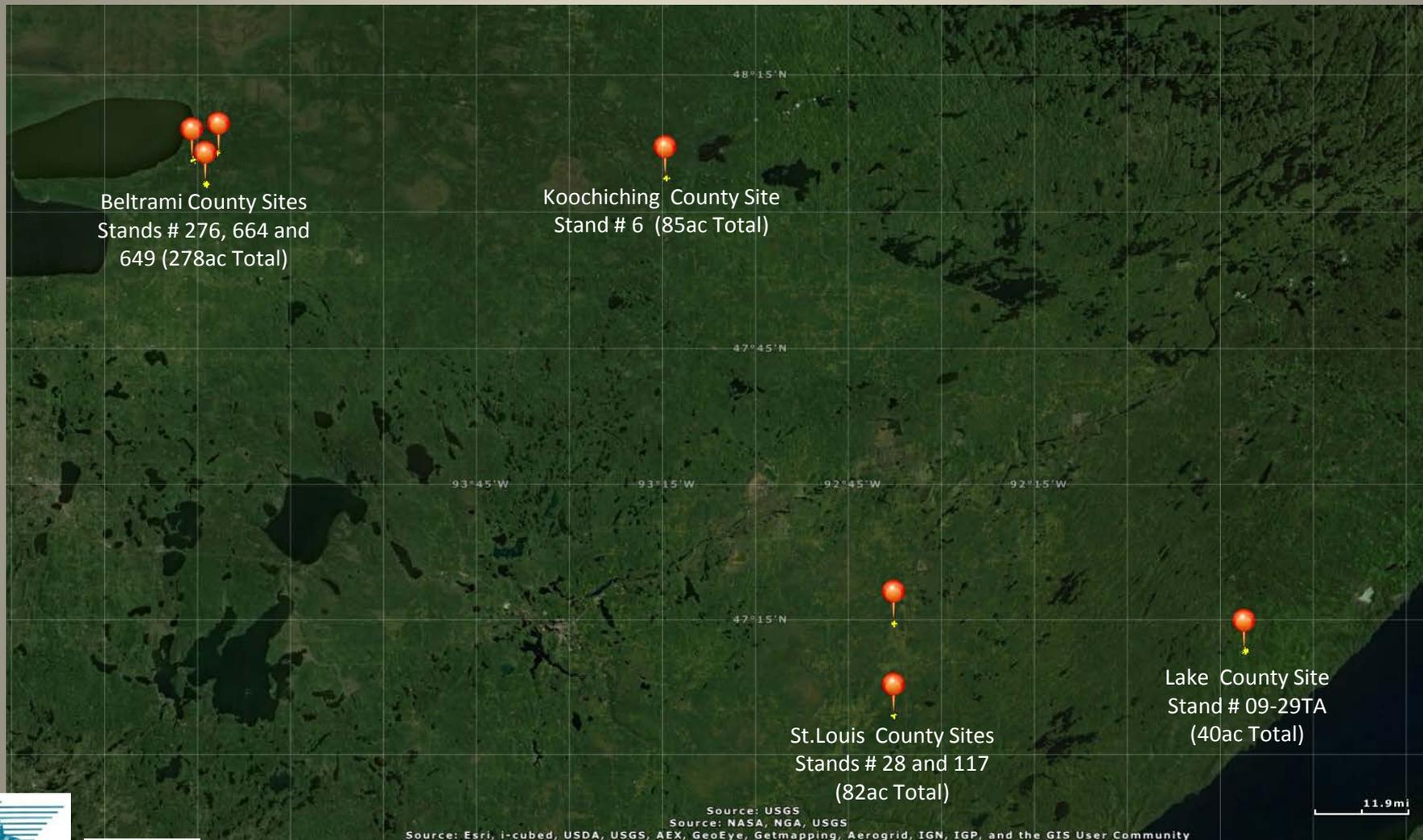


Northeast Minnesota White Cedar Plant Community Restoration Project

DEMONSTRATION SITES



Purpose

Demonstrate various methods of tree establishment.

Demonstrate various methods of tree protection.

Demonstrate protected tree survival vs. unprotected tree survival.

Demonstrate effects of shading by creating canopy gaps.

General Goals

Determine effects of hydrologic conditions on regeneration.

Determine effectiveness of tree protection to enable recruitment.

Provide resource managers with information to assist in cedar management.



Plant Materials

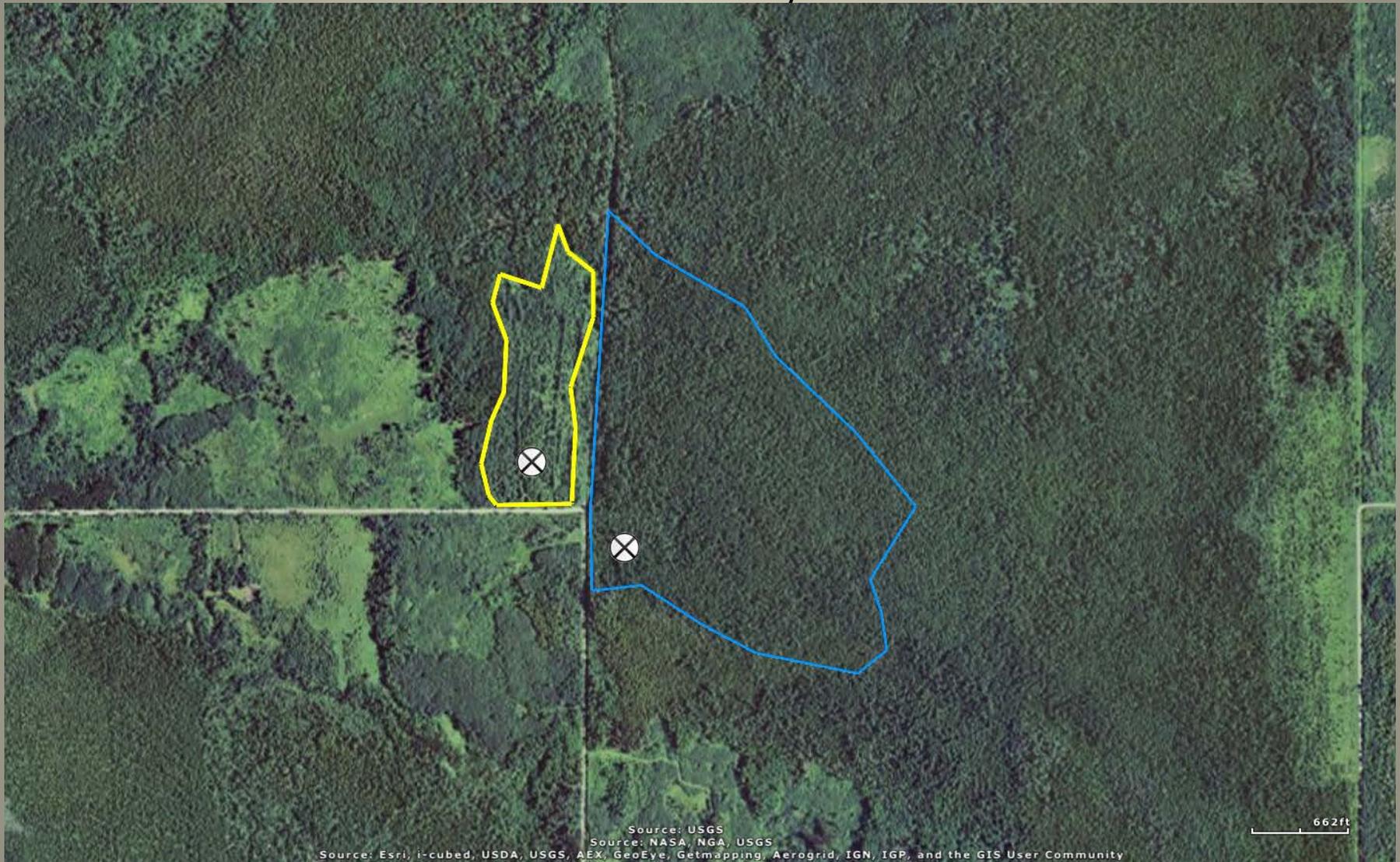
Trees were lifted at the nursery on May 21 and shipped on May 30.

The boxes were intercepted at the terminal, cold-tarped and transported to cold storage.

All trees were planted by June 5, and all seeding was completed by June 16.

Beltrami County Sites Stand 664

102 acres in study area



Planting Area



Control Area



Observation Wells











Seeding

Cedar seeding was performed by hand broadcast and spot application.
Spot application targeted desired seed beds.



Seeding

The seed was gathered at the State Tree Nursery -70% germination rate.

It was like seeding with confetti.



Seeding

Natural regeneration was noted on old stumps and in mossy areas.



Seeding

Spot application of seed targeted locations containing moss.



Plant Materials

The plants were healthy and vigorous.



Plant Materials

The transplants had especially well-developed root systems.



Plant Materials

Nominal root pruning.



Plant Materials

Root pruned, dipped in terrasorb solution, packed in tub with moss-lined bottom, then tops rinsed to remove dirt.



Plant Materials

Thermal cold-tarp covers the load during transport to prevent wind damage.



Plant Materials

Prepped trees arrive at the planting site, are moved to a protected location on-site, and then the planters will “bag-up”.



Plant Materials

Prerequisites of a good bag site include shelter from wind and sun, a central location, -



Plant Materials

and a good "sitting log".



Planting

Sharp-shooter planting spade opens a 16-inch deep hole.



Planting

Roots are gently pushed to the bottom, the plant is pulled-up to the correct depth -



Planting

A “dibble” is performed to close first the bottom of the hole, then the top -



Planting

Then a final pack removes any air pockets.



Protection

A percentage of seedlings are protected by installation of rigid protectors.



Protection

Rigid protectors.



Protection

A percentage of transplants are protected by 32-inch diameter wire mesh enclosures.



Protection

A percentage of both seedlings and transplants are left un-protected.



Protection

Demonstration site #117. Site prepped, planted, seeded and protected. Note groundwater observation well.



Education

International Society of Wetland Scientists field visit to demonstration site #28 two days after installation.