

Kitsap Conservation District
2022
City of Bainbridge Island
Watershed Assessment of Manzanita

Objective

Inform the landowners and community members of the Manzanita watershed about the issue of stormwater runoff and solutions they can undertake. Provide personalized design support to the landowners of the watershed and encourage them to implement the designs.

Specifics

Participate in the process to scientifically target areas for maximum stormwater mitigation, flow control and/or infiltration with Ecology's Puget Sound Watershed Characterization model.

Help design and proof a website that describes the objectives of the watershed assessment and the process for designing a rain garden (or other LID feature) with the Kitsap Conservation District.



DESCRIPTION

Manzanita watershed on Bainbridge Island presents an opportunity to design and implement stormwater improvements in accordance with landowner willingness, cost effectiveness, and greatest ecological lift.

Other studies have recognized that this watershed has great potential to regain hydrologic balance and provide intact riparian habitat to support Puget Sound recovery.

This project will assess how an 'out of basin mitigation' program could fund retrofit projects in the Manzanita watershed.

Contact Us

Christian Berg

Water Resources
Technician
[Email](#)
206.780.3784
[Staff Directory](#)

HOW TO STAY INFORMED

To sign up for project notifications, click on "[Notify Me](#)" and select "Watershed Assessment of Manzanita"

STATUS

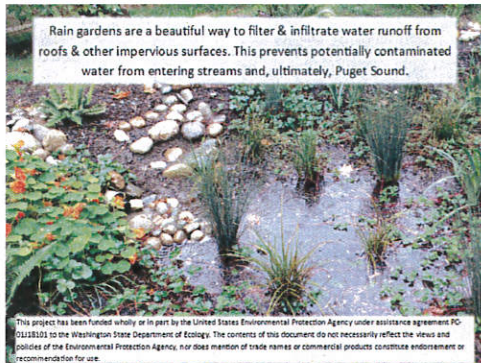
The city is currently working with their consultant and other project partners to understand the watershed processes through data gathering, GIS analysis and field observations.



Help design and proof a post card to inform property owners about the opportunity for free rain garden design.

Send postcard to approx. 200 targeted property owners.

KCD sent 252 past cards to landowners in the targeted area.



**WANT TO HELP
RESTORE PUGET SOUND?**

Because your property is geologically unique and has a relatively high potential for restoring nearby Manzanita creek, you are eligible to receive a FREE custom rain garden design.

This offer is available on a first come, first serve basis. For more information and to apply, contact KCD Planner Brian Stahl at 360-204-5529 x112 or b-stahl@kitsapcd.org.

From:
Kitsap Conservation District
10332 Central Valley Rd
Poulsbo, WA 98370



WATERSHED ASSESSMENT OF MANZANITA
KITSAPCD.ORG/MANZANITA



Achieve feedback from 5 property owners in the watershed interested in Low Impact Development (LID) infrastructure solutions on their property. Communicate options for LID retrofits and other best management practice to improve water quality of stormwater runoff.

KCD received 20 replies to the post card mailing and completed 19 site visits.

2 – Properties were provided Rain Garden designs.

6 - Properties did not have appropriate areas for a rain garden or infiltration

6 - Properties were already infiltrating roof runoff

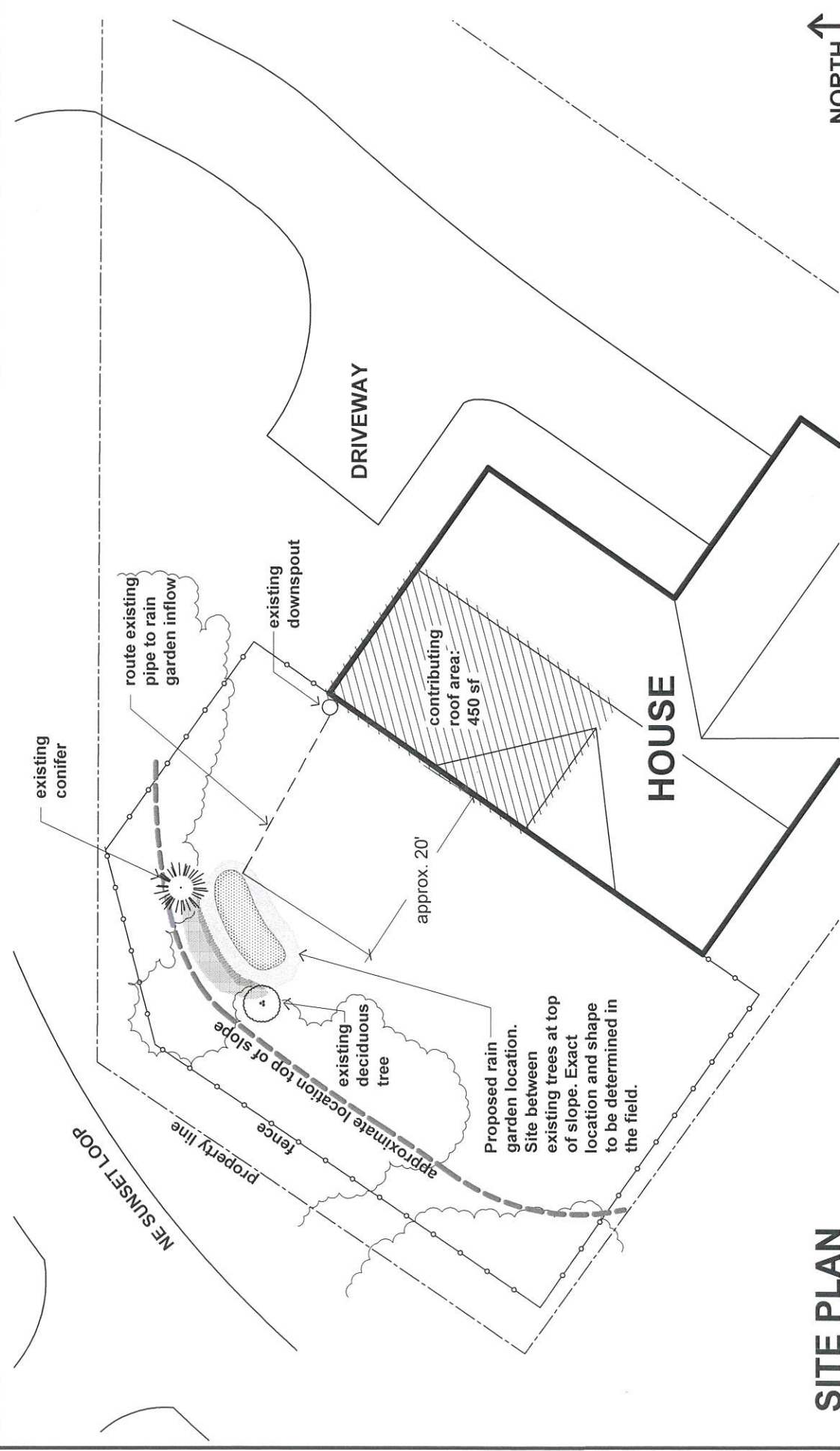
3 – Properties have potential for rain gardens and would be referred to the Rain Garden Program if available.

2 – Properties had larger stormwater concerns that should be considered by the City.

Complete final designs (90%) for at least 2 rain gardens or other non-engineered LID to slow down, filter and infiltrate stormwater runoff on private property.

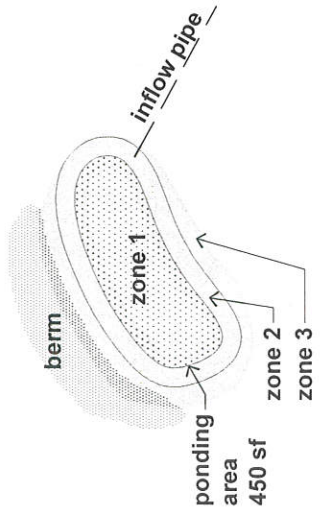
Project 1 – Whitethorn Farm – 7130 NE Day Road – The horse boarding facility is located adjacent to Manzanita Creek and runoff from the farm flows directly into the creek. An existing swale collects approximately 5105 sqft of roof area. Retrofitting the swale into a rain garden would slow water flow and improve infiltration. A design was completed.

Project 2 – Griesser – 11668 NE Sunset Loop – The residence was the only clearly identified site where roof runoff was piped to the road ditch. A Rain Garden was designed to infiltrate 450 sqft of roof area. Another 450 of roof area was already directed in a swale allow for infiltration. The remaining roof area could not be redirected, but flows into a swale along the property.



SITE PLAN

NORTH ↑
SCALE: 1/16"=1'-0"



Rain garden detail

not to scale

POTENTIAL RAIN GARDEN PLANTS

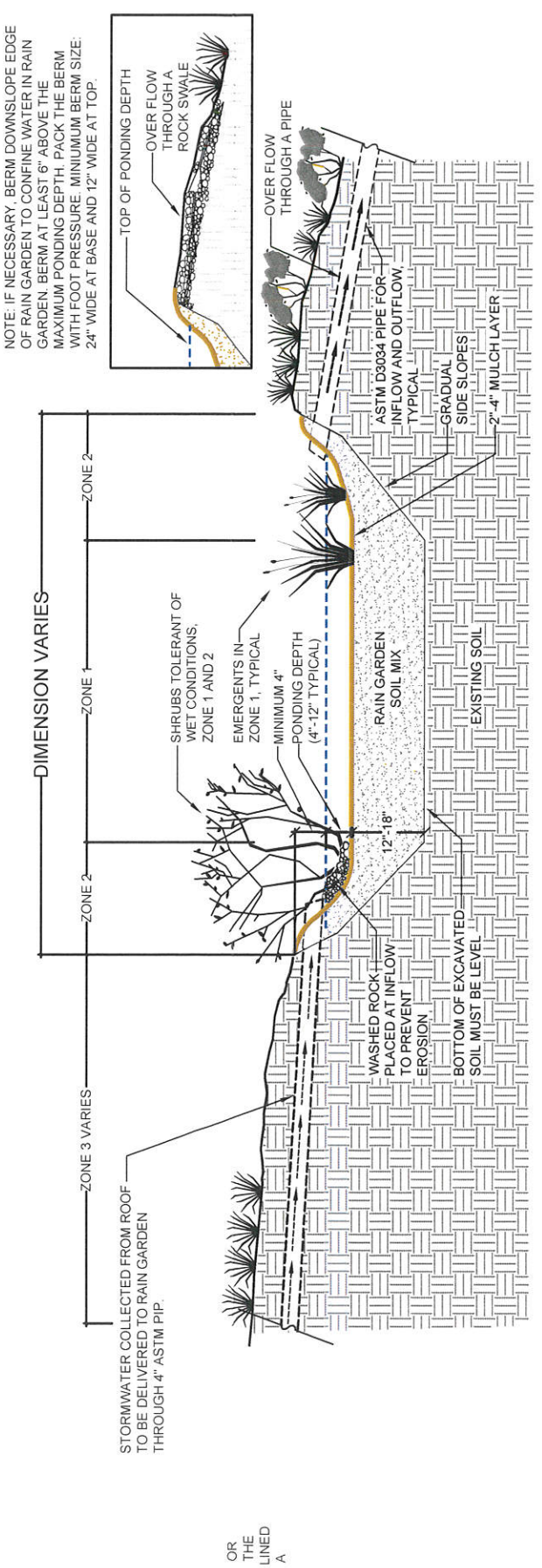
- ZONE 1 PLANTS**
Carex obnupta/ Slough Sedge
Cornus sericea 'Kelsey'/' Dwarf Redtwig Dogwood
Juncus patens/ Spreading Rush
Iris douglasiana/ Douglas Iris
Sidalcea hendersonii/ Henderson Checkermallow

- ZONE 2 PLANTS**
Fragaria chiloensis/ Coastal Strawberry
Mahonia nervosa/ Low Oregon Grape
Polystichum munitum/ Sword Fern
Tellima grandiflora/ Fringecup

ZONE 3 PLANTS
 Landowner has the option of transplanting existing garden plants into zone 3 and/or adding plants they choose. Refer to Rain Garden Handbook for Western Washington Homeowner (WSU Extension) for additional plant suggestions.

NOTES:

1. Bottom of excavation and top of rain garden soil must be level.
2. All pipe to be ASTM D3034 or as otherwise specified.
3. Do not construct rain gardens during storm events or allow water to pond within the rain garden area during construction.
4. Reinforce inflow and overflow of rain garden with a minimum of 2'-3" depth of washed rock that extends a minimum of 2'-3' beyond the inflow and overflow. Use a variety of sizes of rock to more effectively prevent erosion.
5. The lowest elevation of the rain garden must be planted with zone 1 plants.
6. Apply 2" to 3" aged coarse compost after planting.
7. Plant quantities may vary based on species and size of plants at installation.
8. Refer to *Rain Garden Handbook for Western Washington Homeowners*, (WSU Extension) for important construction guidelines.
9. Before you dig, locate utilities. Call 1-800-424-5555 or 811 or go to www.washington811.com.



TYPICAL RAIN GARDEN SECTION DETAIL

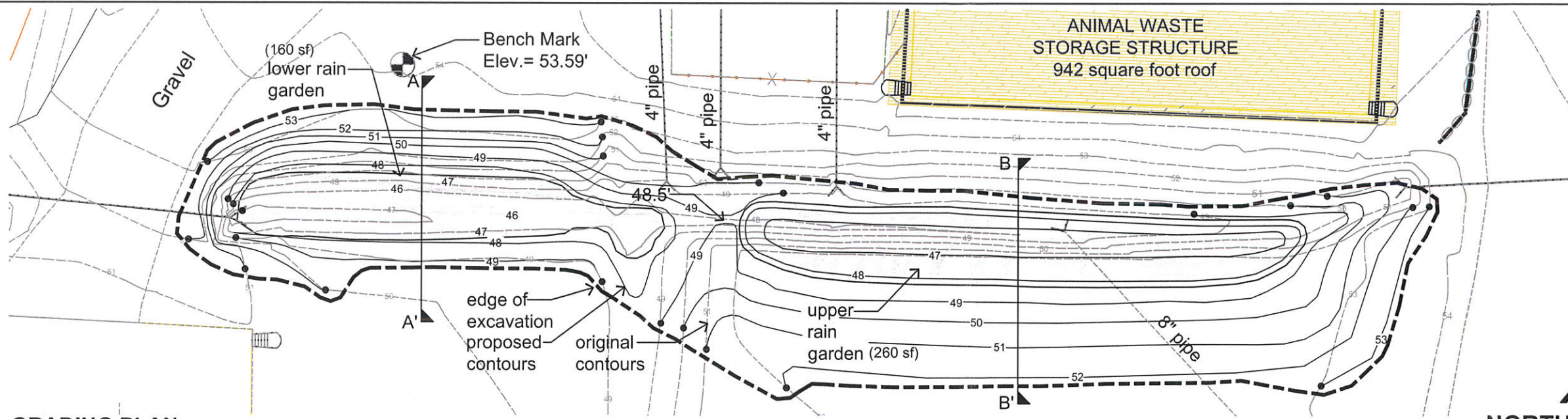
NORTH ↑
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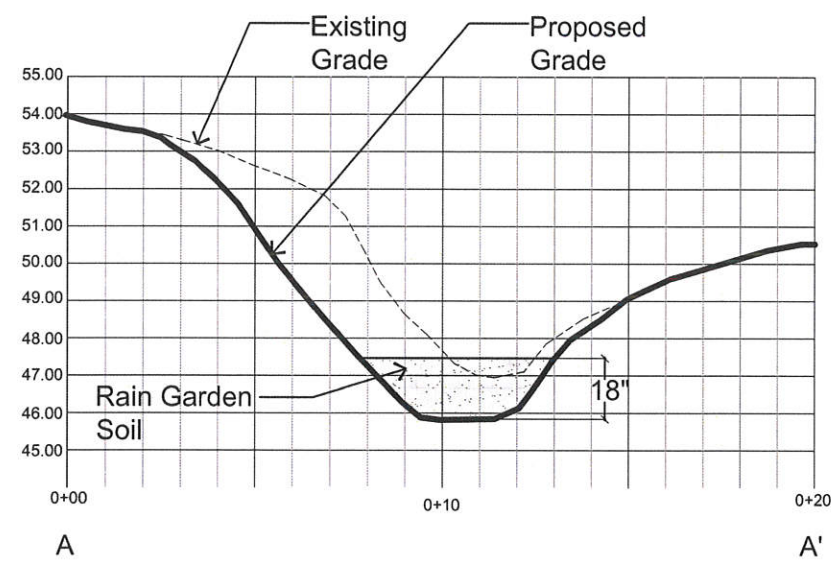
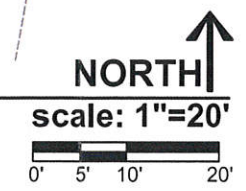
Designed:
BS/JM
Drawn:
JM

Griesser Rain Garden
 11668 NE Sunset Loop
 Bainbridge Island WA

Date
03.24.22
Sheet No.
1 of 1

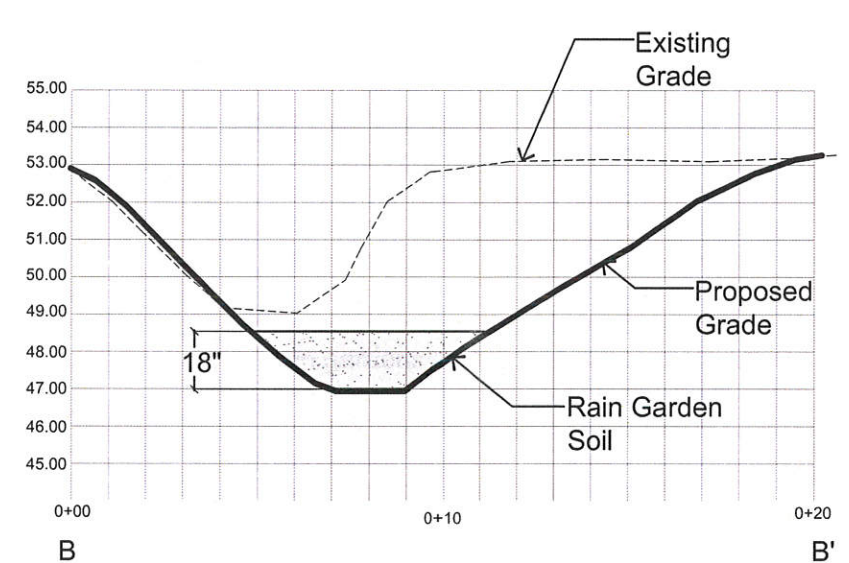


GRADING PLAN



SECTION A: lower rain garden

H:2 V:1

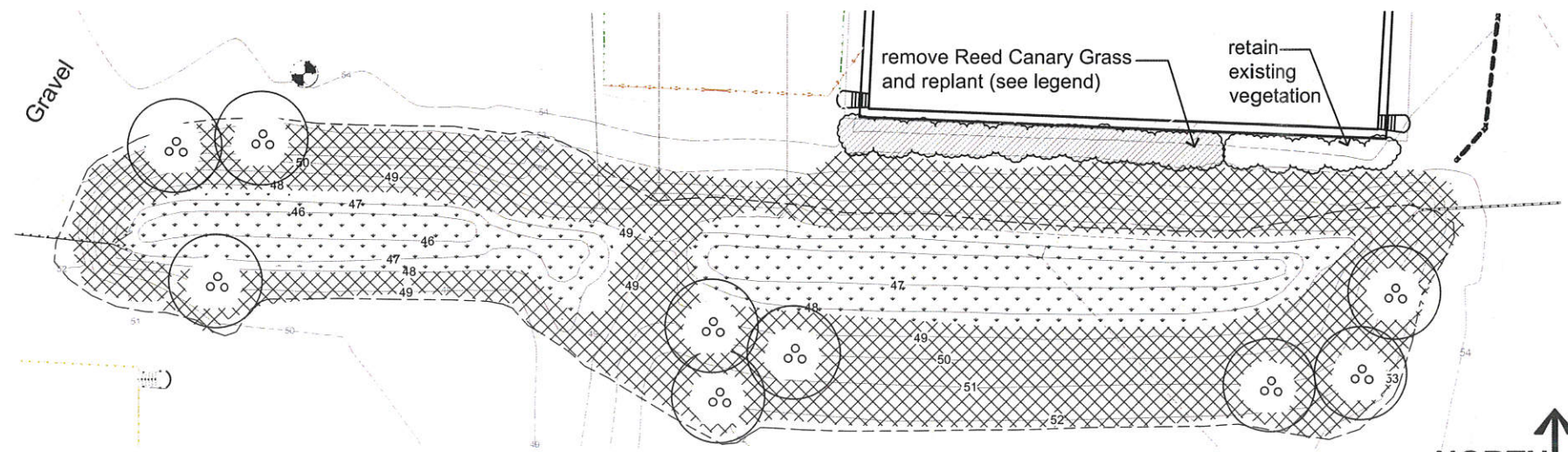


SECTION B: upper rain garden

H:2 V:1

GRADING NOTES:

- Proposed grading will create 2 stepped rain garden separated by a compacted earth berm. The berm will have low pointm reinforced with washed rock to allow for overflow from the upper to the lower rain garden.
- Adjust all inflow pipes (extend or shorten) to enter rain gardens above the rain garden soil mix.
- Install washed rock (2"-3" deep) extending a minimum of 2'-3' beyond all inflow and outflow pipes to prevent erosion.
- See sheet 2 for additional notes.



SCHEMATIC PLANTING PLAN

NORTH
not to scale

SYMBOL	QTY	Botanical Name/ Common Name	NOTES
	9	<i>Acer circinatum</i> / Vine Maple	as shown on plan
	5	<i>Gaultheria shallon</i> / Salal	
	5	<i>Polystichum munitum</i> / Sword Fern	Place in row along top of slope
	5	<i>Mahonia aquifolium</i> /Tall Oregon Grape	
	50	<i>Carex obnupta</i> /Slough Sedge	
	100	<i>Juncus patens</i> /Spreading Rush	Triangular spacing approximately 15" on center
	100	<i>Sidalcea hendersonii</i> /Henderson checkerbloom	
		<i>Bioswale Seed Mix or</i>	
	300	Groundcovers such as: Fringecup, Coastal Strawberry, Kinnikinnick, Clumping Fescue	Triangular spacing approximately 2' on center
	1125 sf		

NOTE:
 • plant selection and location to be refined as per landowners' goals
 • indicated quantities are approximate

Date
03.24.22

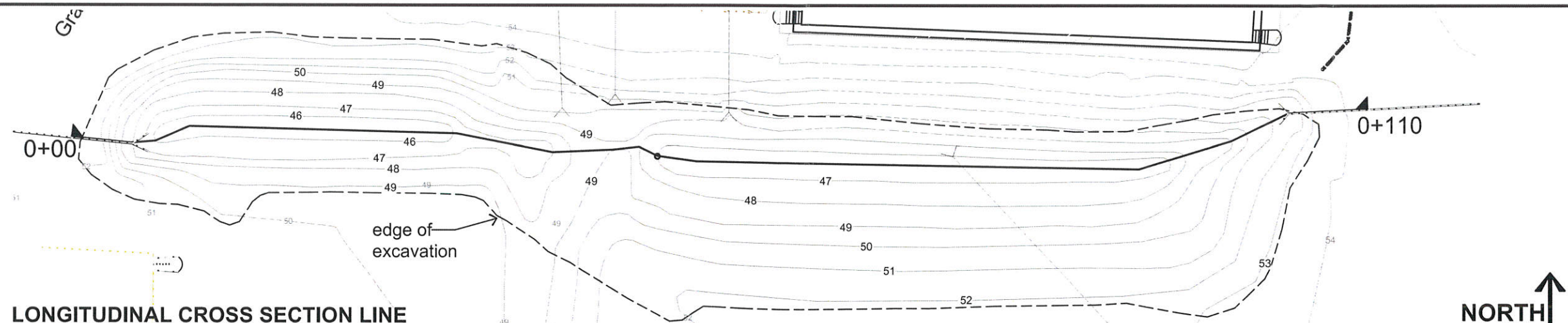
Sheet No.
1 of 2

WHITEHORN PROPERTY
 7130 NE DAY ROAD WEST
 BAINBRIDGE ISLAND, WA

Designed:
JM

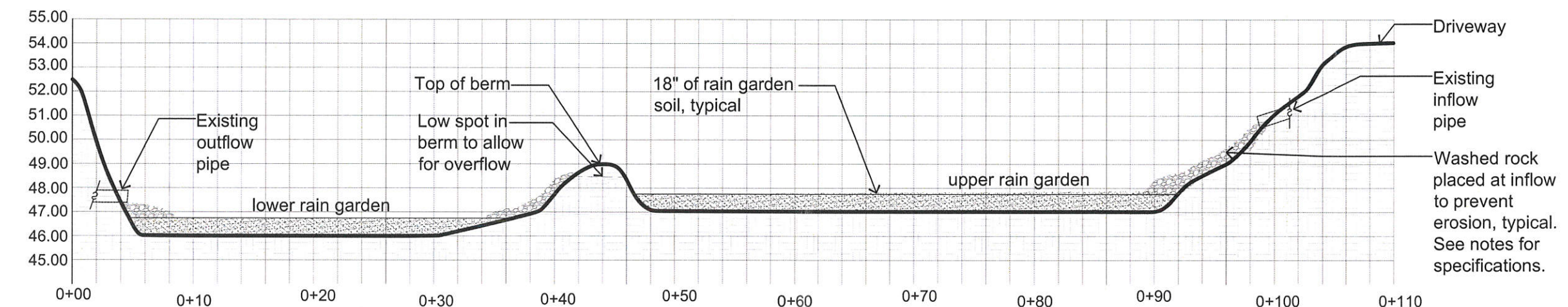
Drawn:
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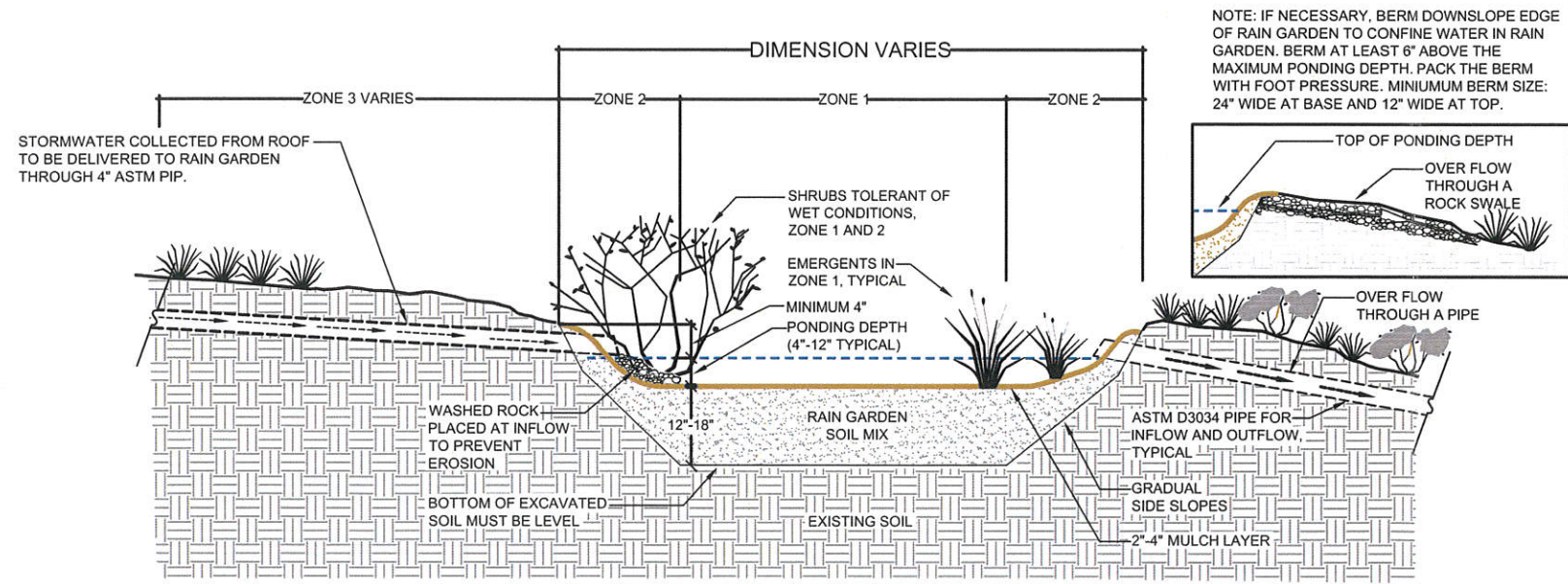
LONGITUDINAL CROSS SECTION LINE

NORTH ↑
 scale: 1"=20'
 0' 5' 10' 20'



LONGITUDINAL CROSS SECTION

scale: 1"=20'



TYPICAL RAIN GARDEN SECTION DETAIL

NORTH ↑
 not to scale

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Date 03.24.22
 Sheet No. 2 of 2

WHITEHORN PROPERTY
 7130 NE DAY ROAD WEST
 BAINBRIDGE ISLAND, WA

Designed: JM
 Drawn: JM

