

Grow Community Phase 3

UTILITY REPORT

PLAT ALTERATION

Submitted to

City of Bainbridge Island
280 Madison Avenue North
Bainbridge Island, WA 98110

Client

Bainbridge 14, LLC.
27 Handford Street
Seattle, WA 98134

Prepared by

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Project Description

The proposed project is the third phase of Grow Community. The first two phases of the project were completed by 2017. This project is located in the southeast portion of the site. The proposal will alter the existing 5 lots into 14 lots. The project will consist of 14 single family units on 14 separate lots. Additionally, we proposed to modify the parking lot located on Tract C and portions of Shepard Way. The proposed lots will be 27-31 and 33-41. The total area of the new lots will be 22,684 square feet.

Existing Conditions

The project site has been mass graded with the previous phase of development and is currently covered in tall grass. The existing 5 lots are bordered by Tract C and Shepard Way. A 7 stall parking lot is located to the west. A large grass court yard is located to the north. An accessible ramp and 7 stall parking lot is located to the east. On the south side of the project is Shepard Way which consists of a two lane paved road with curb and gutter on the north side and a thickened edge on the south. This road was improved as part of the previous phase of the development.

Stormwater Drainage

Existing Conditions

The runoff generated on the project site is currently collected and conveyed to an existing system in Shepard Way. The Shepard Way system drains east to a connection with Madison Avenue. A downstream analysis of this system is described in the previous phase's utility report.

Minimum Requirement Determination

The proposed project will create the following areas:

- 1.3 acres of disturbed area,
- 0.6 acres of impervious surface and
- 0.7 acres of pervious surface.

The project is required to meet Minimum Requirements 1-9, except the project is exempt from Minimum Requirements 7 and 8. The project is exempt from Minimum Requirements 7 and 8 because the stormwater from the project will discharge directly to salt water (Eagle Harbor) in an entirely manmade conveyance. Table 1 provides a brief description of how each Minimum Requirement is met.

Table 1
Summary of Stormwater Minimum Requirements

<u>Minimum Requirement</u>	<u>Comment</u>
1. Stormwater site plan	A stormwater site plan is presented.
2. Construction stormwater pollution prevention	A detailed erosion and sedimentation control plan meeting the City's regulations will be submitted for approval to the City with the site construction permit.
3. Source control of pollutants	The proposed project is not considered a pollutant generator by the City's regulations.
4. Preservation of natural drainage systems and outfalls	All stormwater will continue to discharge in the same location. The project's impact on the downstream drainage systems has been evaluated and it was

	determined that the City's drainage system has adequate capacity and there are no adverse impacts.
5. On-site stormwater management	Post construction soil quality will be utilized to retain the stormwater onsite to the maximum extent possible. A rain garden may be used to treat the runoff from the modified west parking lot.
6. Runoff treatment	The existing pollution generating impervious surfaces are treated by two Stormfilter treatment systems. There will be changes to the curbing of the west parking lot that will allow more area to drain into Shepard Way. The stormfilter at the east end of Shepard Way will be modified to add an additional filter to treat the additional runoff. The new portion of the western parking area will either drain to a rain garden or to another Stormfilter treatment system. The feasibility of the rain garden is dependent on the final layout of the water system in the area. It should be noted that Grow Community as a whole has agreed that the treatment systems for the project will treat 95% of the runoff from pollution generating areas instead of the minimum 91% required by code. This will provide added protection to Eagle Harbor. Landscape areas will be amended to meet the soil quality and depth requirements within the City's regulations.
7. Flow control	The site drains directly to salt water. It is exempt from this requirement.
8. Wetlands protection	The site does not drain into a wetland, so it is exempt.
9. Operation and maintenance	The existing operation/maintenance manual will be modified to address the changes to the system as part of the construction phase of the project.

Proposed Drainage System

The proposed drainage system will be divided into two categories; treatment and collection/conveyance. Most of the treatment system was installed with the previous phase of the development. Shepard Way and the east parking area are collected and treated by Stormfilter 2. Currently the runoff from the west parking lot is collected and treated by Stormfilter 3. Both of these systems discharge to the collection and conveyance system that the proposed buildings will discharge to. This system leaves the property at the southeast corner of the site. The proposed project will add approximately 1,526 square feet when compared to the original design. This is a nominal increase for a project that consists of over 135,000 square feet of impervious area that discharges to this drainage system. Since the previous downstream analysis determined that the drainage system had adequate capacity and there is nominal 1% increase in the total impervious surface it is our opinion that the existing drainage system is adequate for the proposed project.

Frontage Improvements

We are proposing to construct parallel parking and a sidewalk on the north side of Shepard Way. We are also proposing to narrow the east portion of Shepard Way to a single two way lane with stop control. This is to reduce vehicle speeds in the area and make this area more

pedestrian friendly. This is currently under review by the Fire Marshal. Based on their comments we will engage with a traffic engineer to provide a detailed design to the City for review. If it is determined that narrowing Shepard Way is not approvable, we still propose to construct the parallel parking and sidewalk on the north side of Shepard Way. The project is not reliant of the narrowed roadway to meet the City's regulations.

Proposed Sewer Service

The previous phases of the project constructed sewer improvements in Shepard Way to support the development. The previous approved design on the site (Lots M-Q) consisted of 356 drainage fixture units. The proposed project will produce 294 fixture units. Based on this, the project will have a lower discharge to the City's sewer system.

There are three 6 inch side sewers that were extended to the project site. Per the City's regulations a side sewer can support two single family residences. These side sewers will be used to provide service to six of the residences. To provide service to the remaining 8 residences, we proposed to construct an 8 inch sewer main that will extend north from Shepard Way. The main will be about in the middle of the frontage and extend about 20 feet. Then four 6 inch side sewers will extend from this location to serve the remaining 8 units. The exact configuration of how these side sewers will connect with the main needs to be coordinated with the City of Bainbridge Island engineering and operations staff.

Proposed Water Service

The previous phases of the project constructed water improvements in Shepard Way and throughout the project to support the development. The previous approved design on the site (Lots M-Q) consisted of 412 water fixture units. The proposed project will produce 366 water fixture units. Based on this, the project will have a lower demand from the City's water system.

An existing 4 inch manifold is located at the southwest corner of Lot 28. There are currently 7 water meters located in this area. They are:

- 1-1" residential meter
- 1-3/4" commercial meter
- 4-3/4" residential meters and
- 1-3/4" irrigation meter.

Currently only the irrigation meter is in use. The other meters were for the previous project on the five lots.

We are proposing to modify the manifold to allow for a total of 15 water meters, 14 – 3/4" residential meters and 1- 3/4" irrigation meter.

Erosion Control

The Contractor will be responsible for maintaining erosion control facilities on the site during construction and for ensuring that sediment does not leave the site. The general principles of construction pollution prevention are:

- Retain native vegetation
- Prevent erosion rather than treat sediment laden water.
- Employ site specific best management practices (BMPs)
- Divert upslope runoff around disturbed area
- Phase construction operations to reduce total amount of disturbance at one time
- Amend soils before seeding
- Minimize the slope length and steepness of disturbed areas

- Reduce runoff velocities
- Prevent the tracking of sediment off site
- Employ BMPs that address not only erosion but also other potential pollutants.

A detailed plan will be developed that will meet the City's regulations. It will be submitted as part of the construction permit for review and approval.

Appendix A

Drainage Areas

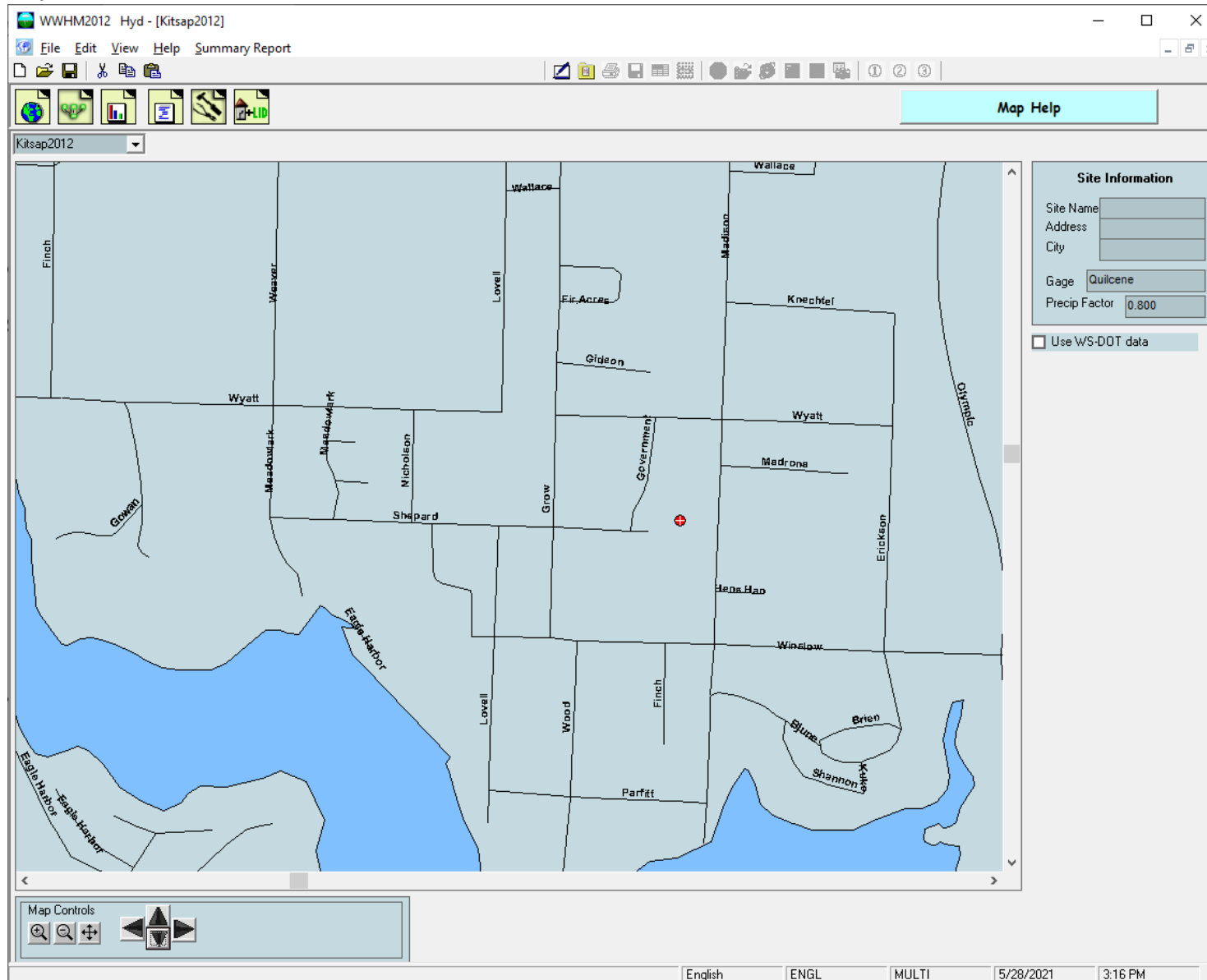
Grow Communityh Phase 3
Drainage Areas

Total Area 87713 sf

Drainage Areas	Previous Design		Proposed Design		Proposed vs Previous
<i>Impervious</i>					
Building	21910 sf	0.503 ac	12334 sf	0.283 ac	-9576 sf
Road/Path	34981 sf	0.803 ac	46083 sf	1.058 ac	11102 sf
					1526 sf
<i>Pervious</i>					
Landscaping	30822 sf	0.708 ac	29296 sf	0.673 ac	-1526 sf
Stormfilter Areas					
2	26407 sf	0.606 ac	27701 sf	0.636 ac	1294 sf
3	3958 sf	0.091 ac	3610 sf	0.083 ac	-348 sf
New			1802 sf	0.041 ac	1802 sf

Storm filter Flow	Qwq	Qcart	Required # cartridges
2	0.194 cfs	0.017 cfs	12.0
3	0.025 cfs	0.025 cfs	1.0
New	0.013 cfs	0.025 cfs	1.0

Project Location



Drainage Basin to Stormfilter 3 (Existing West Parking Lot)

WWHM2012 Hyd

File Edit View Zoom Help

Schematic

Basin to SF3 Mitigated

Subbasin Name: Basin to SF3 ☐ Designate as Bypass for POC:

Flows To : Surface Interflow Groundwater

Area in Basin ☒ Show Only Selected

Available Pervious Acres Available Impervious Acres

☒ ROADS/FLAT .083

Pervious Total 0 Acres

Impervious Total 0.083 Acres

Basin Total 0.083 Acres

Precipitation Gage 2 - <UNK> | Quilcene

Select By:

English ENGL MULTI 5/28/2021 3:16 PM

The screenshot displays the WWHM2012 Hyd software interface. The main window is titled 'Schematic' and shows a grid-based schematic diagram of a drainage basin. The grid is divided into four quadrants, each containing a small icon representing a different land use or feature. The top-left quadrant is labeled '3', the top-right '4', and the bottom-right '2'. The bottom-left quadrant is empty. The left sidebar contains a 'SCENARIOS' section with 'Predeveloped' and 'Mitigated' options, and a 'Basic Elements' section with various icons for adding elements to the schematic. Below these are 'Pro Elements' and 'LID Toolbox' sections. At the bottom left, there is a 'Move Elements' section with directional arrows and 'Save x,y' and 'Load x,y' buttons. The right sidebar shows the 'Basin to SF3 Mitigated' properties. It includes fields for 'Subbasin Name', 'Flows To' (Surface, Interflow, Groundwater), 'Area in Basin' (with a 'Show Only Selected' checkbox), and 'Available Pervious Acres' and 'Available Impervious Acres'. The 'Available Impervious Acres' field is set to 'ROADS/FLAT' with a value of '.083'. At the bottom right, there are summary statistics for 'Pervious Total', 'Impervious Total', and 'Basin Total', all in acres. There is also a 'Precipitation Gage' dropdown menu set to '2 - <UNK> | Quilcene' and an 'Auto Assign Gages' button. A 'Deselect Zero' button and a 'Select By' field with a 'GO' button are also present. The status bar at the bottom shows the language as 'English', the user as 'ENGL', the date as '5/28/2021', and the time as '3:16 PM'.

Water Quality Flow Rate for SF3 (Qwq=0.025 cfs)

WWHM2012 Hyd

File Edit View Help Summary Report

Analysis Help

Analysis

Water Quality

On-Line BMP

24 hour Volume (ac-ft) 0.0193

Standard Flow Rate (cfs) 0.0253

Off-Line BMP

Standard Flow Rate (cfs) 0.0154

Stream Protection Duration LID Duration Flow Frequency Water Quality Hydrograph

Wetland Input Volumes LID Report Recharge Duration Recharge Predeveloped Recharge Mitigated

Analyze datasets Compact WDM Delete Selected Monthly FF

803 POC 3 Mitigated flow

Evap POC 1 POC 2 POC 3 POC 4

All Datasets Flow Stage Precip

Flood Frequency Method

☒ Log Pearson Type III 17B

☐ Weibull

☐ Cunnane

☐ Gringorten

Basin Total 0.636 Acres

Precipitation Gage 2 - <UNK> I Quilcene Auto Assign Gages

Deselect Zero Select By: GO

English ENGL MULTI 5/28/2021 3:24 PM

Drainage Basin To New Stormfilter

WWHM2012 Hyd

File Edit View Help Summary Report

Basin Help

Schematic

SCENARIOS

☐ Predeveloped

☒ Mitigated

Run Scenario

Basic Elements

Pro Elements

LID Toolbox

Commercial Toolbox

Move Elements

Save x,y Load x,y

X 20 Y 0

Basin to New SF Mitigated

Subbasin Name: Basin to New SF ☐ Designate as Bypass for POC:

Flows To : Surface Interflow Groundwater

Area in Basin

Available Pervious Acres

Available Impervious Acres

☒ Show Only Selected

☒ ROADS/FLAT .041

Pervious Total 0 Acres

Impervious Total 0.041 Acres

Basin Total 0.041 Acres

Precipitation Gage 2 - <UNK> I Quilcene Auto Assign Gages

Deselect Zero Select By: GO

English ENGL MULTI 5/28/2021 3:16 PM

Water Quality Flow Rate (Qwq=0.0125 cfs)

WWHM2012 Hyd

File Edit View Help Summary Report

Analysis Help

Analysis

Water Quality

On-Line BMP

24 hour Volume (ac-ft) 0.0095

Standard Flow Rate (cfs) 0.0125

Off-Line BMP

Standard Flow Rate (cfs) 0.0076

Stream Protection Duration LID Duration Flow Frequency Water Quality Hydrograph

Wetland Input Volumes LID Report Recharge Duration Recharge Predeveloped Recharge Mitigated

Analyze datasets Compact WDM Delete Selected Monthly FF

804 POC 4 Mitigated flow

Evap POC 1 POC 2 POC 3 POC 4

All Datasets Flow Stage Precip

Flood Frequency Method

☒ Log Pearson Type III 17B

☐ Weibull

☐ Cunnane

☐ Gringorten

Basin Total 0.636 Acres

Precipitation Gage 2 - <UNK> I Quilcene Auto Assign Gages

Deselect Zero Select By: GO

Fri 3:17p - Hyd - Finish Mitigated

English ENGL MULTI 5/28/2021 3:31 PM

Drainage Basin to Stormfilter 2

WWHM2012 Hyd

File Edit View Help Summary Report

Basin Help

Schematic

SCENARIOS

☐ Predeveloped

☒ Mitigated

Run Scenario

Basic Elements

Pro Elements

LID Toolbox

Commercial Toolbox

Move Elements

Save x,y Load x,y

X 40 Y 0

Basin to SF2 Mitigated

Subbasin Name: Basin to SF2 ☐ Designate as Bypass for POC:

Flows To : Surface Interflow Groundwater

Area in Basin

Available Pervious Acres

Available Impervious Acres

☒ Show Only Selected

☒ ROADS/FLAT .636

Pervious Total 0 Acres

Impervious Total 0.636 Acres

Basin Total 0.636 Acres

Precipitation Gage 2 - <UNK> I Quilcene Auto Assign Gages

Deselect Zero Select By: GO

English ENGL MULTI 5/28/2021 3:16 PM

Water Quality Flow Rate ($Q_{wq} = 0.1942$ cfs)

WWHM2012 Hyd

File Edit View Help Summary Report

Analysis Help

Analysis

Water Quality

On-Line BMP

24 hour Volume (ac-ft) 0.1481

Standard Flow Rate (cfs) 0.1942

Off-Line BMP

Standard Flow Rate (cfs) 0.1181

Stream Protection Duration LID Duration Flow Frequency Water Quality Hydrograph

Wetland Input Volumes LID Report Recharge Duration Recharge Predeveloped Recharge Mitigated

Analyze datasets Compact WDM Delete Selected Monthly FF

802 POC 2 Mitigated flow

Evap POC 1 POC 2 POC 3 POC 4

All Datasets Flow Stage Precip

Flood Frequency Method

☒ Log Pearson Type III 17B

☐ Weibull

☐ Cunnane

☐ Gringorten

X 10

Y 60

#

Fri 3:17p - Hyd - Finish Mitigated

Basin Total 0.636 Acres

Precipitation Gage 2 - <UNK> I Quilcene Auto Assign Gages

Deselect Zero Select By: GO

English ENGL MULTI 5/28/2021 3:34 PM

Appendix B
Water and Sewer Calculations

Grow Community Phase 3
Water and Sewer Availability

Previous Design	Sewer		Water	
	ERU	DFU	Water Meter	WFU
M	1	20	3/4	28
N	1	20	3/4	28
O	1	20	3/4	28
P	1	20	3/4	28
Q	18	276	1.5	300
	22	356		412

	Single Family M-P			BLG Q		
	FU	WF	WFU	FU	WF	WFU
Shower	4	2	8	4	18	72
Lavatory	1	3	3	1	42	42
Water Closet	2.5	3	7.5	2.5	24	60
Kitchen Sink	1.5	1	1.5	1.5	18	27
Dishwasher	1.5	1	1.5	1.5	18	27
Clothes Washer	4	1	4	4	18	72
Hose Bib	2.5	1	2.5			
			28			300

Proposed Design	SFR Type	Sewer		Water		Service Line	
		ERU	DFU	Water Meter	WFU	Length	Min. Diam.
1	1	1	25	3/4	31	80	1
2	1	1	25	3/4	31	110	1
3	1	1	25	3/4	31	140	1
4	1	1	25	3/4	31	200	1.25
5	1	1	25	3/4	31	230	1.25
6	1	1	25	3/4	31	260	1.25
7	2	1	18	3/4	22.5	40	1
8	2	1	18	3/4	22.5	70	1
9	2	1	18	3/4	22.5	100	1
10	2	1	18	3/4	22.5	130	1
11	2	1	18	3/4	22.5	170	1
12	2	1	18	3/4	22.5	200	1
13	2	1	18	3/4	22.5	230	1
14	2	1	18	3/4	22.5	260	1
		14	294		366		

	Type 1 SFR			Type 2 SFR		
	FU	WF	WFU	FU	WF	WFU
Shower	4	2	8	4	1	4
Lavatory	1	5	5	1	3	3
Water Closet	2.5	3	7.5	2.5	2	5
Kitchen Sink	1.5	1	1.5	1.5	1	1.5
Dishwasher	1.5	1	1.5	1.5	1	1.5
Clothes Washer	4	1	4	4	1	4
Hose Bib	2.5	1	2.5	2.5	1	2.5
Hose Bib add	1	1	1	1	1	1
			31			22.5