

Call to Order (Attendance, Agenda, Ethics)  
Review & Approve Minutes – September 19, 2018  
Review and Approve Interim Report to the Planning Commission  
Review Existing Conditions Material  
Discussion: Developing Goals and Alternatives  
Public Comment  
Adjourn

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**Call to Order (Attendance, Agenda, Ethics)**

Chair Maradel Gale called the meeting to order at 6:35 PM. Members in attendance were Micah Strom, Michael Loverich, Scott Anderson and Donna Harui. Tracy Collier was absent and excused. Jane Rein (Design Review Board) and Sarah Blossom (City Council) attended. Michael Killion (Planning Commission) was absent and excused. City Staff present were Planning Director Gary Christensen, Engineering Manager Mike Michael, Long Range Senior Planner Jennifer Sutton and Administrative Specialist Jane Rasely who monitored recording and prepared minutes.

The agenda was reviewed. There were not any changes in status.

**Review & Approve Minutes – September 19, 2018**

Ms. Rein acknowledged the e-mail sent by a citizen asking to amend their public comment as portrayed in the minutes.

**Motion:** Motion to accept.

**Strom/Harui:** Passed unanimously

**Review and Approve Interim Report to the Planning Commission**

Ms. Sutton informed the Steering Committee the Planning Commission meeting on October 11, 2018 had been canceled and it was decided the interim report would be presented at the November 8, 2018 Planning Commission meeting.

**Review Existing Conditions Material**

See attached draft report.

**Discussion: Developing Goals and Alternatives**

Using the word “possibilities” instead of alternatives was discussed.

**Public Comment**

**Linda Mallin, Citizen** – Spoke about the definition of the three words vision, goals and alternatives and that they had very different meanings and should be reviewed before the next meeting. She also mentioned that the Committee was talking about comprehensive planning, not specific site planning.

An update on the process for new committee members was given.

The schedule for the next meeting was discussed due to scheduling issues for October 17, 2018.

**Adjourn**

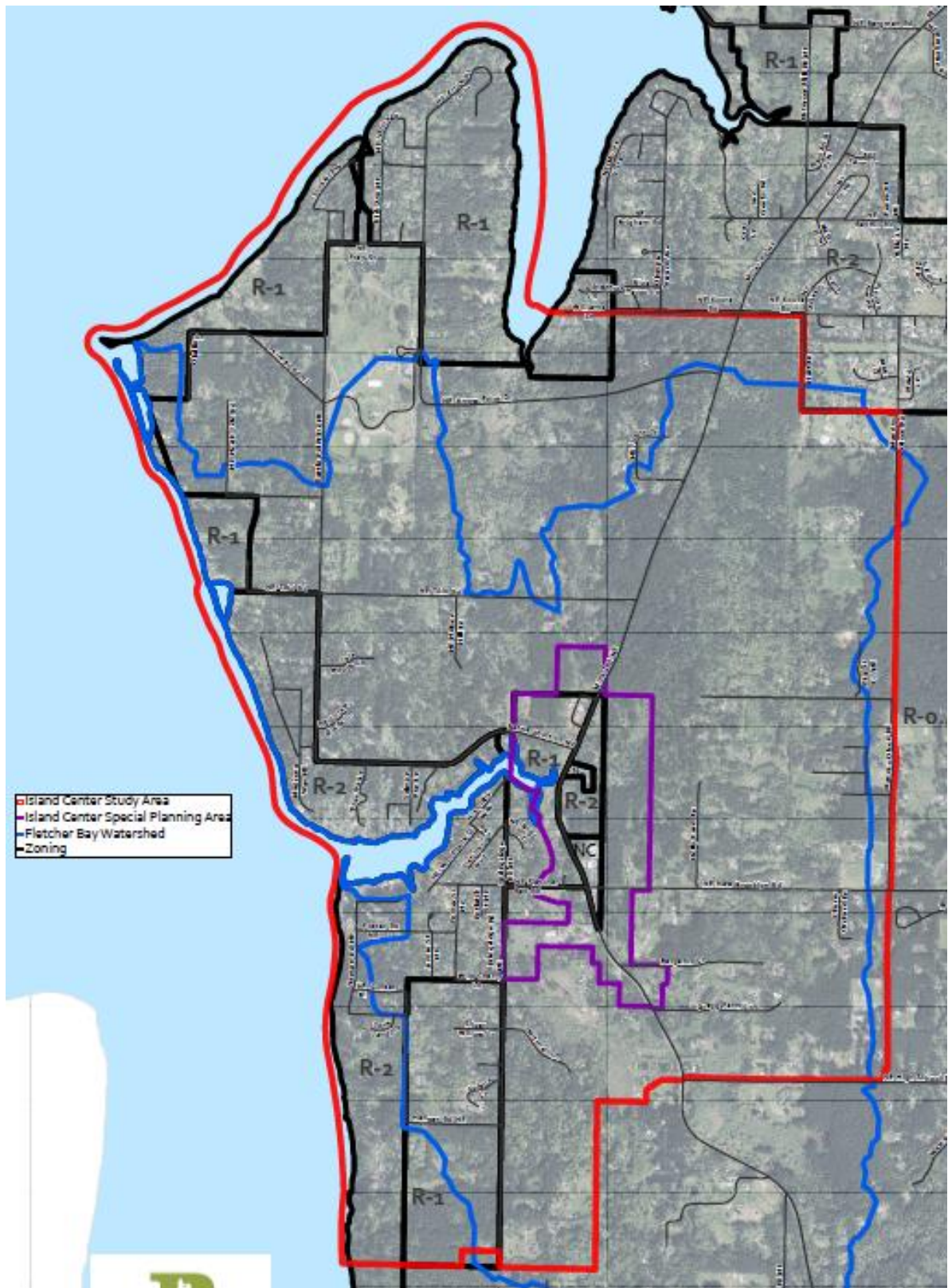
The meeting adjourned at 8:46 PM.



**October 3, 2018 6:30 – 8:30 PM**

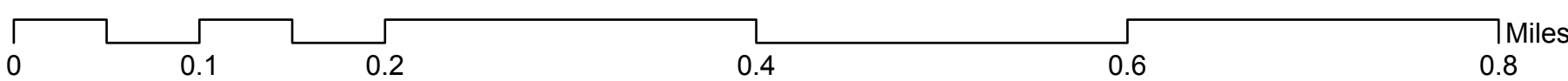
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## EXISTING CONDITIONS IN THE ISLAND CENTER STUDY AREA



# Table of Contents

1. Map of Existing Land Use and Subdivision Potential: Island Center Study Area
  - Current and Potential Dwelling Units & Population Estimate
2. Transportation: Infrastructure and Planning
  - Roadway Classifications
  - Traffic Count Data: Comparing 2012 to 2018
  - Nonmotorized Planning
  - Current Approved Capital Projects
3. Local Kitsap Transit Bus Service
4. City Sewer Service Areas
5. Island Center Area Drinking Water Service Areas
6. Critical Areas: Wetlands, Streams & Steep Slopes
7. Island Center Area Water Resources Summary: Surface water, Shorelines and Groundwater
8. Housing on Bainbridge Island

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## Island Center Study Area Existing Residential Development & Potential

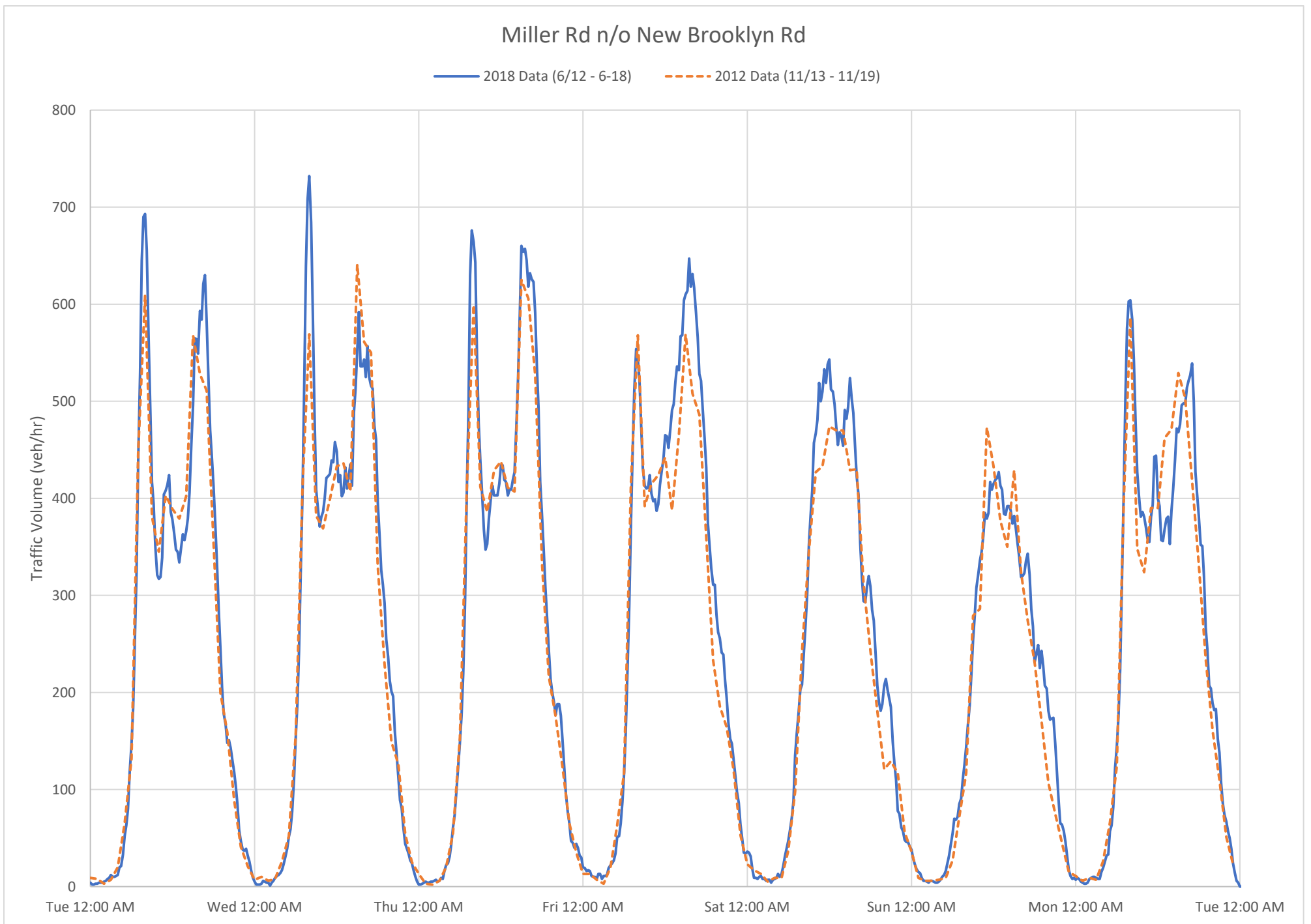
| ZONE                                                                                                         | EXISTING Single-family Residences (SFRs) | EXISTING ADUs or Multifamily (MF) Residences | Max. # of SFRs /w/ Existing Zoning |
|--------------------------------------------------------------------------------------------------------------|------------------------------------------|----------------------------------------------|------------------------------------|
| R-0.4                                                                                                        | 361                                      | 22                                           | 421                                |
| R-1                                                                                                          | 273                                      | 12                                           | 318                                |
| R-2                                                                                                          | 322                                      | 22                                           | 433                                |
| Split-zoned Properties                                                                                       | 8                                        | 2                                            | 17                                 |
| Vacant Parcels all zones                                                                                     | 0                                        | 0                                            | 275                                |
| <b>Total</b>                                                                                                 | <b>964</b>                               | <b>58</b>                                    | <b>1464</b>                        |
| Maximum Additional SFRs Under Current Zoning                                                                 |                                          |                                              | 500                                |
| Estimated 25% Reduction from Critical Areas & Septic Issues (-175 SFRs)                                      |                                          |                                              | 375                                |
| Vacant Parcels in Forestry or Open Space Taxation Status                                                     | 0                                        | 0                                            | 84                                 |
| Vacant BI Land Trust Parcels                                                                                 |                                          |                                              | 23                                 |
| NOTE: 10 POTENTIAL UNITS IN BILT PROPERTIES ADJACENT TO GRAND FOREST; 8 POTENTIAL UNITS FROM CITY GRAVEL LOT |                                          |                                              |                                    |

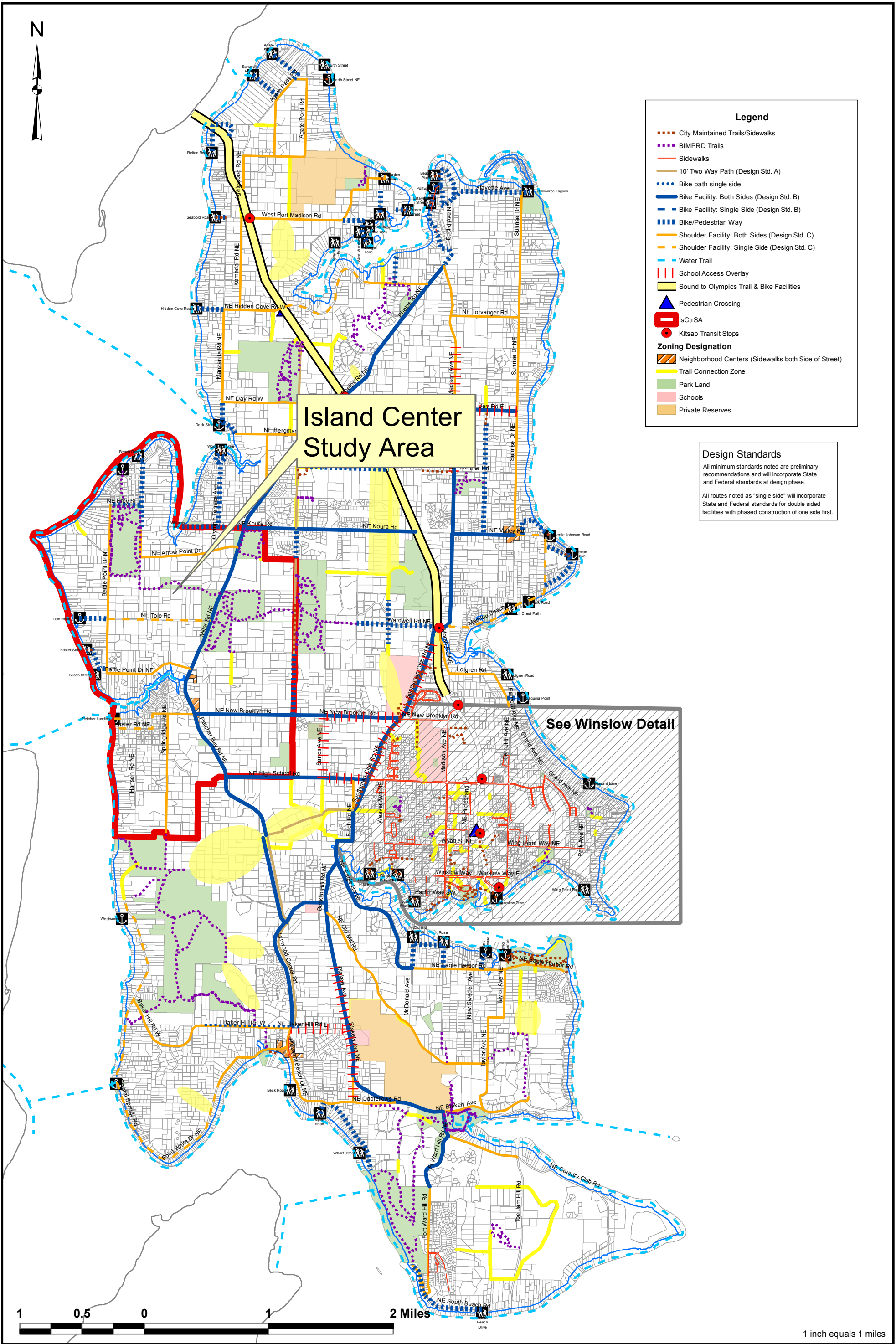
## Island Center Study Area Population Estimate

|                                                                                  | Population Estimate EXISTING<br>58 ADUs/MF UNITS | Population Estimate EXISTING 964<br>SFRs | Population Estimate for<br>500 additional SFRs Under<br>Existing Zoning | Population Estimate for 375 additional<br>SFRs (Existing Zoning Reduced for<br>Critical Areas & Septic) |
|----------------------------------------------------------------------------------|--------------------------------------------------|------------------------------------------|-------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|
| Persons per household (pph)<br>for SFRs= 2.5 pph;<br><br>ADUs/MF Units = 1.8 pph | 104 persons                                      | 2,410 persons                            | 1,250 persons                                                           | 938 persons                                                                                             |
| Total Existing Island Center<br>Population Estimate                              | 2514 persons                                     |                                          |                                                                         |                                                                                                         |
| Total Max. Potential Island<br>Center Population Estimate                        |                                                  |                                          | 3764 persons                                                            | 3452 persons                                                                                            |



# Island Center Area Traffic Data: Comparison of 2012 & June 2018 Traffic Counts





# Non-Motorized System Plan Map C: (Minimum Standards)

December 2016



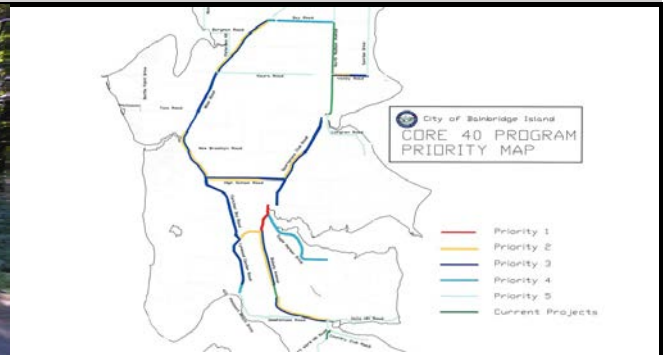
 City Maintained Trails/Sidewalks  
 BIMPRD Trails  
 Sidewalks  
 10' Two Way Path (Design Std. A)  
 Bike path single side  
 Bike Facility: Both Sides (Design Std. B)  
 Bike Facility: Single Side (Design Std. B)  
 Bike/Pedestrian Way  
 Shoulder Facility: Both Sides (Design Std. C)  
 Shoulder Facility: Single Side (Design Std. C)  
 Water Trail  
 School Access Overlay  
 Sound to Olympics Trail & Bike Facilities  
 Pedestrian Crossing  
 Kitsap Transit Stops

**Zoning Designation**

 Neighborhood Centers (Sidewalks both Side of Street)  
 Trail Connection Zone  
 Park Land  
 Schools  
 Private Reserves

**Number:** 00218

## Project Description



**Benefit:** Safety and non-motorized transportation connectivity.

### Capital Funding (1000's)

|                          | Prior Yrs. | 2017        | 2018        | 2019        | 2020        | 2021        | 2022        | 2023-2034  | Total        |
|--------------------------|------------|-------------|-------------|-------------|-------------|-------------|-------------|------------|--------------|
| FUNDING SOURCES (1000's) |            |             |             |             |             |             |             |            |              |
| General Fund             | \$0        | \$50        | \$50        | \$50        | \$50        | \$50        | \$50        | \$0        | \$300        |
| Water Fund               | \$0        | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0        | \$0          |
| Sewer Fund               | \$0        | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0        | \$0          |
| SSWM Fund                | \$0        | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0        | \$0          |
| Federal Grant            | \$0        | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0        | \$0          |
| State Grant              | \$0        | \$0         | \$0         | \$0         | \$0         | \$0         | \$0         | \$0        | \$0          |
| <b>Sub-total</b>         | <b>\$0</b> | <b>\$50</b> | <b>\$50</b> | <b>\$50</b> | <b>\$50</b> | <b>\$50</b> | <b>\$50</b> | <b>\$0</b> | <b>\$300</b> |
| FUNDING USES (1000's)    |            |             |             |             |             |             |             |            |              |
| Design/permitting        |            |             |             |             |             |             |             |            |              |
| Construction             |            | \$50        | \$50        | \$50        | \$50        | \$50        | \$50        |            | \$300        |
| <b>Sub-total</b>         | <b>\$0</b> | <b>\$50</b> | <b>\$50</b> | <b>\$50</b> | <b>\$50</b> | <b>\$50</b> | <b>\$50</b> | <b>\$0</b> | <b>\$300</b> |

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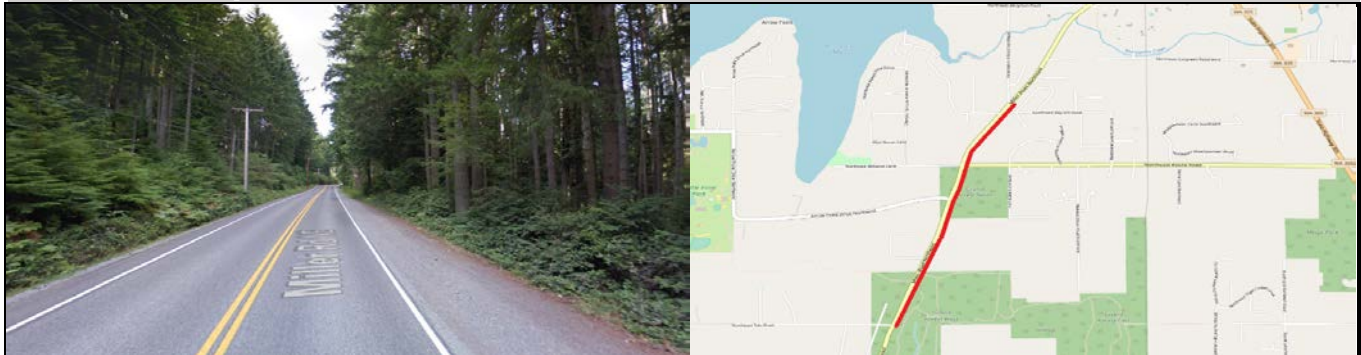
**Project:** C40 Miller Road

**Number:**

00800

**Location:** Tolo Rd. to Peterson Hill Rd.

### Project Description



Description: Provide shoulder widening on both sides of Miller Road from Tolo Road to Peterson Hill Road. Assumes that no permanent ROW acquisition is needed.

Benefit: Safety and non-motorized transportation connectivity.

Schedule: YR1/2: design and permit. YR3: construction.

### Capital Funding (1000's)

|                          | Prior Yrs.   | 2017       | 2018         | 2019       | 2020       | 2021       | 2022       | 2023-2034  | Total          |
|--------------------------|--------------|------------|--------------|------------|------------|------------|------------|------------|----------------|
| FUNDING SOURCES (1000's) |              |            |              |            |            |            |            |            |                |
| General Fund             | \$25         | \$0        | \$324        | \$0        | \$0        | \$0        | \$0        | \$0        | \$349          |
| Water Fund               | \$0          | \$0        | \$0          | \$0        | \$0        | \$0        | \$0        | \$0        | \$0            |
| Sewer Fund               | \$0          | \$0        | \$0          | \$0        | \$0        | \$0        | \$0        | \$0        | \$0            |
| SSWM Fund                | \$0          | \$0        | \$0          | \$0        | \$0        | \$0        | \$0        | \$0        | \$0            |
| Federal Grant            | \$155        | \$0        | \$596        | \$0        | \$0        | \$0        | \$0        | \$0        | \$751          |
| State Grant              | \$0          | \$0        | \$0          | \$0        | \$0        | \$0        | \$0        | \$0        | \$0            |
| <b>Sub-total</b>         | <b>\$180</b> | <b>\$0</b> | <b>\$920</b> | <b>\$0</b> | <b>\$0</b> | <b>\$0</b> | <b>\$0</b> | <b>\$0</b> | <b>\$1,100</b> |
| FUNDING USES (1000's)    |              |            |              |            |            |            |            |            |                |
| Design/permitting        | \$180        | \$0        |              |            |            |            |            |            | \$180          |
| Construction             |              |            | \$920        |            |            |            |            |            | \$920          |
| <b>Sub-total</b>         | <b>\$180</b> | <b>\$0</b> | <b>\$920</b> | <b>\$0</b> | <b>\$0</b> | <b>\$0</b> | <b>\$0</b> | <b>\$0</b> | <b>\$1,100</b> |

### Estimated Impact on Future Operating Budget

|                  | Prior Yrs. | 2017       | 2018       | 2019       | 2020       | 2021       | 2022       | 2023-2034  | Total      |
|------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Operating        |            |            |            |            |            |            |            |            |            |
| Debt Service     |            |            |            |            |            |            |            |            |            |
| <b>Sub-total</b> | <b>\$0</b> | <b>\$0</b> | <b>\$0</b> | <b>\$0</b> | <b>\$0</b> | <b>\$0</b> | <b>\$0</b> | <b>\$0</b> | <b>\$0</b> |

### 2% Contribution to Public Art Account

|                  | Prior Yrs  | 2017       | 2018       | 2019       | 2020       | 2021       | 2022       | 2023-2034  | Total      |
|------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| <b>Sub-Total</b> | <b>\$1</b> | <b>\$0</b> | <b>\$6</b> | <b>\$0</b> | <b>\$0</b> | <b>\$0</b> | <b>\$0</b> | <b>\$0</b> | <b>\$7</b> |

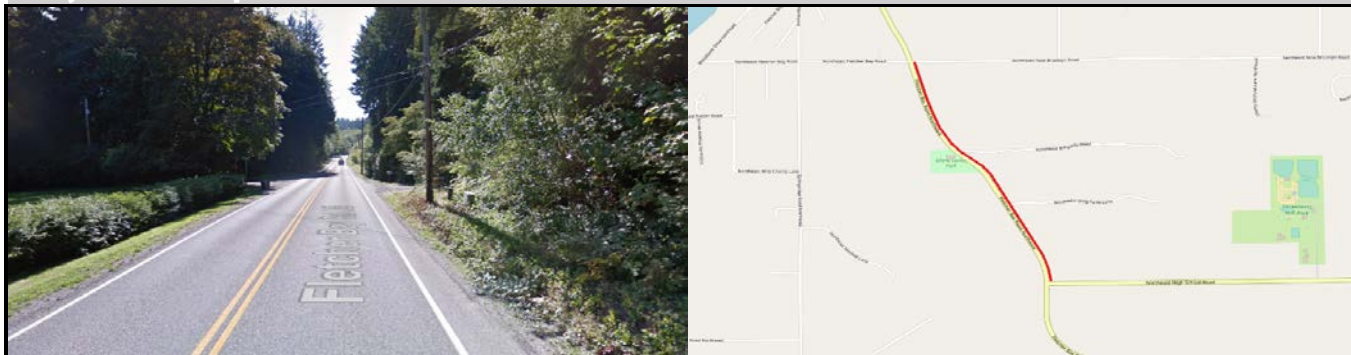
**Project:** C40 Fletcher Bay Road

**Number:**

00780

**Location:** High School to New Brooklyn

### Project Description



**Description:** Provide shoulder widening on both sides of Fletcher Bay Road from High School Road to New Brooklyn Road. The project is planned to be designed by COBI staff. Assumes that no permanent ROW acquisition is needed.

**Benefit:** Safety and non-motorized transportation connectivity.

**Schedule:** YR1: design and permit. YR2: construction.

### Capital Funding (1000's)

|                          | Prior Yrs. | 2017        | 2018         | 2019       | 2020       | 2021       | 2022       | 2023-2034  | Total        |
|--------------------------|------------|-------------|--------------|------------|------------|------------|------------|------------|--------------|
| FUNDING SOURCES (1000's) |            |             |              |            |            |            |            |            |              |
| General Fund             | \$0        | \$20        | \$111        | \$0        | \$0        | \$0        | \$0        | \$0        | \$131        |
| Water Fund               | \$0        | \$0         | \$0          | \$0        | \$0        | \$0        | \$0        | \$0        | \$0          |
| Sewer Fund               | \$0        | \$0         | \$0          | \$0        | \$0        | \$0        | \$0        | \$0        | \$0          |
| SSWM Fund                | \$0        | \$0         | \$0          | \$0        | \$0        | \$0        | \$0        | \$0        | \$0          |
| Federal Grant            | \$0        | \$0         | \$389        | \$0        | \$0        | \$0        | \$0        | \$0        | \$389        |
| State Grant              | \$0        | \$0         | \$0          | \$0        | \$0        | \$0        | \$0        | \$0        | \$0          |
| <b>Sub-total</b>         | <b>\$0</b> | <b>\$20</b> | <b>\$500</b> | <b>\$0</b> | <b>\$0</b> | <b>\$0</b> | <b>\$0</b> | <b>\$0</b> | <b>\$520</b> |
| FUNDING USES (1000's)    |            |             |              |            |            |            |            |            |              |
| Design/permitting        |            | \$20        |              |            |            |            |            |            | \$20         |
| Construction             |            |             | \$500        |            |            |            |            |            | \$500        |
| <b>Sub-total</b>         | <b>\$0</b> | <b>\$20</b> | <b>\$500</b> | <b>\$0</b> | <b>\$0</b> | <b>\$0</b> | <b>\$0</b> | <b>\$0</b> | <b>\$520</b> |

### Estimated Impact on Future Operating Budget

|                        | Prior Yrs. | 2017       | 2018       | 2019       | 2020       | 2021       | 2022       | 2023-2034  | Total      |
|------------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Operating Debt Service |            |            |            |            |            |            |            |            |            |
| <b>Sub-total</b>       | <b>\$0</b> | <b>\$0</b> | <b>\$0</b> | <b>\$0</b> | <b>\$0</b> | <b>\$0</b> | <b>\$0</b> | <b>\$0</b> | <b>\$0</b> |

### 2% Contribution to Public Art Account

|                  | Prior Yrs  | 2017       | 2018       | 2019       | 2020       | 2021       | 2022       | 2023-2034  | Total      |
|------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| <b>Sub-Total</b> | <b>\$0</b> | <b>\$0</b> | <b>\$2</b> | <b>\$0</b> | <b>\$0</b> | <b>\$0</b> | <b>\$0</b> | <b>\$0</b> | <b>\$3</b> |

## KITSAP TRANSIT BUS ROUTES IN ISLAND CENTER AREA: #95, #106 & #93



<http://www.kitsaptransit.com/rider-resources/bainbridge-island-system-map>

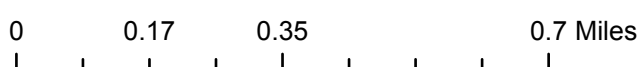
## UTILITIES IN THE ISLAND CENTER STUDY AREA

The Island Center Neighborhood Center area and some of the Fletcher Bay neighborhood to the west is served by the City's drinking water utility. The area is not currently served by any public sewer system, therefore development in the Island Center utilizes on-site septic. On-site septic systems are regulated by the [Kitsap Public Health District](#). Maps of Island Center Area drinking water utilities, and the City's sewer service areas follow.

The City periodically prepares "system plans" for both its water and sewer systems in conformance with Washington Administrative Codes (WAC) 246-290 and 173-240 respectively. These plans were last completed in 2015 ([General Sewer Plan](#), July 2015; adopted by [resolution 2015-10](#), Sept 22, 2015) and in 2017 ([Water System Plan](#), July 2017; adopted by [resolution 2017-16](#), Aug 22, 2017).

These documents, in addition to describing and documenting the current condition of the utility system being reviewed, evaluate the capacity of the systems (both current and future), the current and anticipated demands on the systems, and any system improvements (Capital Projects) needed to meet the current and anticipated future demands. Both plans look at the systems "status" at three "time-steps" consisting of current, near-term (typically 5 or 6 years out), and long-term (typically 20 years out). Included in the overall analysis of the utility is a financial forecast of both revenue and expenses to ensure that appropriate rates are in place (or are planned) to pay for system operation and upgrades over the duration of the near-term planning horizon.

In the case of the City's water and sewer utilities, the current plans provide for more capacity than required to meet the anticipated demands. In the case of the sewer utility, some details on how to meet that future demand have been left for further study based on the outcomes of other activities such as the Island Center Subarea Planning effort.





CITY OF  
BAINBRIDGE  
ISLAND

# COBI Current Sewer Service Area

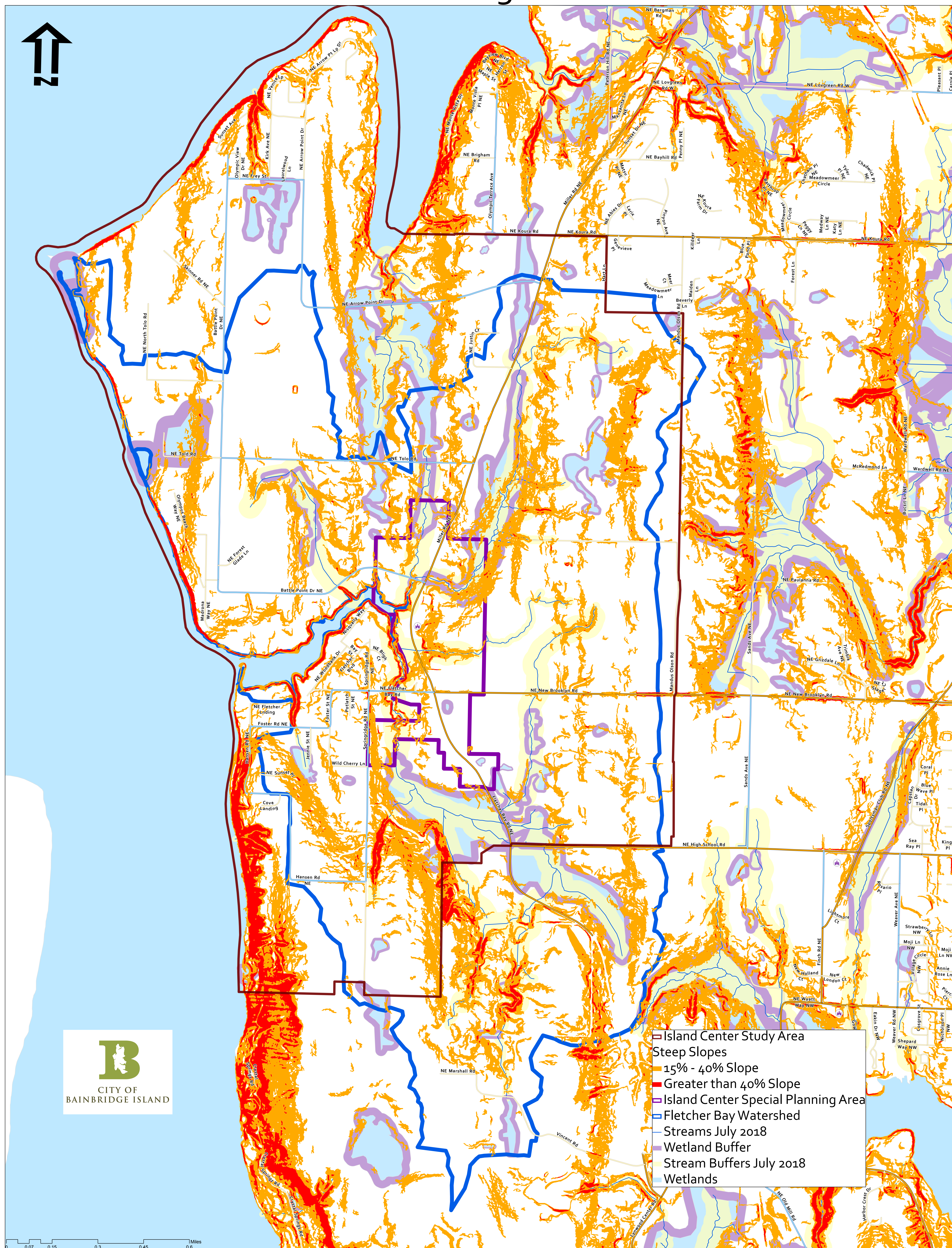
## Legend



Current Sewer Service Area



# Island Center Subarea Planning Boundaries & Critical Areas



## Island Center and Fletcher Bay Watershed

State of the Water Resources 2018

### FLETCHER BAY WATERSHED

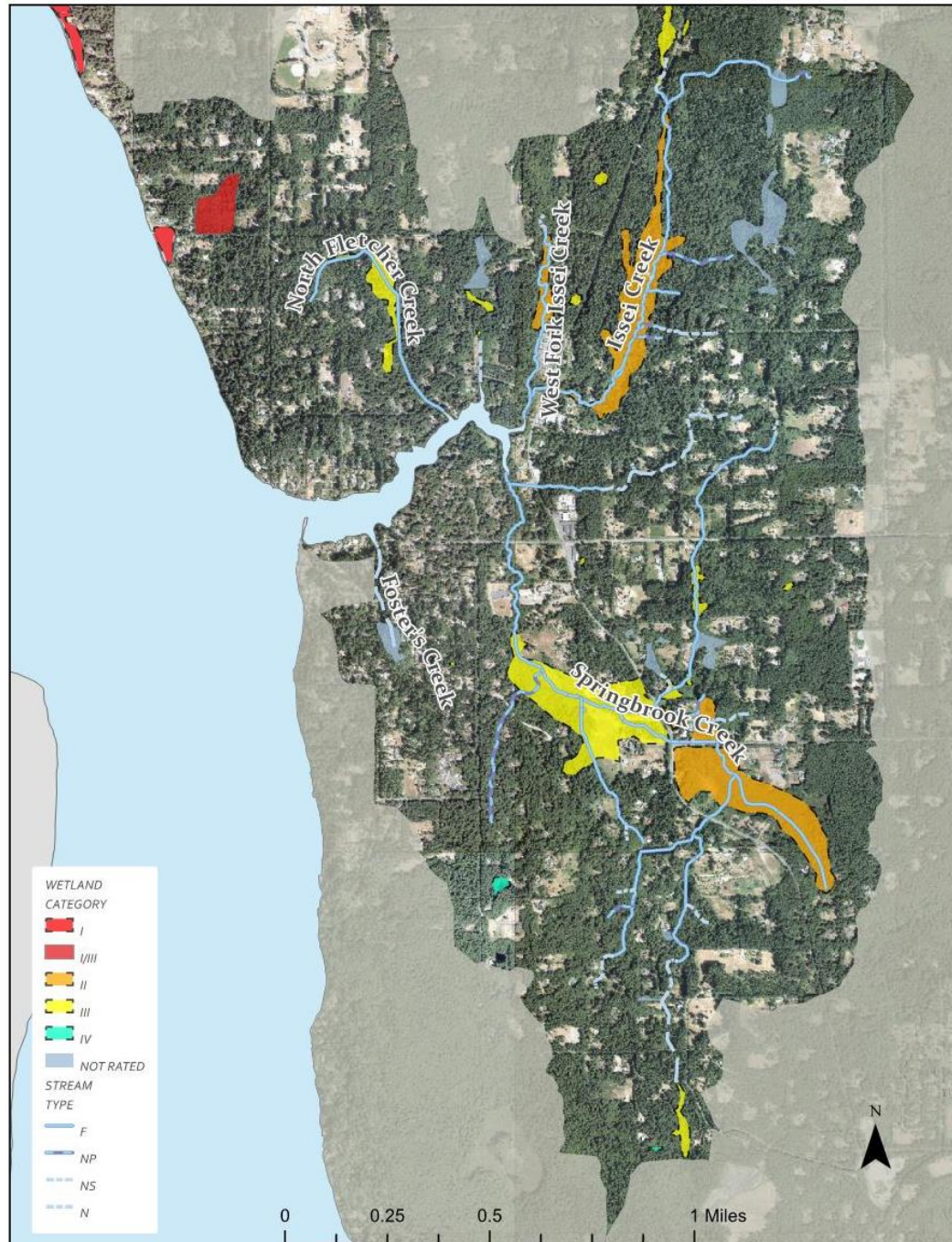


Figure 1 Surface Water Features (City of Bainbridge Island (COBI))

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*

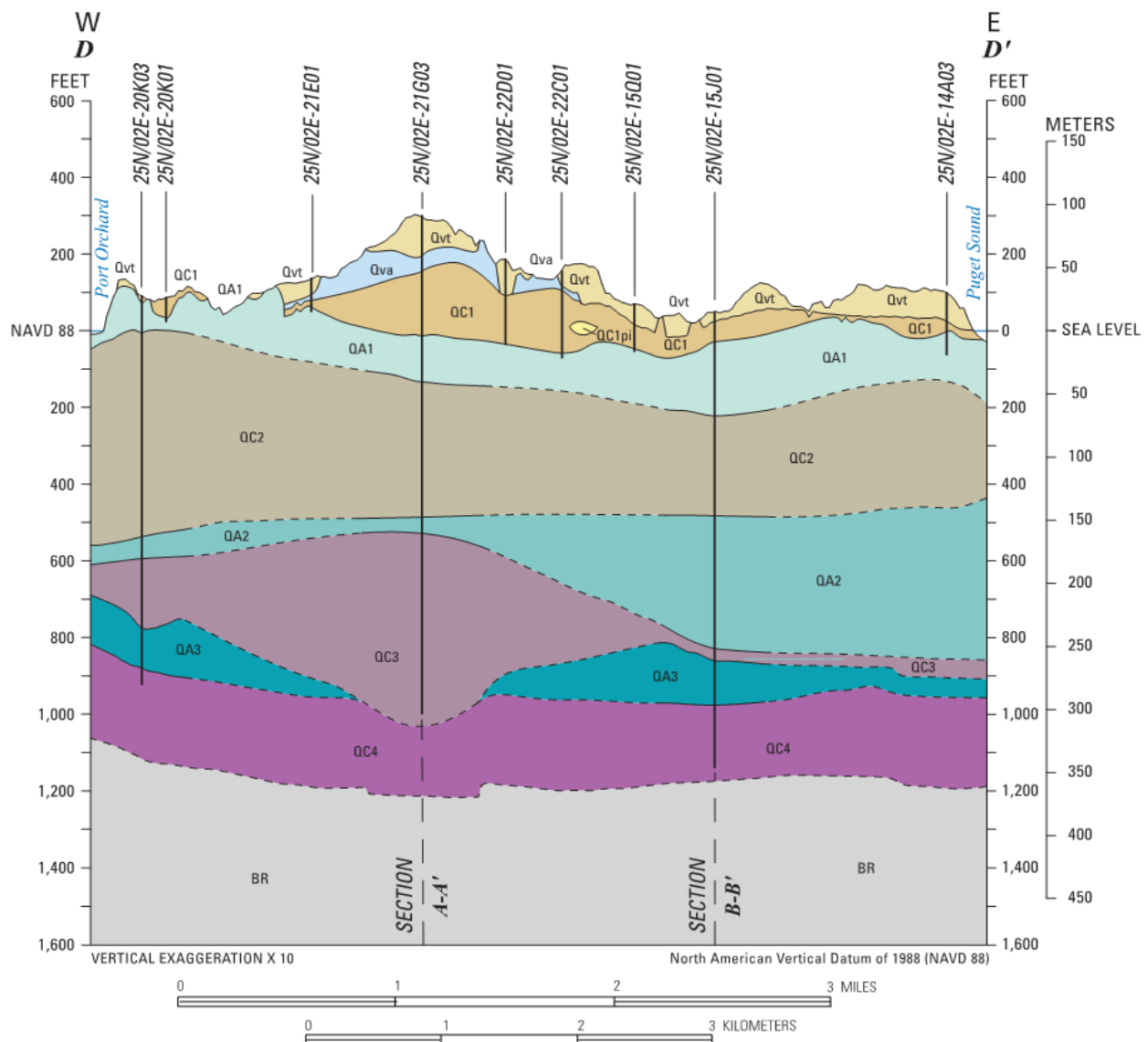


Figure 2 Representative Cross Section of Aquifers underlying the Fletcher Bay Watershed, USGS 2011-5021

[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).

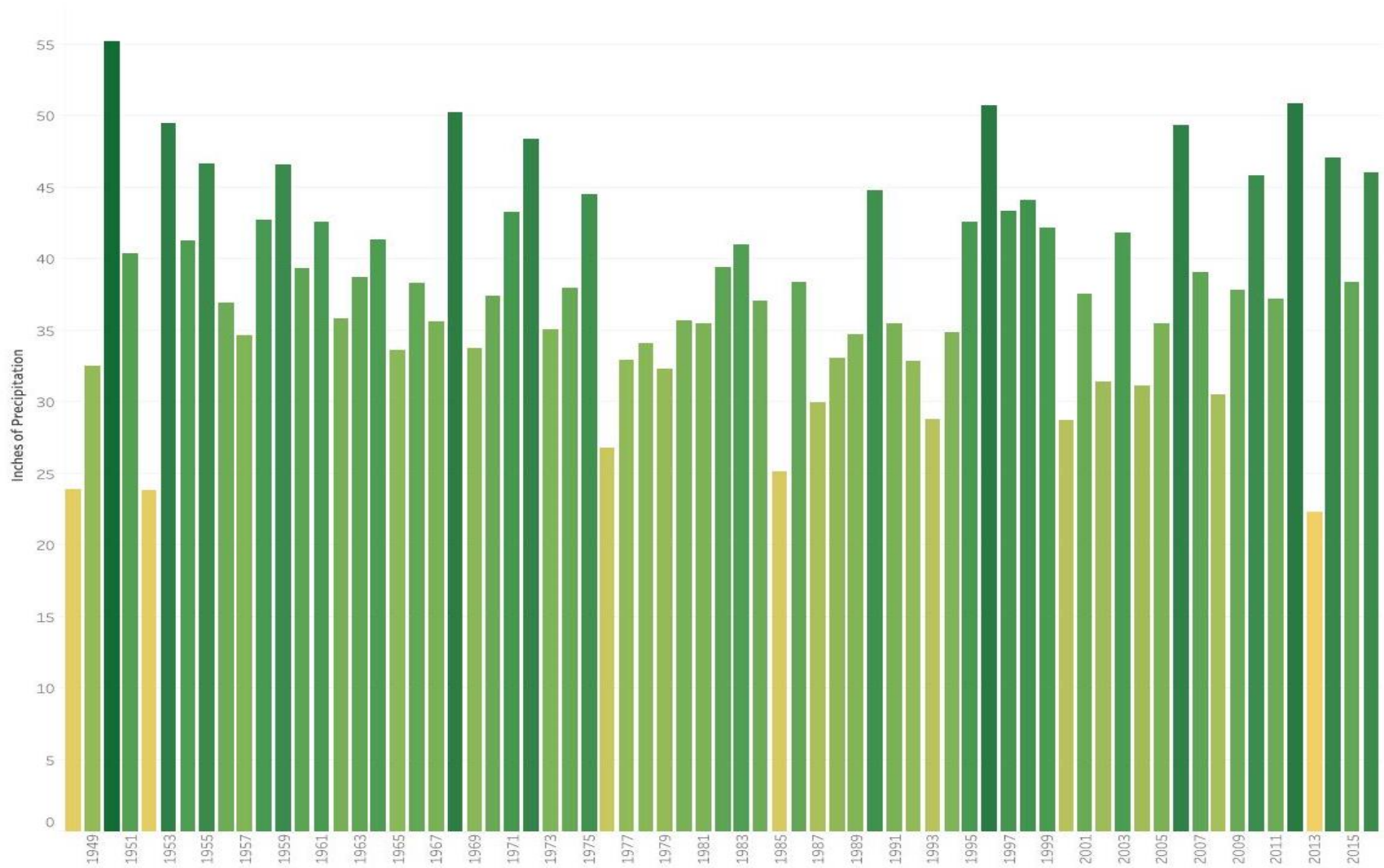


Figure 3 Annual Precipitation Totals in Inches (1948-2016 Sea-Tac Precipitation Monitoring Station)

### **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/)

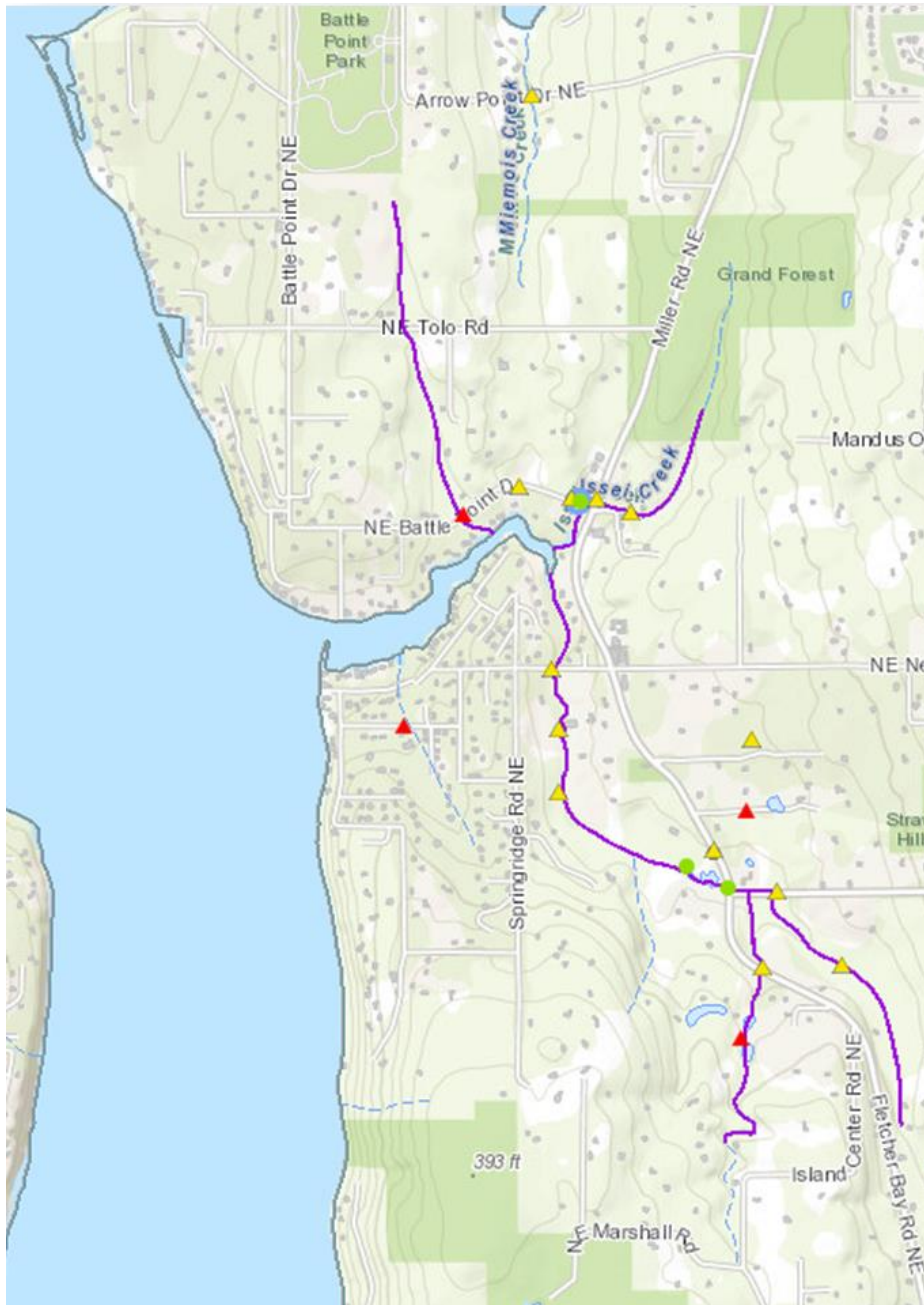


Figure 3 WDFW map, Yellow triangles are partial barriers, purple lines represent streams with fish presence  
<http://apps.wdfw.wa.gov/fishpassage/>

# 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

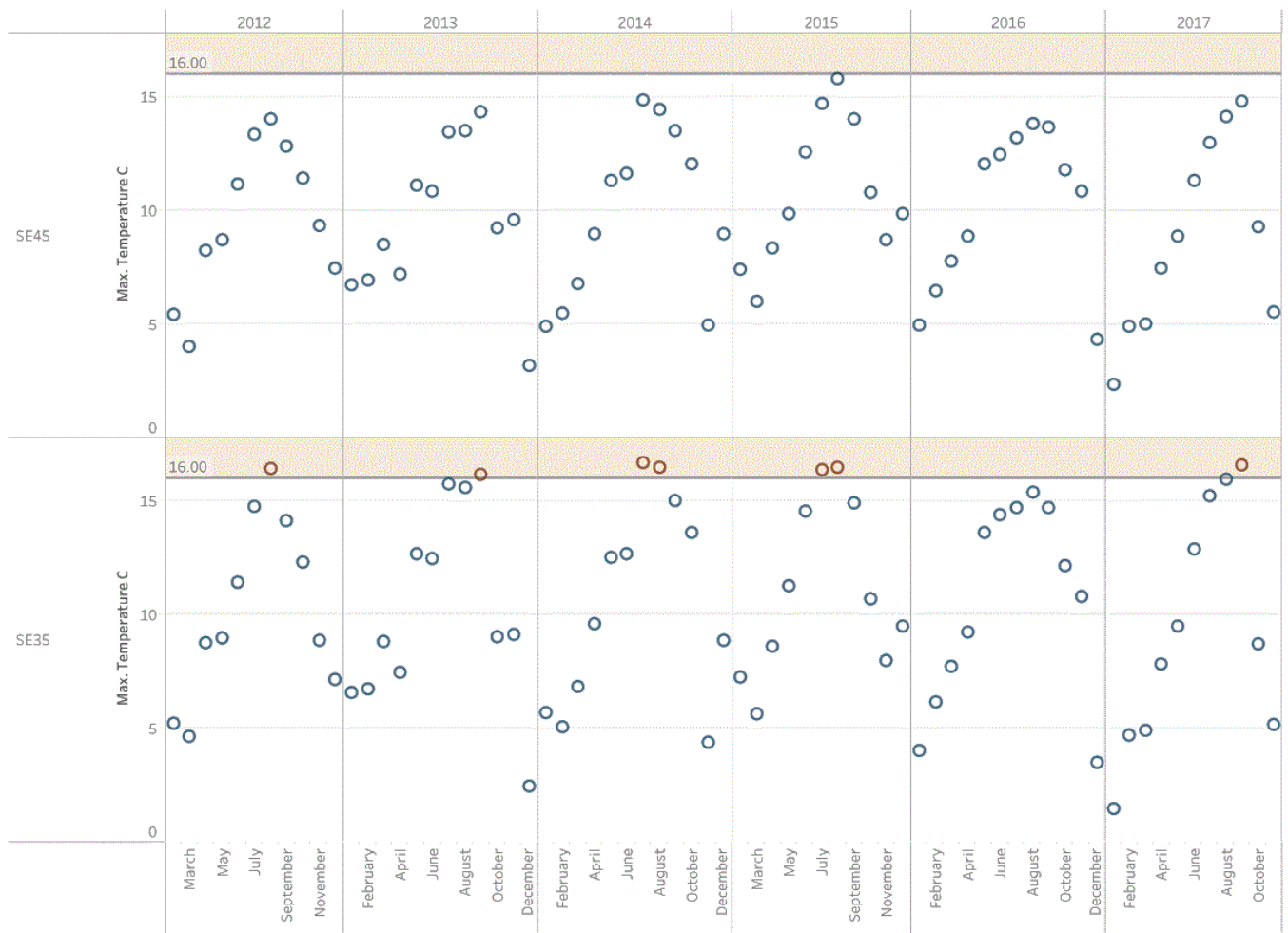


Figure 5 COBI WQFMP Monthly Temperature Data

### 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 Exceedences

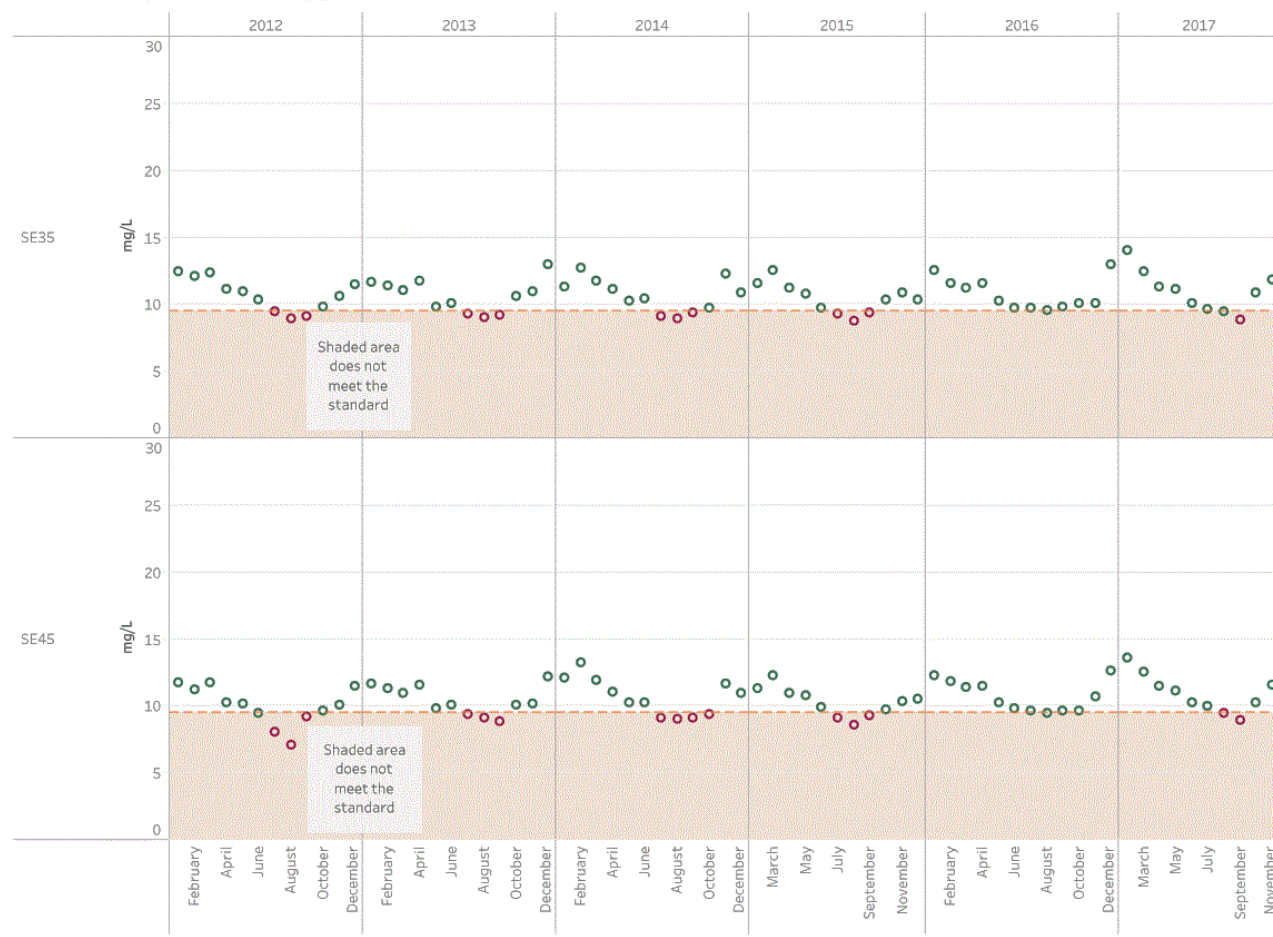


Figure 6 COBI WQFMP Monthly Dissolved Oxygen Data

## 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 an significant improving trend in percentage of pollution *intolerant* species versus tolerant species, indicating an improvement in water quality (Figure 9).

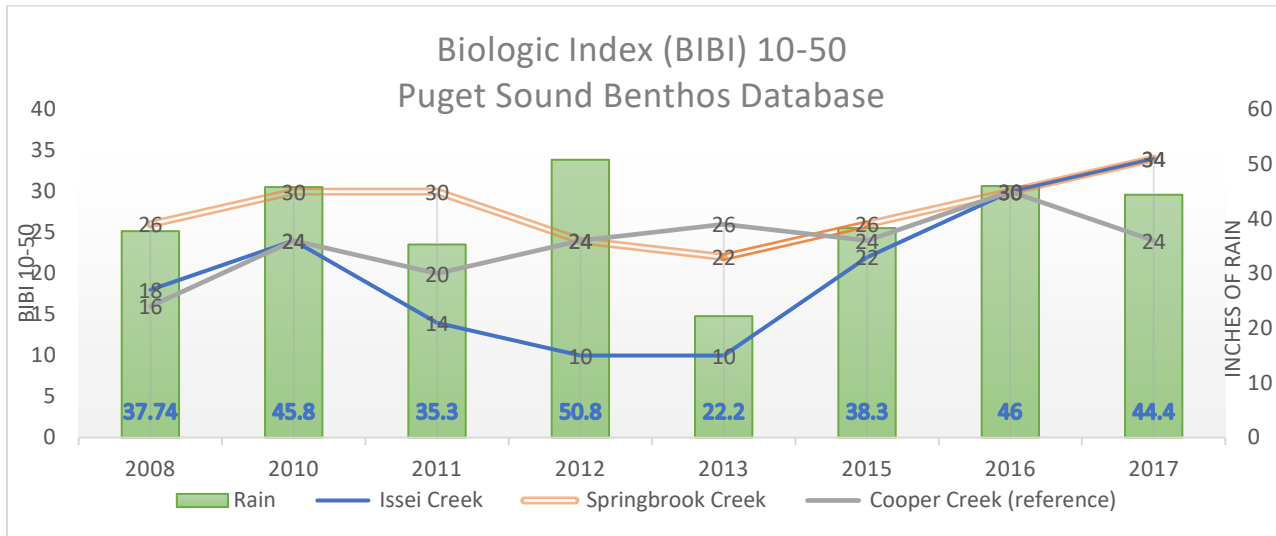


Figure 7 B-IBI scores 2008-2017, COBI

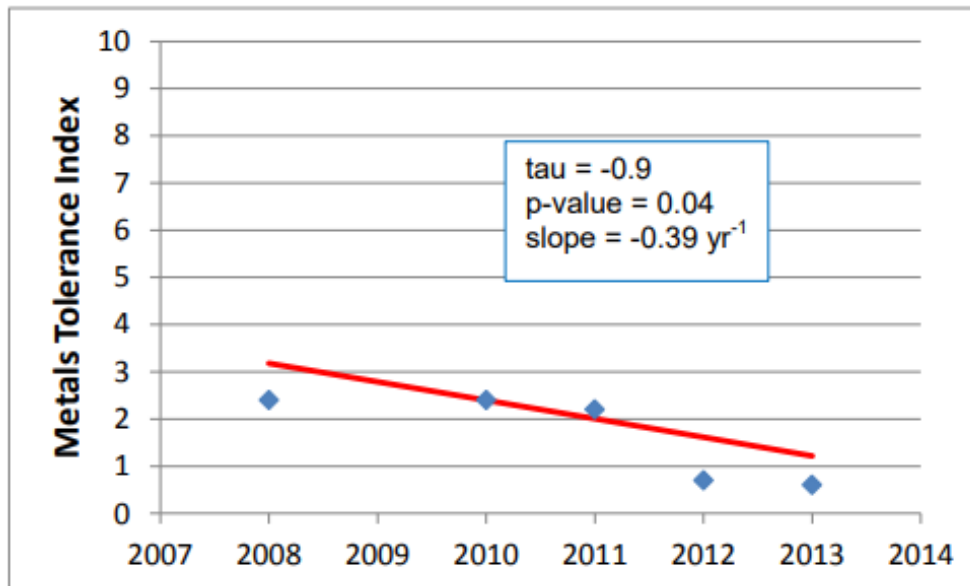


Figure 8 DeGasperi 2015

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)

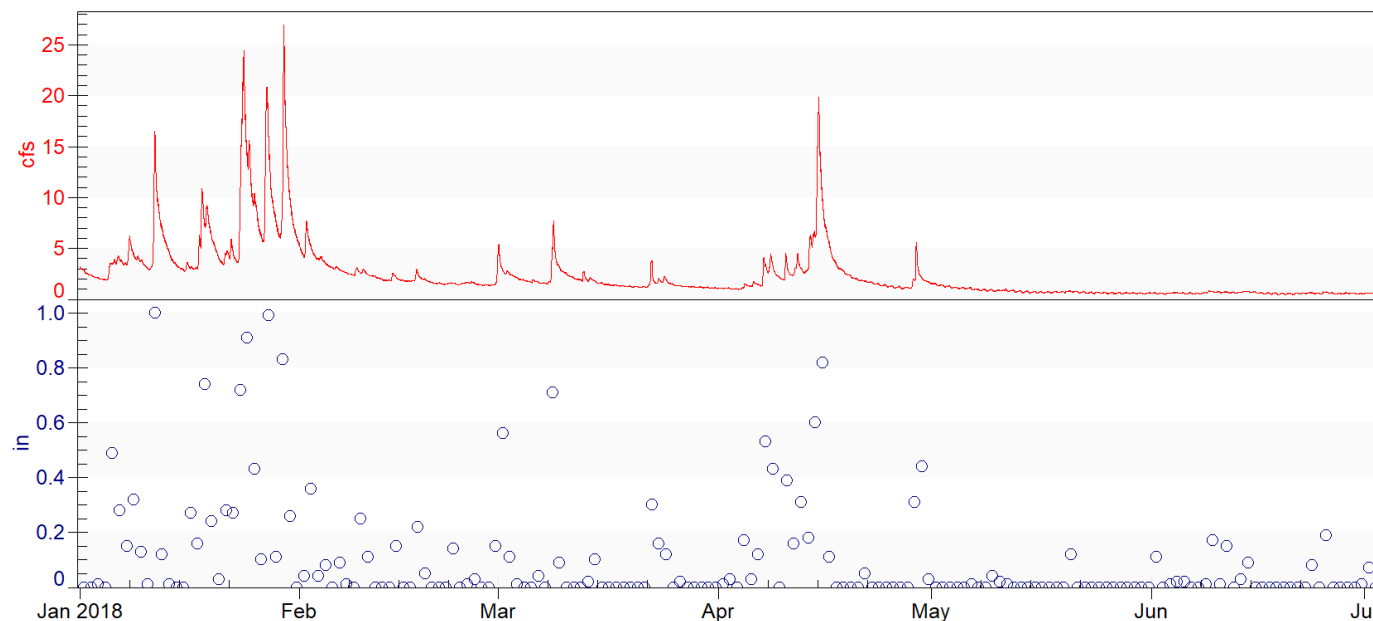


Figure 9 Flow and Precipitation Springbrook Creek 2018 COBI

## 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](#)



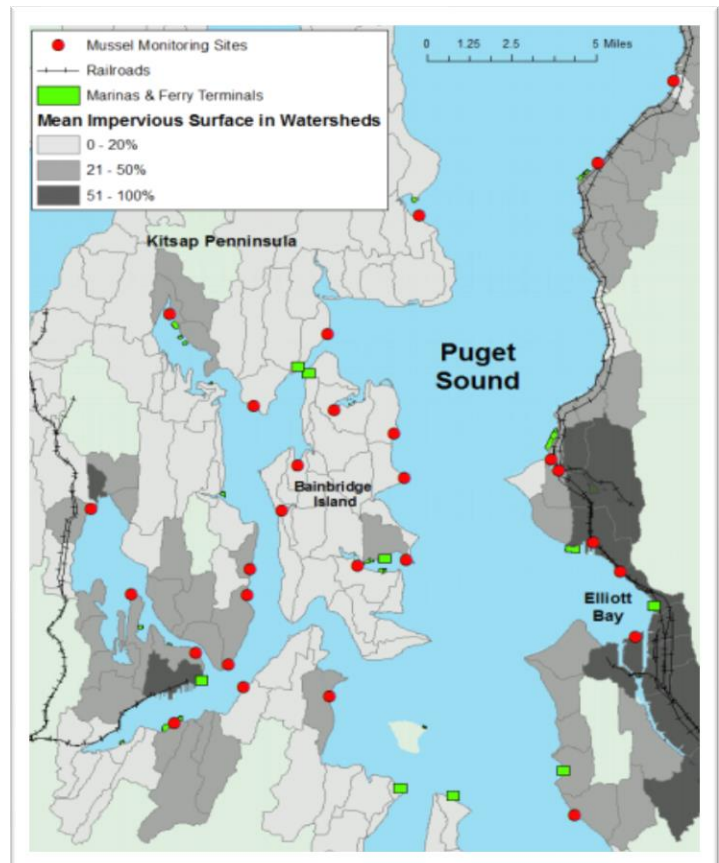
Washington Department of Ecology

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 as 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.

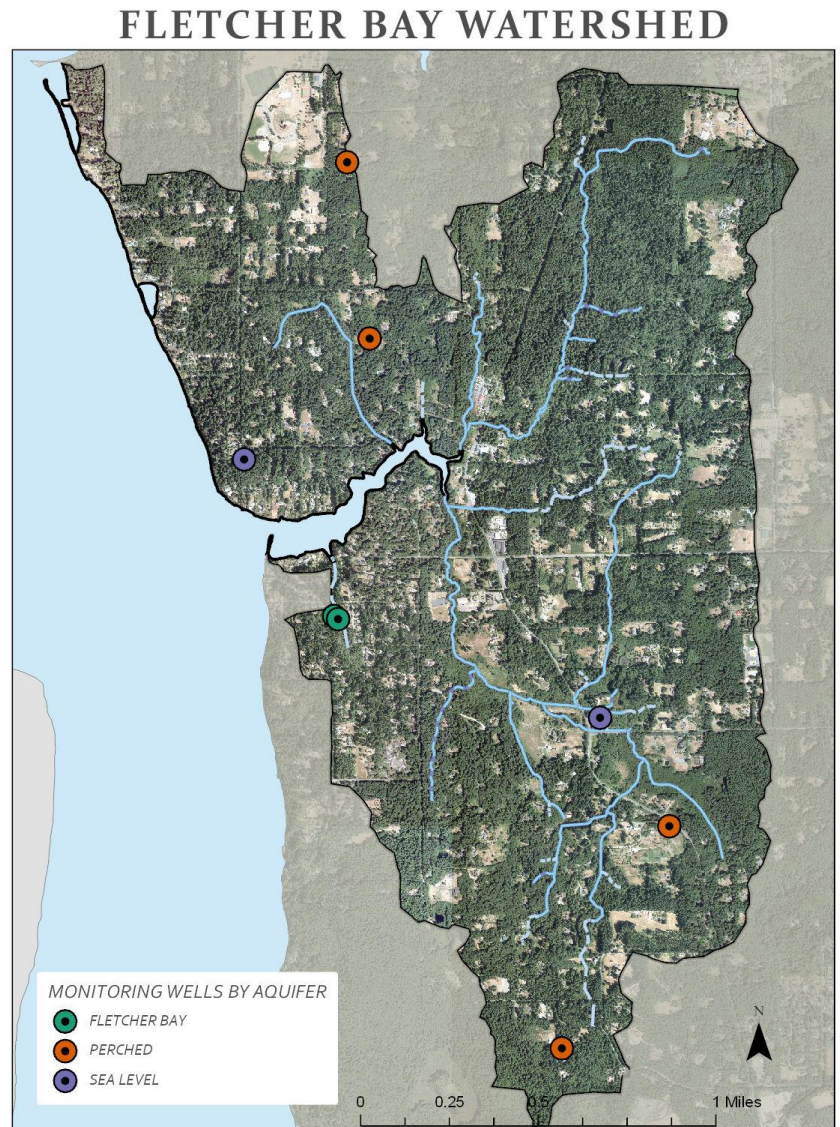
In the Fletcher Bay watershed 9 wells are monitored for water level; 2 in the Fletcher Bay aquifer (FBA), 3 in the sea level aquifer (SLA) and 4 in the perched aquifer (PA). Eight wells show an increasing trend and 1 shows a decreasing trend.

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.

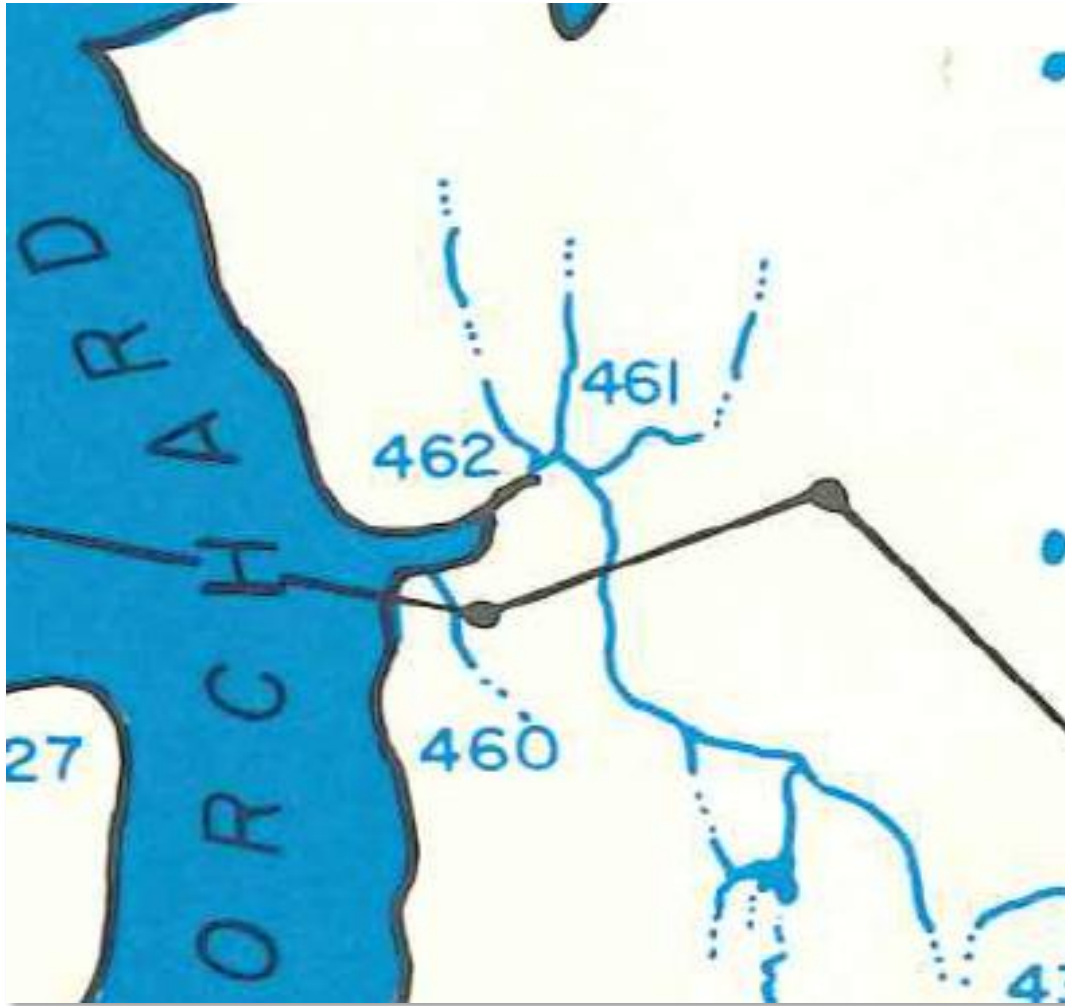
The City is considering the development of a groundwater management plan in 2019.

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.](#)

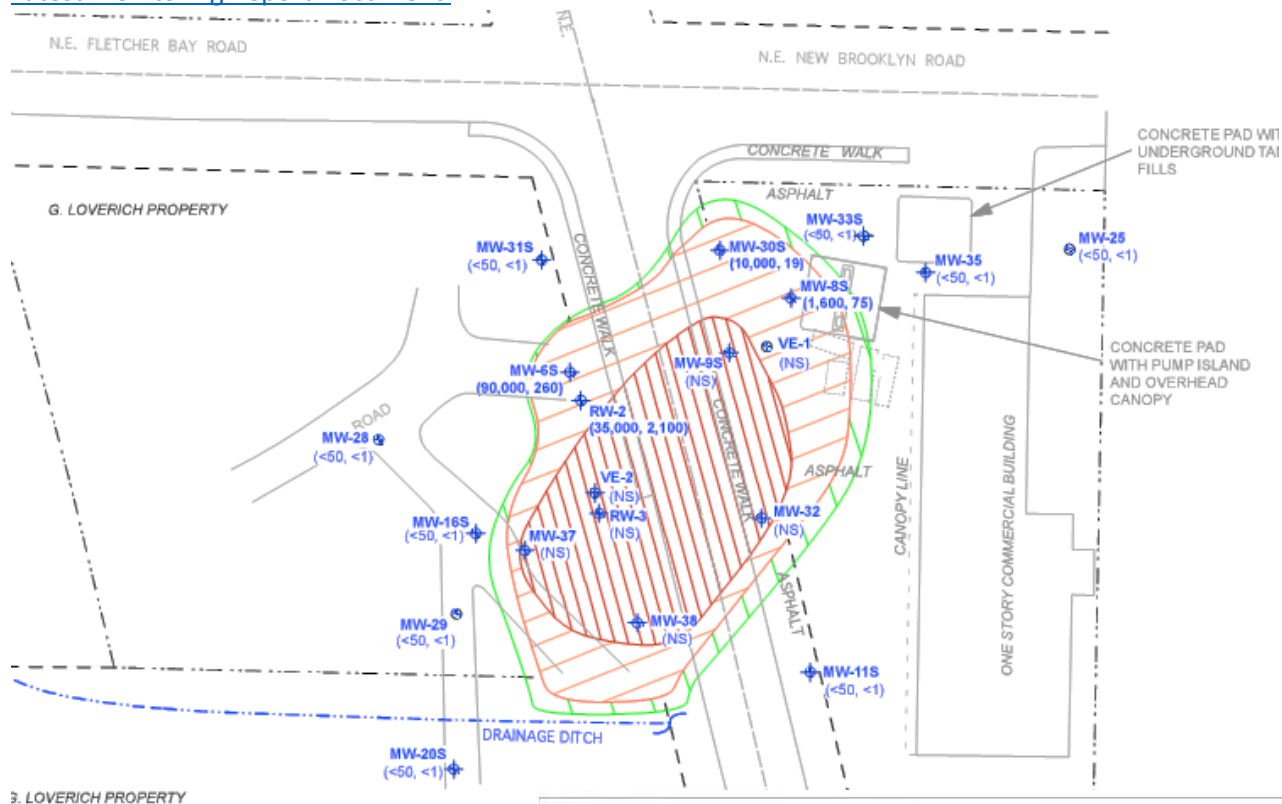
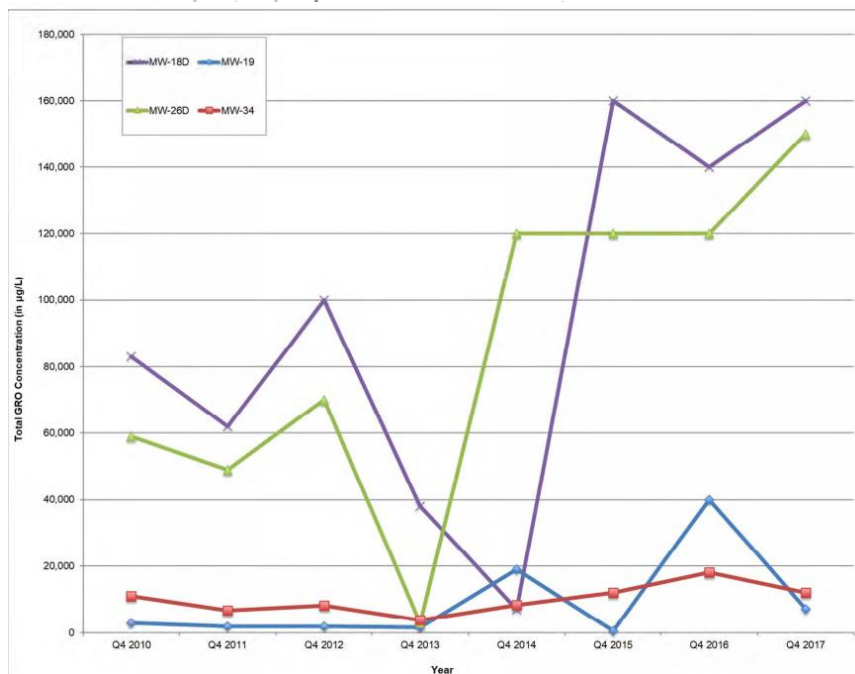


Figure 11 Fletcher Mart Contamination Map

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/>

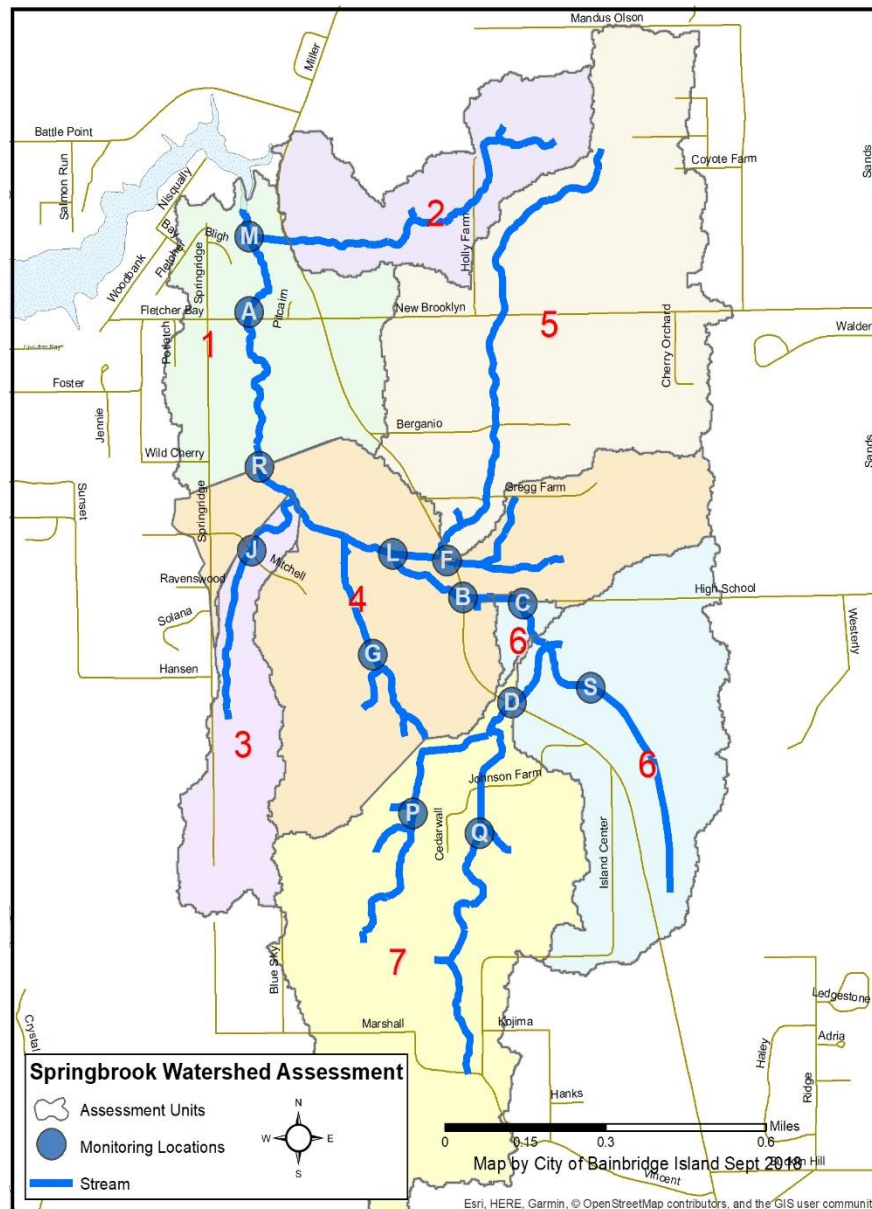


Figure 13 Springbrook Creek Watershed study locations, COBI

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

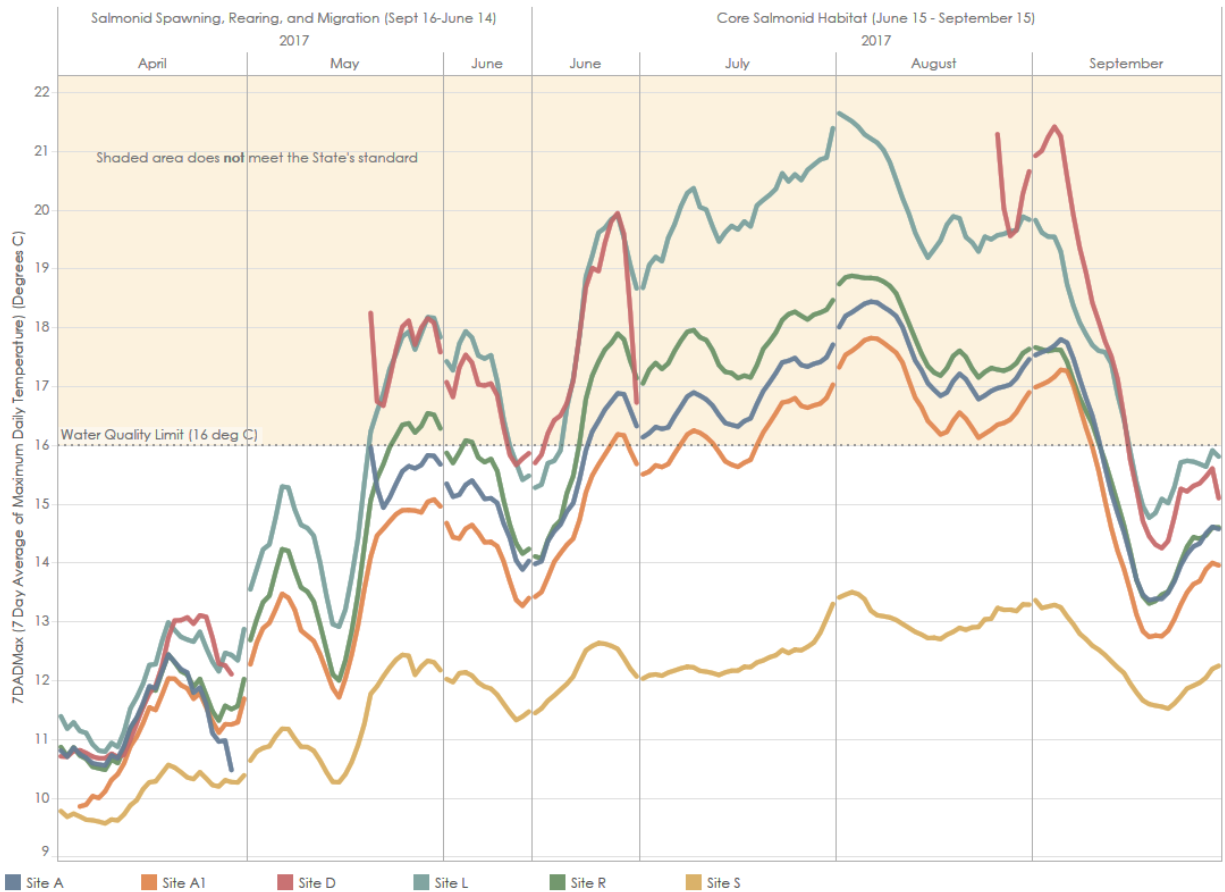


Figure 14 Springbrook Creek, Continuous Temperature Data, COBI

## 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          |

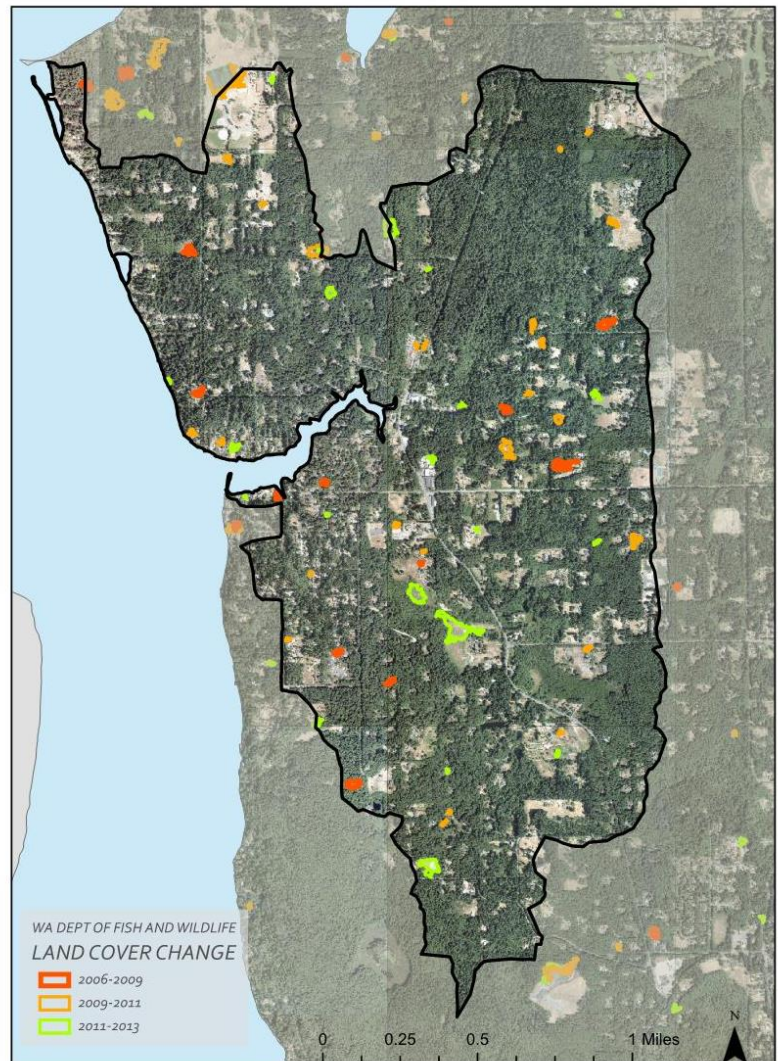


Figure15 Land Cover Change 2006-2013, WDFW

[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=>

## Housing on Bainbridge Island:

The Affordable Housing Task Force completed their final report in July, 2018. The City Council has indicated support for moving forward with *Priority Recommendations* & *Quick Wins*. The report and its appendices can be read on the City's website:

<https://www.bainbridgewa.gov/DocumentCenter/View/10828/Affordable-Housing-Task-Force-Final-Report-and-Appendices-072018>



## Affordable Housing Task Force Final Report



July 11, 2018