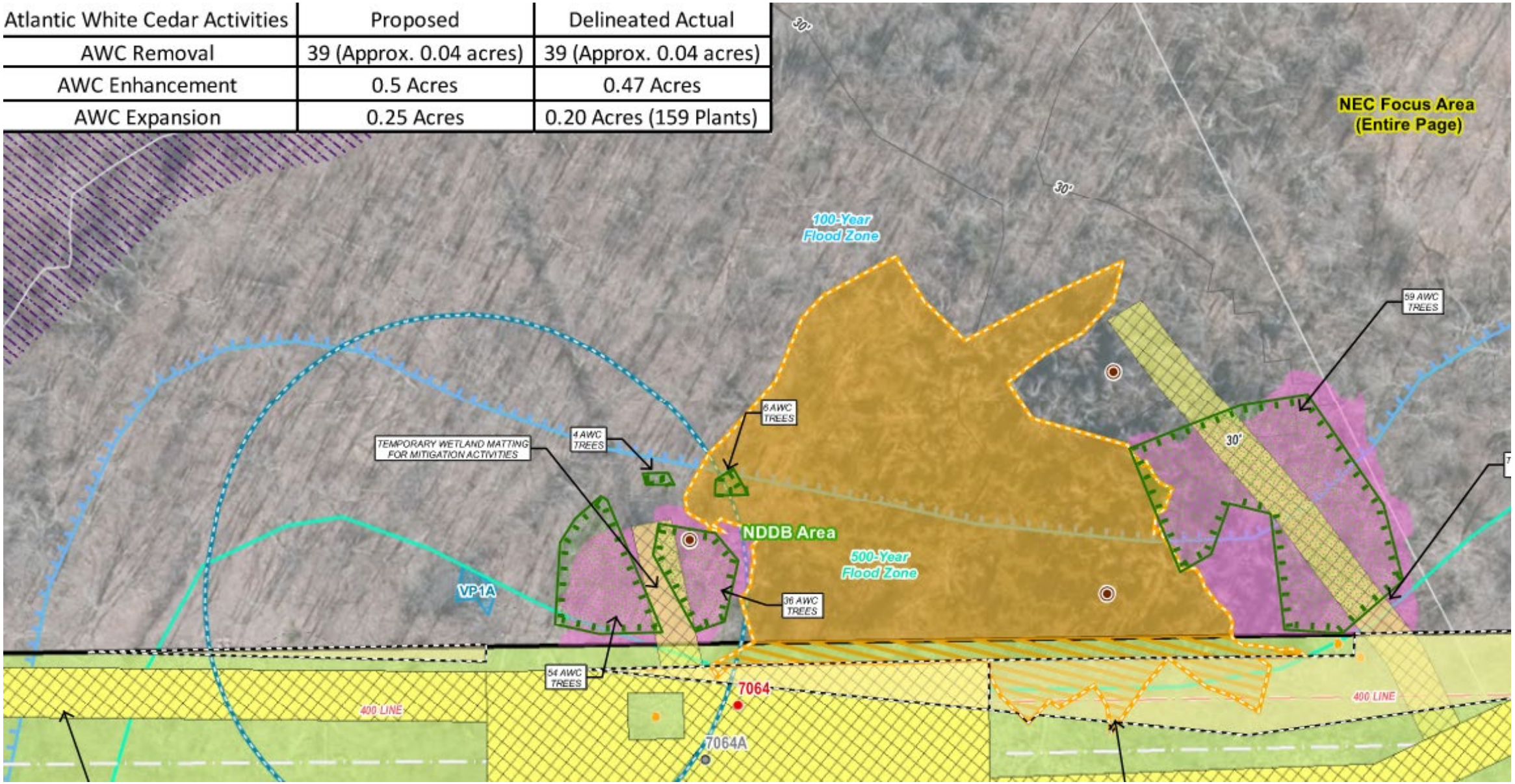
Protective Fencing Installation

AWC MITIGATION PLAN IMPLEMENTATION
STEP 2: CREATION

159 AWC saplings were planted in April 2023

Pre-planting inspection

Atlantic White Cedar Activities	Proposed	Delineated Actual
AWC Removal	39 (Approx. 0.04 acres)	39 (Approx. 0.04 acres)
AWC Enhancement	0.5 Acres	0.47 Acres
AWC Expansion	0.25 Acres	0.20 Acres (159 Plants)



Next Step: Annual Monitoring

- 5 monitoring events

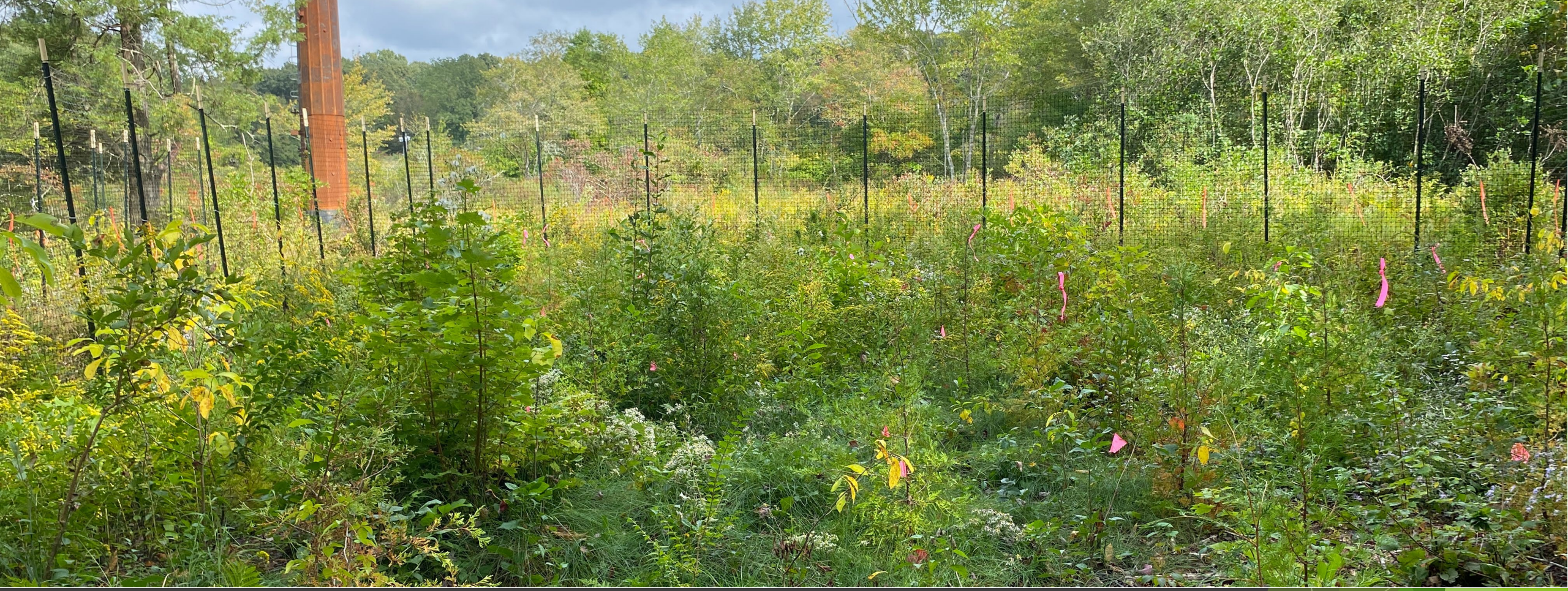
AWC Monitoring Dates
June 15, 2023
July 13, 2023
August 31, 2023
September 23, 2023
October 19, 2023

- Data Collection
  - Height
  - Health
  - Phenology
  - Vegetative Competition
- When possible weedy or invasive species were hand-pulled

Annual Monitoring Data

- The height/growth of the AWC saplings was determined with a tape measure (to the nearest half-inch).
- Phenology was recorded based on visual observation of fruits or lack thereof.
- Overall comprehensive health:
  - 3 – a sapling with 75% or more green foliage
  - 2 - a sapling with less than 50% yellowing foliage
  - 1 – a sapling with more than 50% yellowing foliage
  - 0 – a sapling with brown foliage or non-surviving sapling
- Vegetative competition was estimated visually and reviewed based on the number of sides and overall coverage of the area experiencing competition by woody vegetation.

June 2023



September 2023

Competition from Invasive Plants and Native Woody Vegetation

ADAPTIVE MANAGEMENT

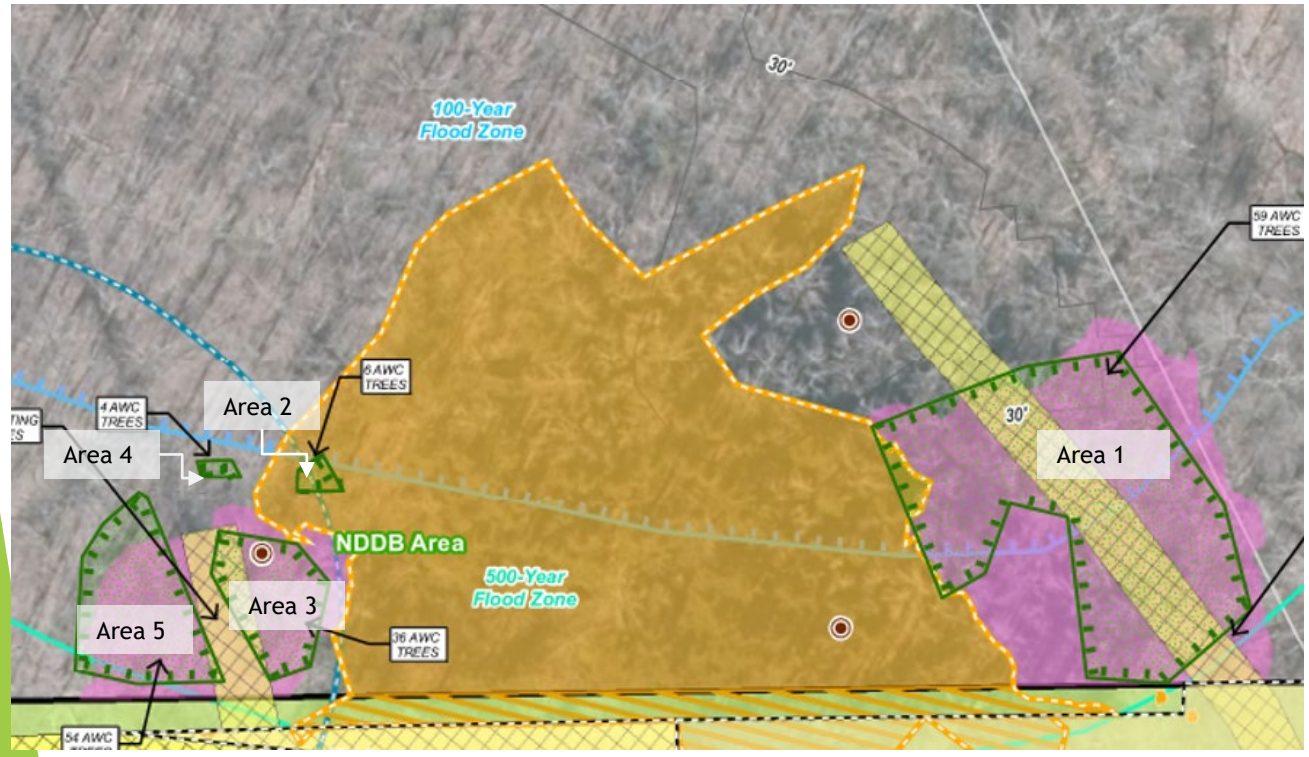
- Competing vegetation management
- Manual cutting of easily accessible woody competitors
- Wetland-approved herbicide application (with landowner approval)
- Invasive Plants

Post Management

November 2023

1st Year 2023 Monitoring Results

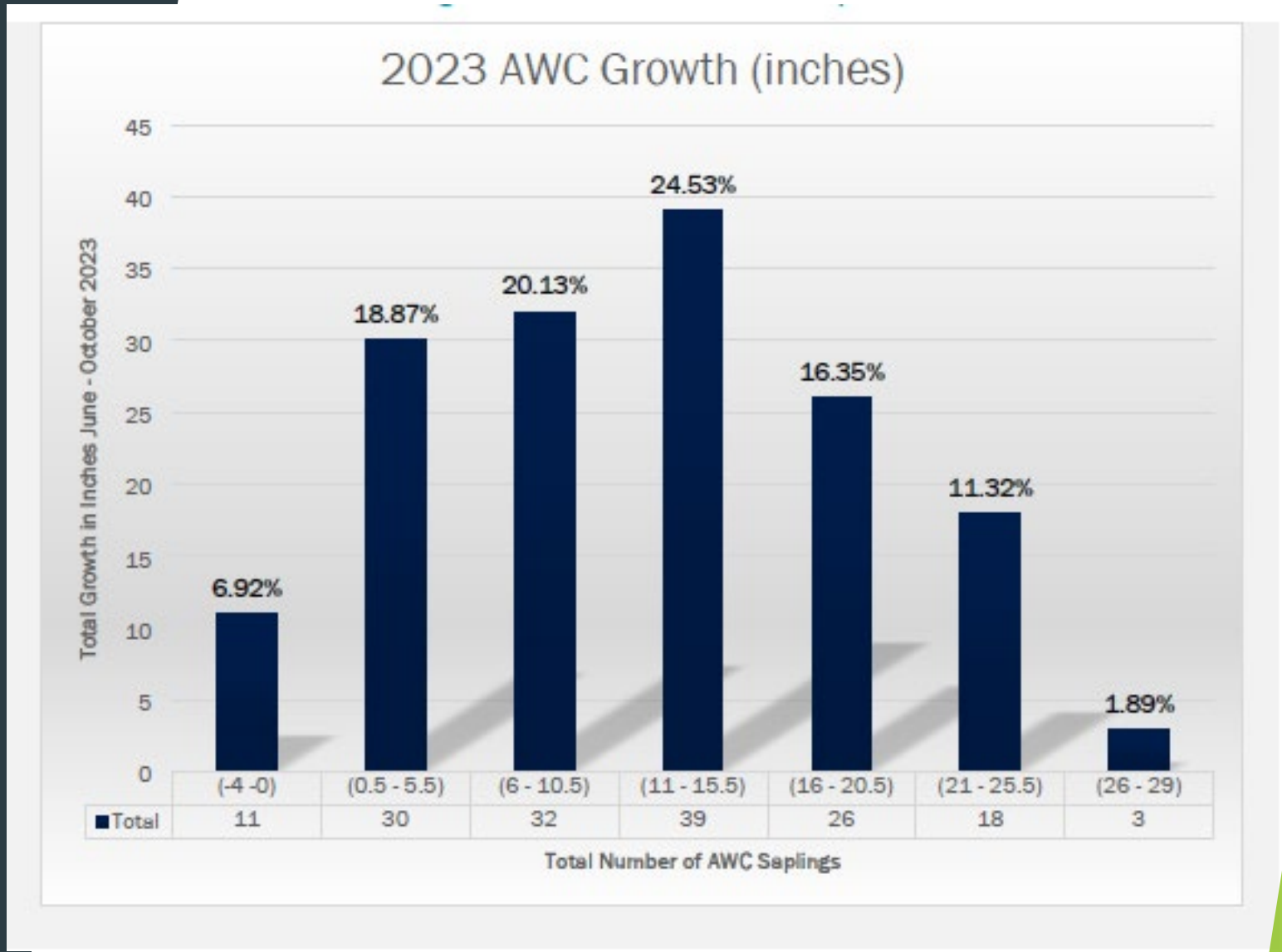
THE DATA

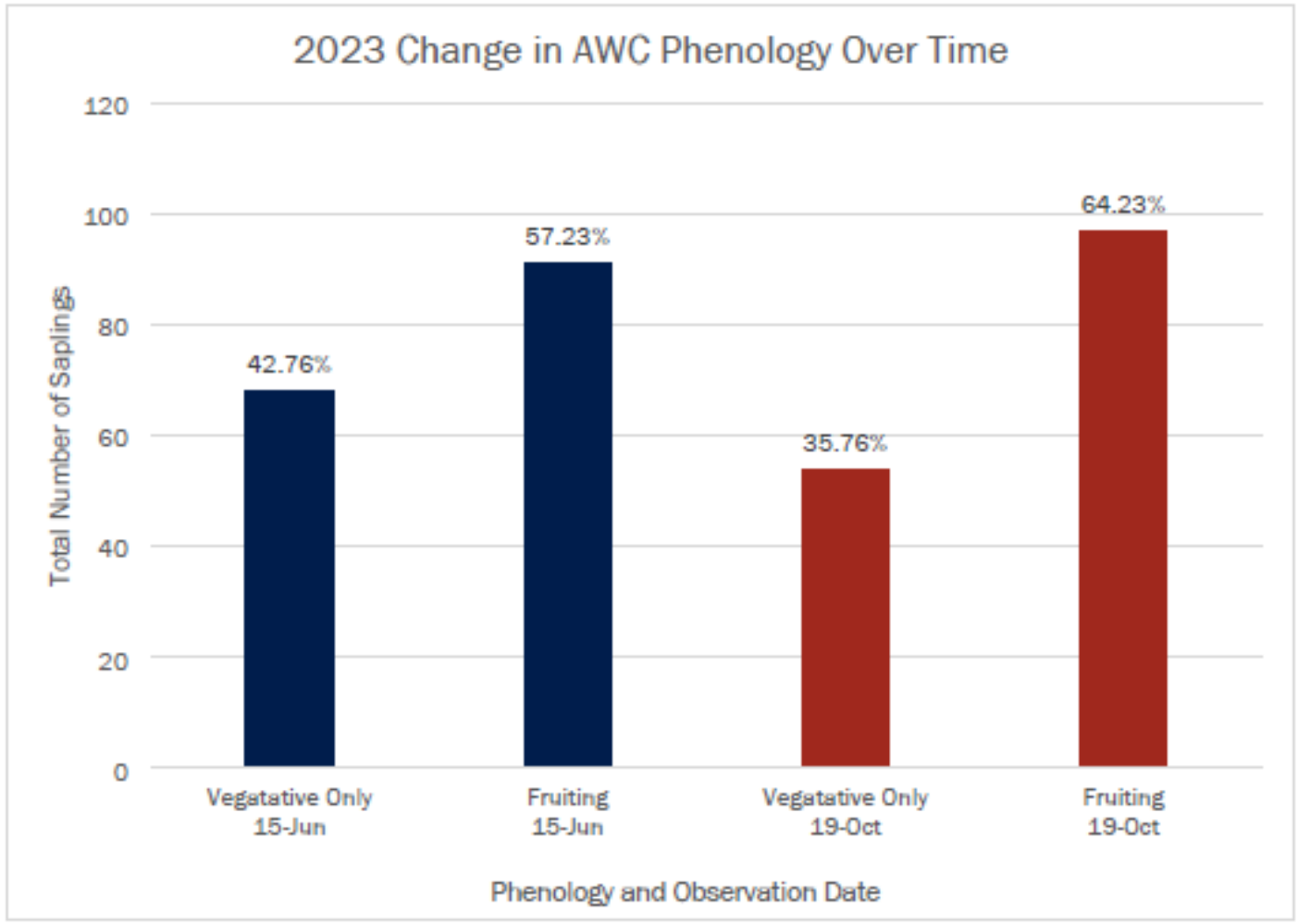


- After the 1st growing season, 151 planted saplings survived
- Growth of these plants was documented
- Area 1 (northernmost unit) had the best observed growth rate.
- Areas 3 and 5 – Show a slower annual average growth rate.
- Natural regeneration was observed outside of the fenced areas. Likely due to the opening of the canopy and clearing of larger trees.

GROWTH:

During the 2023 growing season, the majority of the AWC saplings grew.
The annual growth ranged from 0.5 to 29 inches





PHENOLOGY:

Out of the 151 Surviving Plants:

64% of the individual AWC plants were observed in fruit (in October 2023).

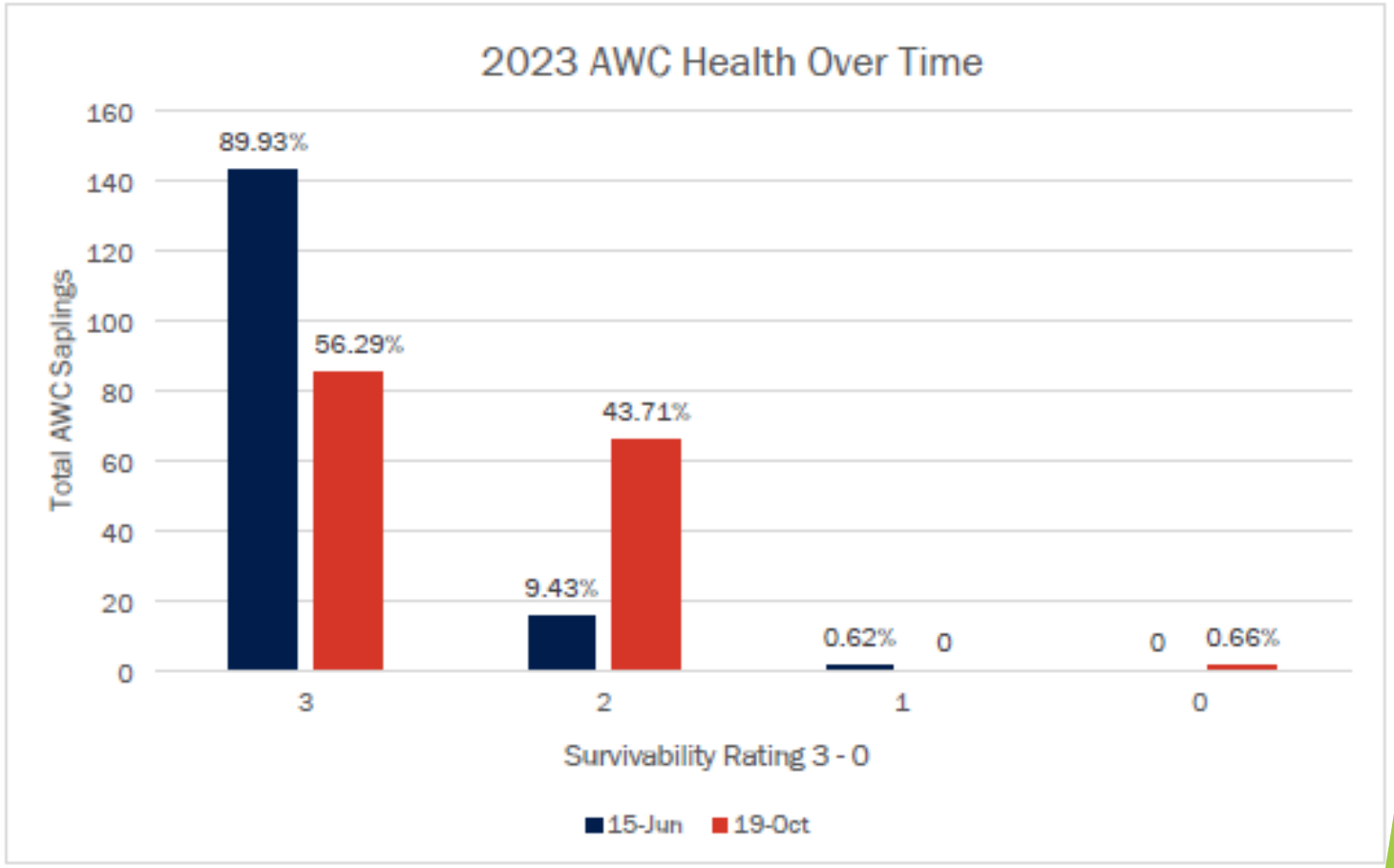
34% of the plants were not observed in fruit or with very little fruit.

COMPREHENSIVE HEALTH:

June - 89.93% of the AWC saplings were categorized with a “3” survivability rating.

October – Survivability in the “2” category increased from 9.43% to 43.71%.

Only 1 sapling did not survive.



The mitigation area will continue to be monitored for growth/health metrics for four more years (until 2028).

Fencing will not be removed for at least 7 to 9 more years (until the trees are approximately 10 feet tall)

Moving Forward

- Proposing to gather additional data for the second-year monitoring event, including assessing general vegetation in and around the fenced AWC enclosures.
- Natural Regeneration – Observed but monitoring in future years is important.
- Examining potential diversity variations between the areas within the deer fencing and outside, utilizing diverse methods geared towards herbaceous surveying.
- Continuing management of competing woody vegetation

Questions and Comments