AGENDA
Parks & Recreation Commission

6:30 PM - Wednesday, September 5, 2018
City Hall Council Chambers, Sammamish, WA

Page			Estimated Time
	CALL TO ORDER		**6:30 pm**
	ROLL CALL		
	APPROVAL OF AGENDA		
	APPROVAL OF THE MEETING SUMMARY		
3 - 5		Meeting Summary - June 06, 2018 Parks Commission Meeting Summary 06-06-18	
	PUBLIC COMMENT		
	TOPICS		
6 - 28	1.	Big Rock Park – Site B Phase I Improvements: Discussion/Recommendation AB-18-215 - Big Rock Park – Site B Phase I Improvements: Discussion/Recommendation - Pdf	**30 minutes**
29 - 105	2.	Urban Forest Management Plan - First Draft Review Urban Forest Management Plan Draft UFMP Presentation 2018-09-05	
106 - 133	3.	Community Garden AB-18-217 - Community Garden - Pdf	**20 minutes**
134 - 161	4.	Plant Holding Area - Temporary Location AB-18-216 - Plant Holding Area - Temporary Location - Pdf	**20 minutes**
	CHAIRMAN'S REPORT		**10 minutes**
	DIRECTOR'S REPORT		**10 minutes**

Angie Feser, Parks & Recreation Department Director

1. Park Planning/Capital Projects (Anjali Myer, Deputy Director)
2. Recreation Programming/Events
3. Parks Maintenance

PARKS COMMISSION LIAISON REPORTS **10 minutes**

1. Sammamish Friends - Sid
2. Sammamish Community Wildlife Habitat - Kathe
3. Native Plant Stewards -Cheryl/Sid
4. **Sammamish Walks - Hank/Loreen**
5. **Trail Stewards - Nancy**
6. **Sammamish Youth Board - Sara**
7. Sammamish YMCA - Sheila
8. Sammamish Market - Stephanie
9. Community Garden - Stephanie

OTHER

MEETING CALENDAR

1. October 3, 2018 - Regular Meeting, 6:30 pm
2. Long Term Calendar

ADJOURNMENT **8:30 pm**

Parks & Recreation Commission meetings are wheelchair accessible. American Sign Language (ASL) interpretation is available upon request.
Please phone (425) 295-0500 at least 48 hours in advance. Assisted Listening Devices are also available upon request.

City of Sammamish
Parks and Recreation Commission
Regular Meeting
June 6, 2018 - 6:30-8:30 PM
Sammamish City Hall 801 228th Ave SE

MEETING SUMMARY

Commissioners Present
Sid Gupta, Stephanie Hibner, Sheila Sappington, Nancy Way

Excused Commissioners
Hank Klein, Sara Houpis, Loreen Leo, Kathe Low, Cheryl Wagner

Staff Present
Angie Feser, Anjali Myer, Kellye Hilde, Dillon Edwards, Alexa Lowry, Belle Stanley

Call to Order
6:40 p.m.

Approval of Summary
The meeting summary for May 2, 2018 was approved as presented.

Approval of Agenda
The Agenda was approved as presented.

Public Comment
None.

Introduction of Recreation Interns
Angie Feser introduced Alexa Lowry and Dillon Edwards, two Recreation Interns joining the Parks & Recreation team for the summer. They will be involved in planning and participating in our summer events.

Town Center Regional Stormwater Project Update – Kellye Hilde
Kellye Hilde, Planning Manager, provided the background for the project which started with the Town Center Plan being adopted in 2008 through several phases leading to the 2017 Town Center Regional Stormwater Feasibility Study completion and the Stormwater Rate Model Study Biennial Budget Adjustment adopted in 2017. Regional Stormwater is designed to manage stormwater runoff from multiple projects and/or properties. The advantages include improved water quality, higher assurance of maintenance and reduced long term maintenance and operating costs. Disadvantages can be timing, upfront capital costs, land acquisition and coordination with multiple property owners. Kellye provided several local examples of regional stormwater facilities and their design, costs and lessons learned from those projects. Kellye presented the findings of the 2017 Town Center Regional Stormwater Feasibility Study which can be found in the complete presentation document attached. The Town Center Regional Stormwater Strategy will serve as a road map for the development of co-located stormwater and park and open space facilities. The Parks & Recreation Commission's role is to help guide the development of the Town Center Regional Stormwater Strategy Plan, ensuring that proposed

Pending Approval

park infrastructure designed as a part of a regional stormwater systems meets the goals and policies of the Town Center Plan and Town Center Infrastructure Plan. The next steps will be the City Council awarding the Consultant Contract this month with the consultant to begin work in July 2018.

YMCA Property Development Plan – Angie Feser, Anjali Myer
Angie provided some background to the YMCA property which was part of the 2013 operating agreement between the City and the YMCA which included the Sammamish Community and Aquatic Center and this parcel of land on 228th just south of Issaquah-Pine Lake Rd. The agreement had some requirements comprising of a development plan for the YMCA property to be submitted to the Y by June 30, 2018. The original Parks CIP from 2016, proposed an indoor field house for that property. The public interest shifted over the last couple of years and through the 2018 PRO Plan community feedback, 78% of those who responded emphasized a desire for passive recreation space. The PRC passed a recommendation to Council to not have a field house on the site and renegotiate the agreement to include passive recreation on the YMCA property. In May, the YMCA denied the extension of the development plan. The plan is being compiled this month. It does not obligate us to build the proposed plan nor does the YMCA have to approve the plan. Anjali presented the proposed development plan (**attached**) which will be submitted to the YMCA by the June 30th deadline, after being presented to Council on June 19th.

Motion: The Parks & Recreation Commission recommend to the City Council the attached proposed development plan for submittal to the YMCA by the June 30, 2018 deadline to comply with the outlined terms of the Recreational Property Ground Lease Agreement for the YMCA property.

Motion was unanimously passed by the Commissioners present.

Chairman's Report – Sid Gupta, Vice Chair
Plant Salvage - after visiting several sites to be considered for a plant salvage and community garden location, Big Rock Park Site B and Ebright Creek Park were the two frontrunners. The CWU campus is not zoned appropriately for the project, so it has been removed from the consideration. Big Rock Park Site B has the greatest potential for the plant salvage site with Ebright being considered for the new community garden site. Cheryl and Sid met with City staff to share the needs and wants for the potential plant salvage site. Next step will be the City working with the consultant to incorporate key elements into the. In the meantime, a temporary site is being considered at either Lower Sammamish Commons or in the maintenance yard at Beaver Lake Park. There has also been discussion to visit other sites in King County to see what works and what they would change from their existing sites. The plant stewards are grateful to the City for moving ahead with this project.

Edible Plantings at Sammamish Landing Park – Sid shared the plan drawings with the plant list **(attached)** derived from discussions with the plant stewards and the City. The plan is to begin planting in the fall. Feedback is welcome on the plan and plants to be included.

Director's Report—Angie Feser, Anjali Myer

Pending Approval

Capital Projects – Thank you to all who came to the Sammamish Landing Restroom Ribbon-cutting. RCO grant technical review for the acquisition of two parcels along Zackuse Creek took place on May 14th. The application was well received. Additional information and parameters were given by the review committee; those modifications will be made and submitted by the 6th of July with the final presentation in Olympia on August 7th. We will know by mid-October if we qualified for the grant funding. We have a consultant onboard, KPG, for the Big Rock Park Site B project and we have started to negotiate the scope of the plan. We reached out to the neighbors and had an informal meeting on May 31st at the site to answer questions and give them an idea of the projected plans. For the athletic field study, we had two applicants and brought in one consultant for an interview. The scope of work for the project is pending review. We have been working with consultants on the Town Center Green Spine and have compiled a guidebook for the general parameters of the project. The Sammamish Heritage Society presented their work for the last year to Council and requested $14,000 of the City's Historic Preservation Fund for architectural services related to a proposed addition to the Reard-Freed House. It was approved, and the Sammamish Heritage Society will be moving forward on architectural plans to add the kitchen. The Parks & Recreation department hosted the annual skate competition with overall lower numbers than in the past. However, there was an increase in numbers from people outside the area. The numbers were most likely impacted by the parking lot construction. Summer programs are gearing up with Concerts in the Park, Fourth on the Plateau and the new Outdoor Movie series. Parks Maintenance is down a couple of staff and are in the process of interviewing some candidates. They will be going on a parks tour and meeting existing staff before the final decision is made to hire. In addition, Parks Maintenance has 5 of their 6 seasonal staff onboard for the summer.

Park Commission Liaison Reports

Sammamish Friends– Sid The Sammamish Friends Barn Dance Fundraiser is coming up. This can impact the Zackuse Creek land acquisition grant positively by showing public interest and involvement. Tickets are currently on sale. The Sammamish Days Kids Mud Run registration is available now.

Sammamish Community Wildlife Habitat – Kathe No report

Native Plant Stewards – Sid A recent salvage event took place on May 19th; the plants are currently being stored at the community garden. There was a restoration work party at Ebright Creek Park on June 2nd with great attendance. The site is looking fantastic with the coordination of work from the plant stewards, staff and other volunteers.

Other

Meeting Calendar

1. June 21, 2018 – Joint meeting with Planning Commission, Urban Forest Management Plan
2. July 4, 2018 – Regular Meeting CANCELLED

Adjourn

8:20 p.m.

Pending Approval

Agenda Bill

Parks and Recreation Commission Regular Meeting
September 05, 2018

SUBJECT:	Big Rock Park – Site B Phase I Improvements: Discussion/Recommendation
DATE SUBMITTED:	August 30, 2018
DEPARTMENT:	Parks & Recreation
NEEDED FROM COMMISSION:	☑ Action ☐ Direction ☐ Informational
RECOMMENDATION:	Review and recommend to City Council the Preliminary Design with the addition of an ADA accessible ramp to the existing treehouse for Phase I Improvements at Big Rock Park – Site B.
EXHIBITS:	Exhibit 1 - Preliminary Design Site Plan Exhibit 2 - Preliminary Design PowerPoint Presentation

BUDGET:

Total dollar amount	2,200,000	☑ **Approved in budget**
Fund(s)	Parks Capital Improvement Fund	☐ **Budget reallocation required**
		☐ **No budgetary impact**

WORK PLAN FOCUS AREAS:

☐ Transportation	☐ Community Safety
☐ Communication & Engagement	☐ Community Livability
☐ High Performing Government	☑ Culture & Recreation
☑ Environmental Health & Protection	☐ Financial Sustainability

NEEDED FROM COMMISSION:

Shall the Parks & Recreation Commission recommend to the City Council the attached preliminary design along with an ADA accessible ramp to the existing treehouse as well as the associated costs for Phase I Improvements at Big Rock Park – Site B?

KEY FACTS AND INFORMATION SUMMARY:

The purpose of this discussion is to brief the Parks & Recreation Commission on the status and history of Phase I Improvements at Site B, in addition to seeking recommendation to the City Council on the inclusion of an ADA accessible ramp to the existing treehouse.

Summary:

In March 2018, a Request for Proposals (RFP) was published for consultant services for phase I improvements. Based on the quality of previous planning and design work with projects of similar nature, the experience and qualifications of their staff, KPG was selected through the consultant selection process for the project.

Phase I improvements will consist of a diverse set of improvements necessary to open the site to the public. These include vehicular and pedestrian circulation, construction of a new parking lot, a new restroom building, possible renovations to an existing tree house, maintenance shed remodel, modifications to existing utilities, landscaping and irrigation, and associated site improvements for Big Rock Park. In addition, the project scope includes right-of-way improvements along 220th Avenue SE and 221st Avenue SE.

Due to the complexity of this project, it became evident that several components required additional investigation and review prior to moving forward with design development. Therefore, a small contract was executed with KPG for a schematic design to respond to the following components:

- ADA accessibility to treehouse: a significant treehouse to be built by Mary Pigott was identified on Site B during the master plan process. The treehouse was constructed before the property was donated to the City and is currently only accessible via stairs. As part of the site improvements and opening the park to the public, the City has an opportunity to provide universal access to the treehouse with the removal of the existing staircase and replacement with an ADA ramp.
- Right-of-way roadway requirements: access to Site B is provided off 220th Ave SE and 221st Ave SE. 220th Ave SE will serve as the primary access to the park and needs to be upgraded to accommodate public use. 221st Ave SE will serve as the secondary access with parking located within the right-of-way. Park Planning staff worked with Public Works to determine the most appropriate solution that is proportional to the scale of the parks' development and reduces impact to adjacent properties, while still preserving future road connectivity. The proposed solutions deviate from Public Works' Standards, but maintain appropriate vehicular and pedestrian access.
- Investigation of reuse of existing septic field for restroom: the existing septic system was evaluated and inspected for reuse, but due to the change of use from residential to public, King County Health Department will require the construction of a new septic system that meets current codes.
- Investigation of on-site well for irrigation purposes: the master plan determined that the on-site well would be used for irrigation purposes. However, the existing wells on both Site A and B are considered one project and would be subject to a cumulative daily threshold of 5,000 gallons per day and ½ acre of land. This threshold will preclude sufficient irrigation supply to both sites. Therefore, the existing well on Site B will be decommissioned and irrigation will provided from Sammamish Plateau Water. Water is available at 220th Ave SE and will be brought in to serve irrigation, the restroom, maintenance storage building and the Reard Freed House.

The well at Site A was decommissioned and replaced with a new well in 2016 to provide irrigation water to the newly installed landscaping completed as part of Phase I Improvements.

- Complete structural assessment of detached garage for remodel feasibility: a structural conditions assessment was completed to determine the feasibility of the existing garage potentially being used for maintenance storage. The anticipated magnitude of repairs and associated costs are extensive and only increase the structure's lifespan for 5 to 10 years. As a result, staff are proposing to demolish the existing garage and replace with a new structure that has a similar footprint and can better accommodate park maintenance needs.
- Determine utility connections to Reard-Freed House and proposed addition: City Council allocated funds to the Sammamish Heritage Society (SHS) to prepare architectural drawings for the exterior of the historic kitchen. This addition to the house will require a connection to potable water and the new septic system to accommodate a kitchen and restroom. Additionally, the SHS installed plumbing on the second floor of the house that will also require a connection to the new septic system. These utility connections were not anticipated in the master plan and were therefore not included in the original cost estimate.

The first floor of the Reard-Freed House will include a heritage museum and meeting space, while the second floor will serve as offices and storage for SHS.

- Develop schematic layout of plant holding area: Site B was identified as the preferred location for a plant holding area at the April 4, 2018 Parks & Recreation Commission meeting. Staff met with the plant holding area sub-committee to determine the minimum space requirements to develop a schematic layout of the holding area.
- Preliminary Traffic Analysis: a preliminary assessment of potential vehicle trip and parking associated with this first phase of improvements was completed to help shape the program for the site and identify potential areas of impact to the surrounding neighborhood.
- Complete conceptual connectivity to Site C: although Site C is not currently under City ownership, it was critical to review connectivity between Site B and C to provide a long-term vision for connections between properties.

As part of this phase, the following studies were completed:

- Topographic survey
- Wetland delineation
- Preliminary geotechnical investigation
- Structural assessment of the existing garage
- Preliminary septic feasibility
- Preliminary assessment of traffic analysis
- Treehouse occupancy calculation

Through this feasibility study, the aforementioned components have been resolved and City staff are now ready to move forward with a contract for planning and design services for Phase I Improvements at Big Rock Park – Site B.

Project Background:

In 2010, Mary Pigott gifted three parcels located in the center of the City (Site A, B and C) totaling 51 acres to the City of Sammamish as part of a phased land donation agreement. The agreement between Ms. Pigott and the City states that the properties will be used as a park, now called Big Rock Park, for the benefit of the community. The City and Ms. Pigott envision a park facilitating a variety of low

impact active and passive activities that may include nature trails, open space and passive sports meadows.

Site A, the first parcel of three, is 16 acres and was transferred in early 2011. Shortly after the "soft" opening of Big Rock Park in 2011, the Park Planning team began work on the master plan for Site A and B. Over a year of site reconnaissance, studies, an extensive public process, a public park naming contest, concept development and refinement was completed and incorporated into the final master plan for the park which was adopted by City Council in July 2014. Phase I development of Site A concluded in early 2016.

Site B, the second parcel of three, was transferred to the City in January 2017. The 20 acres that make up Site B include dense forest cover, open meadows, a stream in the northern third, two ponds and meandering trails that navigate through varying topography. Buildings on the site include a single-family home, detached garage, sauna/laundry structure, and the historic Reard-Freed House.

The final master plan site features and programming for Site B are intentionally more passive than Site A with design elements that include meandering trails and boardwalks. These amenities allow for an up-close and exploratory experience in support of outdoor education. The master plan identifies improvements to be implemented in two phases. The phased plan includes proposals for new park elements and upgrades to existing features.

After completion of the master plan and prior to transferring to the City, Mary Pigott added a significant, custom-built tree house to Site B.

The Reard-Freed House was relocated to Site B in 2012. The house was donated in 2001 and became the first building in Sammamish to be listed on the King County Historic Resource Inventory as a registered landmark. The house is currently undergoing renovations led by the Sammamish Heritage Society. At the June 5, 2018 City Council Regular Meeting, a total of $14,000 was allocated to the Heritage Society to prepare architectural drawings for the exterior of the historic kitchen. The kitchen was located on western wing of the historic home and was demolished prior to the house relocation in 2012.

The third and final parcel, Site C, is 16 acres and is currently the private property and residence of Ms. Pigott and will continue as such for the foreseeable future.

FINANCIAL IMPACT:

$2,200,000 is allocated in the 2018-2019 Parks CIP budget for the Big Rock Park Site B, Phase I Improvements and is inclusive of all planning, design and construction costs. $50,000 is allocated in the 2018-2019 Parks CIP budget for a Plant Salvage Program/Facility.

The following amenities were not factored into the scope and costs during the master plan phase:

- Addition of an ADA accessible ramp to the treehouse
- Existing well decommission and addition of an irrigation meter
- Removal and replacement of existing septic system
- Demolition and replacement of the garage with a new maintenance/storage structure

- Addition of a plant holding area
- Utility connections to the Reard Freed House
- Demolition of existing structures

With the addition of these amenities, the anticipated project costs are closer to $3,200,000.

OTHER ALTERNATIVES CONSIDERED:

The Parks & Recreation Commission may elect to not recommend an ADA Accessible ramp to the existing treehouse or to include as part of a later phase of improvements.

The Parks & Recreation Commission may elect to not recommend a selection of amenities that were not factored in during the master plan phase.

RELATED CITY GOALS, POLICIES, AND MASTER PLANS:

Work under this contract is outlined in the Big Rock Park Master Plan, adopted by City Council on July 8, 2014.

Exhibit 1 - Site B Preliminary Design

BIG ROCK PARK - SITE B PHASE I IMPROVEMENTS

Presentation to Parks & Recreation Commission

September 5, 2018

Sammamish Parks and Recreation

Overview

What we will be discussing

- Big Rock Park
  - Project Background
- Big Rock Park – Site B
  - Master Plan Implementation Process
  - Phase I Improvements Overview
  - Phase I Improvements Discussion
- Q & A

BIG ROCK PARK
PROJECT BACKGROUND

Big Rock Park:

Background

- 2010 – Site A, B, C, gifted to the City from Mary Pigott
- 2011 – Site A transferred to the City
- 2012 – Reard Freed House relocated to Site B
- 2014 – Big Rock Park Master Plan adopted
- 2014 – Site A Phase I Design began
- 2016 – Site A Phase I construction completed
- 2017 – Site B transferred to the City
- 2018 – Site B Design Development began

BIG ROCK PARK – SITE B

PHASE I IMPROVEMENTS OVERVIEW

Big Rock Park – Site B:

Phase I Improvements Overview

Programming Requirements

- Right-of-way improvements
- Access
- Parking
- Utilities
- Restrooms and park storage
- Accessible Meadow Trails
- Walkways between buildings
- Irrigation
- Heritage Gardens
- Site Furniture
- Trail Enhancements between Site A & B
- Buffer Landscaping

Big Rock Park – Site B :

221st Avenue SE Parking

Overview

- Secondary park access
- 3 parallel parking spaces in 221st Ave SE right-of-way

Big Rock Park – Site B :

220th Avenue SE Site Entrance and Parking

Overview

- Primary park access
- Entrance from 220th Ave SE
- 12 parking spaces
- One-way driveway
- Drop off area

Big Rock Park – Site B :

Existing Structures to be Demolished

Overview

- Detached Garage
- Tanner House
- Sauna/Laundry Building

Big Rock Park – Site B :

Reard Freed House & Heritage Gardens

House Overview

- 1st Floor Heritage Museum
- 2nd Floor office space
- House improvements not included in project scope

Garden Overview

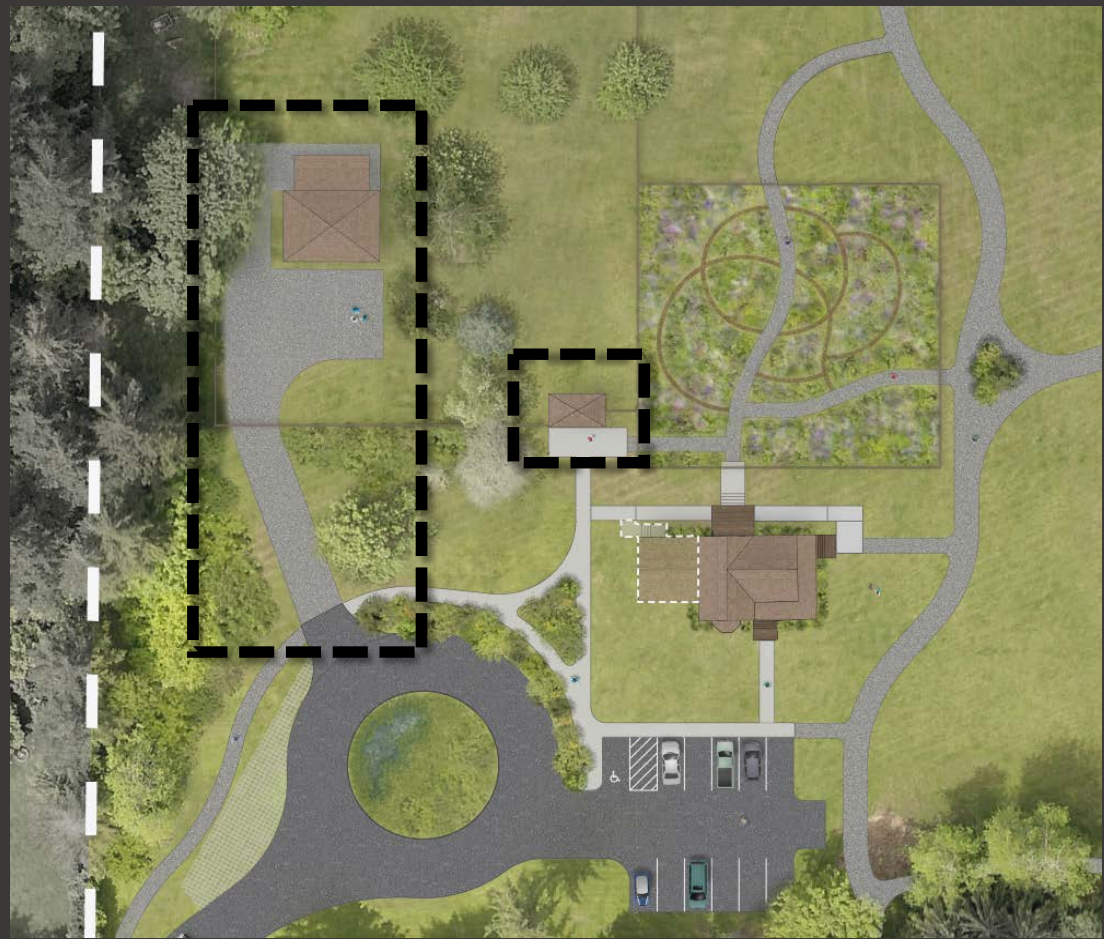
- Design

Big Rock Park – Site B :

Restrooms and Park Storage

Overview

- New maintenance storage building
- Pre-fabricated restroom
- Demolish existing structures



Big Rock Park – Site B :

Plant Holding Area

Overview

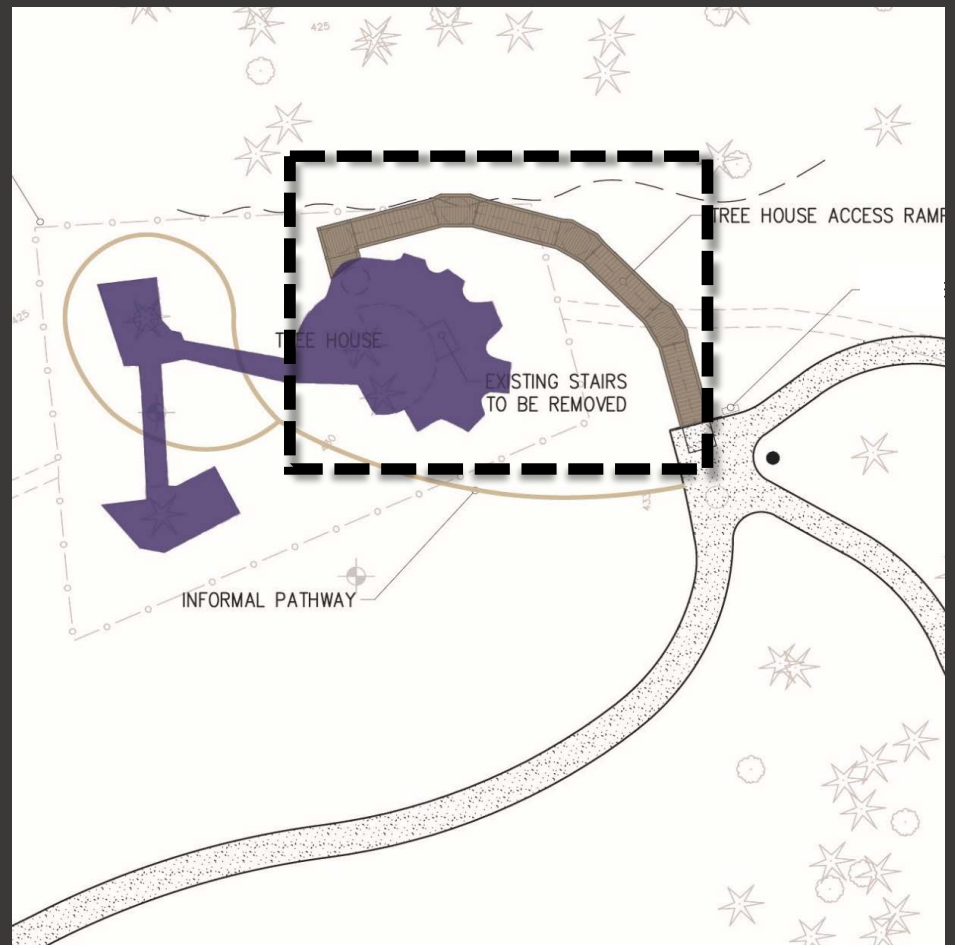
- Covered Area for Potting
- Heeling in Area
- Stockpile Area

Big Rock Park – Site B :

Treehouse ADA Ramp

Overview

- Remove existing stairs
- Replace with ADA ramp
- Pathway underneath treehouse between trees



Big Rock Park – Site B :

Utilities

Overview

- Water well decommissioning & irrigation meter
- New septic drain field
- Utility connections to Reard-Freed House (electrical, water and septic)

BIG ROCK PARK – SITE B

PHASE I IMPROVEMENTS DISCUSSION

Big Rock Park – Site B :

Phase I Improvements Discussion – Next Steps

Plant Holding Area **$100,000**

(Not included in Master Plan)

Locate at this site or hold until Site C?

Temporary site provided in the meantime

Treehouse ADA Accessible Ramp **$80,000**

(Providing ADA access to treehouse is not required, but optional)

Next Steps

- Present options and Commission recommendation to City Council for direction in October

QUESTIONS?

City of Sammamish

Urban Forest Management Plan (Draft)

2018

Prepared for:

The City of Sammamish
Department of Community Development
801 228th Ave SE

Sammamish, Washington, 98075

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Disclaimer:

The following document is a draft and is provided as a courtesy. The content herein is subject to change and is not intended to be free of grammatical errors, sentence fragments, and other legibility concerns.

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Acknowledgements

To be completed with second draft

Art in the Urban Forest Management Plan

As part of the development of the UFMP, the City conducted the "My Sammamish Forest" photo contest with help from the Sammamish Art Commission. The City created the contest to highlight the different ways that Sammamish residents appreciate and celebrate the City's urban forest. Over 250 photo entries were submitted to the photo contest, by nearly 100 photographers. Many of these photos are included in the UFMP.

Scope & Purpose

The purpose of the Urban Forest Management Plan (UFMP) is to provide a policy guide for managing, enhancing, and growing trees in the City of Sammamish over the next twenty (20) years. The Plan includes long-range goals to promote resilience, species diversity, and enhanced canopy cover. An urban forest is defined as all of the trees and woody shrubs growing within an urban area. The UFMP further differentiates the publicly-managed trees along streets, in parks, and at City facilities as the *community urban forest*. The Plan also includes considerations for privately-owned trees because of their function and contribution to the sustainability of the overall urban forest in Sammamish.

The purpose of this UFMP is to:

- Illustrate the value and benefits of trees.
- Promote shared vision and collaboration between community residents.
- Establish benchmarks and metrics to monitor the long-term success of management strategies.
- Enhance the health and sustainability of the community urban forest.
- Increase the benefits that are provided to Sammamish and the region by the trees.
- Ensure that resources are in place to support the care and management of the community's trees.

The Plan identifies both long and short-term goals as well as action strategies in support of this purpose and identifies appropriate resources to adequately manage community trees. It is designed to be flexible and dynamic, allowing for the exploration and implementation of the actions as funding and resources permit.

DRAFT

Executive Summary

Spending any amount of time outdoors in the City of Sammamish will reveal the richness and diversity of natural resources that embrace the community. Trees are abundantly visible among buildings and roadways. The generous mix of native trees and planted nursery specimens impart a diversity of views in the landscape. These trees provide shade, freshen the air, soften the built environment, and allow residents and visitors to readily connect with nature. All the trees and woody shrubs that inhabit the community make up Sammamish's urban forest resource. However, without active management, this urban forest is at risk. The history of logging in the area is the primary reason for the forest we see today, but as the city grows, urban forest can be lost to the need for more homes, buildings and other necessities of urban living.

In 2015 the City adopted a Comprehensive Plan that formally recognizes the importance of conservation of the urban forest. The Urban Forest Management Plan (UFMP) is intended to be a policy document that aligns with and supports the Comprehensive Plan. It agrees with the City's intention to prioritize sustainability and health as overriding core values.

The structure and organization of the UFMP are based on the understanding of what we have, what we want, how we get there, and how we are doing. This structure, referred to as adaptive management, is commonly used for resource planning and management (Miller, R.W., 1988) and provides a good conceptual framework for managing community forest resources. To understand the urban forest, the development process included an Urban Tree Canopy Assessment. This remote sensing project establishes baseline information about the quantity of forest in the City and was used to facilitate conversations about community values, existing regulations, and policies that protect community trees. In addition, there were multiple stakeholders, internal and external, who played a role in the planning, design, care, and advocacy of the community forest. These individuals included the public, City departments, and related community groups.

What Do We Have?

Sammamish's urban forest is a combination of public and private trees. Trees that the City of Sammamish has responsibility for and are in direct control of are defined as the *community urban forest*. This includes trees in parks, along rights-of-way, and at City facilities. While public trees along major arterials and high-profile areas are well-known and routinely cared for by City staff, other public street trees are the responsibility of the adjacent property owner. Aside from the information collected in conjunction with individual development applications, the City has only recently begun to track the status and location of its trees. In the Public Works Department, this was started with a GIS survey of the rights-of-way, which found an estimated 15,988 trees. Within the Parks and Recreation Department, two (2) of their fourteen (14) parks have had trees assessed.

Recognizing the role of trees in the community and the necessity to manage them, Sammamish acknowledged the importance of its urban forest in the 2003 Comprehensive plan. Revised in 2015, elements of the Comprehensive Plan introduce urban forest policy objectives that have since been the source for many of the City's tree management decisions, including the development of detailed municipal codes related to tree protection, preservation, and planting.

City staff were consulted during UFMP development to review current practices. City code and public safety are the primary considerations for tree care decisions. Currently, manager take a reactive approach to tree care by performing work on trees as problems are discovered. They also look for opportunities to strategically plant trees in public places.

The planning process for this UFMP included an assessment of tree canopy. The results of the study provide a clear picture of the extent and distribution of tree canopy across Sammamish, benchmarking the average tree canopy cover at 48%.

The primary challenges and opportunities for urban forest management are:

- There is limited knowledge about the community urban forest resource.
- Tree management by city staff could transition to pro-active management.
- Tree preservation and replacement codes provide an essential function for ensuring canopy retention.
    - Oversight and enforcement of tree preservation and planting activities could be improved.
- There is potential to increase the canopy to almost 60%, but there are no formal planting plans.

Table X: Benchmark Values (2018)

The City	
Acres	13,228
Park Trees	Unknown
Street Trees	15,988
Land Cover	
Tree Canopy	48%
Grass & Vegetation	23%
Impervious Surfaces	25%
Bare Soils	2%
Open Water	2%
Potential Tree Canopy	
Maximum Potential Canopy Cover	60%
High Priority Planting Acres	226.29
Investment	
Human Population	63,773
Tree Care Per Capita	$8.13

What Do We Want?

Managing any resource begins with defining what is being managed and establishing benchmarks along with clearly defined goals and expectations. The Plan development process included substantial outreach to community stakeholders, residents, and non-profit agencies. Through open house forums and public meetings, an engaged set of residents communicated common values and the belief that trees help define the character of Sammamish. The process provided a broad perspective on the challenges and opportunities that face the urban forest. Opinions varied on matters pertaining to the care of the urban forest, but the consensus was to protect and conserve as much of the urban forest as reasonably possible.

In general, stakeholders from both the community and City staff share the following desired outcomes for the UFMP:

- Preservation and enhancement of tree canopy
- Sustainability, health, and safety for the community urban forest
- Preservation and enrichment of wildlife and habitat
- Improved outreach and education
- Increased collaboration with volunteers and nonprofit groups

How Do We Get There?

The strategic goals identified by the UFMP are organized around three guiding principles of a sustainable urban forestry program:

<u>Urban Forest Sustainability</u> – That the urban forest is an asset which provides benefits that the community wishes to protect and maintain. Associated goals are intended to improve the urban forest resource over the next twenty (20) years by developing detailed expectations for the urban forest. Goals include:

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- Maintain overall canopy cover
- Increase and promote resilience in the urban forest resource.
- Update design, construction and development standards that apply to trees and planting sites.
- Enhance tree bank (fund) for applications beyond parks
- Assess the ecosystem services provided by public trees and natural areas.
- Collect and maintain a complete inventory database for the community tree resource.
- Care for the community urban forest using the best available science.

Efficiency in Municipal Operations – That the city organizes in ways that are efficient. Associated goals are intended to drive improvements in City policy and practices by developing efficiency and alignment of efforts within City departments. Goals include:

- Maintain Urban Forest Management Plan alignment with other City plans and policies.
- Provide staff that are appropriately trained to work safely and effectively.
- Establish a Formal Interdepartmental Working Team.
- Develop annual work plans that foster routine operations and predictable funding.
- Enhance processes for tree planting and plant salvage
- Review tree ordinances every 5-10 years.

Community Collaboration and Engagement – That the community can be engaged and provide support for urban forest management. Associated goals build stronger community engagement and public participation in urban forest stewardship. Goals include:

- Maintain an engaging, user-friendly Urban Forestry web page
- Develop outreach materials to engage and educate on key topics.
- Pursue and maintain Tree City USA status.
- Collaborate and nurture partnerships with other organizations.
- Establish Arborist Businesses License.
- Develop a wood re-use/recycle program.

How Are We Doing?

The UFMP presents opportunities to steward the urban forest by providing an overarching framework for forestry operations, policies, and programs. It provides a high-level review of urban forest management in the City, including historical context and an exploration of the benefits of Sammamish trees. Building upon that information, the Plan connects the community's vision for the urban forest with appropriate goals and actions.

The Plan provides direction and vision over the next twenty (20) years. The short and long-term goals will be achieved by adapting the Plan to a five-year (5-year) cyclical review and adjustments to operational objectives. The success of the UFMP will be measured through the realization of goals and demonstrated through the increased value of the urban forest and the environmental benefits provided by trees. Ultimately, it will lead to an enhancement of tree canopy throughout the City.

Introduction

Trees play an essential role in the community of Sammamish, providing numerous tangible and intangible benefits to residents, visitors, neighboring communities, and wildlife. Research demonstrates that healthy urban trees can improve the local environment and lessen the impact resulting from urbanization and industry (U.S. Forest Service, Pacific Southwest Division, 2017).

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Trees improve air quality, reduce energy consumption, help manage stormwater, reduce erosion, provide critical habitat for wildlife, and promote a connection with nature.

In addition to these direct improvements, healthy urban trees increase the overall attractiveness of a community. Research from Portland, Oregon, found that street trees add an average $8,870 to the sales price and reduce time on the market for home sales by 1.7 days (Donovan and Butry, 2010). Studies on the business benefits of trees have shown how retail districts promote longer and more frequent shopping and greater sales (Wolf, 2007). Urban trees support a more livable community, fostering psychological health and providing residents with a greater sense of place (Kuo, 2003). Community trees, both public and private, soften the urban hardscape by providing a green sanctuary and making the City a family-friendly community with unrivaled connectedness to nature. The City has emphasized the importance of trees within its Comprehensive Plan (2016) to the extent that trees are defined as a valued community resource, an important component of the urban infrastructure, and a part of the City's identity.

Vision

The Sammamish Comprehensive Plan provides a vision of the community as family-friendly, attractive, and sustainable in a beautiful natural environment. It specifically recognizes the value of tree canopy as contributing to that vision:

"Sammamish is a vibrant bedroom community blessed with a well-preserved natural environment, a family-friendly, kid-safe culture, and unrivaled connectedness. From its expanding tree canopy, to its peaceful neighborhoods, to its multi-modal transportation resources, Sammamish captures the best of the past even as it embraces a burgeoning digital future and meets housing affordability through balanced, sustainable housing. It is a state-of-the art community—engaged, responsive and generous in its support for the full range of human endeavor." - Comp Plan 2015

In aligning with this vision, this UFMP provides a guiding document to management of the urban forest in ways that balance our community responsibilities of environmental stewardship with the necessities of human endeavor. It provides strategies for City staff to manage the forest resource, especially focusing on public lands and rights-of-way. For private lands, the UFMP will guide educational and incentive programs to encourage good tree management.

Benefits of The Urban Forest

Urban and natural forests work constantly to mitigate the effects of urbanization and development and to protect and enhance lives within the community. This is increasingly evident as communities calculate the benefits of their urban forest using a complete inventory or sample data in conjunction with the USDA Forest Service i-Tree software tools. This state-of-the-art, peer-reviewed software suite considers regional environmental data and costs to quantify the ecosystem services unique to a given urban forest resource.

Individual tree owners can calculate the benefits of trees to their property by using the **National Tree Benefit Calculator** (www.treebenefits.com/calculator) or with **i-Tree Design**. www.itreetools.org/design). The National Tree Benefit Calculator was developed by Casey Trees and Davey Tree Expert Company to aid in the understanding of the environmental and economic value trees provide on an annual basis.

To help understand these benefits, four (4) commonly found trees were selected for an introduction to tree benefit calculations in the following discussions; Purple leaf plum (*Prunus cerasifera*), Red maple (*Acer Rubrum*), Douglas-fir (*Pseudotsuga menziesii*) and Big leaf maple (*Acer macrophylum*). The benefits provided by these trees vary according to their size and leaf

area. In general, there are five (5) important ways in which trees provide benefits; Water Quality, Carbon Sequestration, Energy Savings, Air Quality, and Socioeconomic Benefits.

Water Quality

Urban stormwater runoff is a major source of contamination for the Puget Sound and riparian areas throughout Sammamish, threatening both human health and wildlife, including salmon populations. Requirements for surface water management are becoming more stringent and costlier for both developers and the City. By incorporating the right mix of urban trees into stormwater management planning, runoff volumes, peak stream flows, and flooding incidents may all be reduced; a strategy that may lessen the need for constructing stormwater management facilities and the cost of treatment to remove sediment and other pollutants. A well-functioning green infrastructure system can deliver the equivalent water availability and filtration, flood control, and shoreline protection as a major physical infrastructure project (Action 2020, 2018). Trees improve and protect water quality in the following ways:

- **Interception** – Trees intercept rainfall in their canopy, which act as a mini-reservoir. Some water evaporates from the canopy and some slowly soaks into the ground, reducing the total amount of runoff (Xiao, et al., 2000). Canopy interception also lessens soil compaction, which in turn further reduces runoff.
- **Increasing soil capacity and infiltration** – Root growth and decomposition increase the capacity and rate of soil infiltration through rainfall and snowmelt, resulting in slower percolation rates and increasing the filtration of contaminants (Xiao, et al., 2007).
- **Reducing soil erosion** – Tree roots reduce the flow and volume of stormwater runoff, avoiding erosion and preventing sediments and other pollutants from entering streams, rivers, Lake Washington, and the Puget Sound (Washington Department of Ecology, 2011).
- **Providing salmon habitat** – Shade from trees helps to cool warm urban runoff, which poses a threat to anadromous fish, such as salmon. Shade from trees provides lakeside and riparian habitat for salmon and cools water temperatures, increasing dissolved oxygen, which is essential to salmon survival (Puget Sound Partnership, 2012).

In Sammamish, a red maple (12" DBH) growing along a residential street would intercept an estimated 909 gallons of stormwater from City storm sewers in 2018 avoiding $25.25 in stormwater management cost (www.treebenefits.com , 2018).

Common Name	Scientific Name	DBH (inches)	Average Benefits	Intercept Stormwater Runoff (gals)	Stormwater Value
Purple leaf plum	*Prunus cerasifera*	6.00	57.00	258.00	$7.18
Red maple	*Acer rubrum*	12.00	133.00	909.00	$25.25
Big leaf maple	*Acer macrophyllum*	24.00	191.00	2,035.00	$57.05
Douglas fir	*Pseudotsuga menziesii*	24.00	224.00	2,964.00	$82.37

Carbon Sequestration

As environmental awareness continues to increase, governments are paying particular attention to the effects of greenhouse gas (GHG) emissions. As energy from the sun (sunlight) strikes the Earth's surface, it is reflected back into space as infrared radiation (heat). Greenhouse gases absorb some of this infrared radiation and trap this heat in the atmosphere, increasing the temperature of the Earth's surface. Many chemical compounds in the Earth's atmosphere act as GHGs, including methane (CH_4), nitrous oxide (N_2O), carbon dioxide (CO_2), water vapor, and human-made gases/aerosols. As GHGs increase, the amount of energy radiated back into space is reduced, and more heat is trapped in the atmosphere. An increase in the average temperature of the earth may result in changes in weather, sea levels, and land-use patterns, commonly referred to as "climate change." In the last 150 years, since large-scale industrialization began, the levels of some GHGs, including CO_2, have increased by 25% (U.S. Energy Information Administration, 2003).

Trees absorb atmospheric carbon, which reduces greenhouse gases. The carbon-related function of trees is measured in two (2) ways: storage (total stored in tree biomass) and sequestration (the absorption rate per year). Urban trees act as a sink of CO_2 by storing excess carbon as biomass during photosynthesis and the amount of CO_2 stored is proportional to the biomass of the trees (Gómez-Baggethun and Barton, 2013).

Urban trees reduce atmospheric carbon dioxide (CO_2) in two (2) ways:

- Directly – Through growth and the sequestration of CO_2 as wood and foliar biomass.
- Indirectly – By lowering the demand for heating and air conditioning, thereby reducing the emissions associated with electric power generation and natural gas consumption.

Because of these factors, trees in the urban forest are effective at helping municipalities realize their goals towards GHG emissions reduction, especially with carbon dioxide (Blum, 2016).

In Sammamish, a red maple (12" DBH) growing along a residential street would annually reduce over 267 pounds of atmospheric carbon (www.treebenefits.com , 2018). This can be represented as about $0.46 in benefits both in carbon sequestered and avoided.

Common Name	Scientific Name	DBH (inches)	Average Benefits	Reduced atmospheric carbon (lb)	Carbon Value
Purple leaf plum.	*Prunus cerasifera*	6.00	57.00	110.00	$0.36
Red maple	*Acer rubrum*	12.00	133.00	267.00	$0.84
Bigleaf maple	*Acer macrophyllum*	24.00	191.00	731.00	$2.22
Douglas fir	*Pseudotsuga menziesii*	24.00	224.00	466.00	$1.42

Energy Savings

Electric and gas utilities develop energy conservation solutions to keep rates low for their customers, reduce their need to build new lines, and ultimately, serve as environmental stewards. Energy services delivered to Sammamish residents are provided by Puget Sound Energy (PSE). PSE is developing initiatives to reduce its carbon footprint by fifty (50) percent by 2040 through the transition from coal, development of new product and resource development, and focus on cleaner transportation (PSE, 2018). Urban trees influence air temperature in urban areas, which in turn create energy savings that reduce power plant emissions (McPherson and Simpson, 2003). Urban trees and forests modify the environment and conserve energy in four (4) principal ways:

- Shade dwellings and impervious surfaces – Impervious surfaces in 2015 were assessed as 25% of the total land base (See tree canopy results section). Shade from trees reduces the amount of radiant energy absorbed and stored by these impervious surfaces, thereby reducing the urban heat island effect. Urban heat island effect is a term that describes the increase in urban temperatures in relation to surrounding locations (Simpson and McPherson, 2000). Shade from trees also reduces the amount of energy used to cool a structure (Simpson, 2002).
- Transpiration – Transpiration releases water vapor from tree canopies, which cools the surrounding area. Through shade and transpiration, trees and other vegetation within an urban setting modify the environment and reduce heat island effects. Temperature differences of more than 9°F (5°C) have been observed between City centers without adequate canopy cover and more forested suburban areas (Akbari, et al., 1997).
- Wind reduction – Trees reduce wind speeds by up to 50% and influence the movement of air and pollutants along streets and out of urban canyons. By reducing air movement into buildings and against conductive surfaces (e.g., glass, metal siding), trees reduce conductive heat loss from buildings, translating into potential annual heating savings of 25% (Heisler, 1986).
- Green Roofs – Native trees and vegetation on rooftops can help reduce the urban heat island effect, decrease the heat loss through rooftops (U.S. Department of Energy, 2004).

In Sammamish, a red maple (12" DBH) growing along a residential street would conserve about 50 Kilowatt / hours of electricity for cooling and reduce consumption of oil or natural gas by two (2) therm(s) ((www.treebenefits.com , 2018). This can be represented as about $5.49 in energy savings. A 24" DBH Douglas fir conserves 90 Kilowatt / hours valued at $7.19 per tree.

Common Name	Scientific Name	DBH (inches)	Average Benefits	Conserved (Kilowatt hours)	Energy Value
Purple leaf plum.	*Prunus cerasifera*	6.00	57.00	15.00	$1.74
Red maple	*Acer rubrum*	12.00	133.00	50.00	$5.49
Bigleaf maple	*Acer macrophyllum*	24.00	191.00	88.00	$7.75
Douglas fir	*Pseudotsuga menziesii*	24.00	224.00	90.00	$7.19

Air Quality

Urban trees improve air quality in five fundamental ways:

- Reducing particulate matter (e.g., dust and smoke)
- Absorbing gaseous pollutants
- Providing Shade and transpiration
- Reducing power plant emissions
- Increasing oxygen levels

Trees and forests protect and improve air quality by intercepting particulate matter (PM_{10}), including dust, ash, pollen, and smoke. The particles are filtered and held in the tree canopy where they are eventually washed harmlessly to the ground. Trees and forests also absorb harmful gaseous pollutants like ozone (O_3), nitrogen dioxide (NO_2), and sulfur dioxide (SO_2). A net effect of increased tree cover in urban areas is a reduction in ozone concentrations (Dixon and Wolf, 2007). Urban forests have a positive impact on air quality through absorption of pollutants by vegetation canopy, sequestration of atmospheric carbon dioxide in woody biomass, and reduction of summertime air temperatures and associated ozone formation. Shade and transpiration reduce the formation of O_3, which is created during higher temperatures. Scientists are now finding that some trees may absorb more volatile organic compounds (VOCs) than previously thought (Karl, T. et al 2010; Science NOW, 2010). VOCs are a class of carbon-based particles emitted from automobile exhaust, lawnmowers, and other human activities.

Health, Aesthetic, Habitat, and Socioeconomic Benefits

While perhaps the most difficult to quantify, the health, aesthetic, habitat, and socioeconomic benefits from trees are among their greatest contributions. These benefits include:

- Human health
    - Reduced illness and reliance on medication
    - Quicker recovery from injury or illness
- Reduction in violent crime
- Beautification, comfort, and aesthetics
- Shade and privacy
- Wildlife habitat
- Opportunities for recreation
- Creation of a sense of place and history
- Heightened business activity
- Increased property values

Research has found that exposure to nature, including trees, has a healthy impact on humans both mentally and physically. Children with ADHD experienced reduced symptoms when they were exposed to green environments and spent time in nature (Faber and Kuo, 2006). Encounters with nearby nature (e.g., forest bathing, sitting under individual trees, time spent in parks and gardens) are important for walkability, weight loss, immune function, child development, mental health, and the treatment of senior dementia (Wolf, 2016). Research has also shown that hospital patients with access to live vegetation experienced shorter hospitalizations, faster recovery times, fewer intakes of postoperative analgesics, more positive physiological responses, and less pain, anxiety, and fatigue. Patients with views of living plants in their rooms also felt more positively about their rooms and evaluated them with higher satisfaction (Park, 2006).

Sociologists have found that green spaces also increase community health by reducing crime and aggressive behavior. Research shows that the more greenery around a building's surroundings

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the fewer total crimes are committed. Residents in public housing in Chicago reported 25% fewer domestic crimes when landscapes and trees were planted near their homes (Kuo and Sullivan, 2001). Further, a study of individuals living in twenty-eight (28) identical high-rise apartment units found residents who live near green spaces had a stronger sense of community, better mental health, coped better with stress and hardship, were less violent, and managed problems more effectively than those living away from green space (Kuo and Sullivan, 2001). Green stormwater infrastructure is also associated with reduced narcotic use and distribution (Kondo et al., 2015). While some of these benefits are intangible and/or difficult to quantify, empirical evidence of these benefits does exist (Kaplan, 1989; Ulrich, 1986).

Trees and forest lands provide habitat (foraging, nesting, spawning, etc.) for mammals, birds, fish, and other aquatic species. Trees preserve habitat and create movement corridors for wildlife. Further, trees can offer pollinators a valuable source of flowering plants. By including an array of flowering trees that provide pollen and nectar in the urban forest, honeybees are provided with additional food sources. Habitat creation and enhancement increase biodiversity and complement many other beneficial functions of the urban forest (Haddad et al., 2015). This indicates a solution for conservation and restoration measures that improves landscape connectivity, which will reduce extinction rates and help maintain ecosystem services.

There is evidence that trees promote better business by stimulating more frequent and extended shopping plus a willingness to pay more for goods and parking (Wolf, 2007). Shoppers are willing to travel more often, for more time, and over greater distance to a retail district with trees, and once arrived, would spend more time at the destination (Wolf, 2013). Proximity to trees generates better school performance, lessens workplace illness, and improves concentration, all of which yield an increase to overall productivity. In addition, trees throughout the urban environment (and especially among vacant lot conversions and streets) promote active living connectors and reduce crime rates. Thus, trees provide for their community by generating new economic income and removing judicial system costs (Wolf, 2013).

Some of these benefits are captured as a percentage of property values, through higher sales prices where individual trees and forests are located. According to Donovan and Butry (2010), street trees increase residential property value and reduce the average time of selling a residential property. Their research also found that the benefits of street trees spill over to neighboring residences.

In Sammamish, a red maple (12" DBH) growing along a residential street increases adjacent property value by $99 and increases leaf surface area by 233 square feet per year (www.treebenefits.com , 2018). Douglas fir (24" DBH) increases adjacent property value and leaf surface area by $128 in property value and 301 square feet of leaf surface area per tree.

Common Name	Scientific Name	DBH (inches)	Average Benefits	Leaf Surface Area (ft^2)	Increased Property Value
Purple leaf plum.	*Prunus cerasifera*	6.00	57.00	111.00	$47.00
Red maple	*Acer rubrum*	12.00	133.00	233.00	$99.00
Bigleaf maple	*Acer macrophyllum*	24.00	191.00	281.00	$119.67
Douglas fir	*Pseudotsuga menziesii*	24.00	224.00	301.00	$128.00

What Do We Have?

To effectively manage the urban forest, it is essential to have knowledge and understanding of what exists today. This section lays the groundwork for the UFMP with historical context, current policies, practices and understanding about the existing state of the urban forest. As a summary and synthesis of available information, this section can be referenced as containing benchmark considerations when evaluating and implementing actions that will impact the urban forest in the future.

Community History

Prior to the 1800's, Sammamish was home to Native Americans, including Duwamish and Snoqualmie tribes. English settlements began to appear in the 1880s and 1890s with logging and farming activity. In the late 1930s through 1970s, the Sammamish plateau was popularized by resorts in places like Pine Lake and Beaver Lake. As the region's population grew, development on the plateau increased, and by 1985, the community began discussion about incorporation. The discussion continued over many subsequent years, and on August 31st, 1999, the City of Sammamish was officially incorporated (Dougherty, 2008). The Sammamish population continues to grow and, from 2016 estimates, is currently 63,773 people on a land area of twenty-one (21) square miles. To this day, and as evidenced by the abundance of remnant forest from the history of logging operations, the character of the City is defined by its trees.

History of Urban Forestry in Sammamish

As a relatively new city in King County, most of the current forest conditions can still be traced back to early logging and agricultural practices. More recent changes in the urban forest have been influenced primarily by new development. Homeowners in older homes around the City often have mature native trees like Douglas-Fir, Western red cedar and Big leaf maple around their property that could be considered second growth forest. Newer neighborhoods typically have a more diverse species palette of urban trees and the trees are younger.

Prior to the City's incorporation, the land was being governed and managed according to King County regulations. Early environmental planning to manage the growing population became a legal obligation through the Growth Management Act in 1990. Once the City incorporated, it was required to adopt a Sammamish Comprehensive Plan (SCP), which it did in 2003. This set the early stage for the City to adopt its own guiding principles and environmental quality goals that support this legislation. Trees were recognized as important to Sammamish in this early planning document. In 2004, the City adopted a Parks Recreation and Open Spaces Plan (PRO Plan), which gave additional direction to managing public natural areas in the City. It also includes one of the City's first visions for environmental conservation.

A third Plan, The Trails, Bikeways and Paths Plan (2004) influenced urban forest management in the City as part of a vision for an integrated system of transportation options that de-emphasized the differences between recreation facilities and transportation facilities. It included as Plan goals, environmental sensitivity to significant trees in trail development, and the importance of keeping room for trees in the streetscape environment for pedestrian value.

During the last decade, the SCP and the PRO Plan have undergone revisions since they were first drafted, with the most recent versions being the SCP in 2015, and the PRO Plan in 2018. While working through these Plan updates, trees began receiving official City recognition and protections through municipal ordinances passed in 2015.

From these related events, it is clear that the community has assumed an increasing level of care for the urban forest and would benefit from focused long-term strategic planning. Increasing regulations from the State and Federal Government for environmental stewardship requirements have also played a significant role in defining the level of care for the urban forest that exists in Sammamish today.

The Urban Forest Resource

Sammamish's urban forest includes all trees (public and private) within the limits of the city. A subset of the overall urban forest, the community tree resource is comprised of publicly-owned trees on rights-of-way, in parks, and at city facilities. The community tree resource is most actively managed by the City of Sammamish. However, because all trees contribute to the quality of life and provide critical environmental benefits to the community, there are policies and requirements for the preservation of the overall resource.

To gain a more comprehensive understanding of the urban forest, the City of Sammamish partnered with the University of Washington (UW) to provide an assessment of tree canopy and other primary land cover across the community. The assessment, completed in early 2018, was the result of a UW research project (Dyson and Patterson, 2018) that evaluated two (2) sources of high-resolution aerial imagery; the National Agriculture Imagery Program, and aerial imagery from the 2015 Regional Aerials (City Consortium project). A key outcome of the project is a GIS map layer of tree canopy across Sammamish.

Tree canopy is measured as the layer of leaves, branches, and stems of trees and other woody plants that cover the ground when viewed from above. The amount and distribution of leaf surface area is the driving force behind an urban forest's ability to produce benefits for the community (Clark et al, 1997). As canopy cover increases, so do the benefits. Understanding the location and extent of tree canopy is important to developing and implementing sound management strategies.

The results of the study provide a clear picture of the extent and distribution of tree canopy within Sammamish. The dataset enhances the City's existing Geographic Information System (GIS-database) and provides countless opportunities to analyze tree canopy in conjunction with other geographic, demographic, and socio-economic data layers. Analysis can be performed at virtually any level from the overall city to individual parcels. The information provides a foundation for making informed decision about management and polices effecting the urban forest, including:

- Benchmarking the location and extent of tree canopy along with other primary land cover
- The ability to assess changes over time
- Identification and prioritization of potential planting sites and underserved areas
- Opportunities enhancing wildlife corridors and trail systems with contiguous tree canopy

The data, combined with existing best management practices and emerging research, will help managers identify and assess urban forest opportunities and find a balance between growth and preservation.

Land Cover Summary

The City of Sammamish encompasses a total area of 20.6 square miles (13,228 acres) with 6,357 acres of tree canopy (Figure X). Davey Resource Group (DRG) analyzed the land cover data developed by UW to develop the following information that characterizes existing land cover in Sammamish:

- 48% (6,357 acres) existing canopy, including trees and woody shrubs

    - 51% is coniferous tree type
    - 49% is deciduous tree type.
    - The majority of this canopy (75%) is in good health,
- 25% impervious surfaces, including roads, parking lots, and structures (3,311 acres)
- 12% (1,542 acres) is pervious surface, typically grass.
- 14% (1,794 acres) have understory and low growing vegetation.
- 2% (254 acres) open water.
- A potential for 59.8% canopy cover, considering suitable planting sites (1,556 acres) and the existing canopy (6,357 acres), for a total of 7,913 acres
- 51.3% (5,659 acres) of existing canopy is on privately-owned land
- 363 acres of tree canopy in 680 acres of parks.
- The average canopy in parks is 57.6% with Beaver Lake park having the most canopy 73.6% (58.31 acres)
- Trees are providing nearly $3.1 million annually in air quality and stormwater benefits
- Stored carbon is valued at $28.2 million.

FIGURE X: Landcover distribution

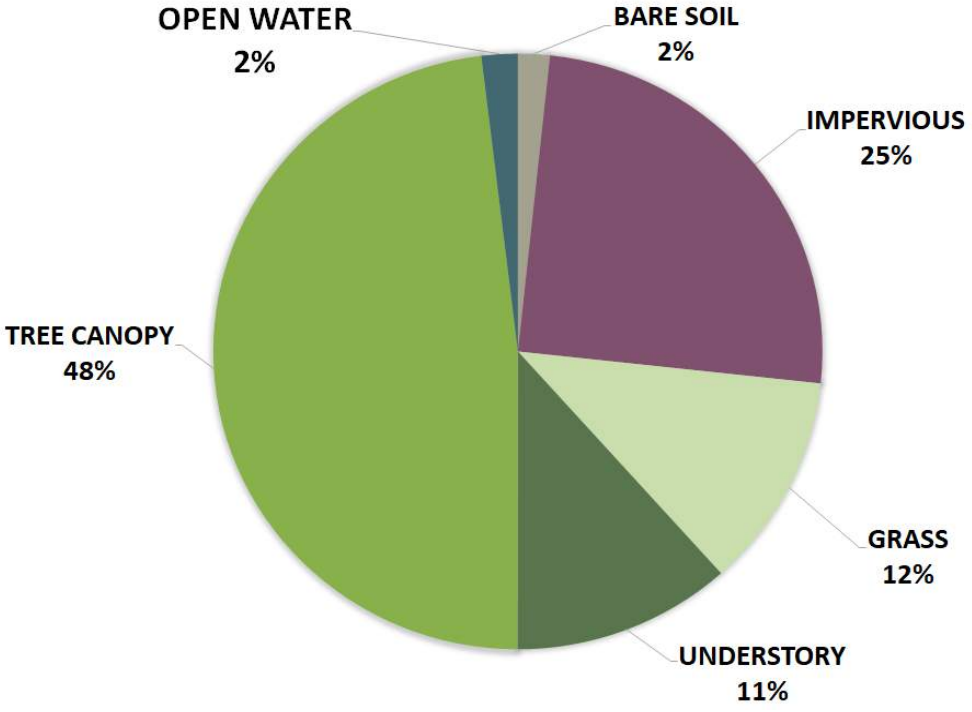
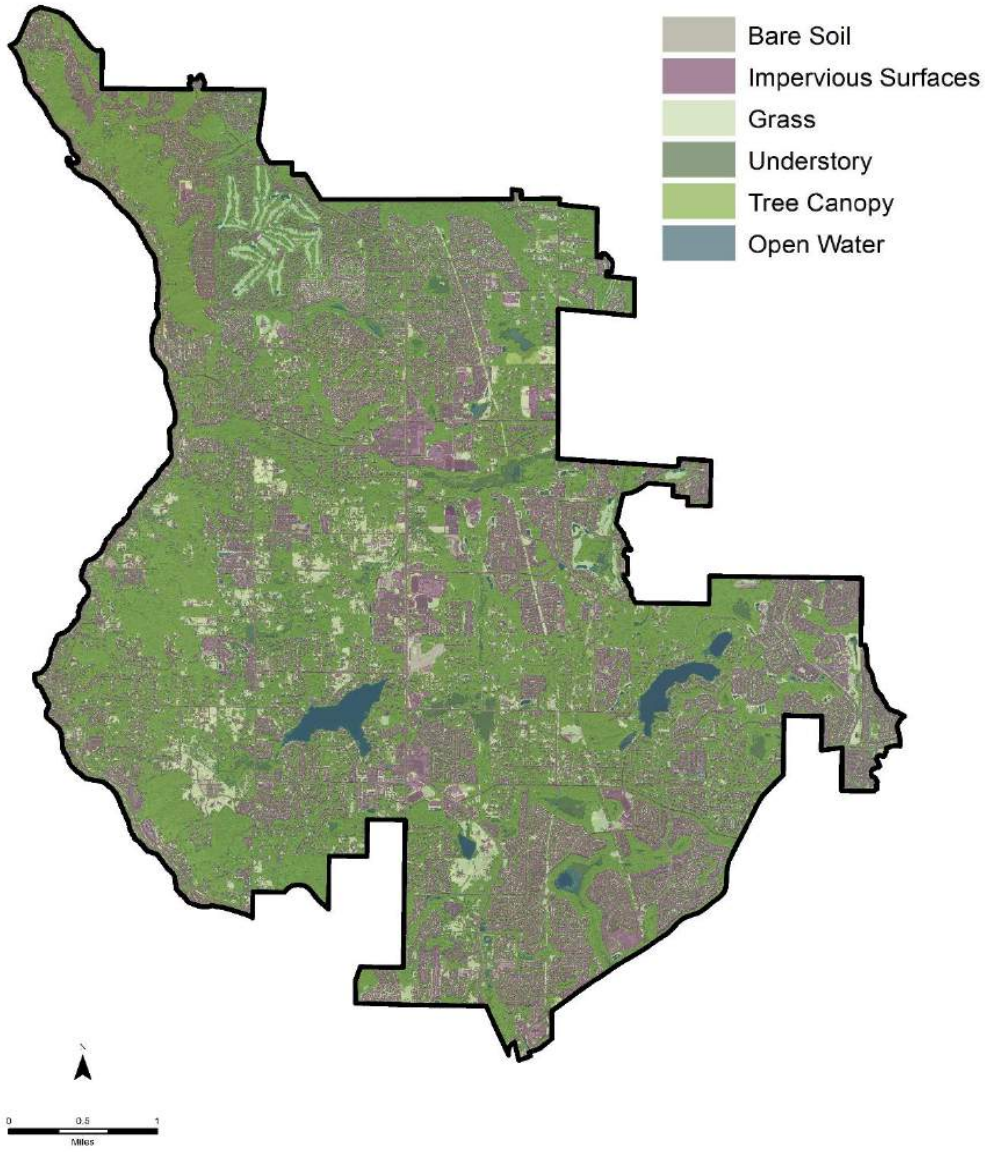
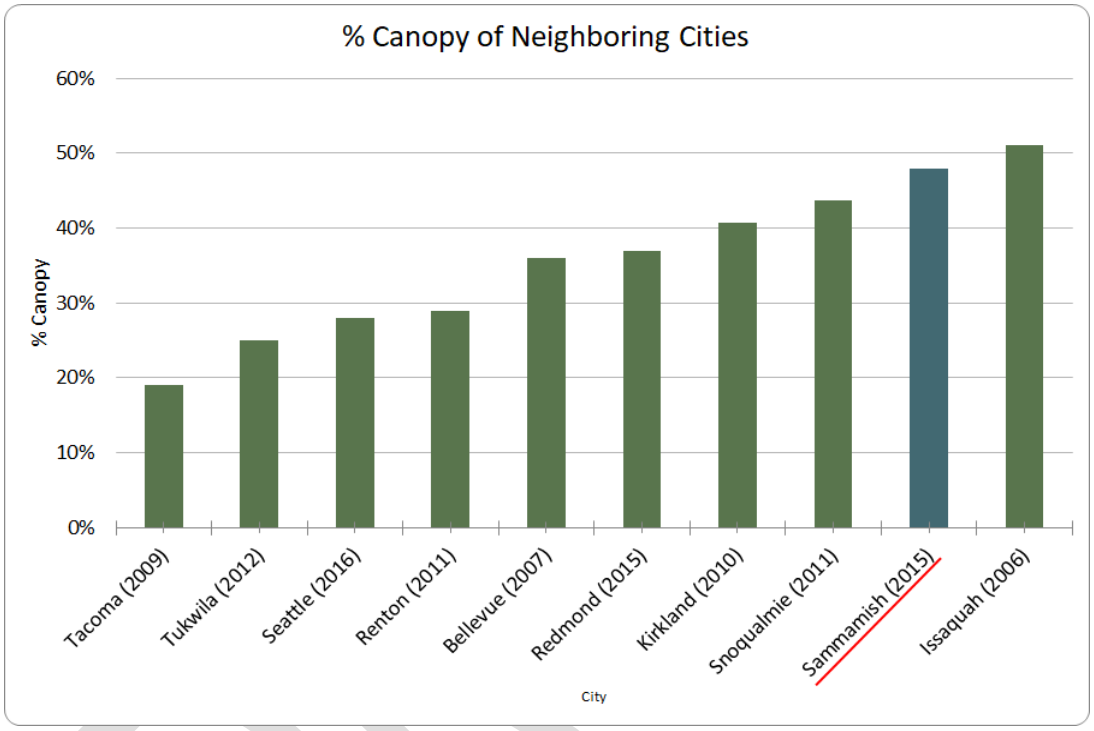


Figure X: Map Illustration of Land Cover Distribution



Relative to other municipalities in the region, Sammamish has more tree canopy than its neighbors. Based on a 2006 assessment, Issaquah's canopy was slightly higher (51%), however conditions may have changed over the last 12 years. Understanding regional canopy cover can provide greater context for urban forest planning in Sammamish.



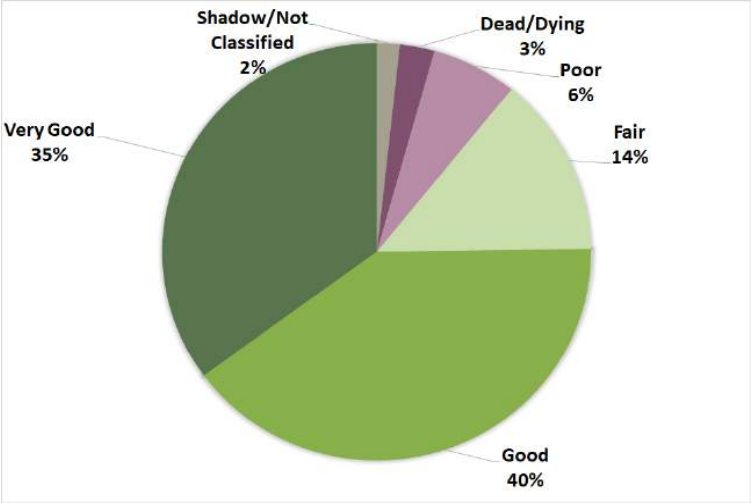
Forest Composition

The UW land cover assessment provides a basic indication of the forest composition, estimating that conifer species account for 51% of Sammamish's urban forest. Deciduous species account for the remaining 49%. The overall species composition was not determined.

Tree Canopy Health

Using methodology developed at UC Davis, California (Xiao and McPherson, 2005), DRG analyzed multispectral, high-resolution, spatial data to remotely assess the overall health of the urban forest. The methodology applies algorithms that generate a relative health index rating based on the reflection of infrared light off the canopy. While this process does not result in a condition (or health) rating for individual trees, it does identify areas where canopy is showing stress. The resulting GIS map layer can be used to target areas where further inspection is warranted. A site inspection, including observation, verification, and sampling (foliar/soil) can provide additional information for diagnosis and treatment if necessary.

The analysis determined that approximately 75% of tree canopy is in good health. Six percent (6%) of the overall tree canopy is showing indications of poor health and another 3% appears to be dead or dying (Figure x). This information indicates at least some level of functional loss in environmental benefits from 9% of the overall urban forest canopy. City staff have observed signs of laminated root rot, drought and other emerging pests or diseases of concern that may be accounted for within this assessment.



Environmental Services

Sammamish's land cover was analyzed using *i-Tree Hydro* and *Canopy* to estimate the environmental benefits to stormwater, atmospheric carbon, and air pollution. To date, trees in Sammamish are storing 800,558 tons of carbon in their leaves and woody biomass. The stored carbon is valued at $28.2 million.

Each year, the urban forest is providing nearly $3.1 million in additional benefits, including:

- Reducing 87.8 million gallons of stormwater runoff, valued at more than $2.4 million.
- Improving air quality by removing 180 tons of pollutants (CO, NO_2, O_3, SO_2, and PM_{10}), valued at $626,579.
- Sequestering an additional 26,859 tons of carbon, valued at $946,916.

Watershed Sub-Basins

The City of Sammamish has identified and mapped 14 watershed sub-basins within the city limits. Stormwater runoff from these sub-basins flows into creeks and streams and eventually into Lake Sammamish. The Monohon sub-basin has greatest canopy cover (57%), followed by Panhandle (56%), and Beaver Lake (52%). Mystic Lake has the lowest canopy cover at 30%.

The largest sub-basin, Laughing Jacobs (2,129 acres) has 939 acres of tree canopy and an overall canopy cover of 44%. Based on existing land cover, the Laughing Jacobs sub-basin has the potential to support a total of 1,256 acres of tree canopy and 59% canopy cover.

Water quality mapping has identified Pine Lake Creek and Beaver Lake sub-basins as critical drainage areas with sensitive lakes (Sammamish, 2017). Beaver lake currently has 52% canopy cover that could potentially be increased to 61%. Pine Lake Creek currently has 49% canopy cover that could be increased up to 62% with additional tree planting. By identifying canopy metrics for sub-basins, the City has baseline measures to support targeted improvements using trees to improve water quality and watershed health.

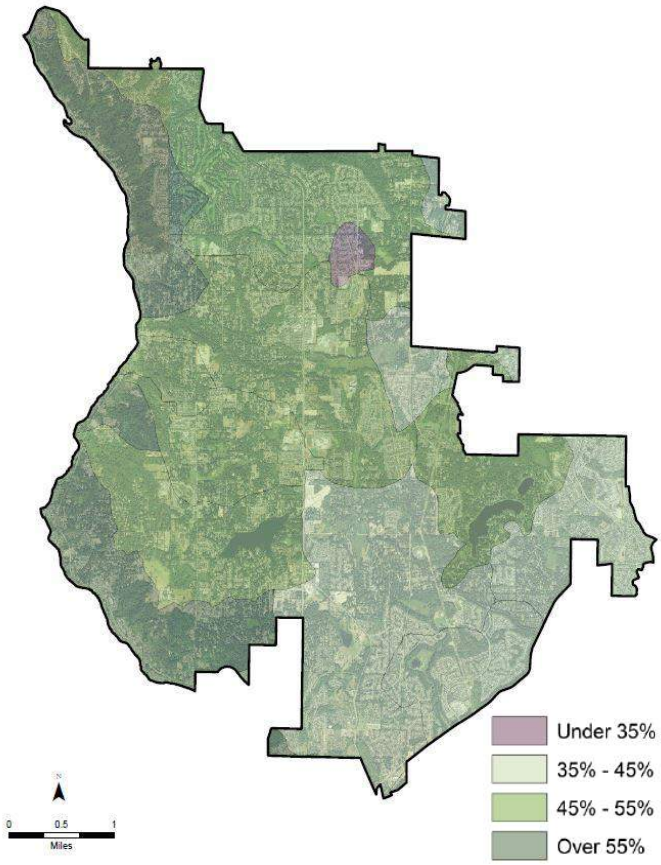


Figure X: Tree canopy by watershed sub-basin.

Sub Basin	Basin Acres	Coniferous Acres*	Coniferous % of Total Canopy	Deciduous Acres*	Deciduous % of Total Canopy	Canopy Acres*	Canopy Cover %	Maximum UTC %
Allen Lake	322.2	46.11	36.07	81.75	63.93	127.86	40.00	49.00
Mystic Lake	112.01	12.21	36.43	21.30	63.57	33.51	30.00	45.00
Beaver Lake	792.94	193.22	46.42	223.02	53.58	416.24	52.00	61.00
Evans Creek	1,944.48	566.29	57.13	425.00	42.87	991.29	51.00	61.00
Patterson Creek	967.95	157.48	43.16	207.39	56.84	364.87	38.00	52.00
North Fork Issaquah Creek	689.25	166.78	59.95	111.40	40.05	278.18	40.00	49.00
Laughing Jacobs	2129.04	526.08	56.04	412.61	43.96	938.69	44.00	59.00
Inglewood	1,700.97	364.86	46.58	418.49	53.42	783.35	46.00	59.00
Thompson	774.03	194.38	53.68	167.71	46.32	362.09	47.00	66.00
Panhandle	1,043.49	281.48	48.39	300.21	51.61	581.69	56.00	62.00
Monohon	1253.42	364.85	50.74	354.13	49.26	718.98	57.00	68.00
Pine Lake Creek	1,211.66	297.57	50.31	293.87	49.69	591.44	49.00	62.00
Zackuse	252.64	63.70	50.98	61.26	49.02	124.95	49.00	60.00
Issaquah Creek	29.47	3.19	34.58	6.04	65.42	9.23	31.00	76.00
AVERAGE	945	231.00	0.48	220.00	0.52	452	45.00	59.00

*Tree Canopy Acres may not equal original land cover metrics. The 7-class landcover dataset with the tree canopy for conifer/deciduous did not have data for the two missing areas with corrupt tiles. Evergreen canopy information was unavailable in those areas.

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Tree Canopy by Park

Sammamish has twelve (12) parks and two (2) golf courses encompassing 680 acres. The average canopy cover in these areas is 57.7% (Table X). Steven and Rosina Kipper Preserve has the highest overall tree cover (97.5%), followed by Beaver Lake Preserve (95%), and Northeast Sammamish Park (82%). Illahee Trail Park has the least canopy cover at 11.7%.

Sammamish's largest park is Beaver Lake Park (79.2 acres). Beaver Lake Park has 73% (58.3 acres) canopy cover. Northeast Sammamish Park is the smallest park (5.8 acres) with 4.7 acres of canopy (82.0% canopy cover).

The two golf courses are privately managed properties with Sahalee Golf & Country Club being the largest. It has 44% (93.7 acres) tree canopy.

Overall, the land cover analysis identified 56 acres in all parks where additional trees might potentially be planted. Sammamish Commons has the greatest area of potential planting sites (18 acres).

Table X: Summary of tree canopy by park.

Park	Acres	Canopy Acres	Canopy Cover (%)	Preferred Plantable Acres	Preferred Plantable Percent (%)	Maximum UTC (%)
Beaver Lake Park	79.18	58.31	73.64	4.49	5.67	79.31
Big Rock Park	36.29	23.68	65.25	11.4	31.41	96.66

East Sammamish Park	18.83	7.94	42.18	1.15	6.1	48.28
Ebright Creek Park	12.37	5.17	41.81	3.47	28.02	69.83
Illahee Trail Park	12.73	1.49	11.7	3.8	29.86	41.57
Klahanie Park	64.14	36.26	56.52	0.43	0.68	57.2
NE Sammamish Park	5.75	4.71	82.02	0.38	6.54	88.56
Pine Lake Park	18.99	13.21	69.56	0.48	2.52	72.08
Sammamish Commons	39.06	8.45	21.64	18.27	46.78	68.42
Sammamish Landing Park	7.48	5.28	70.55	1.43	19.11	89.66
Sahalee Golf & Country Club	212.2	93.71	44.16	1.90	0.89	45.06
Plateau Golf & Country Club	100.28	35.75	35.65	8.47	8.45	44.1
Beaver Lake Preserve	55.64	52.85	94.99	0.36	0.65	95.64
Steven & Rosina Kipper Preserve	17.11	16.68	97.49	0.03	0.17	97.67
TOTAL	680.05	363.5	53.54	56.05	8.00	61.69

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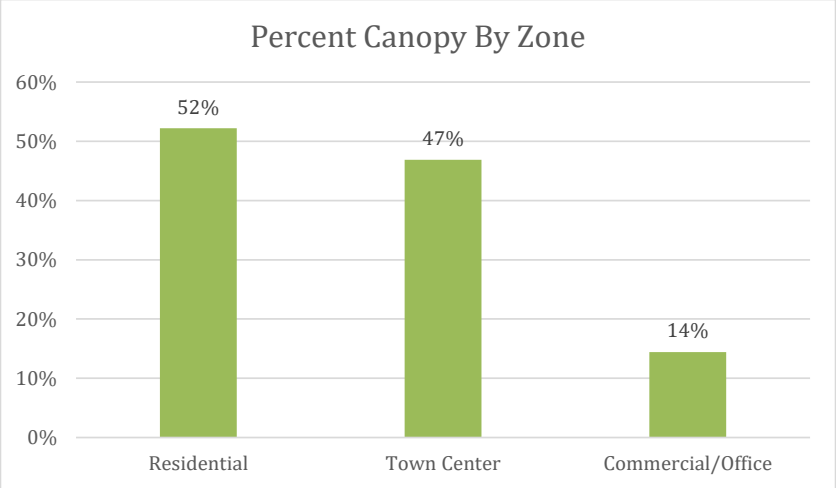
Tree Canopy by Zone

One way to explore urban tree canopy (and understand its potential) is to look at how it relates to zoning. Cities establishes zoning to manage development. Zoning is the practice of mapping designated zones to regulate the use, form, design, and compatibility of property development. Tree canopy cover can vary widely between different zoning classifications. In Sammamish, zoning classifications can be generalized as Commercial, Residential, and Town Center.

Residential parcels make up the largest zoning classification (11,370 acres). Residential zoned parcels have a total of 5,934 acres of tree canopy and an average canopy cover of 52%. Commercially zoned parcels have the lowest canopy cover (14%).



Zoning Code	General Land Use Translation	Acres	Canopy Acres	Canopy Percent	Preferred plantable acres	Preferred plantable percent (%)	MAXIMUM UTC (%)
CB	Commercial	60.44	6.62	10.96	2.68	4.43	15.39
NB	Commercial	1.97	0.28	14.04	0.05	2.3	16.34
O	Office	12.17	3.87	31.77	0.86	7.03	38.8
R-1	residential	2,488.19	1,516.50	60.95	321.88	12.94	73.88
R-1_Anx	residential	0.04	0.02	47.79	0.00	3.66	51.45
R-12	residential	65.38	21.73	33.24	6.21	9.5	42.74
R-18	residential	139.88	45.33	32.41	11.23	8.03	40.43
R-4	residential	6,404.85	3,404.46	53.15	725.01	11.32	64.47
R-4_Anx	residential	0.00	0.00	0.00	0.00	0	0
R-6	residential	2,181.33	916.89	42.03	320.52	14.69	56.73
R-8	residential	90.61	29.45	32.51	11.59	12.79	45.29
TC A-1	Town Center	26.71	10.81	40.47	9.99	37.4	77.87
TC A-2	Town Center	19.15	10.04	52.45	2.55	13.3	65.75
TC A-3	Town Center	9.87	2.86	28.99	2.83	28.69	57.68

TC A-4	Town Center	6.88	1.67	24.22	2.72	39.51	63.73
TC A-5	Town Center	1.86	0.20	10.72	0.78	41.82	52.53
TC B	Town Center	75.84	43.34	57.14	14.26	18.8	75.94
TC C	Town Center	36.86	23.54	63.86	7.89	21.4	85.26
TC D	Town Center	38.97	8.44	21.65	15.08	38.7	60.35
TC E	Town Center	12.58	6.32	50.22	2.10	16.73	66.95
TOTAL	Commercial/Office	74.58	10.77	14.44%	3.59	4.81%	19.25%
TOTAL	Residential	11,370.28	5,934.38	52.19%	1396.44	12.28%	64.47%
TOTAL	Town Center	228.72	107.22	46.88%	58.20	25.45%	72.32%

Tree Canopy and Development

Urban tree canopy is routinely impacted by development. To preserve existing canopy, the City has municipal codes that limit canopy loss and require replacement tree planting when a property is developed. Through a GIS query of undeveloped properties (2018), the City estimates there are 779 acres of land with a high potential for development. These parcels currently have 561.6 acres of tree canopy. This represents nearly 9% of the overall tree canopy in Sammamish. If these areas were completely developed with no canopy retention, overall canopy cover in the community would be reduced to less than 44%. This is an unlikely scenario as most properties require some tree retention and replanting during development.

The following table illustrates a range of impacts to UTC in scenarios where tree retention and tree replacement (as required in existing City code) is successful.

	Land Acres	Canopy Acres	Current Canopy Percent
Citywide Total	13,228.85	6,357.42	48.06%
Potential Development Acres	778.90	561.59	72.10%
Future Canopy Scenarios	**Land Acres**	**Possible Canopy Acres**	**Possible Canopy**
After Development - No Significant Tree Retention	13,228.85	5,795.83	43.81%
After Development - 25% Significant Tree* Retention	13,228.85	5,936.23	44.87%
After Development - 40% Significant Tree* Retention	13,228.85	6,020.47	45.51%

*Assumed Medium size crown diameter of 30 ft (0.162 acres of canopy)

Owners of residential homes and developed property are permitted to remove either sixteen or twenty-four (16 or 24) significant trees within a rolling ten-year (10-year) period, depending on the zoning of the property. In the unlikely scenario where all property owners applied for their maximum annual removal of significant trees and assuming these are medium stature trees (0.016 acres of canopy), the City could see the permitted removal of 2,302 acres of canopy, reducing community-wide canopy to 30.7% in 10 years' time.

Zoning Code	Acres	Canopy Acres	Canopy Percent (2015)	Removal Rate Per Acre- # of Significant Trees over 10 years period	Canopy Acres Removed per acre of Lot	Canopy Acres Retained	Future Canopy Percent (2025)
CB	60.44	6.62	10.96	16.00	0.26	4.9	8.11%
NB	1.97	0.28	14.04	16.00	0.26	0.2	10.52%
O	12.17	3.87	31.77	16.00	0.26	2.9	23.53%
R-1	2,488.19	1,516.50	60.95	24.00	0.39	925.1	37.18%
R-1_Anx	0.04	0.02	47.79	24.00	0.39	0	30.50%
R-12	65.38	21.73	33.24	10.00	0.16	18.2	27.84%
R-18	139.88	45.33	32.41	10.00	0.16	38	27.14%
R-4	6,404.85	3,404.46	53.15	24.00	0.39	2076.8	32.42%
R-4_Anx	0	0.00	0.00	n/a			
R-6	2,181.33	916.89	42.03	24.00	0.39	559.3	25.64%
R-8	90.61	29.45	32.51	24.00	0.39	18	19.83%
TOTAL	11,444.86	5,945.15	52.00%			3,643.30	31.83%
Citywide	13,228.85	6,357.42	48.00%			4,055.50	30.66%

Both of these scenarios explore the impacts of tree removal to the overall tree canopy. However, these scenarios do not account for tree replacements (planted trees), which would provide additional mitigation to the impacts from tree removal. Under current code requirements, for every tree removed in these scenarios, at least one (1) tree needs to be planted. Tree replacement requirements have the potential to replace some of lost canopy over time, recognizing that it may take 15 years or more for newly planted trees to mature to a moderate stature.

Canopy Fragmentation

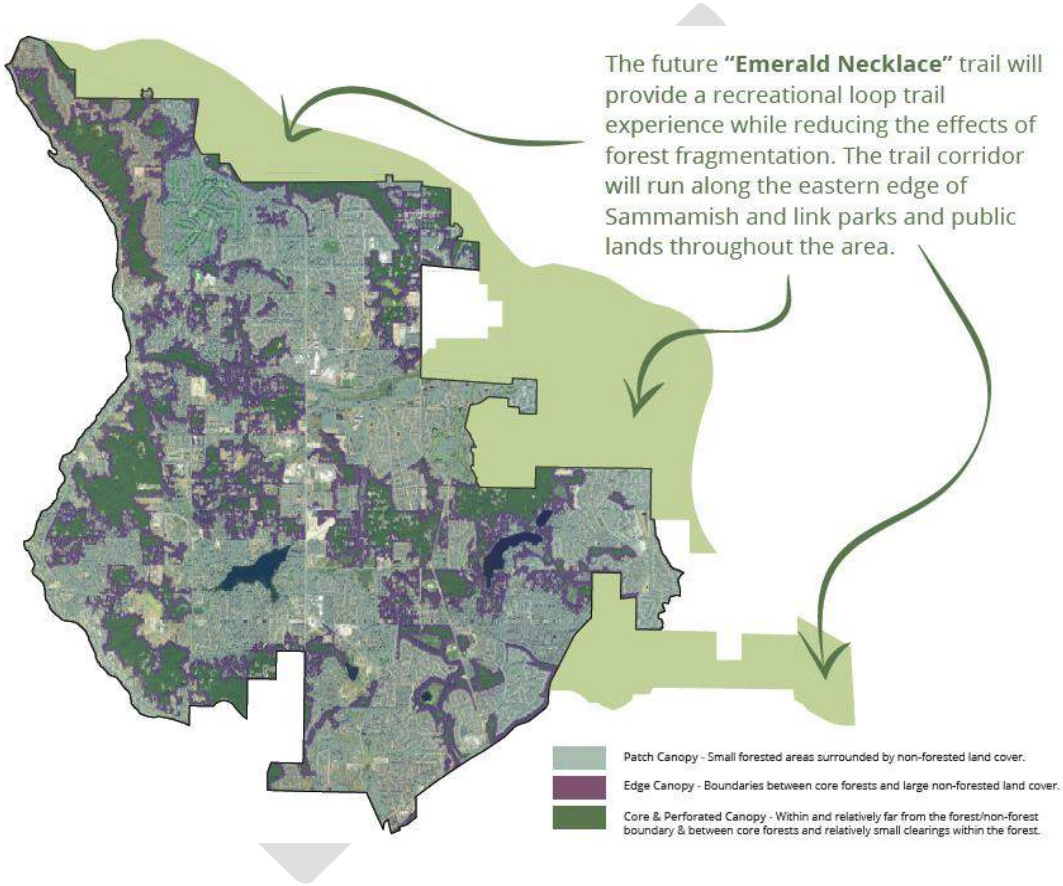
The quality of tree canopy cover can be further explored by analyzing fragmentation. The overall health of the urban ecosystem is highly dependent on the ability of the trees, plants, wildlife, insects, and humans to interact collectively. Ecosystem health and diversity are supported when core canopy is contiguous, providing linkages between multiple patches of forest. DRG analyzed Sammamish's tree canopy for fragmentation to help identify where additional tree planting can reduce fragmentation and provide greater support for wildlife corridors and trail systems (Map x).

Canopy fragmentation analysis identified the following:

- **25.82% (1641.29 acres) of Core and Perforated Canopy -** Tree canopy that exists within and relatively far from the forest/non-forest boundary (i.e., forested areas

surrounded by more forested areas) is core canopy. Patches of small clearings can be described as perforated canopy. In the analysis methods provided by the UW, these two were combined.

- **33.97% (2,159 acres) of Edge Canopy -** Tree canopy that defines the boundary between core forests and large core forests and large non-forested land cover features, approximately 328 feet. When large enough, edge canopy may appear to be unassociated with core forests.
- **40.22% (2,557 acres) of Patch Canopy -** Tree canopy of a small-forested area that is surrounded by non-forested land cover.



The City of Sammamish has been working with King County and neighboring municipalities to retain more forest connectivity throughout areas on the east side of the City. This effort is referred to as the *Emerald Necklace*, and it is where the City is partnering to create a recreational loop trail experience while reducing the effects of forest fragmentation. The trail corridor will run along the eastern edge of Sammamish to link parks and public lands throughout the area. With the inclusion of a forest fragmentation GIS map layer, the City can prioritize planting efforts to strengthen the effectiveness of these forest corridors.

Priority Planting

Some planting sites are more beneficial than others. To identify and prioritize planting potential areas, DRG assessed environmental features to determine benefits to stormwater interception, erosion control, urban heat islands, and existing canopy. Weighted consideration was provided for proximity to hardscape and canopy, soil permeability, slope, road density, and a soil erosion factor (K-factor) (Table X). Each feature was assessed using a separate grid map. A value between zero (0) and four (4) (with zero (0) having the lowest risk potential) was assigned to each feature/grid assessed. Overlaying these grid maps and averaging the values provided the risk potential at any given point. A priority ranging from very low to very high was assigned to potential planting areas based on the calculated average (Map X).

The analysis identified 1,495 acres of potential planting area assigned to the following priorities:

- Very High–226.3 acres
- High–273.5 acres
- Moderate–372.8 acres
- Low–373.8 acres
- Very Low–249 acres

As Sammamish evaluates where to plant more trees, priority planting data, combined with existing and emerging urban forestry research and applications, can help guide decisions that will yield the highest return of environmental benefits. The environmental factors for each site will vary, meaning the most optimal tree will vary as well. Increasing the number and size of trees in high priority sites will yield the highest return on investment.

Table X. Factors Used to Prioritize Tree Planting Sites

Dataset	Source	Weight
Proximity to Hardscape	Urban Tree Canopy Assessment	0.30
Slope	National Elevation Dataset	0.25
Road Density	National Hydrologic Dataset	0.15
Soil Permeability	Natural Resource Conservation Service	0.10
Soil Erosion (K-factor)	Natural Resource Conservation Service	0.10
Canopy Fragmentation	Urban Tree Canopy Assessment	0.10

Trees planted in the next several years should be planted in areas where they will provide the most benefits and return on investment. A very low priority area is one where planting a tree will do little to impact stormwater, heat islands, and environmental conditions. A very high priority planting site likely has high rankings in at least two (2) factors, and thus, tree planting in these areas is highly strategic, addressing multiple urban issues at once (Map X).

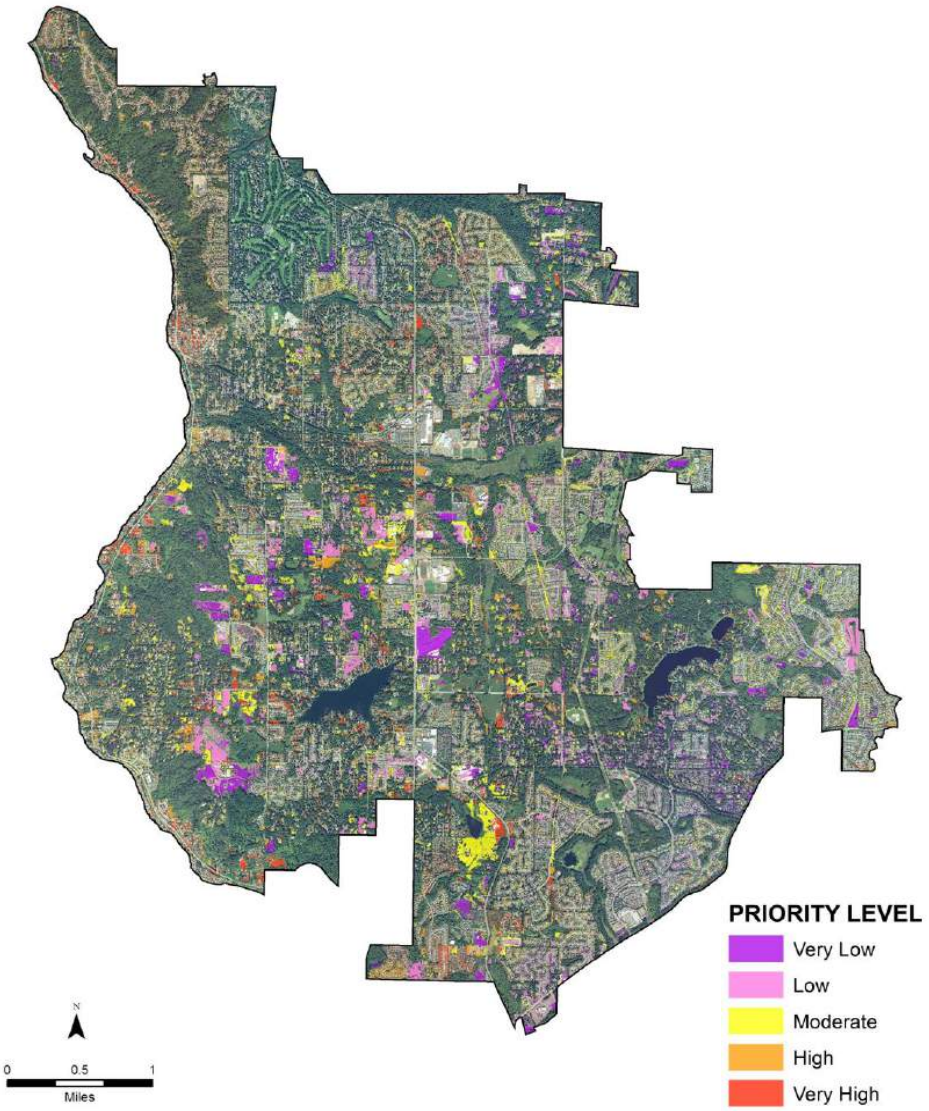


Figure X: Map illustration of priority planting opportunities.

The Community Urban Forest Resource (Public Trees)

Public trees along rights-of-way, in parks, and at city facilities are defined as the community urban forest. These trees are actively managed by the City and provide the best indicators to showcase well-managed and sustainable urban forest conditions. Since trees are relatively long-lived organisms, the urban forest often develops into a combination of well-adapted, high-performance species mixed with other species that over time have proven to be less desirable and require more attention. As an urban forest evolves, managers revise their objectives for individual tree species based on past performance and emerging prospects to make efficient use of funding and labor resources. In 2017, the City began formally collecting information about public trees in parks. That same year, the Department of Public Works conducted a remote sensing project that identified the location of street trees. Both of these projects were intended to increase awareness of issues and liabilities and increase operational efficiency.

Park Trees

The City of Sammamish includes fourteen (14) parks organized into three categories; city parks, golf/country clubs, and nature preserves. Together, these parks encompass 680.1 acres (5.1% of all land area). The Parks and Recreation department began an inventory and inspection of trees in 2017 beginning within Beaver Lake Park and Pine Lake Park. In Beaver Lake, 1,091 trees were inventoried. The Pine Lake inventory identified 1,043 trees. The results of these projects summarized the trees according to their safety risk in low, moderate and high categories. The inventory also identified maintenance needs. The results are being used to plan and budget for tree care work. The department anticipates collecting inventory data at other parks in the coming years.

Table X: 2017 Tree Assessment Summary in Beaver Lake and Pine Lake

	Acres Assessed	Low Risk	Low/Moderate	Moderate	Moderate/ High	High Risk	Inventory Total
Beaver Lake Park	17	1004	55	27	5	0	1091
Pine Lake Park	9	914	96.00	27	4	2	1043
Total	26	1918	151	54	9	2	2134
% of Trees	--	89.88%	7.08%	2.53%	0.42%	0.09%	100%

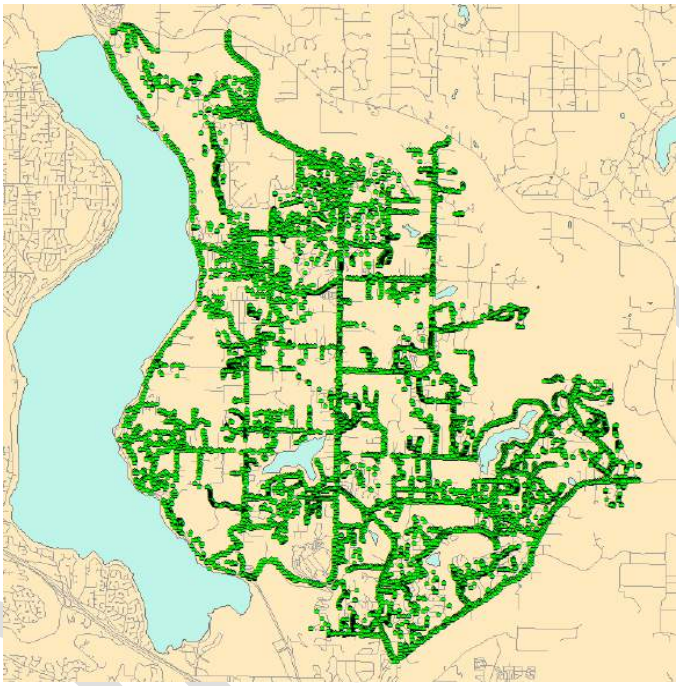
Street Trees

Trees within or adjacent to the public right-of-way are referred to as street trees. For safety and liability, street trees generally require the most active and intensive management. These trees often pose challenges to adjacent infrastructure, lifting sidewalks and pavement. They require pruning to maintain visibility and clearance for vehicles and pedestrians. According to a 2017 GIS survey commissioned by the City, there are an estimated 15,988 trees within the right-of-way that are likely owned by the City (Figure x). The project used remote sensing and did not include any assessment of tree health or maintenance needs. It did, however, identify tree type; with 2,245

trees identified as conifer species and 7,643 as deciduous. The project identified an additional 6,100 clusters of trees of unknown tree type.

The information gathered from this project provides very few metrics useful for planning and management. As a result, the City is still reliant on public reports and staff inspections to identify tree maintenance concerns within the right-of-way. A complete accounting of safety risks and liabilities remains largely unknown. This creates challenges for anticipating and budgeting for maintenance needs from year to year.

Figure X: A map illustration of the Sammamish's street tree population (2017)



Summary Considerations about the Urban Forest

The UTC assessment establishes a GIS data layer that can be used in conjunction with other map layers to prioritize planting sites and increase canopy cover strategically. Sammamish existing tree canopy covers 48% of the City and decision-makers can set a target canopy cover goal to pursue. With this UTC assessment, urban forest managers have the following opportunities to help balance between human population growth and tree preservation:

- Define targeted canopy objectives for the community and identify actions that will support policy objectives within the Comprehensive Plan.
- Use priority planting site analysis to identify new tree planting locations that maintain the City's forested character.
- Use GIS canopy and land cover mapping to explore lower canopy watersheds (sub-basins) and identify potential planting sites when off-site restoration efforts are required from other projects.
- Increase canopy with tree planting in areas of patch and fragmented canopy to reduce forest fragmentation and improve wildlife habitat and corridors.

In addition, urban forest managers have the following opportunities to leverage this information to manage risks and liabilities:

- Prioritize inspection of public trees based on preliminary canopy health assessments.
- Utilize forest fragmentation results to investigate trees along canopy edges for laminated root rot.
- Refine development codes to offer more options for tree preservation objectives. Improve alignment twitch canopy cover objectives rather than specific tree retention requirements.

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Urban Forest Management

The care and management of Sammamish's urban forest is performed by a combination of City staff and contracted professional services. Currently, management of the community urban forest is focused primarily on public safety and responding to environmental stewardship expectations. The following sections provide greater detail about current operations and policies. These sections also explore how urban forestry management connects with the community through volunteer efforts and engagement with local non-profit organizations who share similar values and objectives for the urban forest in Sammamish

Community Tree Care

Currently, three (3) departments share responsibility for the protection and management of Sammamish's urban forest; Community Development (DCD), Public Works (PWD), and Parks and Recreation (PRD). Management and decision-making authority are based on the location of the trees. There is no single position or leadership team with overarching responsibilities for guiding the management, preservation, and care of the urban forest. Areas of responsibility are as follows:

- The DCD oversees the development and implementation of permits, codes, and land use rules. They are the main department in oversight of trees located in private property developments.
- PWD developed the approved tree list (Public Works Standards, Appendix F, 2016) and performs service calls to reactively maintain tree conflicts near the Rights-of-Way.
- PRD provides planning and care for trees within City parks.

As issues arise, the responsible department assigns staff and identifies actions to resolve the situation (Table X).

Table X: Decision matrix for urban forest management in Sammamish

Tree Location	City Department	Responsibility
Trees on Private Property	Community Development	Oversees Tree Management in Developments
		Permits for Tree Removal
		Permits for Tree Pruning
		Permits for Tree Planting
Trees in Parks	Parks and Recreation	(Permits Required)
		Hazardous Tree Inspections
		Tree Pruning
		Tree Removal
		Tree Planting
Trees within City Rights-of-Way and City Facilities	Public Works	(No Permits Required)
		Hazardous Tree Inspections
		Tree Pruning
		Tree Removal
		Tree Planting
		Reviews Plans from Planning Department

Tree Maintenance

Pruning serves to maintain the health, safety, structure, and aesthetic value of individual trees and is necessary on a periodic basis as trees grow and increase in diameter and canopy. Tree longevity and stability are enhanced with structural pruning from a young age. Structural pruning can also reduce the cost of maintenance over time by reducing the number and size of branches that require removal on mature trees and the amount and size of tree debris. Industry best practices recommend rotational pruning every five to seven years for all public park and street ROW trees.

Maintenance for public trees can generally fit into two main categories: rotational (routine) pruning and safety (risk management), although risk reduction is also a goal of routine pruning. In instances where trees are near busy streets, playgrounds, multi-use paths, and pedestrian areas, pruning can significantly reduce the risk of tree failure. Pruning is also required to ensure visibility in the "sight triangle" at street intersections as well as for traffic signals and signs.

Currently, most tree maintenance is performed on a reactive basis using internal staff. Work is prioritized based on safety and available resources. Both PWD and PRD conduct maintenance with a combination of City staff and contractors. City staff perform light tree pruning from the ground and removal of small trees. Larger tree projects are handled by contracted arborists. Tree maintenance on private property is the responsibility of the property owner, however a permit is required when trees are being removed.

Staffing Levels

[Needs client feedback. DRG is unclear which staff positions/titles are the most engaged in urban forestry.]

Currently, an estimated sixteen (16) City staff positions respond or manage tree issues on at least an intermittent basis every week. Leadership within the three departments will collaborate on projects and share resources when necessary (such as in tree planting projects) but there is no formal policy on resource sharing, and no department has a position designated as a Full-Time Employee (FTE) dedicated to urban forestry. City staff also use contractors for both tree care consulting and tree work to meet workload demands. The following table benchmarks the time contributions required by City staff.

City Services	Common Urban Forestry Related Activities	Estimated Hours per Week*
Permit Intake and Review	Development plan review for compliance with tree protection codes Public inquiries (online, phone and counter)	20 hours (DCD)
Code Enforcement & Complaint Investigation	Investigating and resolving tree complaints Investigating and resolving infrastructure damage complaints.	5-10 hours (DCD)

Parks & Public Tree Maintenance	Tree planting and establishment Structural pruning on smaller trees Inspection and identification of hazardous trees	25 hours (PWD) 18 hours (PRD)
Contract Management	Managing contract tree crews	2 hours (DCD)
Emergency Response	Community Service Requests Response Management	0
Comprehensive (Long-range) Planning	Urban Forest Management Plan stewardship Federal, state grant procurement	0
Community Education Action and Outreach	Volunteer events Coordinated tree planting Neighborhood association Support Website Content and Public Education	30 hours
Tree Board Meetings	Addressing public issues related to trees.	0

*NOTE: “0” estimated hours per week does not mean that no time is spent on the activity, but that the time spent is very occasional and not measurable on a weekly basis.

Service Levels - Streets and Public Property (not parks)

PWD handles tree maintenance on all rights-of-way and all public property except parks. While the City does have access to a chipper truck, most projects that require such equipment are contracted out. PWD does not need to submit removal tree permits to remove high-risk trees from the ROW. Information about tree work performed by PWD is largely unmaintained. Although staff have access to a GIS application (ArcGIS Collector App), which allows staff to easily add lines, points, and shapefiles to GIS databases, they do not keep detailed records of the trees they inspect or work on. Staff have explored using the Tree Collection App that is pre-built for street tree inventory management but have not implemented it.

Service Levels - Parks

PRD handles the planning and maintenance of public trees on park lands with thirteen (13) staff members. In 2017, PRD had conducted tree health assessments for two (2) parks as part of a parks tree inventory program. The health assessments are conducted to record the structural and biological health of trees. Inspection priority was given to trees located in areas with a history of storm damage from southerly winds. The PRD is integrating tree health assessments as part of its routine duties, but most tree maintenance occurs as public safety or tree health issues are identified and prioritized.

Service Levels - Private Property

Sammamish has extensive tree protections and replacement requirements which impact tree management on private property in their development code (SMC 21A.37). Trees on private property are the responsibility of the property owner and can be cared for without a permit. However, once a tree is being considered for removal, property owners are required to communicate and seek approval with DCD through a permit process. This approval is considered either through a tree removal permit or it may be included in conjunction with another land use approval such as a preliminary plat grading permit.

Staff Training

The science of arboriculture and the management of urban forests are domains that are increasingly recognized as special areas of expertise. Credentials are increasingly requested by many municipalities as evidence of competency. Bachelor's degrees in Forestry, Urban Forestry, Environmental Sciences, and Horticulture are often the base requirements for leadership roles in urban forest management. Professional credentials can also demonstrate competency, with the most widely accepted credentials in Washington State coming from the International Society of Arboriculture (ISA).

The City provides ongoing training to any staff handling tree maintenance equipment including chainsaw, chipper and truck safety. Stakeholder interviews revealed that landscape maintenance workers in Sammamish receive routine (annual) training on structural pruning or tree care. The following is a summary description of staff resources and training within individual City departments:

- In DCD, staff are trained to interpret ordinances related to trees, but rely on reports by ISA certified arborists when necessary to render decisions. Staff within development services have backgrounds in various fields but there are no ISA certified arborists within development services staff.
- The PWD has a director with degrees in civil engineering and organizational development. In addition, the department has engineers on staff who can successfully consider relevant tree issues in terms of asset and infrastructure management, but tree care expertise is not required for any staff in this department. Tree related issues are resolved based on previous experiences with similar issues at the city. When additional expertise is necessary, ISA certified arborists are contracted. Typically, two (2) to three (3) tree care consultants are held on retainer for operational maintenance and plan review.
- PRD leadership includes staff with advanced degrees in landscape architecture. While some are trained in advanced tree climbing, they rarely perform tree climbing activity.

Equipment and Tools

City staff use common arborist tools (chainsaws, shovels, pruning saws etc.). The City has plans to purchase a lift truck in 2019. When tree work is substantial, the City will contract arborist companies (with ISA certified arborist supervision). City staff expressed that they do not have a suitable truck for watering new plantings.

Tree Acquisition and Quality Control

For City staff, replacement trees are often planted with the help of machinery due to the size requirements defined in municipal code. PRD performs visual inspections of trees as part of routine safety inspections, but inspections are undocumented. Most proactive tree management on park properties are typically associated with care for trees after planting to encourage successful establishment. Activities include watering, installing or removal of stakes and light pruning.

Discussions with City staff involved in acquiring and planting trees did not reveal any standard practices to ensure the quality of the trees during acquisition. As trees are planted, there is no planned follow-up or warranties managed with new trees. When trees are transplanted from an existing site to a new site, there is no follow-up. The City collaborates with volunteer groups and non-profits, and some of these members will temporarily store trees scheduled to be replanted on public property.

Funding

Stable and predictable funding is important to effective and efficient management of the urban forest. Trees are living organisms, constantly growing and changing over time and in response to their environment. Tree health and structure are influenced by a variety of biotic and abiotic factors, including nutrition, available water, pests, disease, wind, and humidity. With regular monitoring and maintenance, the negative consequences of these external influences on tree health and structure can be mitigated to increase the benefits and longevity of trees.

Young trees benefit greatly from early structural pruning and training. Simple, minor corrections can be applied cost effectively when a tree is young. However, if left unattended, these structural issues can increase liability and be very expensive to correct as trees mature. Eventually they may be impossible to correct without causing greater harm to the overall health of the tree.

Through regular monitoring of tree health, many nutritional deficiencies or toxicities, pest infestations, and diseases can be mitigated. Managers can also take preventative measures to ensure that these issues do not affect a greater part of the population. Some pests and diseases can be extremely destructive and costly to respond to, such as the issues of laminated root rot already found in some Sammamish parks.

Consistent funding is also critical for effective management of trees as they near the end of their life cycle. Over-mature trees often require more frequent inspection and removal of dead or dying limbs to reduce the risk of unexpected failure. A stable budget allows urban forest managers to program the necessary tree care at the appropriate life stage when it is most beneficial and cost effective.

As of 2017, the annual City budget for urban forestry services is $518,274, approximately 0.3% of the overall municipal budget.

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Table X: 2017 Municipal Urban Forestry Budget

Urban Forestry Item	Expenditure
ROW Landscape	$173,774
Typical Capital Project	$100,000
Arborists	$96,000
Tree Removal	$60,000
Tree Maintenance	$36,000
Volunteer Activities	$30,000
Assessments/Reports	$15,000
Office & Operating	$7,500
Total	$518,274.00
Sammamish Population	63,773
Budget Per Capita	$8.13

The total urban forestry budget is the sum of forestry budgets from three (3) departments; Parks and Recreation, Public Works, and Community Services (Planning Division). Together, the three (3) departments manage the urban forest. Each department has their own distinct budget for tree management based on their responsibilities. For example, the Parks and Recreation department has $30,000 allocated for volunteer activities while the Public Works department has $20,000 allocated for storm response and clean-up ($10,000 for arborists and $10,000 for tree removals). 70% of the total urban forest budget is from the Public Works department, in large part because the Public Works department is responsible for rights-of-way landscaping.

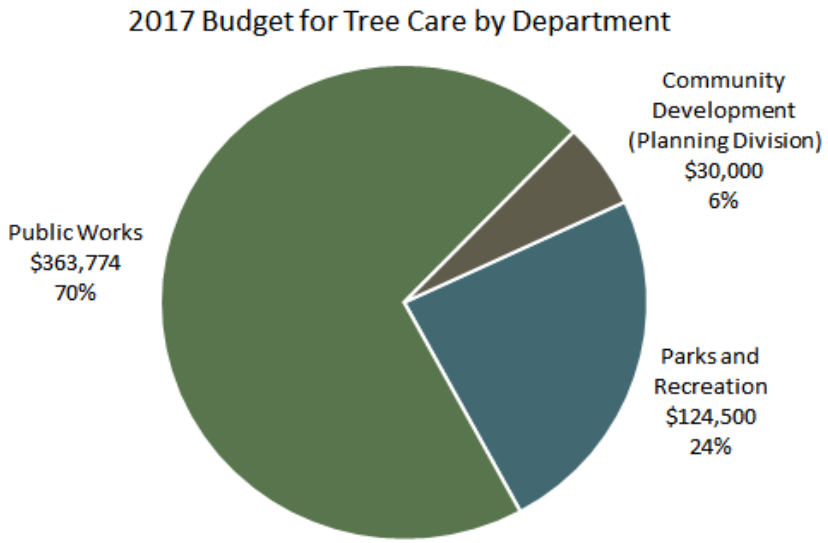

Figure X: 2017 Urban Forestry Budget by Department

With a population of roughly 63,773, the urban forestry budget represents a per capita investment of $8.13, which is higher than the national average of $7.50 (Arbor Day Foundation, 2016). To maximize the value and measure the effectiveness of the budget, community outreach events provide an opportunity to measure community satisfaction with tree care and forestry operations and gauge the sufficiency of the budget to meet the expectations of the community. In addition, regular assessments can quantify the benefits of the urban forest and show the return on investment for urban forestry expenditures.

Tree City USA

The Arbor Day Foundation is a 501(c)(3) nonprofit conservation and education organization founded in 1972 in Nebraska, United States by John Rosenow. It is the largest nonprofit membership organization dedicated to tree planting and provides the framework necessary for communities to manage and expand their public trees (The Arbor Day Foundation, 2012). Cities can achieve Tree City USA status by meeting four core standards of quality urban forestry management:

(1) Maintain a tree board or department that is legally responsible for the care of city trees.
(2) Enact a community tree ordinance which provides clear guidance for planting, maintaining, and removing trees from streets, parks, and other public places.
(3) Document the spending of at least $2 per capita toward the planting, care, and removal of city trees.
(4) Celebrate Arbor Day!

As of this publication, the City of Sammamish dedicates $518,274 towards total community forestry expenditure, and with a population of roughly 63,773, has a per capita investment of $8.13. However, the City is not currently a Tree City USA.

Major Changes and Threats to the Urban Forest

The City recognizes that strategic planning efforts must include consideration of the major changes and threats to urban forest sustainability that are above and beyond the natural processes that occur within the ecosystem, thus should include a long-term response in this plan. In particular, the City recognizes how climate change, development (human population growth) and major diseases and pests can have significant impacts on the sustainability of the urban forest as it exists today.

Climate Change

Projections on climate change suggest that Washington will have increased temperatures and decreased precipitation during future growing seasons (WA DNR, 2018). These changes will contribute to tree stress, making them more susceptible to insects and diseases. Historical evidence suggests that tree mortality is likely to increase significantly. The extensive droughts of 2012 and 2015 contributed to greater than expected tree mortality and damage across the state. Extraordinary weather events are likely to increase in years to come, including more frequent and stronger wind events. Climate changes will also create changes in the population dynamics of forest insects and pathogens. Research on climate change in these complex ecosystems is challenging and still evolving, and there is no clear consensus on future outcomes.

Development (loss of open space and forest)

Infrastructure is a necessary part of the development associated with a growing human population but can also have devastating impacts on the environment. Development can impact the urban forest and reduce overall canopy, health, and resilience. Development in such a densely forested

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area such as Sammamish will often require the removal of trees either for the structure itself or for the access routes necessary to construct and use the structure. In addition to the net loss of trees and canopy, there is also the threat of fragmentation.

Forest fragmentation is the disruption of large, contiguous, forested areas into smaller pieces of forest. These pieces are typically separated by roads, agriculture, utility corridors, subdivisions, or other human development. Fragmentation often leads to a decline in habitat quality and the degradation of ecosystem health. Furthermore, this degradation causes an imbalance to microclimates which increases their risk and susceptibility to invasive species damaging urban forest health and sustainability.

Diseases and Pests

Another important aspect to tree maintenance is staying alert to managing emerging diseases and pests that can be costly to control with individual trees. For sustainability of the entire urban forest, these are potentially catastrophic matters to consider. Among the many diseases and pests that affect trees, City staff and residents remain alert to the following:

- Dutch Elm Disease (DED) has devastated American elm populations, which are some of the most important street trees in the twentieth century. Since first reported in the 1930s, it has killed over fifty (50) percent of the native elm population in the United States (Forest Service, Northeastern Area State and Private Forestry, 2005). However, some elm species have shown varying degrees of resistance.
- Laminated Root Rot (LRR) is one of the most damaging root diseases amongst conifers in the pacific northwest. LRR is caused by the fungus *Phellinus weirii*. The disease is widespread in southern British Columbia, Washington, Oregon, northern California, western Montana, and northern Idaho (Forest Service, Pacific Northwest Research Station, 1995). Symptoms include crown yellowing and thinning, red brown stained outer heartwood, and laminate decay. The trees die from failure to take up water and nutrients because of the decay in the main roots. Their death is also accelerated by wind that downs trees.
- Swiss Needle Cast (SNC) is the name of the foliage disease of Douglas-fir caused by the fungal pathogen *Phaeocryptopus gaeumannii*. SNC disease symptoms include chlorotic (yellow) needles and decreased needle retention, resulting in sparse crowns and reduced diameter and height growth (OSU, 2017). Mortality from this disease is considered rare, but tree care and maintenance of this disease can be expensive and necessary in an urban setting.
- Douglas-fir Tussock Moth (DFTM) is a moth found in western North America. Its population periodically erupts in cyclical outbreaks (Wickman et al., 1998). Outbreaks of the Douglas-fir tussock moth appear to develop almost explosively, and then usually subside abruptly after a year or two. The caterpillars feed on the needles of Douglas fir, true fir, and spruce in summer. Forestry management to prevent tree damage from tussock moth outbreaks include four (4) activities: early detection, evaluation, suppression, and prevention. These four activities must be well integrated to insure adequate protection from the pest.
- Other Diseases and Pests. Information on specific diseases and insects that damage trees in our region have been identified by the Washington State Department of Natural Resources. Current online information is at: www.dnr.wa.gov/ForestHealth.

Regulations and Policies

City policies are required to comply with state and federal regulations. As such, this plan has been developed with consideration of such laws. The three most relevant regulations that directly

influence the management of urban forestry and land use in Sammamish are the State Environmental Policy Act (1971), the Growth Management Act (1990) and the Evergreen Communities Act (2008). In addition, the City has developed comprehensive plan policy documents and parks planning documents that provide overarching policy guidance in the development of this plan.

Endangered Species Act (1973)

The Federal Endangered Species Act (ESA) makes it illegal to sell, harm, harass, possess or remove protected animals from the wild. ESA also provides for the designation of critical habitat and prohibits the destruction of that habitat. Sammamish has identified critical areas as identified in the Growth Management Act (see below), which includes consideration of critical habitat identified in the ESA, in city ordinances to further ensure compliance with the ESA.

Migratory Bird Treaty Act (1918)

The Federal Migratory Bird Treaty Act (MBTA) protects all common wild birds found in the United States except house sparrow, starling, feral pigeon, and resident game birds such as pheasant, grouse, quail, and wild turkeys. The MBTA makes it unlawful for anyone to kill, capture, collect, possess, buy, sell, trade, ship, import, or export any migratory bird, including feathers, parts, nests, or eggs. When tree work and other ground- disturbing activities cannot be avoided during the nesting season, managers, supervisors, and crews are responsible for ensuring that activities do not result in any violation of the MBTA, as well as, the Federal Endangered Species Act which makes it illegal to sell, harm, harass, possess or remove protected animals from the wild.

State Environmental Policy Act (1971)

The State Environmental Policy Act (SEPA) applies to decisions by every state agency, county, city, port, and special districts (such as a school or water district) within Washington State. SEPA's basic policy of maintaining and improving environmental quality is implemented primarily through extensive procedural requirements designed to ensure that governmental agencies give proper consideration of environmental matters in making decisions on actions, whether proposed by private parties or the governmental entities themselves, that may impact the environment. Therefore, the SEPA process identifies and analyzes environmental impacts associated with decisions made by the Sammamish government. These decisions may be related to issuing permits for private projects, constructing public facilities, or adopting regulations, policies, and plans.

The SEPA review process helps agency decision-makers, applicants, and the public understand how the entire proposal will affect the environment. SEPA can be used to modify or deny a proposal to avoid, reduce, or compensate for probable impacts.

Growth Management Act (1990)

All cities and counties in Washington are required to adopt critical areas regulations by the Washington State Growth Management Act (GMA, Chapter 36.70A RCW) and urban forest management can support critical area regulations within this Act. In 1990, the State Legislature adopted the GMA on the basis that uncoordinated and unplanned growth posed a threat to the environment, sustainable economic development and the overall quality of life in Washington. Unique among states, the Act requires that municipalities prepare their own comprehensive plans that provide for growth and development in a manner that is locally and regionally consistent, achievable, and affordable.

The GMA defines critical areas as:

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a. Wetlands;
b. Areas with a critical recharging effect on aquifers used for potable water;
c. Fish and wildlife habitat conservation areas;
d. Frequently flooded areas; and
e. Geologically hazardous areas.

Sammamish has established environmental quality goals within the Comprehensive Plan that support the legislation objectives and protect critical areas. Cities are required to include the best available scientific research in developing policies and regulations to protect the functions and values of critical areas. Further to that end, jurisdictions must review, evaluate, and, if necessary, revise their critical areas ordinances per an update schedule. Sammamish has an inventory of critical areas and protection of these critical areas overlaps with the protection of the urban forest. The trees in the urban forest increase soil security to protect wetlands, waterways and flooded areas, and the branches and canopy provide ample real estate for wildlife to call home. It is important that the City plan for all the trees in the urban forest as a whole, not just critical areas. This notion is reinforced in Washington Administrative Code (365-190-060(1)), which specifies when classifying forest land resources that "Cities are encouraged to coordinate their forest resource lands designations with their county and any adjacent jurisdictions. Counties and cities should not review forest resource lands designations solely on a parcel-by-parcel basis."

Evergreen Communities Act (2008)

Within the state of Washington, the legislature passed regulations in 2008 designed to provide leadership and guidance for municipalities in the state related to urban forest management. Nicknamed the Evergreen Communities Act (Chapter 35.105 RCW), the regulations create an evergreen community's recognition program, and the criteria by which cities can be assessed and recognized as an Evergreen community. Although there is no current recognition being provided by the state because of this Act, the City of Sammamish continues to align with the criteria to be considered an evergreen City.

Guiding Policy Documents (municipal)

Within City policy documents, two (2) overarching documents have been created to provide strategic guidance that is integrated into this plan. The Sammamish Comprehensive Plan (SCP, 2015), and the Sammamish Parks Recreation and Open Space (PROS) Plan (2018) are discussed below.

The Comprehensive Plan (2015)

As the overarching guiding document for the City, the Comprehensive Plan aggregates other City visions and plans into one (1) cohesive source. The City of Sammamish Comprehensive Plan (SCP) guides the community's desires to balance future development with principles of conservation. The plan guides decisions on eight (8) elements; land use, environment & conservation, housing, transportation, utilities, capital facilities, shoreline, and parks, recreation and open spaces. Each of these elements receives a dedicated chapter of the SCP with goals and priorities that are formed to support the collective vision of the future for Sammamish.

The City has prioritized sustainability and health as overriding core values for the Comprehensive Plan. This core value reflects long-standing community values and a clear vision of Sammamish's commitment to quality of life issues, including those supported by this Urban Forest Management Plan. The SCP developed specific goals for Health and Sustainability that are contained within Framework for Health and Sustainability:

- HS.1 Create and protect healthy habitat.
- HS.2 Maintain a diverse ecosystem supporting a variety of wildlife.

- HS.3 Maintain Sammamish's forested character.
- HS.4 Conserve energy usage in buildings.
- HS.5 Conserve water and protect water quality.
- HS.6 Protect air quality.
- HS.7 Reduce energy consumption and emissions related to mobility.
- HS.8 Foster healthy neighborhoods and promote a citywide culture of environmental and human health.
- HS.9 Promote sustainable development through the use of environmentally sensitive building techniques and low impact stormwater methods.
- HS.10 Minimize the paved area of rights-of-way to the minimum infrastructure required for mobility and safety.
- HS.12 Promote inclusive citizen involvement in shaping decisions for Sammamish's future.
- HS.13 Support a regional economy that provides opportunities for economic vitality.

These goals and priorities can be achieved with the inclusive management of the urban forest. The goals and priorities (HS. 1 through 8) are all strengthened by an expanded urban forest canopy because of the many benefits provided by trees. The success of goals HS.9 and HS.10 increase the potential space for additional urban tree canopy. Goal HS.12 is being honored within this Plan because community input is a fundamental component to development of the UFMP.

More specifically in the SCP elements, the Environment and Conservation Goal (EC.10) directs the City to "maintain and improve the City's forested character" within the following policy framework:

- Policy EC.10.1 Preserve and enhance of the City's urban forest. Use trees and other vegetation, both native and non-native, as appropriate, in all restoration.
- Policy EC.10.2 Preserve trees on all public properties and facilities to the maximum extent possible.
- Policy EC.10.3 Maintain and enhance a street tree maintenance program. Use trees and other vegetation, both native and non-native, as appropriate, in all restoration.
- Policy EC.10.4 Encourage community residents and property owners to preserve the green and wooded character of existing neighborhoods.
- Policy EC.10.5 Within the city, allow off-site options for replanting and restoration where not feasible on-site in order to meet tree retention requirements and achieve tree canopy coverage and stormwater capture.
- Policy EC.10.6 Develop and enforce effective regulatory penalties and practices for unauthorized removal or damage of trees.
- Policy EC.10.7 Prioritize restoration and enhancement of environmentally critical areas and buffers, with the aim of enhancing ecosystem function.
- Policy EC.10.8 Consider incentivizing retention of trees on existing lots, prioritizing clusters and/or a continuous canopy with trees on adjacent lots when feasible.
- Policy EC.10.9 Promote regulatory tools that take into consideration the case-by-case context-sensitive nature of tree retention and canopy coverage.
- Policy EC.10.10 Create and support a robust and comprehensive Urban Forestry Management Plan starting in 2016.
- Policy EC.10.11 Develop incentives to prioritize the retention of high value trees, including heritage and/or landmark trees.

The City's attention to urban forestry matters in the SCP is very detailed in its mandate for active management of the forest. The SCP vision statement has aspirations of expanding the tree canopy and there are goals of maintaining the City's forested character with specific policies that

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influence how to achieve it. With the SCP's strong and explicit direction as a foundation, this UFMP provides the necessary 'roadmap' for success.

The PROS Plan (2016)

The Parks, Recreation and Open Space (PRO) Plan provides high-level guidance on the management and development of Sammamish's parks, recreation and open spaces, and the services provided by City staff. The PRO plan is part of the City's broader Comprehensive Plan and is consistent with the guidelines established by the Growth Management Act (GMA). The PRO plan has been regularly updated (2004, 2012, 2018) to remain relevant to Sammamish as the City evolves and maintains very specific objectives that influence how the urban forest is managed within City parks and properties.

The Parks and Recreation department is responsible for maintaining the 600 acres of developed parks, preserves, natural areas and special facilities. The PRO plan defines a mission for the department that is especially important to urban forestry:

Mission: Sammamish's Parks and Recreation system contributes to the quality of life for the community by creating a legacy of diverse and quality parks, exceptional recreation programs and protected natural resources. (PRO plan, 2018)

The PROS Plan also enumerates a series of goals and objectives that have been identified for the parks system. In particular, the goal for maintenance and stability includes specific direction in support of urban forest management:

[...]

GOAL 4: Maintain Sammamish parks and recreation facilities to ensure longevity of assets, a positive aesthetic and sensory experience, preservation of habitat and natural systems, and safety for park patrons.

[…]

4.2 Maintain an inventory of assets and their condition; update the inventory as assets are added, updated or removed from the system and periodically assess the condition of park and recreation facilities and infrastructure.

[…]

4.8 Establish a plant salvage program, in coordination with local nonprofits, volunteer groups and developers, that will support ecological restoration and public landscaping within the City of Sammamish, and that could include space for salvaged plants to be stored, watered and possibly propagated.

[…]

4.12 Support the implementation of the Urban Forestry Management Plan and the management practices to ensure the long-term health of the urban forest.

[...] (PRO Plan, 2018)

These PRO plan goals provide the strategic alignment necessary to ensure that actions by the parks and recreation department, staff and volunteers, are effectively considering the urban forest and tree's as essential assets to fulfilling the mission of the Parks and Recreation department.

Land Acquisition Strategy & Implementation Program

In 2017, the City adopted a strategy to acquire land within and adjacent to the City limits. This strategy was developed in response to concerns over increasing development activity. It provides policy guidance for the City to pursue land acquisitions with the following objectives:

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- Preserving natural resources
- Protecting Habitat
- And Retaining tree canopy

In the strategy, the City developed 10 criteria with which to evaluate land for acquisition. Included in this criterion will be evaluations of the existing tree canopy, the ecological value of the land and its connectedness (or fragmentation) from other natural areas. With new information now available about the urban tree canopy, the City can adapt this strategy to include information gathered within this UFMP.

Municipal Ordinance – The Tree Code

City's commonly develop ordinances to direct management of the urban forest. The National Arbor Day Foundation recognizes their value as a minimum requirement within their Tree City USA certifications. Although tree related regulations may be variable in terms of their location in City code, they are often referenced collectively as a City's tree code. The following sections briefly review the tree code to provide the framework under which the City staff and the community are required operate.

Authorization of Power authorizes the City to manage trees.

- **Chapter 2.10** gives the City Manager the authority to appoint a designee.
- **Chapter 21.10** defines the "Director" as the director of the Sammamish DCD or their designee.
- **Chapter 21A.05** gives the Director (as defined above) the ability to use his/her best judgment on the use and enforcement of regulations as they relate to development and land use.

- **Chapter 21A.100** gives the Director the authority to make decisions on denying or approving permits.

Definitions terms related to infrastructure, development, and the environment.

- **Chapter 21A.15** defines many key terms related to the management of the urban forest including a definition of when a tree is of sufficient size to become subject to tree codes and protections.
  - **Significant trees** are either a coniferous tree with a diameter of eight (8) inches or more DBH; or a deciduous tree with a diameter of twelve (12) inches or more DBH. The code does not distinguish between street trees, park trees, or private trees.
  - **Heritage trees** are trees that grow to greater than 22 inches in diameter.
  - **Landmark trees** are trees that grow greater than 32 inches.

Trees in Shoreline Areas, Critical Areas, and Buffers are protected and are subject to special environmental laws and regulations.

- **Chapter 25.06** requires that all development projects in these special jurisdictions shall include measures to lessen the environment impacts and promote ecological restoration.
- **Chapter 21A.50** provides special exemptions and regulations in critical areas for the removal of vegetation or trees in hazardous areas.

Tree Related Fees and Penalties are established to penalize violations of public tree codes, encourage compliance, and provides penalties as a punitive deterrent:

- **Chapter 18.45.070** sets a maximum fine and sentencing for the violation of Chapter 21.

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Private Land Clearing is defined as the clearing and removal of vegetation (including trees) on private property.

- **Chapter 16.15** requires a permit for private land clearing.

Tree Protection During Construction is code language that recognizes how trees can often be damaged during construction and require special protections to ensure their viability.

- **Chapter 18.45** defines measures that must be taken in order to retain and protect trees from construction damage during land development projects.

Tree Removal Permits are issued to allow tree removal on private property and in parks. It limits the number of removals in any given year depending on property size.

- **Chapter 21A.37.240 (1)** limits the number of significant trees that may be removed after a tree removal permit is obtained.
- **Chapter 21A.37.240 (2)** limits the number of significant trees that may be removed on lots

There are four different types of permits:

- **Healthy Tree Removal** permit is for removal of healthy significant trees.
- **Hazard Tree Removal** requires the designation of "hazardous tree" through an assessment conducted by a Tree Risk Assessment Qualified Arborist (ISA-TRAQ) and notification to the City.
- **Unhealthy Tree Removal** requires the designation of "unhealthy tree" through an assessment conducted by an ISA- TRAQ arborist and notification to the City.
- **Imminent Threat Tree Removal** allows property owners the ability to remove significant trees on their property that could cause serious or life-threatening injury or death at any time without a permit. Following removal, a report must be submitted to the city. If the imminent threat is disputed, a retroactive permit is required.

Tree Replacement Standards defines acceptable species and standards for the replacement of trees.

- **Chapter 21A.37** defines the replacement requirements for removed trees and provides different replacement criteria for significant, heritage and landmark trees.

Regional Resources

Regional urban forestry resources are organizations which provide services to aid in the protection, maintenance, and development of the urban forest. These range from active volunteer groups in the City, to nonprofits, academic institutions, state and federal government agencies. Some of the organizations and programs described below have been used by the City. Others may be good choices for the future.

Washington State Urban and Community Forestry Program

Under the Washington State Department of Natural Resources (DNR), the Washington State Urban and Community Forestry (UCF) Program provides technical, educational and financial assistance to Washington's cities and towns, counties, tribal governments, nonprofit organizations, and educational institutions. The mission of the UCF is:

"To provide leadership to create self-sustaining urban and community forestry programs that preserve, plant and manage forests and trees for public benefits and quality of life."

A key service provided by the UCF is its collection of financial assistance programs including; Community Forestry Assistance Grants, Tree City USA Tree Planting & Maintenance Grants, Arbor Day Tree Reimbursements, Landscape Scale Restoration Grants, Scholarships, and Internships. All forms of financial assistance, their availability in a given year, and their associated dollar amounts are dependent on continued funding through annual grant allocations from the USDA Forest Service. The UCF communicates events, educational opportunities, and other information through a Tree Link Newsletter.

The Washington Community Forestry Council advises the DNR on policies and programs. The program does this by teaching citizens and decision-makers about the economic, environmental, psychological, and aesthetic benefits of trees. The program also helps local governments, citizen groups, and volunteers' plant and sustain healthy trees throughout Washington. The council was established under RCW 76.15.

FORTERRA Green City Partnerships

The Green City program helps urban communities in the Puget Sound region effectively steward their natural open spaces through best practices. Forterra partners with local municipalities to develop achievable goals, shared visions, long-term plans, and community-based stewardship programs to care for the valuable forests and natural areas in our urban environments. Specific services include:

- Citywide forested park and natural area assessment
- Strategic and restoration planning
- Volunteer program development and guidance
- Education and training for volunteers
- Restoration tracking systems
- Green City outreach and community engagement
- On the ground stewardship projects and event support

The Green City Partnerships share three core goals:

- Improve the quality of life, connections to nature, and enhance forest benefits in cities by restoring our forested parks and natural areas
- Galvanize an informed and active community
- Ensure long-term sustainable funding and community support

These unique public/private partnerships bring together public, private, and nonprofit stakeholders to create a sustainable network of healthy forested parks and natural areas throughout the region.

Futurewise

Futurewise is a non-profit that has worked to prevent sprawl in order to protect the resources of communities in Washington State. Futurewise was founded to help support implementation of Washington State's Growth Management Act, and to focus on preventing the conversion of wildlife habitat, open space, farmland, and working forests to subdivisions and development.

Futurewise provides data analysis and research, community and environmental planning and policy development, community engagement and outreach, grassroots organizing and advocacy, legislative initiatives, and litigation. These services are all provided through strategic collaboration with businesses, governments, community organizations, and nonprofit partners.

Municipal Research and Services Center

The Municipal Research and Services Center (MRSC) is a nonprofit organization that helps local governments across Washington State better serve their citizens by providing legal and policy

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guidance on any topic. The MRSC collects state and local information from parks and recreation department's, land use planners, utilities, and citizen organizations to promote and manage urban forestry resources. Example resources include local urban forestry programs in Washington State, legal references and related articles.

The University of Washington Restoration Ecology Network

The UW-Restoration Ecology Network (UW-REN) is a tri-campus program, serving as a regional center to integrate student, faculty and community interests in ecological restoration and conservation. Students in the program are required to complete capstone projects, where students of different academic backgrounds work together to complete a local restoration project. Students learn how to plan, design, install, and monitor a restoration project while working in teams. The Capstone spans three academic quarters beginning in the fall. Communities collaborate with the program to develop RFPs which then provide volunteers for the community and excellent learning experiences for the students.

Sammamish Stormwater Stewards

The Sammamish Stormwater Stewards are leading a group of concerned citizens and community leaders to steward the stormwater system in Sammamish. The organization's goals are to educate citizens about stormwater systems and advocate policy makers to prioritize the implementation and maintenance of stormwater systems. To accomplish these goals, the stewards train and support a volunteer core and promote stormwater programs. The "Adopt-a-Stormwater Pond" project encourages the planting of native species around stormwater facilities, where appropriate and allowable. The stewards also strive towards a Citywide pollinator pathway. This group comprises members of the City of Sammamish that have dedicated themselves to the cause of high-quality municipal stormwater systems and to restore native habitat where possible around stormwater systems.

Sammamish Community Wildlife Habitat Project

The initial goal of the Sammamish Community Wildlife Habitat Project when it was formed in November 2008 was to help Sammamish become a certified Community Wildlife Habitat with the National Wildlife Federation. We earned our certification 3/4/2011 and were the 12th in WA state and the 51st in the country. The organization's ongoing goals are to focus on continuing educating Sammamish residents about sustainable garden practices (such as reducing or eliminating chemical fertilizers and pesticides, conserving water, planting native plants, removing invasive plants and composting), and holding community events and educational programs. The mission is to make the Sammamish community healthier for local residents and wildlife.

Washington Native Plant Society

The Washington Native Plant Society mission is to promote the appreciation and conservation of Washington's native plants and their habitats through study, education, and advocacy. The organization collaborates with Sammamish on the Native Plant Stewardship Program. The Native Plant Stewardship Program educates community volunteers about the region's native plants and plant communities and teaches how to use this knowledge to protect and restore Washington's natural ecosystems.

EarthCorps

EarthCorps is a human capital development program where corps members learn leadership skills by working collaboratively, leading community volunteers, and executing technical restoration projects along shorelines, trails and in forests. Puget Sound Stewards help EarthCorps run restoration events, monitor plant growth, adapt management plans, and educate the

community. EarthCorps collaborates with businesses, nonprofits, and communities to offer volunteers who are passionate about conservation and restoration.

Comparison Matrix / Other Cities

The following neighboring jurisdictions were evaluated within this UFMP to provide additional context to urban forest management in the City. Of these cities, only Bellevue has a specific goal for their urban forest canopy, and Kirkland is the only city with an overarching urban forest management plan.

Municipality	Benchmarks	Policy Documents
City of Bellevue	40% Canopy goal in 2015 Comp Plan Urban Ecosystem Analysis completed in 2008	No stand-alone forest policy document, but they do have a formally described forest management program and a City staff arborist.
City of Issaquah	No Canopy Goal	No stand-alone forest policy document.
City of Kirkland	No Canopy Goal	Adopted an Urban Forest Strategic Management Plan in 2013 with a six-year review cycle.
City of Mercer Island	No Canopy Goal	No stand-alone forest policy document.
City of Redmond	No Canopy Goal	Currently drafting a tree canopy strategic plan (as of 2017)

Summary Conclusions

Forestland in Sammamish is in transition. In conjunction with development and population growth, iconic forest stands are being replaced in the landscape with a broader mix of urban-adapted species. As the landscape becomes more diverse, management strategies for the urban forest will need to adapt as well. Unlike traditional forestlands, an urban forest requires a proactive management approach to ensure that trees are structurally pruned and maintained for clearance, safety, and to fulfill their intended role in the landscape. The urban environment poses particular challenges to tree health, including planting site limitations, compacted soils and reduced organic matter, disruptions to soil biota, pollution, and increased exposure to mechanical injury (e.g, from vehicles, pedestrians, and pets). Regular inspections and routine maintenance are necessary to support tree health and promote greater longevity and sustainable benefits. To date, the City of Sammamish has managed the community urban forest with a reactive approach that assigns resources and staff to address issues as they occur or when notification is received from the public or field staff.

To adapt urban forest operations for a more proactive approach, the City will need to advance its knowledge of the urban forest resource by completing an inventory of the public tree resource and identifying a means and methodology for maintaining current tree data. Ideally, an inventory database will track the location of trees along with species, relative age (DBH), general condition, maintenance needs, and relevant history (e.g., previous failure, inspections). The information can be used to develop annual work plans and projected budgets.

Researchers and industry professionals have developed standards and best management practices (BMPs) for the stewardship of urban forests worldwide. This combined knowledge and experience has resulted in sustainability indicators for evaluating urban forest programming (TABLE X). These indicators provide a benchmark for existing operations in Sammamish and suggest additional actions for increasing resilience and sustainability.

Currently urban forest operations are divided between three departments. Regulations, including city code and development standards support tree protection, however, these policies are not well enforced. Program efficiency can be improved by creating a position for a high-level urban forestry planning professional to lead a multidisciplinary team. This will facilitate interdepartmental cooperation and enforcement of policies and codes.

Existing tree planting and replacement projects are opportunistic rather than the result of strategic planning. Ideally a planting program is driven by canopy cover goals, environmental services, and equity considerations. A focused approach to species diversity and age distribution is critical to resource resilience. There is a widely accepted rule of thumb that no single species should represent greater than 10% of the total population, and no single genus more than 20% (Clark et al, 1997). This strategy provides greater protection and resilience in an urban forest resource by minimizing losses when a catastrophic pest or disease is introduced [e.g., Dutch elm disease (Ophiostoma ulmi) and emerald ash borer (Agrilus planipennis)]. A diverse species composition also provides protection in the face of extreme storms, drought, climate fluctuations, and the myriad of other stressors that impact the health of an urban forest. In addition, promoting resilience provides stability in the flow of environmental benefits and in the costs associated with maintaining an urban forest. As we gain a better understanding of the effects of a changing climate, the emerging consensus among industry leaders is that we should be increasing diversity in new tree plantings so that over time no species represents more than 5% of an urban forest resource.

Funding for the management of the community tree resource is currently oriented toward reactive tree care. As the City transitions to a more proactive approach additional resources and sustainable funding streams will need to be identified, including exploring collaborations, engaging partners, and identifying grant opportunities.

Indicators of a Sustainable Urban Forest THE MGMT APPROACH	Sammamish Today	Performance Levels			Overall Objective
		Low	Moderate	Good	
Tree Inventory	The city has started to inventory parks and has no inventory of trees in the rights-of-way,	No inventory or out-of-date inventory of publicly-owned trees.	Partial or sample-based inventory of publicly-owned trees, inconsistently updated.	Complete, GIS-based inventory of publicly-owned trees updated on a regular, systematic basis.	Comprehensive, GIS-based, current inventory of all intensively-managed public trees to guide management, with mechanisms in place to keep data current and available for use. Data allows for analysis of age distribution, condition, risk, diversity, and suitability.
Canopy Assessment	First assessment of the city was completed in 2018 based on 2015 imagery.	No tree canopy assessment	Sample-based canopy cover assessment	High-resolution tree canopy assessment using aerial photographs or satellite imagery	Accurate, high-resolution, and recent assessment of existing and potential city-wide tree canopy cover that is regularly updated and available for use across various departments, agencies, and/or disciplines.
Management Plan	The city is developing a strategic urban forest management plan and anticipates implementation in 2018	No urban forest management plan exists.	A plan for the publicly-owned forest resource exists but is limited in scope, acceptance, and implementation.	A comprehensive plan for the publicly owned forest resource exists and is accepted and implemented.	Existence and buy-in of a comprehensive urban forest management plan to achieve citywide goals. Re-evaluation is conducted every 5 to 10 years.
Risk Management Program	Inventories have provided information on risk issues. Imminent threats are addressed, though much of remaining risk abatement work is done reactively	Request-based, reactive system. The condition of publicly-owned trees is unknown.	There is some degree of risk abatement thanks to knowledge of condition of publicly-owned trees, though generally still managed as a request-based reactive system.	There is a complete tree inventory with risk assessment data and a risk abatement program in effect. Hazards are eliminated within a set time period depending on the level of risk.	All publicly-owned trees are managed for maximum public safety by way of maintaining a city-wide inventory, conducting proactive annual inspections, and eliminating hazards within a set timeframe based on risk level. Risk management program is outlined in the management plan.
Maintenance Program of Publicly Owned Trees (trees managed intensively	Few of Sammamish's trees have been assessed and inventoried, and there is almost no information documented about in the public rights-of-way or city managed facilities	No maintenance plans are in effect.	Only reactive management efforts to facilitate public use (risk abatement).	Maintenance plans are in place for publicly-owned areas focused on managing ecological structure and function and facilitating public use.	The ecological structure and function of all publicly-owned trees are protected and enhanced while accommodating public use where appropriate.
Planting Program	Currently there is no discrete budget item for annual planting work across departments. Planting locations are more opportunistic, less strategic.	Tree establishment is ad hoc.	Tree establishment is consistently funded and occurs on an annual basis.	Tree establishment is directed by needs derived from a tree inventory and other community plans and is sufficient in meeting canopy cover objectives.	Comprehensive and effective tree planting and establishment program is driven by canopy cover goals, equity considerations, and other priorities according to the plan. Tree planting and establishment is outlined in the management plan.
Tree Protection Policy	Regulations are in place via tree ordinances and development code. An arborist is involved in plan reviews and inspections. Code enforcement is limited after permits are issued.	No tree protection policy.	Policies are in place to protect trees, but the policies are not well-enforced.	Protections policies ensure the safety of trees on public and private land. The policies are enforced and supported by significant deterrents and shared ownership of city goals.	Comprehensive and regularly updated tree protection ordinance with enforcement ability is based on community goals. The benefits derived from trees on public and private property is ensured by the enforcement of existing policies.
City Staffing and Equipment	Staff are trained for tree work, but ISA certified arborists are needed for supervision. ISA certified arborists are contracted to fill in gaps.	Insufficient staffing levels insufficiently trained staff, and/or inadequate equipment and vehicle availability.	Certified arborists and professional urban foresters on staff have some professional development, but are lacking adequate staff levels or adequate equipment.	Multi-disciplinary team within the urban forestry unit, including an urban forestry professional, operations manager, and arborist technicians. Vehicles and equipment are sufficient to complete required work.	Adequate staff and access to the equipment and vehicles to implement the management plan. A high-level urban forester or planning professional, strong operations staff, and solid certified arborist technicians.
Funding	Public funding supports primarily reactive tree care.	Funding comes from the public sector only and covers only reactive work.	Funding levels (public and private) generally cover mostly reactive work. Low levels of risk management and planting in place.	Dynamic, active funding from engaged private partners and adequate public funding are used to proactively manage and expand the urban forest.	Appropriate funding in place to fully implement both proactive and reactive needs based on a comprehensive urban forest management plan.

What Do We Want?

Community Input

[This section to be enhanced with second draft community feedback]

Sammamish conducted substantial outreach to public stakeholders, residents, and non-profit agency stakeholders. Connections and relationships that develop among stakeholders are valuable outcomes of the urban forest outreach process. This provided a wide context for the challenges that face Sammamish's urban forest. As community awareness and actions associated with urban forestry move forward, it will be the people of Sammamish that ultimately realize the value of their contributions to their community in the trees that grow around them.

Stakeholder Interviews

In January of 2018, a team from the Davey Resource Group met with several municipal and regional urban forest stakeholders. These stakeholder interviews occurred over three days and included urban planners, utility experts, public works, local business owners, City staff, and City leadership. Their valuable contributions guided the framework of the UFMP.

Community Workshops

The first community meeting was a public education workshop held on January 31, 2018. During this meeting, issues, concerns and values about the urban forest were explored with members and visitors in attendance. Later, another public meeting (June 21, 2018) provided a presentation to the Parks & Recreation Commission and Planning Commission at a joint meeting. The purpose of this presentation was to share information about the UFMP development process, progress that had been made, and next steps.

A third meeting occurred on July 9th, 2018, when with a City Council Study Session presentation. This was another opportunity to solicit leadership input for the UFMP development process. The results of these public meetings helped the City to understand the needs and concerns of the community, its elected leadership.

Educational Pop-Ups

To raise awareness in the community and initiate relationships for long-term stewardship, the City conducted pop-up events. The City set up a kiosk with various educational resources at each pop-up event. The first pop was conducted on April 21 at the Sammamish Lodge Near Beaver Lake. This pop-up was conducted as part of a larger Earth Day celebration. The second and third pop-ups were conducted during the City's Farmers Market. These pop-ups occurred on May 16, 2018 and May 30, 2018, from 3:30pm to 8:00pm.

The pop-up kiosk contained informational flyers, half a dozen educational storyboards, and various trinkets and small items as keepsakes for visitors. A sign-up sheet was available for visitors to record their contact information.

The educational storyboards covered the following topics:

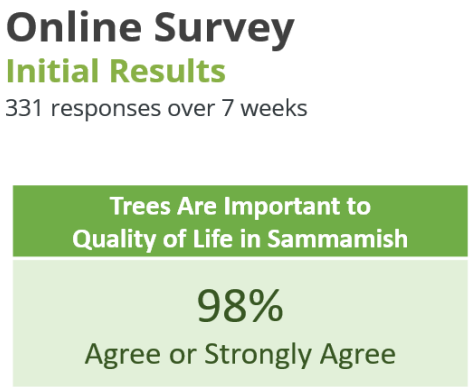
- Land cover and canopy cover
- Benefits of the urban forest
- Pests, diseases, and threats to the urban forest
- Desired outcomes from the UFMP

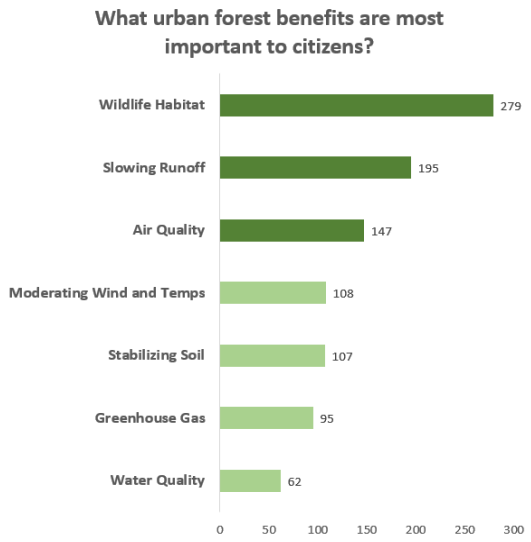
- Canopy health
- Forest fragmentation
- Satisfaction with public tree care

Online Community Survey

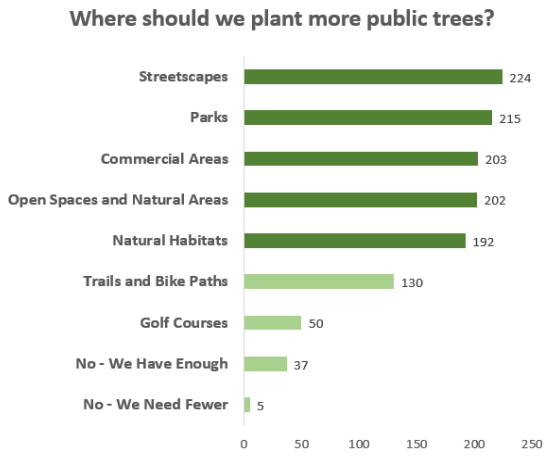
From the initial stakeholder outreach, a survey was developed with the intention of understanding and benchmarking Sammamish community values and views on the urban forest. Survey data was collected online. The survey opened on April 20, 2018 and the survey closed on June 4, 2018 with 331 responses having been gathered (Appendix X).

The results showed that ninety-eight percent (98%) of respondents “agree” or "strongly agree" that public trees are important to the quality of life in Sammamish. When asked to rank the ecological benefits most valued from the urban forest, respondents expressed the greatest appreciation for wildlife habitat, with 84% indicating that it is the most important benefit, followed by slowing runoff from precipitation (59%) and improving air quality (44%). Improving water quality was ranked of least importance at 19% (Figure X).





Sammamish Needs More Public Trees
81% Agree or Strongly Agree



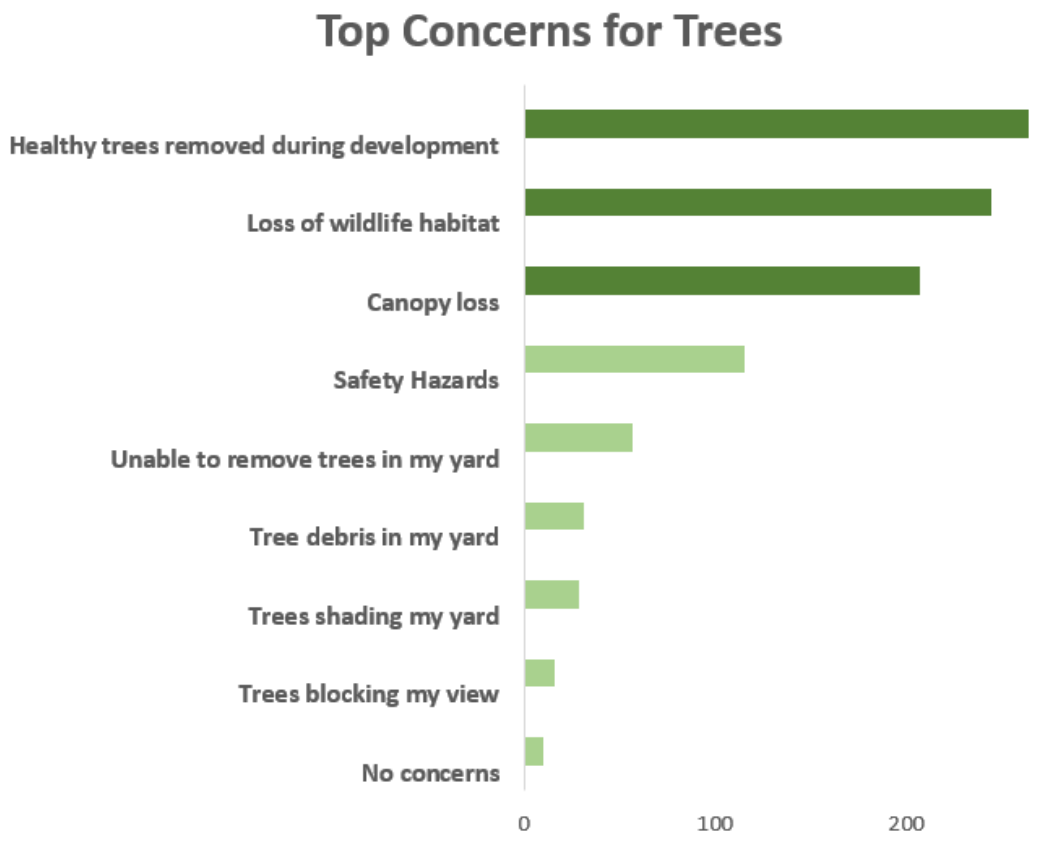
Sixty-seven percent (81%) of respondents "agree" or "strongly agree" that Sammamish needs more public trees. The most popular location for more trees is in streetscapes (69%), followed by parks (66%), commercial areas (62%), then open spaces and natural areas (62%), and trails and bike paths (40%). Five (5) respondents (1.5%) indicated a preference for fewer trees.

What is your satisfaction level with care of public trees?		
Satisfied	Neutral	Dissatisfied
58%	29%	13%

How often do you encounter...		
Trees Blocking the Right-of-Way	Trees with Poor Structure	Trees in Poor Health
62% Never	64% Never	45% Never

In general, respondents are content with the current level of maintenance, with 58% saying they are “satisfied.” Only 13% of respondents indicated they are “Dissatisfied” with the care of public trees. When asked how often respondents encounter several tree issues, 62% never encounter

trees blocking the right-of-way, 64% never encounter trees with poor structure, and 45% never encounter trees in poor health. (Figure X). Of those respondents who do encounter issues, less than 10% of responses found issues more frequently than a several times a year.



When asked to rank their top concerns for trees in Sammamish, respondents expressed that the removal of healthy trees during development is the most important concern (80%), followed by loss of wildlife habitat (74%) and canopy loss (63%). Trees blocking personal views was ranked of least importance at 5% (Figure X). Healthy trees removed during development garnered many passionate comments. Anecdotes from the public workshops and pop-ups affirmed that people are often surprised by land clearing associated with development. They often question the way trees are selected for removal or retention with the impression that too many trees are being removed in developments.

Forty-four percent (44%) of respondents are aware of City tree regulations because of news articles and 38% are aware because of personal experience. 20% of respondents reported that they were not aware of City tree regulations. Of respondents who had experience with these regulations, 15% reported that their experience was easy and reasonable while 9% reported their experience was difficult and too strict. 56% reported that they had no opinion, or the question was

not applicable (Figure X).

What is your awareness of City tree regulations?		
Aware from Personal Experience	Aware from News Articles	Was Not Aware
38%	44%	20%

What is your experience with City tree regulations?		
Easy and Reasonable	Difficult and Too Strict	No Opinion
15%	9%	56%

Tree removal regulations were a polarizing topic among survey respondent comments.

1. “To remove an unhealthy tree (endangering my property) I need to substitute it with another one plus provides an expensive arborist's report. To remove the same tree as healthy (just because I want) I just need to substitute with a new tree. And if a tree falls "by itself" then I don't need to provide anything. What’s the point? Also, since a substitution tree is required, one cannot really "thin" one's dense private forest from 30 trees to 29, without applying for a grading permit (in which case it would be easier to remove as much as possible instead of a reasonable 1 that one wanted). Regulations are not flexible.”
2. “I have lived in a rented house on an acre of forested land in Sammamish for more than 8 years, and my 15-year-old daughter knows every tree, bush and lichen in this acre. To our horror, many of the neighbors have cleared forest for no other reason than to get a sunnier yard. It is heartbreaking that this is allowed. The removal of forested areas and fencing off what is left will destroy everything this area. We need to learn, as a community, that we share our spaces with other living beings. A bear has been visiting our plum tree every year and has broken off several big branches, and we could not be happier about seeing it each year! We are one of the few remaining areas of forest left in the immediate vicinity that is not fenced off or just gone. I STRONGLY support enforced regulations to stop the irreversible deforestation of privately owned areas of Sammamish.“
3. “Developers get away with a slap on the hand if they remove trees to be protected "in error". This needs to be addressed. Make it hurt their bottom line by placing huge fines based on caliper inch of tree removed and/or actual value of the trees as developed by ISA, as some other cities have adopted.”
4. “Due to my lot size, I cannot replant the mitigation requirement. I have 7 large size conifers on my property of 0.25 acre.”

5. “I was required to replant from a select list of trees based on number of diseased trees I took down. I was able to afford to do this, but I am not sure this is a viable alternative for many.”
6. “As a private owner with lots of trees, we are told we can't remove any of them, including unsightly maple suckers from stumps from 10-20 years ago, without an arborist report. Meanwhile acres of mature conifers are cleared for development with no consideration for wildlife habitat.”
7. “We had a tree impacting our foundation. The requirement to pay for an arborist for a clearly visible impact and hazard is ridiculous. The process was weeks long and very expensive for the average homeowner trying to remove/ mitigate a dangerous tree.”
8. “Based on our experience, City tree regulations are beyond lacking and insufficient. The staff is trained extremely poorly on the issuing of tree removal permit process. It results in healthy PROTECTED trees being removed without any consideration. Also, no transparency on how the City enforces the preservation of 35% of significant trees in new developments. There is also no accountability for builders or new house-owners in these developments to ensure survival of three trees post-construction. Have multiple examples on this, unfortunately. “
9. “In my case, the private property is HOA open space. The process to get trees managed is difficult and the information needed is unavailable and the City is short-staffed. I have not been able to get the HOA plat development plans or documents used to designate the open space as critical wetland. City staff could not help and sent me to outside agencies which are not responding. The City requested a forest management plan which is expensive, and King County would not cover the cost of the plan since the plat is in the City of Sammamish.”

Respondents were asked to indicate their level of support for possible urban forestry policies and initiatives at the City. When asked “Would you support the creation of a business licensing process to categorize and monitor businesses practicing arboriculture in the City? “83% answered “Yes” or “Maybe (with conditions)”. 97% of respondents answered “Yes” or “Maybe (with conditions)” to the implementation of punitive policies for developers who violate tree regulations. Finally, 68% of respondents supported the creation of a special property tax to directly fund the urban forestry program (Figure X). As a related topic, 88% of respondents supported the creation of a City staff arborist position to serve the community as a point of contact for tree issues.

Do you support...		
Business License for Arborist?	**Punitive Policies for Violations?**	**Special Property Tax for Urban Forestry?**
83% Yes or Maybe (With Conditions)	97% Yes or Maybe (With Conditions)	68% Yes or Maybe (With Conditions)

Summary Considerations for UFMP (Conclusions)

Already considered an asset by residents, Sammamish has an opportunity to further improve the urban forest through increased public outreach, streamlined permitting, and the addition of a City arborist position. Public engagement on urban forestry issues has demonstrated that the public is generally satisfied with the City's activities on public property. Community members had a wide range of views regarding existing tree regulations and associated processes.

There is general agreement from survey respondents that too many healthy trees are removed from properties during development, and the issue strikes residents as a primary tree issue in Sammamish. This is especially important because the community views trees and the urban forest are fundamental to Sammamish's identity as a community.

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How Do We Get There?

Over the next 20 years, the City of Sammamish will be able to enhance management of the urban forest through implementation of actions recommended in this plan. The decision to develop a plan with a 2040-time horizon was primarily based on the precedent established by the City with other long-range planning documents. Additionally, growing and improving Sammamish' urban forest are slow processes. Tree physiology for most trees in Western Washington can take up to seven (7) years to establish after planting, and another ten (10) years before they reach functional maturity. Trees provide the majority of their ecosystem services when they reach functional maturity. For this additional reason, it is essential that urban forest planning consider at least twenty (20) years within the Plan framework as a reasonable expectation for achieving the desired state of the urban forest.

The long-range strategic goals provided in this plan will address three (3) guiding principles of a sustainable urban forestry program:

- **Urban Forest Sustainability** – That the urban forest is an asset which provides benefits that the community wishes to protect and maintain. Associated goals are intended to improve the urban forest resource over the next twenty (20) years by developing detailed expectations for the urban forest. To accomplish these goals, the most common tactic will be to increase the amount of information the City maintains about its urban forest resource. This includes activities like routine tree canopy assessments and maintaining a public tree inventory, both of which are fundamental to management. Since these activities require substantial expenses to an urban forestry program, maintaining this information requires significant planning and consideration.
- **Efficiency in Municipal Operations** – That the city organizes in ways that are efficient. Associated goals are intended to drive improvements in City policy and practices by improving efficiency and alignment of efforts within City departments. The common tactics for accomplishing these goals center around developing policies that promote routine tree inspection and formalized tree management strategies for City-owned trees. These goals encourage the City to improve its awareness and mitigation of tree hazards and eliminate barriers to effective urban forest management.
- **Community Collaboration and Engagement** – That the community can be engaged and provide support for urban forest management. Associated goals build stronger community engagement and public participation in urban forest stewardship. Common actions include coordinating with the public and encouraging the participation of citizens and businesses to align with the City's vision for the urban forest.

The research into the City's current and historical efforts in urban forestry has revealed numerous opportunities to enhance the understanding of the urban forest resource as well as improve efficiency in tree maintenance operations. Through plan implementation, criteria and indicators will become increasingly available for establishing performance measures. These measures will eventually guide managers in ways that improve the health of the urban forest resource and the effectiveness of their management approach. The criteria and indicators proposed by Kenney, et al (2011) were used as a reference standard to assess the current urban forestry practices in the City and provided the framework for the following recommended goals. An overview of this reference standard as it applies to Sammamish is in Appendix A.

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Urban Forest Sustainability

Urban Forest Goal #UA1 - Maintain overall canopy cover

Actions Include:

A. Develop and adopt an overall canopy goal.
   a. Identify specific goals by land-use and zoning
   b. Update canopy goals inside the Comprehensive Plan.
B. Enhance Canopy in Key Areas
   a. Plant trees in sub-basins to improve stormwater management, protect existing natural resources, and enhance overall canopy cover,
   b. Plant trees in high-profile areas to maintain Sammamish's forested character.
      i. Gateways into the city
C. Assess urban tree canopy every ten (10) years to determine changes and evaluate progress.

Urban Forest Goal #UA2 – Increase and promote resilience in the urban forest.

Actions Include:

A. Develop a city-wide planting plan
   a. Include right-tree right-place in planting policies.
   b. Select species to improve diversity.
      i. No single species represents >10% of the resource.
      ii. No single genus represents >20% of the resource.
      iii. No single family represents >30% of the resource.
   c. Reduce reliance on overused species
   d. Reduce forest fragmentation
B. Develop an approved tree list as a separate policy document that can be updated routinely and independently from other city policy documents.
   a. Identify species and appropriate use for rights-of-way, parks, and private property
   b. Identify and maintain a broad palette of regionally compatible species
      i. Include native and adapted species
   c. Identify pest and disease resistant varieties where available.
C. Develop an Integrated Pest Management Program to assess and mitigate urban forest health issues.
   a. Laminated Root Rot
   b. Invasive Species

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Urban Forest Goal #UA3 - Update design, construction and development standards that apply to trees and planting sites.

Actions Include:

A. Require compliance with ANSI A300 as the standard for care in all tree work.

B. Develop design standards that include optimal design standards for large-stature trees.

   a. Suspended sidewalks.

   b. Pervious concrete.

   c. Structured soils.

   d. Green roofs.

C. Develop requirements that landscape designs and planting plans consider existing infrastructure above and below grade.

D. Establish tree inspections or audit requirements in development projects to ensure trees planted or protected remain healthy.

Urban Forest Goal #UA4 - Enhance tree bank (fund) for applications beyond parks

Actions Include:

A. Revise the tree in-lieu fund to create provisions for trees to be planted on private properties.

   a. Develop an audit inspection program related to tree in-lieu fee collection and distribution.

   b. Develop a non-profit partnership to improve administration of funds.

   c. Develop partnerships with HOA's to fund tree planting on private properties.

B. Ensure funds are dedicated specifically for tree care operations, including planting and replacement.

C. Identify opportunities for additional sources of revenue.

   a. Appraisal fees for trees damaged in vehicular accidents.

   b. Fines for malicious damage to public trees.

   c. Charitable contributions and 'in-memories'.

Urban Forest Goal #UA5 - Assess the ecosystem services provided by public trees and natural areas

Actions Include:

A. Complete a resource analysis (using i-Tree or another model).

   1. Use i-Tree to evaluate the current composition, benefits, and benefit versus investment ratio of the community urban forest.

B. Periodically review changes and improvements to benefits, composition, and benefit versus investment ratio.

   1. Consider results and alignment of UFMP goals, objectives, and actions.

C. Report changes and progress in the State of the Urban Forest Report.

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Urban Forest Goal #UA6 - Collect and maintain a complete inventory database for the community tree resource

A. Develop a standard tree inspection protocol.
    a. Inspect existing trees on a 7 to 10-year inspection cycle.
        i. Record key information for each site according to International Society of Arboriculture Best Management Practices.
            1. Genus, species, diameter (DBH), condition, and location
        ii. Document tree condition and risk factors
            1. Identify signs or symptoms of disease, pests, and abiotic disorders, including environmental stress (e.g., water management, soil conditions, and nutrient availability).
            2. Identify obvious signs of decline and/or failing structure.
            3. Identify and assess risk and potential risk.
            4. Identify risk factors and mitigation strategies for mature, over-mature, and declining trees
        iii. Prioritize plant health care needs/requirements.
    b. Inspect newly planted trees to ensure successful establishment.
    c. Monitor and sample natural areas
        i. Invasive species
        ii. Pests/disease
        iii. Health of the understory
B. Integrate inventory data into accessible data management system.
    a. Evaluate applications for smartphones/tablets to allow for updates to occur simultaneously as maintenance and/or inspections are completed.
        i. Coordinate with GIS and Information Technology staff to evaluate urban forest tree inventory software.
C. Develop a policy and assign responsibility for keeping inventory data current.
    a. Establish policies and processes that allow for access to inventory data by supervisory and field staff
        i. View and update data in the field
    b. Integrate inventory data updates into tree work contracts.

Urban Forest Goal #UA7 – Care for the community urban forest using the best available science.

A. Set policies that any tree work complies with ANSI A300 Tree Care Standards.
B. Set policies that and tree workers comply with ANSI Z133 Safety Standards.
C. Set policies urban forestry work consider best management practices as advised by the International Society of Arboriculture.

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Municipal Operations

Municipal Goal #M1 - Maintain Urban Forest Management Plan alignment with other City plans and policies.

Actions:

A. Review and revise the UFMP every five to ten (5-10) years.
    a. Adjust goals and actions as necessary.
    b. Periodically review the UFMP for alignment with community values and expectations for the urban forest.
    c. Assess community satisfaction measured through surveys or as evidenced by public support for realizing the Plan's goals and actions.
        i. Gauge the level of public engagement and support for urban forest programs, workshops, and issues.
B. Collaborate with city staff experts to establish a risk management policy for trees.
    a. Identify policies and action thresholds.
C. Include urban forestry concerns in emergency response plans.
    a. Staging areas
    b. Identify response authority and staff responsibilities
    c. Debris management
    d. Tree risk assessments of Emergency routes
    e. Emergency contracts and funding strategies

Municipal Goal #M2 – Provide staff that are appropriately trained to work safely and effectively.

Actions Include:

A. Formalize a policy for ongoing training to staff working in urban forestry.
    a. Establish training protocols for city staff performing tree work.
    b. City tree crews should be fully trained and qualified for any bucket work, climbing, and rescue.
B. Establish a policy that all tree work be supervised by an ISA certified arborist.
C. Require that all tree work procedures comply with ANSI Z133 safety standards.

Municipal Goal #M3 - Establish a Formal Interdepartmental Working Team

Actions Include:

A. Designate an Urban Forester within City staff to provide leadership to the working team.

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Municipal Goal #M4 - Develop annual work plans that foster routine operations and predictable funding.

Actions Include:

A. Operational objectives
    a. Pruning schedules for maintenance contract(s).
    b. Tree planting and replacement schedule.
    c. Prioritized risk mitigation actions and tree removals.
    d. Prioritizes areas for tree inspections & risk assessment.
B. Develop an annual urban forestry operations budget.
    a. Identify suitable taxes or levies to support urban forestry
    b. Identify and apply for grant funding opportunities.

Municipal Goal #M5 Enhance processes for tree planting and plant salvage

A. Develop a staging site or green house location for the city to receive and care for trees and other plant materials.
B. Acquire a watering truck to ensure successful tree establishment.
C. Manage warranties from nurseries
D. Provide training for tree planting volunteers/staff to ensure proper tree planting.

Municipal Goal #M6 – Review tree ordinances every 5-10 years.

Actions Include:

A. Evaluate the value and benefits of removal and replacement ratios to canopy objectives
    a. Provide exceptions for tree removal restrictions on residential properties when planting and replacement strategies would align with city canopy goals.
    b. Offer higher credit when trees are preserved in clumps and/or connect to neighboring canopy
B. Preserve existing ordinances exemptions for utilities to control costs.
C. Develop incentives for development projects to retain native trees.
D. Consider revisions to tree removal and replacement requirements on development properties to incentivize retention of healthy trees and removal of unhealthy trees.
E. Evaluate exceptions for tree removal permits
    a. City Parks
    b. Unsuitable locations.
F. Provide options for private property tree management plans to streamline permitting on properties where canopy is consistent with city goals.
    a. Privately-owned properties

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b. Golf courses

G. Develop flexibility for the requirement that replacement coniferous trees shall be at least eight feet in height.

a. Allow a smaller nursery stock trees in appropriate sites

b. Measure trees by nursery caliper instead of height

Community Collaboration and Engagement

Community Goal #C1 - Maintain an engaging, user-friendly Urban Forestry web page

Actions Include:

A. Create a main dashboard for tree related questions and facts

B. Maintain and enhance the urban forest story map.

C. Add landing pages to support the following interests:

a. Volunteering

b. Tree Removal

c. Permits

d. Benchmarks

e. City Staff Contacts

f. Tree Care best practices

g. Tree diseases of concern for the City

h. Helpful links (ISA Trees Are Good, etc.)

i. Food Forests

j. Free trees

Community Goal #C2 - Develop outreach materials to engage and educate on key topics

Actions Include:

A. Develop an Annual State of the Urban Forest Report

B. Determine what methods of outreach are most used and appreciated by the community

a. Web-based

b. Apps

c. Hard (paper) materials

d. Self-guided, hands-on, and/or group workshops

C. Develop outreach materials (pamphlets, articles, etc.) that communicate specific topics about trees, the urban forest, and environmental benefits:

a. Communicate basics of tree care, including planting, pruning, and irrigation.

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b. Communicate benefits of trees and tree canopy, including environmental, social, and economic.

c. Communicate information about the community urban forest, including composition, health, and species diversity.

d. Present recommendations for tree species for private property.

D. Partner with other city departments, nonprofits, and other groups to incorporate shared information and outreach goals when possible. Possible examples include:

a. Right Tree Right Place

b. Safety considerations related to trees near energized lines and underground utilities.

c. Interpretive trails.

d. Wildlife habitat in urban environments

e. Waterfront properties

f. Self-guided tree tours.

Community Goal #C4 - Pursue and maintain Tree City USA status

Actions Include:

A. Create citizens' Tree Board
B. Ensure annual urban forestry expenditures are above $2 per capita.

Community Goal #C5 - Collaborate and nurture partnerships with other organizations

Actions Include:

A. Collaborate and partner with city departments, nonprofits and neighborhood groups for tree replacement and improvements to streetscapes.

a. Forterra

b. STEM internships for students

c. Develop outreach materials that communicate information about trees and the community urban forest.

Community Goal #C6 - Establish Arborist Business License

Actions Include:

A. Determine the number of companies doing business in landscaping or arboriculture and have the necessary insurance.

B. Ensure that all tree work within the city is performed in a safe, professional manner and according to ANSI A300 standards for tree care.

C. Host learning forums for businesses performing tree work.

D. Host learning forums for general contractors about urban forestry and tree protection.

E. Create provisions for revoking licenses to business in cases where arborists are disregarding city code or best practices in arboriculture

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Community Goal #C7 - Develop a wood re-use/recycle program

A. Collaborate with end-users (artists, craftsmen) to identify needs and opportunities
B. Develop city website to foster a social network of wood waste utilization opportunities in the city.
C. Improve communication of plant salvage opportunities in development projects.
D. Designate areas as free wood chip sites.
E. Utilize wood chip waste to mulch landscape beds in parks, open space, and city facilities.
F. Incorporate wood waste into playgrounds and parks.

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How Are We Doing?

Monitoring and Measuring Results

The UFMP includes goals and actions for measuring the success of planning strategies. It is intended that the Plan serves as a living document. As new information becomes available, this section of the UFMP will be reviewed and amended using routine plan updates, annual reports, and community satisfaction surveys.

5-10 Year Plan Update (Planning through 2040)

The UFMP is an active tool that will guide management and planning decisions over the next 20 years. The goals and actions will be reviewed every five to ten (5 -10) years for progress and integration into an internal work plan. The UFMP presents a long-range vision and target dates are intended to be flexible in response to emerging opportunities, available resources, and changes in community expectations. Each year, specific areas of focus should be identified to inform budget and time requirements for urban forest managers.

Annual State of the Urban Forest Report

This report, delivered annually, should include numbers of trees planted and removed and any changes to the overall community urban forest (e.g., structure, benefits, and value). It will serve as a performance report to stakeholders and an opportunity for engagement. The report also highlights the successful attainment of UFMP actions as well as informs stakeholders about any issues or stumbling blocks. This information can be integrated into urban forest managers' Annual Reports and will be used to pursue additional project support and funding from state agencies and Tree City USA applications.

Community Satisfaction

The results of the UFMP will be measurable in improvements to efficiency and reductions in costs for maintenance activities. Attainment of the goals and actions will support better tree health, greater longevity, and a reduction of tree failures. Furthermore, one of the greatest measurements of success for the UFMP will be its ability to meet community expectations for the care and preservation of the urban forest resource.

Community satisfaction can be measured through surveys as well as by monitoring public support for realizing the goals and actions of the Plan. Satisfaction can also be gauged by the community's level of engagement and support for urban forest programs. An annual survey of urban forest stakeholders will help managers ensure activities continue to be aligned with the community's vision for the urban forest.

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REFERENCES

Action2020, 2018, http://action2020.org/business-solutions/investing-in-natural-infrastructure

Akbari, H., D. Kurn, et al. 1997. Peak power and cooling energy savings of shade trees. Energy and Buildings 25:139–148.

Blum, J., 2016. Contribution of ecosystem services to air quality and climate change mitigation policies: the case of urban forests in Barcelona, Spain. In Urban Forests (pp. 21-54). Apple Academic Press.

Casey Trees and Davey Tree Expert Company. The National Tree Benefit Calculator, 2017. http://www.treebenefits.com/calculator/

City of Sammamish. 2004. Trails, Bikeways, and Paths Plan. Department of Parks, Recreation and Cultural Services.

City of Sammamish. 2015. Streetscape Plan. Department of Parks, Recreation and Cultural Services.

City of Sammamish. 2016. Citizens' Tree Board.

City of Sammamish. 2016. Comprehensive Plan. Department of Development Services, Planning Division.

City of Sammamish. 2016. Parks, Recreation and Open Spaces Plan. Department of Parks, Recreation and Cultural Services.

City of Sammamish. 2017. Urban Tree Canopy Assessment Report. City of Sammamish Department of Development Services.

City of Sammamish. 2018. City of Sammamish Municipal Code. http://www.codepublishing.com/WA/Sammamish/

City of Sammamish. 2017, Stormwater Map Series, https://www.sammamish.us/government/departments/public-works/maps-and-gis-data/

Clark, James, N. Matheny, G. Cross, V. Wake, 1997, A Model of Urban Forest Sustainability, Journal of Arboriculture 23(1): January 1997

Dixon, K. K., and K. L. Wolf. 2007. Benefits and Risks of Urban Roadside Landscape: Finding a Livable, Balanced Response. Proceedings of the 3rd Urban Street Symposium (June 24-27, 2007). Washington D.C.: Transportation Research Board of the National Academies of Science.

Donovan, G.H. and Butry, D.T., 2010. Trees in the city: Valuing street trees in Portland, Oregon. Landscape and urban planning, 94(2), pp.77-83.

Dougherty, Phil, 2008. Sammamish incorporates on August 31, 1999. 3rd Edition. http://www.historylink.org/File/7466

Dyson, Karen, and Patterson, M.S., 2018. City of Sammamish Land and Canopy Cover Analysis: Methods and Results. University of Washington.

Energy Information Administration, 2003, Emissions of Greenhouse Gases in the United States 2003. http://www.eia.doe.gov/oiaf/1605/ggrpt/

Faber Taylor, A. and Kuo, F.E., 2006, "Is contact with nature important for healthy child development?" State of the evidence. In Spencer, C. & Blades, M. (Eds.), Children and Their Environments: Learning, Using and Designing Spaces. Cambridge University Press, Cambridge, U.K.

DRAFT

Gómez-Baggethun, E. and Barton, D.N., 2013. Classifying and valuing ecosystem services for urban planning. Ecological Economics, 86, pp.235-245.

Haddad, N.M., Brudvig, L.A., Clobert, J., Davies, K.F., Gonzalez, A., Holt, R.D., Lovejoy, T.E., Sexton, J.O., Austin, M.P., Collins, C.D. and Cook, W.M., 2015. Habitat fragmentation and its lasting impact on Earth's ecosystems. Science Advances, 1(2), p. e1500052.

Heisler, G.M., 1986, "Energy savings with trees." Journal of Arboriculture, 12, 113-25

Taylor, Katherine, 2017. Beaver Lake South, Arborist Report Project No. Ts – 5834, Tree Solutions Inc.

Taylor, Katherine, 2017. Beaver Lake North, Arborist Report Project No. Ts – 6055, Tree Solutions Inc.

Taylor, Katherine, 2017. Pine Lake Beach Park South, Arborist Report Project No. Ts – 6035, Tree Solutions Inc.

Taylor, Katherine, 2017. Pine Lake Beach Park North, Arborist Report Project No. Ts – 6055, Tree Solutions Inc.

i-Tree. 2018. Tools for Assessing and Managing Community Forest. www.itreetools.org

Kaplan, Rachel and Stephen. 1989. The Experience of Nature: A Psychological Perspective. Cambridge: Cambridge University Press.

Karl, Tom., P. Harley, L. Emmons, B. Thornton, A. Guenther, C. Basu, A Turnipseed, K. Jardine. 2010, Efficient Atmospheric Cleansing of Oxidized Organic Trace Gases by Vegetation. Web 11/9/2010. <http://www.sciencemag.org/cgi/content/abstract/330/6005/816>

Kenney, W.A., Van Wassenaer, P.J. and Satel, A.L., 2011. Criteria and indicators for strategic urban forest planning and management. Arboriculture & Urban Forestry, 37(3), pp.108-117.

Kondo, M.C., Low, S.C., Henning, J. and Branas, C.C., 2015. The impact of green stormwater infrastructure installation on surrounding health and safety. American journal of public health, 105(3), pp. e114-e121

Kuo, F.E., and Sullivan, W.C., 2001. Environment and crime in the inner city: Do vegetation reduce crime? Environment & Behavior, 33(3), 343-367.

Kuo, F.E., 2003. The role of arboriculture in a healthy social ecology: Invited review article for a Special Section. Journal of Arboriculture 29(3), 148-155.

McPherson, E.G., and J. R. Simpson. 2003. Potential Energy Savings in Buildings by an Urban Tree Planting Program in California. Urban Forestry & Urban Greening, 2, 2003, pp. 73- 86.

The National Arbor Day Foundation. 2012. Tree City USA Award. http://www.arborday.org/

The National Arbor Day Foundation. 2016. Tree City USA Summary by the Numbers. https://www.arborday.org/programs/treecityusa/documents/tree-city-usa-infographic-national-2016.pdf

Oregon State University (OSU), 2017. College of Forestry, Swiss Needle Cast. http://sncc.forestry.oregonstate.edu/glossary/term/17

Park, S.H., 2006. Randomized clinical trials evaluating therapeutic influences of ornamental indoor plants in hospital rooms on health outcomes of patients recovering from surgery. Kansas State University. http://krex.k-state.edu/dspace/handle/2097/227

Puget Sound Energy. 2018. Together, we'll reduce carbon emissions by 50 percent by 2040. https://pse.com/inyourcommunity/Together/Pages/default.aspx

DRAFT

Puget Sound Partnership. 2012. www.psparchives.com

Simpson, James, 2002. “Improved estimates of tree-shade effects on residential use,” Energy and Buildings 34, 1067-1076

Simpson, J.R. and E.G. McPherson. 2000. Energy and air quality improvements through urban tree planting. In: Kollin, C., (ed.). Building cities of green: proceedings of the 1999 national urban forest conference; Seattle. Washington, D.C.: American Forests: 110-112

Ulrich RS. 1986. Human Responses to Vegetation and Landscapes. Landscape and Urban Planning 13: 29-44.

U.S. Forest Service, Pacific Southwest Division. 2017. Urban Ecosystems and Processes (UEP). https://www.fs.fed.us/psw/topics/urban_forestry/

U.S. Forest Service, Pacific Northwest Division. 1995. Laminated Root Rot in Western North America. https://www.fs.fed.us/pnw/pubs/pnw_gtr349.pdf

U.S. Forest Service, Northeastern Area State and Private Forestry. 2005. Forest Health Protection—Dutch Elm Disease. http://na.fs.fed.us/fhp/ded

U.S. Department of Energy, 2004. “Green Roofs,” Federal Technology Alert DOE/EE-0298, Federal Energy Management Program.

Washington Department of Ecology, 2011 – Slope Stabilization and Erosion Control, http://www.ecy.wa.gov/programs/sea/pubs/93-30/index.html

Washington Department of Natural Resources. 2018. Forest Health Program. https://www.dnr.wa.gov/ForestHealth

Washington State, 1971. Washington State Environmental Policy Act. Chapter 197-11 WAC. http://apps.leg.wa.gov/WAC/default.aspx?cite=197-11

Washington State, 1990. Washington State Growth Management Act (RCW 36.70A.070 (1) Land Use Element1)

Wickman, Boyd. 1988. Degree-Day Accumulation Related to the Phenology of Douglas-Fir Tussock Moth and White Fir During Five Seasons of Monitoring in Southern Oregon. https://www.fs.fed.us/pnw/pubs/pnw_rn392.pdf

Wolf, K.L. 2007. The Environmental Psychology of Trees. International Council of Shopping Centers Research Review. 14, 3:39-43.

Wolf, K.L. 2013. The Urban Forest. Communities & Banking 24, 2: 25-27. http://www.naturewithin.info/CityBiz/Communities_Banking.Urban_Forest.Wolf.pdf

Wolf, K.L., 2016. Science in the City: Urban Trees, Forests, and People. Western Forester 61 (4): 4-7, 61(4), pp.4-7.

Xiao, Q.; McPherson, E.G.; Simpson, J.R.; and S.L. Ustin. 2007. Hydrologic processes at the urban residential scale. Hydrological Processes 21:2174-2188

Xiao, Q.; McPherson, E.G.; Ustin, S.L.; and M.E. Grismer. 2000. A new approach to modeling tree rainfall interception. Journal of Geophysical Research 105(D23):29,173-29,188 -

Xiao, Q., E.G. McPherson, 2005. Tree health mapping with multispectral remote sensing data at UC Davis, California. Urban Ecosystems, 8:349-361

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APPENDIX B

Sammamish Community Survey Responses

[ADDITIONAL APPENDICES TO BE PROVIDED WITH SUBSEQUENT DRAFTS]

Urban Forest Management Plan

First Draft Review

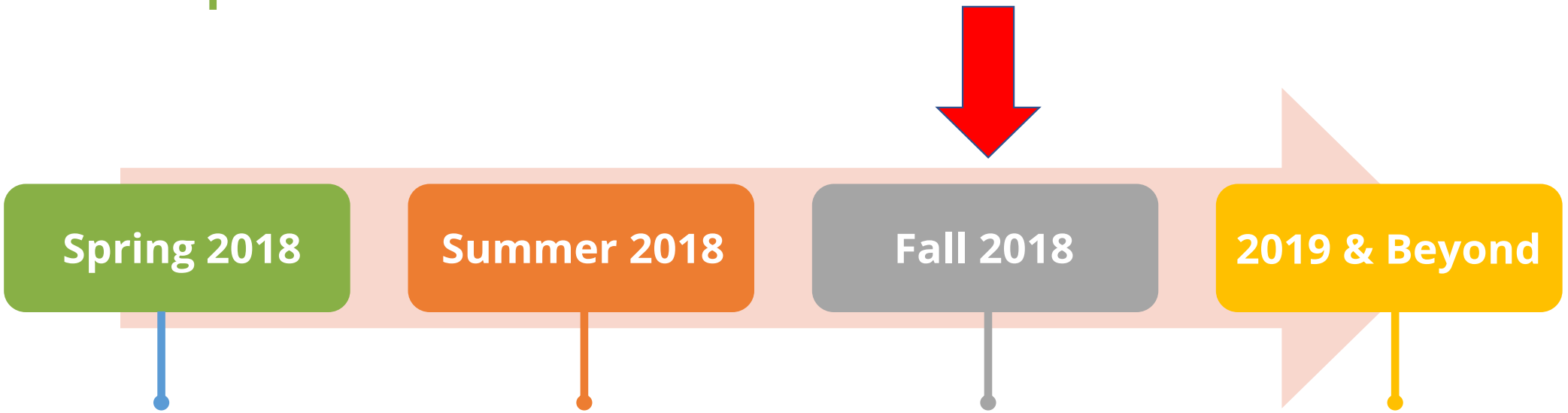
Parks & Recreation Commission

September 5, 2018

Presented by Davey Resource Group Inc.

Urban Forest Management Plan

Next Steps



What Do We Have?

- UW Canopy Assessment
- Interviews
- Background Research

What Do We Want?

- Online Survey
- Open House Meetings
- Workshops
- Release StoryMap

How Do We Get There?

- Goal Setting
- Draft Plan Review

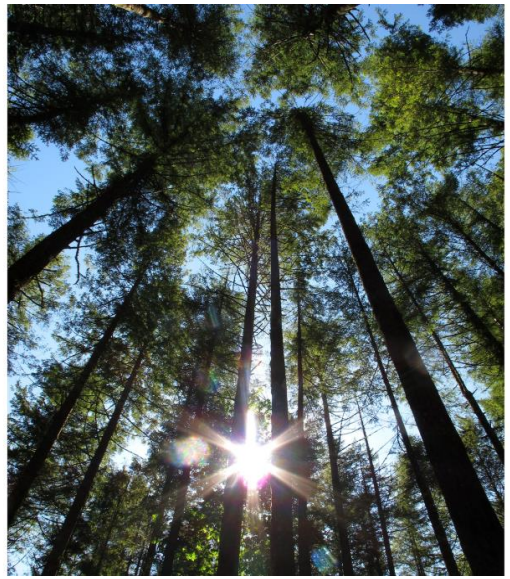
How Are We Doing?

- Plan Adoption
- Plan Implementation

First Draft Review

What We're Looking For

- Seeking high-level feedback
  - Alignment with Parks & Rec priorities
  - Direction on strategic goals
  - Topics to include or exclude:
    - Benefits of the urban forest
    - Threats to the urban forest
    - Other considerations



Agenda Bill

Parks and Recreation Commission Regular Meeting
September 05, 2018

SUBJECT:	Community Garden
DATE SUBMITTED:	August 30, 2018
DEPARTMENT:	Parks & Recreation
NEEDED FROM COMMISSION:	☐ Action ☑ Direction ☐ Informational
RECOMMENDATION:	Review Ebright Creek Park as the preferred site for a second Community Garden in the City and consider making a recommendation to City Council.
EXHIBITS:	Exhibit 1 Community Garden PowerPoint

BUDGET:

Total dollar amount	$100,000	☑ **Approved in budget**
Fund(s)	Parks Capital Improvement Fund	☐ **Budget reallocation required**
		☐ **No budgetary impact**

WORK PLAN FOCUS AREAS:

☐ Transportation	☐ Community Safety
☐ Communication & Engagement	☑ Community Livability
☐ High Performing Government	☑ Culture & Recreation
☑ Environmental Health & Protection	☐ Financial Sustainability

NEEDED FROM COMMISSION:

Shall the Parks & Recreation Commission recommend Ebright Creek Park to City Council as the preferred site for a second Community Garden?

KEY FACTS AND INFORMATION SUMMARY:

The purpose of this discussion is to brief the Parks & Recreation Commission on the site analysis and anticipated costs of a potential second community garden at Ebright Creek Park.

Summary

Construction of the City's first Community Garden was completed in May 2013, at Lower Sammamish Commons Park. Construction costs were approximately $175,000 and primarily funded by the Parks CIP. This community garden consists of 52 raised beds, 6 accessible raised beds, fencing, a garden shed and temporary restrooms. An annual rental fee of $50 is charged for each plot to help cover maintenance and utility costs. Currently, more than 40 residents are on the wait list for a plot in the community garden with an average wait time of 2 years.

The 2018 Parks, Recreation and Open Space (PRO) Plan Update was adopted by Council on February 27, 2018. As part of this update, community gardens were identified in the top ten highest priorities in both the community survey and virtual town hall. This community input for the PRO Plan suggested a need for additional garden facilities within the City. Currently, the only city owned community garden is located at Lower Sammamish Commons. The PRO Plan identified both community and neighborhood parks as viable locations for this amenity.

In addition, the Parks & Recreation Commission recommended and it was approved by the City Council to research and possibly develop a plant salvage facility with a CIP allocation of $50,000 in 2018.

Background

In winter 2018, City staff evaluated all its current parks for the feasibility for a second community garden. To determine the most appropriate property for a second community garden and possible co-located plant salvage facility, staff assembled selection criteria to analyze for the site selection process. The criteria are outlined below:

- Access to utilities – water and electricity
- Sun exposure – south/southwest light
- Accessible route – from parking to garden area for ability to transport materials and equipment
- Existing parking infrastructure
- Onsite storage and surrounding flexible space – sufficient space for tools, pots, storage bins for soil, tables for potting, waster bins
- Topography – relatively flat terrain
- Available space – minimum 40 plot community garden
- Composting area
- Adjacent compatible uses

Six of the City's existing parks were determined to be not feasible for a community garden location due to lack of access to utilities, inadequate space/capacity, accessibility, or incompatible adjacent uses. The properties considered not suitable for a community garden include:

- Ilahee Trail
- Pine Lake Park
- Sammamish Landing
- Beaver Lake Preserve
- Evans Creek Preserve
- NE Sammamish Park

Ten potential locations within parks were further evaluated and presented at the April 4th, 2018 Parks Commission meeting.

- Lower Commons Park (expand existing community garden)
- Beaver Lake Park (as per master plan)
- Beaver Lake Park (northwest corner)
- Big Rock Park Site A
- Big Rock Park Site B
- Big Rock Park Site C
- CWU Campus
- East Sammamish Park
- Ebright Creek Park
- Klahanie Park

The Commissioners voted on their top three preferred community garden locations. The location that received the most votes from the Commissioners was the underused lawn area in the northeast corner of Ebright Creek Park. The Ebright Creek Park location has excellent sun exposure, has 43 existing parking spaces, and access to electrical and water. The potential community garden site is over 10,000sf and can accommodate a minimum desired number of raised beds, onsite storage, and gathering area. A few alternative concept designs will be presented at the upcoming September 5th Parks & Recreation Commission Meeting.

Site constraints include an existing 18" retaining wall and an approximate 5' grade change which equals a 9%-10% grade change, sloping east to west. Conceptual level diagrams and analysis prove that the site will require one or two retaining walls (the north-south length of the site) to provide terraced, flat areas for a community garden use.

FINANCIAL IMPACT:

A total of $100,000 is allocated in the 2018-2023 Parks Capital Improvement Plan (CIP) for a Community Garden; $50,000 available in 2018 and the remaining funds available in 2019.

Preliminary anticipated budget costs for a community garden at Ebright Creek Park is over half a million dollars due to existing site conditions requiring modification and related construction, which is significantly more than the allocated funds.

OTHER ALTERNATIVES CONSIDERED:

The Parks and Recreation Commission may elect to not recommend a second community garden at this time.

Another alternative would be to plan for a combined facility with a community garden and plant holding area at parcel C of Big Rock Park, when it is transferred to the City.

RELATED CITY GOALS, POLICIES, AND MASTER PLANS:

Parks, Recreation, and Open Space Plan, adopted 2018

COMMUNITY GARDEN

Parks & Recreation Commission Meeting
September 5, 2018

Presentation Topics

- Overview & Background
- Ebright Creek Park Site Analysis
- (3) Conceptual Ideas
- Next Steps

Overview & Background

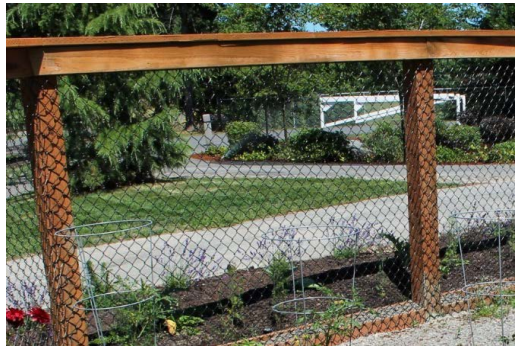
Existing Facilities/Infrastructure

Lower Commons Community Garden

- Approximately 7,500 SF
- 58 total raised beds (6 accessible)
- Close proximity to parking
- Mostly exposed site with flat terrain
- Lockable garden shed
- Temporary restrooms
- 6’ height fence and artistic gates

Garden Shed

Raised Cedar Beds



6’ Enclosure Fence

Artistic Gates

A Second Community Garden

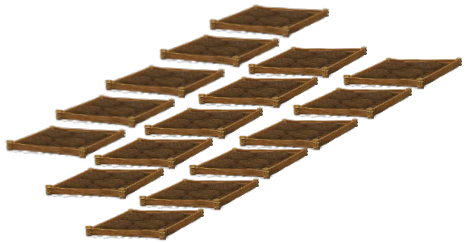
Current Need

- Waitlist is over 58 people
- Average wait time is 2-3 years
- 5-10 people release beds each year

Projected Need

- Urban growth/density of housing
- Town Center potential impact on Lower Commons
- Regional stormwater potential in Lower Commons

Site Considerations

Water	South/Southwest Light	Minimum Size 	Existing Topography
Existing Parking	Onsite Storage	Compost Area	Adjacent Uses

Community Garden Location Study

Properties not suitable for community garden

- Ilhaee Trail
- Pine Lake Park
- Sammamish Landing
- Preserves
  - Beaver Lake
  - Evans Creek

Possible Locations:

- Lower Commons Park (expand existing community garden)
- Beaver Lake Park (North & NW)
- Big Rock Park (sites A, B, & C)
- CWU Campus
- East Sammamish Park
- Ebright Creek Park
- Klahanie Park

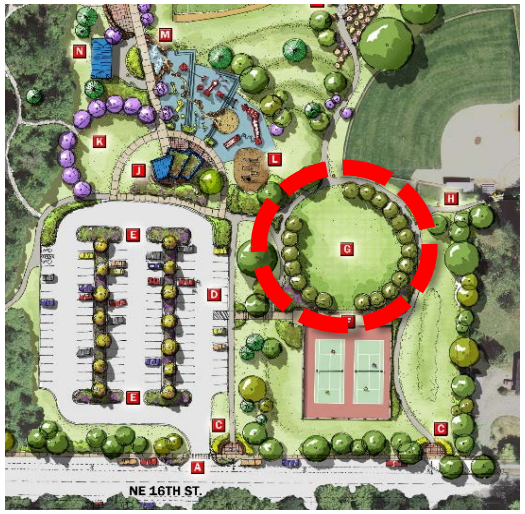
Pine Lake Park

Sammamish Landing

Beaver Lake Preserve

Evans Creek Preserve

Park Sites Evaluated



East Sammamish Park

- Margaret Mead construction overflow parking (‘18-’19)
- Potential future location of practice cricket pitch

Beaver Lake Park - North

- No existing parking
- Gas line beneath proposed location
- Gas line in unplanned area
- BPA & PSE

Beaver Lake Park – NW Corner

- 75’ easement for 2 gas lines
- Water not available
- Corner identified as “iconic” park entrance to unify “two halves” of park
- Partially encumbered by sensitive areas

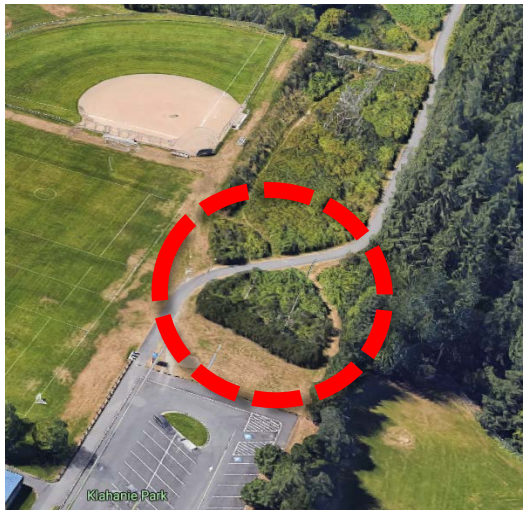
Park Sites Evaluated

CWU

- Future property use
- Property leased by others
- Proximity to existing community garden

Lower Commons Expansion

- Master Plan starting later this year
- Does not provide a second neighborhood location (north or south)
- Loss of level lawn area
- Town Center / regional stormwater impacts



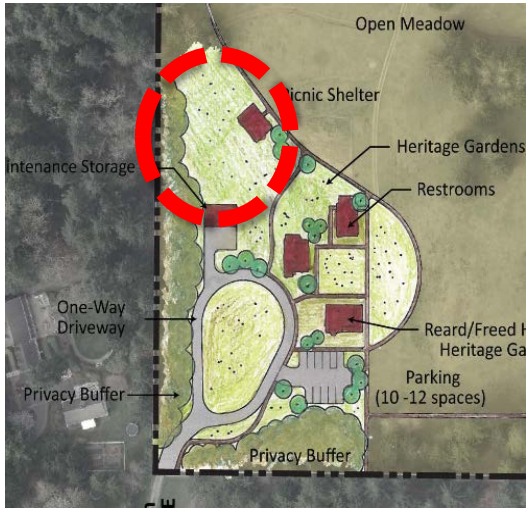
Klahanie Park

- Within utility easement
- 2 other existing community gardens within Klahanie
- Master Plan starting later this year

Park Sites Evaluated

Big Rock Park Site A

- No existing parking
- Gas line beneath proposed location
- Gas line in unplanned area
- BPA & PSE



Big Rock Park Site B

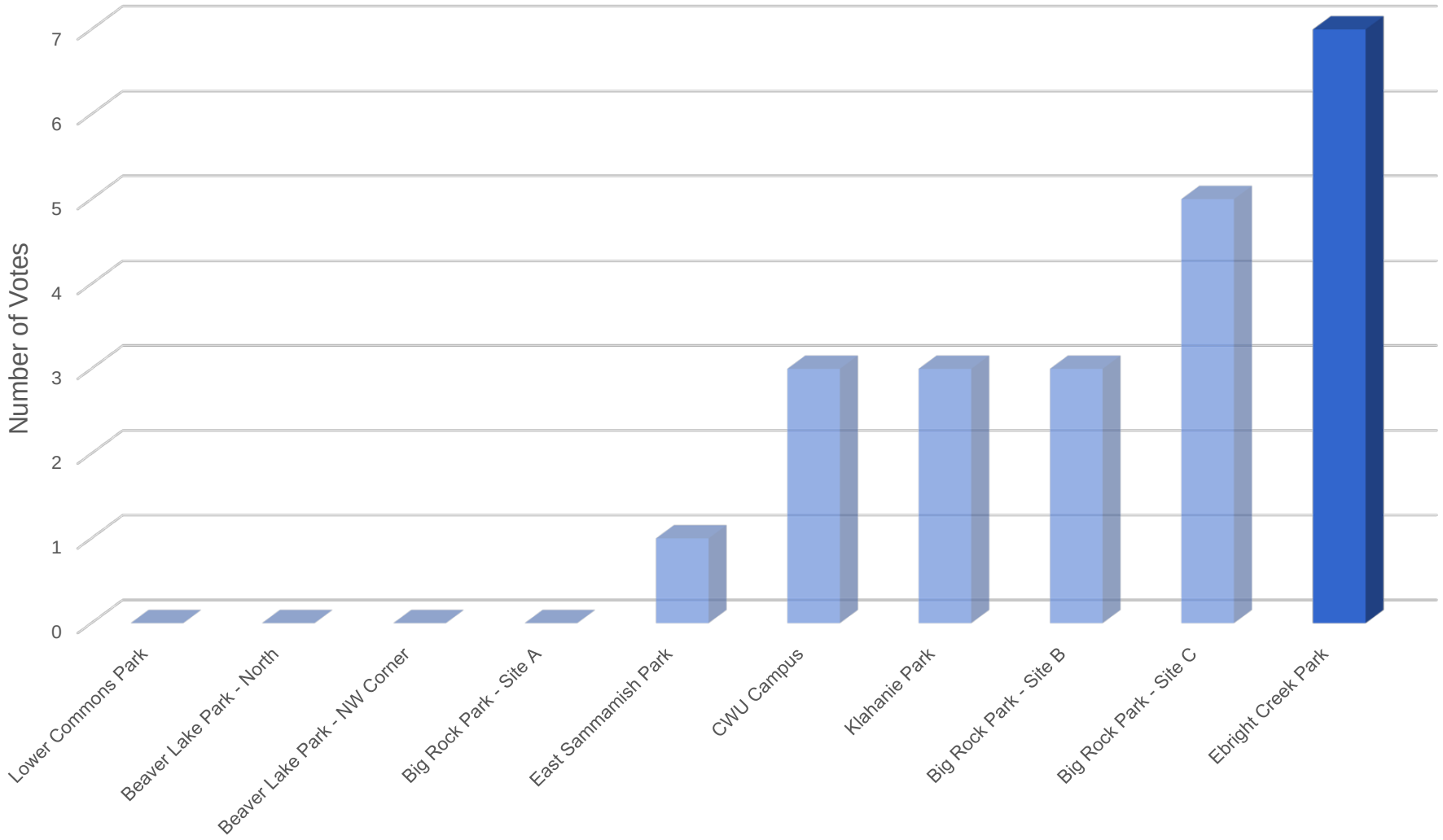
- Opposition during 2014 Master Plan process
- Proximity to existing community garden

Big Rock Park Site C

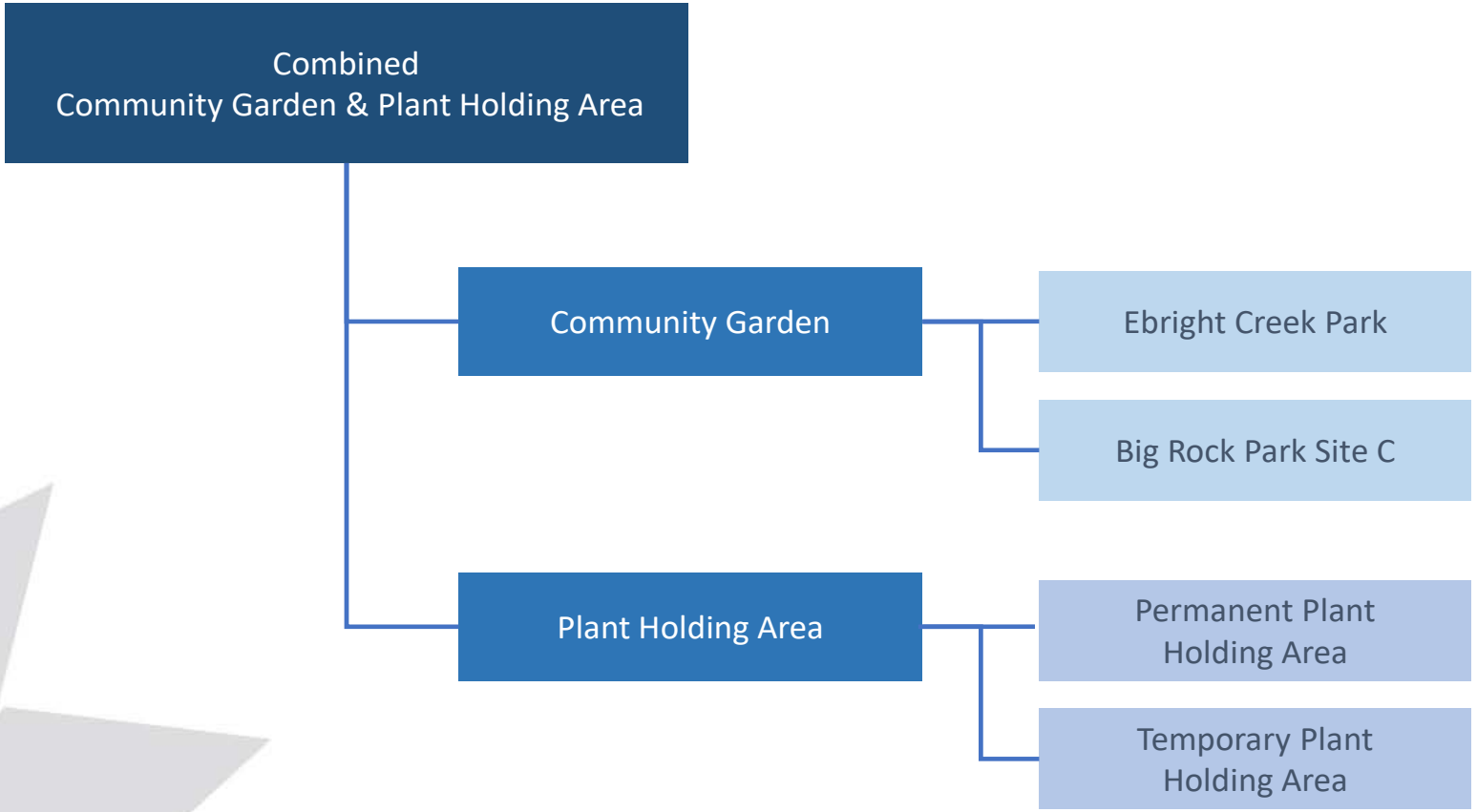
- Master Plan is not currently planned for this property
- Property not legally granted to the City; date is unknown
- Proximity to existing community garden

Preferred Location - Ebright Creek Park

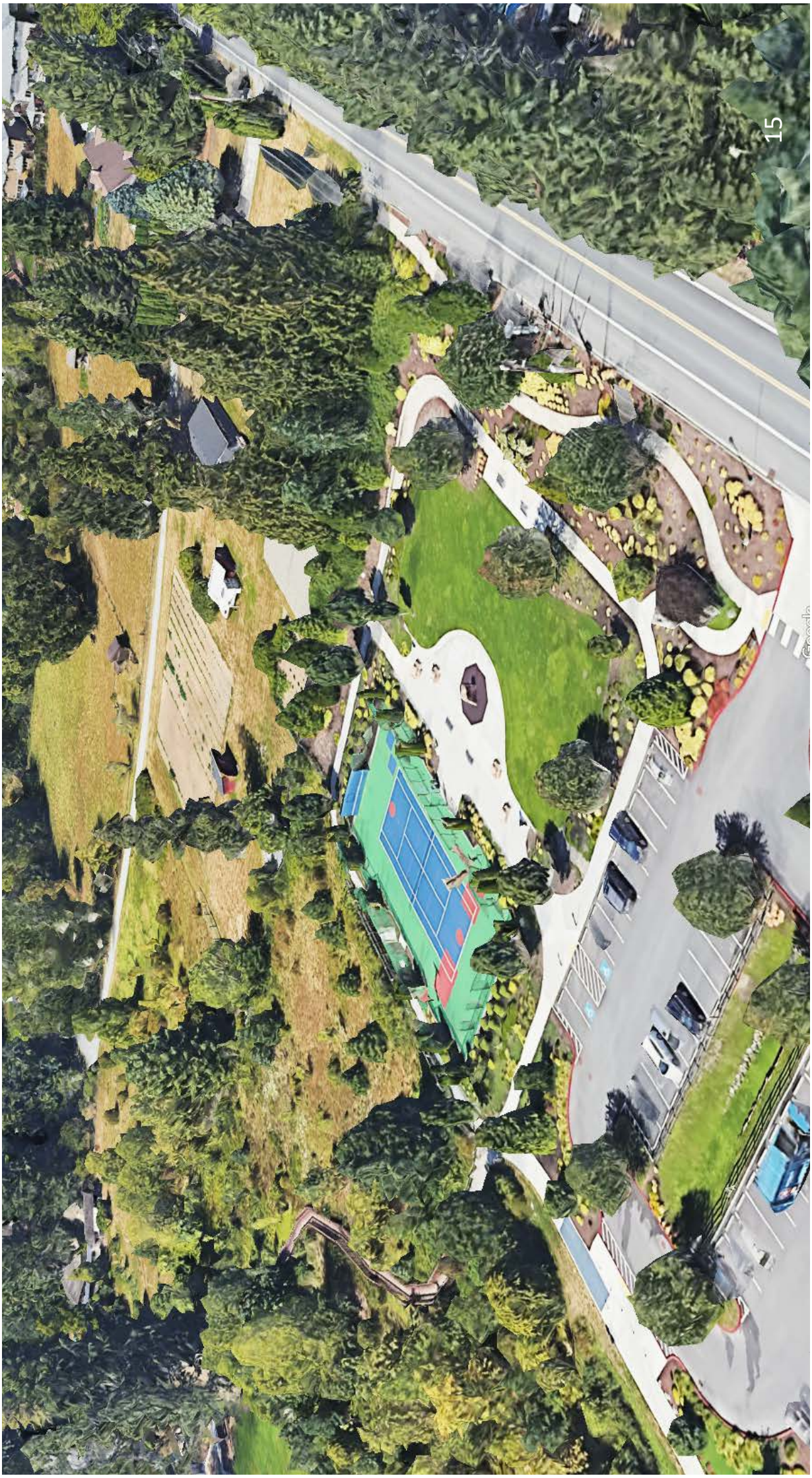
Preferred Location Results



Projects Diverge



Community Garden – 2nd Site
Ebright Creek Park Site Analysis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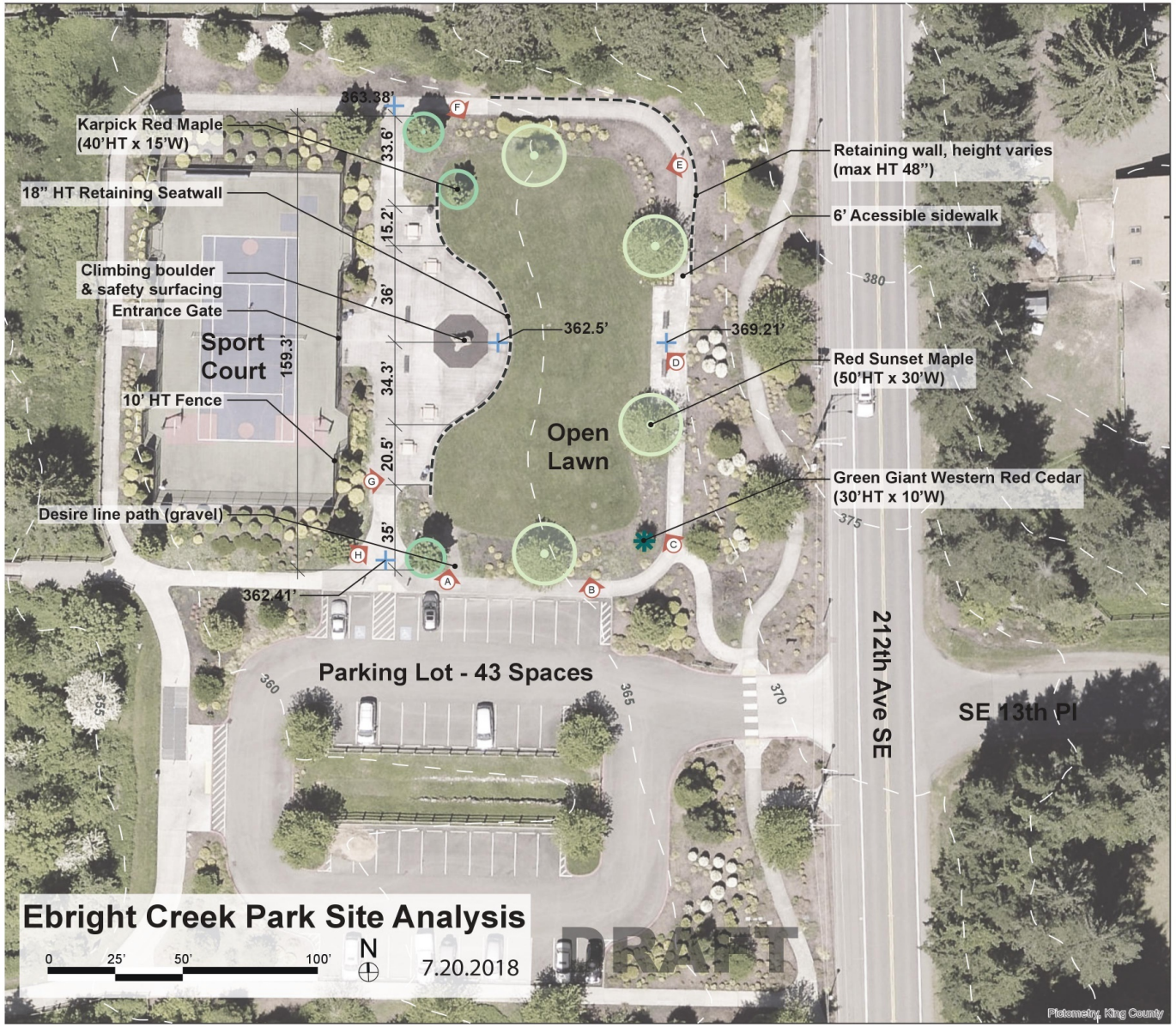

Karpick Red Maple
(40'HT x 15'W)
18" HT Retaining Seatwall
Climbing boulder
& safety surfacing
Entrance Gate
Sport
Court
10' HT Fence
Desire line path (gravel)
363.38'
33.6'
15.2'
36'
34.3'
20.5'
35'
159.3'
362.5'
369.21'
362.41'
Open
Lawn
Retaining wall, height varies
(max HT 48")
6' Acessible sidewalk
Red Sunset Maple
(50'HT x 30'W)
Green Giant Western Red Cedar
(30'HT x 10'W)
Parking Lot - 43 Spaces
212th Ave SE
SE 13th Pl
Ebright Creek Park Site Analysis
0
25'
50'
100'
N
7.20.2018
DRAFT
Pictometry, King County

Site Photos

Google
A
B
C
D
E
F
G
H

Site Photos

Picnic /Play Structure/Plaza Area

Retaining Wall – 1.5’ ht

9-10% Slope

Site Section – Existing Conditions

Site Photos

Existing Trees

Adjacent to Parking Lot

Climbing Rock

Ebright Creek Park Community Garden
Feasibility

Pros:
- Recommended by Parks Commission
- Underused lawn area
- Access off 212th
- 43 Existing parking stalls
- Excellent sun exposure
- Water available
- 11,000 - 14,000 SF

Cons:
- Proximity to existing community garden @ Lower Commons
- 5' Grade change
- 1.5' Ht existing retaining wall

Budget:
- $100,000 in CIP

Timeline: To be determined

Comparison - Lower Commons:
- $175,000 (approximately)
- 58 raised beds
- 24 months to design/build

(3) Conceptual Ideas

Ebright Creek Park Community Garden

Option 1

Keep Existing Infrastructure

Legend

- Community Garden Area
- Shed / Utility / Gathering Area
- Fenceline (Approximate)

Considerations:

- Approximately 11,100 SF
- 71 raised planter beds
- Requires 1-2 terraced areas
- Possible tree removal
- Maintains existing site features
  - 1.5' ht retaining wall
  - All plaza/hardscape areas
  - Climbing rock and surfacing
  - Picnic tables & benches

Approximate Cost: $500,000

$

Ebright Creek Park Community Garden

Option 2

Remove Existing Infrastructure

Legend

- Community Garden Area
- Shed / Utility / Gathering Area
- Fenceline (Approximate)

Considerations:

- Approximately 16,000 SF
- 114 raised planter beds
- Requires 1-2 terraced areas
- Tree removal
- Renovates entire space

Approximate Cost:
Significantly Exceeds $500,000

$$$

Ebright Creek Park Community Garden

Option 3 - Hybrid
Keep Retaining Wall, Utilize Space Below Retaining Wall

Legend

- Community Garden Area
- Shed / Utility / Gathering Area
- Fenceline (Approximate)

Considerations:

- Approximately 16,000 SF
- 110 raised planter beds
- Requires 1-2 terraced areas
- Possible tree removal
- Maintains 1.5' ht retaining wall

Approximate Cost:
Moderately Exceeds $500,000

$$

Next Steps

- Consider recommendation of Ebright Creek Park site to City Council for the 2nd community garden
- Hold until Big Rock Park Site C is available to house both the community garden and the plant holding area as one compatible facility
- Other recommendations?

Agenda Bill

Parks and Recreation Commission Regular Meeting
September 05, 2018

SUBJECT:	Plant Holding Area - Temporary Location
DATE SUBMITTED:	August 30, 2018
DEPARTMENT:	Parks & Recreation
NEEDED FROM COMMISSION:	☐ Action ☑ Direction ☐ Informational
RECOMMENDATION:	Review site options and make a recommendation for a temporary plant holding area
EXHIBITS:	Exhibit 1 - Plant Holding Area PowerPoint

BUDGET:

Total dollar amount	$50,000	☑ **Approved in budget**
Fund(s)	Parks Capital Improvement Fund	☐ **Budget reallocation required**
		☐ **No budgetary impact**

WORK PLAN FOCUS AREAS:

☐ Transportation	☐ Community Safety
☐ Communication & Engagement	☐ Community Livability
☐ High Performing Government	☑ Culture & Recreation
☑ Environmental Health & Protection	☐ Financial Sustainability

NEEDED FROM COMMISSION:

Shall the Parks & Recreation Commission select the Beaver Lake Park Maintenance Yard or the Lower Commons Park as a temporary plant holding area?

KEY FACTS AND INFORMATION SUMMARY:

The purpose of this discussion is to brief the Parks & Recreation Commission on an analysis for a temporary plant holding area and seek a recommendation to City Council for a preferred site.

Summary

The Sammamish Plant Stewards are a local group that salvage native plants on local sites scheduled for clearing due to development. Volunteers may salvage small native trees, shrubs, and herbaceous

plants for use in future restoration, revegetation, mitigation, park and stormwater projects. Plants are often potted and stored for up to a year.

Presently, there is no plant holding facility located in the City; salvaged plants are being stored at private residences of volunteers. Additionally, the City does not have the capacity at existing facilities to provide the space and infrastructure needed for a permanent plant holding area.

Community input for the Parks & Recreation Open Space (PRO) Plan suggested a need for additional garden facilities in the City. Goal 4.8 of the PRO Plan is to establish a plant salvage program, in coordination with volunteers and developers, which may include space for salvaged plants to be stored, watered, and possibly propagated. The PRO Plan does not identify a specific park type for this amenity.

Background

A presentation and discussion about a future community garden and plant holding area was held at the April 4, 2018 Parks & Recreation Commission meeting. The presentation included general site considerations, pros and cons of potential properties, and examples of other community gardens and plant holding areas in the region. The Parks and Recreation Commission voted on and recommended separate preferred permanent locations for each garden facility– a community garden (Ebright Creek Park) and a permanent plant holding area (Big Rock Site B).

A permanent plant holding area is being considered as part of design for Big Rock Park Phase II (Site B). The opening date of Big Rock Park Site B is anticipated in early 2020. However, there is a need for a temporary holding area in the interim, until a permanent plant holding area is constructed.

Since April, City staff have been researching possible city-owned properties for a temporary plant holding area including parks and stormwater facilities. Staff narrowed the list of potential areas on park property down when vetting the minimal requirements needed for a holding area against existing park site conditions. Evaluation criteria included:

- Designated space (approximately 1,000 sf)
- Topography
- Access to water
- Protection
    - Partial shade
    - Fencing
- Vehicular access

Staff also carried out a reconnaissance and site analysis for four existing, vacant city-owned stormwater facility sites. The sites were recommended by Stormwater staff. These four sites proved to have limitations that would not support a plant holding area. Access to water would require a gas-powered generator, accessing the storm vault or pond, water quality treatment, and a steady supply of water (the water is at the lowest levels/unavailable during the summer months).

City staff have therefore identified and are recommending two potential locations that can accommodate the temporary plant holding use, an area in Beaver Lake Park, and an area in

Sammamish Lower Commons Park. The two sites were reviewed by the community garden/plant holding area sub-committee during an August 17th, 2018 meeting.

The area at Beaver Lake Park is located within the gated maintenance yard. This site is approximately 845 square feet, has vehicular access, is mostly shaded, and has historically and is currently being used for plant storage by maintenance staff. Site constraints are that the proximity to working maintenance staff could pose potential vehicular/pedestrian conflict, the site is fairly small and oddly shaped and there is a 4' retaining wall surrounding the area.

The area in Sammamish Lower Commons Park is the 2-stall ADA parking lot, directly west of the community garden. This location is approximately 1,400 square feet, has available water, vehicular and pedestrian access and partial shade. Site constraints include the proximity to homeowners, the temporary loss of 2 ADA stalls upon installation and the need for security fencing. Additionally, we would have to get approval from City Council as this space is currently available for public use.

FINANCIAL IMPACT:

$50,000 is allocated in the 2018-2019 Parks CIP budget for a Plant Salvage Program/Facility.

OTHER ALTERNATIVES CONSIDERED:

The Parks and Recreation Commission may elect to not recommend a temporary plant holding area.

RELATED CITY GOALS, POLICIES, AND MASTER PLANS:

Parks, Recreation, and Open Space Plan, adopted February, 2018

PLANT SALVAGE HOLDING AREA

Parks & Recreation Commission Meeting
September 05, 2018

Presentation Topics

- Overview & Background
  - Purpose
  - Minimum Requirements
  - Permanent Location
- Temporary Plant Holding Area
  - Lower Commons Park
  - Beaver Lake Park
  - Stormwater Facility Sites
- Next Steps

Overview & Background

Purpose

Salvage plants from sites that will be cleared for use in restoration, revegetation, mitigation, park, and stormwater projects.

Minimum Requirements

Designated Space

- Area large enough to hold ~3,000 two gallon plants
- Covered area (lighted) with potting tables
- Healing in area large enough to hold ~1,000 plants

Water

- Spigot / yard hydrant for wash down
- Spray heads or drip with automatic watering system

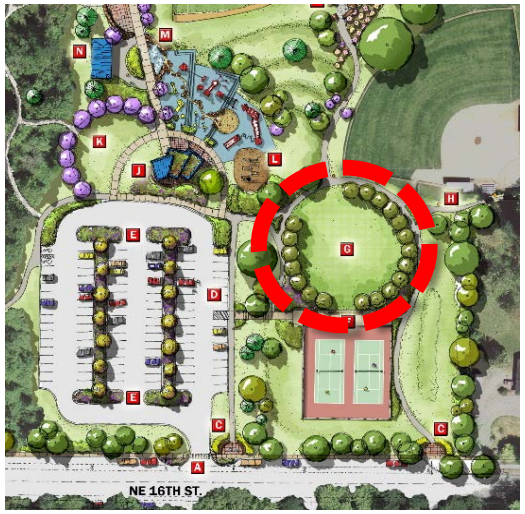
Protection

- Semi-shaded site
- Fenced and gated
- Windblock from the NW

Flexible Space

- Planting soil stockpile
- Compost / compost removal
- Storage / toolshed

Park Sites Evaluated



East Sammamish Park

- Margaret Mead construction overflow parking (‘18-’19)
- Potential future location of practice cricket pitch

Beaver Lake Park - North

- No existing parking
- Gas line beneath proposed location
- Gas line in unplanned area
- BPA & PSE

Beaver Lake Park – NW Corner

- 75’ easement for 2 gas lines
- Water not available
- Corner identified as “iconic” park entrance to unify “two halves” of park
- Partially encumbered by sensitive areas

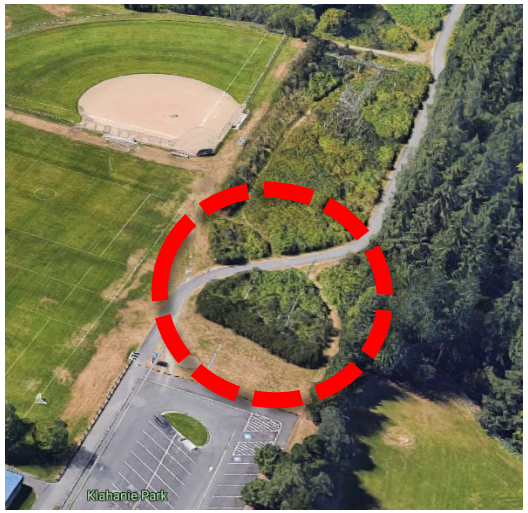
Park Sites Evaluated

CWU

- Future property use
- Property leased by others

Ebright Creek Park

- Not large enough for both community garden and plant holding area
- Adjacency to road (visible to neighbors/park users)



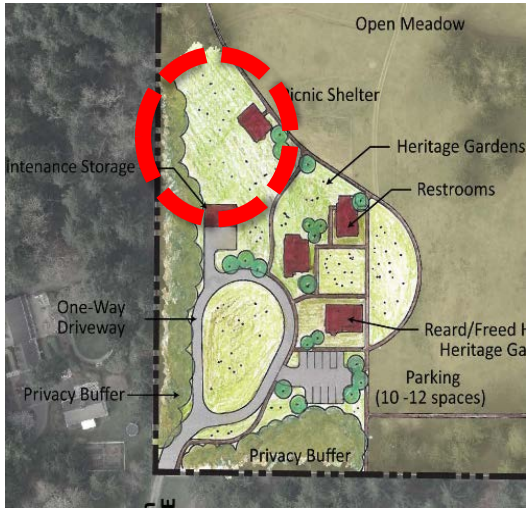
Klahanie Park

- Within utility easement
- Master Plan starting later this year

Park Sites Evaluated

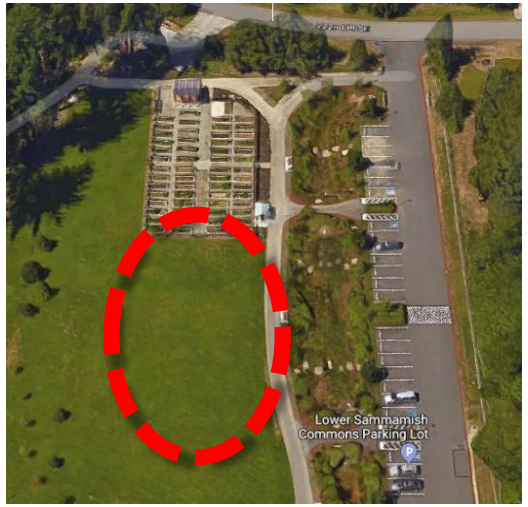
Big Rock Park Site A

- No existing parking
- Gas line beneath proposed location
- Gas line in unplanned area
- BPA & PSE



Big Rock Park Site C

- Master Plan is not currently planned for this property
- Property not legally granted to the City; date is unknown
- Proximity to existing community garden



Lower Commons Expansion

- Master Plan starting later this year
- Does not provide a second neighborhood location (north or south)
- Loss of level lawn area
- Town Center / regional stormwater impacts

Permanent Location - Big Rock Site B

PROS

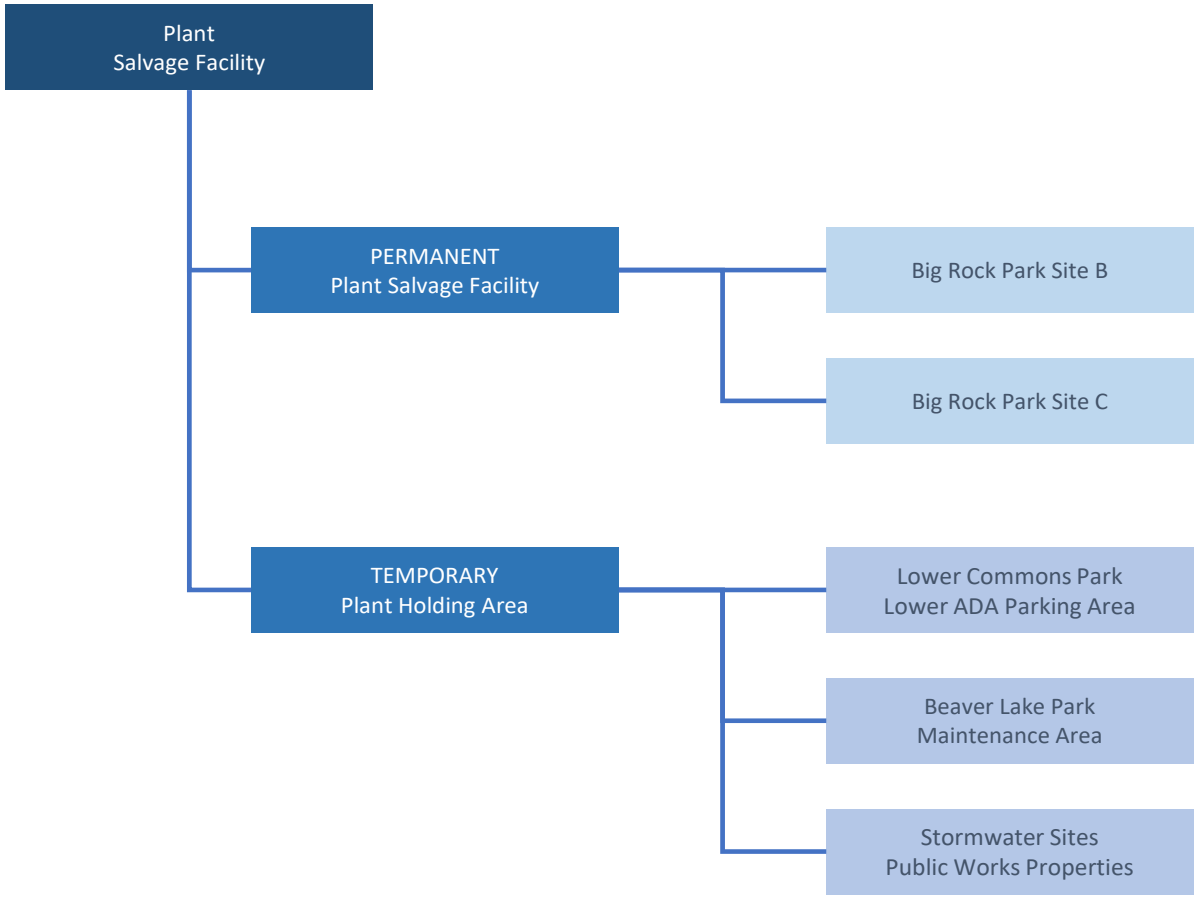
- Excellent sun exposure
- Flat terrain
- Utilities, access, & parking with Phase I improvements
- Infrastructure can be integrated into Phase I Improvements

CONS

- Availability 2020-21
- Possible deviation from adopted Master Plan

Plant Holding Area

- No existing plant holding facilities
- Some plants are being held at Plant Steward's homes
- Some plants are being held in a small area at Lower Sammamish Commons Community Garden
- Existing park facilities do not have capacity for permanent infrastructure



Temporary Plant Holding Area

Site Analysis – Lower Sammamish Commons Park

13

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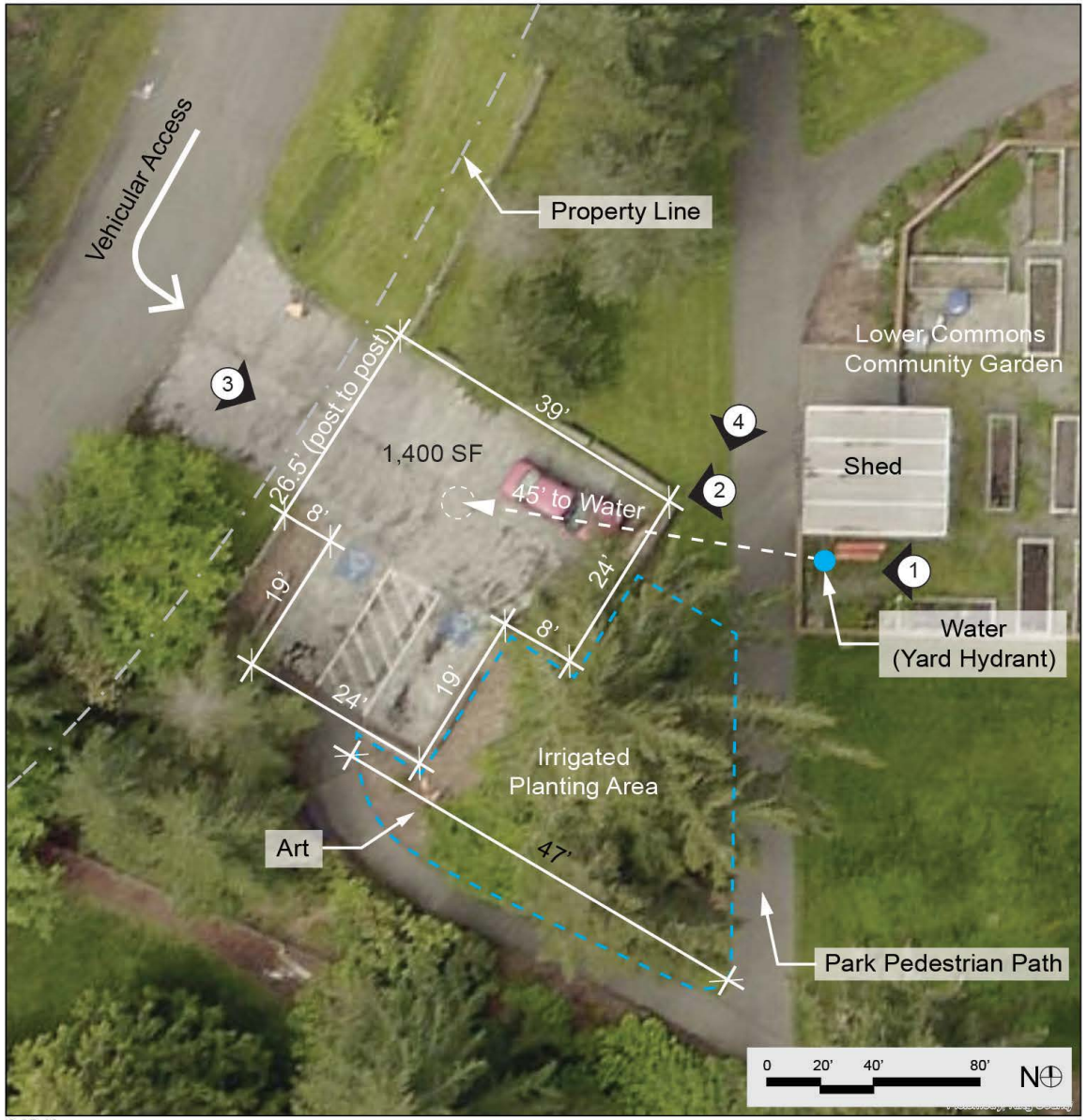


6-25-18

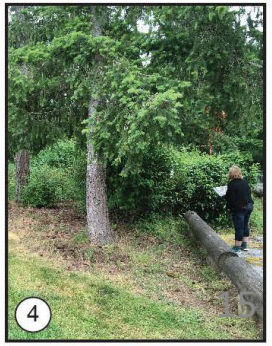
Lower Commons Park

Pros:

- Approximately 1,400/SF
- Water available onsite
- Adjacent irrigated planting area
- Yard hydrant near shed
- Vehicular and pedestrian access
- Proximity to Community Garden
- Area is paved
- Partial shade

Cons:

- Council approval is needed
- Close proximity to home owners
- Pervious pavement
- Loss of 2 ADA stalls
- Temporary fencing needed
- 4th Street construction project (traffic impacts)
- Closes trail connection



Site Photos

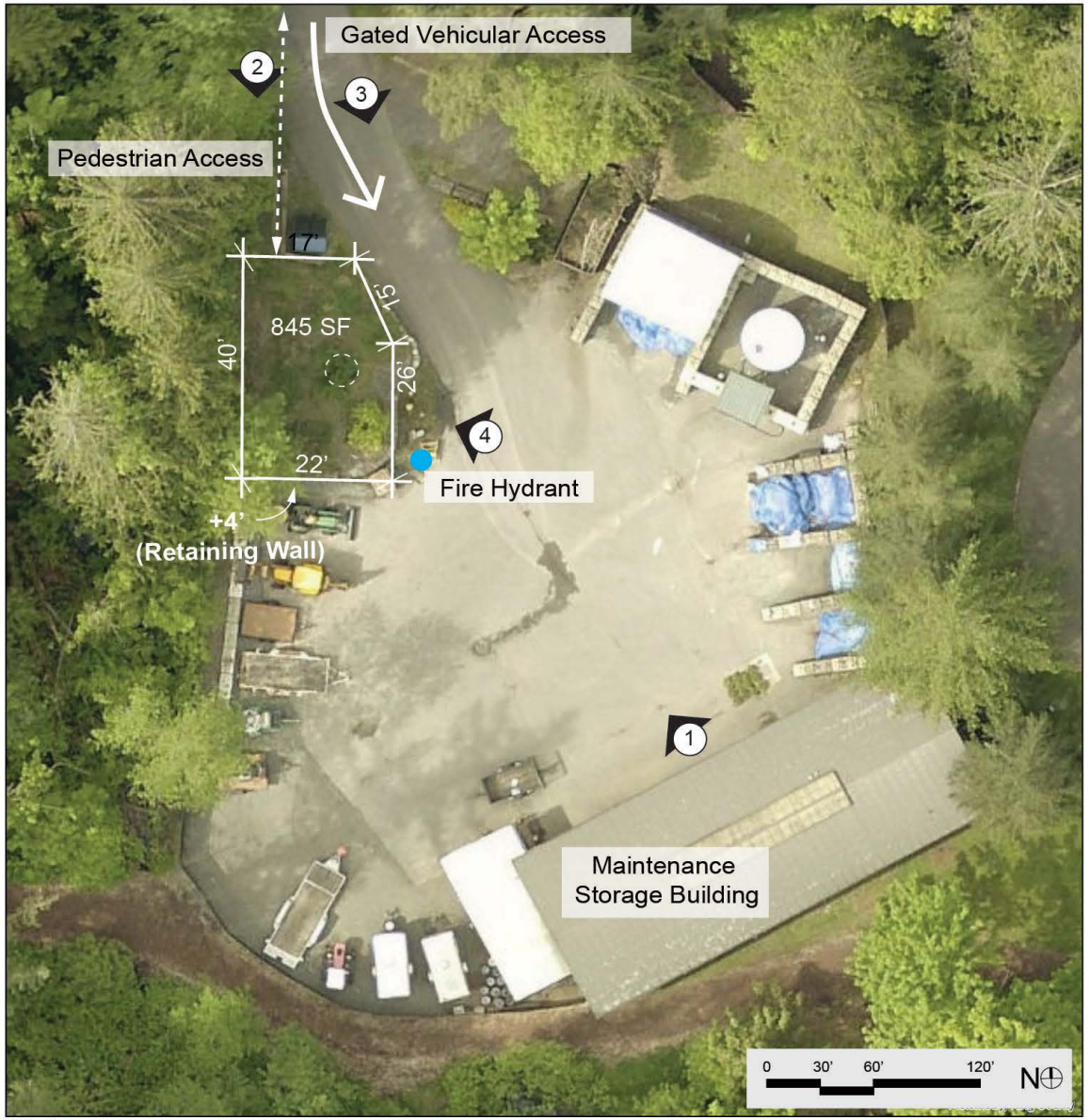
Pervious Pavement

Pervious Pavement

Proximity to Community Garden

Site Analysis – Beaver Lake Park Maintenance Area

Beaver Lake Park
18



8-29-18

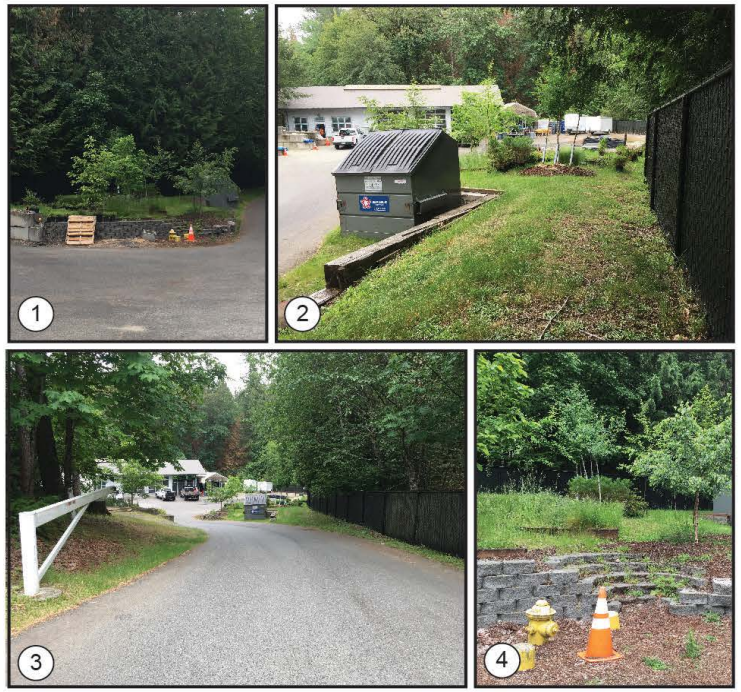
Beaver Lake Park

Pros:

- Vehicular access
- Water available onsite
- Currently a plant holding area
- Limited access from public (visibility, security)
- Partial shade
- Partially fenced
- Adjacent to parking

Cons:

- Approximately 850 SF
- Near working maint. staff (potentially dangerous)
- Fairly small, oddly shaped area
- Gated access for vehicles
- Plant holding area for Maint.
- ~4' Retaining wall at perimeter
- Temporary fencing needed



Site Photos

At-Grade Access

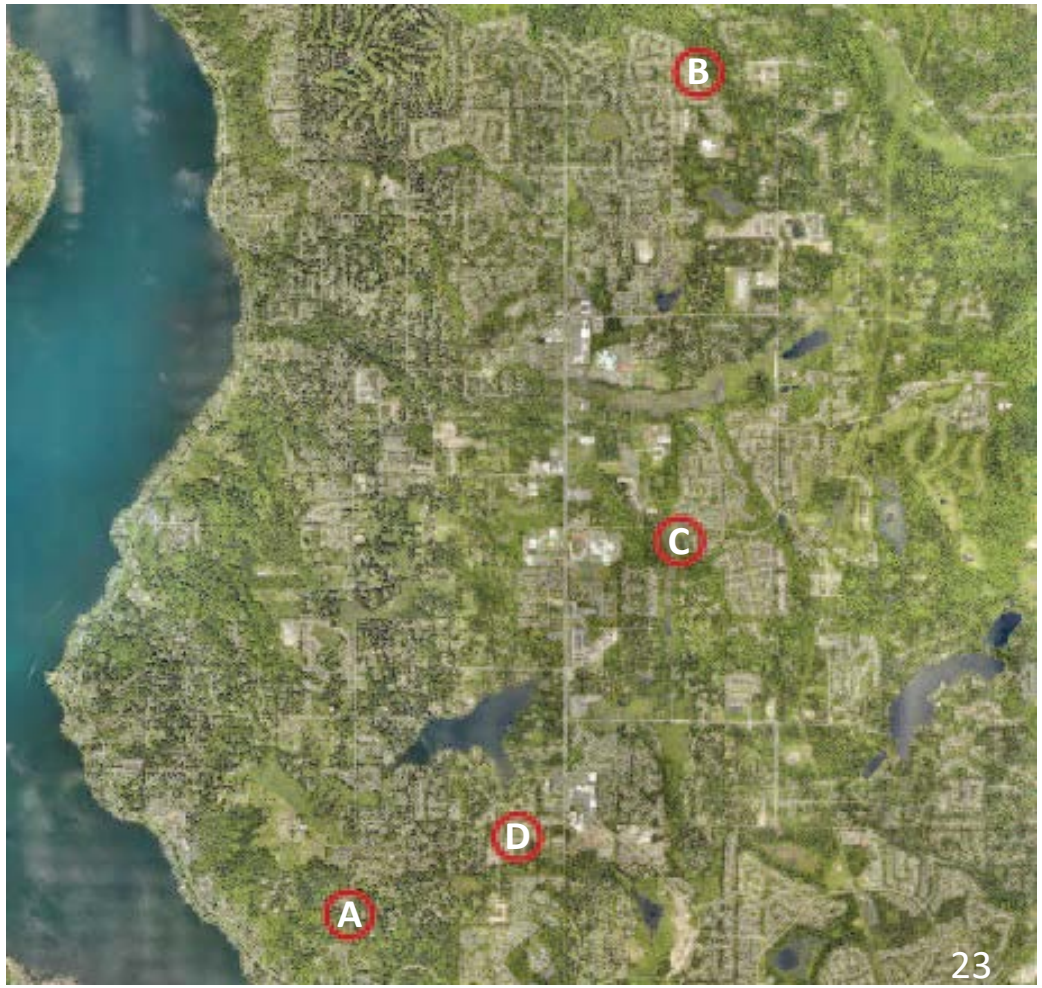
Current Use

Retaining Wall & Stairs

Site Analysis - Stormwater Facility Sites

Additional Sites Evaluated

- **Four stormwater sites** were evaluated as potential holding areas
- Sites are all:
  - City-owned
  - Vacant



Stormwater Site Limitations

- **Access to water**
  - Gas-powered generator and water pump
  - Open / close storm drain cover
  - Water may not be available all year
  - Water quality / filter
- **Electricity / Lighting** not available
- **Adjacent to neighbors**
- Removable **bollards** (heavy)
- Neighbors often **using as open space**

Next Steps

- Park Commission Recommendation for Temporary Plant Holding Area