CRITICAL AREA STUDY

8430 SE 47th Place Watercourse Buffer Reduction

Prepared for:

City of Mercer Island
Development Services: Building & Planning
9611 SE 36th Street
Mercer Island, WA 98040

Prepared on behalf of:

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Prepared by:

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CRITICAL AREA STUDY

8430 SE 47th Place Watercourse Buffer Reduction

1 INTRODUCTION

This critical area study is prepared as part of a proposal to permit proposed site improvements at 8430 SE 47th Place in Mercer Island, Washington (parcel number 3317500120). Proposed site improvements consist of an addition to the existing detached garage, including expansion over an existing concrete pad, expanded building depth, and a second story. A detention facility to address stormwater runoff will be situated south of the expanded garage, and a four-inch pipe will discharge from the tank to a dispersal pad upland of an existing stream.

A stream is located on the adjacent property to the west. The open channel of the watercourse meets the criteria for Type 2, requiring a standard buffer width of 50 feet. The applicant proposes to reduce the standard 50-foot buffer to 25 feet. Unavoidable buffer impacts will be mitigated through on-site enhancement of remaining portions of the standard 50-foot buffer within the property. This report is intended to satisfy the requirements of the Mercer Island City Code (MICC). It provides a description of existing site conditions, proposed watercourse buffer reductions, and includes compensatory mitigation to ensure no net loss of critical area or buffer functions.

2 METHODS

In July of 2017, Sarah Sandstrom, Senior Fisheries Biologist from The Watershed Company visited the property to identify and delineate the ordinary high water mark (OHWM) of jurisdictional watercourses.

Prior to the site visit, public-domain information on the subject property was reviewed for this delineation study. These sources include the following:

- U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) Soil maps,
- U.S. Fish and Wildlife Service (FWS) National Wetland Inventory (NWI) maps,
- Washington Department of Fish and Wildlife (WDFW) interactive mapping programs (PHS on the Web and SalmonScape),

- Washington State Department of Natural Resources (DNR) Forest Practices Application Mapping Tool (FPARS),
- King County's GIS mapping website (iMAP), and
- City of Mercer Island's online mapping portal.

Delineated watercourses were marked in the field using blue- and white-striped flagging. Watercourses were classified based on duration of water flow and fish use using definitions provided in the Mercer Island City Code (MICC).

3 EXISTING CONDITIONS

3.1 Setting

The subject property is located at 8430 SE 47th Place in Mercer Island, Washington (see Figure 1). The subject property is situated in Southwest section 18, Township 24, Range 5). It is located in the Mercer Island drainage basin in the Cedar River/Lake Washington watershed, within the Cedar-Sammamish Water Resource Inventory Area (WRIA-8). The subject parcel measures 0.31 acres.

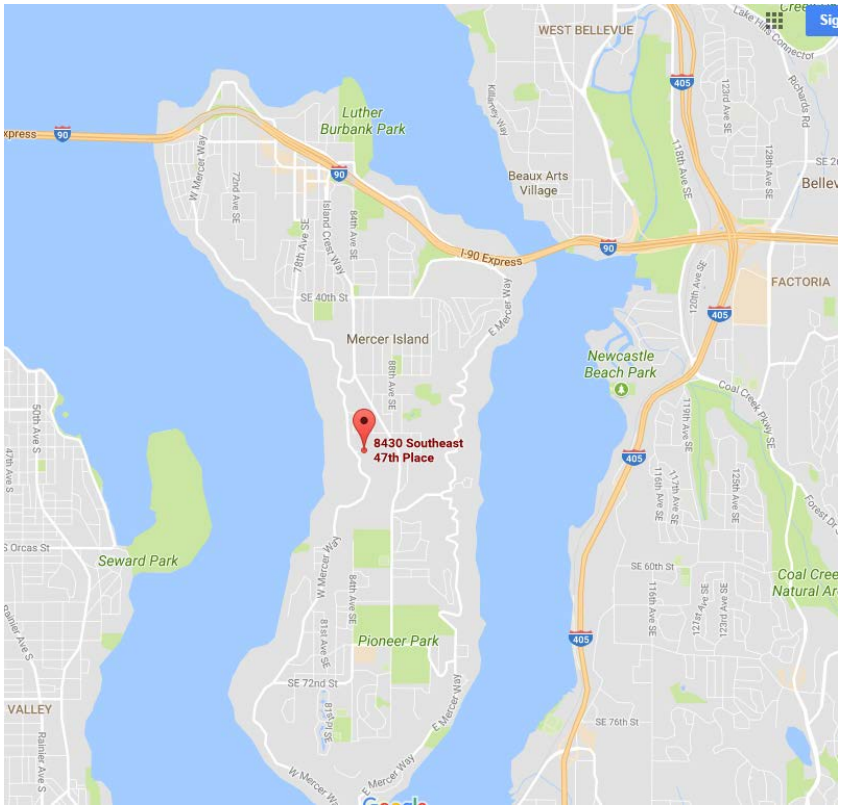


Figure 1. Vicinity map, with project location at red indicator.

3.2 Watercourse Findings

A stream occurs on the adjacent parcel to the west. It originates from a culvert immediately west of the northwest corner of the subject parcel and flows to the southwest (Figure 2). The neighboring property owner granted permission to flag and survey the stream adjacent to the proposed development.

Figure 2. Photo showing stream outlet from culvert.

Based on the following observations, the stream is considered a Type-2 Stream, as defined by the Mercer Island City Code (19.07.070.B):

- The stream is designated as a Type 2 stream in the City of Mercer Island GIS portal maps;
- The stream is not mapped on DNR's FPARS site;
- The stream flows year-round, based on observed flow during the site visit in July;
- The stream channel originates from a culvert and appears to intercept groundwater at the northwestern corner of the parcel, meaning that there is no potential fish habitat upstream from the parcel;
- The lower portion of the stream is piped for a distance of approximately 350 feet (roughly one quarter of the length of the stream);
- The average slope of the channel is approximately 15 percent across its entire length with steeper segments of approximately 18 percent in places (based on Mercer Island GIS portal contour mapping); and
- The bankfull width of the stream on and adjacent to the parcel is approximately two to five feet wide.

In Mercer Island, watercourses are regulated under in the MICC Chapter 19.07, Environment. A standard buffer of 50 feet applies to Type 2 watercourses. The minimum buffer with enhancement is 25 feet. Buffer reduction may be permitted with submittal of a critical areas study and subject to guidelines listed in MICC 19.07.070.B.2.

3.3 Surrounding Area

The area surrounding the stream where it discharges from the culvert is fairly steep. The predominant vegetative cover between the stream and the proposed garage expansion consists of English ivy (*Hedera helix*) and English laurel (*Prunus laurocerasus*), both non-native, invasive species. Other non-native, invasive species, including English holly (*Ilex aquifolium*) and Himalyan blackberry (*Rubus armeniacus*), are also present. In addition to the invasive vegetative cover, several species of native vegetation, including red alder (*Alnus rubra*), one western red-cedar (*Thuja plicata*), bigleaf maple (*Acer macrophyllum*) and beaked hazelnut (*Corylus cornuta*), vine maple (*Acer circinatum*), and sword fern (*Polystichum munitum*) are located in the riparian area surrounding the stream.

Figure 3. Photo showing dominant existing vegetation within the 50-foot-buffer area, including English ivy and English laurel, with trace amounts of Himalayan blackberry

Figure 4. Photo showing predominance of English laurel within the 50-foot standard buffer.

Figure 5. Photo showing back (southwest) side of existing garage.

4 PROPOSED PLANS

As described above, proposed site improvements consist of an addition to the existing detached garage, including expansion over an existing concrete pad, expanded building depth, and a second story (See project plans). The lower floor of the expanded garage area would accommodate an additional covered parking stall, as well as an indoor shower, sauna, and spa. The upper level would accommodate two guest bedrooms, a bathroom, and a game room area. A

cantilevered deck would extend off the southern and eastern walls of the expanded structure. The structure will use a shallow conventional foundation system (native/bearing soil is 3'-5' deep +/-).

The proposed project also includes a detention facility and outfall to manage roof runoff from the structure. The proposed detention tank will be situated south of the expanded garage and outside of the 50-foot stream buffer. A buried 4-inch diameter pipe will drain from the detention tank toward the stream channel. The runoff from the pipe will disperse on a rock pad interplanted with willow stakes and located upland from the OHWM of the stream. The pipe will be hand-placed, and will not require machinery within the 25-foot buffer area. Minimal ground disturbance is proposed for the portion of the pipe that extends off the property and within 25 feet of the stream. The pipe will be placed above the ground surface in this area, and pinned to the ground. The discharge location will be situated beyond the dripline of an existing conifer. All runoff to the detention facility will be from roof surfaces, and will not include runoff from road or driveway surfaces.

5 Avoidance and Minimization Measures

In attempt to stay outside of the watercourse buffer, the applicant initially explored locating the garage/DADU expansion to the northeast side of the existing garage. This option was determined to be infeasible because it would require the following: extensive grading to modify and expand the concrete retaining wall along the driveway; extension of the concrete driveway for the new garage; demolition and reconstruction the concrete steps and walkway to the house; a side-yard construction easement from the neighbor for grading and retaining wall construction. These modifications were cost prohibitive. In addition, the expansion in this location created an undesirable separation of less than 10' between the expansion and house and blocked views and natural light from the primary spaces within the house.

Positioning the garage/DADU expansion to the northwest side of the existing garage, eliminated the need for infrastructure reconfiguration, as described above.

A small excavator will be used to minimize impacts when digging the foundation on the western side of the structure to minimize impacts to the buffer.

As noted above, the proposed detention facility is positioned outside of the 50-foot watercourse buffer. The drainage pipe design will have minimal impact to the buffer. It will be buried within the mitigation enhancement area. Off-

property, the four-inch pipe will sit on the ground surface, so that virtually no soil disturbance (aside from pins to secure the pipe) will be required within 25 feet of the stream. The discharge location will be reinforced with rock and willow stakes to minimize potential for sedimentation, erosion, or scour along the stream banks. The discharge location was positioned just beyond the dripline of an existing tree to avoid affecting tree health from the altered hydrology. No significant ecological effects are anticipated to result from the discharge pipe. On the contrary, the detention tank will help moderate effects to hydrology that would otherwise be associated with an increase in impervious surface coverage.

6 Impacts, Mitigation & Restoration

The applicant proposes to reduce the standard 50-foot buffer to a minimum of 25 feet, as allowed in MICC 19.07.070.B.2. As described above, the expansion area to the northwest of the existing structure is over an existing concrete parking pad (295 square feet). The expansion area to the southwest of the existing garage (375 SF) is generally bare ground under existing conditions. The total expansion area within the standard 50-foot buffer is 670 square feet.

The garage expansion will require removal of three trees that are located along the perimeter of the proposed structure. Two of the trees to be removed are located within the 50-foot standard buffer, including one 15-inch diameter at breast height (DBH) western red-cedar, one 24-inch DBH bigleaf maple. In addition, a multi-stemmed bigleaf maple on the southeast side of the expanded garage footprint would be removed.

Although the trees to be removed are located around the perimeter of the expanded structure, given the configuration of the proposed structure, removal of the two trees within the 50-foot standard buffer is necessary to accommodate the foundation of the proposed structure. Additionally, the cantilevered deck will extend over the location of the large multi-stemmed bigleaf maple.

In order to ensure that the reduced buffer protects the watercourse, the applicant proposes the following mitigation measures:

- Vegetated buffer enhancement. Within on-site portions of the standard 50-foot buffer within the property, existing non-native, invasive English ivy and English laurel will be removed, and native vegetation will be planted within a 1,255 square-foot area, nearly a 2:1 ratio to project impacts, as shown in the mitigation plan (Appendix B). The boundary of this enhancement area will become the modified buffer area in perpetuity.

- Tree replacement. The applicant will plant a total of six trees to replace the three existing trees to be removed. This number was determined based on a 2:1 replacement ratio. Replacement trees will be western redcedar and Douglas fir. All of the trees will be planted within the standard 50-foot buffer. All replacement trees will be at least six feet tall at planting (consistent with 19.10.070.B).

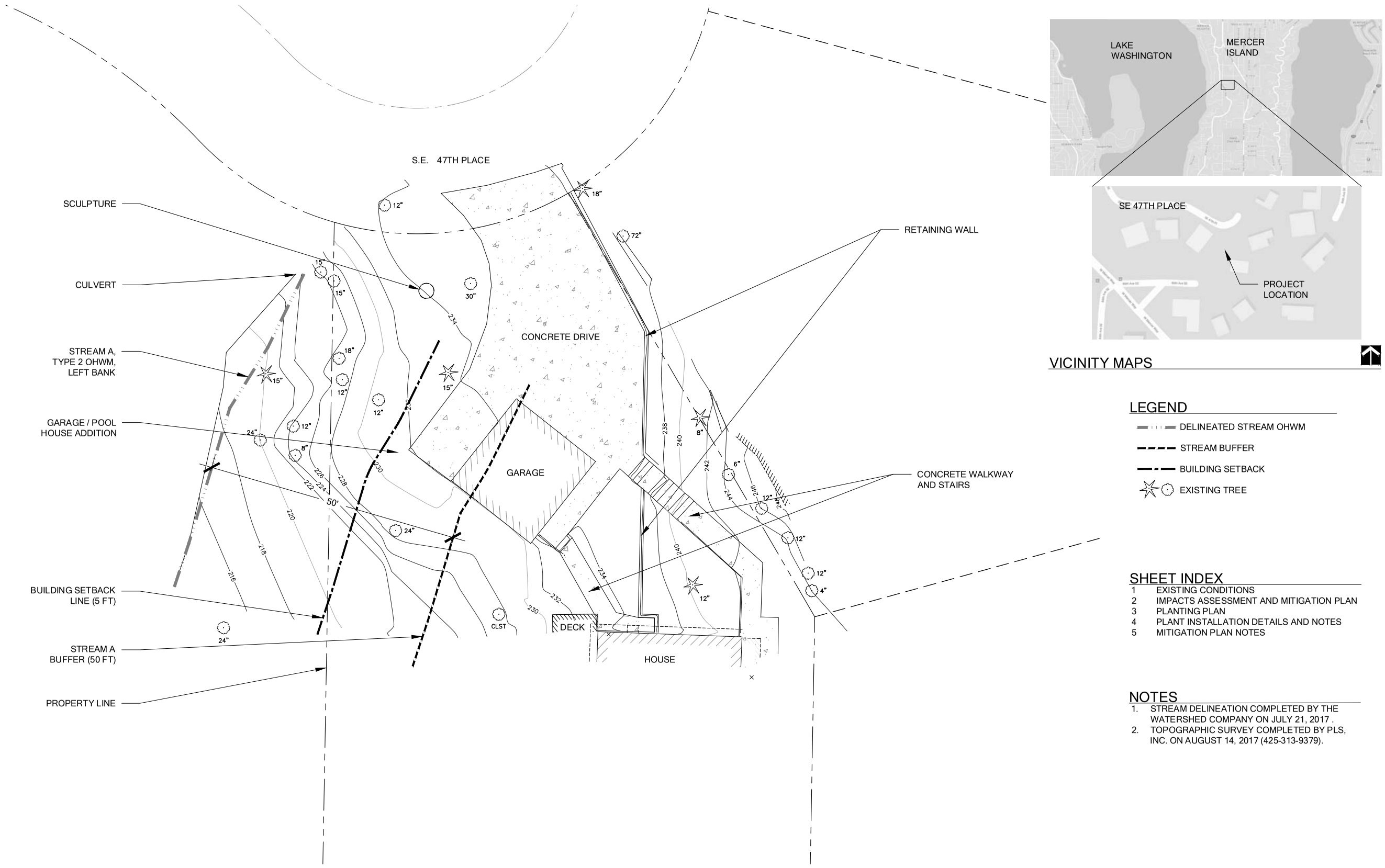
7 SUMMARY

In summary, the proposed project will extend within the standard 50-foot buffer of a Type II stream and will necessitate removal of three trees and placement of a 4-inch drainage pipe to a dispersal pad adjacent to the stream channel. The applicant proposes to mitigate for potential water quality, habitat, and hydrologic impacts of the buffer reduction and tree removal through vegetation enhancement throughout the remaining on-site area within the 50-foot standard buffer and through replacement tree planting. The detention facility will help limit potential effects to the hydrologic regime that could result from an increase in impervious surfaces. In summary, the project is expected to maintain or improve stream and stream buffer functions compared to existing conditions.

APPENDIX A

Mitigation Plan

PAZARENA MITIGATION PLAN



VICINITY MAPS

LEGEND

- DELINEATED STREAM OHWM
- STREAM BUFFER
- BUILDING SETBACK
- EXISTING TREE

SHEET INDEX

NOTES

1. STREAM DELINEATION COMPLETED BY THE WATERSHED COMPANY ON JULY 21, 2017 .
2. TOPOGRAPHIC SURVEY COMPLETED BY PLS, INC. ON AUGUST 14, 2017 (425-313-9379).

EXISTING CONDITIONS

SCALE 1:10

0' 5' 10' 20' 40'

THE WATERSHED COMPANY
750 Sixth Street South
Kirkland WA 98033
p 425.822.5242
www.watershedco.com
Science & Design

PAZARENA MITIGATION PLAN
MITIGATION PLAN
PREPARED FOR: CITY OF MERCER ISLAND
PROJECT LOCATION:
8430 SE 47TH PLACE
MERCER ISLAND, WA 98040

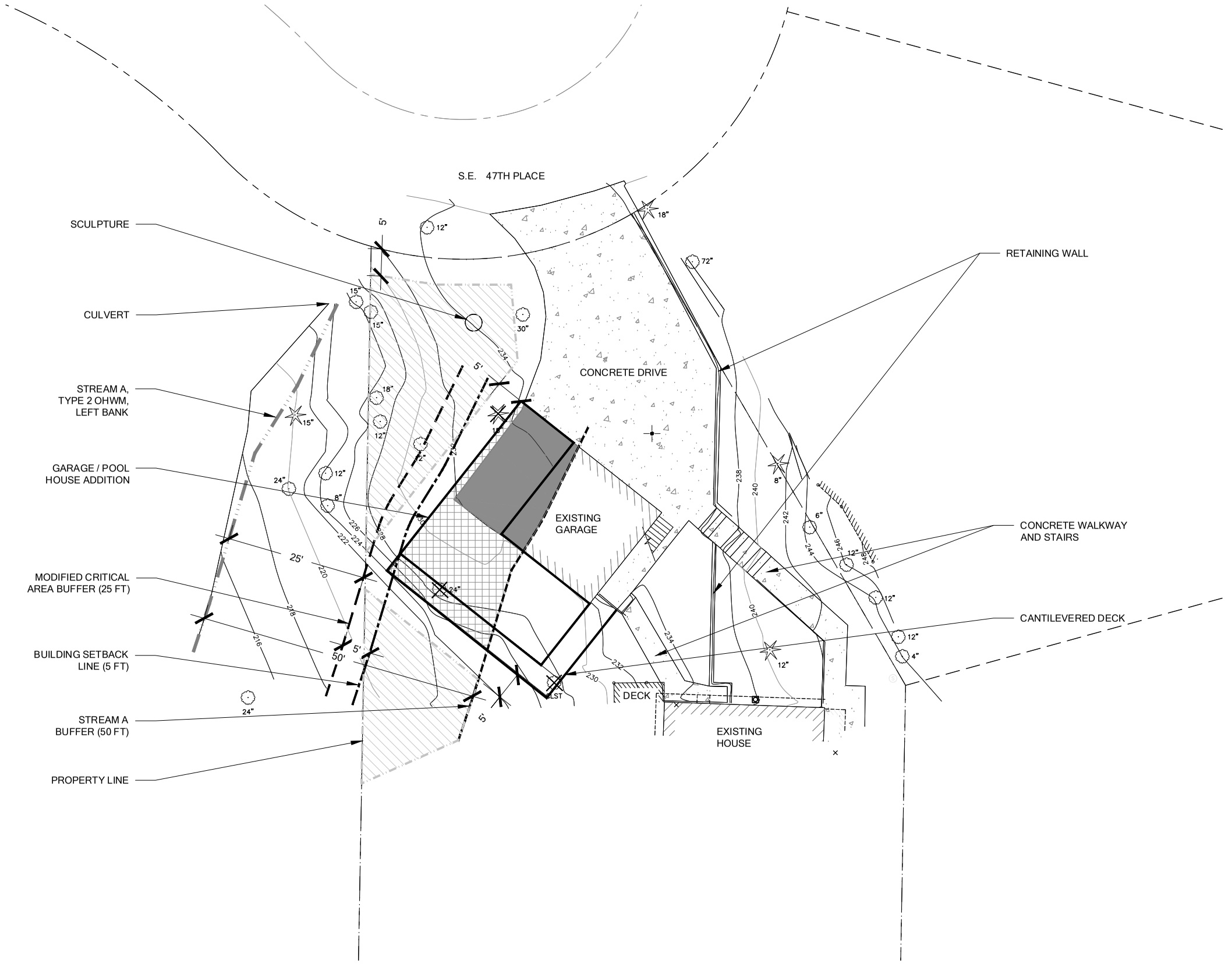
SUBMITTALS & REVISIONS

NO.	DATE	DESCRIPTION	BY
1	09-26-2017	MITIGATION PLAN SET	RH

SHEET SIZE:
ORIGINAL PLAN IS 22" x 34".
SCALE ACCORDINGLY.

PROJECT MANAGER: SS
DESIGNED: RH
DRAFTED: RH
CHECKED: SS, MF
JOB NUMBER: 170716
SHEET NUMBER: W1 OF 5

FILENAME
PRINTED BY
DATE



IMPACTS ASSESSMENT AND MITIGATION PLAN

SCALE 1:10

0' 5' 10' 20' 40'

LEGEND

- DELINEATED STREAM OHWM
- STREAM BUFFER
- MODIFIED CRITICAL AREA BUFFER
- BUILDING SETBACK
- EXISTING TREE
- TREE TO BE REMOVED (3)
- EXISTING BUFFER IMPACT (295 SF)
- PROPOSED BUFFER IMPACT (375 SF)
- MITIGATION AREA (1,255 SF)

NOTES

1. SEE ARCHITECTURAL OR CIVIL PLAN SETS FOR CONSTRUCTION DETAILS.

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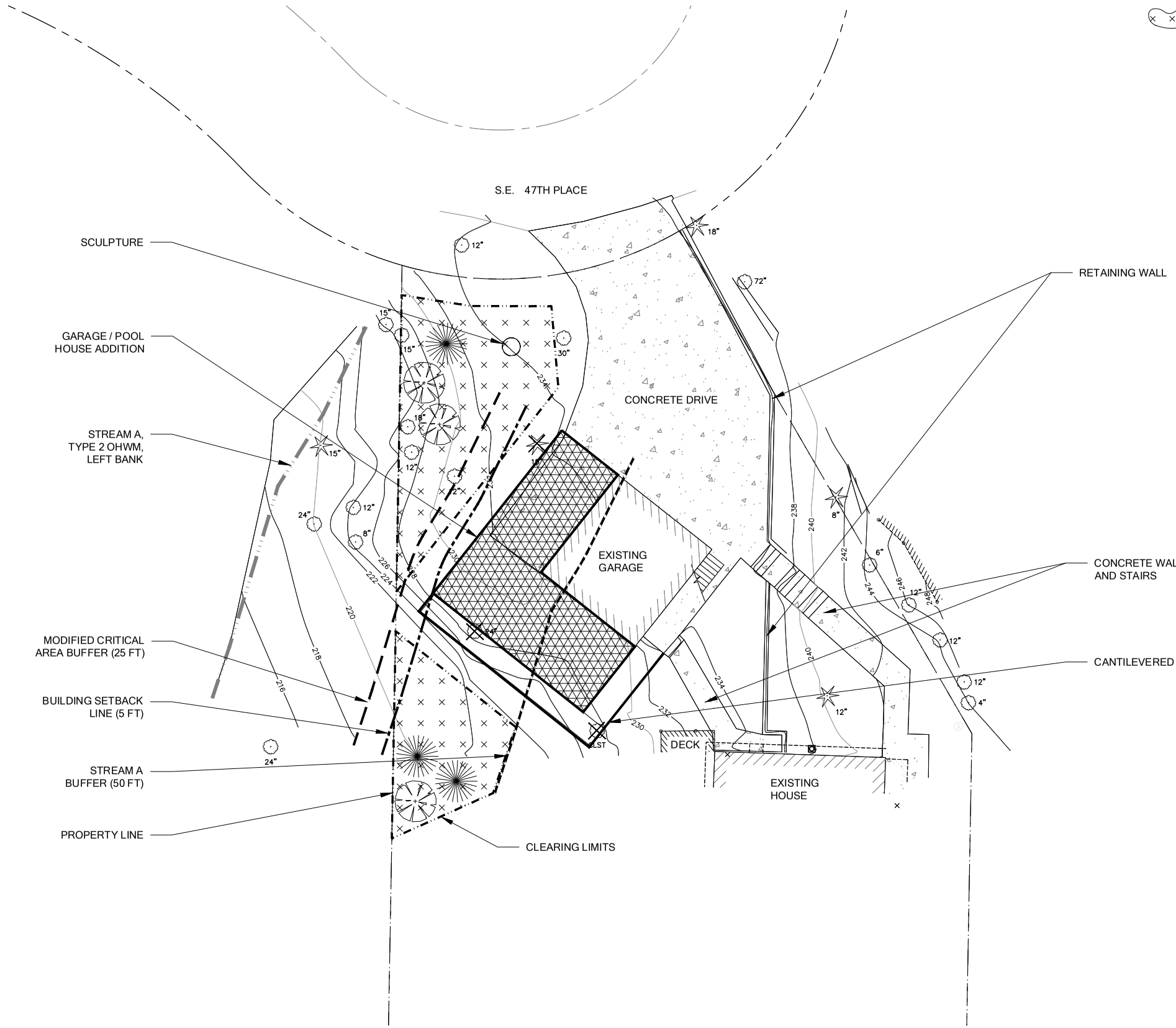

PLANTING PLAN

SCALE 1:10

CANDIDATE PLANT LIST

TREES	QTY	SPACING	SIZE
THUJA PLICATA / WESTERN REDCEDAR	3	ALL TREES TO BE SPACED PER PLAN	2 GAL.
PSEUDOTSUGA MENZIESII / DOUGLAS-FIR	3		2 GAL.
SHRUB AND GROUNDCOVER AREA			
SHRUBS (SPACE TRIANGULARLY)			
ACER CIRCINATUM / VINE MAPLE	3	6' O.C.	2 GAL.
CORNUS SERICEA / RED-OSIER DOGWOOD	3	6' O.C.	2 GAL.
HOLODISCUS DISCOLOR / OCEANSPRAY	3	6' O.C.	2 GAL.
PHILADELPHUS LEWISII / MOCK ORANGE	3	6' O.C.	2 GAL.
PHYSOCARPUS CAPITATUS / PACIFIC NINEBARK	4	6' O.C.	2 GAL.
ROSA NUTKANA / NOOTKA ROSE	4	6' O.C.	2 GAL.
RUBUS PARVIFLORUS / THIMBLEBERRY	3	6' O.C.	2 GAL.
RUBUS SPECTABILIS / SALMONBERRY	4	6' O.C.	2 GAL.
SYMPHORICARPOS ALBUS / SNOWBERRY	3	6' O.C.	2 GAL.
	30		
GROUNDCOVERS (SPACE TRIANGULARLY)			
ARCTOSTAPHYLOS UVA-URSI / KINNIKINNICK	50	36" O.C.	1 GAL.
FRAGARIA CHILOENSIS / COASTAL STRAWBERRY	50	36" O.C.	1 GAL.
GAULTHERIA SHALLON / SALAL	50	36" O.C.	1 GAL.
MAHONIA NERVOSA / LOW OREGON GRAPE	50	36" O.C.	1 GAL.
POLYSTICHUM MUNITUM / SWORD FERN	50	36" O.C.	1 GAL.
	250		

LEGEND

- DELINEATED STREAM OHWM
- STREAM BUFFER
- MODIFIED CRITICAL AREA BUFFER
- BUILDING SETBACK
- EXISTING TREE TO REMAIN
- TREE TO BE REMOVED (3)
- CLEARING LIMITS / PLANTING BOUNDARY (1,255 SF)
- PROPOSED ADDITION

NOTES

1. MITIGATION RATIO FOR REMOVED TREES SHALL BE 2:1.
2. REMOVE ALL INVASIVE SPECIES IN CLEARING AREA PRIOR TO PLANTING.
3. INSTALL APPROPRIATE BMPs FOR EROSION CONTROL AND PROTECT VEGETATION TO REMAIN.
4. APPLY 4-INCH-THICK LAYER OF WOOD CHIP MULCH ACROSS ENTIRE PLANTING AREA.

0' 5' 10' 20' 40'

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PAZARENA MITIGATION PLAN

MITIGATION PLAN

PREPARED FOR: CITY OF MERCER ISLAND

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W3 OF 5

FILENAME
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DATE

PLANT INSTALLATION SPECIFICATIONS

GENERAL NOTES

QUALITY ASSURANCE
1. PLANTS SHALL MEET OR EXCEED THE SPECIFICATIONS OF FEDERAL, STATE, AND LOCAL LAWS REQUIRING INSPECTION FOR PLANT DISEASE AND INSECT CONTROL.
2. PLANTS SHALL BE HEALTHY, VIGOROUS, AND WELL-FORMED, WITH WELL DEVELOPED, FIBROUS ROOT SYSTEMS, FREE FROM DEAD BRANCHES OR ROOTS. PLANTS SHALL BE FREE FROM DAMAGE CAUSED BY TEMPERATURE EXTREMES, LACK OR EXCESS OF MOISTURE, INSECTS, DISEASE, AND MECHANICAL INJURY. PLANTS IN LEAF SHALL BE WELL FOLIATED AND OF GOOD COLOR. PLANTS SHALL BE HABITUATED TO THE OUTDOOR ENVIRONMENTAL CONDITIONS INTO WHICH THEY WILL BE PLANTED (HARDENED-OFF).
3. TREES WITH DAMAGED, CROOKED, MULTIPLE OR BROKEN LEADERS WILL BE REJECTED. WOODY PLANTS WITH ABRASIONS OF THE BARK OR SUN SCALD WILL BE REJECTED.
4. NOMENCLATURE: PLANT NAMES SHALL CONFORM TO FLORA OF THE PACIFIC NORTHWEST BY HITCHCOCK AND CRONQUIST, UNIVERSITY OF WASHINGTON PRESS, 1973 AND/OR TO A FIELD GUIDE TO THE COMMON WETLAND PLANTS OF WESTERN WASHINGTON & NORTHWESTERN OREGON, ED. SARAH SPEAR COOKE, SEATTLE AUDUBON SOCIETY, 1997.

DEFINITIONS
1. PLANTS/PLANT MATERIALS. PLANTS AND PLANT MATERIALS SHALL INCLUDE ANY LIVE PLANT MATERIAL USED ON THE PROJECT. THIS INCLUDES BUT IS NOT LIMITED TO CONTAINER GROWN, B&B OR BAREROOT PLANTS; LIVE STAKES AND FASCINES (WATTLES); TUBERS, CORMS, BULBS, ETC..; SPRIGS, PLUGS, AND LINERS.
2. CONTAINER GROWN. CONTAINER GROWN PLANTS ARE THOSE WHOSE ROOTBALLS ARE ENCLOSED IN A POT OR BAG IN WHICH THAT PLANT GREW.

SUBSTITUTIONS
1. IT IS THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN SPECIFIED MATERIALS IN ADVANCE IF SPECIAL GROWING, MARKETING OR OTHER ARRANGEMENTS MUST BE MADE IN ORDER TO SUPPLY SPECIFIED MATERIALS.
2. SUBSTITUTION OF PLANT MATERIALS NOT ON THE PROJECT LIST WILL NOT BE PERMITTED UNLESS AUTHORIZED IN WRITING BY THE RESTORATION CONSULTANT.
3. IF PROOF IS SUBMITTED THAT ANY PLANT MATERIAL SPECIFIED IS NOT OBTAINABLE, A PROPOSAL WILL BE CONSIDERED FOR USE OF THE NEAREST EQUIVALENT SIZE OR ALTERNATIVE SPECIES, WITH CORRESPONDING ADJUSTMENT OF CONTRACT PRICE.
4. SUCH PROOF WILL BE SUBSTANTIATED AND SUBMITTED IN WRITING TO THE CONSULTANT AT LEAST 30 DAYS PRIOR TO START OF WORK UNDER THIS SECTION.

INSPECTION
1. PLANTS SHALL BE SUBJECT TO INSPECTION AND APPROVAL BY THE RESTORATION CONSULTANT FOR CONFORMANCE TO SPECIFICATIONS, EITHER AT TIME OF DELIVERY ON-SITE OR AT THE GROWER'S NURSERY. APPROVAL OF PLANT MATERIALS AT ANY TIME SHALL NOT IMPAIR THE SUBSEQUENT RIGHT OF INSPECTION AND REJECTION DURING PROGRESS OF THE WORK.
2. PLANTS INSPECTED ON SITE AND REJECTED FOR NOT MEETING SPECIFICATIONS MUST BE REMOVED IMMEDIATELY FROM SITE OR RED-TAGGED AND REMOVED AS SOON AS POSSIBLE.
3. THE RESTORATION CONSULTANT MAY ELECT TO INSPECT PLANT MATERIALS AT THE PLACE OF GROWTH. AFTER INSPECTION AND ACCEPTANCE, THE RESTORATION CONSULTANT MAY REQUIRE THE INSPECTED PLANTS BE LABELED AND RESERVED FOR PROJECT. SUBSTITUTION OF THESE PLANTS WITH OTHER INDIVIDUALS, EVEN OF THE SAME SPECIES AND SIZE, IS UNACCEPTABLE.

MEASUREMENT OF PLANTS
1. PLANTS SHALL CONFORM TO SIZES SPECIFIED UNLESS SUBSTITUTIONS ARE MADE AS OUTLINED IN THIS CONTRACT.
2. HEIGHT AND SPREAD DIMENSIONS SPECIFIED REFER TO MAIN BODY OF PLANT AND NOT BRANCH OR ROOT TIP TO TIP. PLANT DIMENSIONS SHALL BE MEASURED WHEN THEIR BRANCHES OR ROOTS ARE IN THEIR NORMAL POSITION.
3. WHERE A RANGE OF SIZE IS GIVEN, NO PLANT SHALL BE LESS THAN THE MINIMUM SIZE AND AT LEAST 50% OF THE PLANTS SHALL BE AS LARGE AS THE MEDIAN OF THE SIZE RANGE. (EXAMPLE: IF THE SIZE RANGE IS 12" TO 18", AT LEAST 50% OF PLANTS MUST BE 15" TALL.).

SUBMITTALS

PROPOSED PLANT SOURCES
1. WITHIN 45 DAYS AFTER AWARD OF THE CONTRACT, SUBMIT A COMPLETE LIST OF PLANT MATERIALS PROPOSED TO BE PROVIDED DEMONSTRATING CONFORMANCE WITH THE REQUIREMENTS SPECIFIED. INCLUDE THE NAMES AND ADDRESSES OF ALL GROWERS AND NURSERIES.

PRODUCT CERTIFICATES
1. PLANT MATERIALS LIST - SUBMIT DOCUMENTATION TO CONSULTANT AT LEAST 30 DAYS PRIOR TO START OF WORK UNDER THIS SECTION THAT PLANT MATERIALS HAVE BEEN ORDERED. ARRANGE PROCEDURE FOR INSPECTION OF PLANT MATERIAL WITH CONSULTANT AT TIME OF SUBMISSION.
2. HAVE COPIES OF VENDOR'S OR GROWERS' INVOICES OR PACKING SLIPS FOR ALL PLANTS ON SITE DURING INSTALLATION. INVOICE OR PACKING SLIP SHOULD LIST SPECIES BY SCIENTIFIC NAME, QUANTITY, AND DATE DELIVERED (AND GENETIC ORIGIN IF THAT INFORMATION WAS PREVIOUSLY REQUESTED).

DELIVERY, HANDLING, & STORAGE

NOTIFICATION
CONTRACTOR MUST NOTIFY CONSULTANT 48 HOURS OR MORE IN ADVANCE OF DELIVERIES SO THAT CONSULTANT MAY ARRANGE FOR INSPECTION.

PLANT MATERIALS
1. TRANSPORTATION - DURING SHIPPING, PLANTS SHALL BE PACKED TO PROVIDE PROTECTION AGAINST CLIMATE EXTREMES, BREAKAGE AND DRYING. PROPER VENTILATION AND PREVENTION OF DAMAGE TO BARK, BRANCHES, AND ROOT SYSTEMS MUST BE ENSURED.
2. SCHEDULING AND STORAGE - PLANTS SHALL BE DELIVERED AS CLOSE TO PLANTING AS POSSIBLE. PLANTS IN STORAGE MUST BE PROTECTED AGAINST ANY CONDITION THAT IS DETRIMENTAL TO THEIR CONTINUED HEALTH AND VIGOR.
3. HANDLING - PLANT MATERIALS SHALL NOT BE HANDLED BY THE TRUNK, LIMBS, OR FOLIAGE BUT ONLY BY THE CONTAINER, BALL, BOX, OR OTHER PROTECTIVE STRUCTURE, EXCEPT BAREROOT PLANTS SHALL BE KEPT IN BUNDLES UNTIL PLANTING AND THEN HANDLED CAREFULLY BY THE TRUNK OR STEM.
4. LABELS - PLANTS SHALL HAVE DURABLE, LEGIBLE LABELS STATING CORRECT SCIENTIFIC NAME AND SIZE. TEN PERCENT OF CONTAINER GROWN PLANTS IN INDIVIDUAL POTS SHALL BE LABELED. PLANTS SUPPLIED IN FLATS, RACKS, BOXES, BAGS, OR BUNDLES SHALL HAVE ONE LABEL PER GROUP.

WARRANTY

PLANT WARRANTY
PLANTS MUST BE GUARANTEED TO BE TRUE TO SCIENTIFIC NAME AND SPECIFIED SIZE, AND TO BE HEALTHY AND CAPABLE OF VIGOROUS GROWTH.

REPLACEMENT
1. PLANTS NOT FOUND MEETING ALL OF THE REQUIRED CONDITIONS AT THE CONSULTANT'S DISCRETION MUST BE REMOVED FROM SITE AND REPLACED IMMEDIATELY AT THE CONTRACTOR'S EXPENSE.
2. PLANTS NOT SURVIVING AFTER ONE YEAR TO BE REPLACED AT THE CONTRACTOR'S EXPENSE.

PLANT MATERIAL

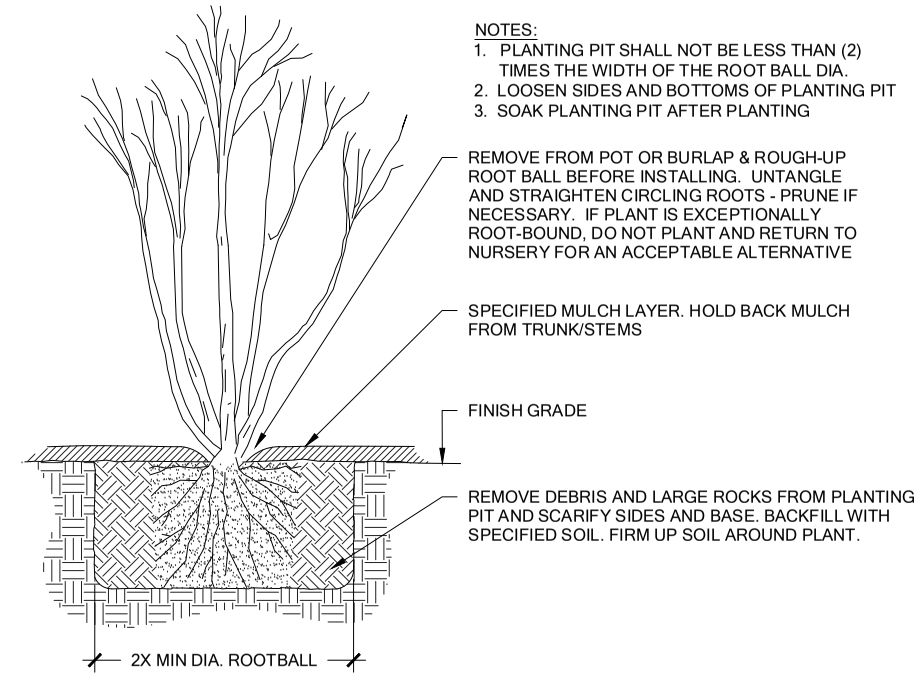
GENERAL
1. PLANTS SHALL BE NURSERY GROWN IN ACCORDANCE WITH GOOD HORTICULTURAL PRACTICES UNDER CLIMATIC CONDITIONS SIMILAR TO OR MORE SEVERE THAN THOSE OF THE PROJECT SITE.
2. PLANTS SHALL BE TRUE TO SPECIES AND VARIETY OR SUBSPECIES. NO CULTIVARS OR NAMED VARIETIES SHALL BE USED UNLESS SPECIFIED AS SUCH.

QUANTITIES
SEE PLANT LIST ON ACCOMPANYING PLANS AND PLANT SCHEDULES.

ROOT TREATMENT
1. CONTAINER GROWN PLANTS (INCLUDES PLUGS): PLANT ROOT BALLS MUST HOLD TOGETHER WHEN THE PLANT IS REMOVED FROM THE POT, EXCEPT THAT A SMALL AMOUNT OF LOOSE SOIL MAY BE ON THE TOP OF THE ROOTBALL.
2. PLANTS MUST NOT BE ROOT-BOUND; THERE MUST BE NO CIRCLING ROOTS PRESENT IN ANY PLANT INSPECTED.
3. ROOTBALLS THAT HAVE CRACKED OR BROKEN WHEN REMOVED FROM THE CONTAINER SHALL BE REJECTED.

PLANT INSTALLATION DETAILS AND NOTES

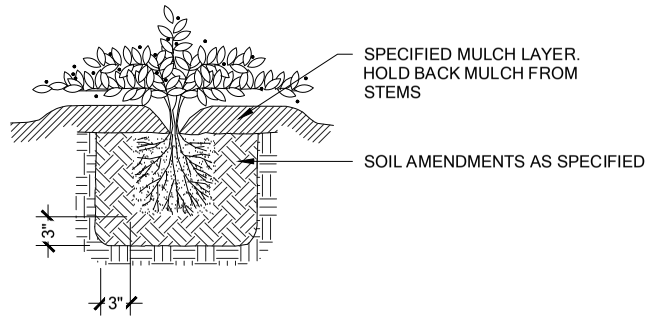
SCALE AS NOTED



1 TREE AND SHRUB PLANTING

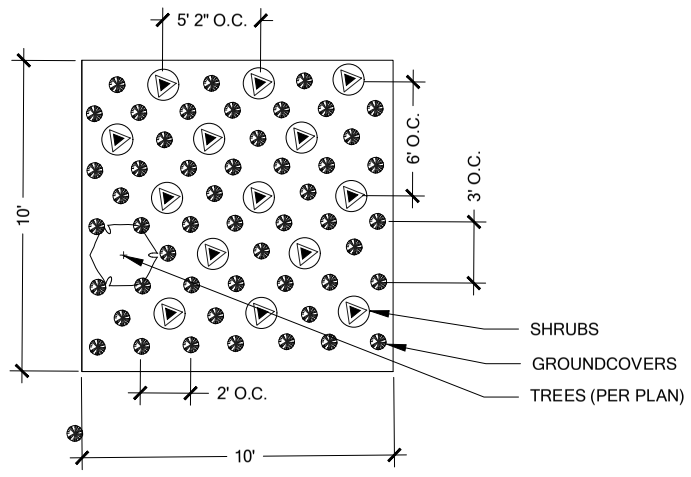
Scale: NTS

NOTES:
1. PLANT GROUNDCOVER AT SPECIFIED DISTANCE ON-CENTER (O.C.) USING TRIANGULAR SPACING, TYP.
2. LOOSEN SIDES AND BOTTOM OF PLANTING PIT AND REMOVE DEBRIS
3. LOOSEN ROOTBOUND PLANTS BEFORE INSTALLING
4. SOAK PIT BEFORE AND AFTER INSTALLING PLANT



2 GROUNDCOVER PLANTING

Scale: NTS



3 TYPICAL PLANT SPACING

Scale: NTS

THE WATERSHED COMPANY
750 Sixth Street South
Kirkland WA 98033
p 425.822.5242
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Science & Design

PAZARENA MITIGATION PLAN
MITIGATION PLAN
PREPARED FOR: CITY OF MERCER ISLAND
PROJECT LOCATION:
8430 SE 47TH PLACE
MERCER ISLAND, WA 98040

SUBMITTALS & REVISIONS

NO.	DATE	DESCRIPTION	BY
1	09-26-2017	MITIGATION PLAN SET	RH

SHEET SIZE:
ORIGINAL PLAN IS 22" x 34".
SCALE ACCORDINGLY.

PROJECT MANAGER: SS
DESIGNED: RH
DRAFTED: RH
CHECKED: SS, MF
JOB NUMBER: 170716
SHEET NUMBER: W4 OF 5

FILENAME
PRINTED BY
DATE

MITIGATION PLAN NOTES

THIS PLAN HAS BEEN PREPARED AS MITIGATION FOR IMPACTS TO THE BUFFER OF A TYPE II WATERCOURSE. THE IMPACTS TO THE BUFFER ARE TO ACCOMMODATE THE CONSTRUCTION OF A PROPOSED GARAGE EXPANSION. THIS PROPOSAL WILL IMPACT A TOTAL OF 670 SQUARE FEET WITHIN THE OUTER 21 FEET OF THE STANDARD BUFFER. 295 SQUARE FEET OF THE IMPACTED AREA IS ALREADY IMPACTED BY AN EXISTING IMPERVIOUS CONCRETE PARKING PAD. OTHER PORTIONS OF THE IMPACTED BUFFER ARE GENERALLY CLEARED OF VEGETATION; HOWEVER, THREE TREES AROUND THE OUTER PERIMETER OF THE PROPOSED FOOTPRINT WILL BE NEED TO BE REMOVED TO ACCOMMODATE THE EXPANDED STRUCTURE. TO OFFSET THESE CRITICAL AREA BUFFER IMPACTS, A TOTAL OF 1,255 SQUARE FEET OF ENHANCEMENT IS PROPOSED. THIS RESULTS IN A NET ENHANCEMENT TO IMPACT RATIO OF 1:1. ENHANCEMENT OF THE DEGRADED BUFFER WILL INCLUDE REMOVAL OF NON-NATIVE AND INVASIVE SPECIES, THE INSTALLATION OF A NATIVE TREE, SHRUB AND GROUNDCOVER PLANT COMMUNITY.

MITIGATION AREA WORK SEQUENCE (SEE MATERIALS FOR ITEMS IN BOLD)

A RESTORATION SPECIALIST SHALL MAKE SITE VISITS TO VERIFY THE FOLLOWING PROJECT MILESTONES:

1. MARK THE CLEARING LIMITS WITH HIGH VISIBILITY FENCING OR SIMILAR MEANS.
2. INSTALL EROSION CONTROL MEASURES USING BMPS AS NEEDED.
3. INSTALL NATIVE PLANTS PER PLANTING DETAILS ON SHEET W4 AND W5.
   a. NATIVE PLANT INSTALLATION SHALL OCCUR DURING THE DORMANT SEASON (OCTOBER 15TH THROUGH MARCH 1ST) IN FROST-FREE PERIODS ONLY.
   b. LAYOUT PLANT MATERIAL PER PLAN FOR INSPECTION BY THE RESTORATION SPECIALIST. PLANT SUBSTITUTIONS WILL NOT BE ALLOWED WITHOUT PRIOR WRITTEN APPROVAL OF THE RESTORATION SPECIALIST.
   c. INSTALL PLANTS PER PLANTING DETAILS.
5. WATER EACH PLANT THOROUGHLY TO REMOVE AIR POCKETS.
6. INSTALL A TEMPORARY IRRIGATION SYSTEM CAPABLE OF SUPPLYING AT LEAST 1-INCH OF WATER PER WEEK TO THE ENTIRE PLANTED AREA DURING THE DRY SEASON (JUNE 1ST THROUGH SEPTEMBER 30TH).
7. ONE YEAR AFTER INITIAL PLANTING, APPLY A SLOW-RELEASE, PHOSPHOROUS-FREE, GRANULAR FERTILIZER TO EACH INSTALLED PLANT.

MAINTENANCE

THE SITE SHALL BE MAINTAINED FOR FIVE YEARS FOLLOWING SUCCESSFUL INSTALLATION.

1. REPLACE EACH PLANT FOUND DEAD IN THE SUMMER MONITORING VISITS IN THE FOLLOWING DORMANT SEASON (OCTOBER 15 - MARCH 1). REPLACEMENT SHALL BE OF THE SAME SPECIES AND SIZE PER PLAN UNLESS OTHERWISE APPROVED BY THE RESTORATION SPECIALIST.
2. GENERAL WEEDING FOR ALL PLANTED AREAS
   a. AT LEAST TWICE ANNUALLY, REMOVE COMPETING GRASSES AND WEEDS FROM AROUND THE BASE OF EACH INSTALLED PLANT TO A RADIUS OF 12 INCHES. WEEDING SHOULD OCCUR AT LEAST ONCE IN THE SPRING AND ONCE IN THE SUMMER. THOROUGH WEEDING WILL RESULT IN LOWER PLANT MORTALITY AND ASSOCIATED PLANT REPLACEMENT COSTS.
   b. MORE FREQUENT WEEDING MAY BE NECESSARY DEPENDING ON WEED CONDITIONS THAT DEVELOP AFTER PLANT INSTALLATION.
   c. NOXIOUS WEEDS MUST BE REMOVED FROM THE ENTIRE MITIGATION AREA, AT LEAST TWICE ANNUALLY.
   d. DO NOT USE STRING TRIMMERS IN THE VICINITY OF INSTALLED PLANTS, AS THEY MAY DAMAGE OR KILL THE PLANTS.
3. MAINTAIN A FOUR-INCH-THICK LAYER OF WOODCHIP MULCH ACROSS THE ENTIRE PLANTING AREA. MULCH SHOULD BE PULLED BACK TWO INCHES FROM THE PLANT STEMS.
4. INSPECT AND REPAIR THE IRRIGATION SYSTEM AS NECESSARY EACH SPRING. DURING AT LEAST THE FIRST TWO GROWING SEASONS, MAKE SURE THAT THE ENTIRE PLANTING AREA RECEIVES A MINIMUM OF ONE INCH OF WATER PER WEEK FROM JUNE 1ST THROUGH SEPTEMBER 30TH.

GOALS

1. ENHANCE 1,255 SQUARE FEET OF DEGRADED WATERCOURSE BUFFER.
   a. CREATE A DENSE, NATIVE, TREE AND SHRUB COMMUNITY.
   b. REMOVE NON-NATIVE AND INVASIVE PLANT SPECIES FROM THE ENHANCEMENT AREA.

PERFORMANCE STANDARDS

THE FOLLOWING PERFORMANCE STANDARDS WILL BE USED TO GAUGE THE SUCCESS OF THE PROJECT OVER TIME. IF ALL PERFORMANCE STANDARDS HAVE BEEN SATISFIED BY THE END OF YEAR FIVE, THE PROJECT SHALL BE CONSIDERED COMPLETE AND THE CITY OF BELLEVUE SHALL RELEASE THE PERFORMANCE BOND.

1. SURVIVAL
   a. ACHIEVE 100% SURVIVAL OF ALL INSTALLED TREES AND SHRUBS BY THE END OF YEAR ONE.
   b. ACHIEVE 80% SURVIVAL OF ALL INSTALLED SHRUBS AND 100% SURVIVAL OF ALL INSTALLED CONIFERS BY THE END OF YEAR TWO.
   c. ACHIEVE 80% SURVIVAL OF ALL INSTALLED TREES AND SHRUBS BY THE END OF YEAR FIVE.

SURVIVAL STANDARDS MAY BE ACHIEVED THROUGH ESTABLISHMENT OF PLANTED MATERIAL, RECRUITMENT OF NATIVE VOLUNTEERS, OR REPLACEMENT PLANTS AS NECESSARY.

2. DIVERSITY
   a. ESTABLISH AT LEAST FOUR NATIVE SHRUB SPECIES IN THE ENHANCEMENT AREA BY THE END OF YEAR FIVE. ESTABLISHMENT IS DEFINED AS FIVE OR MORE INDIVIDUAL PLANTS OF THE SAME SPECIES ALIVE AND HEALTHY.
3. COVER
   a. ACHIEVE 40% COVER OF NATIVE TREES, SHRUBS AND GROUNDCOVER BY THE END OF YEAR THREE.
   b. ACHIEVE 60% COVER OF NATIVE TREES, SHRUBS, AND GROUNDCOVER BY THE END OF YEAR FIVE.
   c. NO MORE THAN 10% COVER BY INVASIVE SPECIES LISTED AS CLASS A, B, OR C BY THE KING COUNTY NOXIOUS WEED CONTROL BOARD IN ANY MONITORING YEAR.

MONITORING

PRIOR TO THE COMMENCEMENT OF THE MONITORING PHASE, AN AS-BUILT PLAN DOCUMENTING THE SUCCESSFUL INSTALLATION OF THE PROJECT WILL BE SUBMITTED TO THE CITY OF MERCER ISLAND. IF NECESSARY, THE AS-BUILT REPORT MAY INCLUDE A MARK-UP OF THE ORIGINAL PLAN THAT NOTES ANY SIGNIFICANT CHANGES OR SUBSTITUTIONS THAT OCCURRED. DURING THE AS-BUILT INSPECTION, THE RESTORATION SPECIALIST WILL ESTABLISH AT LEAST FOUR PERMANENT PHOTO-POINTS.

THE SITE WILL BE MONITORED TWICE ANNUALLY FOR FIVE YEARS BEGINNING WITH APPROVAL OF THE AS-BUILT REPORT. EACH SPRING THE RESTORATION SPECIALIST WILL CONDUCT A BRIEF MAINTENANCE INSPECTION FOLLOWED BY A MEMO SUMMARIZING MAINTENANCE ITEMS NECESSARY FOR THE UPCOMING GROWING SEASON. THE FORMAL LATE-SEASON MONITORING INSPECTION WILL TAKE PLACE ONCE ANNUALLY DURING LATE SUMMER OR EARLY FALL. DURING EACH LATE-SEASON MONITORING INSPECTION, THE FOLLOWING DATA WILL BE COLLECTED:

1. PERCENT SURVIVAL OF ALL INSTALLED PLANTINGS, INCLUDING SPECIES SPECIFIC COUNTS OF INSTALLED TREE AND SHRUB PLANTINGS (NOTE: GROUNDCOVER PLANTS COUNTED IN YEAR-1 ONLY, FOR WARRANTY PURPOSES).
2. NATIVE WOODY COVER AS DETERMINED USING VISUAL COVER CLASS ESTIMATES.
3. NATIVE GROUNDCOVER PLANT COVER AS DETERMINED USING VISUAL COVER CLASS ESTIMATES.
4. ESTIMATES OF INVASIVE HERBACEOUS PLANTS OR GROUNDCOVER USING VISUAL COVER ESTIMATES.
5. THE SPECIES COMPOSITION, NOTING WHETHER A SPECIES IS NATIVE OR EXOTIC AND WHETHER PLANTS WERE INSTALLED OR ARE VOLUNTEERS.
6. THE GENERAL HEALTH AND VIGOR OF THE INSTALLED VEGETATION.
7. PHOTOGRAPHS FROM FIXED PHOTO-POINTS ESTABLISHED DURING THE AS-BUILT INSPECTION.
8. ANY EVIDENCE OF WILDLIFE USAGE IN THE MITIGATION AREA.

MONITORING REPORTS SHALL BE SUBMITTED ANNUALLY TO THE CITY. REPORTS SHALL DOCUMENT THE CONDITIONS OF THE SITE, INCLUDING QUANTITATIVE DATA COLLECTED DURING THE MONITORING INSPECTION, AND SHALL PROVIDE MAINTENANCE RECOMMENDATIONS THAT MAY BE NECESSARY TO HELP THE SITE ACHIEVE THE STATED PERFORMANCE STANDARDS.

CONTINGENCY PLAN

IF ANY MONITORING REPORT REVEALS THAT THE RESTORATION PLAN HAS FAILED IN WHOLE OR IN PART, AND SHOULD THAT FAILURE BE BEYOND THE SCOPE OF ROUTINE MAINTENANCE, THE APPLICANT WILL SUBMIT A CONTINGENCY PLAN TO THE CITY OF MERCER ISLAND FOR APPROVAL. THIS PLAN MAY INCLUDE REPLANTING, SOIL AMENDMENTS OR TOPDRESSING, SUBSTITUTIONS FOR SPECIES SELECTED IN THE ORIGINAL PLAN, AND ADAPTIVE WEED CONTROL METHODS.

MATERIALS

1. WOODCHIP MULCH: "ARBORIST CHIPS" (CHIPPED WOODY MATERIAL) APPROXIMATELY ONE TO THREE INCHES IN MAXIMUM DIMENSION (NOT SAWDUST). THIS MATERIAL IS COMMONLY AVAILABLE IN LARGE QUANTITIES FROM ARBORISTS OR TREE-PRUNING COMPANIES. THIS MATERIAL IS SOLD AS "ANIMAL FRIENDLY HOG FUEL" AT PACIFIC TOPSOILS [(800) 884-7645]. MULCH SHALL NOT CONTAIN APPRECIABLE QUANTITIES OF GARBAGE, PLASTIC, METAL, SOIL, AND DIMENSIONAL LUMBER OR CONSTRUCTION/DEMOLITION DEBRIS. APPROX. QUANTITY REQUIRED: 15.5 CUBIC YARDS.
2. FERTILIZER: SLOW-RELEASE, PHOSPHOROUS-FREE GRANULAR FERTILIZER. MOST COMMERCIAL NURSERIES CARRY THIS PRODUCT. FOLLOW MANUFACTURER'S INSTRUCTIONS FOR USE. KEEP FERTILIZER IN WEATHER-TIGHT CONTAINER WHILE ON-SITE. FERTILIZER IS ONLY TO BE APPLIED IN YEARS TWO AND THREE, NOT IN YEAR ONE.
3. RESTORATION SPECIALIST: QUALIFIED PROFESSIONAL ABLE TO EVALUATE AND MONITOR THE CONSTRUCTION OF ENVIRONMENTAL RESTORATION PROJECTS.
4. FERTILIZER (FOR NEAR AQUATIC ENVIRONMENTS): SLOW-RELEASE, PHOSPHOROUS-FREE GRANULAR FERTILIZER. LABEL MUST INDICATE THAT PRODUCT IS SAFE FOR AQUATIC ENVIRONMENTS. FOLLOW MANUFACTURER'S INSTRUCTIONS FOR USE. KEEP FERTILIZER IN WEATHER-TIGHT CONTAINER WHILE ON-SITE. FERTILIZER IS ONLY TO BE APPLIED IN YEARS TWO AND THREE, NOT IN YEAR ONE.

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SCALE ACCORDINGLY.

PROJECT MANAGER: SS
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DRAFTED: RH
CHECKED: SS, MF
JOB NUMBER:
170716
SHEET NUMBER:
W5 OF 5

FILENAME
PRINTED BY
DATE

Department of Permitting

Environmental Review
35030 SE Douglas Str, Suite 210
Snoqualmie, WA 98065-9266
206-296-6600 TTY Relay: 711

Critical Areas Mitigation
Bond Quantity Worksheet

Project Name: Mercer Island Pazarena **Date:** 27-Sep-17 **Prepared by:** Sarah Sandstrom

Project Number: 170716 **Project Description:** Stream buffer mitigation

Location: 8430 SE 47th Place, Mercer Island, WA **Applicant:** Craig Pazarena **Phone:**

PLANT MATERIALS (includes labor cost for plant installation)

Type	Unit Price	Unit	Quantity	Description	Cost
PLANTS: Potted, 4" diameter, medium	$5.00	Each			$ -
PLANTS: Container, 1 gallon, medium soil	$11.50	Each	250.00	Groundcover	$ 2,875.00
PLANTS: Container, 2 gallon, medium soil	$20.00	Each	30.00	Shrubs	$ 600.00
PLANTS: Container, 5 gallon, medium soil	$36.00	Each	6.00	Trees	$ 216.00
PLANTS: Seeding, by hand	$0.50	SY			$ -
PLANTS: Slips (willow, red-osier)	$2.00	Each			$ -
PLANTS: Stakes (willow)	$2.00	Each			$ -
PLANTS: Stakes (willow)	$2.00	Each			$ -
PLANTS: Flats/plugs	$2.00	Each			$ -
				TOTAL	**$ 3,691.00**

INSTALLATION COSTS (LABOR, EQUIPMENT, & OVERHEAD)

Type	Unit Price	Unit			Cost
Compost, vegetable, delivered and spread	$37.88	CY			$ -
Decompacting till/hardpan, medium, to 6" depth	$1.57	CY			$ -
Decompacting till/hardpan, medium, to 12" depth	$1.57	CY			$ -
Hydroseeding	$0.51	SY			$ -
Labor, general (landscaping other than plant installation)	$40.00	HR			$ -
Labor, general (construction)	$40.00	HR			$ -
Labor: Consultant, supervising	$55.00	HR			$ -
Labor: Consultant, on-site re-design	$95.00	HR			$ -
Rental of decompacting machinery & operator	$70.00	HR			$ -
Sand, coarse builder's, delivered and spread	$42.00	CY			$ -
Staking material (set per tree)	$7.00	Each	6.00		$ 42.00
Surveying, line & grade	$250.00	HR			$ -
Surveying, topographical	$250.00	HR			$ -
Watering, 1" of water, 50' soaker hose	$3.62	MSF			$ -
Irrigation - temporary	$3,000.00	Acre	0.03		$ 90.00
Irrigation - buried	$4,500.00	Acre			$ -
Tilling topsoil, disk harrow, 20hp tractor, 4"-6" deep	$1.02	SY			$ -
				TOTAL	**$ 132.00**

HABITAT STRUCTURES*

ITEMS	Unit Cost	Unit			Cost
Fascines (willow)	$ 2.00	Each			$ -
Logs, (cedar), w/ root wads, 16"-24" diam., 30' long	$1,000.00	Each			$ -
Logs (cedar) w/o root wads, 16"-24" diam., 30'	$400.00	Each			$ -
Logs, w/o root wads, 16"-24" diam., 30' long	$245.00	Each			$ -
Logs w/ root wads, 16"-24" diam., 30' long	$460.00	Each			$ -
Rocks, one-man	$60.00	Each			$ -
Rocks, two-man	$120.00	Each			$ -
Root wads	$163.00	Each			$ -
Spawning gravel, type A	$22.00	CY			$ -
Weir - log	$1,500.00	Each			$ -
Weir - adjustable	$2,000.00	Each			$ -
Woody debris, large	$163.00	Each			$ -
Snags - anchored	$400.00	Each			$ -
Snags - on site	$50.00	Each			$ -
Snags - imported	$800.00	Each			$ -
* All costs include delivery and installation				*TOTAL*	**$ -**

EROSION CONTROL

ITEMS	Unit Cost	Unit			Cost
Backfill and Compaction-embankment	$ 4.89	CY			$ -
Crushed surfacing, 1 1/4" minus	$30.00	CY			$ -
Ditching	$7.03	CY			$ -
Excavation, bulk	$4.00	CY			$ -
Fence, silt	$1.60	LF	75.00		$ 120.00
Jute Mesh	$1.26	SY			$ -
Mulch, by hand, straw, 2" deep	$1.27	SY			$ -
Mulch, by hand, wood chips, 2" deep	$3.25	SY	278.00		$ 903.50
Mulch, by machine, straw, 1" deep	$0.32	SY			$ -
Piping, temporary, CPP, 6"	$9.30	LF			$ -
Piping, temporary, CPP, 8"	$14.00	LF			$ -
Piping, temporary, CPP, 12"	$18.00	LF			$ -
Plastic covering, 6mm thick, sandbagged	$2.00	SY			$ -
Rip Rap, machine placed, slopes	$33.98	CY			$ -

Rock Constr. Entrance 100'x15'x1'	$3,000.00	Each			$	-
Rock Constr. Entrance 50'x15'x1'	$1,500.00	Each			$	-
Sediment pond riser assembly	$1,695.11	Each			$	-
Sediment trap, 5' high berm	$15.57	LF			$	-
Sediment trap, 5' high berm w/spillway incl. riprap	$59.60	LF			$	-
Sodding, 1" deep, level ground	$5.24	SY			$	-
Sodding, 1" deep, sloped ground	$6.48	SY			$	-
Straw bales, place and remove	$600.00	TON			$	-
Hauling and disposal	$20.00	CY	2.00		$	40.00
Topsoil, delivered and spread	$35.73	CY			$	-
				TOTAL	**$**	**1,063.50**

GENERAL ITEMS

ITEMS	Unit Cost	Unit			Cost	
Fencing, chain link, 6' high	$18.89	LF			$	-
Fencing, chain link, corner posts	$111.17	Each			$	-
Fencing, chain link, gate	$277.63	Each			$	-
Fencing, split rail, 3' high (2-rail)	$10.54	LF			$	-
Fencing, temporary (NGPE)	$1.20	LF			$	-
Signs, sensitive area boundary (inc. backing, post, install)	$28.50	Each			$	-
				TOTAL	**$**	**-**

OTHER

				(Construction Cost Subtotal)	**$**	**4,886.50**
ITEMS	Percentage of Construction	Unit			Cost	
Mobilization	10%	1			$	488.65
Contingency	30%	1			$	1,465.95
				TOTAL	**$**	**1,954.60**

MAINTENANCE AND MONITORING

NOTE: Projects with multiple permit requirements may be required to have longer monitoring and maintenance terms. This will be evaluated on a case-by-case basis for development applications. Monitoring and maintance ranges may be assessed anywhere from 5 to 10 years.

Maintenance, annual (by owner or consultant)						
Less than 1,000 sq.ft. and buffer mitigation only	$ 1.08	SF		(3 X SF total for 3 annual events; Includes monitoring)	$	-
Less than 1,000 sq.ft. with wetland or aquatic area mitigation	$ 1.35	SF		(3 X SF total for 3 annual events; Includes monitoring)	$	-
Larger than 1,000 sq. ft. but less than 5,000 sq.ft. of buffer mitigation	$ 180.00	EACH	10.00	(4hr @$45/hr)	$	1,800.00
Larger than 1,000 sq. ft. but less than 5,000 sq.ft. of wetland or aquatic area mitigation	$ 270.00	EACH		(6hr @$45/hr)	$	-
Larger than 5,000 sq.ft. but < 1 acre -buffer mitigation only	$ 360.00	EACH		(8 hrs @ 45/hr)	$	-
Larger than 5,000 sq.ft. but < 1 acre with wetland or aquatic area mitigation	$ 450.00	EACH		(10 hrs @ $45/hr)	$	-
Larger than 1 acre but < 5 acres - buffer and / or wetland or aquatic area mitigation	$ 1,600.00	DAY		(WEC crew)	$	-
Larger than 5 acres - buffer and / or wetland or aquatic area mitigation	$ 2,000.00	DAY		(1.25 X WEC crew)	$	-
Monitoring, annual (by owner or consultant)						
Larger than 1,000 sq.ft. but less than 5,000 wetland or buffer mitigation	$ 720.00	EACH	11.00	(8 hrs @ 90/hr)	$	7,920.00
Larger than 5,000 sq.ft. but < 1 acre with wetland or aquatic area impacts	$ 900.00	EACH		(10 hrs @ $90/hr)	$	-
Larger than 1 acre but < 5 acres - buffer and / or wetland or aquatic area impacts	$ 1,440.00	DAY		(16 hrs @ $90/hr)	$	-
Larger than5 acres - buffer and / or wetland or aquatic area impacts	$ 2,160.00	DAY		(24 hrs @ $90/hr)	$	-
				TOTAL	**$**	**9,720.00**

Total	**$16,561.10**