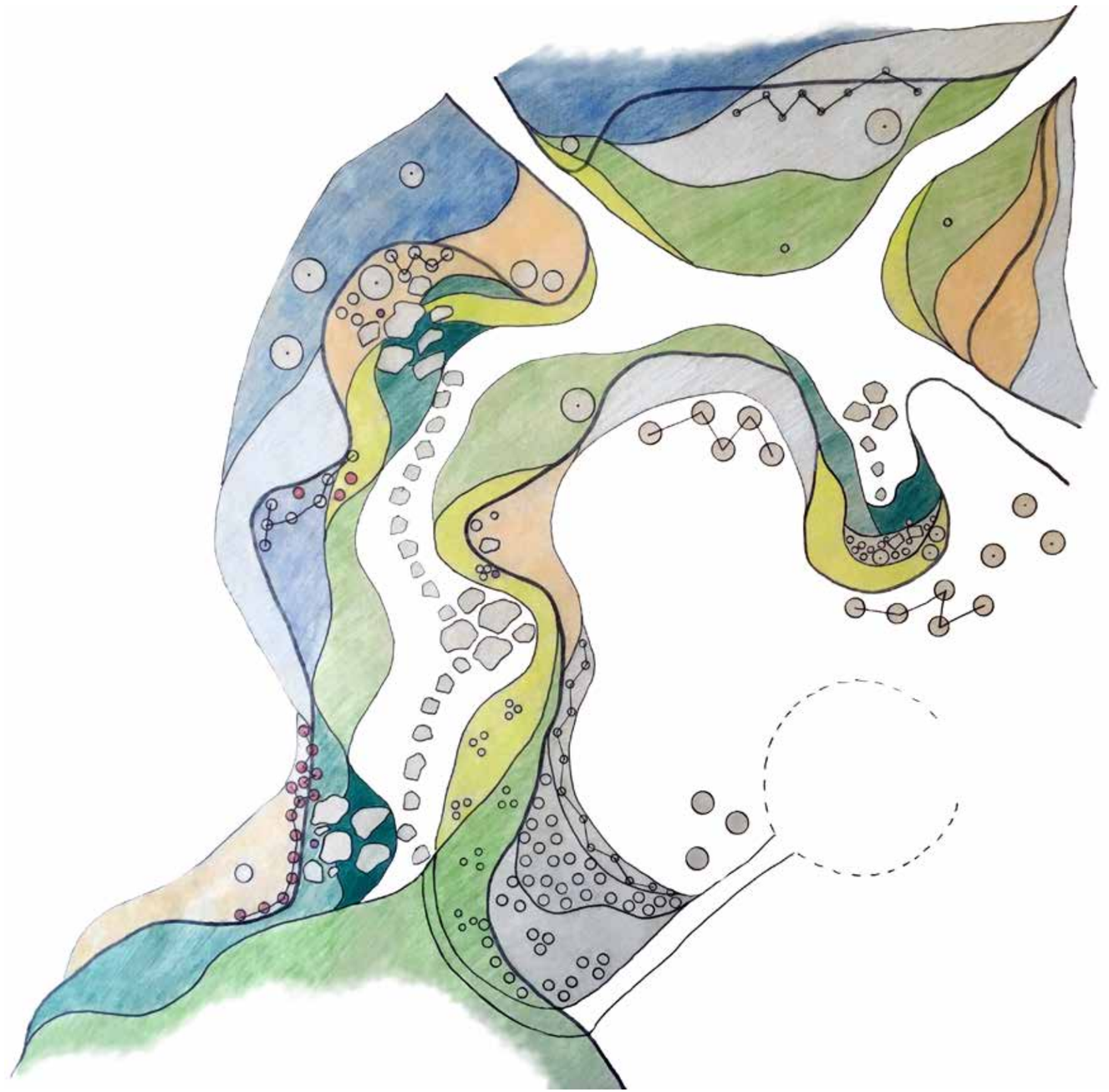


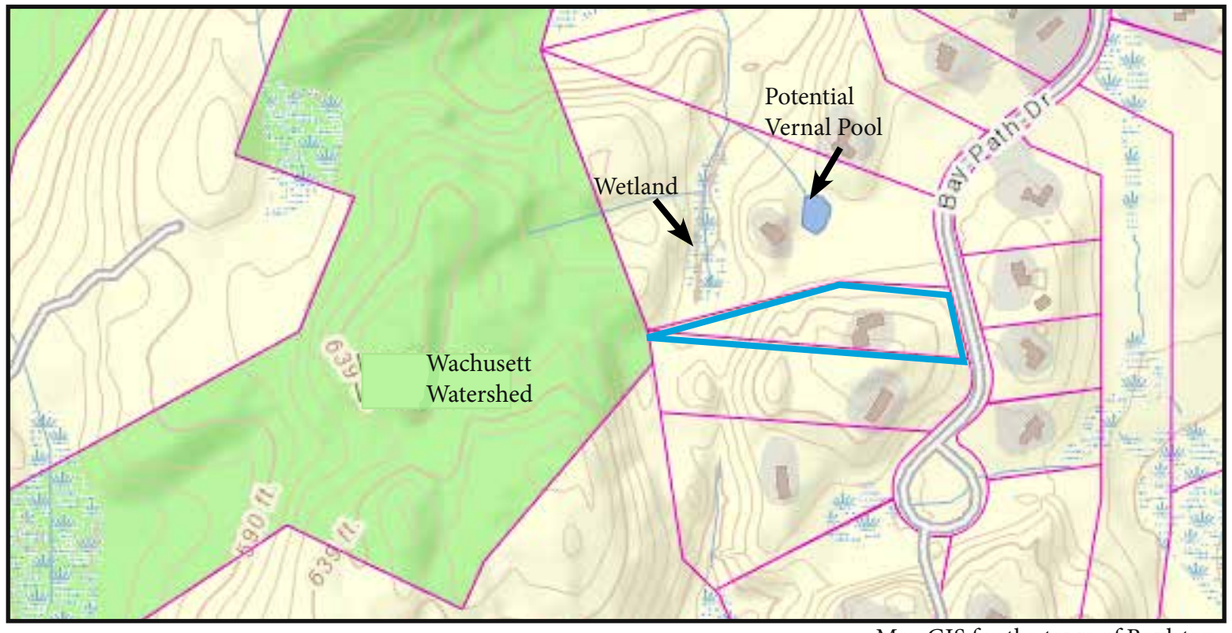
Master Plan & Design

Boylston, MA

December 2015

Prepared by Ruby Leaf Design

MassGIS for the town of Boylston



MassGIS for the town of Boylston

Property Overview

This owner-occupied residential property is located in a single-family residential neighborhood in Boylston, MA, abutting the Wachusett Reservoir watershed on its western side. It is located on 2.46 wooded acres and portions of the property are steeply sloped. The property owners have established gardens throughout the property, with paths connecting from the driveway or house. They noted that they are constantly watering due to the dry woods conditions. The owners state that they are clearing smaller trees and shrubs to create a more open and brighter-lit woodland, similar to what they have seen in Europe.

The owners have expressed interest in developing a plan to help them manage the property more efficiently and in an ecological manner, decrease water use, identify old paths for renovation and sites for potential new paths, and prioritize work. They have identified an area with a struggling lawn and what they state is clay soil, which is directly behind the house and visible from the owners' studio. They indicated that they would like a new design and plant palette for this area.

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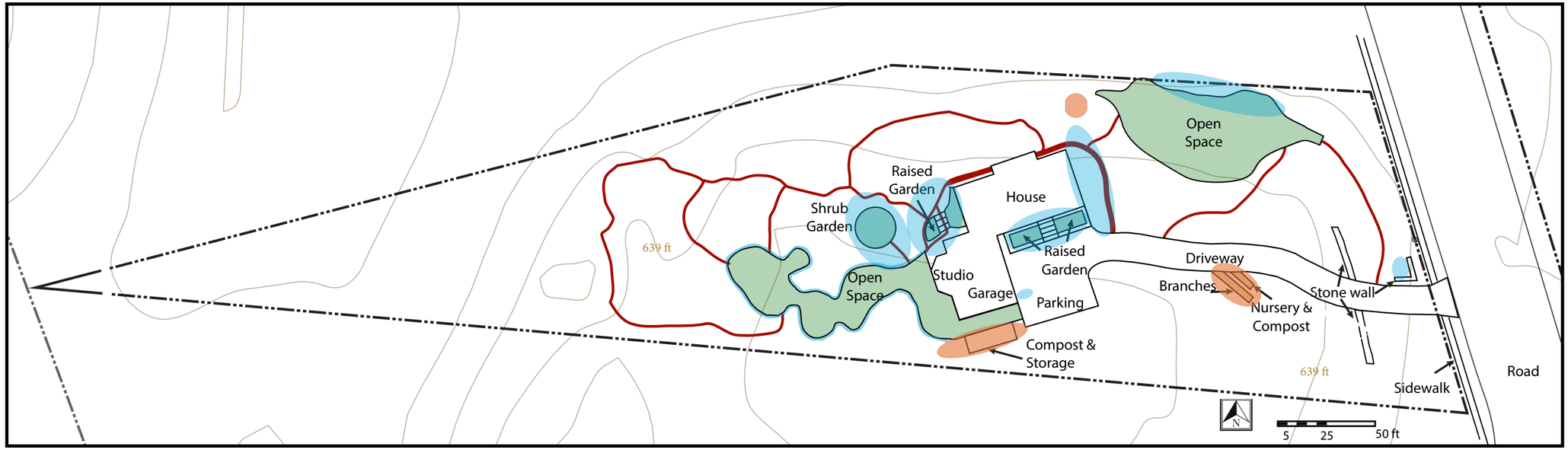
Existing Conditions Location



Project Overview

The project will include the following activities:

- Master plan of the property that includes:
  - Mapping the existing gardens and paths.
  - Identifying old paths needing restoration.
  - Identifying where new paths could be built.
  - Identifying areas for leaf mulch storage.
  - Proposing a management plan for existing gardens.
- Create guidelines for organic lawn maintenance and leaf management (cleanup and storage, not removal).
- Proposal for renovation of lawn area behind house, with design and plant list.

Existing Paths

Existing trails are mostly natural, with no path material besides the existing soil. Some paths consist of 1/2-1 inch gravel. Most paths slope between 8-25% and erosion is visible in many places with stones and tree roots protruding on all paths.

Existing Gardens

Existing gardens are located throughout the property, but primarily near the house and around the periphery of open spaces. Gardens consist of shrubs, perennials, and a few specimen trees. Most are in part to heavy shade from the mature and seedling pines and oaks.

Existing Storage

Existing mulch, leaf, and plant storage areas are located along the driveway, near the garage, and west of the northern open space. Two areas off the driveway, one for large branches, and one has an aged compost pile that is often used to heal-in plants until a permanent planting location is found.

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Existing Conditions Gardens & Paths

Species of Conservation Concern

Aquatic Core
Species of Conservation Concern:
Dwarf Bulrush
Orange Sallow Moth
Eastern Hognose Snake
Bald Eagle
Common Loon

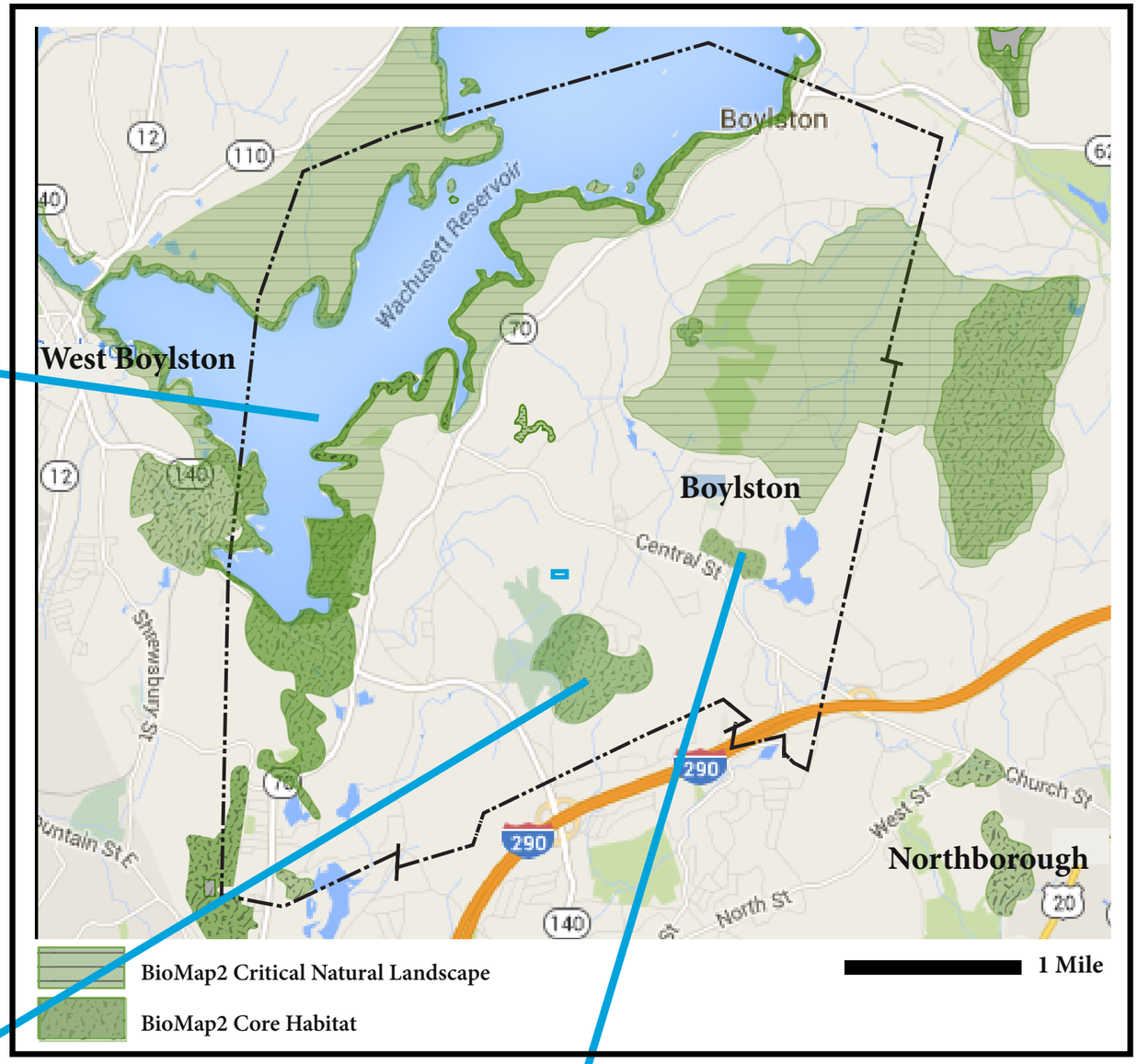

Photo: GoBotany


Photo: Lisa Thomas, Public domain


Photo: Ronal Carlson, Public domain

Both adult and juvenile marbled salamanders live in upland forests most of the year where they reside below-surface and in small-mammal burrows. Breeding season is from late summer to fall, when adults migrate to dried portions of vernal pools, swamps, and marshes. Eggs are laid under logs, leaf-litter, or grass tussocks and hatch after fall rains. The young metmorphosize, then migrate to upland forests.

BioMap2, MA Division of Fisheries and Wildlife



Marbled Salamander (Ambystoma opacum)


Photo: Patrick Coin. Creative Common.

Four-toed Salamander (Hemidactylium scutatum)


Photo: Brian.gratwicke. Creative Common.

Four-toed salamanders live in forests surrounded by wetlands such as swamps, bogs, marshes, and vernal pools, which are also used as breeding sites. Adults are rarely seen except during the spring nesting period. They can be found under objects such as logs and bark in coniferous and hardwood forests.

BioMap2, MA Division of Fisheries and Wildlife

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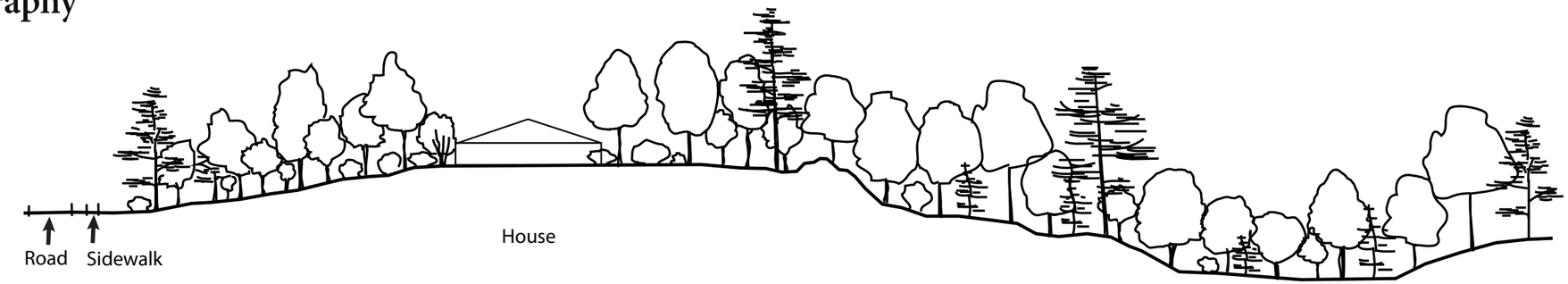
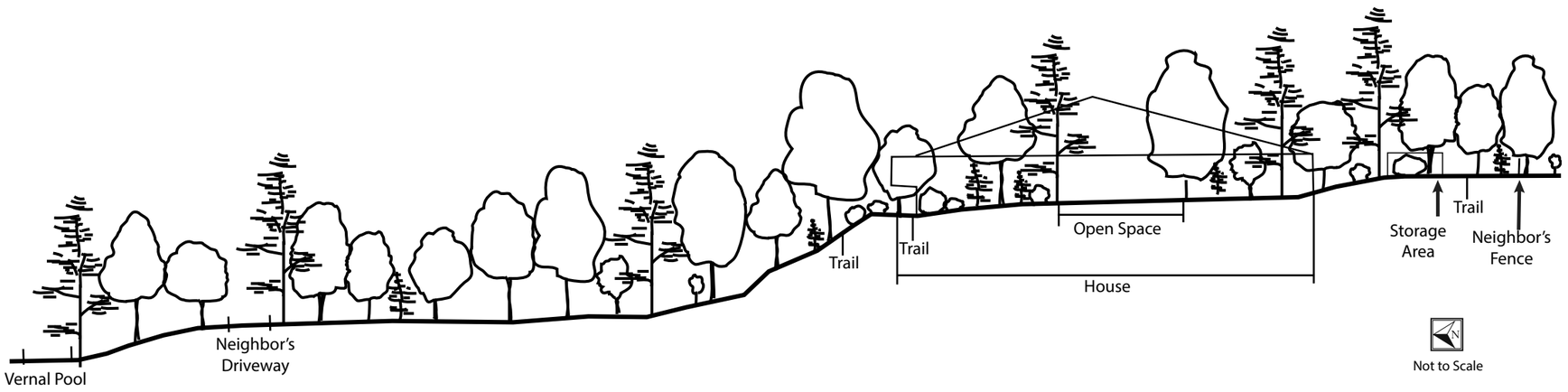
Existing Conditions
Plants & Ecology

Topography



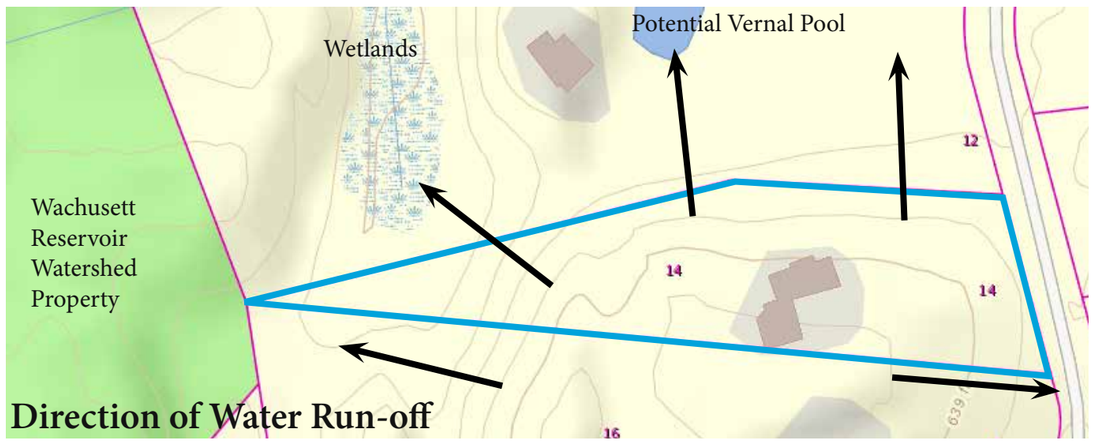
Not to Scale



Not to Scale

Water Run-off

This property is located on a ridge and water runs downhill from it towards the Wachusett Reservoir Watershed, wetlands, and potential vernal pool. Sediment and any fertilizer or chemical applications to the garden or lawns have a high chance of reaching these sensitive wetland environments and negatively impacting all the species dependent on unpolluted soils and waters.



Soils

The soils on this property are predominantly Chatfield-Hollis-Rock outcrop complex which consists of unweathered bedrock with fine, sandy loam and gravelly, fine, sandy loam. With this type of soil, the average depth to lithic bedrock is 10 to 40 inches. It is well-drained with high to very high runoff. Slopes are 3 to 15 percent, but on this property the slopes are sometimes >25 percent. Chatfield-Hollis-Rock outcrop complex soils have very low water storage. This means that soil will be dry year round and when it rains, could easily cause erosion. Plants for any new designs will need to be drought tolerant in order to decrease watering after the plants are established.

Web Soil Survey, NRCS

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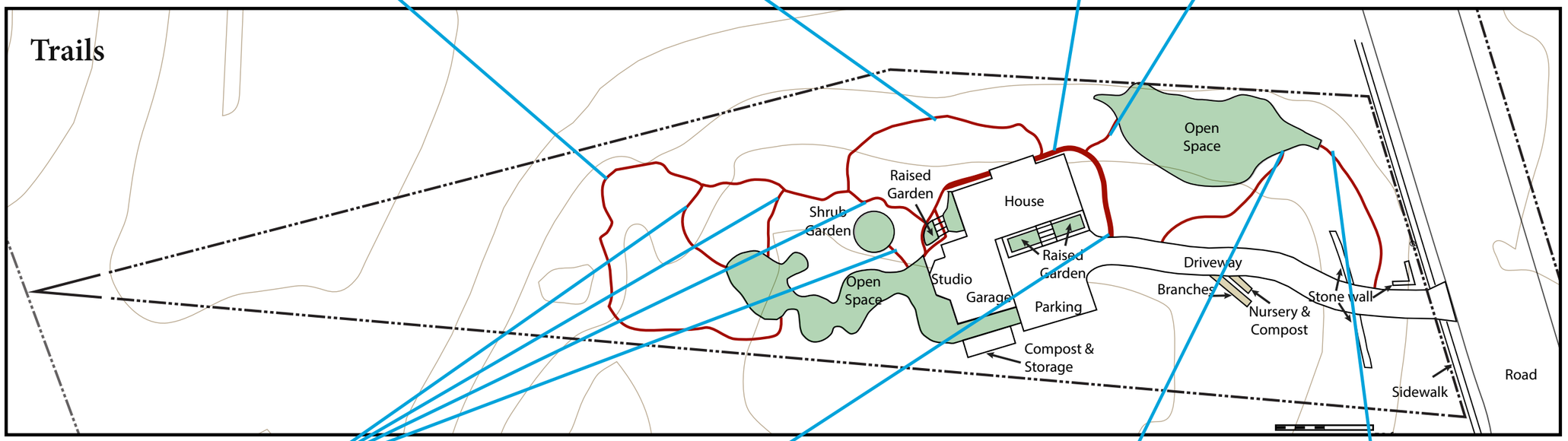
Existing Conditions Topography & Soils

This trail has a soil base. Tree roots and stones are exposed. The slope is 0-15% and erosion occurs where it has the greatest slope. It follows the top of the hill, before it drops steeply down.

This trail has a part soil and part gravel base. Tree roots and stone are exposed, but there is little erosion because it follows topography and has a slope of 0-8%.

This trail has a gravel base and leads on the northern side of the house. It has no slope and no erosion, except at the edge of the hill and where the northern most trail intersects.

This trail leads from the house to the lower garden. It has a slope greater than 25% and is eroded in many places. Plants have grown over the trail so it is difficult to see. Existing wooden steps are uneven and difficult to see.



These trails that connect to the main trails have both soil and gravel bases. The slope is 0-5% and erosion occurs throughout, so tree roots and stones are exposed.

This trail has a gravel base and leads on the eastern side of the house. It has 0-2.5% slope and no erosion, except where the northeasterly most trail intersects.

This trail has a soil base. The slope is 5-25% and erosion occurs throughout, so tree roots and stones are exposed.

This trail runs from the lower driveway near the road to the lower garden. It has a pine needle base. The slope is 0% and has no erosion.

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Existing Trails

Existing Plants

Existing native trees include white and red oak, white pine, hemlock, sugar maple, red maple, and witch hazel. Native undestory plants include various rhododendron and azalea, lowbush blueberry, maple-leaf viburnum, nanny berry, and bugbane. Native groundcovers include partridgeberry, huckleberry, hay-scented fern, Christmas fern, and Pennsylvania sedge.

The gardens include other plants such as boxwood, prostrate juniper, Japanese maple, hostas, Japanese pachysandra, turtlehead, herbs, day lily, and roses.

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Existing Plants

Organic Lawn and Garden Maintenance

This property is located in a naturally acidic region, as displayed by the number of maples, oaks, witch hazel, and blueberries on the property. Putting lime down is used to help grass grow better, because as an introduced non-native plant, it does not adapt well to the existing acidic soils. None of the other existing or suggested trees, shrubs, or perennials will benefit from the application of lime, so it is recommended to eliminate any liming from lawn care.

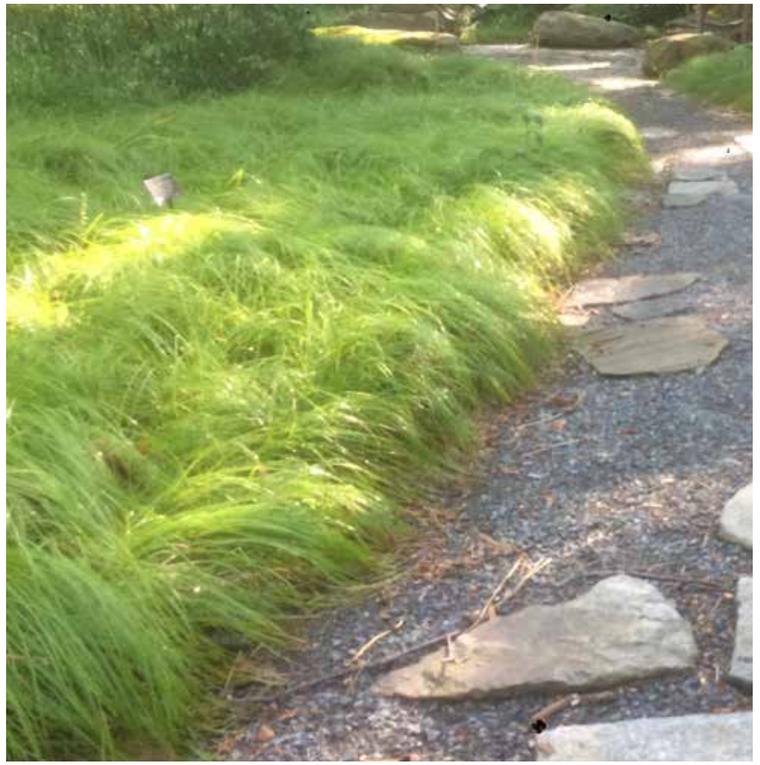
Common lawn management products will also eventually wash away and find their way into the water system, including the neighboring Wachusett Reservoir Watershed, potential vernal pool, and wetlands. Below are the recommendations for organic lawn and garden maintenance.

Lawn Maintenance

Please request that your lawn management company comply with the following guidelines for all parts of your lawns or gardens:

No fertilizer
No lime
No herbicide
No insecticide
No moss killer or deterrent

Basically, the lawn maintenance company should not apply anything that doesn't naturally exist in the landscape and especially should not apply anything without the clients' prior approval.



Pennsylvania sedge lawn, mowed once a year — Garden in the Woods.

Organic Garden Maintenance

Since the soil on this property is well-drained with a high run-off rate and low water retention, it is very important to add organic material to the soil. This can be accomplished by top-dressing gardens and lawns with compost and allowing leaf litter to build up. It is recommended to add 3 inches of compost to all existing garden beds and cover with an additional 2-3 inches of whole or shredded leaves. Do not allow mulch to directly contact tree trunks or bark — keep mulch clear within 6 inches of tree bark. Leaves may be left in place in the fall and only excess amounts of leaves removed in the spring.

Organic material, such as compost and leaf litter, benefits the bacteria and fungus that is naturally found in soil. These organisms break down the organic material and make it available to plants as nutrients. Organic material helps hold moisture, decreasing the frequency and amounts needed to keep plants healthy. It helps insulates plants from extremes in temperature. It also improves the texture of the soil, increasing water retention and aeration, and decreasing compaction, surface crusting, and erosion. Organic material can consist of many things like leaves, live and dead plant waste, decomposing trees, vegetable and fruit scraps, manure, earthworm castings, and grass clippings.

It is also recommended that any bare soil is mulched or planted with groundcovers to prevent soil erosion which can add to the sediment load found in water run-off, and eventually adds sediment to waterways.

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Organic Management

Leaf Management

Leaves are valuable organic matter. Leaves contain 50-80% of the nutrients that a tree takes up during the growing season and over time, bacteria and fungus will break the leaves down and slowly release those nutrients for plants to use again. Leaves also help retain moisture, improve soil texture, and prevent erosion. As an additional benefit the leaves provide winter protection for beneficial insects, reptiles, and small mammals.

People often think that too many leaves will smother their plants, but most plants will grow right through the remaining leaves in spring. This is what the plants were doing long before humans began managing the landscape. Even small wildflowers manage to grow through the leaves. Some plants you might want to remove leaves from in the spring include blueberries, huckleberries, and prostrate junipers because leaves get stuck in the woody stems and look messy.

Leaves may be blown into suggested areas for composting or shredding (refer to map). If your lawn management company usually shreds leaves prior to removal, ask if they will shred the leaves and then return them to you in the designated areas. They should be willing to do this since it will save them the cost of dumping them elsewhere.

It is likely that leaf removal will be desired in areas such as the driveway, porch, sidewalk, and possibly some paths. Most of these leaves can be blown into the gardens or woods or transferred to existing storage areas for composting.

Even the smallest woodland bulbs and perennials like these wild leeks, squirrel corn, and bloodroot, grow through leaf litter which has been allowed to accumulate naturally.

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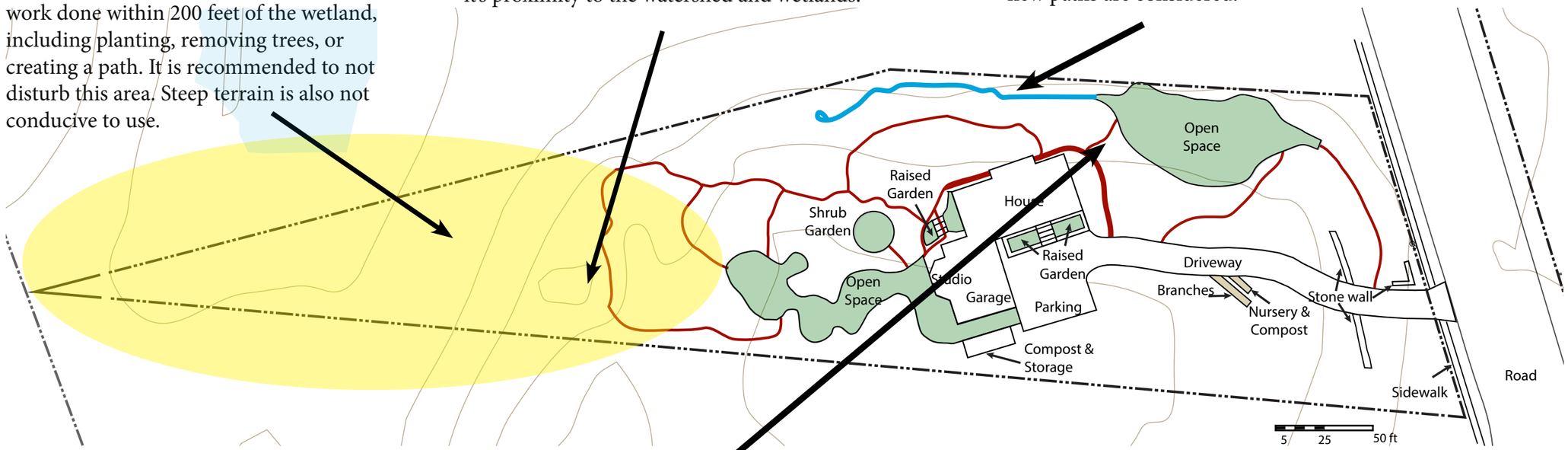
Leaf Management

Trail Recommendations

A notice of intent would need to be filed with the conservation commission for any work done within 200 feet of the wetland, including planting, removing trees, or creating a path. It is recommended to not disturb this area. Steep terrain is also not conducive to use.

A sitting area could be considered for this space, near or on the stone outcrop, and could be an excellent location for specimen wildflowers or low shrubs. No further development would be recommended for this site due to it's proximity to the watershed and wetlands.

A path that follows along the base of the stone ledge could be considered here, but it is in close proximity to the neighbor's driveway and visibility from the neighbor's house. It is recommended to stabilize the existing paths before any new paths are considered.



The path leading from the northeast side of the house down to the lower garden is steep, eroded, and overgrown. It is recommended to close this path entirely. Plants in this area do not need routine maintenance, so a path is not necessary here.

Recommendation: Wood chips are a simple and natural way to make paths more walkable by covering exposed roots and evening the grade, and they blend into the natural landscape. Wood chips decompose slowly and eventually add organic matter back to the soil. A 4-6" layer of wood chips is a good beginning and can be laid thicker to cover larger roots and stones. Log or stone edges could be used to keep the wood-chips from washing off the path.

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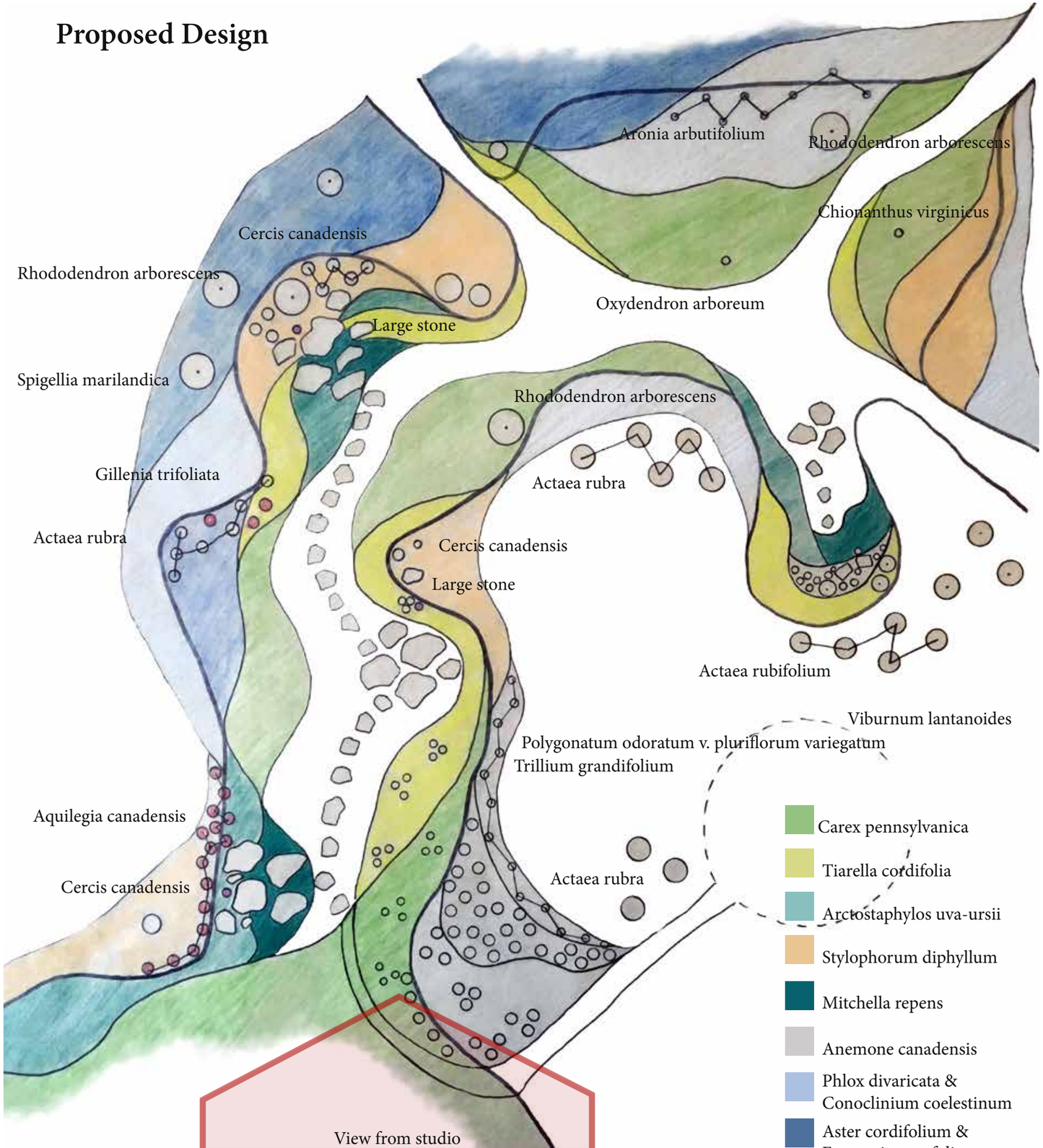
Trail Recommendation

Proposed Design



The design is meant to have a sense of unity through repetition, simplicity, and layers. It is meant to blend the existing surrounding landscape with the designed space and the best viewing point is intentionally positioned looking from the pottery studio, although there are other viewing spaces throughout. The stone path and "puddles" of stone are meant to simulate the feel of water. The plants are native and should do well in this site once established. They help to blend the sharp line of lawn and woods and help strengthen the sense of place — a well-tended New England woodland., but also simulate the balance and flow of a Japanese garden.

In order to introduce more light to this area, some of the trees should be thinned out. An arborists can help distinguish the best trees for removal.

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Design

Plant List for Design

The soils on this property are acidic, well-drained, and have poor water retention.. Groundwater is generally at least 80 inches below the soil's surface and mature oaks, pines, and maples ensure that the soil remains dry. These tall mature trees also create shaded to densely-shaded conditions.

The plants that were selected for the design are New England woodland natives which will not only tolerate the exisitng conditions, but should thrive in them. They will require water to become established, but then should not require additional water except perhaps in periods of extreme drought. Most native plants will simply go dormant early if growing conditions are not optimal.

Most existing plants will remain in place and some might be moved to new locations to allow for new plants.

Actaea rubifolium
Appalachian bugbane

Actaea rubra
Red baneberry

Ageratina altissima
Tall boneset or white snakeroot

Anemone Canadensis
Windflower, meadow anemone

Aquilegia Canadensis
Wild columbine

Arctostaphylus uva-ursi
Bearberry, Kinnickinnic

Aronia arbutifolia
Red chokeberry

Aster cordifolius
Blue wood aster

Carex pennsylvanica
Pennsylvania sedge

Cercis Canadensis
Redbud

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Plant List for Design

Chionanthus viginicus
White fringe tree

Conoclinium coelestinum
Blue mistflower

Gillenia trifoliata
Fawn's breath

Oxydendron arboretum
Sourwood, sorrel tree

Phlox divaricata
Blue phlox

Polygonatum odoratum
Variegated Solomon's seal

Polystichum acrostichoides
Christmas fern

Rhododendron arborescens
Sweet azalea

Spigellia marilandica
Woodland pink, Indian pink

Stylophorum diphyllum
Celandine poppy, yellow wood poppy

Tiarella cordifoila
Foamflower

Trillium grandiflorum
Large-flowered trillium, white wake-robin

Viburnum lantanoides
Hobblebush, moosewood

Heuchera "Autumn Bride"
Maybe mixed in with Phlox

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Plant List for Design

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Web Soil Survey, National Resorces Conservation Services

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