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Preserving Place at the Morris Arboretum: A Landscape Management Plan for the Historic Intern House Garden and Hillcrest Building

Kristiana Bowman

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Abstract

The primary objective of this project is to guide the proper care of a historic section of the Arboretum through the creation of a landscape management plan. The property around the Gardener's Cottage—now serving as the Intern House— and Hillcrest Building is a visible part of the garden where three major pathways converge. Architectural features from the turn of the century and a Conifer collection dating to the Morris era should be preserved for their historic significance.

The initial phase of this project includes an investigation into the history of the Gardener's Cottage, Hillcrest Building, and the surrounding landscape, which informs priorities of focus and any future redesign. The site was surveyed to assess existing conditions, including the health of accessioned plants and trees, perennial plantings, drainage and hydrological movement, as well as common pests and noxious weeds.

Drawing from a diverse range of plans published by other arboreta to private landscape architecture firms, the landscape management plan for the Intern House Garden and Hillcrest Building will incorporate effective strategies for garden management while upholding the site's original design and scale. The foundation of this plan involves a task checklist to direct proper care for the garden throughout the year. Assignments are delegated to teams in Horticulture, Arboriculture and Facilities, and a timeline illustrates when each goal should be realized. A coordinating map of accessioned plants and perennials will contextualize the landscape management plan tasks and document a snapshot of the garden's current presentation.

The final objective of this project is to offer a proposal including future improvements to the site and a recommendation for the implementation of the landscape management plan across all relevant Arboretum teams.

Disciplines

Horticulture

Comments

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Author: **Kristiana Bowman**
 The Alice & J. Liddon Pennock, Jr. Endowed Horticulture Intern

Date: **May 2019**

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INTRODUCTION

"A garden is not an object, but a process"¹

The magnificence of a garden may only be captured in snapshots and enjoyed fully in its current presentation. We may design a landscape and aim to tastefully guide it through the seasons but we must recognize that a garden, like all facets in nature, is ever-changing and evolving. To plan for a beautiful unfolding, the gardener must first dive into the history of the land and form an idea of the site's prior use. This project aims to honor the history of the Arboretum's Gardener's Cottage and Hillcrest building by presenting relevant archival writings and photographs to uncover the buried landscape. This insight may be used to inspire any future redesign and help answer an important question: how can we authentically maintain this parcel of the garden?

This project also offers a blueprint for the ideal level of maintenance needed to keep this area of the garden aesthetically pleasing and well-kept into the future. Landscape management plans from other public gardens demonstrated a range of approaches and highlighted effective techniques that could be incorporated into a plan for the Intern House and Hillcrest Building. The landscape management plan task list weaves in the specifics of the site and includes responsibilities (e.g. string trimming gates and clearing leaves) that may be carried out throughout the season. The project presents a corresponding map of the garden so tasks may be carried out efficiently and accurately, as well as to keep record of the garden's presentation at this moment in history. A map of accessioned trees and the garden's perennial layer demonstrates which areas require seasonal maintenance and may be referenced during any future redesign projects.

The list of responsibilities can be delegated to different teams at the Arboretum, including Horticulture, Arboriculture, and Facilities. These tasks are color-coded and included on a timeline, relaying the ideal window to realize goals in the garden.

Finally, this landscape management plan highlights where improvements to the site can be made and opens discussion on how this part of the garden may better serve and inspire Arboretum visitors. Taking proposed capital projects into consideration, the plan suggests how improvements to the Hillcrest Building and Intern House can fit into future construction. The project finally brings awareness to important educational or interpretational occasions that are currently overlooked. The ultimate aim of the landscape management plan is to provide a detailed look at the garden's past and current arrangement to guide others in its upcoming care.

¹ Ian Hamilton Finlay, *Unconnected Sentences on Gardening*, c. 1980.

BACKGROUND AND HISTORY

All projects at the Morris Arboretum can be observed through the lens of historical preservation. The concept of “landscape as history,” discussed by John Motloch in *Introduction to Landscape Design*, declares that the landscape “is the complex documentation of the history of activities of nature and man, in a particular location. It is seen as a cumulative record, documented chronologically.”² The landscape can either hold these marks of activity and growth or they may fade naturally.

The ability to distinguish these is a skill of the designer; as Motloch writes, “a major emphasis of the historical view of the landscape is to decipher this landscape tapestry and develop the mental construct of the landscape as living history. To do so, the landscape historian decodes the environment, that is, reads and interprets cues, and extrapolates from these cues to reconstruct history.”³

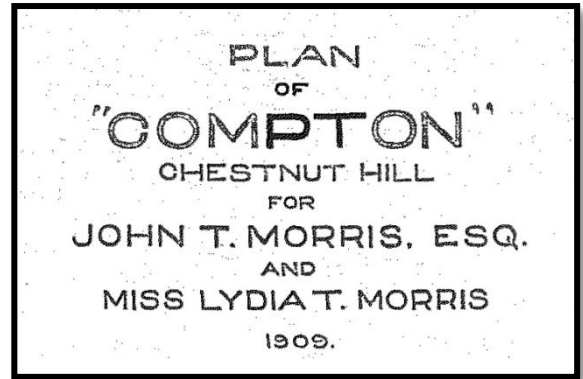


Figure 1: Title of 1909 Compton Atlas

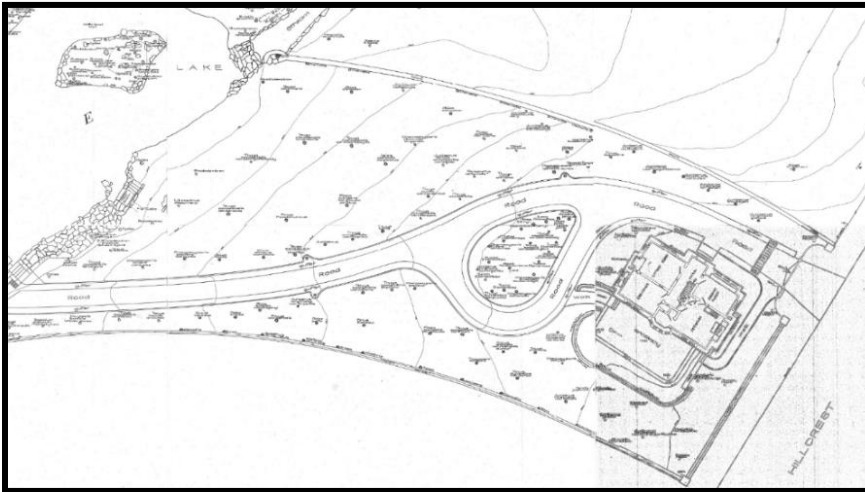


Figure 2: 1909 Map of Gardener's Cottage, Tonkin Drive and Conifer Collection Accessions

Archival records supplement this view of the landscape as living history. Fortunately, there is a photographic record documenting the use and evolution of the grounds around the Gardener's Cottage and Hillcrest Building. The building that serves as today's Intern House was constructed in 1904

by Cope and Stewardson, one of the most influential architecture firms in the late nineteenth to early twentieth-centuries, renowned for their designs at the University of Pennsylvania, Princeton University, and Bryn Mawr College. Some of their most recognizable sites in Philadelphia include the Quadrangle at the University of Pennsylvania, the Penn Museum, and Philadelphia Library's Chestnut Hill Branch. The

² John L. Motloch, *Introduction to Landscape Design*, Van Nostrand Reinhold (New York, NY: 1991).

³ John L. Motloch, *Introduction to Landscape Design*, Van Nostrand Reinhold (New York, NY: 1991).

architectural duo designed the Gate House or Lodge for the Compton Estate that would later serve as the Head Gardener's Cottage then the Intern House at the Morris Arboretum.

Frank Gould was the first Head Gardener to call the Cottage home. A landscape gardener from Wellsley, MA, Gould helped John Morris install and plant several features of the Arboretum from 1898 till his retirement in 1919. John Tonkin soon stepped in to fill Gould's role as Head Gardener and would serve the Morris family for the following thirty years. Tonkin resided in the Gardener's Cottage from around 1919 to 1955, along with his wife Margaret and their daughter, Margaret Tonkin Medlar. John Tonkin happened to keep meticulous records and wrote a journal entry everyday detailing his work at the Compton Estate. Thanks to Tonkin's exhaustive notes, we have an idea of the kind of large-scale projects, such as dredging the Swan Pond, and more routine tasks like chopping and hauling wood, that shaped the Arboretum's early landscape.

The site was also home to one of the Morris' conifer collections, which surrounded the property and lined the drive towards the Swan Pond. These specimens most likely served as ornamental additions to the Lodge Drive while providing great species diversity, satisfying the Morris' interest in exotic plant species.



Figure 3: 1937 Conifers along Cobblestone of Tonkin Way



Figure 4: View of the Gardener's Cottage from the Crabapple Slope. Tonkin Drive and Love Temple foreground the home

SITE SURVEY AND EXISTING CONDITIONS

When drafting a plan for any garden it is essential to complete a survey of the existing conditions. This investigation should note which weeds or pests present challenges to the garden, which trees require priority attention, and any improvements that can be completed in the following seasons. Because this section of the property includes historic infrastructure and includes Morris-era plant curation, consideration may be given to historic trees and shrubs that were features of the original garden.



Figure 5: 1905 Entrance to Gardener's Cottage from Hillcrest Ave, stone pillars frame the Compton Estate



Figure 6: Weedy bed between the Intern House and unsightly Hillcrest Building.

The survey of the site around the Hillcrest Building and Gardener's Cottage brought up key challenges to the site that may be remedied through proper planning. The top priority to emerge during this survey is drainage and the movement of rainwater. When it rains, all of the water collected from the Hillcrest Avenue empties into only two drains, leaving much runoff to flow behind the Hillcrest building and through the garden. The

Hillcrest Building has even flooded in heavy rainstorms. Past projects to re-engineer this drainage pattern or create a storm water garden have not panned out, leaving this site susceptible to damage and in need of improvement. Reconfiguring the flow of runoff water around the Intern House and Hillcrest Building is just one opportunity to protect valuable infrastructure while simultaneously elevating the quality of plant life in the area.

The weedy species behind the Intern House and Hillcrest Building receive much consideration in the Landscape Management Plan checklist. The small pass between these structures is overrun with *Hedera helix* which covers the ground near the Hillcrest Gate, ensnares the fence and climbs the large *Zelkova serrata*.

The *Zelkova*'s weedy seedlings also pose a threat to the site's visual cohesion and may inhibit the growth of desirable herbaceous species. This site has potential if a regular weeding schedule is implemented in



Figure 7: Annual weeds between Intern House and Hillcrest Building form a dense patch by mid-Summer



combination with the planting of a strong, desirable ground-cover such as *Carex amphibola*.

Soil compaction is another issue that should be resolved to improve the health and quality of plants in this section of the garden. In particular, the soil behind the Hillcrest Building needs revitalization and aeration where visitors have worn a path to the Hillcrest restrooms. In consultation with the Assistant Arborist, Andrew Hawkes, the *Thuja occidentalis* and *Ilex × koehneana*, were identified as candidates for air-spading to decrease compaction of their surrounding soil and promote overall health of these trees.

LEARNING FROM OTHER LANDSCAPE MANAGEMENT PLANS

Once familiar with a site, a comprehensive plan for improvement may emerge. In “The Philosophy and Practice of Garden Preservation,” John Sales writes, “whether for radical restoration or for continued preservation, a management plan and an understood conservation policy are essential.”⁴ Many other public garden institutions recognize the importance of protecting their history and plant collection through considerate coordination, thus inspiration for this landscape management plan was gleaned from a variety of publications including the Arnold Arboretum’s 2011 Landscape Management Plan, Penn State Extension’s 2018 Landscape Maintenance Manual, Management Plan by the Eloise Butler Wildflower Garden and Bird Sanctuary in Minneapolis, and the Missouri Botanical Garden’s Shaw Nature Reserve Landscape Maintenance Schedule. Though each plan has unique tasks that address their property’s needs, commonalities emerge which may be applied to any public landscape. More nuance was found in a study of landscape management plans written by landscape architects and the Seattle Department of City Planning.

Published by a fellow public research arboretum with a focus on historic preservation and curation, the Arnold Arboretum’s 2011 Landscape Management Plan proved to be a useful model. This report included a very detailed strategy for how to maintain each section of their property and how they anticipate the garden to evolve in coming years. The Arnold Arboretum priority map allocates the flow of resources and attention to divisions of the garden that are ranked according to visitor interaction or visibility and horticultural priority. The site of interest in this project is too small to

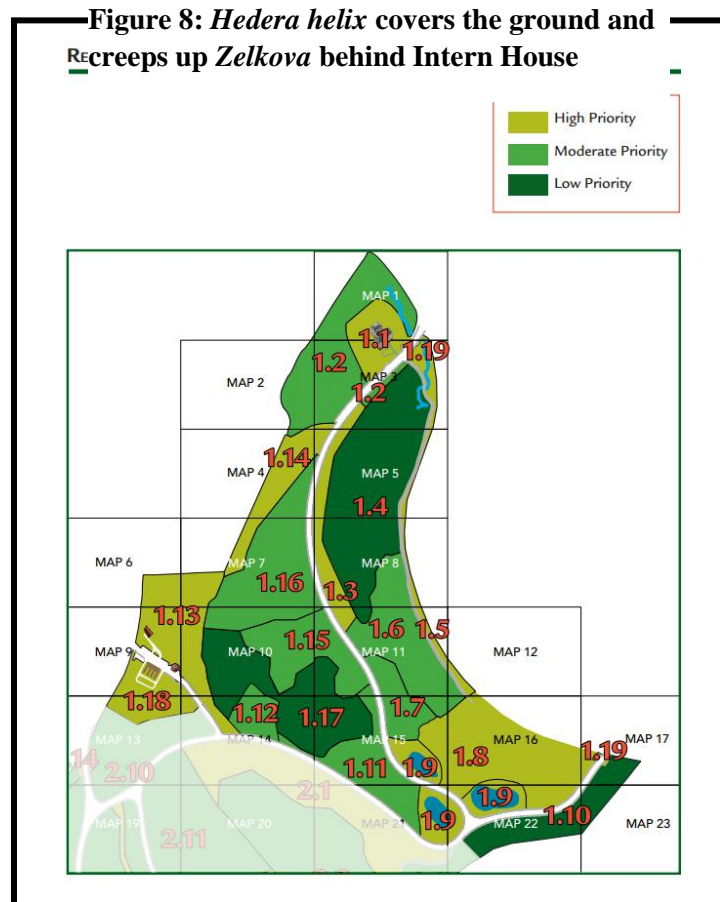


Figure 9: Priority Map from Arnold Arboretum Landscape Management Plan (2011), Page 3.

⁴ John Sales, “The Philosophy and Practice of Garden Preservation,” Bulletin of the Association for Preservation Technology, Vol. 17, No. 3/4, *Principles in Practice* (1985), pg. 61.

subdivide into distinct priority zones; however, the Morris Arboretum could benefit from implementing the priority ranking system used by the Arnold.

The Management Plan published by the Eloise Butler Wildflower Garden and Bird Sanctuary provides useful insight on institutional planning and intentionally preserving the garden's sense of place. This proposal provides a model for caring for the garden while maintaining the structural soundness of the property's infrastructure, including buildings, drains, fences, and all relevant hardscapes. This plan was consulted in combination with initial surveys of the site to draft a list of tasks and timeline for the Facilities team.

In Barbara DeCaro's presentation for the City of Seattle Green Gardening Workshop, she discusses the ideal features of a landscape management plan, writing that all plans "should be adaptable to change and... allow for improved materials, maintenance practices, and resource level adjustments."⁵ In addition, the plan for the garden must adjust and account for changes to the landscape over time, including plants growing larger or transitioning over the seasons into an unplanned micro-ecosystem where they fare better.

The City of Seattle has published a number of useful resources through their Green Factor initiative that incentivizes the drafting and use of landscape management plans to reduce environmental impact. Though this campaign directs city-planning projects and the creation of landscapes on all scales, the Seattle Department of Planning and Development's publication on "Preparing Landscape Management Plans for Seattle Green Factor Compliance," sheds light on the best approach to conserving resources and carrying out a sustainable project regardless of its scope. One of the chief factors emphasized by the Green Factor campaign is the call to "protect the health of residents, workers, and customers, as well as the environment, by minimizing use of pesticides (herbicides, insecticides, fungicides, and rodenticides)."⁶

Seattle's Green Factor also advocates for plans where "plant selection emphasizes native plants and hardy ornamental cultivars to prevent pests and the use of harmful chemicals, especially where they may contact people or wash off in surface water."⁷ This has direct relevance to landscape choices made around the Intern House and Hillcrest building because any pesticide use will eventually run off into the stream and flow towards the Swan Pond. The Green Factor initiative exemplifies how proper landscape planning in combination with horticultural expertise can largely impact the environmental footprint of a new or redesigned landscape. Great attention should be given to selecting plants that are fit for the site and do not require chemical inputs.

⁵ Barbara DeCaro, Landscape Management Plans: Green Gardening Workshop October 16, 2012.

⁶ Seattle Department of Planning and Development. Preparing Landscape Management Plans for Seattle Green Factor Compliance.

<http://www.seattle.gov/Documents/Departments/SDCI/Codes/SampleLandscapeManagementPlan.pdf>

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DISCUSSION

This project exemplifies how an examined parcel of the garden reveals layers of history and offers abundant information ranging from site ecology and hydrology to visitor interaction with the site. From this analysis, we may formulate more informed decisions about the garden's preservation and future structural, aesthetic, and interpretative updates.

One opportunity to add interest and honor the garden's original integrity is to add educational interpretation about the Gardener's Cottage, its early residents, and the surrounding landscape. An interpretative panel could introduce the home as the historic residence of John Tonkin and discuss his legacy working for John & Lydia Morris. Rather than discourage visitors with the current 'Staff Only' sign, the Arboretum could take advantage of an educational opportunity by offering photographs of the original conifer collection in this area, entries from the Head Gardener's journal, or a sketch of who the site used to serve. In this way, we may increase understanding about our infrastructure while connecting visitors with a piece of the Arboretum's rich history.

This project revealed numerous opportunities to improve visitor interaction with the Intern House and Hillcrest gardens while honoring the former use of the site. Currently, the Hillcrest building presents an eyesore to visitors who pass by on the pathway or approach for the restrooms and summer Education programs. However, this blank wall can be easily transformed into a vibrant mural space. One of the Arboretum's past art initiatives exemplifies how a space lacking inspiration can be rapidly transformed into a characteristic garden feature. When the Morris Arboretum commissioned Bruce Weiner to create the *Bee Frenzy* mosaic in 2018, a blank wall housing the restrooms below the Greenhouse was soon activated to beautify the site and improve visitor's experience.



Figure 10: Bee Frenzy mosaic panels by Bruce Weiner

Possibilities are endless for what a mural around the Hillcrest Building can provide, whether it be a blank canvas for summer camp paint projects, an interpretative timeline tracing the history of the Arboretum, or an artistic composition of a natural woodland.

Drainage on and around the Hillcrest Building and Intern House must be addressed to preserve the site and prevent future erosion. New gutters and a working drain need to be installed behind the Hillcrest Building to prevent the continued loss of soil and the resulting unsafe drop-off. Once this site's drainage issues are remedied, the pathways around the Hillcrest Building may be improved.

As it currently stands, the Hillcrest restrooms may be accessed by way of a rogue trail that connects from the major walkway or by circling around to the driveway. Though this path of least resistance is a convenient option for guests, the ground is being eroded by runoff drainage, resulting in a slippery path, damaged turf, and compacted soils. One solution would be to construct a small stone footpath that guides visitors and directs traffic to lessen the impact on the slope.

CONCLUSION

The landscape management plan will serve as a guide for seasonal workers, interns, and future section leaders. Not only will the plan help to familiarize readers with the site

but it will delegate the timing and execution of necessary maintenance tasks. A landscape management plan such as the one included in this project can be drafted for every section of the garden and scaled as an Arboretum-wide project. As the 2011 Arnold Arboretum Landscape Management Plan demonstrated, a large-scale organizational report helps to guide all maintenance projects and promote consistency throughout the garden. The Morris Arboretum Landscape Management Plan could arise as a compilation of Horticulture checklists developed by each Section Leader or it could include multiple teams throughout the organization, including Education, Botany, Visitor Experience, Development, etc. in order to maximize the ideal garden presentation and fulfill the Arboretum's mission. Applying the insight of other institutions to draft a landscape management plan is just one approach to ensure the continuing beauty and historical integrity of this site.

Though the site is relatively small and the needs specific, the strategies discussed in this project may be applied to larger parts of the garden in order to preserve the rich history of the landscape and to promote meaningful public engagement.

ACKNOWLEDGEMENTS

Thank you to Lucy Dinsmore, Kate Deregibus, Leslie Morris-Smith, Erin Conley, Tony Aiello, Andrew Hawkes, Elinor Goff, and Jan McFarlan for their support and guidance on this project.

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LANDSCAPE MANAGEMENT PLAN- INTERN HOUSE AND HILLCREST BUILDING

Area Profile

With visitors approaching from the Swan Pond, Azalea Meadow, and English Park, the landscape around the Intern House and the Hillcrest building is a visible part of the Arboretum property. This transitional node of the garden is home to a historic Conifer collection dating back to the Morris era and the only restroom facilities on the South side of the garden should be maintained at a high standard year round.

Priorities

- Weeds and unwanted vegetation should be controlled in beds and surrounding gates
- Accessioned plants should be maintained at the highest standard to preserve their historic value
- Screening plants or a natural barrier should be added to hide cars in the Intern House driveway
- Install stone steps behind the Hillcrest Building towards the path to prevent erosion of turf and to guide visitors to the Hillcrest restrooms
- Address drainage and runoff water to protect Hillcrest Building, install new gutters and functional drain

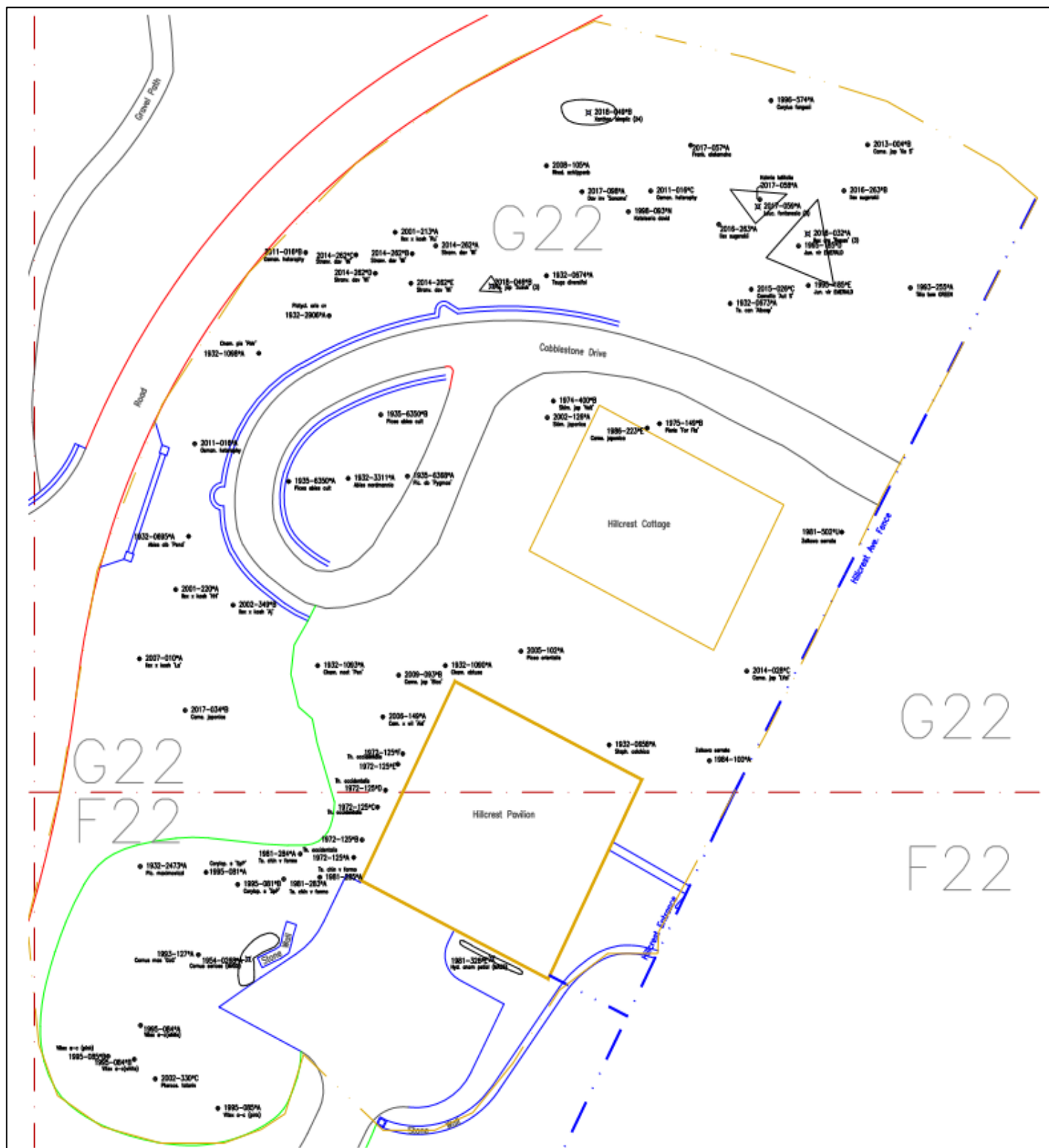
Arboriculture

Great care should be given to the historic conifer collection and other accessioned plants around the Intern House and Hillcrest Building. A list of priority trees included in this report should be consulted to determine which accessioned plants deserve the best care. Finally, any overhang above the Intern House driveway or the Hillcrest gates should be pruned to maintain clear access for vehicles.

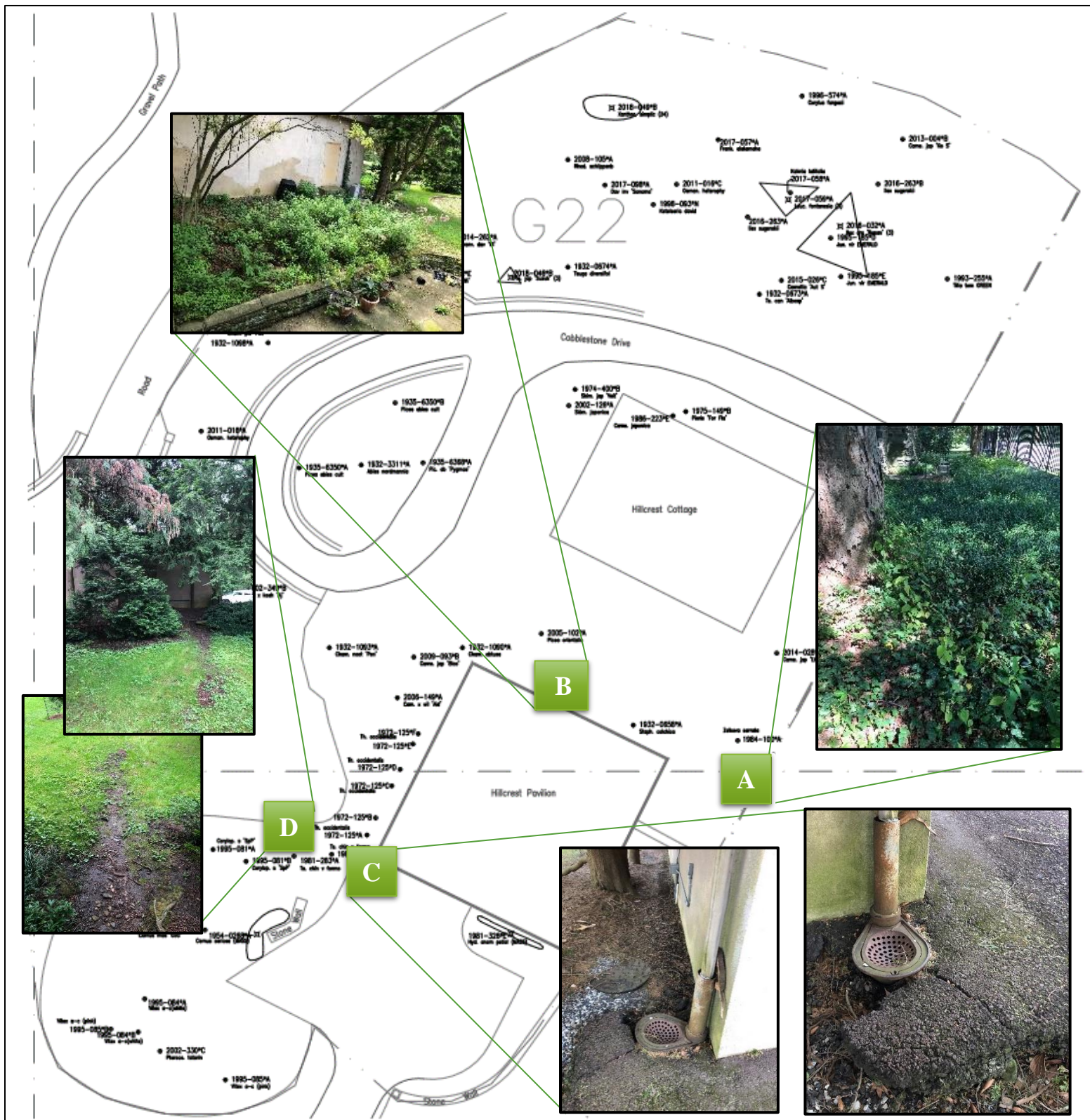
Facilities

This report also includes a timeline and list of priorities for facilities staff to ensure the proper maintenance of the Intern House property and Hillcrest building.

BG-BASE MAP OF SITE



PRIORITY MAP OF SITE



ANNUAL CARE PLAN FOR THE INTERN HOUSE AND HILLCREST BUILDING GARDEN

ALL SEASONS

- ☐ Control weeds in all beds and tree rings.
- ☐ Keep area free of trash and debris from Hillcrest Avenue, particularly after heavy rains.
- ☐ String trim around Hillcrest Avenue gates and border walls.
- ☐ Keep creeping vines off of Intern House, Hillcrest Building and Hillcrest Gate.
- ☐ Prune dead wood and clearance prune Intern House driveway.
- ☐ Manage weedy *Zelkova* seedlings throughout the site.
- ☐ Monitor and perform formative pruning on *Pteroceltis tatarinowii* (2002-330*C)
- ☐ Remove leaf litter and debris from Hillcrest gates.
- ☐ Routinely inspect trees for any pests or diseases.
- ☐ Clear gutter along driveway of leaves and pine needles.

SPRING

- ☐ Remove leaves from beds, around gates and border walls.
- ☐ Cut back *Vitex agnus-castus* by Hillcrest driveway.
- ☐ Cut back *Liriope* near Hillcrest Gate and near path before new Spring growth.
- ☐ Consider devoting a volunteer workday to weeding the Intern House driveway and beds.
- ☐ Plant and cage new additions to the landscape.
- ☐ Mulch flowerbeds where needed.
- ☐ Optional: Use herbicide to remove weeds from the Intern House driveway as needed in Spring through Fall.

SUMMER

- ☐ Selectively remove Ostrich ferns from accessioned young plants (including Pieris, Rhododendron, Davidia).
- ☐ Weed Intern House driveway and beds.
- ☐ Mow grass as needed.
- ☐ Water new plantings unless rainfall exceeds 1" a week.
- ☐ Cut back lilies near Hillcrest driveway at the end of summer.
- ☐ Place mosquito dunks in drains behind Intern House and Hillcrest building.

FALL

- ☐ Remove all leaves and debris from beds, Intern House patio and around Hillcrest building.
- ☐ Cut back Hosta and brown Ostrich fern fronds.
- ☐ Prune trees of any overhang over driveway or deadwood.
- ☐ Cut back Irises in front of Hillcrest building.
- ☐ Plant new additions to the landscape.
- ☐ Mulch where necessary.
- ☐ Clear Intern House and Hillcrest gutters of leaves and debris.

WINTER

- ☐ Prune climbing hydrangea, *Hydrangea anomala* ssp. *Petiolaris* (1981-326*E) to keep off of Hillcrest roof.
- ☐ Remove snow from Intern House driveway, Hillcrest Gate and Hillcrest driveway.

EVERY 2 YEARS, OR AS NEEDED

- ☐ Aerate soil behind Hillcrest building to prevent compaction of several *Thuja occidentalis*.

EVERY 5 YEARS, OR AS NEEDED

- ☐ Paint all gates, clearing any creeping vines and branches within 2 feet



LANDSCAPE MANAGEMENT TIMELINE

Month	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER
Date	1 7 14 21 28	4 11 18 25	4 11 18 25	1 8 15 22 29	6 13 20 27	3 10 17 24	1 8 15 22 29	5 12 19 26	2 9 16 23 30	7 14 21 28	4 11 18 25	2 9 16 23 30
Horticulture Tasks	Perennial Outbacks											
	Cut back Vitex agnus-castus											
	Leaf Removal											
	Spring Plantings											
	Mow Liriope											
	Water Plantings											
	Control Ostrea Ferns											
	Ongoing Garden Maintenance (weeding, deadheading, watering, etc.)											
	Fall Plantings											
	Cut Back Ferns & Irises											
Arboreticulture Tasks	Leaf Removal											
	Snow Removal											
Facilities Tasks	Snow Removal											
	Weekly Mowing & String-trimming											
Facilities Tasks	Remove Deadwood and Prune Driveway of Overhang											
	Soil Aeration											
	Thin Collection for Snowfall											
	Mosquito Dunk Drains											
Facilities Tasks	Routinely Clear Drains of Debris											
	Routinely Clear Drains of Debris											

TOP PRIORITY ACCESSIONED PLANTS

Acc. Num.	Mapkey	Name
1932-0695*A	1	<i>Abies alba</i> 'Pendula'
1932-3311*A	2	<i>Abies nordmanniana</i>
1932-1093*A	16	<i>Chamaecyparis nootkatensis</i> 'Pendula'
1932-1090*A	20	<i>Chamaecyparis obtusa</i>
1932-1098*A	21	<i>Chamaecyparis pisifera</i> 'Plumosa Argentea'
1935-6350*A	54	<i>Picea abies</i> cultivar
1935-6350*B	55	<i>Picea abies</i> cultivar
1935-6368*A	56	<i>Picea abies</i> 'Pygmaea'
1932-2906*A	60	<i>Platycladus orientalis</i> cultivar
1932-0658*A	67	<i>Staphylea colchica</i>
1932-0673*A	75	<i>Tsuga canadensis</i> 'Albospica'
1932-0674*A	76	<i>Tsuga diversifolia</i>

NOXIOUS WEEDS

Common Name	Scientific Name	Treatment	Schedule	Location
Japanese Stilt Grass	<i>Microstegium vimineum</i>	Hand-pull before flowering, string trim	Summer	Along Hillcrest
Creeping Charlie / Ground Ivy	<i>Glechoma hederacea</i>	Hand-pull, spray, or string trim	Spring, Summer	Tree circles
English Ivy	<i>Hedera helix</i>	Hand-pull away from trees and gates	Year-round	Under <i>Zelkova</i> in front of Intern House
Garlic Mustard	<i>Allicaria petiolata</i>	Hand-pull before flowering, string trim	Early summer through late Fall	Between Intern House and Hillcrest
Pinellia	<i>Pinellia ternata</i>	Dig up small bulbs	Early summer through Fall	Tree circles
Porcelain Berry	<i>Ampelopsis brevipedunculata</i>	Remove vines from trees and dig seedlings	Early summer through Fall	Between Intern House and Hillcrest

Oriental Bittersweet	<i>Solanum dulcamara</i>	Pull roots of vine	Early summer through Fall	Between Intern House and Hillcrest
Poison Ivy	<i>Toxicodendron radicans</i>	Hand-pull vines	Year-round	Between Intern House and Hillcrest
Pokeweed	<i>Phytolacca americana</i>	Dig up taproot	Early summer through Fall	Under pines beside path
Pennsylvania Smartweed	<i>Polygonum pensylvanicum</i>	Hand-pull vines	Early summer through Fall	Between Intern House and Hillcrest
Greater Celandine	<i>Chelidonium majus</i>	Dig up root	Early summer through Fall	Under pines beside path;
Hairy Bittercress	<i>Cardamine hirsuta</i>	Hand-pull or hoe	Spring through Winter	Tree circles and Hillcrest bed
Yellow Wood Sorrel	<i>Oxalis stricta</i>	Hand-pull or dig rhizome roots	Spring through Winter	Tree circles and Hillcrest bed
Common Thistle	<i>Cirsium vulgare</i>	Dig up roots or spray with herbicide	Spring through Fall	Circle bed next to Hillcrest access road
Stinging Nettle	<i>Urtica dioica</i>	Dig up roots	Summer through Fall	Under pine near path
Devil's Walking Stick	<i>Aralia spinosa</i>	Dig up roots and remove root suckers	Summer through Fall	Small side bed near Hillcrest Gate
Fox Geranium	<i>Geranium robertianum</i>	Hand-pull	Spring through Fall	Hillcrest beds
Lesser Celandine	<i>Ficaria verna</i>	Dig up small bulbs	Spring	Under Pine near path

PESTS AND DISEASES

Common Name	Scientific Name	Treatment	Schedule	Location
Hemlock Wooly Adelgid	<i>Adelges tsugae</i>	Foliar oil application or soil injection	July through October	<u>1932-0673*A</u> <i>Tsuga</i> <i>canadensis</i> 'Albospica'

PERENNIAL PLANTS

Epimedium 'Domino'

Matteuccia struthiopteris (Ostrich fern)

Athyrium filix-femina var. *angustum* 'Lady in Red'

Polygonatum odoratum var. *pluriflorum* 'Variegatum'

Pachysandra terminalis *Asclepias tuberosa*

Pulmonaria angustifolia

Asarum canadense

Sanguinaria Canadensis

Ibis sibirica 'Caesar's Brother'

Liriope

Hedera helix

Unidentified *Hosta*

Unidentified *Huchera*

Tiarella cordifolia

Pachysandra procumbens

Ageratina altissima

Ceratostigma plumbaginoides

MAP OF PERENNIAL LAYE

Pulmonaria angustifolia

Athyrium filix-femina var. *angustum*
'Lady in Red'

Ceratostigma plumbaginoides

Epimedium 'Domino'

Pachysandra terminalis

Gardener's
Cottage

Hemerocallis

Unknown *Huchera*

Unknown *Hosta*

Pachysandra procumbens

Liriope

Agerantima altissima

Sanguinaria canadensis

Eutrochium purpureum

Hedera helix

Hillcrest
Building

Hemerocallis

Asclepias tuberosa

Iris sibirica 'Caesar's Brother'

Liriope

