

# BAINBRIDGE

## ISLAND CENTER SUBAREA PLAN

DRAFT EXISTING CONDITIONS SUMMARY

DECEMBER 2018



COVER IMAGE TBD

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# CONTENTS

<b>INTRODUCTION</b>	<b>1</b>
<b>EXISTING CONDITIONS</b>	<b>4</b>
<b>ISLAND CENTER PLANNING AREAS</b>	<b>4</b>
<b>POPULATION</b>	<b>4</b>
<b>LAND USE &amp; ZONING</b>	<b>6</b>
TAX STATUS AND CONSERVATION EASEMENTS	6
IC GENERAL STUDY AREA (OUTER BOUNDARY)	8
IC SPECIAL PLANNING AREA (INNER BOUNDARY)	8
HOUSING	10
CAPACITY ANALYSIS	10
NON-RESIDENTIAL USES (INNER BOUNDARY ONLY)	12
CRITICAL AREAS	14
<b>UTILITIES</b>	<b>16</b>
SEWER	16
WATER	16
GROUNDWATER	18
<b>TRANSPORTATION</b>	<b>20</b>
ROADS	20
LEVEL OF SERVICE	22
TRAFFIC COUNTS	22
PUBLIC TRANSPORTATION	24
NON-MOTORIZED	26
<b>ENVIRONMENT</b>	<b>28</b>
FLETCHER BAY WATERSHED	28
STORMWATER IMPACTS	28
FISH PASSAGE & HABITAT	28
LAND COVER	28
CONTAMINATED SITES	30
<b>APPENDICES</b>	<b>31</b>

**LIST OF FIGURES**

FIGURE 1. WINSLOW AND NEIGHBORHOOD CENTERS ON BAINBRIDGE ISLAND.....	3
FIGURE 2. ISLAND CENTER PLANNING BOUNDARIES.....	5
FIGURE 3. EXISTING WOODED CHARACTER AND TOPOGRAPHY ON MILLER ROAD.....	6
FIGURE 4. PARKS, SPECIAL TAX STATUS, AND CONSERVATION EASEMENTS.....	7
FIGURE 5. EXISTING ZONING WITHIN THE GENERAL STUDY AND SPECIAL PLANNING AREAS.....	9
FIGURE 6. BAINBRIDGE ISLAND SINGLE FAMILY HOME PRICE TREND.....	11
FIGURE 7. BAINBRIDGE GARDENS.....	12
FIGURE 8. JERRY'S REBUILD.....	12
FIGURE 9. BAINBRIDGE RENTAL.....	12
FIGURE 10. SPECIAL PLANNING AREA: PARCELS WITH EXISTING BUSINESSES AND ZONING.....	13
FIGURE 11. SPECIAL PLANNING AREA: POTENTIAL CRITICAL AREAS AFFECTING PARCELS.....	15
FIGURE 12. COBI SEWER SERVICE (EXISTING).....	16
FIGURE 13. ISLAND CENTER WATER SERVICE PROVIDERS (EXISTING).....	17
FIGURE 14. FLETCHER BAY WATERSHED MONITORING WELLS BY LOCATION AND AQUIFER.....	19
FIGURE 15. INTERSECTION OF MILLER AND NEW BROOKLYN ROADS.....	20
FIGURE 16. ROADS AND DESIGNATED CENTERS (EXCLUDES INDUSTRIAL CENTERS).....	21
FIGURE 17. 2021 LEVEL OF SERVICE.....	23
FIGURE 18. ISLAND CENTER BUS ROUTES AND SCHOOLS.....	25
FIGURE 19. ISLAND CENTER AREA AND ELEMENTS OF THE NON-MOTORIZED SYSTEM PLAN (FUTURE).....	27
FIGURE 20. WETLAND AND STREAM CATEGORIES.....	28
FIGURE 21. ISLAND CENTER PARKS AND STREAMS.....	29
FIGURE 23. IC CONTAMINATED SITE DETAILS.....	30
FIGURE 22. IC CONTAMINATED SITE LOCATION.....	30

# INTRODUCTION

This Island Center Subarea Plan (IC Subarea Plan) is called for by the Bainbridge Island Comprehensive Plan's Land Use Policy 4.2 (LU 4.2) which specifies a "multi-year work program to undertake subarea planning for the designated centers", including Island Center. The subarea planning process is further outlined in Bainbridge Island Municipal Code (BIMC) Section 2.16.210.

A previous Island Center subarea planning process took place between 2000 and 2002. A draft Island Subarea Plan was developed, but not adopted by City Council.

This 2018 Island Center Subarea Plan will help residents and businesses direct how their area should achieve Comprehensive Plan goals, while addressing this Designated Center's unique constraints and opportunities. Comprehensive Plan goals include focusing urban development in Designated Centers and offering housing and small scale, commercial and service activity outside of Winslow, and reducing traffic congestion by providing an alternative to shopping in Winslow. In addition, pedestrian-oriented development is encouraged in these areas.

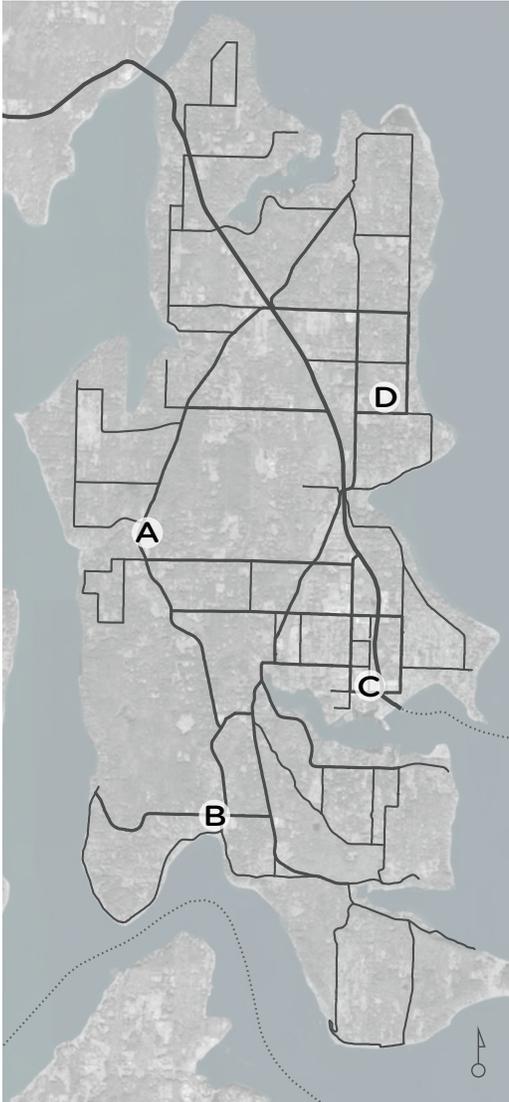
The Washington Growth Management Act (GMA) requires that comprehensive planning efforts ensure sufficient land capacity and urban services to accommodate the next 20 years of growth. Data shows that the City of Bainbridge Island (the Island) has capacity to accommodate anticipated population and employment growth from 2016 through the year 2036:

- Population Capacity Under Existing Zoning 6,814
- 2010-2036 Allocated Population Growth 5,635
- Net 20-Year Population Capacity (+ or -) +1,179

Additionally, the GMA requires that new growth be supported by adequate infrastructure to the level of service specified in the comprehensive plan.

Therefore, the Comprehensive Plan specifies that any localized increase in density over current zoning should further one or more of these public purposes:

- Shift density from critical areas or farmland to Winslow or other designated centers.
- Increase the range and supply of housing types and affordable housing.
- Contribute to public infrastructure or public amenities in excess of what is needed to mitigate the impacts of an individual project's development.
- Reduce greenhouse gas emissions.
- Plan for the effects of climate change to avoid or ameliorate the impacts.



A Island Center                      C Winslow  
 B Lynwood Center                  D Rolling Bay

Figure 1. Winslow and Neighborhood Centers on Bainbridge Island

## DESIGNATED CENTERS

The following Designated Centers are identified as places where urban development could occur.

- Winslow
- Industrial Centers: Day Road and Sportsman Triangle
- Neighborhood Centers: Island Center, Rolling Bay, Lynwood Center

Policy LU 5.11 Commercial and residential density within designated centers may be increased through the use of:

- Affordable housing.
- Transferable development rights (TDRs).
- Contributions to public infrastructure and public amenities in excess of what is required to mitigate the impacts of development.
- Transfer of residential density within the Winslow Mixed Use Town Center (MUTC) and the High School Road Districts or within neighborhood centers.
- Preservation of on-site of historic structures eligible for inclusion on a local, state or federal register of historic places.
- Locating ferry-related parking under building.

## NEIGHBORHOOD CENTERS

Neighborhood Centers are identified as places to offer housing and small scale, commercial and service activity outside of Winslow. The neighborhood centers are expected to help reduce traffic congestion by providing commercial and other services to facilities as an alternative to traveling to Winslow. In addition, the Comprehensive Plan encourages pedestrian-oriented development in these areas.

# EXISTING CONDITIONS

## ISLAND CENTER PLANNING AREAS

Island Center is classified as one of three Neighborhood Centers (NCs) in the 2016 update of the City of Bainbridge Island (the City) Comprehensive Plan (Comprehensive Plan). Collectively, Winslow, the Neighborhood Centers, and the two Industrial Centers of Day Road and Sportsman Triangle, constitute Bainbridge Island's Designated Centers.

A neighborhood center is expected to help reduce traffic congestion by providing an alternative to shopping in Winslow. In addition, the Comprehensive Plan encourages pedestrian-oriented development in these areas.

The map on the facing shows the boundaries of the IC Special Planning Area and the larger IC General Study Area.

### IC GENERAL STUDY AREA (OUTER BOUNDARY)

The general study area extends beyond the subarea planning zone to provide important geographic context for discussions related to population, transportation and mobility, natural resources, city services, etc. The outer boundary also encompasses all except the southern tip of the Fletcher Bay watershed. Changes in zoning or substantial infrastructure improvements are not anticipated in the area outside the subarea planning zone except to provide services or mitigate impacts for actions within the inner boundary.

### IC SPECIAL PLANNING AREA (INNER BOUNDARY)

The special planning area is the smaller, inner boundary that has been identified by the Steering Committee as a place to consider housing and small scale, commercial and service activity outside of Winslow. It is centered on the intersection of Miller and New Brooklyn Roads and includes a gas station, auto repair shops, Bainbridge Rental, Sawatdy Thai Cuisine, and Bainbridge Gardens, among others.

## POPULATION

According to the U.S. Census, Bainbridge Island had a population of 23,025 in 2010. The City estimates the population of the larger IC General Study Area at approximately 2,500 persons. This number is derived from a combination of GIS and existing zoning data; it assumes 2.5 persons per household (PPH) for Single Family Residences (SFR) and 1.8 PPH for Multifamily (MF) and Auxiliary Dwelling Units (ADU).

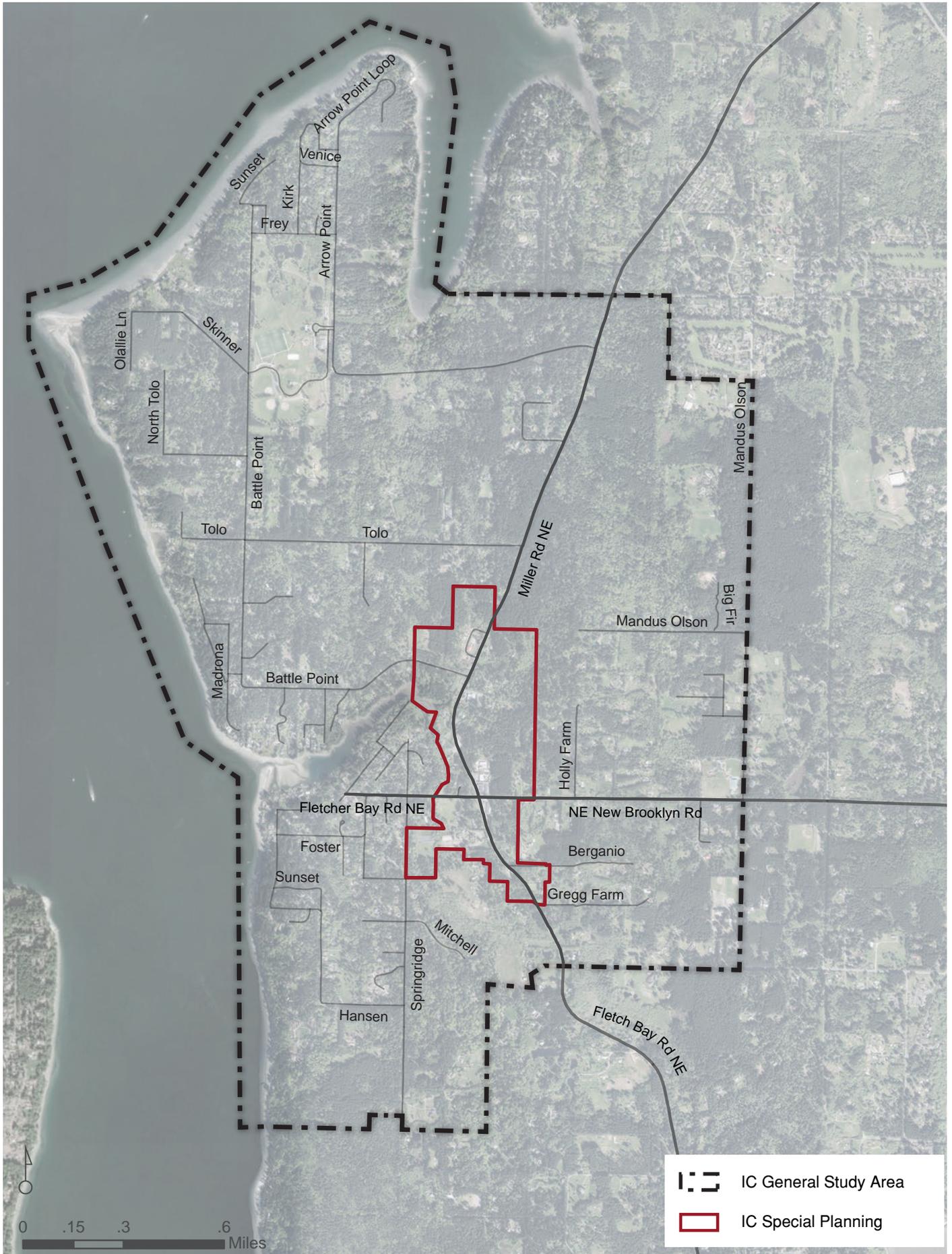


Figure 2. Island Center planning boundaries

## LAND USE & ZONING

### TAX STATUS AND CONSERVATION EASEMENTS

The City provided data identifying parcels in the General and Special Planning areas with special tax status. GIS data included assessor property class codes in the following categories:

Agriculture: 810, 820 & 830

Forestland & Timberland: 880, 920, 950

Conservation lands: 940 (wetlands, streams)

Undeveloped: 910

In addition, parcels that are owned by the Bainbridge Island Land Trust (BILT) or parcels with BILT easements are shown in Figure 3.



Figure 3. Existing wooded character and topography on Miller Road.

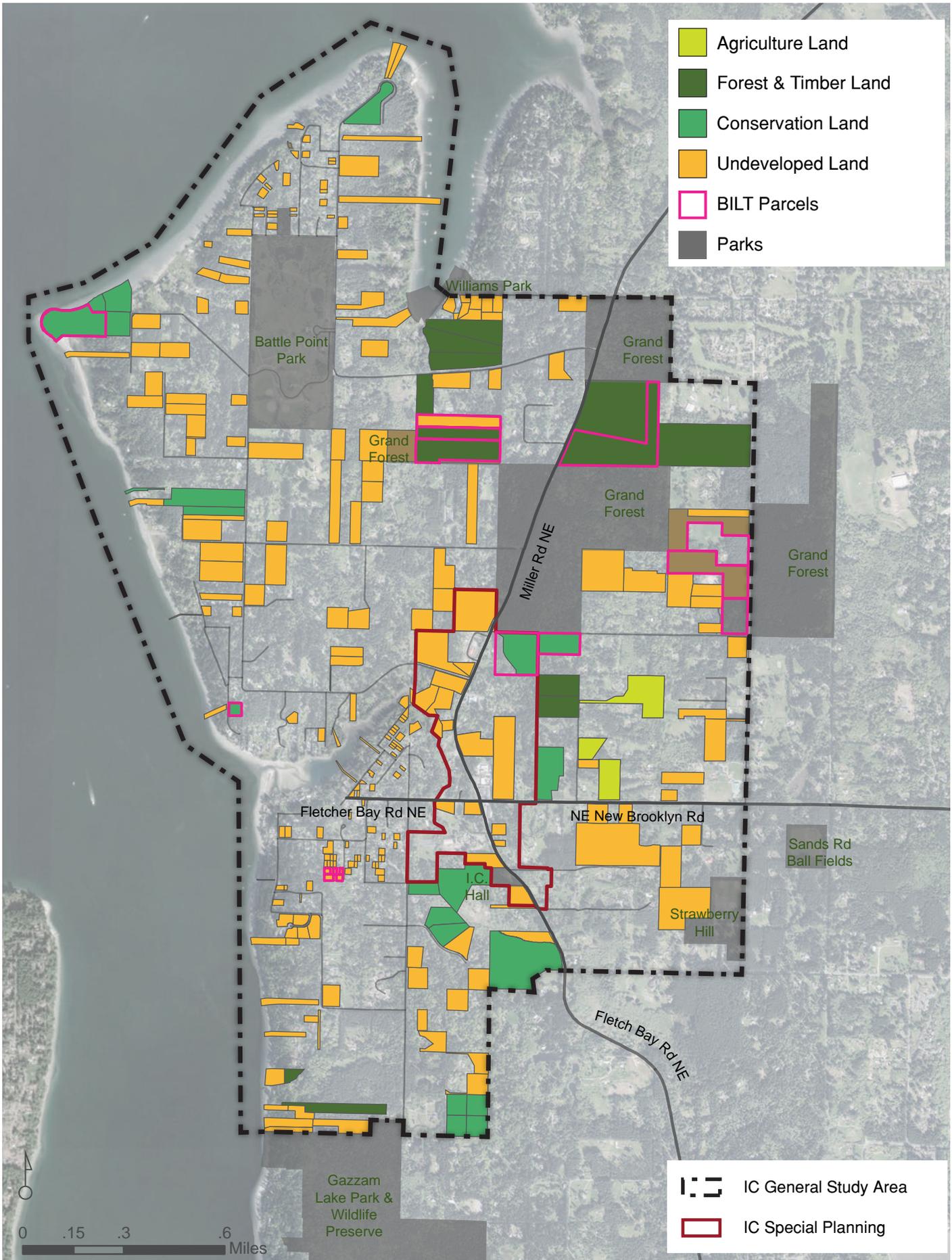


Figure 4. Parks, special tax status, and conservation easements

## LAND USE & ZONING (CONT)

### IC GENERAL STUDY AREA (OUTER BOUNDARY)

The IC General Study Area includes approximately 1,246 surrounding parcels (~ 2,000 acres) and contains four primary zoning districts. The majority of land is designated as residential, supporting single family residences. According to City data, 275 parcels are considered vacant but 107 of those parcels are in Forestry or Open Space Taxation Status or part of the Bainbridge Island Land Trust.

### IC SPECIAL PLANNING AREA (INNER BOUNDARY)

This area encompasses approximately 67 tax parcels (approximately 147 acres). All parcels in the project area currently zoned NC are found exclusively in the IC Special Planning Area. All six parcels, totaling approximately 8 acres, have frontage on the east side of Miller Road.

Existing Zone	# Parcels
Neighborhood Center (NC)	0
Residential 0.4 (R-0.4)	448
Residential 1 (R-1)	348
Residential 2 (R-2)	441
Split	9
<b>Total Parcels</b>	<b>1,246</b>

Table 1. General Study Area parcels by zone

Existing Zone	# Parcels
Neighborhood Center (NC)	6
Residential 0.4 (R-0.4)	30
Residential 1 (R-1)	20
Residential 2 (R-2)	9
Split	2
<b>Total Parcels</b>	<b>67</b>

Table 2. IC Special Planning Area parcels by zone

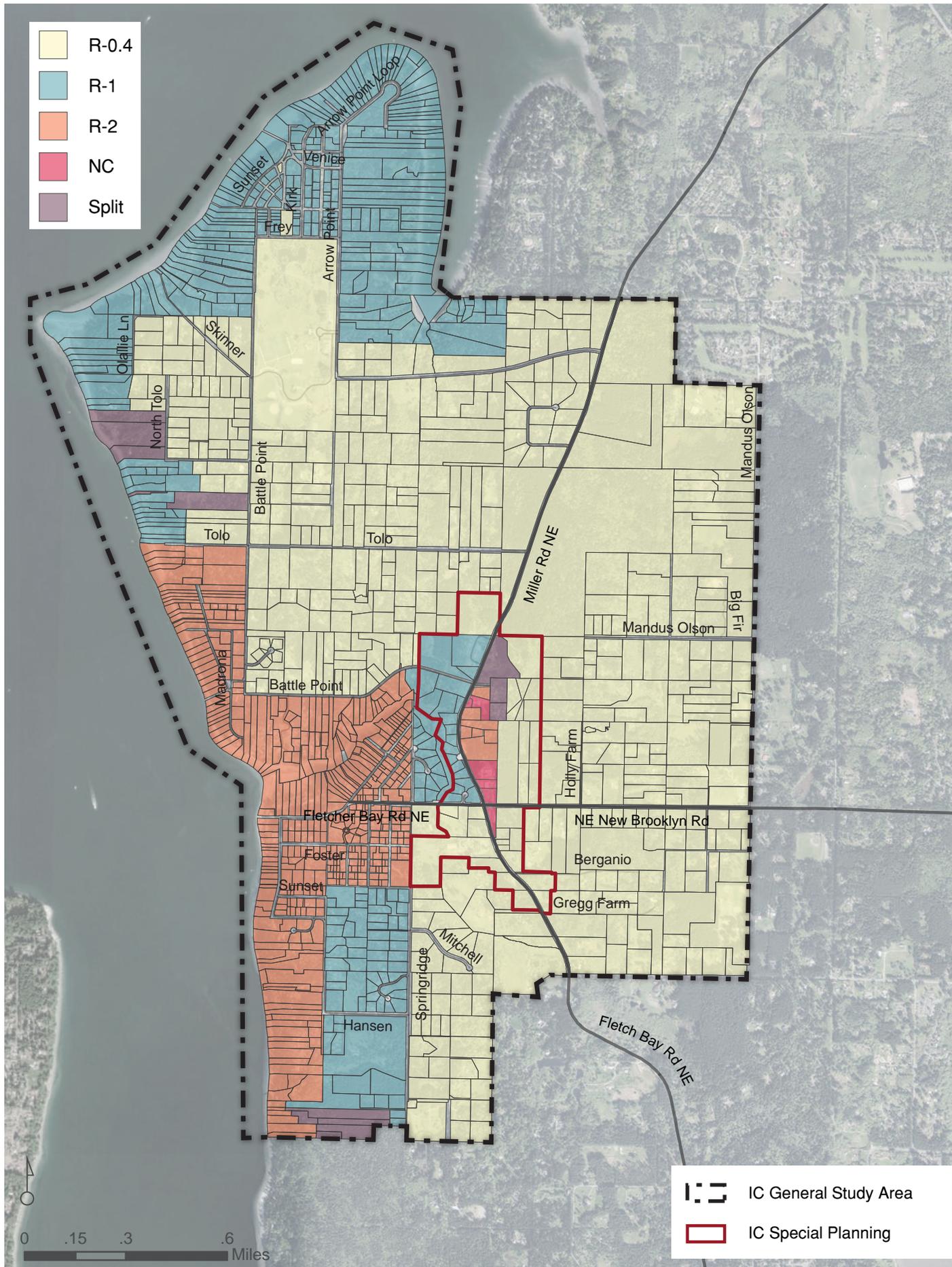


Figure 5. Existing zoning within the General Study and Special Planning areas.

## LAND USE & ZONING (CONT)

### HOUSING

Over the last nine years, home prices on Bainbridge Island have climbed to record highs while inventory has reached a historic low. The cumulative annual growth rate of residential units is less than 1%. In May 2018, the median single family home price on the island was \$875,000. Nearly half of homes, 44%, sold for over \$1 million. Median condo prices are over \$500,000. Average rental prices are approaching \$2000 a month, and rental vacancy rates are well below the 5% rate more typical of well-functioning rental markets.

Single family residences, a low density land-use pattern, account for about 80% of all housing units and almost 91% of the island’s land use area.

An analysis of home sales data available through Zillow indicates that in 2018, the median price of a single family home in the IC General Study Area was \$1,075,000; nearly 20% higher than the island-wide median.

### CAPACITY ANALYSIS

There are 283 units of affordable housing on Bainbridge Island. As of June 2018, approximately 450 people were wait-listed to access those units.\* According to the City, there are no affordable housing units in the General Study or Special Planning areas.

A capacity analysis conducted by the City concluded that under current zoning, the IC General Planning Area has the potential to support an additional 500 single family residences. To account for parcels encumbered by critical area restrictions and septic limitations, a conservative 25% reduction is applied, lowering the estimated capacity to 375 SFRs. See page 15 for more information on critical areas.

See Appendix B for additional capacity analysis details of the IC special Planning Area.

MEDIAN PRICE OF A SINGLE FAMILY HOME ON BAINBRIDGE IN 2018:

\$875,000

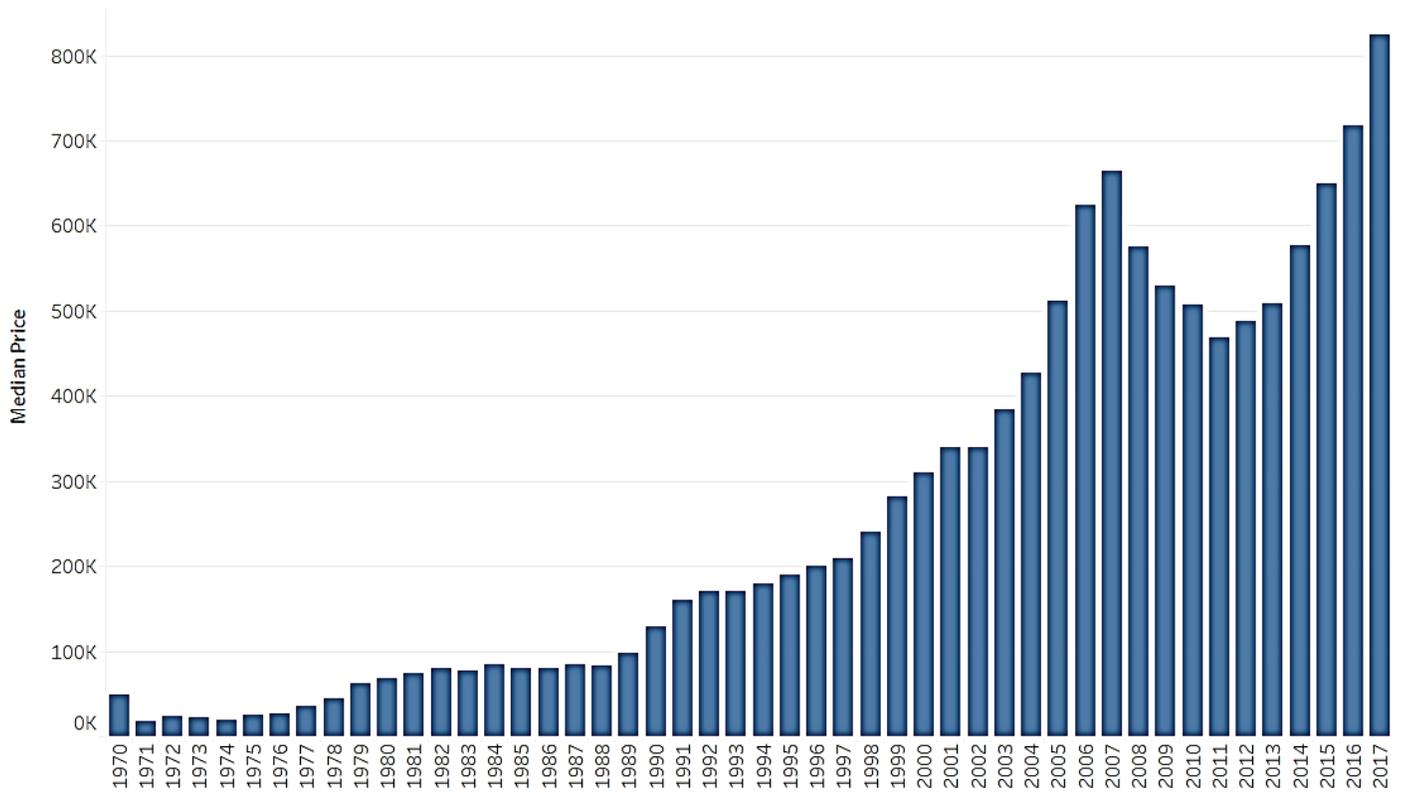
MEDIAN PRICE OF A SINGLE FAMILY HOME IN ISLAND CENTER IN 2018:

\$1,075,000

Existing Zone	Max # SFR Allowed	Existing SFR
R-0.4	421	361
R-1	318	273
R-2	433	322
Split	17	8
Vaccant Parcels All Zones	275	0
<b>Total</b>	<b>1,464</b>	<b>964</b>

Table 3. General Study Area existing capacity analysis (no critical area reduction applied)

\* 2018 Affordable Housing Task Force Final Report, City of Bainbridge Island



- Data pulled from the Kitsap County GIS and Assessors websites
- Only includes records with [Improv Typ] = "DWELLING" OR [Num Dwell] > 0
- Only includes records with Property Class = 111 - Single Family Residence

Figure 6. Bainbridge Island Single Family Home Price Trend  
(Source: 2018 Affordable Housing Task Force Report)

## LAND USE & ZONING (CONT)

### NON-RESIDENTIAL USES (INNER BOUNDARY ONLY)

In addition to several public or private facilities, fifteen existing businesses are located in the IC Special Planning Area. Of note, the Bainbridge Gardens business is located on parcels not zoned NC. The 16.7-acre site on Miller Road is designated a contract zone to recognize the activities currently occurring on-site under the provisions of an Unclassified Use Permit and to consider some expansion of those activities.

Parcel "c" identified on the adjacent map contains the area's only contaminated site. See page 30 for details.

Map ID	Name	Address
a	Island Center Hall	8395 Fletcher Bay Rd NE
b	Barnabee Farm Inc	8545 Fletcher Bay Rd NE
c	Fletcher Bay Mart (76 gas & convenience)	8800 Fletcher Bay Rd NE
c	Sawadty's Thai	8770 Fletcher Bay Rd NE
c	Julie's Frame & Gallery	8780 Fletcher Bay Rd NE
c	Fleetstreet	8800 Fletcher Bay Rd NE
d	All Seasons Party & Event Rental	8820 Miller Rd NE
d	Bainbridge Rental (equipment rental)	8820 Miller Rd NE
d	Island Center Self Service LLC (or IC Self Storage?)	8820 Miller Rd NE
e	Jerry's Auto Rebuild	8890 Miller Rd NE
e	Bainbridge island Auto Repair	8890 Miller Rd NE
f	Animal Magnetism (dog kennel/daycare)	8926 Miller Rd NE
f	Island Center Self Storage (or Self Service??)	8926 Miller Rd NE
g	City Gravel Lot	8964 Miller Rd NE
h	Congregation Kol Shalom	9010 Miller Rd NE
i?	Island Center Cemetery	N/A
j	Modern Collision Rebuild	9270 Miller Rd NE
k	Island Center Auto	9270 Miller Rd NE
l	Bainbridge Gardens	9415 Miller Rd NE

Table 4. Inner boundary: non-residential uses by location



Figure 7. Bainbridge Gardens



Figure 8. Jerry's Rebuild



Figure 9. Bainbridge Rental

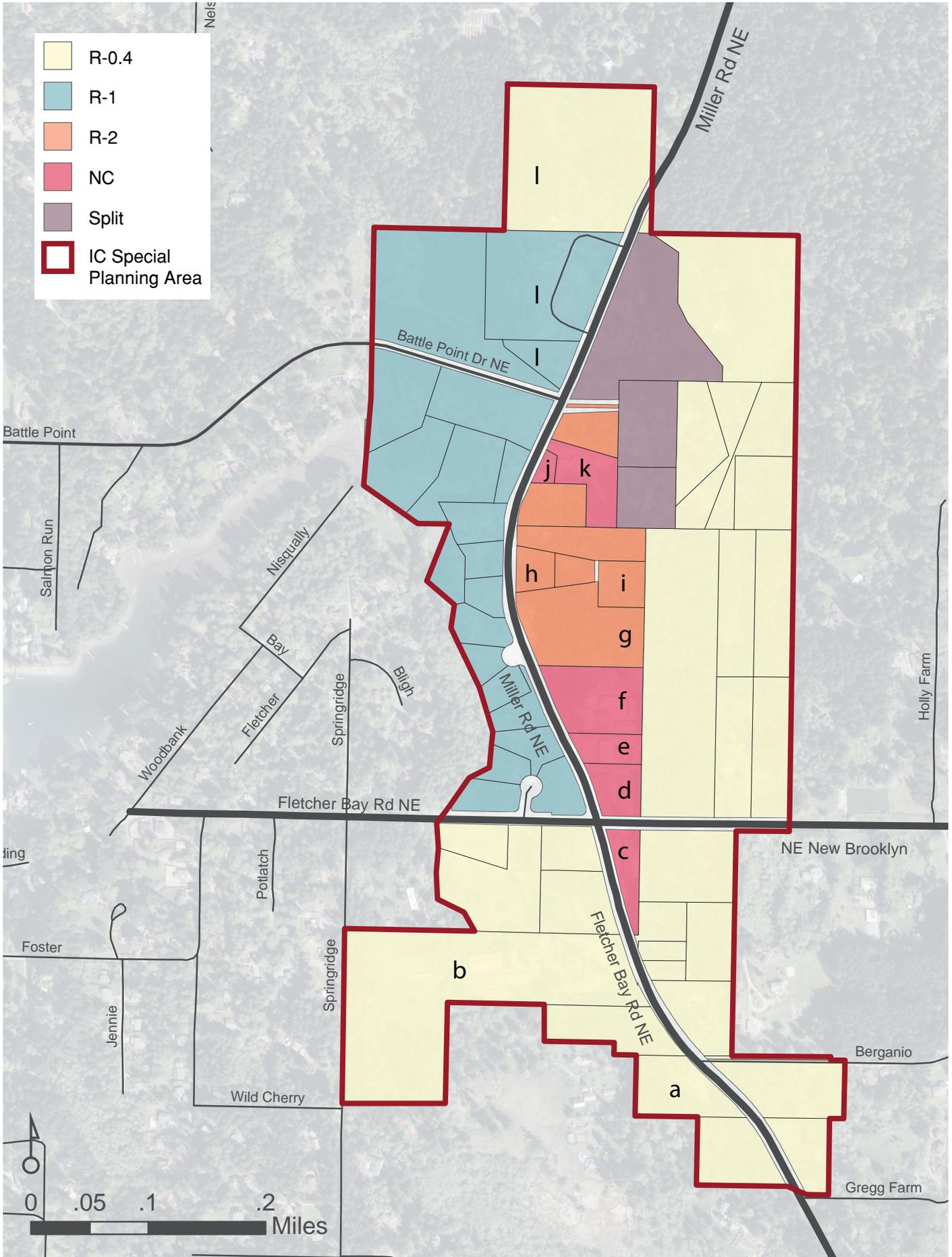


Figure 10. Special Planning Area: parcels with existing businesses and zoning

## LAND USE & ZONING (CONT)

### CRITICAL AREAS

Future land use for each parcel in the IC Special Planning Area is impacted by the presence of critical area restrictions such as steep slopes and protected stream and wetland habitats. The City provided GIS data indicating the presence of slopes, and streams and wetlands with associated buffers (Figure 11).

The development potential of individual parcels has not been determined in this Existing Conditions Memo.

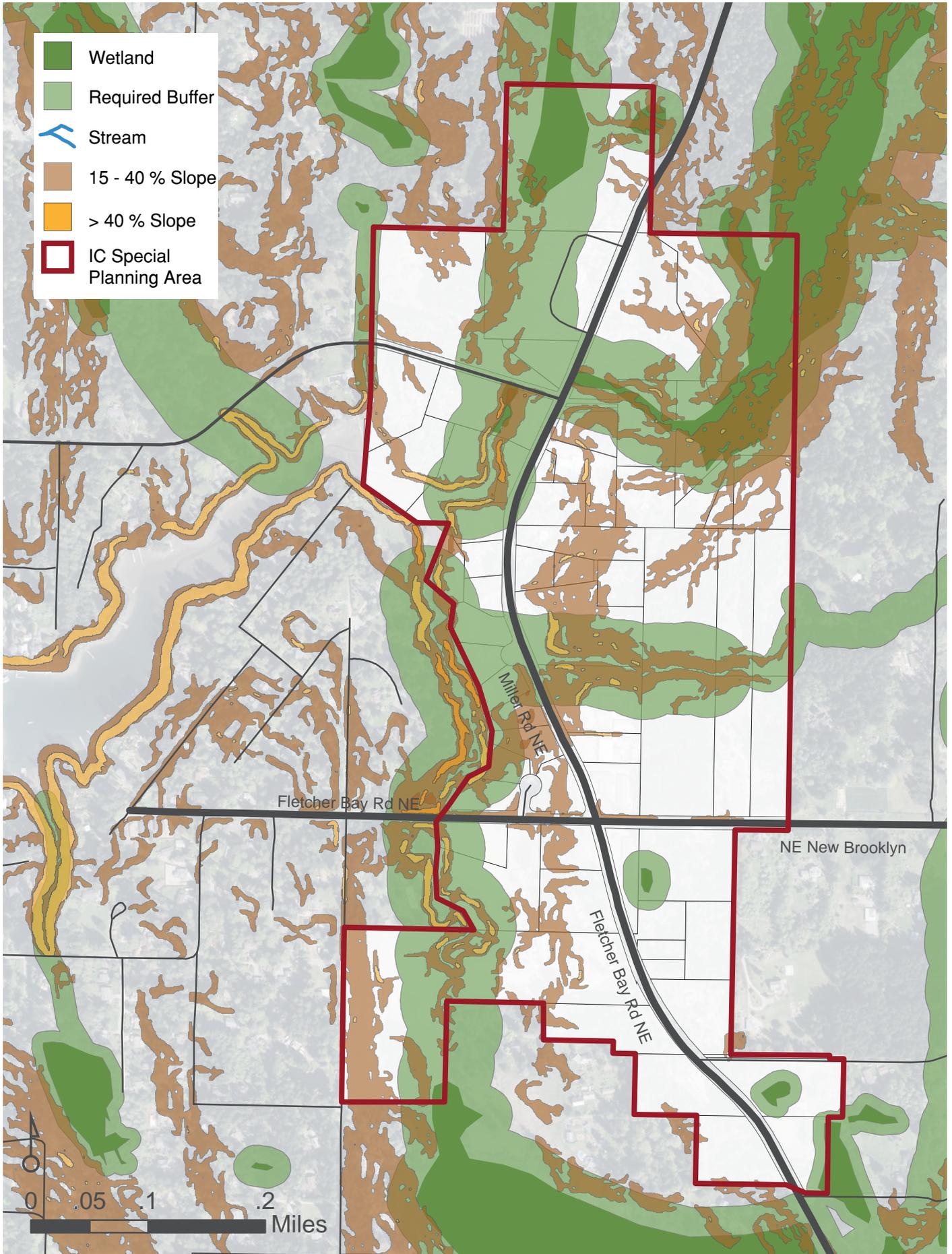


Figure 11. Special Planning Area: potential critical areas affecting parcels

## UTILITIES

### SEWER

The IC Special Planning Area is not currently served by the COBI sewer system. The area relies on private septic systems for this function.

### WATER

The Special Planning Area is partially served by the COBI water system.

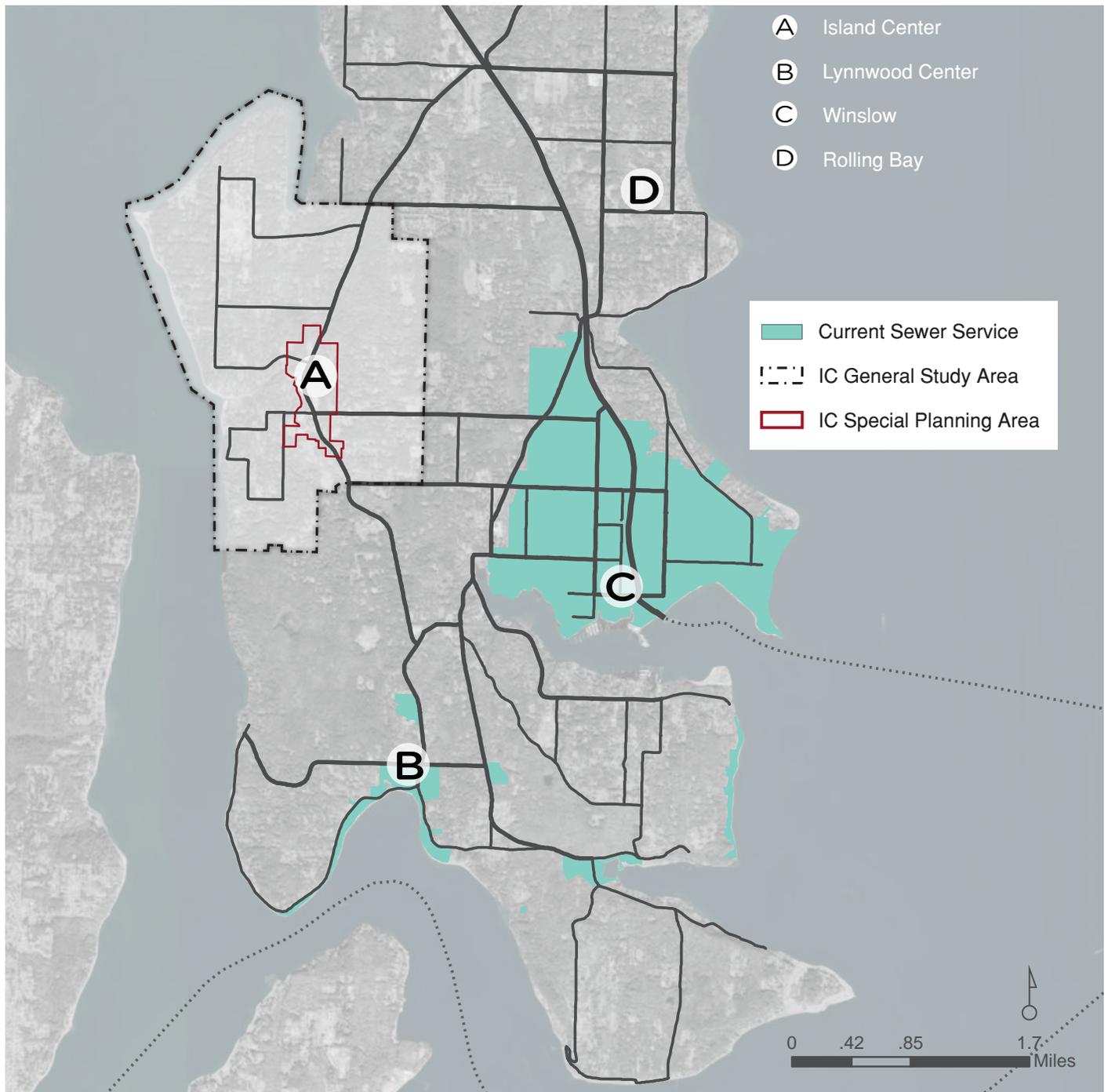


Figure 12. COBI sewer service (existing)

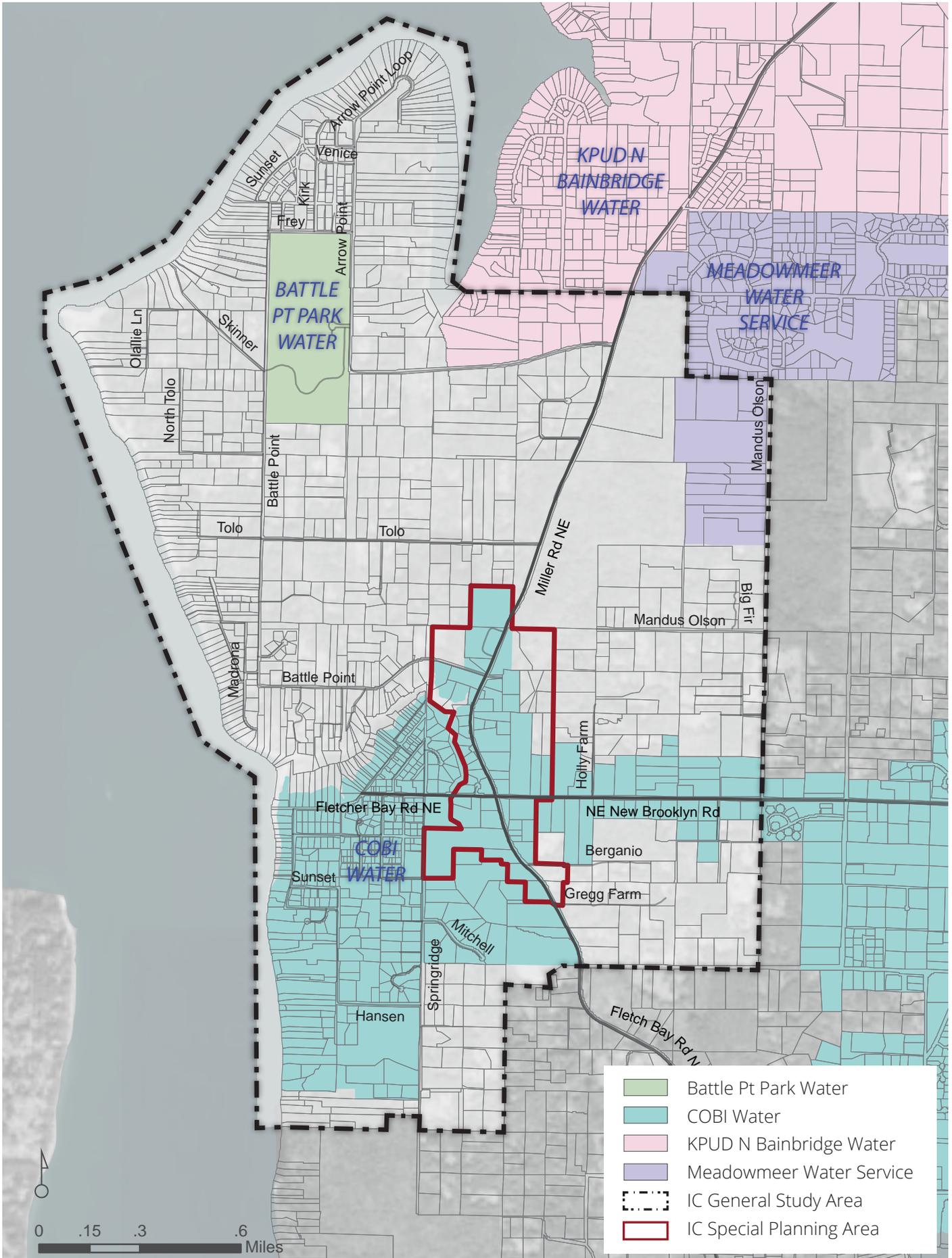


Figure 13. Island Center water service providers (existing)

## GROUNDWATER

As of January 19, 2018, a new State law, ESSB 6091, states that new wells drilled for use in residential projects are subject to a 500-dollar fee and a limit of 950 gallons per day.

Bainbridge Island has six aquifers and the City has modeled the unique depths of the different aquifers across the Island. The City has had a groundwater monitoring program for over 10 years, using 86 public and private wells across the Island to monitor water levels and to monitor chloride - a sign of seawater intrusion. Each year the data collected over the last ten years is assessed against the Early Warning Levels (EWLs), reviewing for safe yield and seawater intrusion. More information about the current state of the Island's aquifers can be found in the 2017 Early Warning Level Assessment.

In the Fletcher Bay watershed nine wells are monitored for water level; two in the Fletcher Bay aquifer (FBA), three in the sea level aquifer (SLA) and four in the perched aquifer (PA). Eight wells show an increasing trend and one monitoring the SLA shows a decreasing trend.

In 2011, the USGS completed a groundwater model for Bainbridge Island.\* As part of the Comprehensive Plan Update process, the City hired Aspect Consulting to take the City's monitoring data and use that data to run the model and calibrate the model to be more accurate. The well monitoring data, rainfall patterns and the climate change information was used to calibrate the model. The review of the USGS model gave the city updated information about groundwater recharge areas and aquifer capacity. The review concluded that the aquifer system can support the City's current forecasted growth from the Comprehensive Plan (through 2036) and beyond.

The City is considering the development of a groundwater management plan in 2019.

See Appendix A for further information on the Fletcher Bay Watershed.

More information about the City's Groundwater Monitoring Program and USGS model review can be found online.\*\*

\*<https://pubs.usgs.gov/sir/2011/5021/>

\*\*<https://www.bainbridgewa.gov/177/Water-Resources-Libraries> .



Figure 14. Fletcher Bay Watershed monitoring wells by location and aquifer

## TRANSPORTATION

### ROADS

The Bainbridge Island roadway system is designed for the movement of people and goods throughout the community. Major regional transportation features of the Island include the Washington State Ferry Terminal, which connects Bainbridge Island to downtown Seattle; and SR 305, which connects the Island to the Kitsap and Olympic Peninsula. SR 305 is the Island's principal transportation corridor, providing an important north-south connection.

The State system is supported by a City roadway system that connects residential areas to the highway and retail and employment areas. The City's arterial, collector, and residential street system provides roadway connections and access to properties within the City.

Several roads spanning both the IC General and Special Planning areas are identified as important travel corridors for the island.\*

- Miller Road (Commute, Retail, and Freight Corridor)
- High School Road (Commute, Retail, School, and Freight Corridor)
- New Brooklyn Road (School Corridor)
- Fletcher Bay Road (Freight Corridor)

Public comments indicate that Fletcher Bay Rd NE is heavily used by vehicles traveling south past NE New Brooklyn Road and turning left onto NE High School Road.

\* 2017 Island-Wide Transportation Plan



Figure 15. Intersection of Miller and New Brooklyn Roads

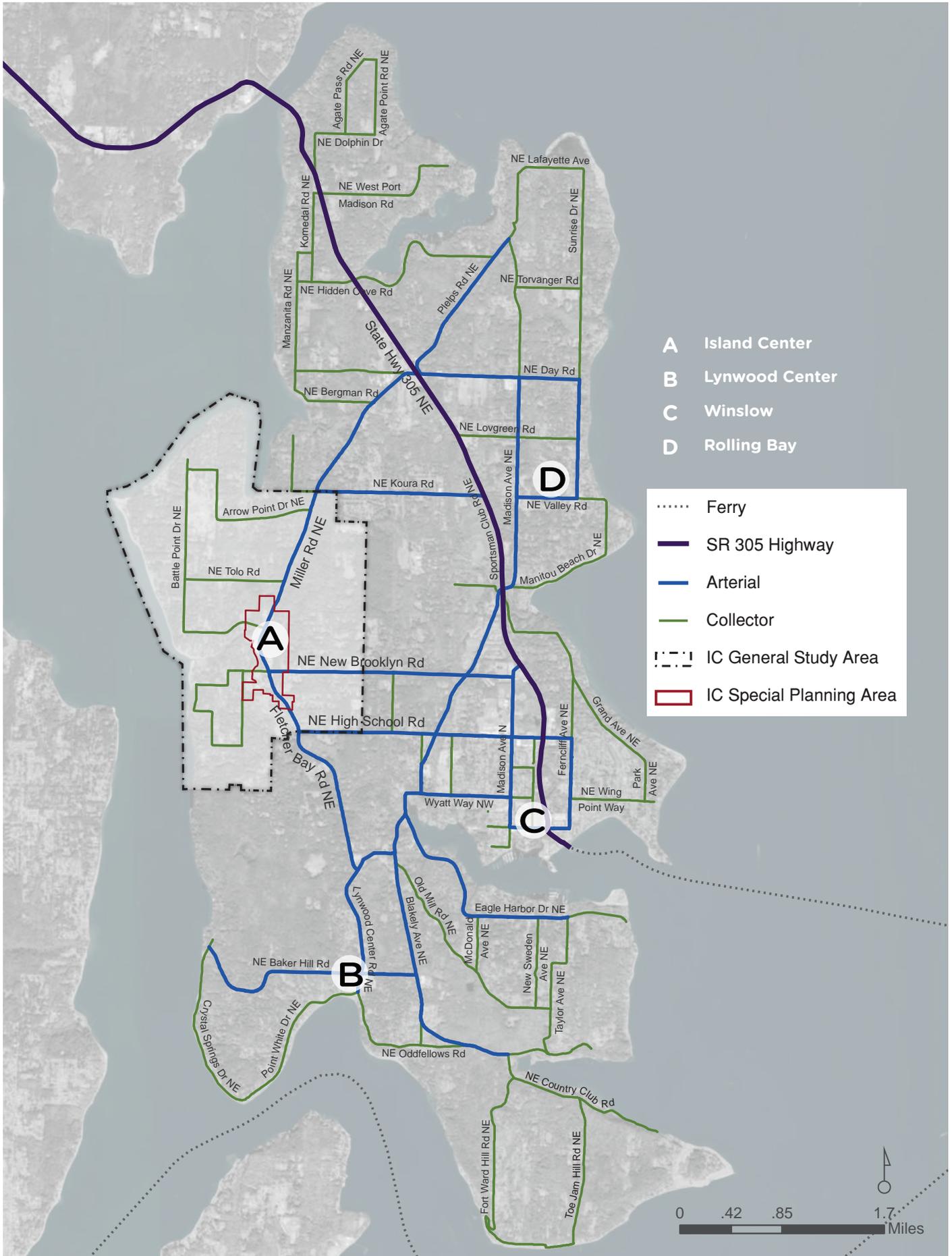


Figure 16. Roads and designated centers (excludes Industrial Centers)

## TRANSPORTATION (CONT)

### LEVEL OF SERVICE

Level of Service (LOS) is a measurement used in transportation planning to assess the operating performance of the transportation system. For roadways, LOS measures the degree of traffic congestion along a roadway from free-flow traffic with minimal delays to highly constrained traffic with long delays. For intersections, LOS is measured as a function of vehicle delay in clearing the intersection.

The Island-Wide Transportation Plan identified one key roadway segment in the IC Special Planning area as below the minimum level of service (LOS) standard forecasted for 2021: Miller Road from New Brooklyn to Arrow Point – shoulder improvements for non-motorized users are recommended. An improvement project is currently programmed in the City's CIP for this segment.

Transportation Solutions, Inc. (TSI) performed a “City-wide Level of Service Update” in 2016 based on updated traffic information as well as a new, more refined, transportation model as noted in the April 13, 2016 memo to the City. This memo was consistent with prior evaluations. It noted no intersection Level of Service (LOS) failure through 2035 but did indicate that the three sections of Miller Rd, north of New Brooklyn (Miller Rd, New Brooklyn to Arrow Pt), would fail beginning in about 2021 based on segment capacity. See Figure 17.

### TRAFFIC COUNTS

Early in the Island Center (IC) Sub-area Planning process, a limited traffic count was conducted to accomplish two objectives; 1) validate the observation by many area residents and business owners that the AM peak traffic was at least as large as the PM peak traffic, and 2) identify the relative total volume of traffic as compared to prior work.

The 2018 data was taken via continuous counters during the period of 6/11 - 6/19, with the data from 6/12 - 6/18 analyzed. This data showed that the local observations were accurate and that the AM peak is generally close to if not slightly higher than the PM peak volumes. It also showed that the total traffic volumes may be slightly less than identified during prior studies. The later can not be wholly validated at this time due to the limited data collected during this early analysis. Further traffic counts, over a broader area will be needed to validate current traffic conditions for future analysis of potential alternatives for the IC study area.

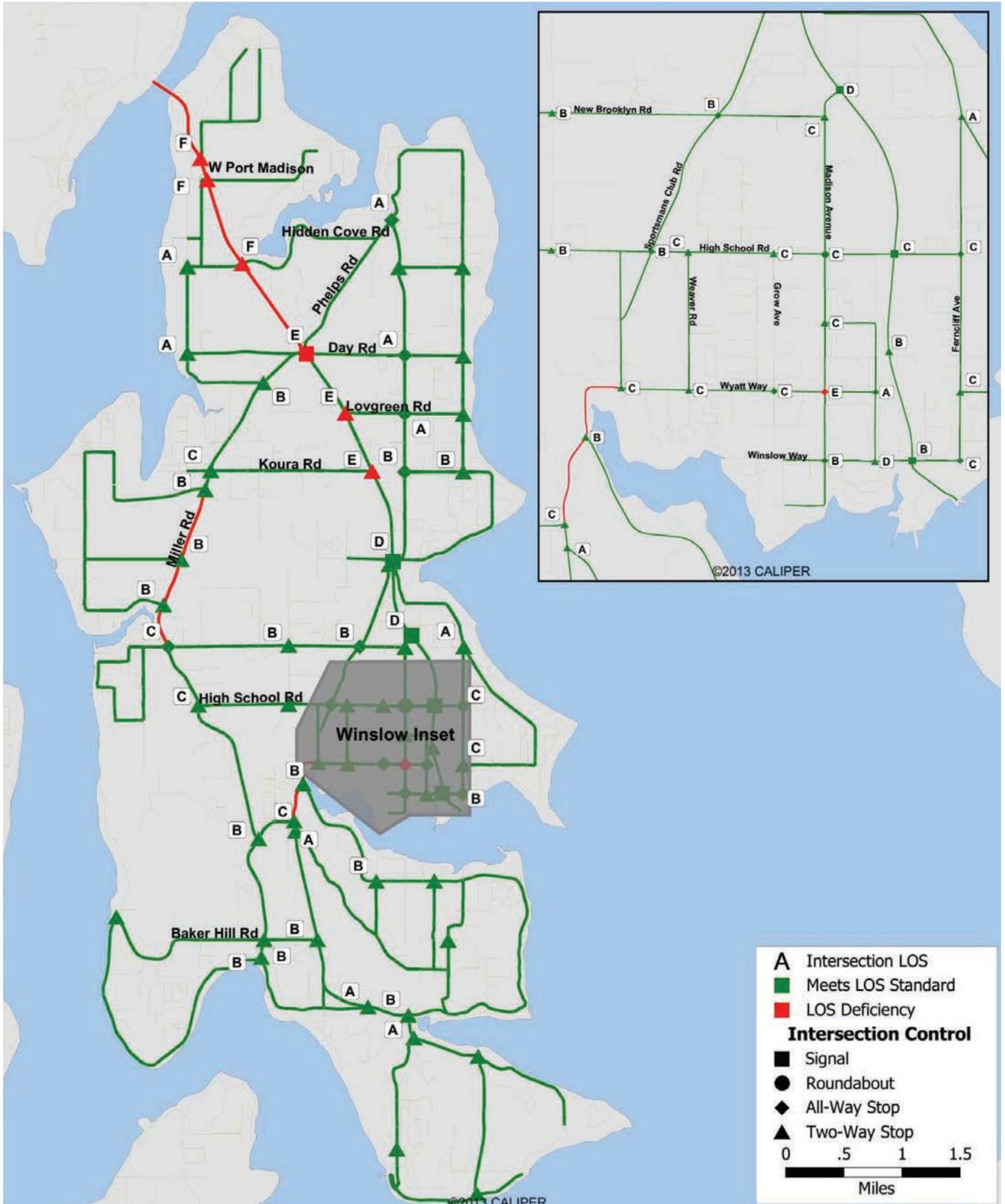


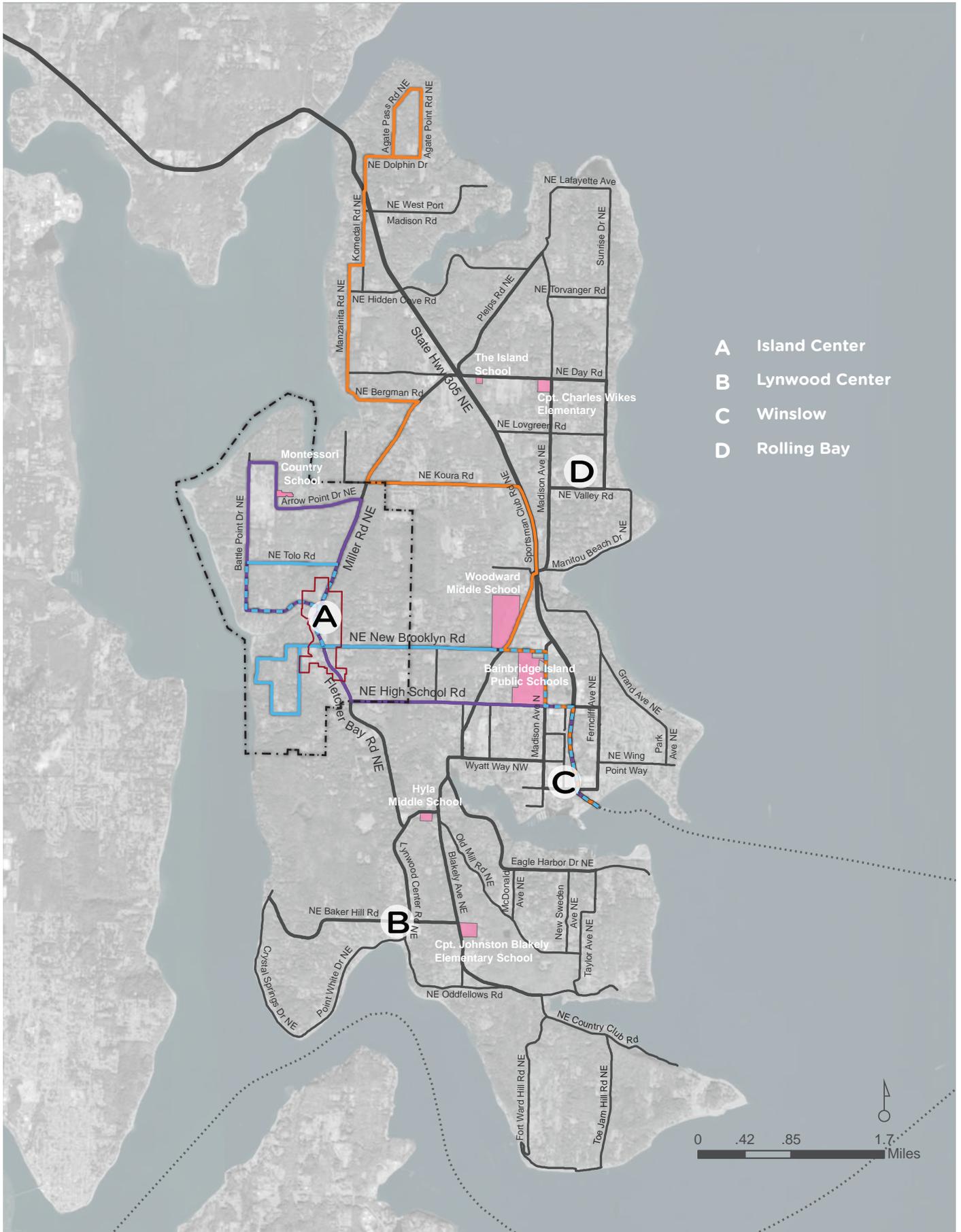
Figure 17. 2021 Level of Service  
 (Source: 2017 COBI Island Wide Transportation Plan)

## TRANSPORTATION (CONT)

### PUBLIC TRANSPORTATION

Two Kitsap Transit bus lines (95 & 106) serve residents of Island Center and the 93 line serves just north of the Island Center area (Figure 16). The #95 has the highest ridership for all Bainbridge Island buses. Service is limited to weekdays only.

In general, bus stops are not marked with Kitsap Transit signs. The bus will stop along the route for riders waiting in a place that is safe for the individual and safe for the bus to pull over.



#93 #95 #106 School IC General Study Area IC Special Planning Area

Figure 18. Island Center Bus Routes and Schools

## TRANSPORTATION (CONT)

### NON-MOTORIZED

Non-motorized users include people walking, cycling, horseback riding, and using wheelchairs. The City’s non-motorized transportation infrastructure includes bike lanes and road shoulders, trails, and sidewalks.

Trails are mostly six foot wide (the City’s minimum is six feet) and surfaced with gravel, although neighborhood trails are often narrower. Sidewalks are required per City Design and construction standards in designated centers.

Minimum shoulder widths are designated as 6-foot (Type B) or 3-foot (Type C). Type B shoulders are intended to provide space that is adequate to accommodate cyclists riding with traffic and pedestrians walking facing traffic. Type C shoulders are intended to ballast the paved roadway in suburban areas or provide shy distance from curbs in urban areas. Three-foot gravel shoulders are not considered a non-motorized facility but they provide limited space between the paved edge and the ditch for pedestrians when vehicles are traveling in both directions.

The Core 40 Shoulder Program would create a network of 40+ miles of safe roadway routes for cyclists.

- Miller Rd & Day Rd: Bicycle lanes both sides for entire length of roadway and for Day Road West of SR 305 to Miller
- High School Rd: Bicycle climbing lanes both directions and bicycle lanes both sides
- New Brooklyn Rd: Bicycle climbing lanes both directions
- Fletcher Bay Rd: Bicycle lanes both sides

There are a total of three CIP projects currently programmed for the Island Center Area (Table 5).

Project #	Description	Benefit
00218	Shoulder repairs and infill missing short segments	Safety & non-motorized connectivity
00780	Shoulder widening on both sides of Fletcher Bay Rd. from High School Rd to New Brooklyn Rd.	Safety & non-motorized connectivity
00800	Shoulder widening on both sides of Miller Rd from Tolo Rd to Peterson Hill Rd.	Safety & non-motorized connectivity

Table 5. Non-motorized CIP projects

\* SOURCE: 2017 Island-Wide Transportation Plan - Chapter 6 Non-Motorized Systems

### NON-MOTORIZED SYSTEM LEGEND

-  IC General Study Area
  -  IC Special Planning Area
  -  Trail
  -  BIMPRD Trail
  -  10' Two Way Path
  -  Bike Facility (Both Sides)
  -  Bike/Pedestrian Way
  -  Shoulder Facility (Both Sides)
  -  Shoulder Facility (Single Side)
  -  Water Trail
  -  Shoreline
  -  School Access Overlay
- ZONING DESIGNATION**
-  School
  -  Park Land
  -  Trail Corridor

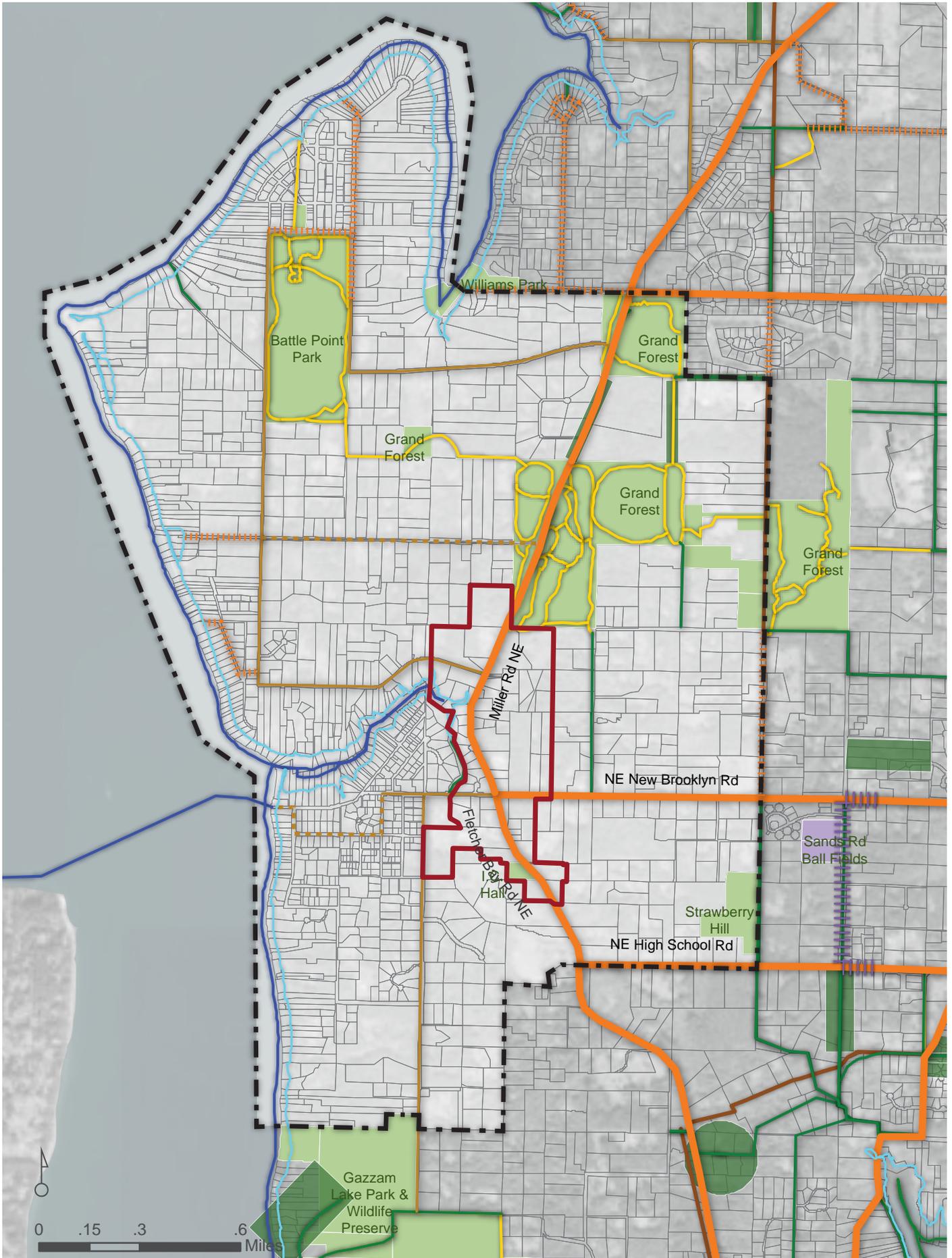


Figure 19. Island Center area and elements of the non-motorized system plan (future)

## ENVIRONMENT

### FLETCHER BAY WATERSHED

As specified in Policy LU 4.4, subarea planning for each designated center shall be informed by surface water and aquifer data in the respective watershed, the planning team referred to the 2018 Island Center and Fletcher Bay Watershed, State of the Water Resources report.

“The Fletcher Bay watershed comprises 2,102 acres of land that drains to Fletcher Bay and ultimately Port Orchard Passage (Figure 1).

### STORMWATER IMPACTS

The majority of the stormwater impacts to the watershed occur along major roads such as Miller Rd and Fletcher Bay Rd that host relatively high traffic volumes. These impacts are partially mitigated by grassed shoulders and decentralized ditch systems. A more concentrated and unmitigated source can be found due to the nature of the Island Center neighborhood service center.

Island Center is host to many auto-centric businesses that have a higher potential for pollutant generation. Also, denser commercial areas like Island Center utilize closed, piped stormwater systems that centralize flows and discharge them in close proximity to the marine receiving waters of Fletcher Bay. Water Quality monitoring has been performed by the City since 2008.

### FISH PASSAGE & HABITAT

There are two principal sub-basins within the watershed that produce perennial salmon bearing streams. Issei Creek captures drainage from the north east portion of the watershed, while Springbrook Creek captures drainage from the south side of the watershed and both creeks discharge into the head of Fletcher Bay. Three streams in the IC General Planning Area are considered to have a “fish presence”: North Fletcher Creek Issei Creek, and Springbrook Creek.

### LAND COVER

Land Cover data is used to understand the relationships between forest cover and stream temperature. Changes in land cover over time can also help understand how and where development has altered the landscape. It appears that the Fletcher bay watershed forest cover has been altered or reduced by 2-3 acres per year from 2000-2015.

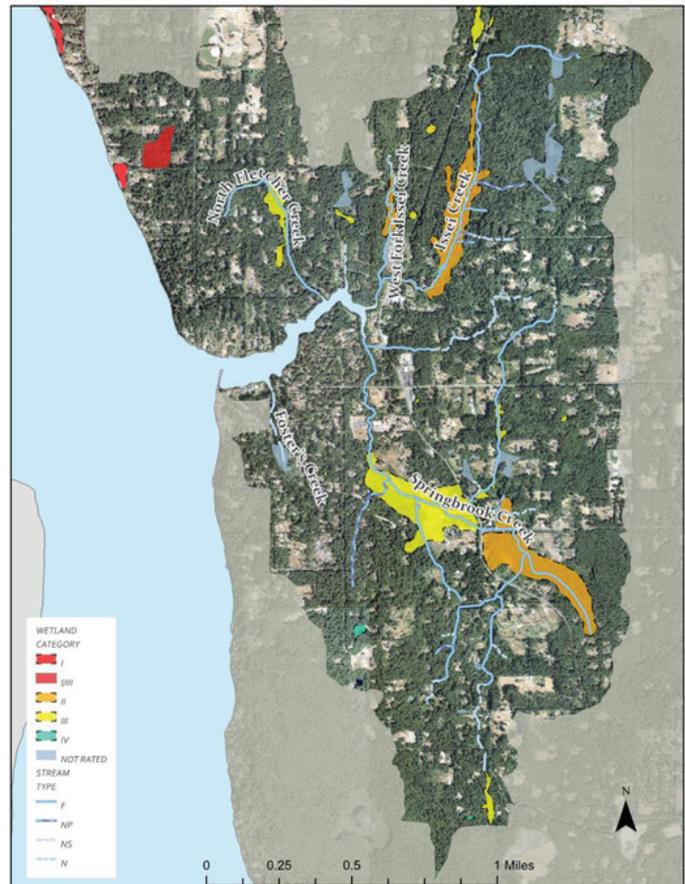


Figure 20. Wetland and stream categories

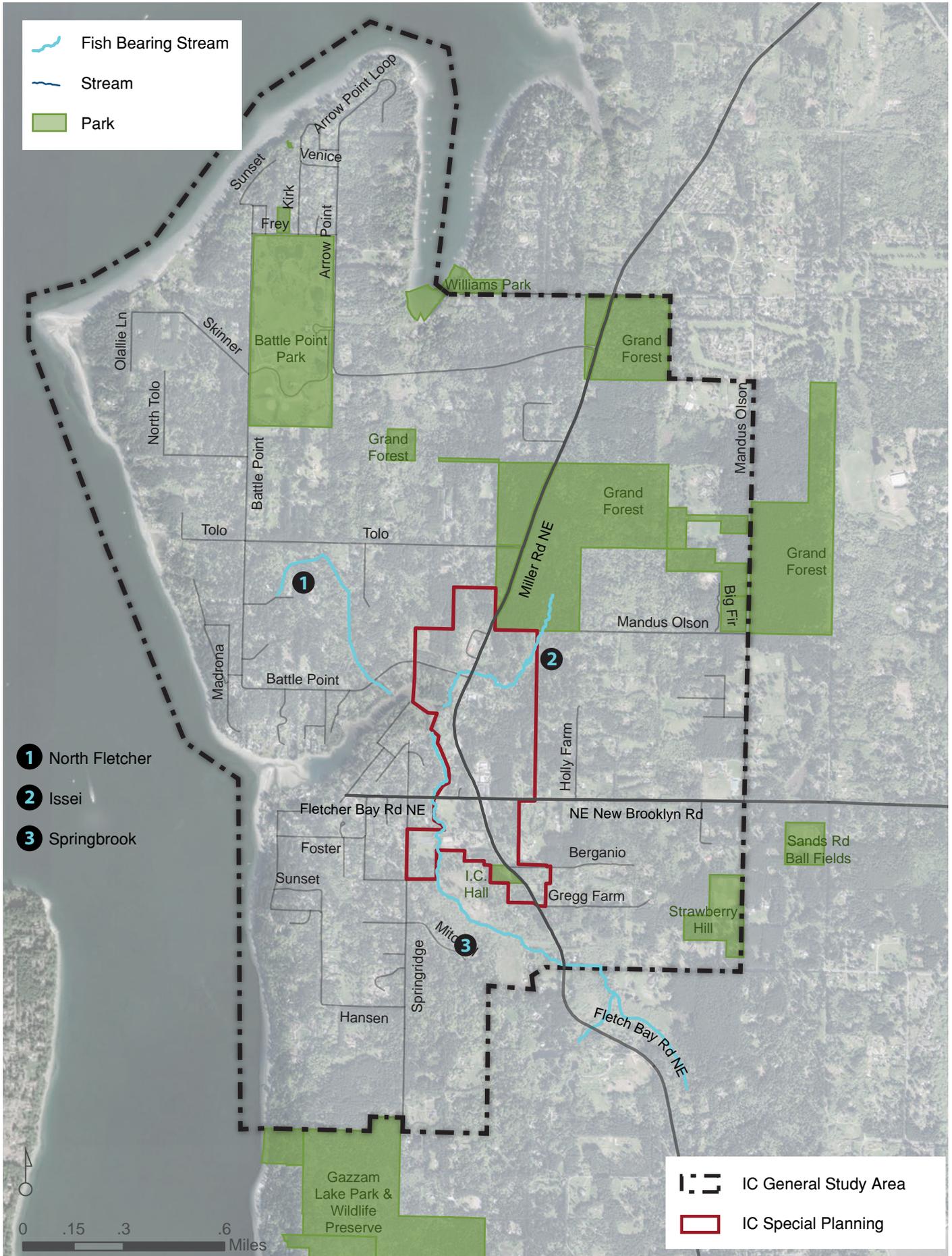


Figure 21. Island Center parks and streams

**CONTAMINATED SITES**

The only significant contaminated site in the watershed that has been documented by the State is due to a leaking underground storage tank at the gas station on the corner of Fletcher Bay Road/Miller Road/New Brooklyn Road. The department of Ecology is overseeing an active monitoring and clean-up plan.

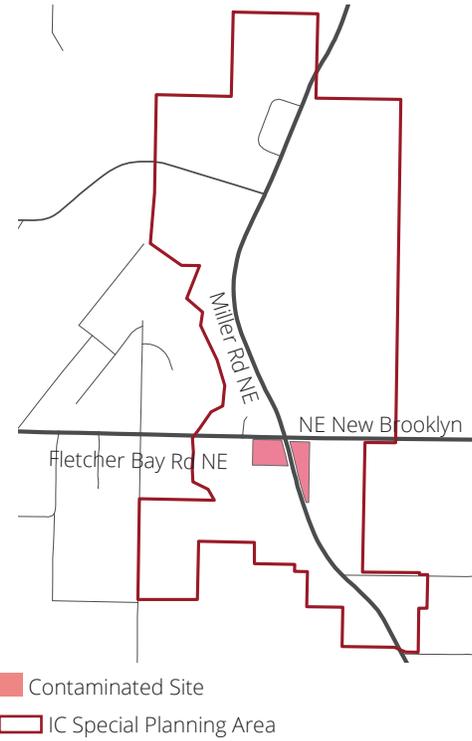


Figure 22. IC contaminated site location

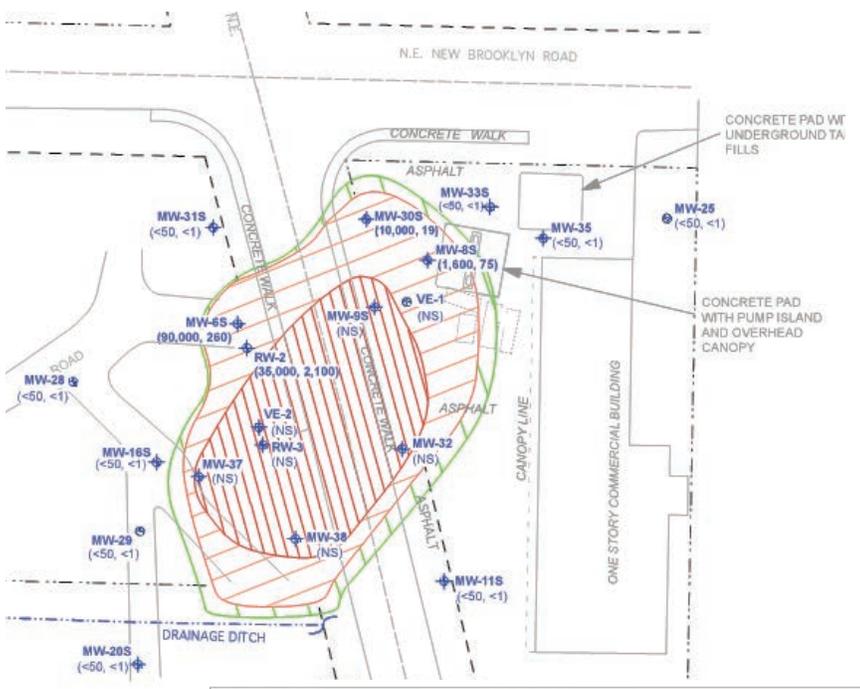


Figure 23. IC contaminated site details

# APPENDICES



# APPENDIX A

ISLAND CENTER & FLETCHER BAY WATERSHED  
STATE OF THE WATER RESOURCES 2018

## Island Center and Fletcher Bay Watershed

### State of the Water Resources 2018

# FLETCHER BAY WATERSHED

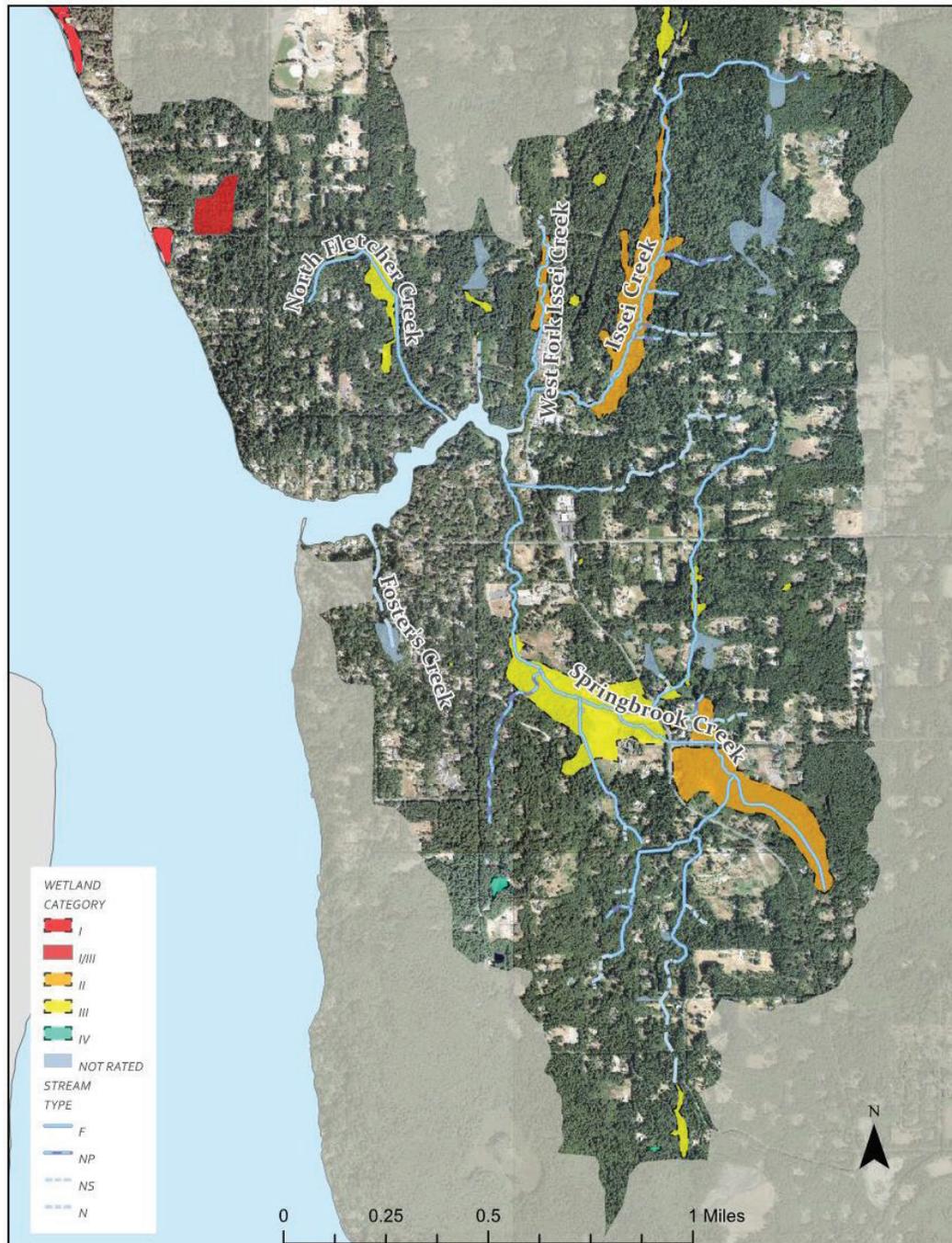


Figure 1 Surface Water Features (City of Bainbridge Island (COBI))

The Fletcher Bay watershed comprises 2,102 acres of land that drains to Fletcher Bay and ultimately Port Orchard Passage (Figure 1). There are two principal sub-basins within the watershed that produce perennial salmon bearing streams. Issei Creek captures drainage from the north east portion of the watershed, while Springbrook Creek captures drainage from the south side of the watershed and both creeks discharge into the head of Fletcher Bay. See [State of the Island's Waters 2012](#). While historically more interest has been paid to surface features such as streams, wetlands and ponds, we also must consider the subterranean features i.e. the aquifer system (figure 2), as well as precipitation patterns. When we consider these three components, surficial, geologic and climatological, we can fully understand the state of the three-dimensional watershed.

*Geologic Map and Cross Sections Showing Hydrogeologic Units on Bainbridge Island, Kitsap County, Washington. Report number 2011-5021 plate 1. USGS*

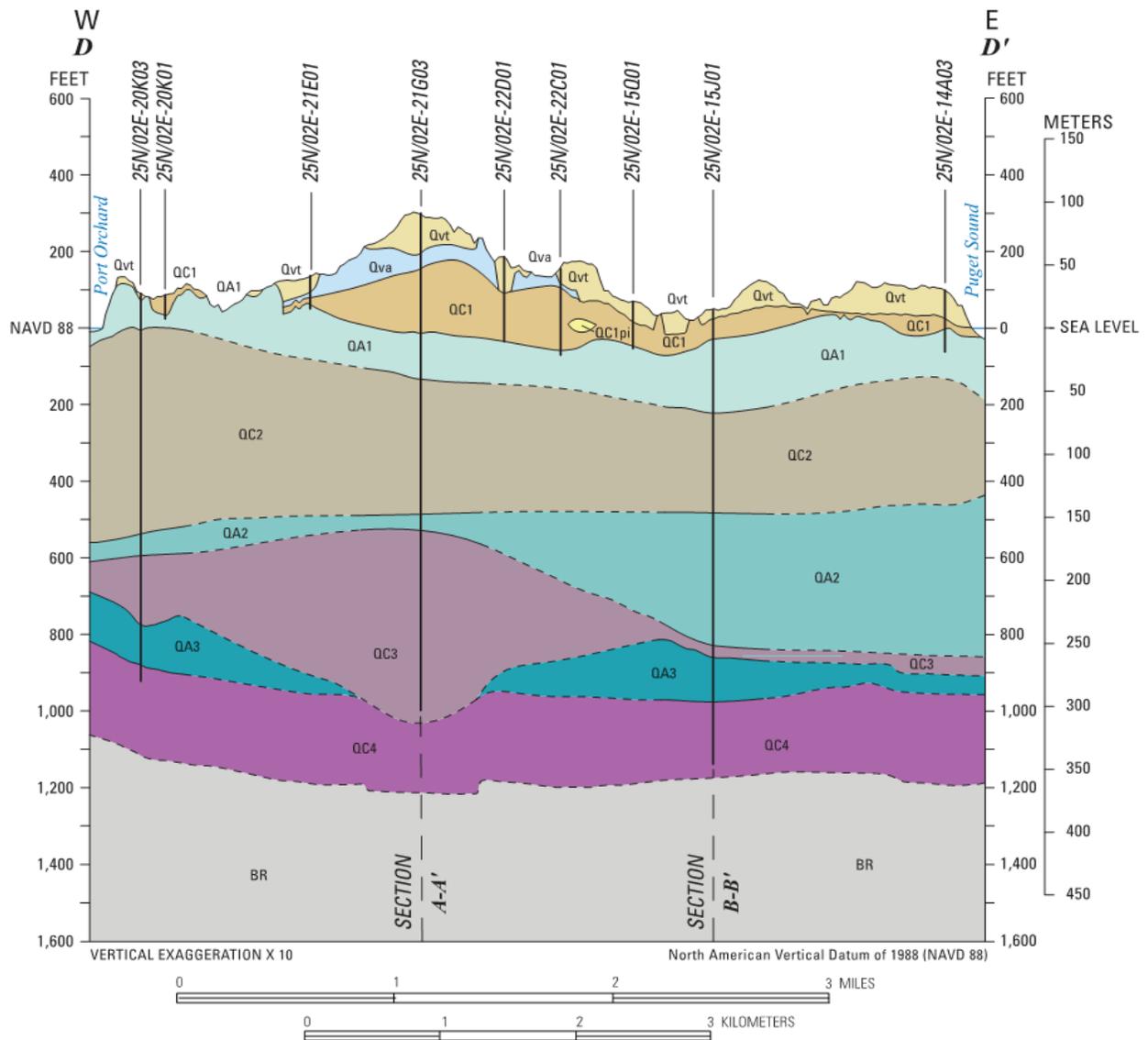


Figure 2 Representative Cross Section of Aquifers underlying the Fletcher Bay Watershed, USGS 2011-5021

[https://pubs.usgs.gov/sir/2011/5021/pdf/sir20115021\\_plate1.pdf](https://pubs.usgs.gov/sir/2011/5021/pdf/sir20115021_plate1.pdf)

The Fletcher Bay watershed receives approximately 40 inches of rain per year. The City measures precipitation in conjunction with an automated flow monitoring station near the mouth of Springbrook Creek (SE35, Site A).

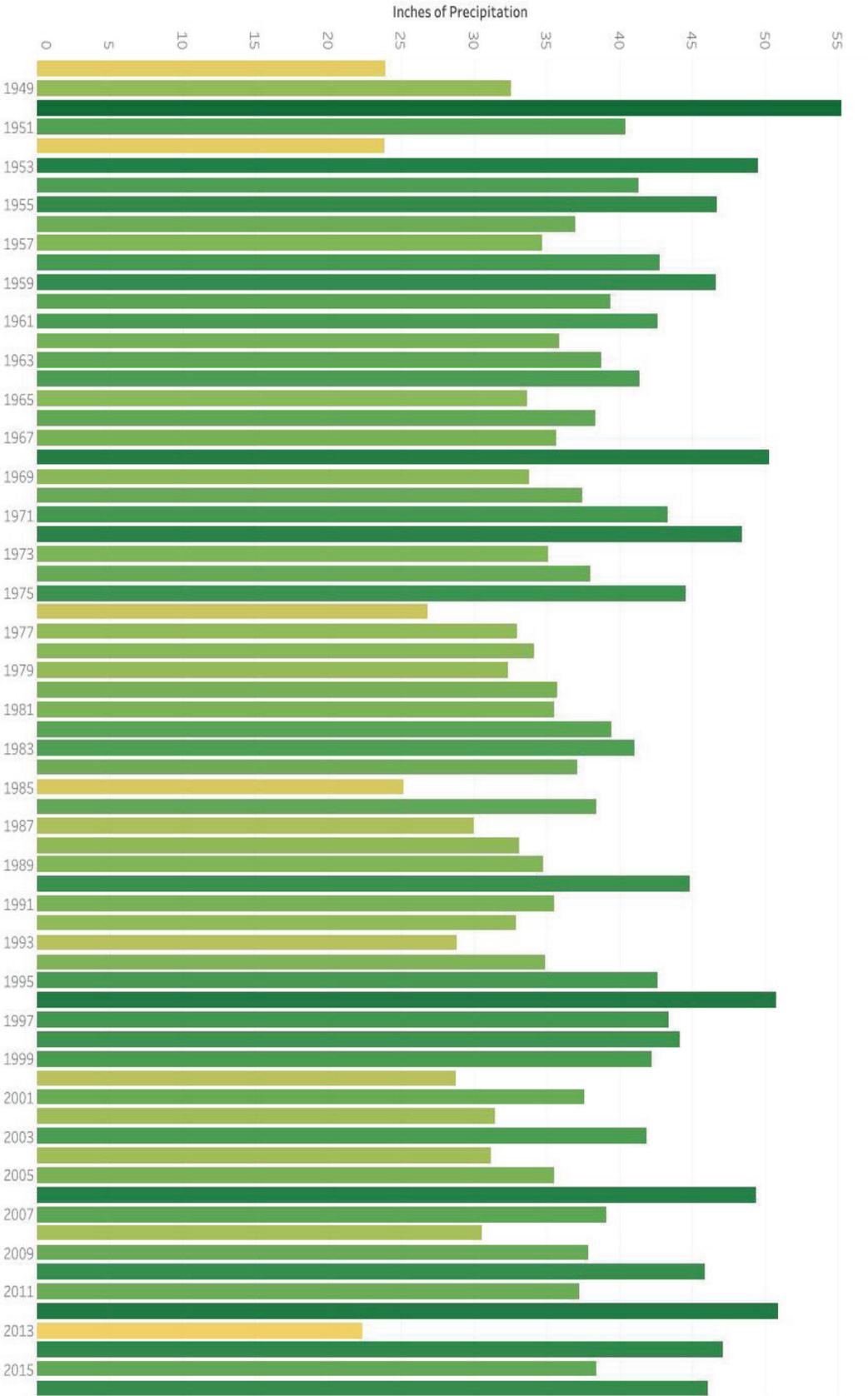


Figure 3 Annual Precipitation Totals in Inches (1948-2016 Sea-Tac Precipitation Monitoring Station)

**FISH PASSAGE & HABITAT**

Springbrook Creek has at least 6 partial barriers to fish passage with the most downstream culvert acting as a full barrier during low flows. The main fork of Issei creek has at least 2 documented partial barriers to fish passage blocking the majority of in-stream fish habitat from use by anadromous (ocean going) species.

Another useful resource has been created by the Wild Fish Conservancy (WFC). The WFC has documented the condition most of the fishbearing streams in the watershed. To view their online map and survey points visit: [WFC Stream Typing](http://apps.wdfw.wa.gov/fishpassage/)

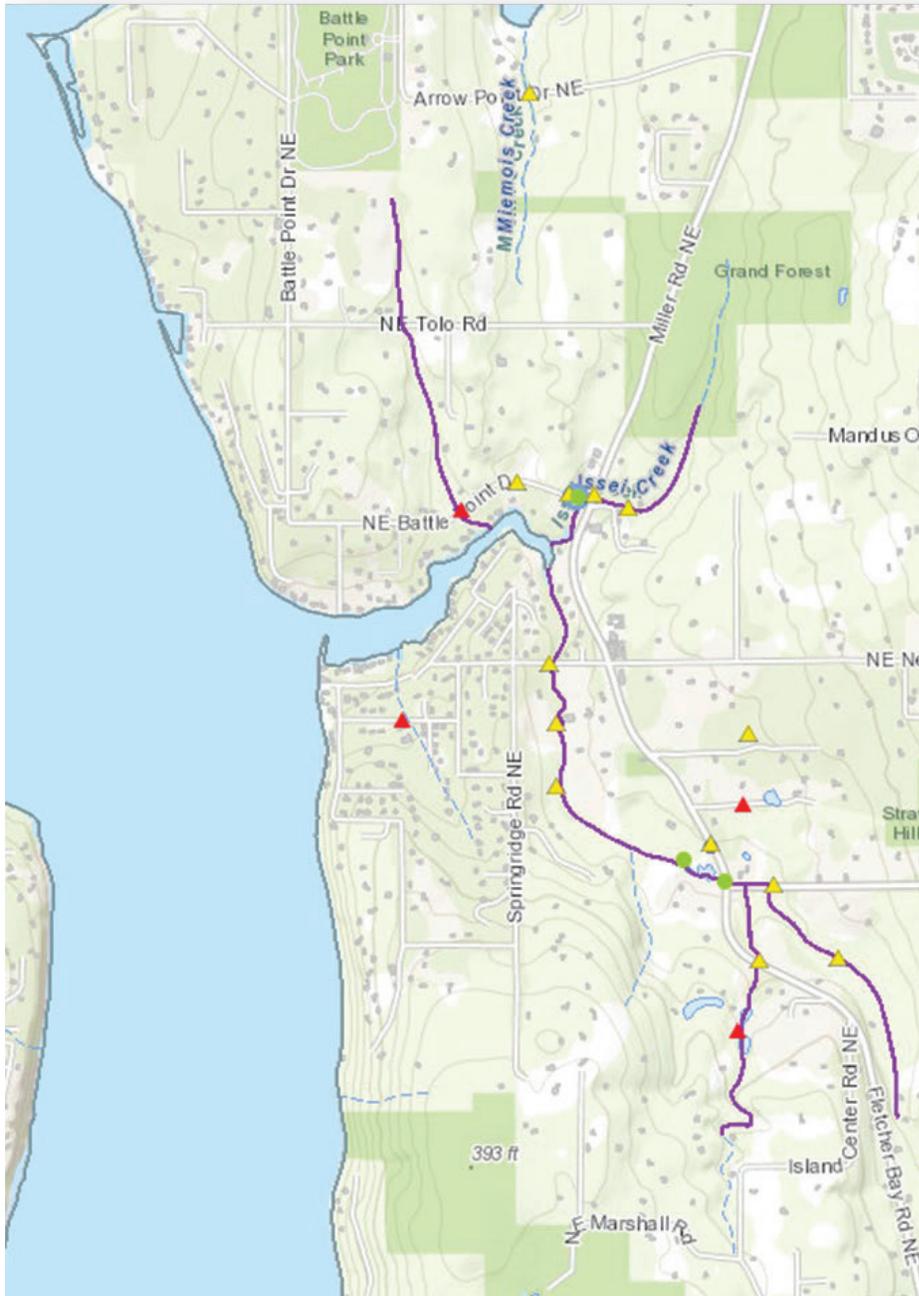


Figure 3 WDFW map, Yellow triangles are partial barriers, purple lines represent streams with fish presence <http://apps.wdfw.wa.gov/fishpassage/>

## Fletcher Bay Watershed Water Quality

### MONITORING EFFORTS

#### City of Bainbridge Island's Water Quality and Flow Monitoring Program (WQFMP)

Since 2008 the city has collected data from two streams in the Fletcher Bay watershed as well as one marine site. For more information visit the [WQFMP webpage](#).

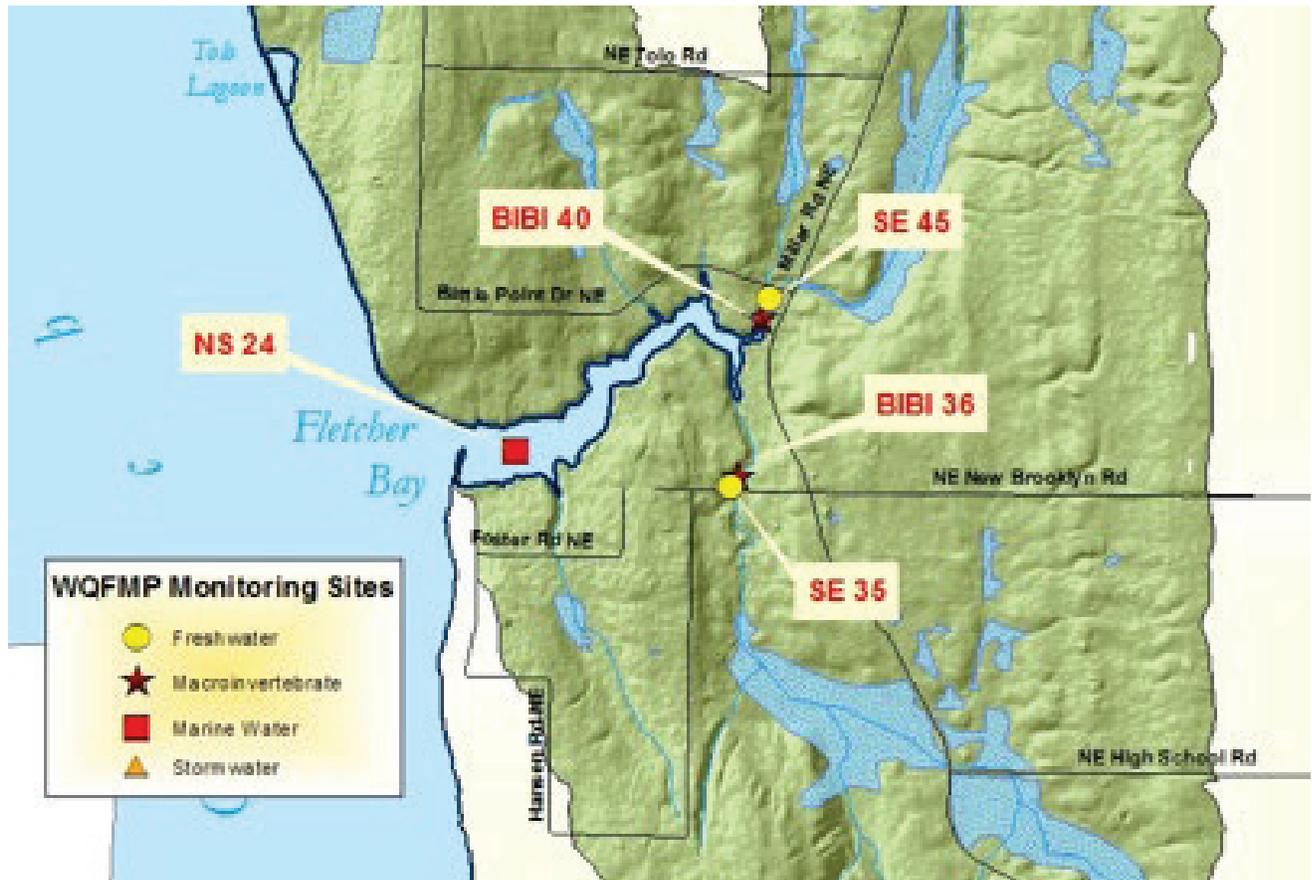


Figure 4 WQFMP Monitoring Sites in Fletcher Bay Watershed

#### Kitsap County Health District

The Kitsap Public Health District (KPHD) investigates properties with suspect septic systems. In the Fletcher Bay watershed, the KPHD identified and helped property owners repair 4 septic systems, 2 in 2008 and 2 in 2015. [Shoreline Survey Report 2008 KPHD](#)

**WATER QUALITY: BACTERIA**WA Department of Ecology TMDL

Currently, the City is a stakeholder in the [Sinclair and Dyes Inlets Fecal Coliform Bacteria Total Maximum Daily Load \(TMDL\)](#). Four of the Island's watersheds are captured within the TMDL drainage basin boundaries including Fletcher Bay. The city has continued to monitor levels of bacteria in the watershed and has installed Mutt-Mitt stations at strategic areas to encourage pet waste pickup.

Springbrook Creek Bacteria

Bacteria counts continue to be high in Springbrook Creek near High School Rd and Fletcher Bay Dr. Focused bacteria sampling in 2011 and 2017 indicate the problem is persistent. In 2017 microbial source tracking analysis was performed and results show that some of bacteria is of human origin. (Springbrook Creek watershed report 2018, State of the Island's Waters 2012)

Issei Creek Bacteria

The west fork of Issei Creek has been documented as a source of bacteria and elevated levels of ammonia as compared to the east fork of Issei Creek, which originates in the Grand Forest. (Aspect 2013)

**PHYSICAL AND CHEMICAL PROPERTIES**

Stream Temperature and Dissolved Oxygen

Springbrook Creek (SE35) failed to meet state standards for temperature in July and/or August during most of the years from 2012-2017. Issei creek (SE45) fared better, generally meeting standards through the summer. Even though Issei is a smaller creek with lower summer baseflows it enjoys a more consistent stream-side tree cover, relative to Springbrook. Upper reaches of Springbrook Creek that experience a greater tree cover have been documented as meeting the standard for temperature year-round. (see figure 15)

Fletcher Bay Temperature Exceedences

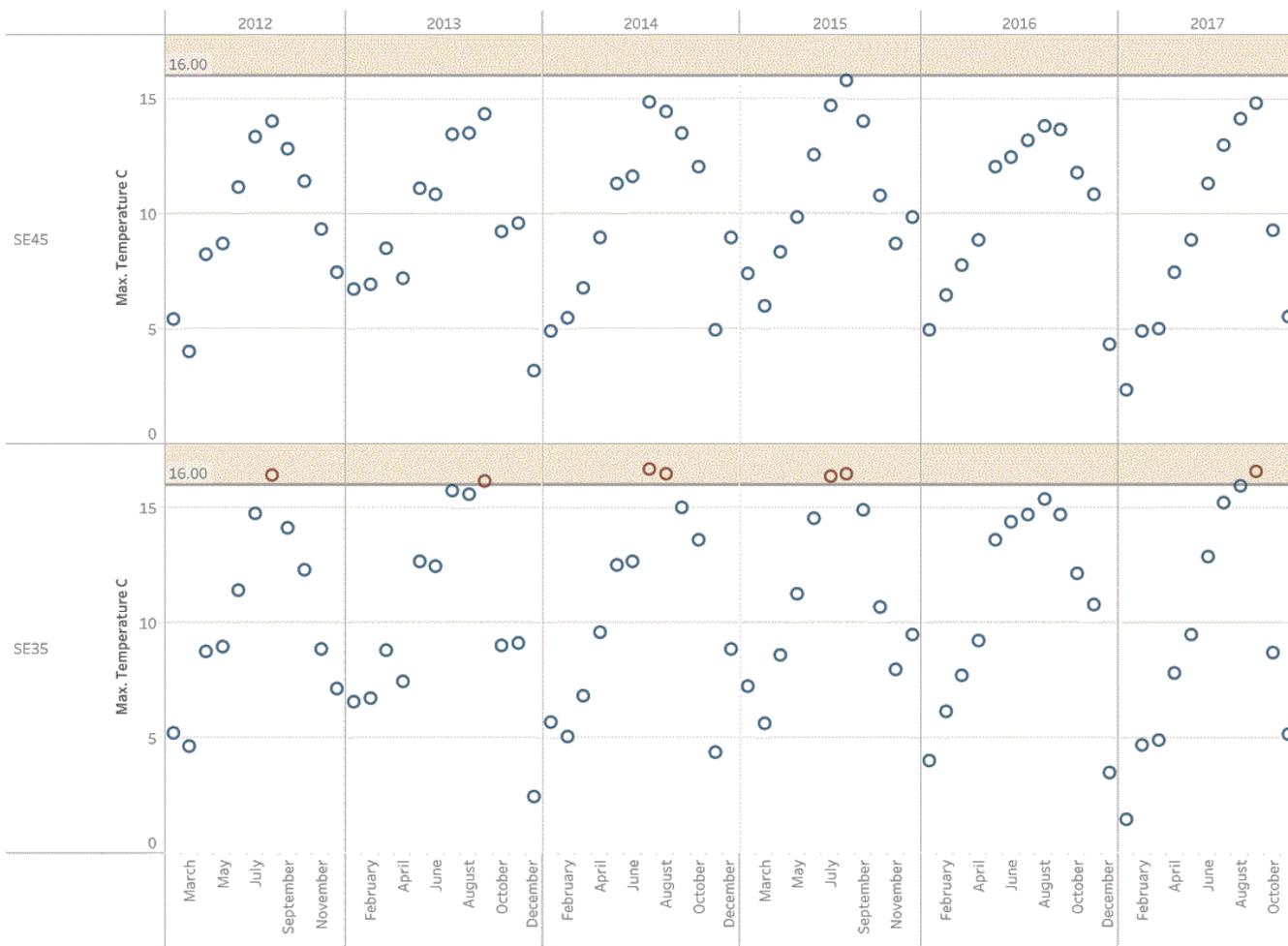


Figure 5 COBI WQFMP Monthly Temperature Data

Dissolved Oxygen Exceedances 2012-2017

Both streams, Issei and Springbrook, do not meet the state standard for Dissolved Oxygen during the summer months (July-September).

Fletcher Bay Dissolved Oxygen Exceedances

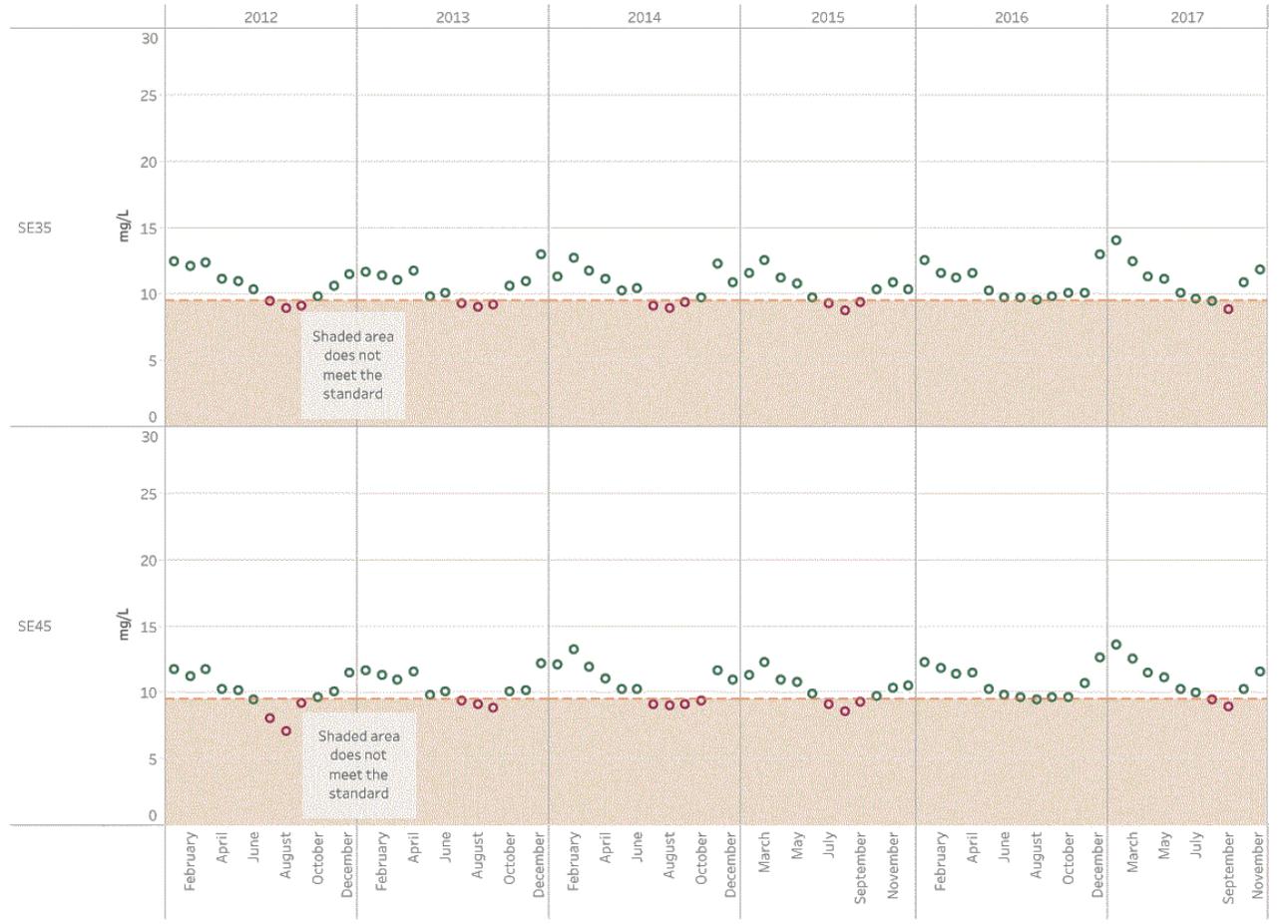


Figure 6 COBI WQFMP Monthly Dissolved Oxygen Data

Macroinvertebrate

The average Benthic Index of Biotic Integrity (B-IBI), an index of stream health, indicates poor stream conditions for Issei creek and fair conditions for Springbrook Creek (Figure 8). Issei Creek showed a significant improving trend in percentage of pollution *intolerant* species versus tolerant species, indicating an improvement in water quality (Figure 9).

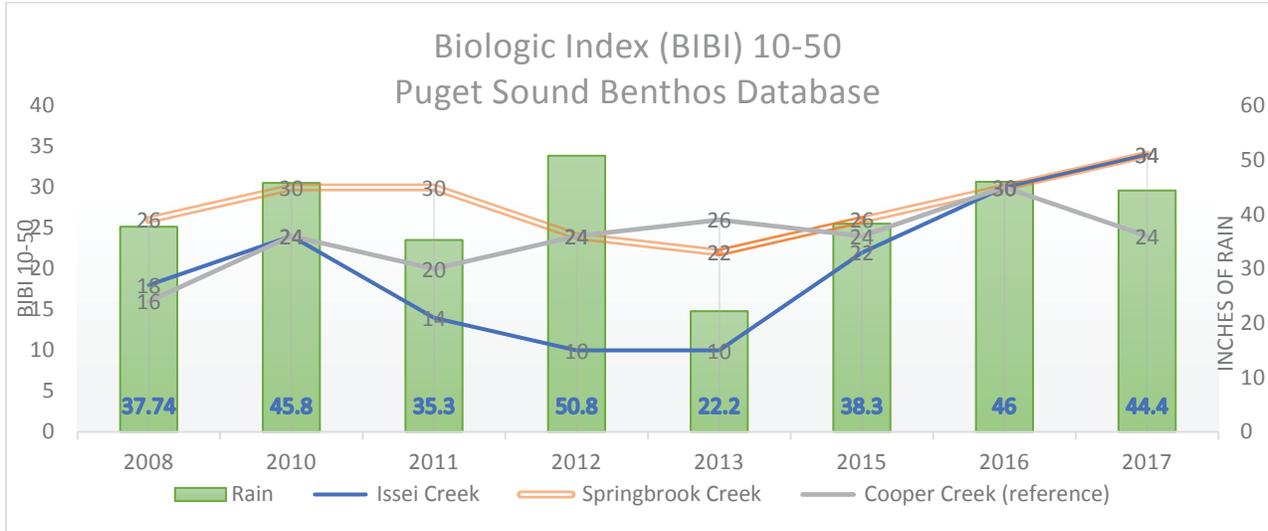


Figure 7 B-IBI scores 2008-2017, COBI

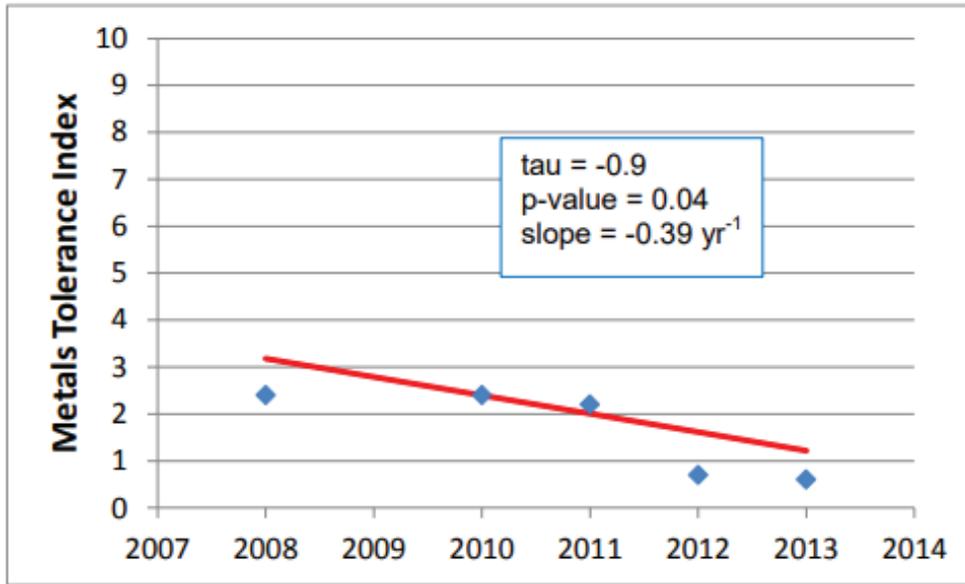


Figure 8 DeGasperi 2015

For more information see: Stream Benthos and Hydrologic Data Evaluation for Bainbridge Island

[http://www.bainbridgewa.gov/DocumentCenter/View/6278/Stream\\_Benthos\\_Final\\_Dec\\_2015?bidId](http://www.bainbridgewa.gov/DocumentCenter/View/6278/Stream_Benthos_Final_Dec_2015?bidId)

**STORMWATER IMPACTS**

The majority of the stormwater impacts to the watershed occur along major roads such as Miller Rd and Fletcher Bay Rd that host relatively high traffic volumes. These impacts are partially mitigated by grassed shoulders and decentralized ditch systems. A more concentrated and unmitigated source can be found due to the nature of the Island Center neighborhood service center. Island Center is host to many auto-centric businesses that have a higher potential for pollutant generation. Also, denser commercial areas like Island Center utilize closed, piped stormwater systems that centralize flows and discharge them in close proximity to the marine receiving waters of Fletcher Bay. Water Quality monitoring has been performed by the City since 2008 by the [City’s Water Quality and Flow Monitoring Program](#) (WQFMP)

Sediment Sampling

Notable increases in Butyl benzyl phthalate, a chemical used in vinyl floor tiles, weather stripping, and other plastics, were found in the marine sediments of Fletcher Bay as well as the two major contributing streams, Issei and Springbrook. Though common in the environment, Fletcher Bay had the second highest concentration on the Island during the sampling effort of 2013.

Targeted Stormwater Sampling

Routine sampling and targeted storm sampling have revealed that both Springbrook and Issei creeks suffer from stormwater impacts. Aluminum has been detected at levels high enough to harm aquatic life in a short time frame. Other metals such as zinc and copper continue to be detected at lower levels, yet still high enough to harm aquatic life with extended exposure. Stormwater runoff from roads and parking lots are most likely the biggest source of metals in our streams and harbors.

2018 Springbrook Creek Flow Rate (cubic feet per second) and Precipitation (inches)

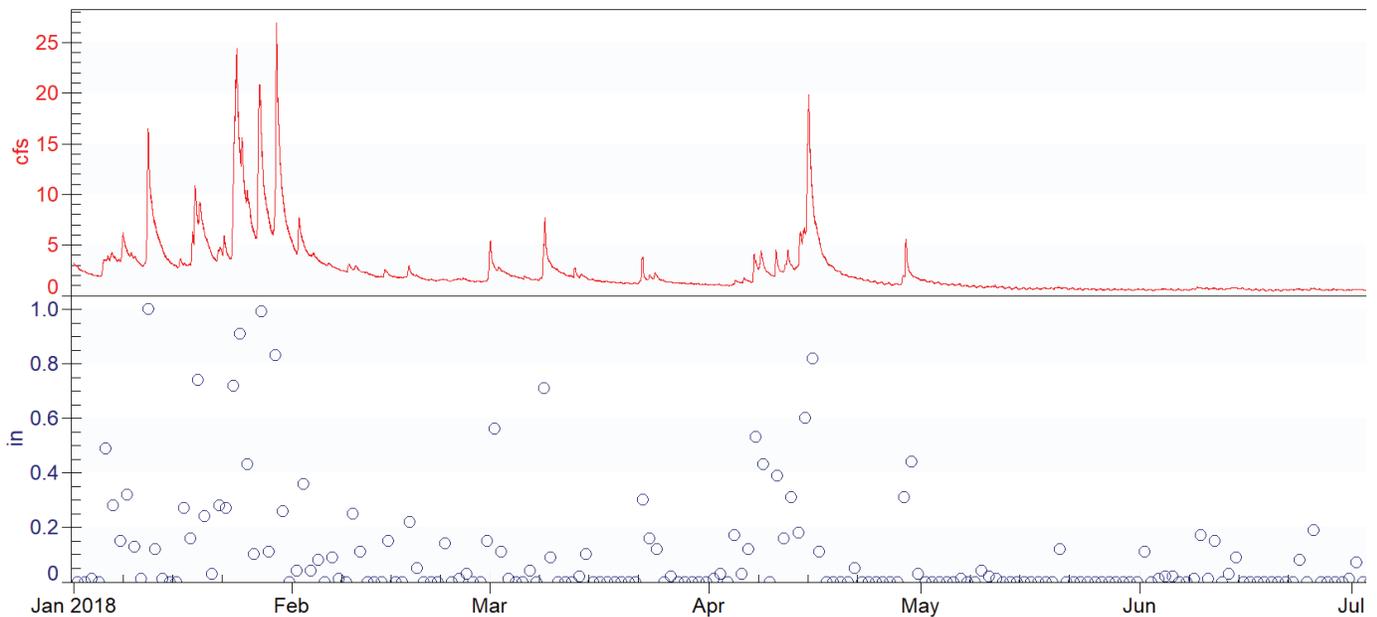
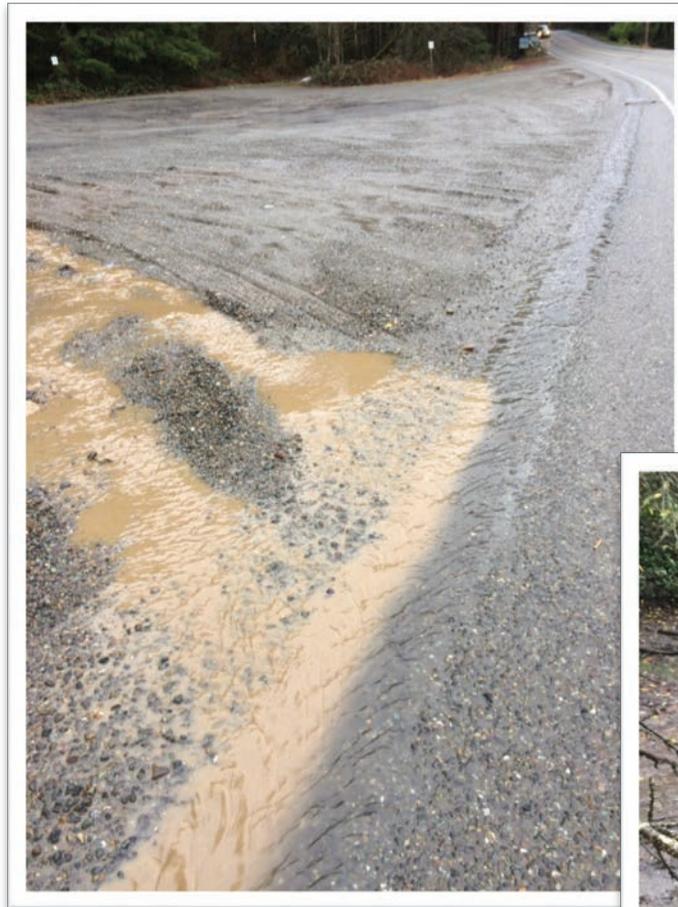


Figure 9 Flow and Precipitation Springbrook Creek 2018 COBI

### Silt Delivery in Fletcher Bay Watershed



Since the early 2000's residents of Fletcher Bay have noticed 'plumes' of silt, or turbid water, flowing to the bay and discoloring the water. Allegations were made on new sub-developments in the watershed, but no direct evidence has been documented. More recent observations have shown that actively used gravel roads such as Fletcher Blvd and Woodbank Dr and parking lots, such as the large City owned lot at 8964 Miller road are contributing turbid



stormwater runoff to the Bay. (iDirt IDDE investigations, Springbrook creek project field observations winter 2017) Sediment grain size analysis agrees that more fine materials may be moving into the marine system. Between 2008 and 2013 percentages of sand sized sediment increased by 16 percent while gravel sized sediment decreased by 31 percent. Though if turbid stormwater was the culprit we would also expect to see smaller silt and clay sized material increase and this did not occur in the 2008-2013 timeframe.

### SHELLFISH ASSESSMENT

Washington Department of Health

Marine water quality stations, monitored by the Department of Health, on the north and south edge (457,450) of the mouth of Fletcher Bay currently indicate acceptable bacteria levels and are *approved* for shellfish harvest, an improvement from years past.

[2017 WA DOH growing area report](#)



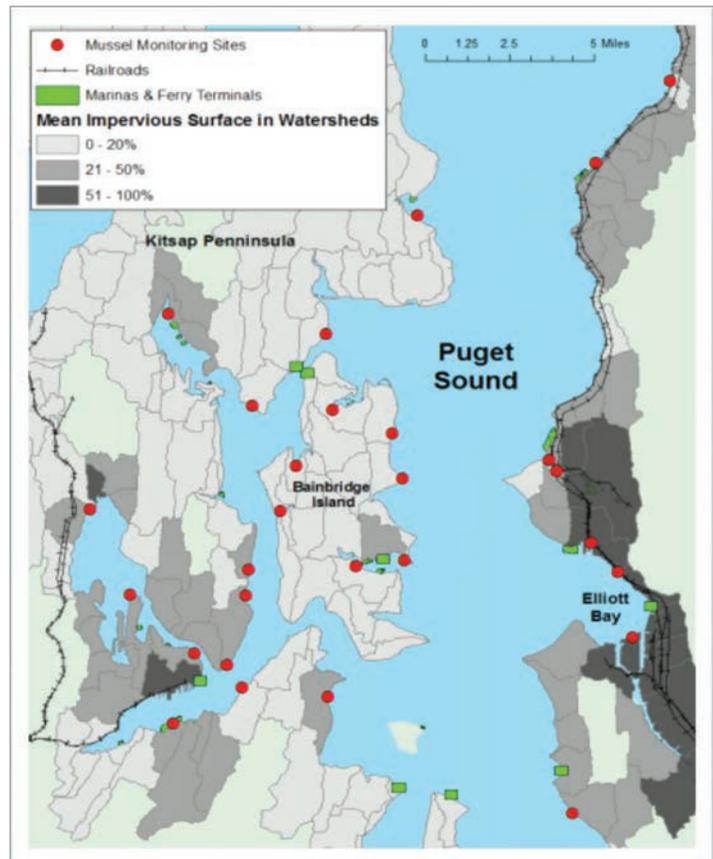
Washington Department of Ecology

Fletcher bay is also home to a mussel monitoring site as part of the [Stormwater Action Monitoring](#) program. Recent mussel tissue analysis concurs with target stormwater and sediment sampling, pollutants such PAH's have been detected at increased levels. For more information visit:

[2017 WDFW Report on Mussel Monitoring](#)

Or

[2017 SAM Symposium presentation](#)



## Groundwater

The City of Bainbridge Island monitors 86 public and private wells, Island-wide, from all six aquifers in the Bainbridge Island aquifer system. Each year the data collected over the last ten-year is assessed against the Early Warning Levels (EWLs), reviewing for safe yield and seawater intrusion.

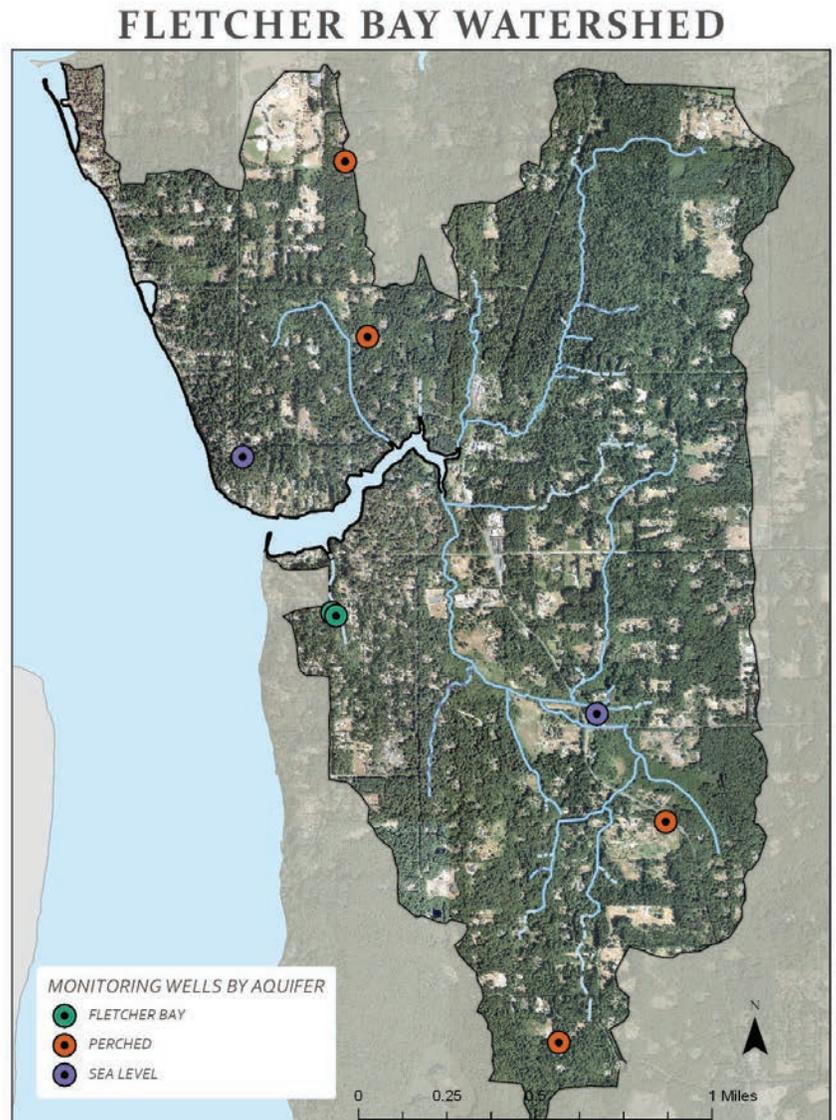
In the Fletcher Bay watershed 9 wells are monitored for water level; 2 in the Fletcher Bay aquifer (FBA), 3 in the sea level aquifer (SLA) and 4 in the perched aquifer (PA). Eight wells show an increasing trend and 1 shows a decreasing trend.

Five wells are monitored for chloride concentration, an indicator of seawater intrusion. Chloride levels in the watershed are generally low (less than 20 mg/L) with no significant increasing trends.

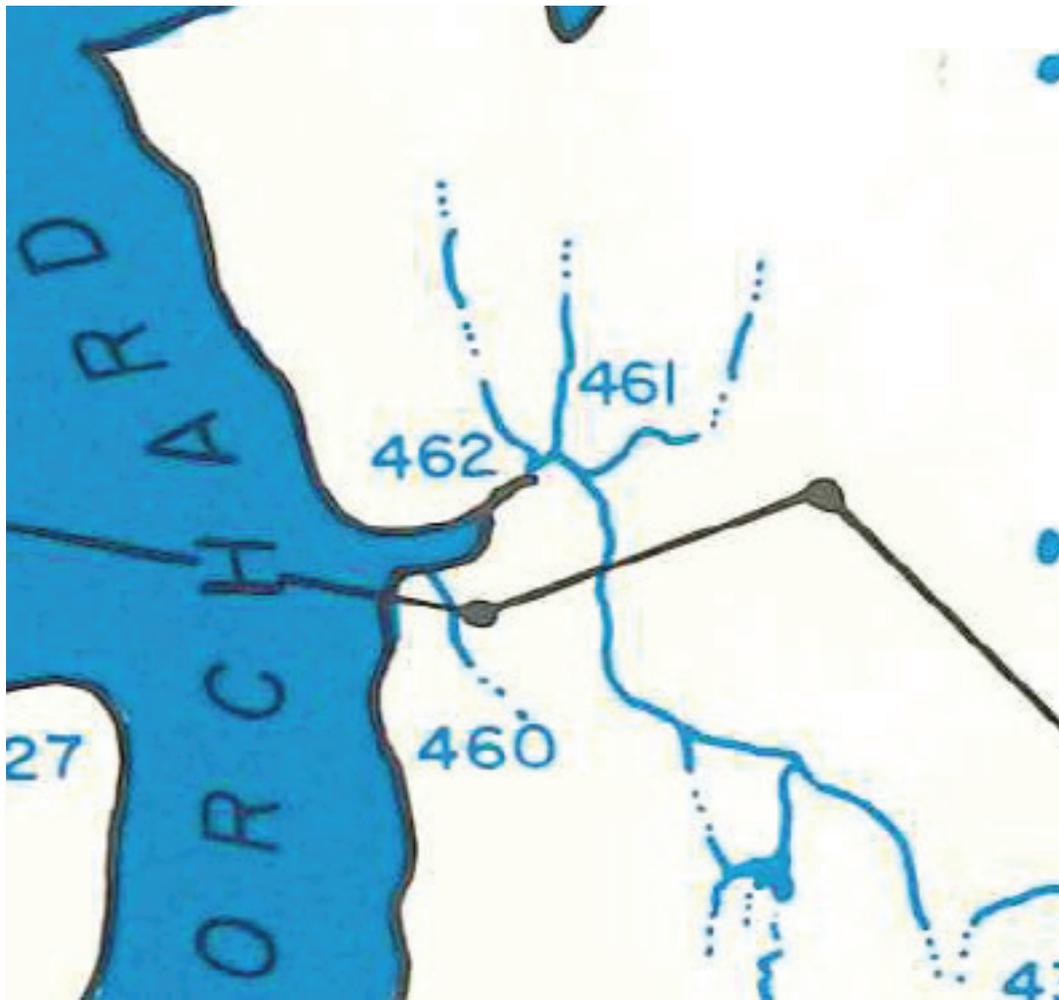
The City is considering the development of a groundwater management plan in 2019.

More information about the current state of the Island's aquifers can be found in the 2017 Early Warning Level Assessment.

<https://www.bainbridgewa.gov/DocumentCenter/View/10883/2017-EWL-Report>



Water Rights and Instream Flow



*Figure 10 Surface waters with restricted use*

As of January 19, 2018, a new State law, ESSB 6091, states that new wells drilled for use in residential projects are subject to a 500-dollar fee and a limit of 950 gallons per day.

Kitsap County has explained this new requirement in the follow document:

[Kitsap Brochure and Notice to Title example.](#)

For more information visit the department of Ecology's webpage:

<https://ecology.wa.gov/Water-Shorelines/Water-supply/Streamflowrestoration>

Contaminated Sites

The only significant contaminated site in the watershed that has been documented by the State is due to a leaking underground storage tank at the gas station on the corner of Fletcher Bay Road/Miller Road/New Brooklyn Road. The department of Ecology is overseeing an active monitoring and clean-up plan.

Extent of groundwater contaminants 10/29/2017. Location of shallow monitoring wells shown in blue. [Latest Monitoring Report Document.](#)

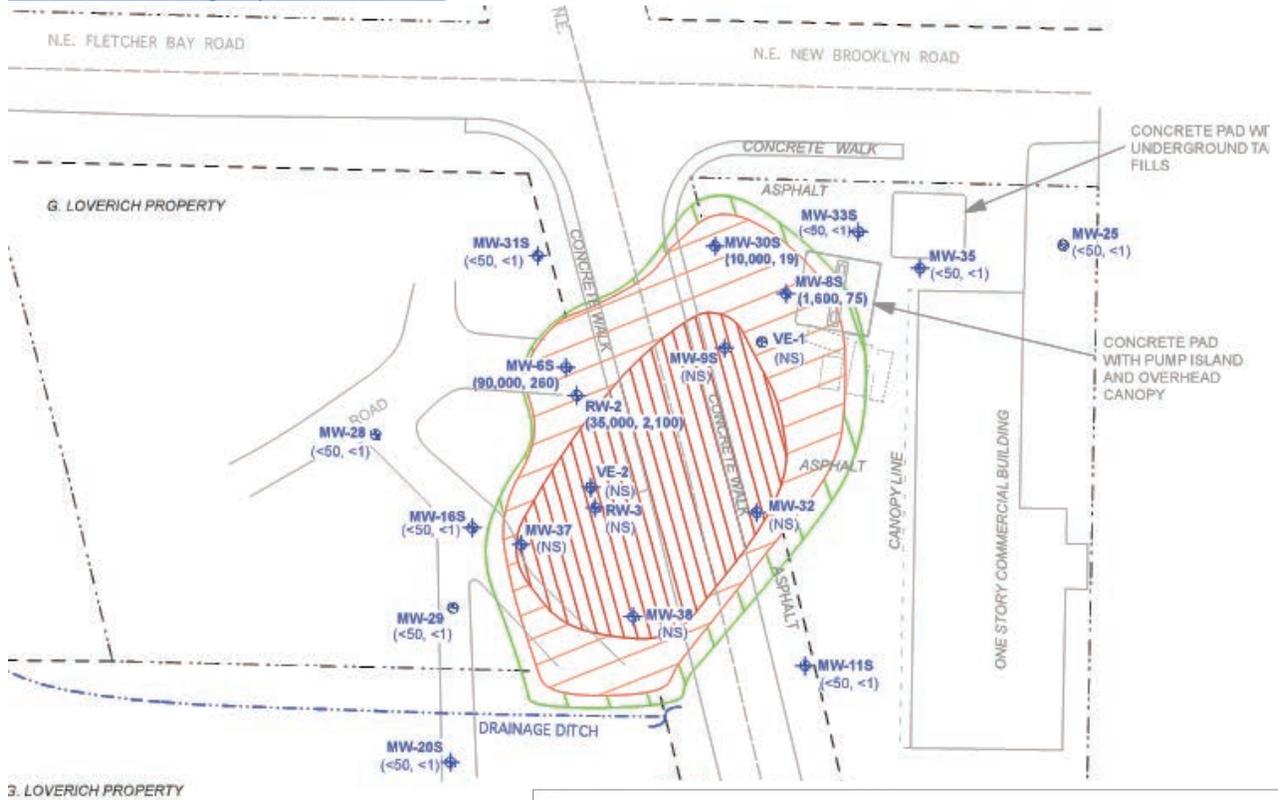


Figure 11 Fletcher Mart Contamination Map

Gasoline concentration sampled from 4 groundwater wells 2010-2017

For complete site summary visit: [Fletcher Mart Webpage](#)

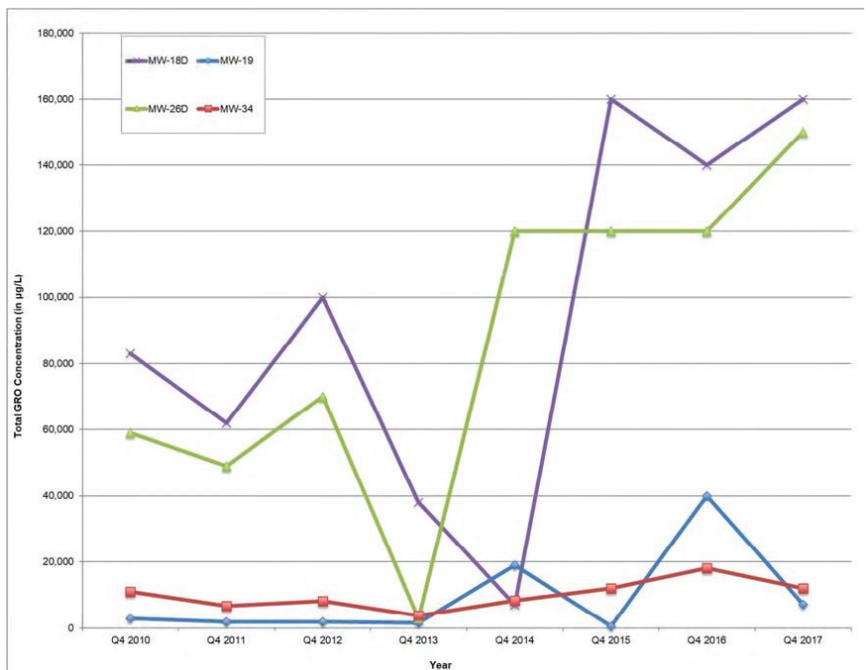


Figure 12 Fletcher Mart Contamination Graph

**Springbrook Creek Watershed Assessment Project**

The City supported the Bainbridge Island Land Trust in the Springbrook Creek Watershed Assessment Project study by monitoring water quality and flow at sites throughout the watershed to better understand environmental stressors at a finer scale (Figure 14). In addition to the project’s field work the WA Department of Ecology used their Puget Sound Watershed Characterization Model to analyze natural processes and give guidance on management actions in the watershed. For more information: visit

<http://www.bainbridgewa.gov/868/Springbrook-Creek-Watershed-Study>

or

<https://www.bi-landtrust.org/protected-spaces/springbrook-creek/>

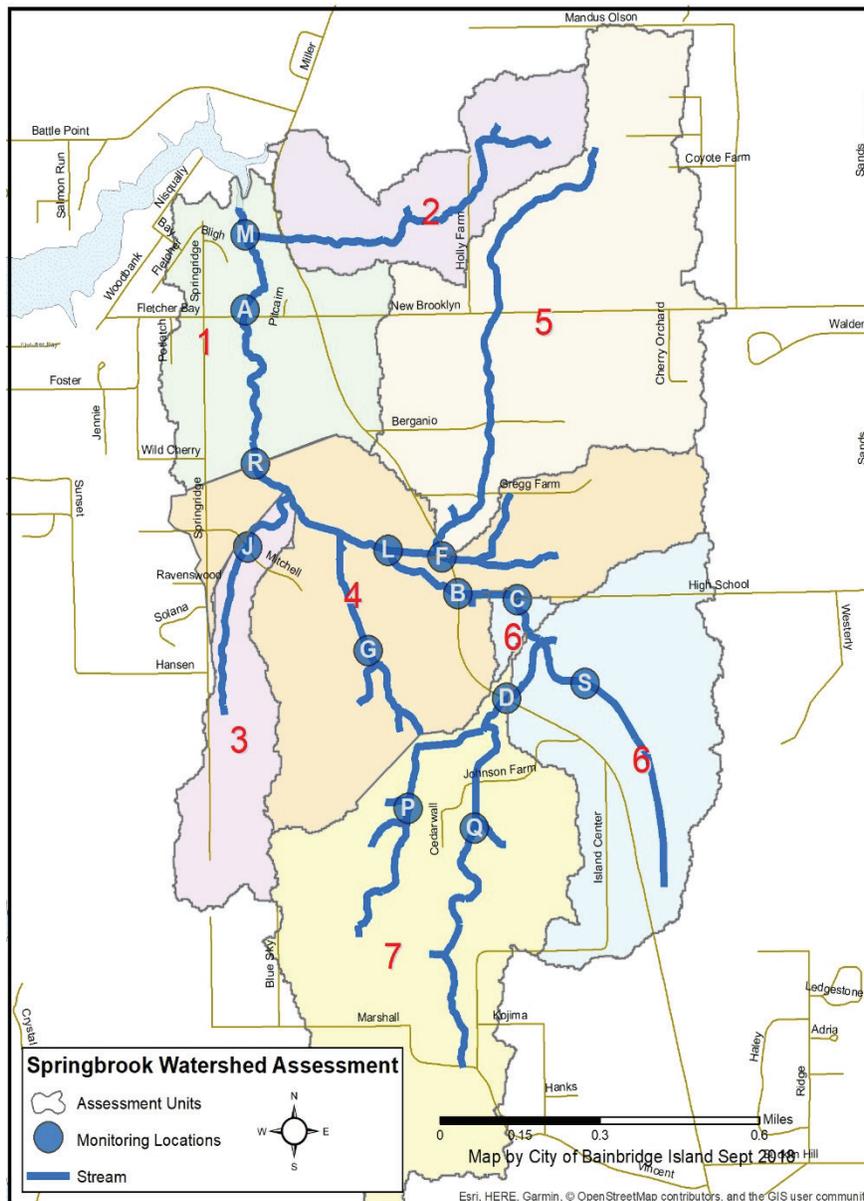


Figure 13 Springbrook Creek Watershed study locations, COBI

As part of the project the City continuously monitored temperature in six locations throughout the watershed. One of the takeaways was that summer stream temperatures regularly exceeded the State standard for healthy fish habitat. The only site that stayed below the standard was in a relatively undeveloped and forested section of the headwater wetland, site S.

### Springbrook Creek - Stream Temperature History



Figure 14 Springbrook Creek, Continuous Temperature Data, COBI

**LAND COVER**

Land Cover data is used to understand the relationships between things such as forest cover and stream temperature. Changes in landcover over time can also help understand how and where development has altered the landscape. Comparing data from one source to another can be difficult thus we keep the groupings as course as possible to provide significance. In reviewing the 4 data sources below it appears that the Fletcher bay watershed forest cover has been altered or reduced by 2-3 acres per year from 2000-2015.

Data Source	Forest (tree)	Developed (grass, impervious surfaces, bare ground)
Bainbridge Watersheds 1995	75.3%	24.7%
Kato and Warren 2000	76.92%	22.52%
COBI LC/LU GIS Data 2015	74.3%	25.6%

Washington State Department of Fish and Wildlife’s High-Resolution Aerial Imagery Change Detection program produces GIS Data that indicates how and where land cover (vegetation) has been altered.

Vegetation Altered in Fletcher Bay Watershed (acres)	Time Frame (years)
2.9	2006-2009
6.1	2009-2011
8.1	2011-2013

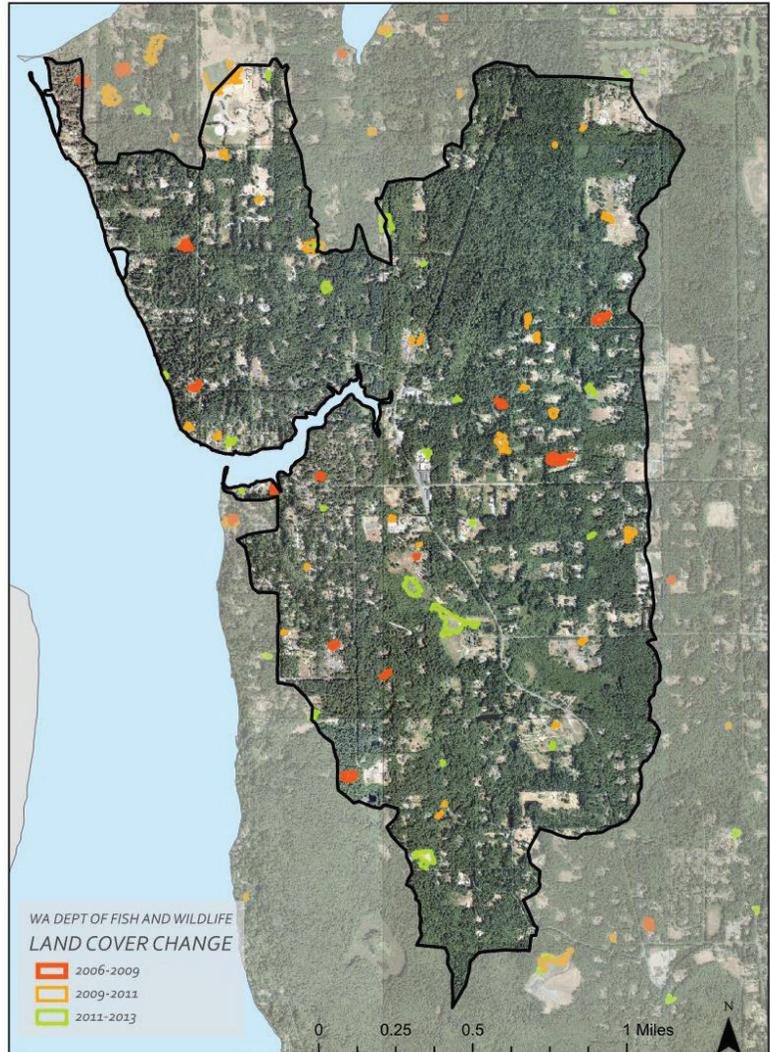


Figure15 Land Cover Change 2006-2013, WDFW

[https://wdfw.wa.gov/conservation/research/projects/aerial\\_imagery/](https://wdfw.wa.gov/conservation/research/projects/aerial_imagery/)

**ADDITIONAL REFERENCES**

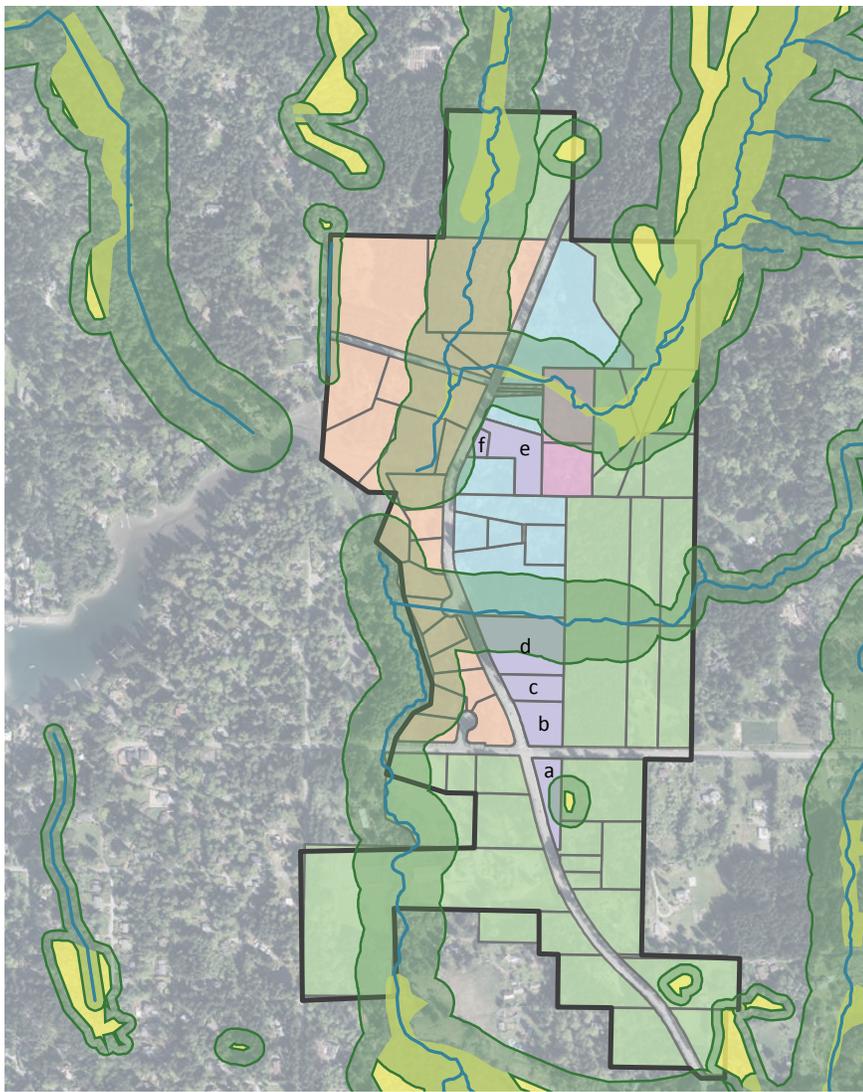
Fletcher bay watershed Surface water Status and trends monitoring

<https://www.bainbridgewa.gov/DocumentCenter/View/10289/Fletcher-Bay-Watershed-Surface-Water-Status-and-Trends-Monitoring-022118?bidId=>

# APPENDIX B

## SPECIAL PLANNING AREA CAPACITY ANALYSIS

# Commercial Lot Coverage (SF)



60,832

Allowed  
(Unconstrained)

36,893

Existing

23,939

Potential  
(Individual parcel development TBD)

## GIS DATA ANALYSIS:

### Allowed:

Approximate commercial lot coverage of NC parcels is calculated using parcel size and 35% Max Lot Coverage specified in BIMC 18.12.020-2.

Parcels **a** and **d** are excluded from this calculation due to critical area\* constraints.

### Existing:

Sum of GIS data: "Existing Commercial"

### Potential:

Calculated by subtracting Existing from Allowed (unconstrained). Individual parcel evaluation is required to determine actual numbers.

\*Critical Areas include GIS data on streams, wetlands, and associated buffers. Waiting for steep slope data from the City.

NC Parcel Use Description		Legend	
a	Convenience Market	R-0.4	Wetlands
b	Mini Warehouse	R-1	Streams
c	Service Garage	R-2	Required Buffer
d	Utility/Storage	NC	
e	Auto Service	Split	
f	Service Garage		

## CURRENT ZONING CAPACITY

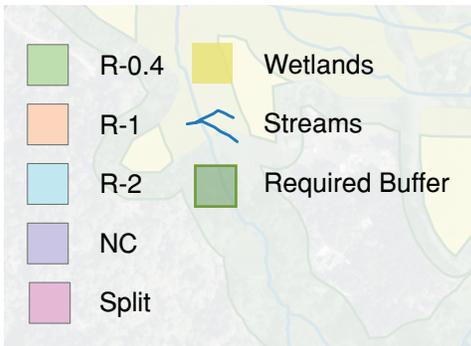
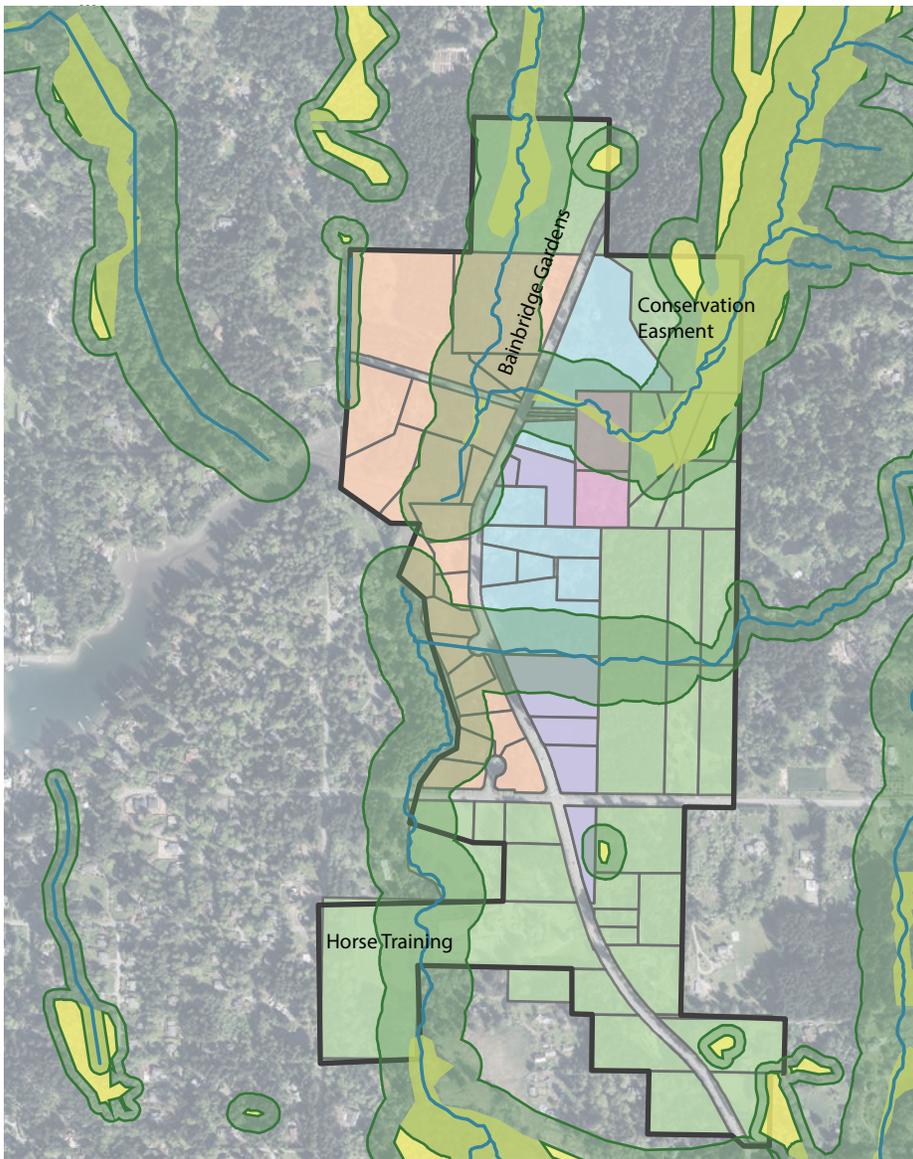
Map ID	NC Use	Parcel (AC)	Parcel (SF)	Max Lot Coverage	Constrained
a	Convenience M	0.99	43,124	15,094	yes
b	Mini Warehouse	1.15	50,094	17,533	
c	Service Garage	0.92	40,075	14,026	
d	Utility/Storage	2.79	121,532	42,536	yes
e	Auto Service	1.67	72,745	25,461	
f	Service Garage	0.25	10,890	3,812	

Allowed  
Unconstrained

118,461  
60,832

NC Use	Existing Commercial (SF)
Auto Service	8,240
Convenience Market	8,588
Mini Warehouse	7,807
Service Garage	10,758
Utility/Storage	1,500
<b>Grand Total</b>	<b>36,893</b>

# Residential Dwelling Units



104 Allowed

41 Existing

63 Potential  
(Individual parcel development TBD)

## GIS DATA ANALYSIS:

### Allowed:

Approximated residential dwelling units per acre are calculated for residential zones only (excludes NC). Estimate calculated using parcel size and maximum density specified in BIMC 18.12.020-2\*.

No parcels are excluded based on critical area impacts\*\* - exceptional parcels are noted on map.

### Existing:

Sum of GIS data: "Existing DU"

### Potential:

Calculated by subtracting Existing DU from Allowed. Individual parcel evaluation required to determine actual DU allowed.

\*Flexlot Subdivision Standards not applied.

\*\*Critical Areas include GIS data on streams, wetlands, and associated buffers. Waiting for steep slope data from the City.

Zone	Parcel (AC)	Parcel (SF)	Max Density	DU Allowed
R-0.4	89.89	3,915,608.40	100,000	39
R-1	31.77	1,383,901.20	40,000	35
R-2	13.7	596,772.00	20,000	30
Split	4.02	175,111.20	N/A	N/A
<b>TOTAL</b>	<b>147.15</b>	<b>6,409,854</b>		<b>104</b>

Zone	Existing DU	Total Floor Area (SF)
R-0.4	21	36,588
R-1	12	24,337
R-2	6	9,441
Split	2	3,154
<b>Grand Total</b>	<b>41</b>	<b>73,520</b>