



LEROY SURVEYORS & ENGINEERS, INC.

Surveying • Engineering • Geology • Septic Design • GPS • GIS Mapping

Exhibit 3.e

Buffer Mitigation Plan

MUSTARD SEED LEGACY DEVELOPMENT LLC

BUFFER MITIGATION PLAN



MUSTARD SEED LEGACY DEVELOPMENT LLC

BUFFER MITIGATION PLAN

PREPARED FOR:

MUSTARD SEED LEGACY DEVELOPMENT LLC
VSI LAW GROUP, PLLC
ATTN: LOREN COMBS
225 TACOMA AVE S
TACOMA, WA 98402

PREPARED BY:

GRETTE ASSOCIATES^{LLC}
2102 NORTH 30TH STREET, SUITE A
TACOMA, WASHINGTON 98403
(253) 573-9300



DECEMBER 4, 2023

CHAD WALLIN, PWS
BIOLOGIST

DATE



DECEMBER 4, 2023

TERRA HAUSER
BIOLOGIST

DATE



TABLE OF CONTENTS

1	INTRODUCTION	1
2	PROJECT DESCRIPTION.....	1
2.1	Project Location	1
2.2	Current Land Use and Existing Conditions	2
2.3	Proposed Project	2
3	CRITICAL AREAS ASSESSMENT SUMMARY	2
4	BUFFER MITIGATION PLAN	3
4.1	Wetland Buffer Reduction	3
4.2	Buffer Impacts	4
4.3	Post Project Buffer Conditions	4
5	MITIGATION SEQUENCING	5
5.1.1	<i>Avoidance</i>	5
5.1.2	<i>Minimization</i>	5
5.1.3	<i>Restoration</i>	5
5.1.4	<i>Reducing Impact over Time</i>	5
5.1.5	<i>Compensation</i>	5
5.1.6	<i>Monitoring</i>	6
6	NATIVE REVEGETATION PLAN.....	6
6.1	Invasive Species Removal	6
6.1.1	<i>Himalayan blackberry</i>	6
6.1.2	<i>English ivy</i>	7
6.1.3	<i>Reed canarygrass</i>	7
6.1.4	<i>English holly</i>	7
6.1.5	<i>Scotch broom</i>	7
6.2	Native Plant Installation.....	8
6.2.1	<i>Planting Schedule</i>	9
6.2.2	<i>Preparation and Installation of Planting Materials</i>	10
7	MAINTENANCE RECOMMENDATIONS.....	10
7.1	Irrigation	10
7.2	Maintenance Activities	10
8	MONITORING AND CONTINGENCY PLAN.....	10
8.1	Post-Installation Inspections and Monitoring	11
8.2	Long-Term Monitoring	11
8.3	Performance Standards	11
8.5	Contingency Plan	13
9	BIOLOGIST QUALIFICATIONS	13
9.1	Chad Wallin	13
9.2	Terra Hauser.....	13
10	REFERENCES	13

LIST OF FIGURES

Figure 1. Vicinity map1

LIST OF TABLES

Table 1. Wetland Summary3
Table 2. Natural water feature identification summary3
Table 3. Buffer Impacts Summary4
Table 4. Planting Schedule for Temporary Impact and Restoration Areas8
Table 5. Planting Schedule for Buffer Enhancement Area9
Table 6. Performance Standards12

LIST OF APPENDICES

Appendix A. Proposed Site Plan

1 INTRODUCTION

Grette Associates, LLC is under contract with Mustard Seed Legacy Development LLC to prepare a Buffer Mitigation Plan (Plan) in support of the proposed development project located off Steilacoom-DuPont Road SW and Barksdale Avenue in DuPont, Washington (Figure 1). The project site is located on Pierce County parcels 0119362039, 0119362009, 0119362012, and 0119362043.

The purpose of this Plan is to demonstrate compliance with Chapter 25.105.050 (Critical Areas) of the City of DuPont Municipal Code (DMC).

This Plan is based on site visits and on previous wetland delineation report Critical Areas Report prepared by Grette Associates (2019). For detailed information on the wetlands and streams on and surrounding the site, please refer to this report.

2 PROJECT DESCRIPTION

2.1 Project Location

To access the project site from I-5, take Exit 119 and turn North. The first intersection in approximately 250 feet is Barksdale Avenue and DuPont-Steilacoom Road, which is the southern corner of the property.

The approximate location of the proposed project is identified by the red polygon as shown in Figure 1.

Figure 1. Vicinity map



2.2 Current Land Use and Existing Conditions

The project site is largely undeveloped. It is dominated by Bell Marsh (Grette Associates 2019). This wetland is approximately 20 acres and is classified as a Category II depressional feature. Habitats that the wetland provides includes aquatic bed, emergent, scrub-shrub, and forested components. According to DMC 25.105.050, Category II wetlands have a required 100-ft standard buffer before any modifications. The buffer for Bell Marsh extends into the project site, necessitating this Plan. The majority of the buffer within the project site is a mature forest canopy made of native species including Douglas-fir (*Pseudotsuga menziesii*), Oregon white oak (*Quercus garryana*), and bigleaf maple (*Acer macrophyllum*). The understory is currently inundated by invasive vegetation, particularly Himalayan blackberry (*Rubus bifrons*) and English ivy (*Hedera helix*). Other invasive species that are less prevalent include English holly (*Ilex aquifolium*), reed canarygrass (*Phalaris arundinacea*), and Scotch broom (*Cytisus scoparius*). While the Himalayan blackberry occurs in large dense thickets, the other invasive species exists among desirable native vegetation, including oceanspray (*Holodiscus discolor*), salal (*Gaultheria shallon*), beaked hazelnut (*Corylus cornuta*), and low Oregon grape (*Berberis nervosa*). The buffer mainly consists of gentle slopes except for the southeastern end along DuPont-Steilacoom Road. A dirt access road lies on the base of the steeper slopes and loops from the corner of Barksdale Avenue and DuPont-Steilacoom Road to connect to a small Pierce County sanitary sewer easement area along DuPont-Steilacoom Road.

Upland areas outside of the buffer also contain a mix of native and invasive species. The northwestern area of the parcel contains a large thicket of Himalayan blackberry, and the upland forested area along DuPont-Steilacoom Road contains several native species of trees that are covered with English ivy. English holly shrubs and trees are also scattered throughout the forested area. A notable stand of native Oregon white oak is located near the corner of Barksdale Avenue and DuPont-Steilacoom Road. Like other species, these trees are covered with English ivy.

There is evidence of human use despite the lack of development. There is also evidence of dumping and littering within and on the margins of the wetland buffer as observed during a site visit on January 30, 2023.

2.3 Proposed Project

Champions Centre, a Washington not-for profit corporation, is proposing to build a religious assembly and parking area primarily outside of the wetland buffer (Appendix A). The building is proposed to be approximately 26,000 square feet and will be located on the corner of Barksdale Avenue and DuPont-Steilacoom Road.

3 CRITICAL AREAS ASSESSMENT SUMMARY

Grette Associates (2019) evaluated the site and delineated one wetland (Wetland A/Bell Marsh; Table 1) in accordance with the U.S. Army Corps of Engineers' (USACE) *Wetland Delineation Manual – Mountains, Valleys, and Coast Region Regional Supplement* (2010). The wetland was rated in accordance with DMC 25.105.050 and the WA State Department of Ecology's *Revised Washington State Wetland Rating System for Western Washington – 2014 Update* (Hruby 2014).

Wetland A/Bell Marsh is located in the western boundary of the project site, outside of the proposed construction boundaries. This wetland is classified as a Palustrine Aquatic-

Bed/Emergent/Scrub-Shrub/Forested wetland and is hydrogeomorphically classified as a depressional wetland. The wetland scored a total of 20 points on the rating system. Under the Washington Department of Ecology rating system, wetlands scoring 20 points are rated as Category II (Hruby 2014). According to DMC 25.105.050, Category II wetlands require a buffer of 100 feet. A summary of Wetland A is provided below in Table 1.

Table 1. Wetland Summary

Wetland ID	Cowardin Class ¹	HGM Class ²	Size (approximate)	Wetland Category ³	Buffer Width ⁴
A	Palustrine Aquatic-Bed/Emergent/Scrub-Shrub/Forested	Depressional	20 acres	II	100 ft

¹ Classification of Wetlands and Deepwater Habitats of the United States (Cowardin 1979)

² Hydrogeomorphic Classification - Washington State Wetland Rating System for Western Washington – 2014 Update (Hruby 2014)

³ Washington State Wetland Rating System for Western Washington – 2014 Update (Hruby 2014) (BCES 2021)

⁴ City of DuPont Municipal Code Chapter 25.105.050 (Critical areas)

A natural fish-bearing stream was also identified by Grette Associates as an inlet to the wetland (Table 2). This stream originates at a stormwater outfall that carries water from Joint Base Lewis-McChord (JBLM) and other areas. According to DMC 25.105.050 (Critical areas), all streams require a 100-foot buffer.

Table 2. Natural water feature identification summary

Feature	Water Type ¹	Buffer ²
PS-1	F	100 ft.

¹ Natural water features were rated according to DMC 25.105.030 and WAC 222-16-030.

² Buffers are based on DMC 25.105.050

For a more detailed description of the conditions on the site and Wetland A, please refer to the critical areas report prepared by Grette Associates (2019).

4 BUFFER MITIGATION PLAN

4.1 Wetland Buffer Reduction

According to DMC 25.105.050(1)(b)(iv), buffers can be reduced with enhancement when an applicant can prove the buffer fits the following criteria: “(A) The existing condition of the buffer is degraded; and (B) Additional protection to the wetland is provided through the implementation of a buffer enhancement plan.” The current project design proposes to reduce the recommended 100-foot buffer to 75 feet.

As described in Section 2.2, the buffer is degraded and there are many opportunities for enhancement. Buffer enhancement actions can include vegetation planting, wildlife habitat improvements, and invasive species removal.

4.2 Buffer Impacts

Despite the poor state of the wetland buffer as discussed in Section 2.2, it is still providing ecological functions to Bell Marsh. Even degraded wetland buffers are known to protect wetlands from sediment loads and toxins, prevent human intrusion, levels, reduce water temperature, and provide wildlife habitat (Castelle et al. 1992). The buffer area to be reduced includes significant patches of Himalayan blackberry and English ivy, but it also contains several native vegetation species including beaked hazelnut, Douglas-fir, and bigleaf maple that provide important wildlife habitat. Most of this buffer area consists of dense vegetation, which can filter toxins from its surroundings before water reaches the wetland. It can also reduce erosion and prevent sediment loading to the wetland.

As noted below, the proposed project also involves upgrades to the existing access road within several small areas within the outer portion (approx. 1,428 sq. ft.) of the proposed reduced buffer (Appendix A, Table 3).

In addition, a flow dispersal trench will be installed within the wetland buffer to infiltrate clean stormwater. The trench will be installed in the central portion of the site immediately west of the access road (Appendix A). The trench will involve temporary grading and excavation impacts, and may require the removal of existing vegetation. The trench will be approximately 50 feet long by three feet wide, and approximately two feet deep, covering approximately 150 square feet (Table 3). Once the trench and all components are installed, the surrounding surface soils will be stabilized and replanted with native vegetation.

The project also involves temporary impacts to the buffer in the form of grading and filling (Appendix A). Areas temporarily disturbed by grading and filling will be stabilized and then restored with native vegetation. These areas will then continue to function as wetland buffer. The total area of temporary grading and filling within the buffer is approximately 2,834 square feet (Table 3).

Table 3. Buffer Impacts Summary

Buffer Impacts	Area (sq ft)
Temporary Impacts	2,834
Permanent Impacts	1,428
Dispersion Trench (temporary)	150
Total Buffer Impacts	4,412

4.3 Post Project Buffer Conditions

The current buffer, while still able to provide some valuable ecological functions to the wetland, is highly degraded and contains many invasive species that especially limits its ability to provide quality wildlife habitat. Enhancement of the remaining wetland buffer will increase the levels of function provided by these areas. Removing invasive species will protect the wetland from further infestation, and planting desirable native species will provide benefits to the wetland in terms of wildlife habitat, water quality and hydrology (Castelle et al. 1992). A reduced but successfully enhanced and preserved buffer can function more effectively than the current buffer.

5 MITIGATION SEQUENCING

DMC 25.105.030.215 outlines the preferred mitigation sequencing for critical areas.

5.1.1 Avoidance

Chapter 25.105.050(1)(d) of the DMC requires that the project demonstrate that all reasonable efforts have been made to avoid and minimize impacts to the critical areas on the site. Extensive design iteration was completed to develop a proposal that did not result in direct impacts to the wetland or stream on-site. Initial designs included a larger sanctuary building and parking areas, which would have required willing into the wetland and stream. This also would have resulted in the removal of the oak trees within the site. The design was refined to reduce the footprint of the build and reconfigure the parking areas and reposition the commercial building on the site to avoid direct impacts to the wetland. Additionally, impacts to the oak stand within the southeast area of the site were avoided by redesigning the building around the trees (Appendix A).

Avoidance of impacts to the buffer occurred to the extent possible. This was accomplished by designing the road and incorporating it into the parking area as much as possible; however, given topographic constraints, there is no design alternative that would not require the proposed buffer reduction and the small intrusion (approx. 1,428 sq. ft.) into the reduced buffer area.

5.1.2 Minimization

Minimization measures to limit direct and indirect impacts to the wetland buffer occurred to the extent possible. Minimization efforts included repositioning the parking areas to pull as much developed area out of the buffers. Additionally, the current design includes the use of retaining walls along the outer edges of the buffers to minimize grading disturbances. In addition, the proposed access road utilizes a portion of the existing road, with added improvements to the road limited to three areas within the buffer (see permanent impacts shown in Appendix A) to minimize disturbances in undeveloped areas.

5.1.3 Restoration

Restoration of the approximately 2,834 square feet of temporary buffer disturbance that will occur during construction will be conducted. Once the temporary disturbances are completed and the areas have been stabilized, native buffer vegetation will be installed. Details are outlined in Section 5.2 (see temporary impacts shown in Appendix A).

5.1.4 Reducing Impact over Time

The impact of the project will be reduced over time by preserving the remaining enhanced buffer areas and allowing the buffer to continue providing valuable ecological functions to the wetland. There are no plans to expand the project to encroach further into the buffer or interfere with the buffer's ability to provide wildlife habitat, control changing hydrology, and protect the wetland from decreased water quality arising from upland influences.

5.1.5 Compensation

As no direct wetland or stream impacts will occur, no compensatory mitigation is proposed.

To ensure no adverse indirect impacts will occur as a result of the proposed buffer reduction and minor buffer development, enhancement of approximately 39,009 square feet of

remaining buffer is proposed. This will minimize the potential for indirect impacts to the wetland by removing invasive vegetation and increase native shrub and forest cover in the buffer. This vegetation will screen the wetland from nearby disturbances and provide increased habitat, water quality and hydrology functions over the existing buffer condition.

Details of the enhancement plan can be found in Section 5 and Appendix A.

5.1.6 Monitoring

The buffer enhancement project will be monitored for at least five years, as discussed in Section 7. Monitoring of the buffer enhancement is important to document the success and development of the plantings. This will ensure that the proposed enhancement improves the functioning of the reduced buffer and provides improved protection to the wetland and stream.

6 NATIVE REVEGETATION PLAN

6.1 Invasive Species Removal

Invasive species control should focus on integrated pest management (IPM), a method that focuses on prevention and monitoring, and encourages the use of control strategies that are cost-effective and sustainable, often encompassing a combination of chemical, mechanical, manual, and biological removal (King County 2018). The goal is to tailor these strategies to the specific needs of the site. Each species has a Best Management Practices (BMP) document compiled by King County outlining different removal options, and should be consulted when controlling infestations in sensitive or hazardous areas like riparian environments and the public Right of Way. The following subsections are based on these documents.

After removal of invasive species, the area should be revegetated to shade out smaller invasive seedlings, and routinely monitored for re-establishment of invasive species. Immature plants are often easier and cheaper to remove than extensive, mature infestations, so it is advisable to remove reinvasions quickly. It is likely that it will take several years to completely control the infestations.

6.1.1 Himalayan blackberry

Methods on removing Himalayan blackberry differ based on the extent of the infestation. At the project site, there are some small patches of blackberry among native species, and some large monoculture infestations. In small patches among native species, manual removal should be the primary tool to ensure that broad herbicide use does not affect native vegetation (King County 2014). Branches can be lopped off with hand tools, and the root ball must be dug up in order to prevent re-establishment. If the root ball cannot be removed, an herbicide such as Glyphosate should be used on the cut stump. Revegetation should follow to prevent re-establishment of the blackberry, and the area should then be mulched. The mulch should not touch the trunks of trees and shrubs as this can cause the plants to rot (Chalker-Scott 2015).

In large, monoculture infestations, blackberry should be mowed and the branches removed. After this, the root balls can be dug up or, in large areas, herbicide can be used on cut stumps. Alternatively, herbicide may be applied to mature blackberry and the dead branches can be mowed. This is faster and less laborious, but may be less effective. The area must be revegetated and mulched to reduce re-establishment.

As discussed above, control will likely take several years, so the removal process will likely need to be repeated until regrowth no longer occurs. For full details on Himalayan blackberry removal, see the Best Management Practices by King County on this species (King County 2014).

6.1.2 English ivy

Like Himalayan blackberry, methods on removing English ivy differ based on the size and location of infestations. Where English ivy is in small patches, manual control can be sufficient (King County 2020a). This includes pulling roots fully from groundcover ivy and cutting vines from tree trunks from the base to about four feet high. The upper vines will die and dry out. Mulching the ground can be effective. However, the recommended depth of the mulching is eight inches to prevent regrowth, which can interfere with the establishment of planted native species.

In large patches of English ivy, a combination of manual and chemical removal is recommended (King County 2020a). Manual removal is more effective, but the size of some of the infestations at the project site may make this method cost-prohibitive. A combination approach will start with the manual removal of vines from trees as described above. Glyphosate with an appropriate surfactant can then be applied to ground ivy. Care will need to be taken to avoid impacting the desirable native vegetation.

For full details on English ivy removal and disposal, see the Best Management Practices by King County on this species (King County 2020a).

6.1.3 Reed canarygrass

The integrated pest management recommendations for reed canarygrass prioritizes shading out existing infestations (King County 2015). Existing plants should first be removed manually, mechanically, or chemically, depending on the extent of the infestation. The seed bank should be depleted by continuing to remove plants each time they resprout. Finally, the area should be replanted with shady species to create a full canopy. This creates a poor environment for reed canarygrass to grow, and will often prevent reinfestation (King County 2015).

6.1.4 English holly

Methods on removing English holly are determined based on the size of the plant. Small English holly seedlings should be pulled, along with their roots, and larger trees should be chemically treated with an EZ-Ject lance (King County 2020b).

6.1.5 Scotch broom

There are several methods that can be effective in removing Scotch broom. The infestation at the project site is a large monoculture. This type of invasion is effectively controlled by herbicide (King County 2008). There are two effective methods of herbicide application: foliar spraying, which requires the entire plant be saturated; and basal bark and cut stump application, which is more labor-intensive but less risky when spraying near desirable native species. After chemical treatment, native grasses should be planted. A healthy grassy area mixed with clover can reduce reinvasion of Scotch broom (King County 2008).

6.2 Native Plant Installation

Tables 4 and 5 specify the selection of native plant species to be planted within the identified planting areas. The selected plant species are adapted to grow within the planting areas based on moisture tolerances and available sunlight, as well as use in similar, previously approved buffer installations.

The restoration area will be at the site of the temporary impacts, and the impact mitigation planting site will be near the southwest corner of the project site, just northwest of the parking lot along Barksdale Avenue. Based on the total size of both the temporary impact and enhancement areas (41,834 square feet), Grette Associates recommends that 186 trees and 976 shrubs be planted (Sound Native Plants 2023). In the temporary impact areas, 13 trees and 66 shrubs should be planted (Table 4), and in the enhancement area 173 trees and 910 shrubs should be planted (Table 5).

Table 4. Planting Schedule for Temporary Impact and Restoration Areas

Scientific	Common Name	Size	Spacing ¹	Quantity ¹
Trees				
<i>Acer macrophyllum</i>	big leaf maple	2 gallon	15 feet	4
<i>Pseudotsuga menziesii</i>	Douglas-fir	2 gallon	15 feet	4
<i>Quercus garryana</i>	Oregon white oak	2 gallon	15 feet	5
Shrubs				
<i>Symphoricarpos albus</i>	common snowberry	1 gallon	6 feet	13
<i>Holodiscus discolor</i>	oceanspray	1-2 gallon	6 feet	13
<i>Oemleria cerasiformis</i>	osoberry	1-2 gallon	6 feet	14
<i>Corylus cornuta</i>	beaked hazelnut	1-2 gallon	6 feet	13
<i>Berberis aquifolium</i>	tall Oregon grape	1-2 gallon	6 feet	13

¹ Spacing and quantities estimated based on the Sound Native Plants Plant Quantity Calculator (2023).

In order to enhance the remaining buffer to allow for a buffer reduction per DMC 25.105.050(1)(b)(iv), native plantings will be installed in the buffer just northwest of the existing dirt access road. This area has approximately 39,000 square feet of planting area, but there is already an existing forest canopy so after invasive species have been removed, Grette Associates recommends that 173 trees and 910 shade-tolerant shrubs be planted among existing vegetation (Table 5).

Table 5. Planting Schedule for Buffer Enhancement Area

Scientific	Common Name	Size	Spacing ¹	Quantity ¹
Trees				
<i>Acer macrophyllum</i>	big leaf maple	2 gallon	15 feet	34
<i>Pseudotsuga menziesii</i>	Douglas-fir	2 gallon	15 feet	35
<i>Quercus garryana</i>	Oregon white oak	2 gallon	15 feet	70
<i>Tsuga heterophylla</i> ²	Western hemlock	2 gallon	15 feet	34
Shrubs				
<i>Symphoricarpos albus</i>	common snowberry	1 gallon	6 feet	66
<i>Holodiscus discolor</i>	oceanspray	1-2 gallon	6 feet	66
<i>Oemleria cerasiformis</i>	osoberry	1-2 gallon	6 feet	65
<i>Corylus cornuta</i>	beaked hazelnut	1-2 gallon	6 feet	65
<i>Berberis aquifolium</i>	tall Oregon grape	1-2 gallon	6 feet	65
<i>Rubus spectabilis</i> ²	salmonberry	1-2 gallon	6 feet	65
<i>Amelanchier alnifolia</i>	serviceberry	1-2 gallon	6 feet	65

¹ Spacing and quantities estimated based on the Sound Native Plants Plant Quantity Calculator (2023). Average spacing was used in the calculator to account for existing vegetation.

² Western hemlock and salmonberry should be planted closer to the wetland as they typically require wetter soils.

The landscape contractor shall make a good faith effort to secure all species specified in this plan. Variations from the approved plan will require review and approval by the City of DuPont prior to installation.

6.2.1 Planting Schedule

In order to reduce mortality, a late fall planting installation (October – November) for container stock is preferred. Plants should not be installed during or immediately before freezing weather.

Plant installation will be performed in accordance with the specifications outlined in this plan. Any alterations to the planting plan due to site conditions will require prior approval from the project biologist and the City of DuPont.

All plant materials to be used on the site will be native to Western Washington and will consist of nursery grown stock and seeds from a reputable, local dealer. Only native species specified in the approved plant schedule are to be used; no hybrids will be allowed. Plant substitutions must be approved by the project biologist if specified species are not commercially available.

Container stock provided will be typical of their species or variety; they will exhibit normal, densely-developed branches and vigorous, fibrous root systems. Plants will be sound, healthy, vigorous plants free from defects and all forms of infestation.

6.2.2 Preparation and Installation of Planting Materials

The landscape contractor shall verify the location of all elements of the landscape plan prior to installation. The project biologist and the City of SeaTac may adjust the locations of landscape elements during the installation period as necessary.

Circular plant pits with vertical sides will be excavated for all container stock. The pits should be at least twice the diameter of the root system, and the depth of the pit should accommodate the entire root system. The bottom of each pit will be scarified to a depth of 4 inches, and the pit should be thoroughly wetted prior to plant insertion to prevent capillary stress. The planting hole shall be amended with a mixture of topsoil and organic material if necessary to provide appropriate rooting media.

Broken roots should be pruned with a sharp instrument and rootballs should be thoroughly soaked prior to installation. Set plant material upright in the planting pit to proper grade and alignment. Water plants thoroughly midway through backfilling and add Agriform tablets as necessary. Water pits again upon completion of backfilling. No filling should occur around stems. Do not use frozen or muddy mixtures for backfilling. Form a ring of soil around the edge of each planting pit to retain water.

After plant installation is complete, the landscape contractor should inspect the site to confirm that all planted material is installed as appropriate.

7 MAINTENANCE RECOMMENDATIONS

7.1 Irrigation

Grette Associates strongly recommends irrigation for at least two years to increase the chances of survival. Several methods of irrigation are effective, including manual hand watering and temporary above-ground systems (Alexander 2003). Hand watering can be a practical choice because a crew can water each plant according to its specific needs. However, the labor is expensive. Above-ground drip irrigation methods are cheaper, but often require more planning around where plants are installed (Alexander 2003). If an above-ground method is chosen, the irrigation system must be removed after two years to avoid roots growing around the piping.

7.2 Maintenance Activities

Recommended maintenance activities are designed to prevent current poor habitat conditions from returning after the initial mitigation process is complete. Every six months, all litter including paper, plastic, bottles, construction debris, etc., will be removed, as well as all invasive and noxious vegetation. Invasive species will be removed according to recommendations in Section 6.1.

Maintenance activities will be logged and a summary of all maintenance conducted will be included in the annual monitoring report.

8 MONITORING AND CONTINGENCY PLAN

The following sections describe the planting plan's monitoring program. As described below, qualified professionals will monitor the site annually for a total of five years. For clarification, the year during which construction of the site is completed (including plant installation) will be Monitoring Year 0 (as-built).

8.1 Post-Installation Inspections and Monitoring

Compliance monitoring will consist of evaluating the plantings immediately after construction to confirm the plan was followed and plants were installed appropriately. A walk-through survey will be conducted by a qualified biologist to verify that the installation conforms to the approved plan. Fixed points will be established within the restoration areas, with each point to be used for photo-point documentation during long-term monitoring. Following completion of the post-installation inspection, a memorandum will be prepared to verify that the restoration was correctly implemented and document any changes to the planting plan that may have occurred. The post-installation inspection will occur no later than 30 days after plants have been installed.

8.2 Long-Term Monitoring

Long-term monitoring will be conducted over a five-year period with observations conducted during years 1, 2, 3, 4, and 5, per DMC 25.105.100 (Table 6). The purpose of the long-term monitoring program is to evaluate the establishment and maintenance of the plant communities within the enhancement and restoration areas, and to determine if the goals and objectives of the plan have been met. Photographs will be taken at each photo point to document the development of the vegetation communities at the site.

Representative transects will be established during the post-installation inspection. These transects will be used for line-intercept sampling to document native plant coverage estimates to ensure canopy coverage development and success.

8.3 Performance Standards

Performance standards provide a clear means of evaluating the success of the restoration plan. The following performance standards (Table 6) have been developed to ensure the mitigation activities have the best chance of success and that any possible issues with the project are identified and rectified in a timely manner.

Table 6. Performance Standards

Restoration Goal	Functional Objective	Performance Standard	Year Inspected	Sampling Method
Enhance and restore wetland buffer habitat and provide diverse native vegetation to improve buffer functions	1. Plant an assortment of native trees and shrubs within approx. 41,834 square feet of wetland buffer.	1a. The wetland buffer will be free of trash and dumping each monitoring year.	0, 1, 2, 3, 4, 5	As-built, visual walk-through
		1b. A minimum of 80% survival of planted vegetation each monitoring year ¹ .	0, 1, 2, 3, 4, 5	Plant census
		1c. A minimum 20% native vegetation cover at Year 1, 50% cover at Year 3, and 75% cover at Year 5. ²	1, 3, 5	Line-intercept
		1c. A maximum of 20% invasive and noxious species coverage at Year 1, then maximum 10% throughout Years 2-5. ³	0, 1, 2, 3, 4, 5	Visual walk through

¹ 100% percent survival during the post-installation inspection.

² Existing native vegetation can count toward canopy coverage requirement.

³ Class A, B and C-listed species in the most current Washington State Noxious Weed List (as issued by the Washington State Noxious Weed Control Board).

8.4 Monitoring Methods

8.4.1 Vegetation Monitoring

Vegetation surveys will be conducted in accordance with the monitoring schedule to compare results against the performance standards described above. Inspection of the planted material to determine health and vigor of the installations will occur during each monitoring visit.

Vegetation monitoring will include collection of qualitative and quantitative data during each monitoring visit. Survival will be evaluated by visually assessing the planted vegetation and recording any mortality that was observed. Survival will be compared against the total plant quantity installed within the restoration as defined in the as-built report. Plant coverage data will be documented using the line-intercept method (WSDOT 2008)

8.4.2 Photographic Documentation

Permanent photo-points will be established during the post-construction inspection in order to obtain representative photographs of the restoration areas. Photo-points will be established during the post construction inspection to document success of the vegetation and development over time. Photographs will be taken from the same locations (and facing the same direction) yearly to document the project's appearance and progress.

8.4.3 Monitoring Reports

The project biologist will submit a monitoring report to the City of DuPont in a timely manner each year in which monitoring occurs detailing the results of that year's monitoring activities. The report will document site conditions, provide a summary of the maintenance actions conducted on the site, and describe any deviations from the monitoring protocols

prescribed in this plan. The report will also describe any potential problems observed and recommend changes to the maintenance or monitoring protocols.

8.5 Contingency Plan

This contingency plan identifies a planning process for selecting appropriate actions to address failure of specific performance standards. In order to maintain the flexibility needed to respond effectively and appropriately to biological and/or physical conditions, this plan does not present a specific list of actions that will be taken to remedy all specific types of failures at the restoration areas.

While the species selected for planting were chosen based on their ability to thrive in the wetland buffer, some mortality is to be expected. When this occurs, the following general approaches are anticipated:

- If the vegetation planted in the restoration area fails to meet the performance standards, additional planting may occur.
- If a specific species that was originally planted continues to have a high mortality rate over time, an approved substitute may be planted.

9 BIOLOGIST QUALIFICATIONS

9.1 Chad Wallin

Chad Wallin is a Biologist with extensive training in wetland science and ecology restoration. Chad also has professional experience in stream and fish habitat restoration, marine monitoring, mitigation monitoring, and fish and wildlife assessments.

Chad has earned a Bachelor's of Arts degree in Environmental Studies from the University of Washington along with certificates in ecology restoration and wetland science and management. Chad is also a certified Professional Wetland Scientist through the Society of Wetland Scientists.

For a list of representative projects, please contact him at Grette Associates.

9.2 Terra Hauser

Terra Hauser is a Biologist with training in wetland science and management. Terra also has experience in wildlife biology and ecological restoration.

Terra has earned a Bachelor's of Arts and Sciences degree from Quest University Canada along with a certificate in Wetland Science and Management from the University of Washington.

For a list of representative projects, please contact her at Grette Associates.

10 REFERENCES

Alexander, B. 2003. Irrigation Systems for Restoration & Mitigation Sites. Presented at: SER/SWS Northwest Chapter Annual Meeting. Accessed February 1, 2023. URL: <https://soundnativeplants.com/wp-content/uploads/irrigationpaper.pdf>

Castelle, A.J., C. Conolly, M. Emers, E.D. Metz, S. Meyer, M. Witter, S. Mauermann, T. Erickson, S.S. Cooke. 1992. Wetland Buffers: Use and Effectiveness. Adolfson

Associates, Inc., Shorelands and Coastal Zone Management Program, Washington Department of Ecology, Olympia, Pub. No. 92-10.

Chalker-Scott, L. 2015. Using Arborist Wood Chips as Landscape Mulch. Washington State University Puyallup Research and Extension Center. Accessed February 1, 2023. URL: <https://pubs.extension.wsu.edu/using-arborist-wood-chips-as-a-landscape-mulch-home-garden-series>

Grette Associates. 2019. Critical Areas Report. Submitted to: Mustard Seed Legacy Development LLC. July 2019.

King County. 2008. Scotch Broom, Scot's Broom Best Management Practices. Accessed February 1, 2023. URL: https://www.nwcb.wa.gov/images/weeds/Scotch-Broom-Control_King.pdf

King County. 2014. Himalayan Blackberry and Evergreen Blackberry Best Management Practices. Accessed February 1, 2023. URL: <https://your.kingcounty.gov/dnrp/library/water-and-land/weeds/BMPs/blackberry-control.pdf>

King County. 2015. Reed Canarygrass Best Management Practices. Accessed February 1, 2023. URL: <https://your.kingcounty.gov/dnrp/library/water-and-land/weeds/BMPs/Reed-Canarygrass-Control.pdf>

King County. 2018. Integrated Pest Management (IPM). Accessed February 1, 2023. URL: <https://kingcounty.gov/services/environment/animals-and-plants/noxious-weeds/weed-control-practices/ipm.aspx>

King County. 2020a. English Ivy Best Management Practices. Accessed December 16, 2023. URL: <https://your.kingcounty.gov/dnrp/library/water-and-land/weeds/BMPs/English-ivy-control-Rev2020.pdf>

King County. 2020b. English Holly Best Management Practices. Accessed December 20, 2023. URL: <https://your.kingcounty.gov/dnrp/library/water-and-land/weeds/BMPs/English-holly-control.pdf>

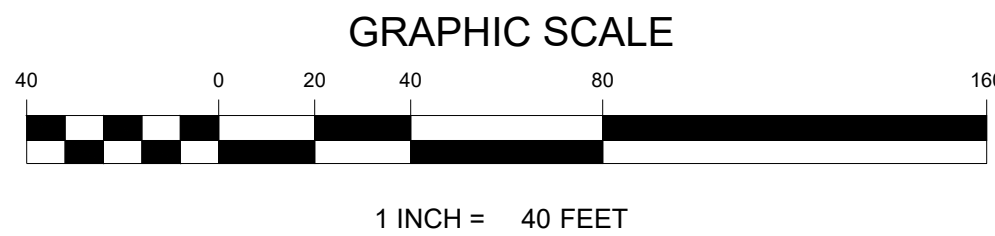
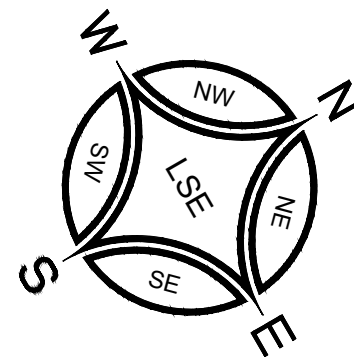
Sound Native Plants. 2023. Plant Quantity Calculator. Accessed February 1, 2023. URL: <https://soundnativeplants.com/nursery/plant-quantity-calculator/>

WA State Department of Transportation (WSDOT). 2008. WSDOT Wetland Mitigation Site Monitoring Methods. Updated June 12, 2008. WSDOT Environmental Services, Olympia, WA.

MUSTARD SEED LEGACY DEVELOPMENT LLC

BUFFER MITIGATION PLAN

APPENDIX A: PROPOSED SITE PLAN



CHAMPIONS CENTRE OVERALL SITE PLAN

A PORTION OF THE SE ¼ OF THE SW ¼ OF SECTION 25 AND NE ¼ OF
SECTION 26, TOWNSHIP 19 N, RANGE4x E, W.M.
CITY OF DUPONT, PIERCE COUNTY, WASHINGTON

LEGEND - WETLAND BUFFER IMPACTS

- TEMPORARY BUFFER IMPACTS - 2,834 SQ FT
- PERMANENT BUFFER IMPACTS - 1,428 SQ FT
- BUFFER ENHANCEMENT - 39,000 SQ FT

PARCEL NUMBERS:
0119362039, 0119362009, 0119362012 & 0119362043

PARCEL AREA:
927,027 S.F. (21.28 AC)

DATUM:
WASHINGTON SOUTH ZONE NAVD 88

TOPOGRAPHY:
2 FOOT CONTOURS: TOPOGRAPHIC INFORMATION FROM AERIAL MAPPING BY
PUGET SOUND LIDAR CONSORTIUM AND VERIFIED BY LS&E

SITE ADDRESS:
XXX BARKSDALE AVE.
DUPONT, WA 98237

PROPERTY OWNER:
MUSTARD SEED LEGACY DEV. LLC
32706 MOUNTAIN HWY E
EATONVILLE, WA 98328

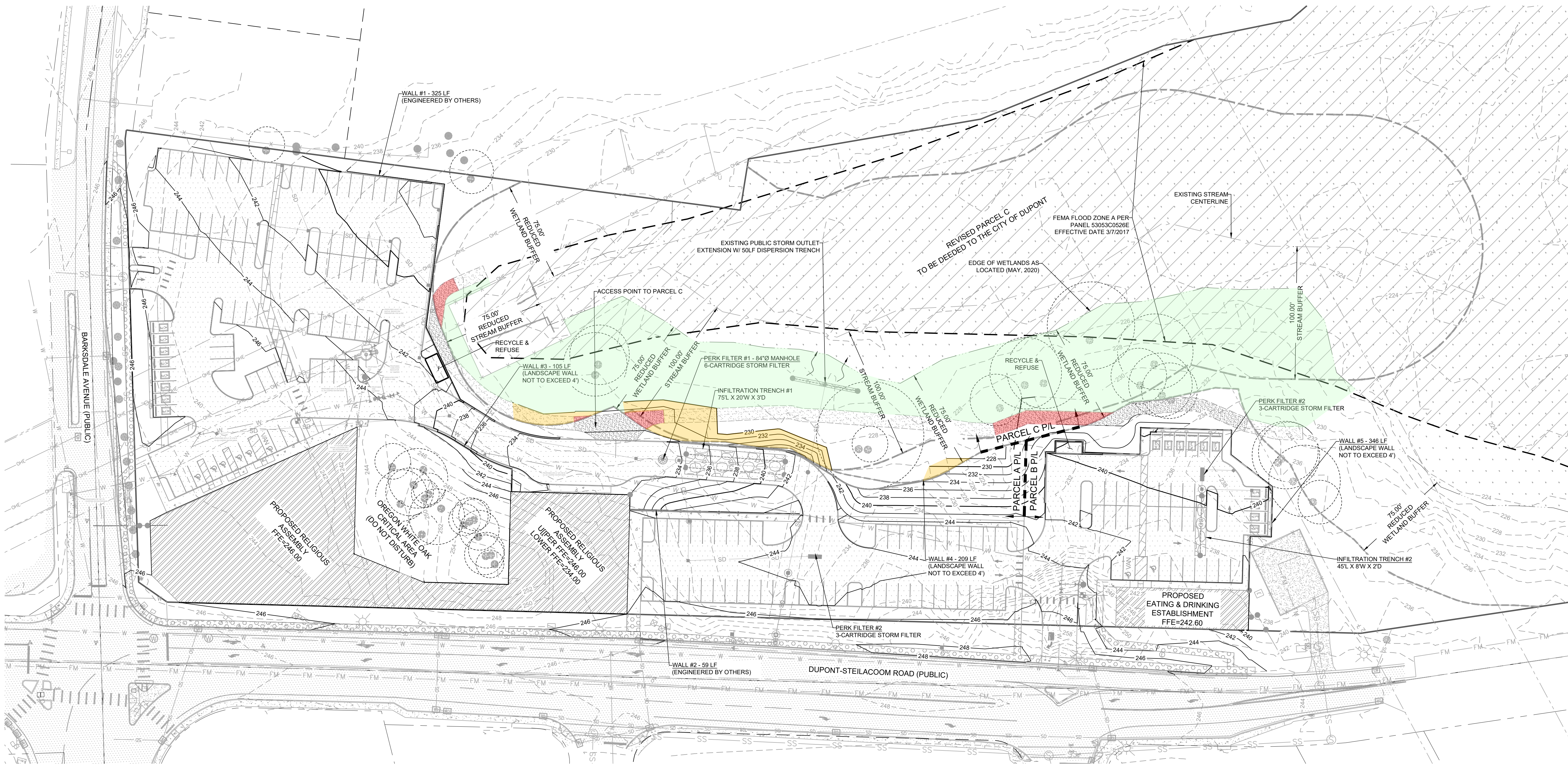
APPLICANT:
CHAMPIONS CENTRE
1819 E. 72ND ST
TACOMA, WA 98404

ZONING:
COMM

WETLAND & WETLAND BUFFER AREA:
WETLAND AREA = 624,000 S.F.
100' WETLAND BUFFER = 150,401 S.F.
75' REDUCED WETLAND BUFFER = 123,714 S.F.

STREAM BUFFER AREA:
100' STREAM BUFFER = 154,201 S.F.
REDUCED STREAM BUFFER = 149,082 S.F.

SURVEY DISCLAIMER:
THIS IS NOT A BOUNDARY SURVEY



REVISION	DATE	BY	DESCRIPTION
1	11/13/23	VS	ISSUED FOR PERMIT
2			
3			
4			
5			
6			
7			
8			
9			
10			

JOB NO. 17895	DATE 11/13/23
DRAWN BY VS	CHECKED BY SN
APPROVED BY SN	

LEROFY
SURVEYING
ENGINEERING
CONSULTING
SEPTIC DESIGN
GPS
GIS MAPPING

LEROFY SURVEYORS & ENGINEERS
P.O. Box 740, Puyallup, Washington 98371
(253) 848-6008 Fax: (253) 840-4140
www.lerofy.com

Overall Plan View

Champions Centre
Site Development Plans
David Yaden, Champions Centre
XXX Barksdale Ave.
DuPont, WA 98237
Phone: 253-606-9041
dave@cc.church

DRAWING

C1
SHEET 01
OF 01

BEFORE ANY CONSTRUCTION CONTACT:
CALL BEFORE YOU DIG @ 1-800-424-5555

© LEROY SURVEYORS & ENGINEERS 11/13/23