WOODY PLANT INVENTORY

FOR FORT WADSWORTH

Staten Island Unit
Gateway National Recreation Area
Staten Island, New York



United States Department of the Interior

NATIONAL PARK SERVICE
Frederick Law Olmsted National Historic Site
99 Warren Street
Brookline, Massachusetts 02146

IN REPLY REFER TO:

H30

February 22, 1995

Memorandum

To: Chief, Development Division, North Atlantic Region

Through: Manager, Olmsted Center for Landscape Preservation NM

From: Supervisor, Preservation Maintenance Branch, Olmsted Center for Landscape Preservation

Subject: Woody Plant Inventory, Fort Wadsworth, Staten Island Unit, Gateway National Recreation Area

Enclosed is the final Woody Plant Inventory report and for Fort Wadsworth, prepared by Margie Coffin of the Olmsted Center for Landscape Preservation (OCLP). The project was conducted collaboratively with Gary Koller, Senior Horticulturist, Arnold Arboretum of Harvard University, and Michael Byer, Ph.D., Botanist, Gateway National Recreation Area.

The report and associated maps provide preliminary inventory information on the extant woody trees, shrubs and vines within the proposed National Park Service boundary for Fort Wadsworth. The report also identifies future projects addressing Emergency Landscape Stabilization and Maintenance and the Assessment and Management of Significant Landscape Features. Cost estimates for the highest priority recommendations, which the OCLP can provide assistance on, include;

Emergency Stabilization and Maintenance

1. Stabilize Tree Hazards and Protect Existing Vegetation	$ 8,300
2. Assess/Mitigate Root Damage to Historic Structures	$ 19,300
3. Prepare Slope Management Plan	$ 6,400

Assessment and Management of Significant Landscape Features

1. Assess Vegetation for Historic Significance and Prepare a Cultural Landscape Inventory/Assessment/Report.	$ 48,000

If you have any questions or comments, please do not hesitate to call me at (617)566-1689 or Nora Mitchell, Manager, at (617)223-5059.

Charles Pepper

cc;
Nora Mitchell, OCLP
Larry Gall, NARO
Mary Gibson Scott, GATE
Margie Coffin, OCLP

Woody Plant Inventory at Fort Wadsworth, Staten Island, NY

prepared by Margie Coffin, Olmsted Center for Landscape Preservation, January 1995

In response to a request for technical assistance, the Olmsted Center for Landscape Preservation has prepared this preliminary report on the woody vegetation at Fort Wadsworth. This report contains a summary of inventory notes, management issues and recommendations, a map of vegetation identified, a list of plant species, and supplemental information on pruning techniques and vegetation control.

INVENTORY NOTES

On December 14 - 16, 1994, a plant inventory was conducted at the Fort Wadsworth property in Staten Island, New York. The purpose of the inventory was to identify woody tree, shrub, and vine species within the proposed National Park Service boundary (figure 1: map, June 1994). This was a preliminary inventory to provide immediate information on the existing vegetation. Specifically the team looked for:

- stands of native species
- unique or rare species
- remnants of historical plantings
- uncommon individual specimens or groups of specimens
- plants of remarkable age, size, or character
- hazardous conditions & horticultural problems that should be addressed

With these objectives in mind, the team examined the vegetation in all areas, identified the genus and species of plants in the field, estimated the age of the oldest plants in each area, identified hazardous conditions and work needed. Information is summarized in this report and attached maps (figure 2: Woody Plant Inventory). The inventory was conducted by Gary Koller, Senior Horticulturalist from the Arnold Arboretum of Harvard University, Margie Coffin, Historical Landscape Architect from the Olmsted Center for Landscape Preservation, and Dr. Michael Byer, Botanist for the Gateway National Recreation Area. This was a preliminary inventory to provide immediate information on existing vegetation. Additional field work is necessary to provide a more detailed survey of all extant vegetation.

Because the inventory was conducted in the late fall, most leaves had dropped from the deciduous vegetation. Plants were identified by buds, bud scars, twig and bark characteristics, taste, seed pods, and remaining leaves. The absence of leaves allowed the team to see further into the densely vegetated areas and thereby inventory the composition of these areas.

The inventory focused on the areas within the proposed NPS boundary. Areas beyond this boundary but within the Fort Wadsworth property were visually scanned.

I. Planted Trees and Shrubs

Throughout the property there are trees and shrubs that were intentionally planted during the course of the development of Fort Wadsworth. In some cases the planting pattern is evident such as the rows of London Plane Tree *(Platanus x acerifolia)* along the streets and large specimen trees surrounding residences (figure 3: trees that appear planted). The area that contained the most extensive plantings was the Officer's quarters area, or Mont Sec Avenue, on the west side of the property (figure 3A: Mont Sec Area). In addition many of streets throughout Fort Wadsworth are lined with trees ranging in age from recently planted to 75-100 years old. The area on the east side of the bridge contains many fragments of plantings that are likely remnants from residences that pre-date the area's military use. More information can be found in the Cultural Resource Report being prepared by the Cultural Resources Management Division with consultants Oz Architects and Planners.

While some of the planted shrubs appear around base residences, other shrubs have spread or naturalized. This is particularly evident with the California privet *(Ligustrum ovalifolium)* shrubs growing in both clusters and lines, but also dispersed throughout the wooded areas surrounding the fortifications (figure 4: shrubs that appear planted).

II. Oldest Trees

The age of vegetation within Fort Wadsworth ranges from very recently planted to approximately 150 - 200 years old. The oldest trees may be the enormous Tuliptree *(Liriodendron tulipifera)* with a 50 inch diameter at four feet, a 60 foot canopy and estimated 100 foot height and an adjacent European Beech *(Fagus sylvatica)* beside it with a 67 inch diameter (figure 5: oldest trees). Throughout the site there are trees and shrubs that may be older than 50 years. If Fort Wadsworth is nominated as a historic district, these trees could contribute to its historic integrity. Some of these plants were recorded during the field survey (figure 5A: trees and shrubs that may be over 50 years old). There are likely to be many more plants older than 50 years. A survey focusing on plant age is highly recommended.

III. Retained Plants

In some cases the native vegetation may have been consciously retained during early modifications to the landscape, such as the remaining stands of native trees described below in #4. A more detailed study of old photographs and plans would help to determine what extant vegetation was planted or retained and therefore part of the cultural landscape.

IV. Stands of Native Trees

Several areas within Fort Wadsworth contain stands of mature native trees that likely pre-date the WW I fortifications, and could possibly date from the 19th century estate period. The most notable clusters of native trees included stands of American elm *(Ulmus americana),* sassafras *(Sassafras albidum),* red maple *(Acer rubrum),* silver maple *(Acer saccharinum)* and Kentucky coffeetree *(Gymnocladus dioicus).* Each stand consists of 10 - 30 trees and includes non-native shrubs and vines. Additional research on these areas is recommended. Each stand should be examined in greater detail to determine tree age and potential historical/ botanical significance (figure 6: stands of native trees).

V. Stand of Oaks

A woodland remnant in the southwest corner of the Fort Wadsworth property contains a stand of mixed trees, primarily oaks *(Quercus sp.)*. This area may not have been disturbed during the 19th century estate period or the development of the site by the military. However, it is important to note this stand is outside of the proposed NPS boundary according to the 6/94 map (figure 7: possible natural area).

VI. Unique/ Uncommon Vegetation

While some species were common throughout the property, others were only found as individual plants or in one location (figure 8: only one or group on site). A survey of uncommon herbaceous vegetation should be conducted in the spring and summer.

VII. Vegetation in Disturbed and Regenerated Areas

Historic photos indicate that several areas at Fort Wadsworth were stripped of their vegetation during the development of the WWI fortifications. In the last 40-50 years a diversity of native and non-native trees, shrubs, vines and herbaceous plants have grown up in these areas. Therefore, these can best be described as disturbed regenerated areas. These areas include a mix of native and non-native, rapidly growing pioneer species such as Norway and sycamore maples *(Acer platanoides* and *pseudoplatanus)*, boxelder *(Acer negundo)*, boxelder *(Ailanthus altissima)*, mulberry *(Morus alba)*, black cherry *(Prunus serotina)*, black locust *(Robinia pseudoacacia)*, Japanese honeysuckle *(Lonicera japonica)*, and porcelain berry *(Ampelopsis brevifolia)* (figure 9: disturbed regenerated areas).

MANAGEMENT ISSUES AND RECOMMENDATIONS

A. Hazardous Trees and Arboricultural Care

As part of the vegetation inventory, the team noted the presence of hazardous tree conditions, and identified work needed. Hazards included deadwood and hanging dead limbs over areas of high use such as benches, walks, and play areas. Many healthy trees were in need of arboricultural care. From our preliminary condition assessment we noted the following work needed:

- figure 10: removal of tree stakes and guy wires on trees planted within the past ten years;
- figure 11: removal of deadwood, improved pruning cuts of branch stubs;
- figure 12: removal of dead trees in visitor use areas (may require Section 106 compliance); and
- figure 13: rejuvenation of old shrubs.

Ideally a comprehensive condition assessment could be carried out in the late spring or early summer.

B. Root Damage to Historic Structures

The Regional Archaeologist is concerned about damage to the historic fort structures caused by vegetation that has grown unchecked for many years. For example, trees are now growing up between steps, walls, doors, etc. Tree species that are particularly invasive due to their shallow roots are: Sycamore Maple *(Acer pseudoplatanus)*, Norway Maple *(Acer platanoides)*, Common Mulberry *(Morus alba)*, and Tree-of-Heaven *(Ailanthus altissima)*. Other trees and shrubs are growing in close proximity to the fort but have less invasive root systems and thus are not as damaging. These include: Black Cherry *(Prunus serotina)*, Gray Birch, *(Betula populifolia)*.

A more detailed examination of this issue is recommended to 1) determine which trees are causing the most damage, 2) determine the age of the trees with tree cores 3) determine whether any of the damaging trees have historical significance, 4) determine what will be the most effective long-term maintenance strategy, and 5) undertake a selective removal program without disturbing the soil and with the guidance of the Regional Archeologist, 6) for those plants that require removal, count and document growth rings.

C. Slope Management - Vegetation Removal and Regrowth

Vegetation has been cut on the slope below Fort Tompkins to restore the view of Battery Weed, the shipping channel, and New York Harbor. However much of these woody plants (such as Tree-of-Heaven, Maple, and Black Cherry) are likely to grow back quickly. Roots, left to retain soil on the steep slope, can send up vigorous shoots that grow to a height of ten to fifteen feet in two years. Thus another cut may be necessary within five years. To minimize maintenance and erosion but retain the view, the following is recommended:

- minimize the frequency of cutting and the use of equipment on the slope to reduce erosion;
- leave roots to hold the soil;
- encourage existing herbaceous plants, low woody plants, and vines with the exception of poison ivy; and
- when cutting woody vegetation to regain view, consider a low-impact chemical treatment as described in attached information.

FUTURE PROJECTS

Below is a list of related projects that could be carried out in the future. Future projects that the Olmsted Center for Landscape Preservation could assist with include:

Emergency Stabilization and Maintenance

1. Complete work needed to address hazardous tress and protect existing vegetation as described in item A and figures 10, 11, 12, and 13.
2. Address the issue of root damage to historic structures as discussed above in item B.
3. Develop a slope management plan to fully address the safe and effective maintenance of the vegetation as discussed above in item C.

Assessment and Management of Significant Landscape Features

1. Assess age of vegetation with core sampling. Determine which plants contribute to the historical significance of the property, and whether these plants were planted or retained. Prepare a Cultural Landscape Inventory/ Assessment or Cultural Landscape Report which includes period plans depicting certain stages in the site's history, including buildings and vegetative cover.
2. Conduct a vegetation survey of shrubs and herbaceous plants in the spring and summer, describe vegetation communities within different areas of the property.
3. Develop a vegetation management plan to set vegetation management policies and objectives, identify management techniques and research needs, and create a monitoring program for different vegetation areas.
4 Collect herbarium specimens of all species found on the property so that the identification can be verified by a taxonomist. The specimens will also serve to document the existing conditions at the time of NPS acquisition (see attached preliminary species list).
5. Determine the wildlife value of the property and related vegetation requirements, and protect these areas accordingly.

List of Plant Species

Code	Botanical Name	Common Name
Ax	Abelia x grandiflora	Glossy Abelia
An	Acer negundo	Box Elder
Au	Acer palmatum	Japanese Maple
Ac	Acer platanoides	Norway Maple
Ap	Acer pseudoplatanus	Sycamore Maple
Ar	Acer rubrum	Red Maple
As	Acer saccharinum	Silver Maple
Am	Acer saccharum	Sugar Maple
Ah	Aesculus hippocastanum	Horsechestnut
Aa	Ailanthus altissima	Tree-of-Heaven
Af	Amorpha fruticosa	Indigobush Amorpha
Ab	Ampelopsis brevifolia	Porcelain Berry
Bt	Berberis thunbergii	Japanese Barberry
Ba	Betula alleghaniensis	Yellow Birch
Bl	Betula lenta	Sweet Birch
Bp	Betula populifolia	Gray Birch
Ce	Celastrus orbiculatus	Oriental Bittersweet
Co	Celtis occidentalis	Hackberry
Cp	Chamaecyparis pisifera 'Filifera Nana'	Sawara Cypress
Ct	Chamaecyparis thyoides	White Cedar
Cl	Clematis paniculata	Sweetautumn Clematis
Cf	Cornus florida	Flowering Dogwood
Cm	Cornus mas	Corneliancherry Dogwood
Cs	Cornus sericea 'Flaviramea'	Golden-twig Dogwood
Cj	Cryptomeria japonica	Japanese Cryptomeria
Dl	Deutzia x lemoinei	Lemoine Deutzia
Ds	Deutzia sp.	Deutzia
Eu	Elaeagnus umbellata	Autumn-olive
Ea	Euonymus alata 'Compacta'	Compact Winged Euonymus
Ek	Euonymus kiatschovica	Spreading Euonymus
Es	Euonymus sp.	Goldtip Euonymus
Fs	Fagus sylvatica	European Beech
Fi	Forsythia x intermedia	Border Forsythia
Fs	Forsythia suspensa	Weeping Forsythia
Fa	Fraxinus americana	White Ash
Gt	Gleditsia triacanthos	Honeylocust
Gi	Gleditsia triacanthos inermis	Thornless Honeylocust
Gd	Gymnocladus dioicus	Kentucky Coffeetree
Hh	Hedera helix	English Ivy
Hs	Hibiscus syriacus	Rose-of-Sharon

Hm	Hydrangea macrophylla	Bigleaf Hydrangea
Hp	Hydrangea paniculata	Panicle Hydrangea
Ib	Ilex cornuta 'Burfordii'	Burfords Chinese Holly
Ic	Ilex crenata	Japanese Holly
Io	Ilex opaca	American Holly
Jn	Juglans nigra	Black Walnut
Jc	Juniperus chinensis	Chinese Juniper
Jt	Juniperus chinensis torulosa 'Hollywood'	Hollywood Juniper
Jh	Juniperus horizontalis	Creeping Juniper
Jb	Juniperus horizontalis 'Blue Chip'	Blue Chip Juniper
Jv	Juniperus virginiana	Eastern Red Cedar
Kl	Kalmia latifolia	Mountain Laurel
Lf	Leucothoe fontanesiana	Drooping Leucothoe
Lo	Ligustrum ovalifolium	California Privet
Ls	Liquidamber styraciflua	Sweetgum
Lt	Liriodendron tulipifera	Tuliptree
Lj	Lonicera japonica	Japanese Honeysuckle
Mg	Magnolia soulangeana	Saucer Magnolia
Ms	Malus sp.	Apple/Crabapple seedlings
Ma	Morus alba	Common Mulberry
Mp	Myrica pennsylvanica	Bayberry
Pa	Parthenocissus tricuspidata	Boston Ivy
Pw	Paulownia tomentosa	Princess Tree
Pc	Philadelphus coronarius	Mock Orange
Pe	Picea abies	Norway Spruce
Pg	Picea pungens glauca	Colorado Blue Spruce
Pj	Pieris japonica	Japanese Pieris
Pn	Pinus nigra	Austrian Pine
Pi	Pinus strobus	Eastern White Pine
Pt	Pinus thunbergii	Japanese Black Pine
Px	Platanus x acerifolia	London Plane Tree
Py	Polygonum cuspidatum	Japanese Knotweed
Pd	Populus deltoides	Cottonwood
Pu	Populus sp.	Poplar species
Ps	Prunus serotina	Black Cherry
Pk	Prunus serrulata 'Kwansan'	Kwansan Cherry
Pr	Prunus sp.	Cherry
Pp	Prunus persica	Peach
Po	Pseudosasa japonica	Arrow Bamboo
Pl	Pyracantha coccinea 'Lelandei'	Lelandei Scarlet Firethorn
Pb	Pyrus calleryana 'Bradford'	Bradfords Callery Pear
Qa	Quercus alba	White Oak
Qc	Quercus coccinea	Scarlet Oak
Qp	Quercus palustris	Pin Oak

Qr	Quercus rubra	Red Oak
Qv	Quercus velutina	Black Oak
Rc	Rhododendron catawbiense	Catawba Rhododendron
Rs	Rhododendron sp.	Azalea
Rj	Rhododendron 'P.J.M.'	P.J.M. Rhododendron
Rh	Rhodotypos scandens	Jetbead
Rg	Rhus glabra	Smooth Sumac
Rr	Rhus radicans	Poison Ivy
Rt	Rhus typhina	Staghorn Sumac
Rp	Robinia pseudoacacia	Black Locust
Ro	Rosa species	Rose species
Rm	Rosa multiflora	Multiflora Rose
Ru	Rubus sp.	Raspberry/ Blackberry species
Sc	Sambucus canadensis	American Elderberry
Sa	Sassafras albidum	Sassafras
Sj	Sophora japonica	Japanese Pagoda Tree
Sr	Smilax rotundifolia	Greenbrier
Sv	Spiraea x vanhouttei	Bridal-wreath Spirea
St	Stephanandra incisa	Lace Shrub
Sy	Syringa vulgaris	Common Lilac
Tb	Taxus baccata 'Repandens'	Prostrate English Yew
Tc	Taxus cuspidata	Japanese Yew
Tm	Taxus x media	Anglojap Yew
Tx	Taxus sp.	Yew species
To	Thuja occidentalis	American Arborvitae
Tl	Tilia cordata	Little-leaved European Linden
Ti	Tilia sp.	Linden species
Ts	Tsuga canadensis	Canadian Hemlock
Ua	Ulmus americana	American Elm
Us	Ulmus sp.	Elm species
Vc	Vaccinium corymbosum	Highbush Blueberry
Vm	Vinca minor	Periwinkle groundcover
Vp	Viburnum plicatum var. tomentosum	Doublefile Viburnum
Vs	Vitis sp.	Grape sp., likely Fox Grape
Wf	Weigela florida	Flowering Weigela

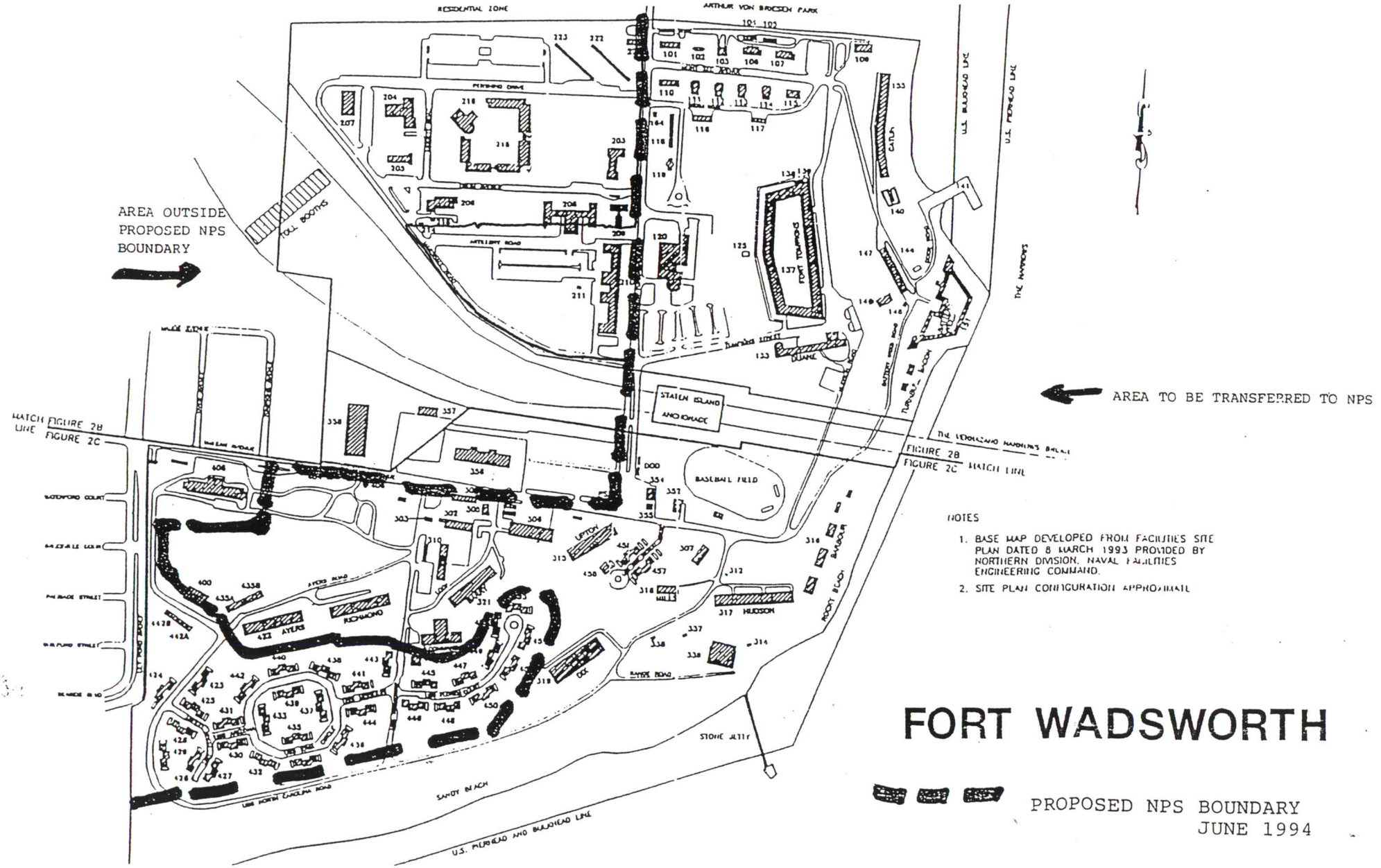


Figure 1: Map, June 1994

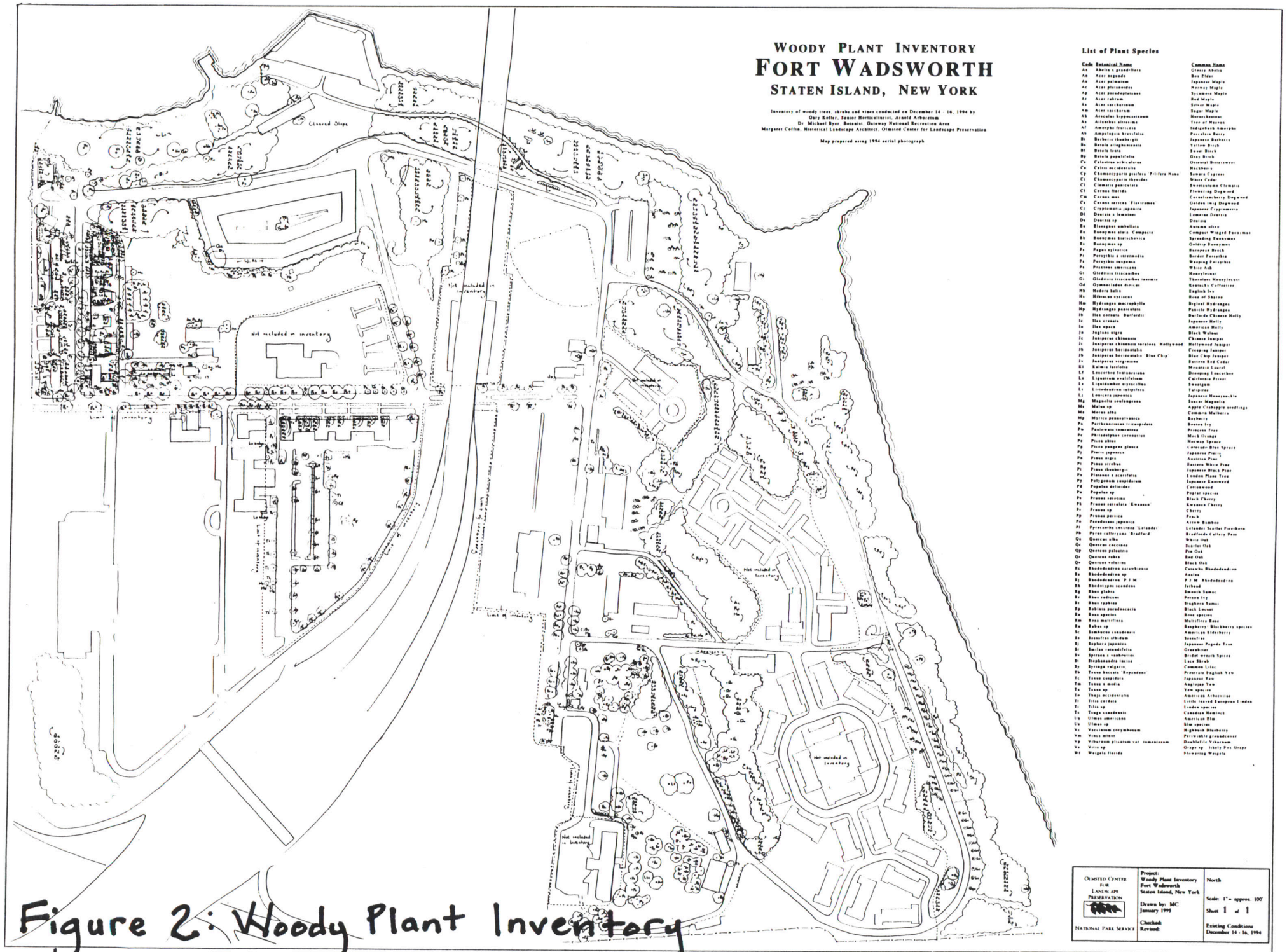


Figure 2: Woody Plant Inventory

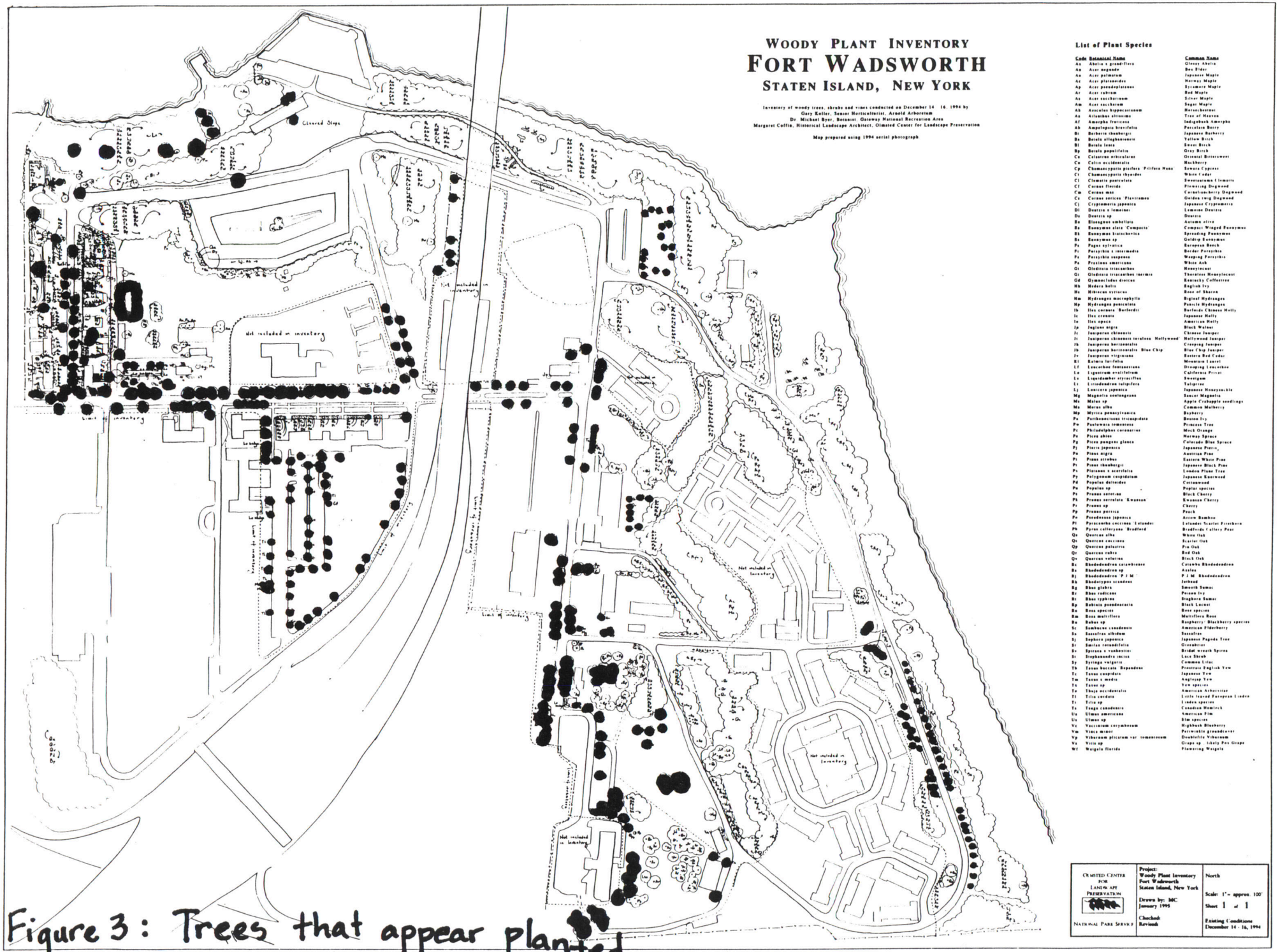


Figure 3: Trees that appear planted

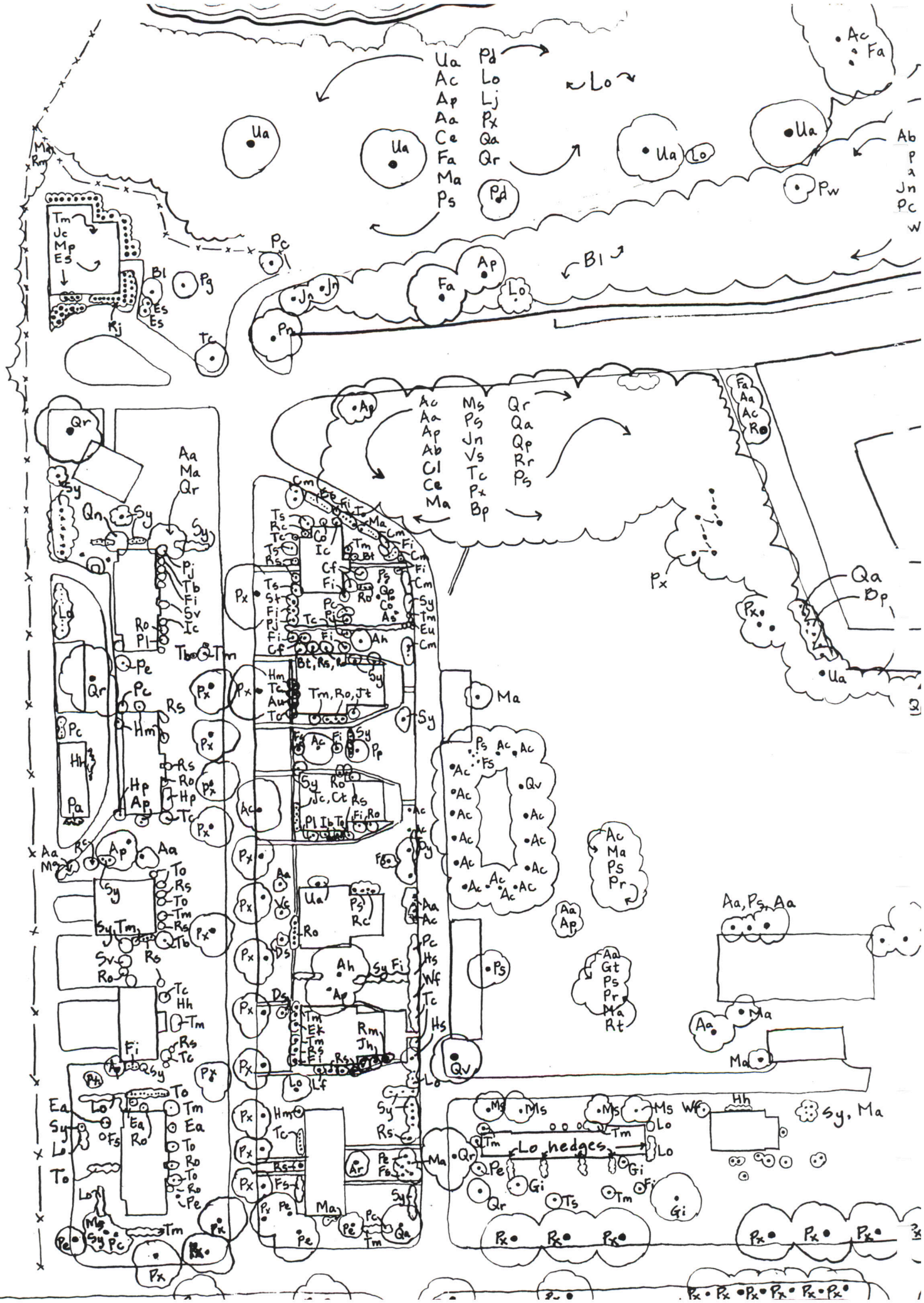


Figure 34: Mont Sec Area

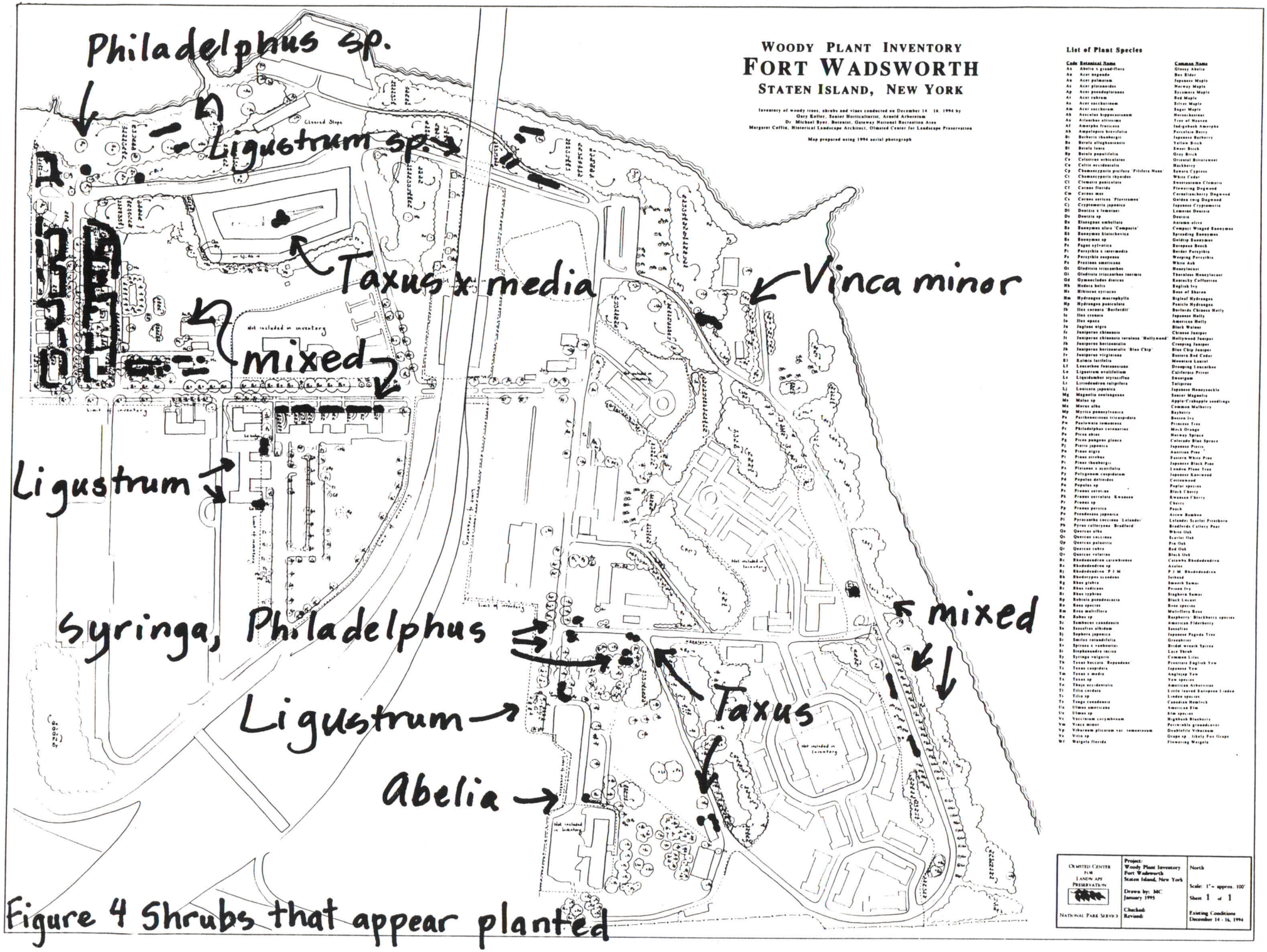


Figure 4 Shrubs that appear planted

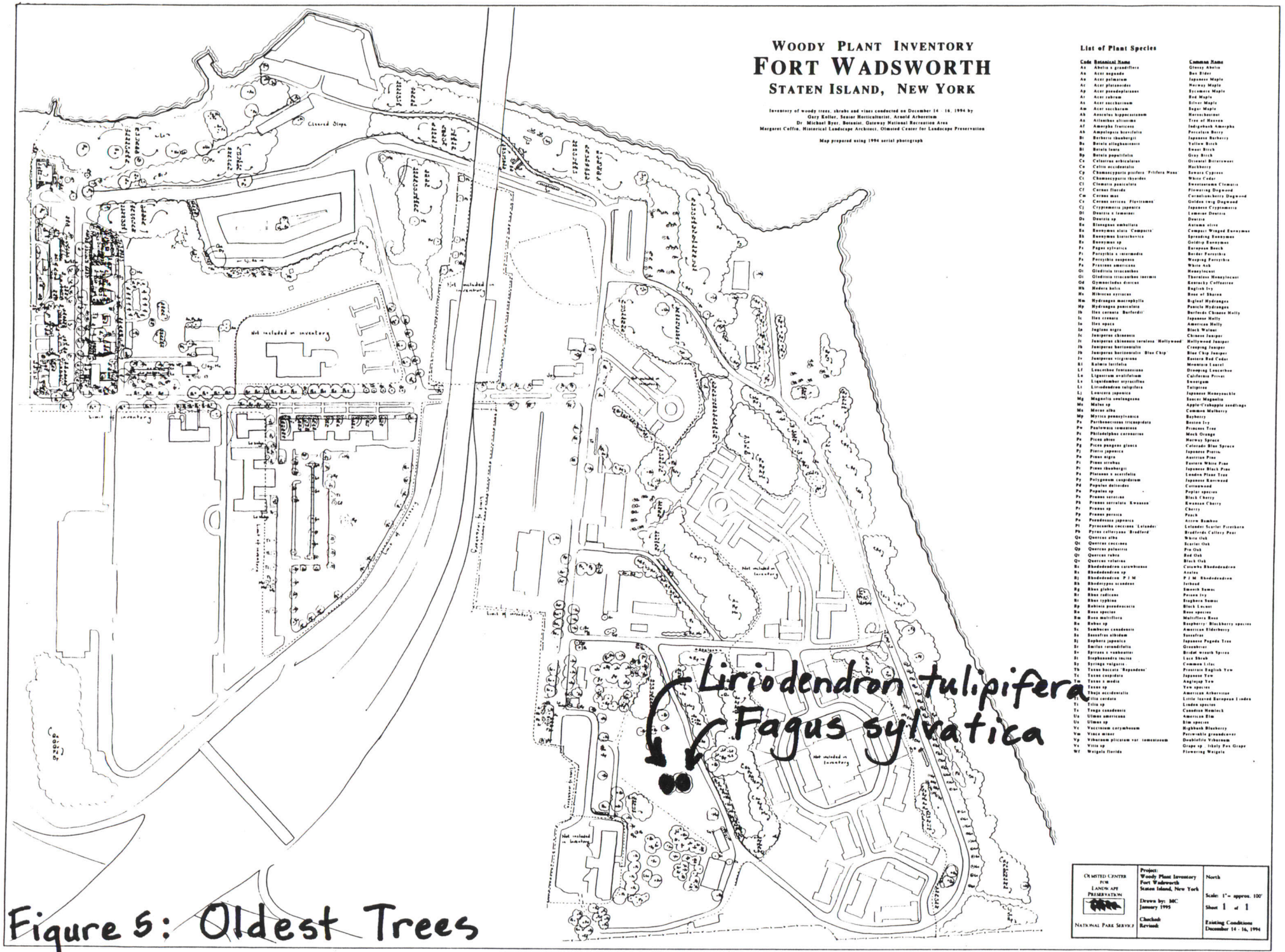


Figure 5: Oldest Trees

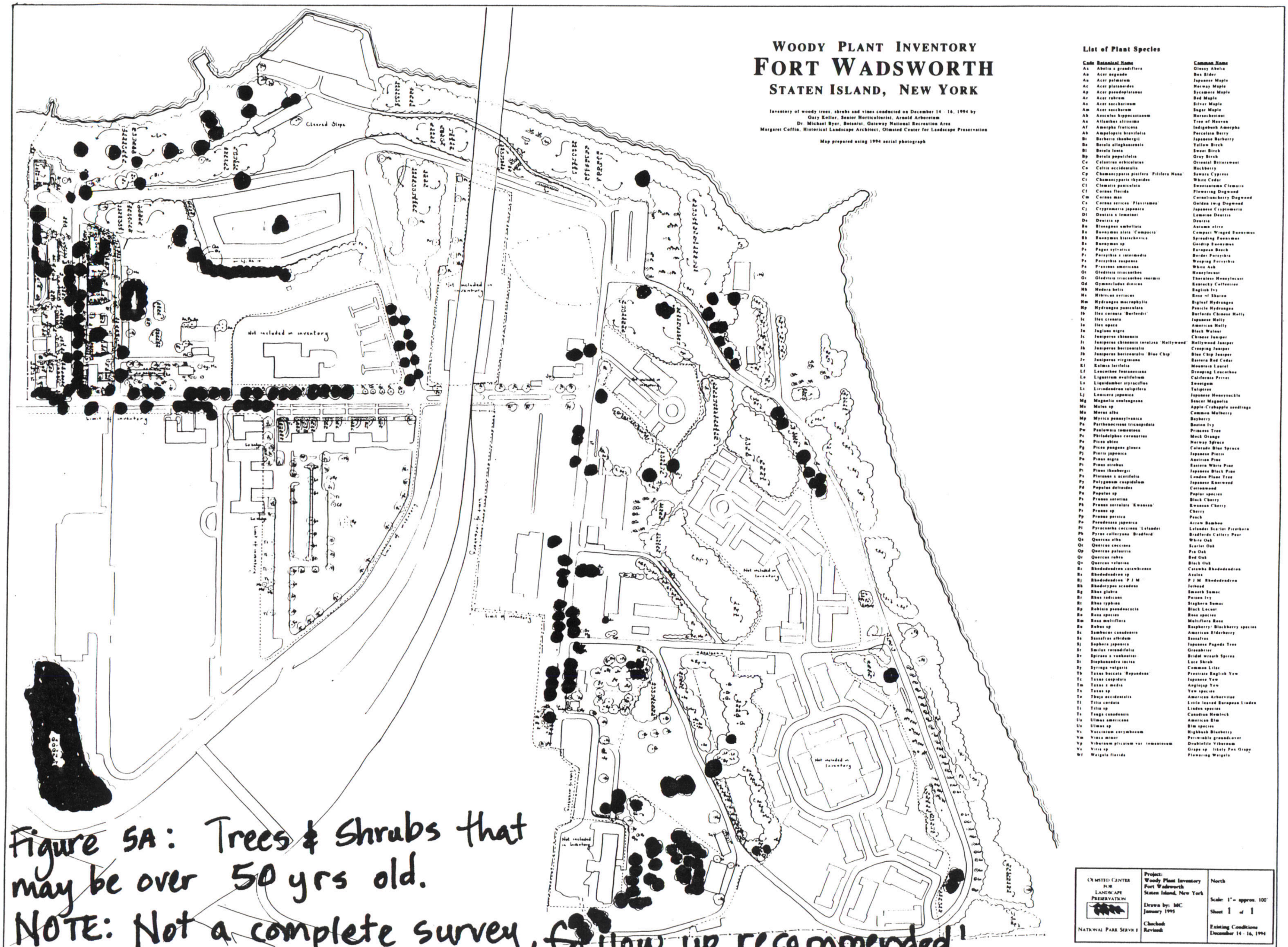


Figure 5A: Trees & Shrubs that may be over 50 yrs old.
NOTE: Not a complete survey, follow up recommended!

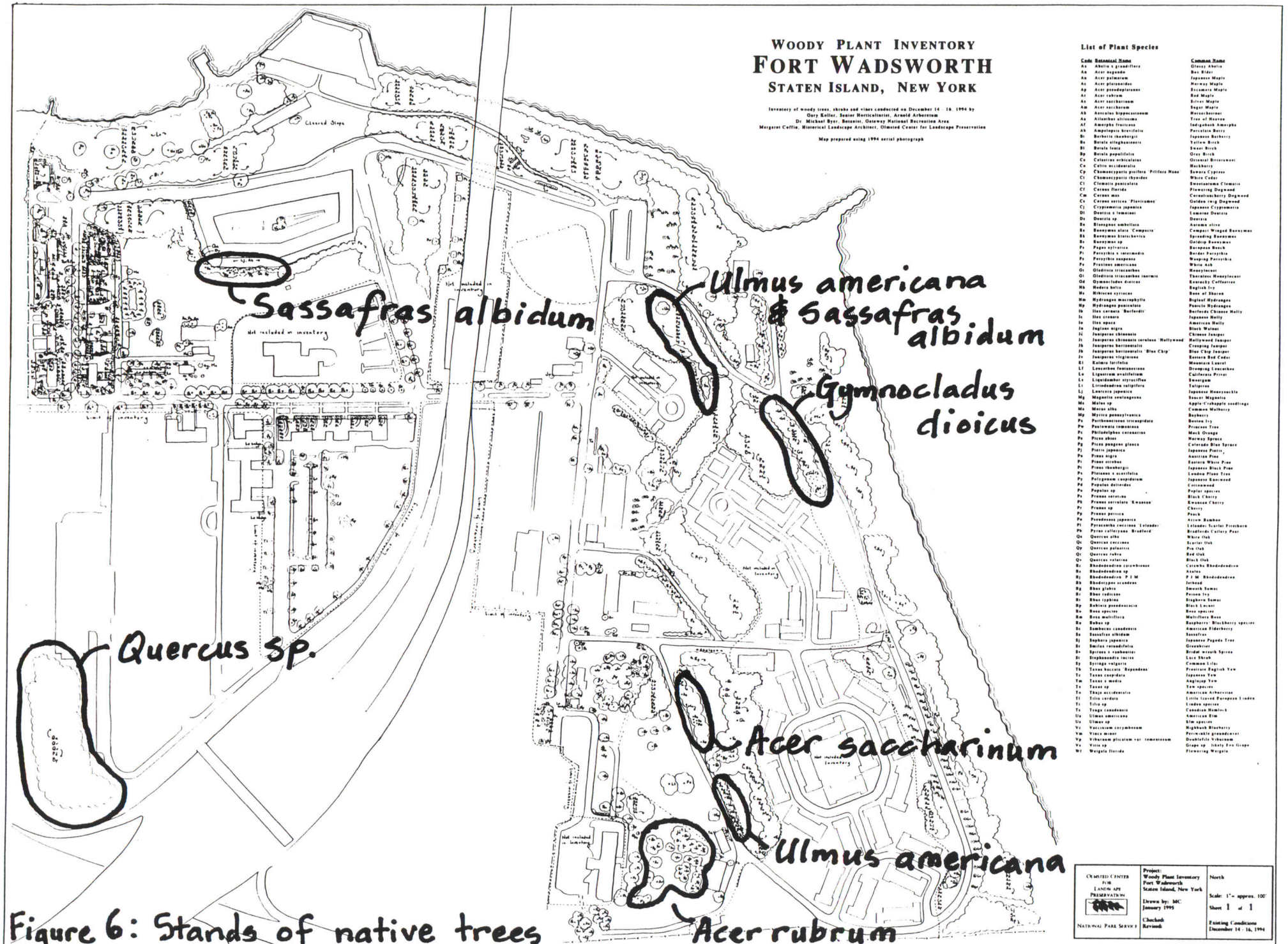


Figure 6: Stands of native trees (mixed ages)

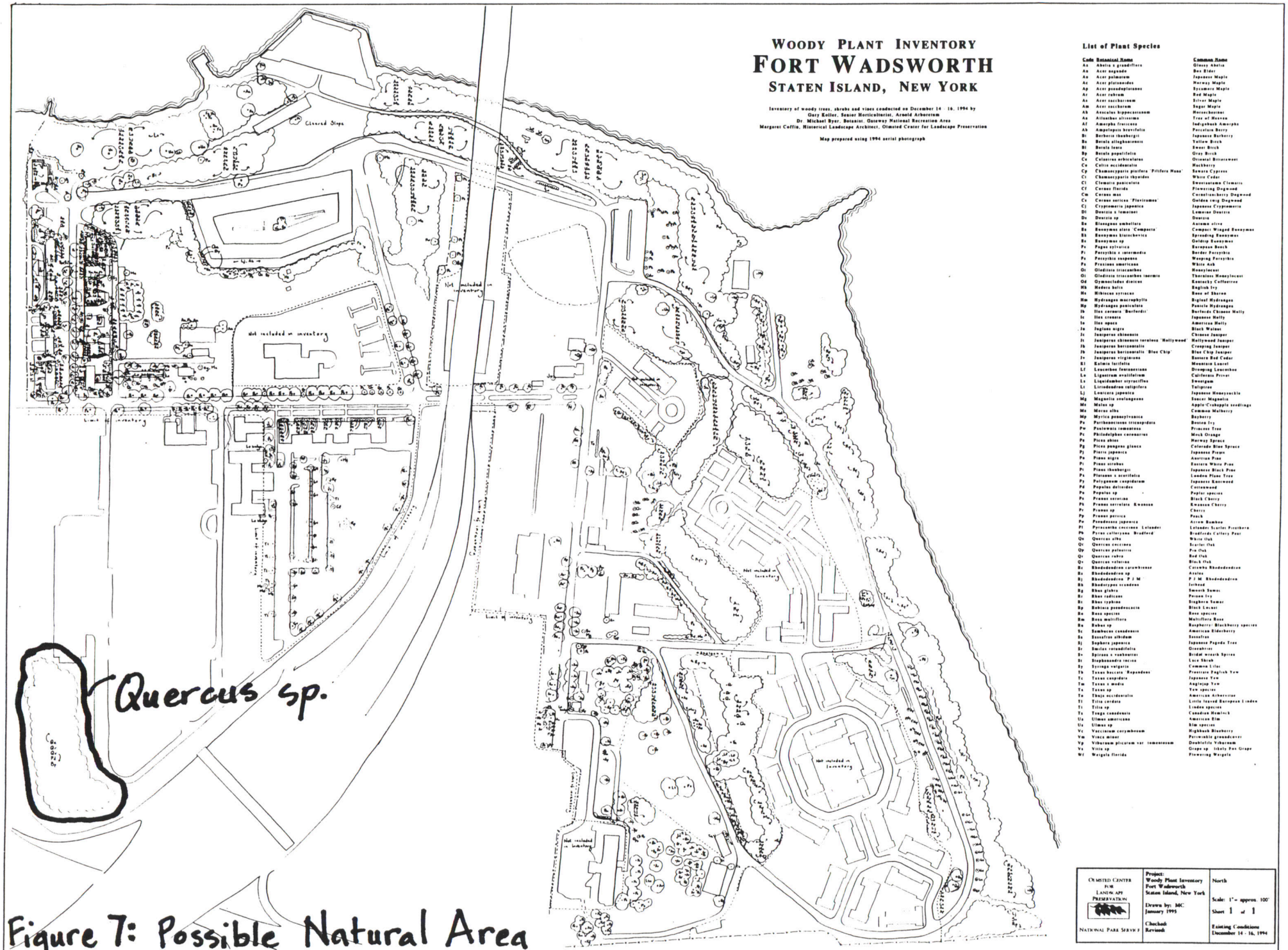


Figure 7: Possible Natural Area



Figure 8: Only one plant/group of species on site

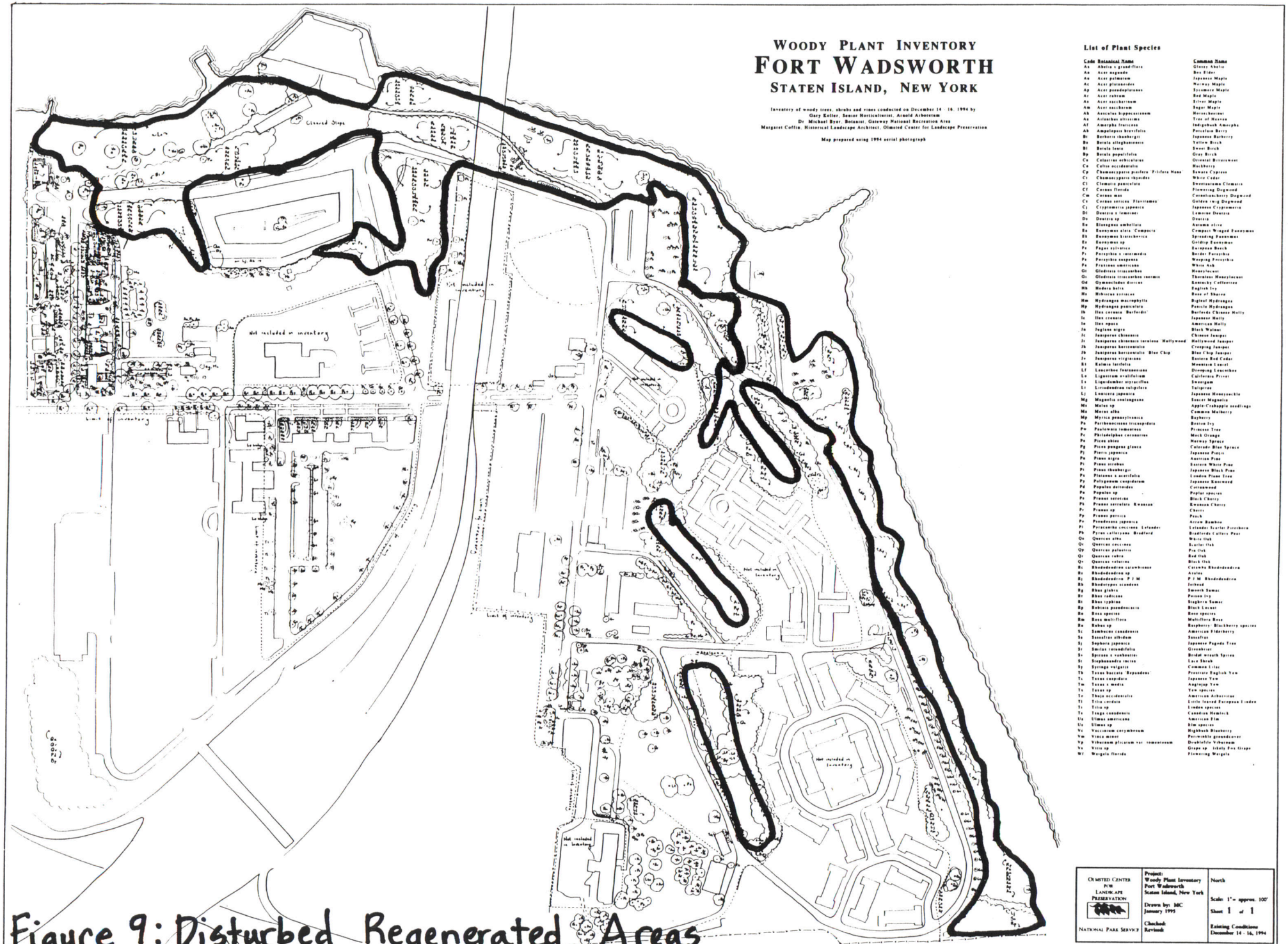


Figure 9: Disturbed Regenerated Areas

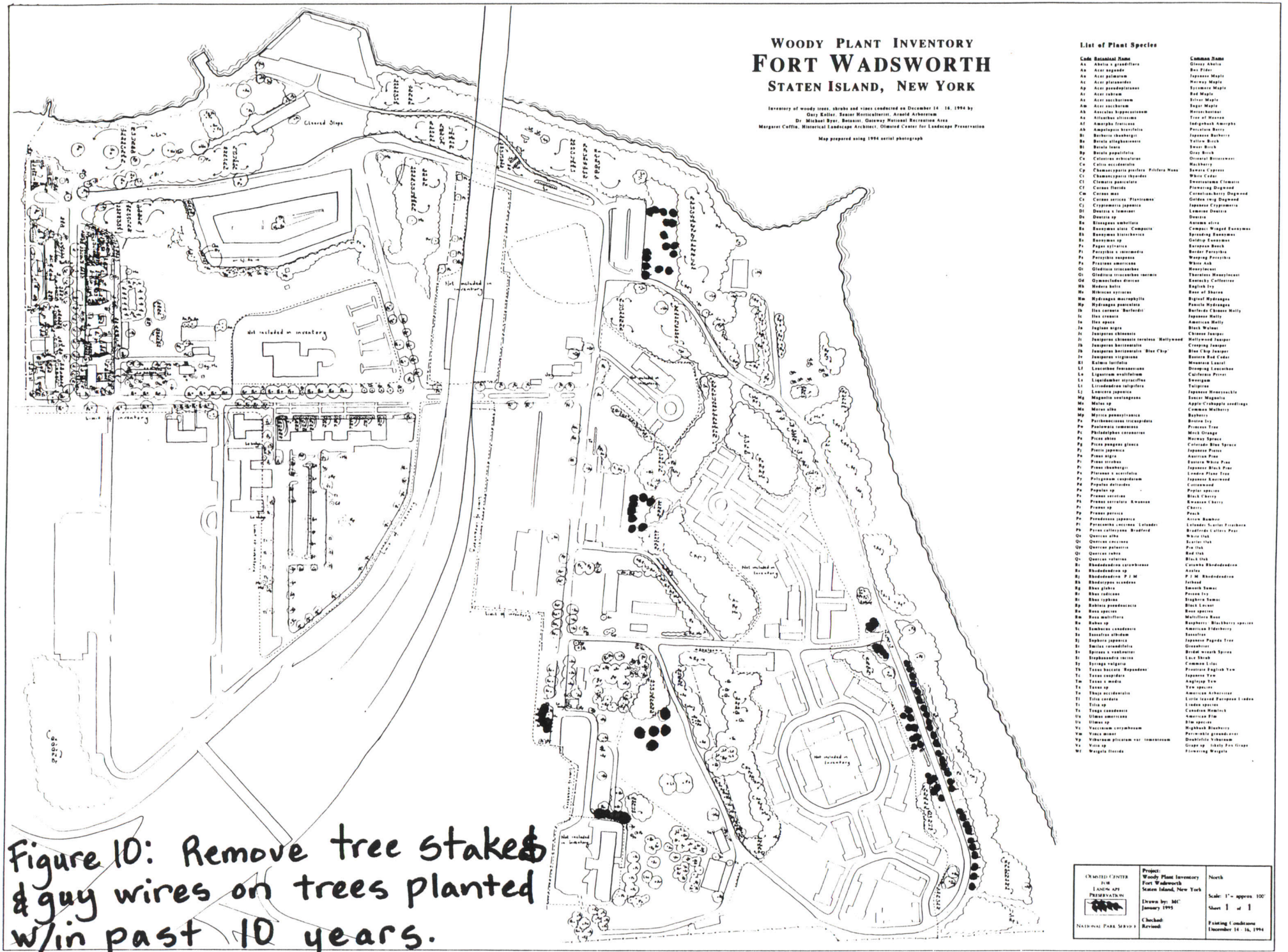


Figure 10: Remove tree stakes & guy wires on trees planted w/in past 10 years.

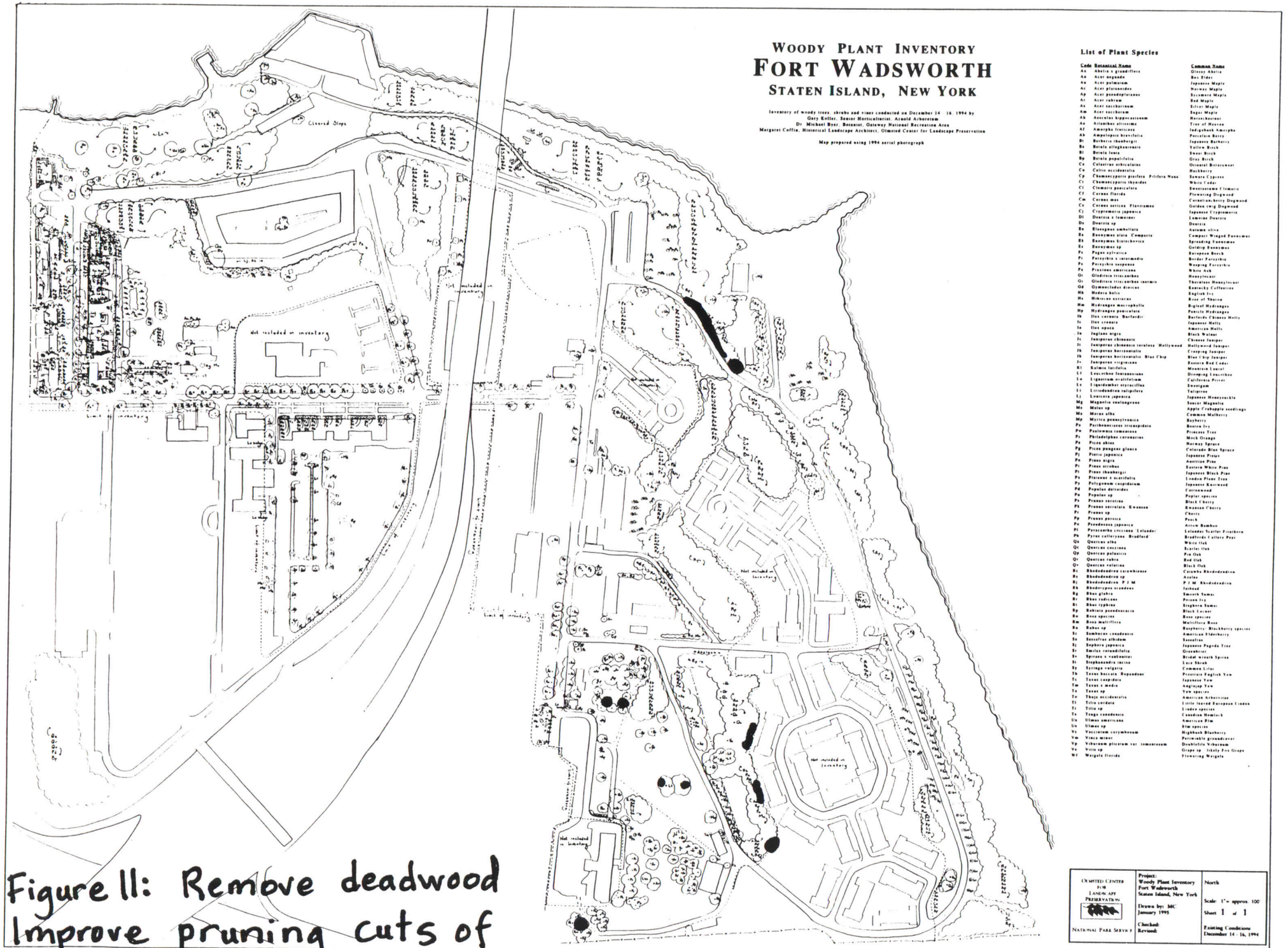


Figure 11: Remove deadwood
Improve pruning cuts of
branch stubs.

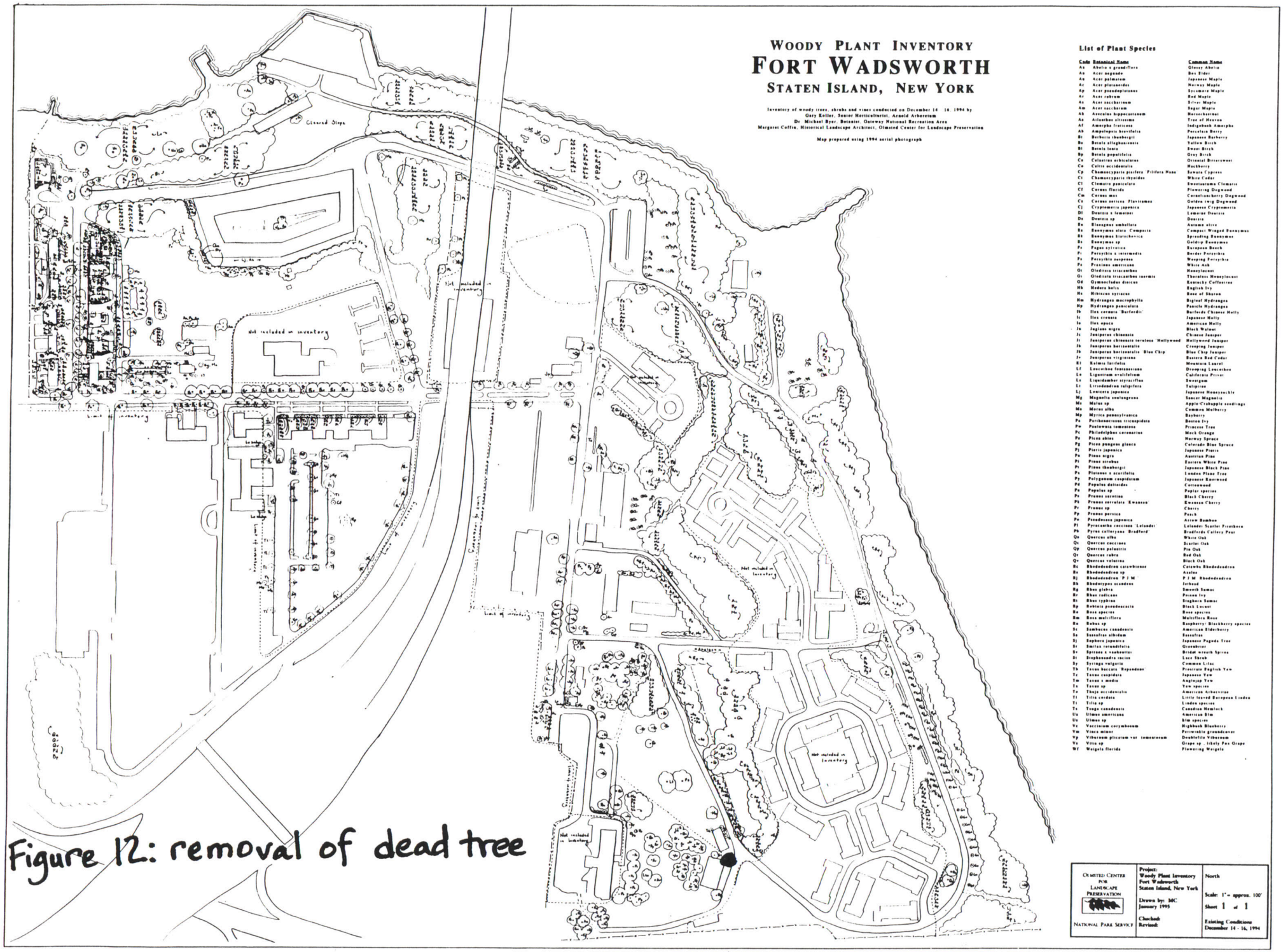


Figure 12: removal of dead tree

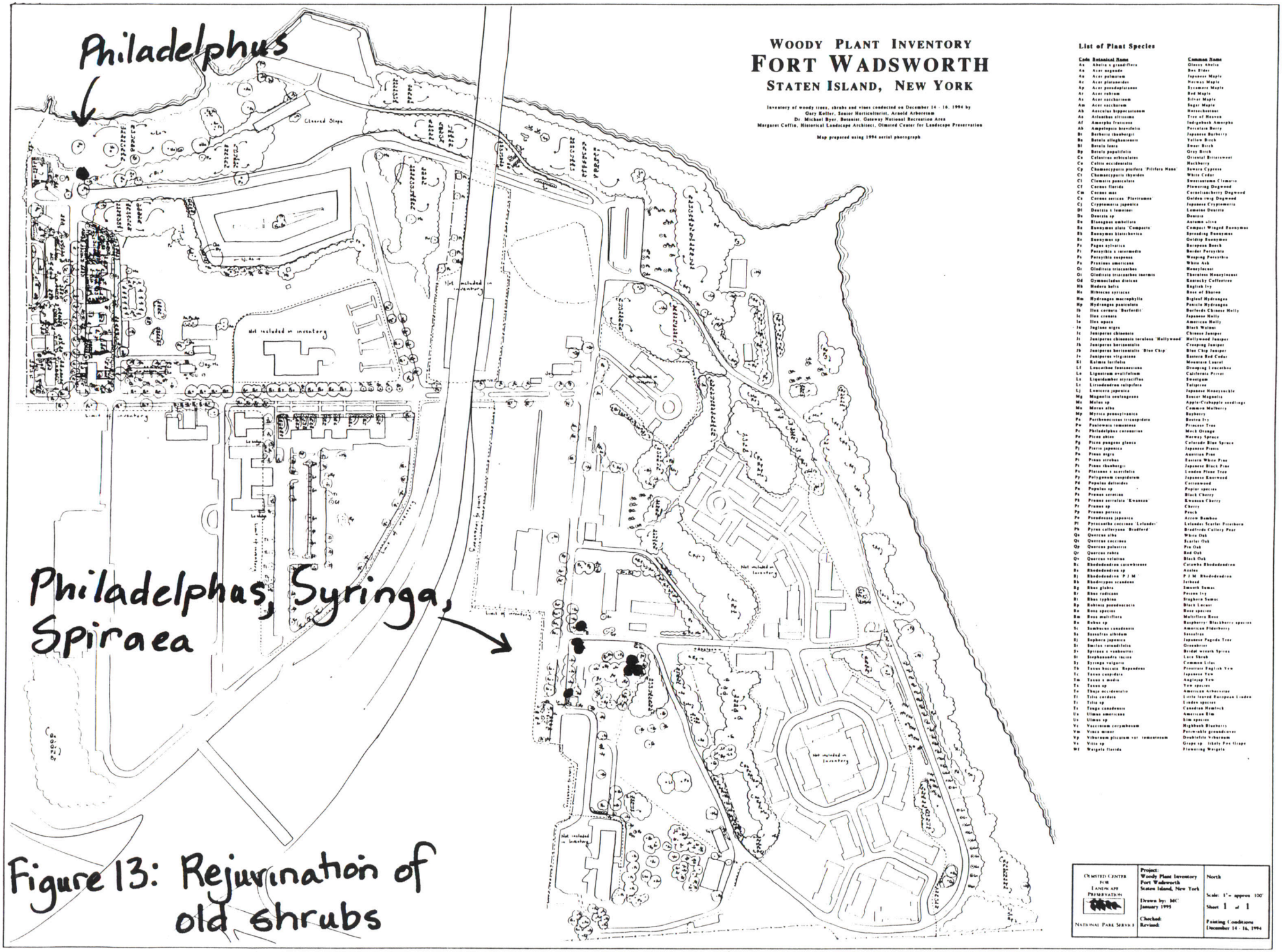


Figure 13: Rejuvination of old shrubs

Attachment: Low-impact Chemical Treatments to Control Regrowth of Vegetation on slope

First, determine which vegetation will be removed or controlled and which vegetation should be retained. If maintaining a view is the primary objective, low growing shrubs, woody vines and herbaceous plants are most likely to be retained and should be marked for protection.

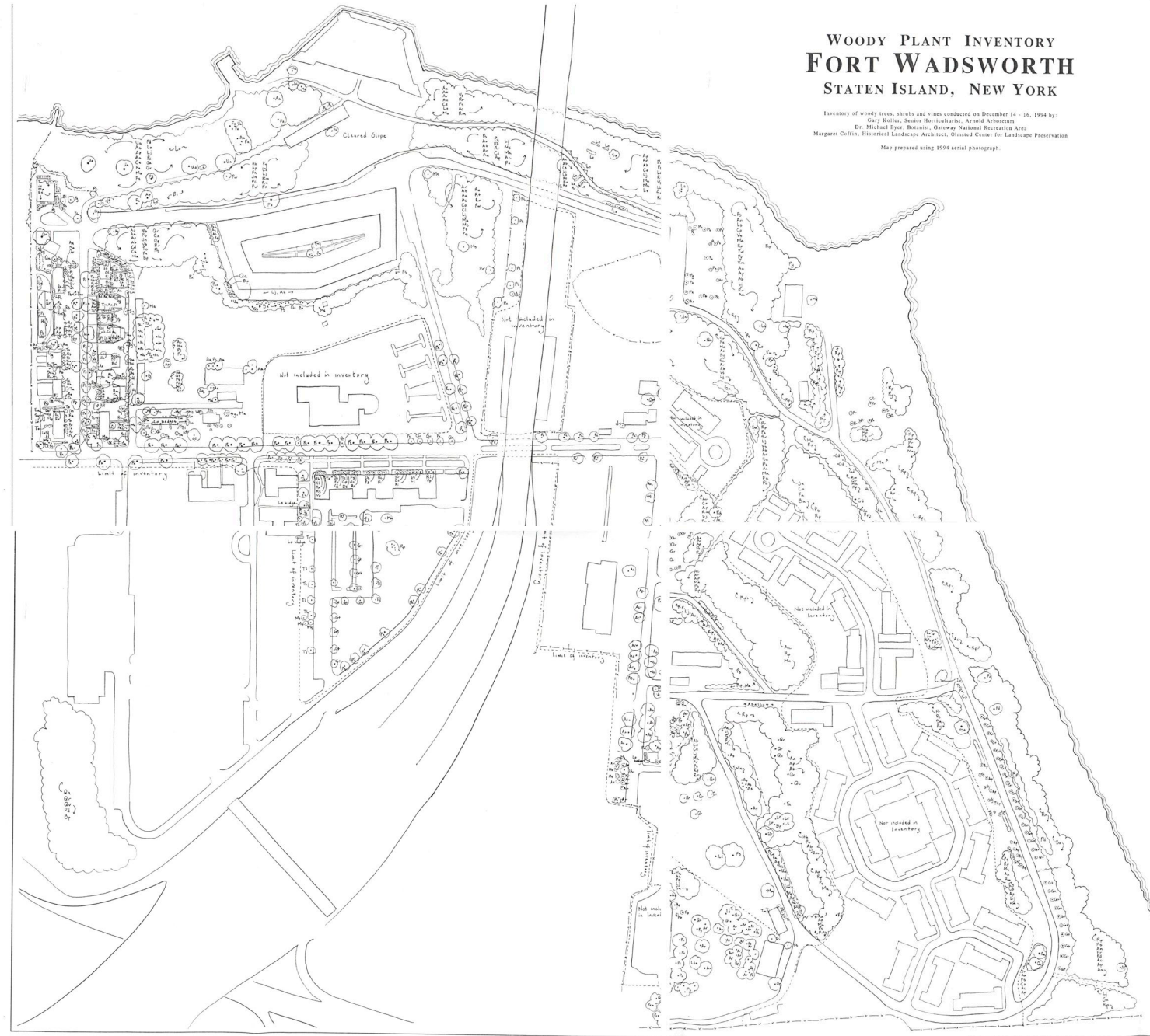
For vegetation selected for removal, if vegetation is still standing, apply a systemic herbicide in the late spring or early summer to the tree using a "Hypohatchet" tree-injector. For trees grater than 3" in diameter, require several injection points, typically one application per inch of at dbh (diameter at four feet height).

If pretreatment using a "Hypohatchet" tree-injector is not possible, then at the time of cutting paint cut surface of stumps using a herbicide applicator wand with a systemic herbicide. When applied to a fresh cut, the chemical will be translocated throughout the root system and reduce the amount of sprouting.

Three or four weeks after cutting, stumps should be examined for new sprouts. If sprouts are appear to be vigorous, herbicide may be applied directly to the new sprouts using an applicator wand to wipe the leaves with herbicide.

If herbicides are not an option, cut stumps may be mulched heavily to discourage resprouting.

The best systemic herbicides to use are those that break down ery quickly. Those with the active ingredient glyphosate are known to break down quickly such as "Round-up" for upland plants and "Rodeo" for wetland plants. Herbiceds similar to "Round-up" include "Accord" which is also a glyphosate, or "Garlon 4" which can be applied late in the season. The latter systemic penetrates the bark and cambium layer effectively when applied with a "Hypohatchet" tree-injector. Two or three weeks after stems are injected, stems can be cut back to the ground.



WOODY PLANT INVENTORY
FORT WADSWORTH
STATEN ISLAND, NEW YORK

Inventory of woody trees, shrubs and vines conducted on December 14 - 16, 1994 by:
Gary Koller, Senior Horticulturist, Arnold Arboretum
Dr. Michael Byer, Botanist, Gateway National Recreation Area
Margaret Coffin, Historical Landscape Architect, Olmsted Center for Landscape Preservation

Map prepared using 1994 aerial photograph.

List of Plant Species

Code	Botanical Name	Common Name
Aa	Abelia x grandiflora	Glossy Abelia
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Af	Amorpha fruticosa	Indigobush Amor
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Bl	Betula lenta	Sweet Birch
Bp	Betula populifolia	Gray Birch
Ce	Celastrus orbiculatus	Oriental Bittersw
Co	Celtis occidentalis	Hackberry
Cp	Chamaecyparis pisifera 'Filifera Nana'	Sawara Cypress
Ct	Chamaecyparis thyoides	White Cedar
Cl	Clematis paniculata	Sweetautumn Cler
Cf	Cornus florida	Flowering Dogwo
Cm	Cornus mas	Corneliancherry D
Cs	Cornus sericea 'Flaviramea'	Golden-twig Dogv
Cj	Cryptomeria japonica	Japanese Cryptom
Di	Deutzia x lemoinei	Lemoine Deutzia
Ds	Deutzia sp.	Deutzia
Eu	Elaeagnus umbellata	Autumn-olive
Ea	Euonymus alata 'Compacta'	Compact Winged
Ek	Euonymus kiautschovica	Spreading Euonym
Es	Euonymus sp.	Goldtip Euonymus
Fs	Fagus sylvatica	European Beech
Fi	Forsythia x intermedia	Border Forsythia
Fs	Forsythia suspensa	Weeping Forsythi
Fa	Fraxinus americana	White Ash
Gt	Gleditsia triacanthos	Honeylocust
Gi	Gleditsia triacanthos inermis	Thornless Honeyl
Gd	Gymnocladus dioicus	Kentucky Coffeetr
Hh	Hedera helix	English Ivy
Hs	Hibiscus syriacus	Rose-of-Sharon
Hm	Hydrangea macrophylla	Bigleaf Hydrange
Hp	Hydrangea paniculata	Panicle Hydrange
Ih	Ilex cornuta 'Burfordii'	Burfords Chinese
Ic	Ilex crenata	Japanese Holly
Io	Ilex opaca	American Holly
Jn	Juglans nigra	Black Walnut
Jc	Juniperus chinensis	Chinese Juniper
Jt	Juniperus chinensis torulosa 'Hollywood'	Hollywood Junipe
Jh	Juniperus horizontalis	Creeping Juniper
Jb	Juniperus horizontalis 'Blue Chip'	Blue Chip Juniper
Jv	Juniperus virginiana	Eastern Red Cedar
Kl	Kalmia latifolia	Mountain Laurel
Lf	Leucothoe fontanesiana	Drooping Leucoth
Lo	Ligustrum ovalifolium	California Privet
Ls	Liquidambar styraciflua	Sweetgum
Lt	Liriodendron tulipifera	Tuliptree
Lj	Lonicera japonica	Japanese Honeysu
Mg	Magnolia soulangeana	Saucer Magnolia
Ms	Malus sp.	Apple/Crabapple s
Ma	Morus alba	Common Mulberry
Mp	Myrica pennsylvanica	Bayberry
Pa	Parthenocissus tricuspidata	Boston Ivy
Pw	Paulownia tomentosa	Princess Tree
Pc	Philadelphus coronarius	Mock Orange
Pa	Picea abies	Norway Spruce
Pg	Picea pungens glauca	Colorado Blue Spr
Pj	Pieris japonica	Japanese Pieris
Pn	Pinus nigra	Austrian Pine
Pr	Pinus strobus	Eastern White Pine
Pt	Pinus thunbergii	Japanese Black Pin
Pr	Prunus sp.	Cherry
Pp	Prunus persica	Peach
Po	Pseudosasa japonica	Arrow Bamboo
Pl	Pyracantha coccinea 'Lelandei'	Lelandei Scarlet Fir
Pb	Pyrus calleryana 'Bradford'	Bradfords Callery P
Qa	Quercus alba	White Oak
Qc	Quercus coccinea	Scarlet Oak
Qp	Quercus palustris	Pin Oak
Qr	Quercus rubra	Red Oak
Qv	Quercus velutina	Black Oak
Rc	Rhododendron catawbiense	Catawba Rhododend
Rs	Rhododendron sp.	Azalea
Rj	Rhododendron 'P.J.M.'	P.J.M. Rhododendr
Rh	Rhodotypos scandens	Jetbead
Rg	Rhus glabra	Smooth Sumac
Rr	Rhus radicans	Poison Ivy
Rt	Rhus typhina	Staghorn Sumac
Rp	Robinia pseudoacacia	Black Locust
Ro	Rosa species	Rose species
Rm	Rosa multiflora	Multiflora Rose
Ru	Rubus sp.	Raspberry/ Blackbe
Sc	Sambucus canadensis	American Elderberr
Sa	Sassafras albidum	Sassafras
Sj	Sophora japonica	Japanese Pagoda Tr
Sr	Smilax rotundifolia	Greenbrier
Sv	Spiraea x vanhouttei	Bridal-wreath Spire
St	Stephanandra incisa	Lace Shrub
Sy	Syringa vulgaris	Common Lilac
Tb	Taxus baccata 'Repandens'	Prostrate English Y
Tc	Taxus cuspidata	Japanese Yew
Tm	Taxus x media	Anglojap Yew
Tx	Taxus sp.	Yew species
To	Thuja occidentalis	American Arborvit
Tl	Tilia cordata	Little-leaved Europ
Ti	Tilia sp.	Linden species
Ts	Tsuga canadensis	Canadian Hemlock
Ua	Ulmus americana	American Elm
Ux	Ulmus sp.	Elm species
Vc	Vaccinium corymbosum	Highbush Blueberr
Vm	Vinca minor	Periwinkle ground
Vp	Viburnum plicatum var. tomentosum	Doublefile Viburn
Vs	Vitis sp.	Grape sp., likely I
Wf	Weigela florida	Flowering Weigela

OLMSTED CENTER FOR LANDSCAPE PRESERVATION NATIONAL PARK SERVICE	Projects: Woody Plant Inventory Fort Wadsworth Staten Island, New York Drawn by: MC January 1995 Checked: Revised:	North Scale: Sheet Existir Decem