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Technical Memorandum

To: Darren Peugh, PDC Seattle LPIV BB/TH, LLC **File Number:** 1144.0036

From: Alex Murphy, Soundview Consultants LLC **Date:** May 23, 2023
Morgan Kentch, Soundview Consultants LLC

Re: Shoreline No Net Loss Analysis and Habitat Management Plan
Skookumchuck Commerce Center

Dear Mr. Peugh,

Soundview Consultants LLC (SVC) is supporting PDC Seattle LPIV BB/TH, LLC with a shoreline no-net loss analysis and habitat restoration plan associated with the proposed industrial development of an approximately 56.29-acre site located at 1406 and 1620 West Reynolds Avenue in the City of Centralia, Washington (Figure 1). The subject property consists of sixteen parcels located in the Northwest ¼ of Section 5 and Northeast ¼ of Section 6, Township 14 North, Range 2 West, W.M. (Lewis County Tax Parcel Numbers 021058010000, 021059000000, 021037000000, 021045000000, 021044002000, 021044003000, 021044004000, 021060000000, 021039000000, 021043002000, 021043003000, 021043001000, 021041001000, 021041000000). This Technical Memorandum has been prepared to provide a no net loss analysis and habitat restoration plan associated with the proposed industrial redevelopment of the subject property with two warehouse buildings and associated infrastructure.

Figure 1. Subject Property Location.



Existing Conditions

SVC investigated the subject property for the presence of potentially regulated wetlands, waterbodies, and other fish and wildlife habitat conservation areas in the summer of 2021 and winter of 2023. The results of this assessment are documented in the *Shoreline, Wetland, and Fish and Wildlife Habitat Assessment Report – Skookumchuck Commerce Center* prepared March 21, 2023 (SVC, 2023). Using current methodology, SVC identified and delineated one Type S (Shoreline of the State) stream (the Skookumchuck River) and one Type F (fish-habitat) stream (Coffee Creek) on the subject property, and one Category IV wetland (Wetland A) offsite. In addition, the entire subject property is located within the FEMA 100-year floodplain.

Proposed Project

The Applicant proposes industrial development of the subject property consisting of two warehouses: Building A (approximately 483,276 square feet in size) and Building B (approximately 295,356 square feet in size) and associated site access, parking, truck loading and turnaround, stormwater facilities, utilities, and associated infrastructure. Stormwater infrastructure will consist of four interconnected stormwater ponds that will discharge treated stormwater at two points landward of the 200-foot shoreline management area with flow paths to both the Skookumchuck River and Coffee Creek. The proposed project has been carefully designed to avoid direct impacts to all identified critical areas, and all site development will be located outside of the 200-foot shoreline management area. However, the entire subject property is located within the FEMA 100-year floodplain and will need to be cleared, graded, and raised above the current elevation to support the proposed industrial development. As such, compensatory flood storage is required to meet the general standards for floodplain development under CMC 16.21.170. A total of 151,000 cubic yards of fill within the FEMA 100-year floodplain areas will be compensated by providing 151,000 cubic yards of flood storage via upland stormwater detention ponds and excavated ponds within the buffers associated with the Skookumchuck River and Coffee Creek. All excavation activities will be located landward of the ordinary high water (OHW) mark of the Skookumchuck River and Coffee Creek. The current buffers and shoreline management area are degraded and consist of maintained fields and non-native invasive Himalayan blackberry (*Rubus armeniacus*) and reed canarygrass (*Phalaris arundinacea*) and lack woody vegetation and tree cover. The proposed riparian habitat restoration actions will include excavating flood storage areas, removing non-native invasive species, providing soil amendments, and replanting with native trees, shrubs, and groundcover suitable for occasionally flooded and upland buffer areas to increase water quality, hydrologic, and habitat functions onsite. The flood compensation will ensure no net rise in floodplain elevations per CMC 16.21.170.F.1.b and CSMP 6.12.B(1)(b).

Regulatory Considerations

Shoreline Considerations

The Skookumchuck River, a regulated shoreline of the state, was identified on the southern boundary of the subject property. The City of Centralia regulates shorelines of the state under CMC 16.20 – Fish and Wildlife Habitat Conservation Areas and under the City of Centralia’s Adopted Shoreline Master Program (CSMP) (City of Centralia, 2019). Per CSMP 3.2.B, the shoreline jurisdiction for streams includes lands that extend 200 feet in all directions of the OHWM, the SMP flood course and contiguous floodplain areas that extend up to 200 feet from the flood course, the FEMA floodway and the contiguous floodplain areas up to 200 feet from the floodway, stream-associated wetlands, and lands within a river delta. Areas immediately surrounding the Skookumchuck River are mapped

as part of the FEMA floodway and SMP flood course, and the FEMA 100-year floodplain encumbers the entirety of the subject property. As such, the shoreline jurisdiction onsite extends 200 feet landward from the FEMA floodway and SMP flood course as shown in Attachment A. Portions of Coffee Creek are located within the shoreline jurisdiction and subject to regulation under the CSMP. Wetland A is located entirely outside of the shoreline jurisdiction.

The shoreline of Skookumchuck River is subject to shoreline environment designations that implement policies and regulations for proposed uses and developments. CSMP Appendix B identifies the shoreline environment designation for the Skookumchuck River on the subject property as Urban Conservancy. Per CSMP 3.3.3.A, the purpose of the Urban Conservancy shoreline environment designation is to provide for ecological rehabilitation in open space, floodplain, and other sensitive areas, while allowing for agricultural, low intensity water-related uses, very-low and low intensity residential developments. CSMP 6.2 Table 6-1 states allowed modifications within each shoreline environment. The proposed industrial development and associated infrastructure are located entirely outside of the shoreline jurisdiction. Activities within the shoreline jurisdiction are limited to the excavation of depressional areas for compensatory flood storage and habitat restoration actions. Per CSMP 6.2 Table 6-1, compensatory flood storage and fill, grading, and excavation activities exceeding 500 cubic yards are permitted in the shoreline jurisdiction subject to a Conditional Use Permit (CUP). Restoration and enhancement activities are permitted.

CSMP 7.4.2 states shoreline setbacks required for each shoreline environment designation; no shoreline setback is established for industrial or industrial development in the Urban Conservancy shoreline environment. However, the CSMP adopts the buffer standards of CMC Title 16 – Environment by reference for critical areas. Standard buffers described under CMC Title 16 are described in the “Critical Area Considerations” section below.

Substantial Development Permits

Per CSMP 2.2.A, a Shoreline Substantial Development Permit (SSDP) is required for all projects located within the shoreline jurisdiction. Per CSMP 2.2.B, in order for the City to approve a SSDP, a project must be consistent with the following:

1. *All applicable regulations of this Program appropriate to the shoreline environment designation and the type of use or development proposed shall be met, except those bulk and dimensional standards that may have been modified by approval of a shoreline variance.*

Activities within the shoreline jurisdiction have been designed to meet all applicable regulations outlined in the CSMP. Compliance with specific regulations is demonstrated in the sections below.

2. *All policies of this Program appropriate to the shoreline environment designation and the type of use or development activity proposed shall be considered and substantial compliance demonstrated.*

See the response to Item 1 above.

3. *The review criteria in WAC 173-27-140 and 150.*

WAC 173-27-140 and 150 require development activities within the shoreline jurisdiction are consistent with the policies and provisions of the Shoreline Management Act (SMA). All

activities described herein are consistent with the SMA. Compliance with specific regulations is demonstrated in the sections below.

Conditional Use

Per CSMP 2.3.A, uses that require a CUP may be authorized provided the following criteria are met:

1. *The proposal is consistent with the policies of RCW 90.58, this Program, underlying zoning, Comprehensive Plan and other applicable regulations.*

Activities within the shoreline jurisdiction have been designed to comply with the policies of the SMA outlined under RCW 90.58, the underlying zoning of the shoreline area onsite, the City's comprehensive plan, and all other applicable regulations, as demonstrated throughout this report. The subject property is zoned M-1 (light industrial) and the shoreline environment designation onsite is Urban Conservancy. Activities proposed in the shoreline jurisdiction include the excavation of areas for compensatory flood storage and habitat restoration. Compensatory flood storage is permitted in the Urban Conservancy environment designation subject to a CUP and habitat restoration activities are permitted outright. All stormwater infrastructure will be located outside of the shoreline jurisdiction.

2. *The proposal meets all the requirements of WAC 173-27-160; including but not limited to the following:*

- a. *That the proposed use is consistent with the policies of RCW 90.58.020 and the master program;*

See the response to Item 1 above.

- b. *That the proposed use will not interfere with the normal public use of public shorelines;*

As no existing public access to the shoreline is present onsite, the proposed project activities in the shoreline jurisdiction will not interfere with normal public use of the shoreline.

- c. *That the proposed use of the site and design of the project is compatible with other authorized uses within the area and with uses planned for the area under the comprehensive plan and shoreline master program;*

The proposed project activities in the shoreline are compatible with authorized uses in the Urban Conservancy shoreline environment and with uses planned for the area under the City's comprehensive plan and SMP.

- d. *That the proposed use will cause no significant adverse effects to the shoreline environment in which it is to be located; and*

The proposed activities in the shoreline jurisdiction have been designed to ensure no net loss of shoreline ecological functions. All excavation activities for floodplain compensation and restoration actions will be located landward of OHW. The existing shoreline areas onsite are degraded due to the presence of managed agricultural fields and non-native invasive species. Following excavation of the onsite shoreline areas for compensatory flood storage, the shoreline areas associated with the Skookumchuck River and buffer areas associated with Coffee Creek will be fully restored with native trees, shrubs, and groundcover. These actions will improve habitat and screening

between the Skookumchuck River and Coffee Creek, and improve water quality for surface runoff entering the streams and hydrologic functions onsite by providing increased plant structure to filter pollutants and slow and attenuate flooding. Overall, these actions are anticipated to provide a net lift in shoreline ecological onsite. Further details are provided in the Habitat Restoration Plan section below.

e. That the public interest suffers no substantial detrimental effect

The proposed project activities in the shoreline jurisdiction will have no detrimental effect on public interest. All activities are proposed landward of OHW. Compensatory flood storage and habitat restoration actions provided onsite will minimize downgradient flooding that will benefit the public interest. In addition, habitat restoration actions in the shoreline areas associated with the Skookumchuck River and the buffer of Coffee Creek will provide a net lift in ecological functions onsite. Further details are provided in the Habitat Restoration Plan section below.

Management Policies

CSMP 3.3.3 outlines the following policies for development in the urban conservancy shoreline environment:

- 1. Uses should result in no net loss of ecological functions to the greatest extent feasible and promote preservation of ecological functions.*

The proposed activities within the shoreline have been designed to ensure no net loss of ecological functions onsite. Excavation of the compensatory flood storage areas will be located entirely landward of the OHW of the Skookumchuck River and Coffee Creek and will minimize downgradient flooding. Further, habitat restoration actions in the shoreline areas associated with the Skookumchuck River and the buffer of Coffee Creek will provide a net lift in ecological functions onsite. Further details are provided in the “Habitat Restoration Plan” section below.

- 2. Preserve, restore and protect the ecological functions to the greatest extent feasible.*

Habitat restoration is proposed for the shoreline areas associated with the Skookumchuck River onsite and buffer area associated with Coffee Creek. The existing shoreline areas are degraded to the presence of maintained agricultural fields and non-native invasive species. Habitat restoration actions will include excavating flood storage areas, removing non-native invasive species, applying soil amendments, and planting native trees, shrubs, and groundcover to provide a net lift in ecological functions onsite.

- 3. Implement public access and recreation objectives in areas where feasible and ecological impacts can be mitigated.*

Providing public access and recreational opportunities as part of the proposed development is not feasible due to the need for compensatory flood storage to offset industrial development activities in the 100-year floodplain but outside of the shoreline jurisdiction. No existing public access or recreational activities are present onsite, and the surrounding shoreline areas in the landscape are developed with private land uses that also lack public access and recreation opportunities.

4. *Water-oriented uses should be given preference over non- water- oriented uses.*

No water-oriented uses are proposed. Activities within the shoreline jurisdiction are limited to the excavation of soils for compensatory flood storage and habitat restoration.

General Regulations

CSMP Chapter 5 provides general regulations applicable for activities proposed in the shoreline jurisdiction. This section addresses regulations applicable for the construction of compensatory flood storage and habitat restoration actions proposed in the shoreline area associated with the Skookumchuck River onsite. In addition, regulations related to water quality are addressed in relation to a stormwater discharge located adjacent to the 200-foot shoreline jurisdiction.

Per CSMP 5.1, the following regulations are universally applicable to projects with activities proposed in the shoreline jurisdiction:

1. *All shoreline uses and developments within shoreline jurisdiction, regardless of whether a shoreline permit is required or not, shall conform to the SMA and the policies and regulations of the SMP.*

The proposed activities within the shoreline jurisdiction have been designed to conform with the SMA and policies and regulations of the CSMP, as demonstrated throughout this document. The proposed project requires the excavation of areas for compensatory flood storage within the shoreline jurisdiction. In addition, habitat restoration will be provided throughout the entire shoreline area onsite. The proposed compensatory flood storage activities are permitted in the shoreline jurisdiction subject to a CUP. The habitat restoration activities are permitted outright.

2. *If provisions of this Program conflict, or if provisions of this Program conflict with other regulations, the provisions most directly achieving the objectives of the SMA shall apply. A final determination of which provisions apply will be made by the Administrator.*

No conflicting provisions have been identified when considering the proposed project activities.

3. *Shoreline uses, developments and/or modifications listed as prohibited shall not be eligible for consideration as a shoreline variance or conditional use.*

No prohibited activities are proposed in the shoreline jurisdiction.

Per CSMP 5.4, the following regulations for environmental protection and mitigation are applicable to all uses within the shoreline environment:

1. *The provisions of this section and CMC Title 16 – Environment, as incorporated into the SMP in section 5.7, shall apply to all uses and developments within shoreline jurisdiction, whether or not a shoreline permit or letter of exemption is required.*

The activities proposed within the shoreline jurisdiction have been designed in compliance with the provisions of this section and CSMP 5.7, as demonstrated in this section.

2. *The provisions of the State Environmental Policy Act (SEPA), WAC 197- 11, may be applicable.*

A SEPA application has been submitted to the City of Centralia to support the proposed project.

3. *The cumulative effects of individual projects and projects within the same reach shall be considered to ensure no net loss of ecological functions.*

Surrounding areas within the same reach as the proposed development are similarly developed with industrial/industrial land uses or developed for residential uses. The proposed project has been carefully designed to avoid no net loss of ecological functions onsite or in the greater Upper Chehalis watershed (Water Resource Inventory Area (WRIA) 23). No infrastructure is proposed within the shoreline jurisdiction. The proposed compensatory flood storage and buffer restoration actions will provide increased ecological functions onsite when compared to the current degraded condition. Therefore, no negative cumulative effects are anticipated but rather a net improvement in water quality, hydrologic, and habitat functions in addition to no net rise in floodplain elevations.

4. *Mitigation shall be required for all projects having impacts on ecological functions. The applicant/owner must demonstrate all reasonable efforts have been made to avoid and minimize impacts. Mitigation ratios are established in CMC Title 16 – Environment as incorporated into this Program. Mitigation sequencing is as follows, listed in the order of priority:*
 - a. *Avoid the impact completely by redesigning, restructuring and/or relocating the development components.*
 - b. *Minimize the impact by limiting the magnitude of the action and its implementation by using appropriate technology and/or taking affirmative action.*
 - c. *Rectify the impact by repairing, rehabilitating or restoring the impacted environment to its original state.*
 - d. *Reduce or eliminate the impact over time by preservation and maintenance actions.*
 - e. *Compensate for the impact by replacing, enhancing and/or providing substitute resources and/or environments.*
 - f. *Monitor the impact and compensation projects and take appropriate corrective measures as required.*

See the “Mitigation Sequencing” section below.

5. *When determining required mitigation measures, lower priority measures shall be applied only when it is adequately demonstrated that higher priority measures are infeasible.*

Higher priority mitigation measures were implemented to the greatest extent feasible, given that all critical area impacts are avoided and buffer restoration is provided to increase ecological functions.

6. *Required mitigation shall not be in excess of the minimum necessary to ensure no net loss of ecological functions.*

No mitigation is required given that all critical area impacts are avoided. However, compensatory flood storage and buffer restoration will be provided which will increase ecological functions onsite and in the basin when compared to the existing degraded conditions of the shoreline management area.

7. *Mitigation actions shall not have an adverse impact on other shoreline functions or critical areas.*

No mitigation is required given that all critical area impacts are avoided. However, compensatory flood storage and buffer restoration will be provided. These actions will transform the existing degraded managed fields and areas of non-native invasive species to a highly interspersed occasionally flooded and upland buffer area with native tree, shrub, and groundcover plantings to increase habitat suitability and complexity, increase sediment and pollutant filtration, and slow surface runoff. Therefore, the proposed restoration actions will provide a net lift in shoreline and critical area functions onsite.

8. *When compensatory mitigation is required, the following shall apply in the order listed:*
 - a. *Compensatory mitigation actions in the immediate vicinity of the proposal.*
 - b. *Compensatory mitigation actions in the same watershed of the proposal. Limiting factors that make the immediate vicinity mitigation infeasible must be adequately identified.*

No mitigation is required given that all critical area impacts are avoided. However, all flood compensation and habitat restoration activities are located onsite, in the immediate vicinity of the proposed project.

9. *Authorization of these compensatory mitigation actions may require safeguards, terms or conditions to ensure no net loss of ecological functions.*
Hydrologic connections between water bodies and associated wetlands shall be protected.

No mitigation is required given that all critical area impacts are avoided. The proposed habitat restoration actions will be implemented in accordance with approved BMPs and TESC measures to ensure no net loss of ecological functions during construction. All work will be located landward of the OHW of the Skookumchuck River and Coffee Creek, and hydrologic connectivity between these features will be maintained. No other wetlands or waterbodies were identified in the shoreline jurisdiction.

Portions of Coffee Creek and the associated buffer area are located within the shoreline jurisdiction associated with the Skookumchuck River. Per CSMP 5.7.B, the following vegetation and critical areas conservation regulations are applicable to development activities in the shoreline jurisdiction:

1. *Required critical area buffers within shoreline jurisdiction, or the minimum setback required by Table 7-3 in this Program, whichever is greater, shall be considered the vegetation conservation area.*

The buffer area within the shoreline jurisdiction will be considered the vegetation conservation area.

2. *All shoreline uses and activities shall be located, designed, constructed and operated to protect and/or enhance the ecological functions and ecosystem-wide processes provided by critical areas and shoreline vegetation. Critical areas are defined in Chapter 9.*

No direct impacts to the critical areas identified on/adjacent to the subject property are proposed. However, compensatory flood storage and buffer restoration will be provided. These actions will transform the existing degraded managed fields and areas of non-native invasive species to a highly interspersed occasionally flooded and upland buffer area with native tree, shrub, and groundcover plantings to increase habitat suitability and complexity,

increase sediment and pollutant filtration, and slow surface runoff. Therefore, the proposed restoration actions will provide a net lift in shoreline and critical area functions onsite.

3. *Normal maintenance of vegetated areas, such as pruning and trimming, is allowed.*

Maintenance and monitoring will be provided for the shoreline restoration areas to ensure the restoration actions are successful.

4. *Clearing and grading activities must meet all requirements of this Program and other local, state and federal regulations.*

All clearing and grading activities have been designed to meet the requirements of this program and all applicable local, state, and federal regulations. The clearing and grading for the proposed project will result in no net rise of floodplain elevations.

5. *Speculative vegetation removal shall be prohibited. Vegetation removal shall be accomplished in the least invasive manner possible.*

No speculative vegetation removal is proposed. Vegetation removal will occur as the result of excavation within the shoreline jurisdiction to meet compensatory flood storage requirements. Non-native invasive species will also be treated and removed with the proposed maintenance and monitoring of the restoration areas to ensure the restoration actions are successful.

6. *The Critical Areas regulations, CMC Title 16 - Environment, in effect on April 10, 2018, by adoption of Ordinance No. 2396, contained in the City of Centralia Critical Areas Ordinance, CMC Chapters 16.16 through 16.21 shall be adopted as part of this Program, except as modified below:*

- a. *CMC 16.16.100 - Application and Review Process. Within shoreline jurisdiction, critical area review, approval, notice and appeal periods/processes shall be integrated with the associated shoreline permit or exemption (see Chapter 2).*

Critical areas review will be integrated with the shoreline substantial development permit and shoreline conditional use permit.

- b. *CMC 16.16.110 – Reasonable Use Exception. Within shoreline jurisdiction, the process for seeking relief from critical area standards shall be a shoreline variance.*

No shoreline variance is proposed.

- c. *CMC 16.17.030 - Mapping. Identification of wetlands and delineation of their boundaries shall be done in accordance with the approved federal wetland delineation manual and applicable regional supplements.*

All identified critical areas were identified within 300 feet of the site, delineated onsite, and included on the Existing Conditions figure in Attachment A. No wetlands were identified onsite.

- d. *CMC 16.17.050 (F)(4) and 16.20.080 (C) - Buffers. In shoreline jurisdiction, buffers may not be decreased by more than 25% of the base buffer width. Administrative buffer reductions of more than 25% shall require a variance. Buffer averaging shall be considered and shown infeasible before administrative buffer reductions may be authorized.*

No buffer reduction is proposed.

- e. CMC 16.17.050(F)(6)(d) – Stormwater Management Facilities, in shoreline jurisdiction, stormwater management facilities are allowed in the outer twenty-five percent of the buffer of Category III and IV wetlands only; provided, that no other location is feasible and the location of such facilities will not degrade the functions or values of the wetland.*

No stormwater management facilities are proposed within the identified wetland buffer.

- f. CMC 16.21.190 - Floodways. Within shoreline jurisdiction, uses and activities that may be authorized within floodways or the SMP flood course are listed in Section 5.5(B)(7).*

No project elements are proposed within the floodway.

- 7. Any provision of Title 16 that is not consistent with the SMA and applicable RCW and WAC chapters shall not apply in shoreline jurisdiction.*

All proposed project elements are consistent with the SMA and applicable RCW and WAC.

- 8. Areas cleared of vegetation and not developed shall be re-planted with native vegetation as soon as feasible but no later than one year from the date of clearing.*

Areas cleared during the excavation of compensatory flood storage areas within the shoreline jurisdiction and buffer areas will be immediately replanted as part of the restoration plan once grading is complete to stabilize soils and avoid adverse ecological impacts.

- 9. Re-planted areas shall be monitored and maintained so that vegetation is 90% re-established within three (3) years. At the discretion of the Administrator, a bond may be required to ensure the success of re-planted areas.*

A five-year monitoring plan will be implemented to ensure the successful establishment of the proposed habitat restoration plantings.

- 10. Proposed uses and developments must protect and preserve native trees and vegetation to the greatest extent feasible during and after construction.*

The excavation of necessary compensatory flood storage within the shoreline jurisdiction and buffer areas will require the clearing of a majority of the existing vegetation. Existing vegetation consists of a mix of native and non-native invasive grasses typical of maintained agricultural fields in addition to Himalayan blackberry. Following the completion of excavation and grading activities, all cleared areas will be planted with native trees, shrubs, and groundcover to provide a net lift in ecological functions onsite when compared to the current degraded condition.

- 11. Developments that propose removal of, or adverse impact to, vegetation conservation areas shall require a mitigation plan to ensure no net loss of ecological functions or ecosystem-wide processes. Such mitigation plan shall be prepared by a qualified professional. Such plan shall include details on how the project complies with the mitigation sequence outlined in section 5.4.B(4). Compensatory mitigation requirements shall be the minimum necessary to ensure no net loss of ecological functions, and at a minimum shall be 1:1 for riparian habitat buffers.*

Clearing and grading of managed field grasses and non-native invasive Himalayan blackberry will be required to provide flood compensation areas within the shoreline jurisdiction and buffers. Following grading actions, soil amendments will be added, and native trees, shrubs, and groundcover will be installed to improve ecological functions when compared to the existing degraded conditions. A habitat restoration plan has been prepared to ensure no net loss of ecological functions or ecosystem-wide processes. Mitigation sequencing outlined in CSMP 5.4.B(4) is demonstrated above. Further details are provided in the “Habitat Restoration Plan” section below.

12. *Trees that are in immediate danger of collapse and represent a clear danger to persons or property, may be removed or topped without a permit or mitigation plan. Immediate danger of collapse means the tree is already leaning, surrounding soil is heaving and there is significant likelihood that the tree or a portion of will fall and has the potential to result in damage to persons or property before a permit can be obtained. Replacement and/or mitigation may be required.*

No trees in immediate danger of collapse or that represent a clear danger to persons or property have been identified in the shoreline jurisdiction.

13. *Approved uses within vegetation conservation areas shall permanently remove no more than fifteen percent (15%) of the native vegetation; except for those uses allowed in section 5.5.B(7). Vegetation removal shall be limited to the minimum amount necessary to accommodate the approved use.*

No permanent vegetation removal is proposed. The proposed buffer restoration plan will install native trees, shrubs, and groundcover throughout the entire shoreline jurisdiction and onsite buffer areas to improve ecological functions when compared to the existing degraded condition.

14. *The following uses may be allowed in shoreline jurisdiction, vegetation conservation areas, and critical area buffers without a shoreline variance permit:*

- a. *Uses and activities allowed in Section 5.5.B, when uses are also allowed in the Shoreline Environment Designation and the underlying zoning.*
- b. *Water-oriented uses as allowed in Table 7-1, provided development is located, designed, constructed and operated to minimize the critical area impacts to the maximum extent feasible. Such development shall not be exempt from the protection and mitigation requirements of section 5.4, and shall comply with the setbacks in Table 7-3.*
- c. *Non-water oriented commercial and industrial uses may be allowed within the vegetation conservation areas in the following reaches without a variance permit, provided they're in compliance with the underlying zoning designation, existing ecological functions are protected and previously degraded ecological functions are restored and/or improved:*

1. *CE-01 – PMP, M-1, M-2 zoning designations in and around the Port of Centralia; and H-1 zoning designation on the north side of Cooks Hill Road.*
2. *CE-02 – Commercial areas adjacent to Harrison Avenue and Hayes Lake in the High Intensity environment.*
3. *CE-05 – Commercial areas adjacent to Kresky Avenue and National Avenue in the High Intensity environment.*

Non-water-oriented uses shall be located no closer to the OHWM than those existing as of the date of adoption of this Program.

These uses may be required to increase or enhance public access and/or restore or enhance ecological functions. Such developments are not exempt from the protection and mitigation requirements of section 5.4.

- d. *Compensatory flood storage consistent with section 6.12.*
- e. *Restoration and enhancement, including mitigation actions, consistent with section 6.11.*

Proposed activities within the shoreline jurisdiction include the excavation of flood storage and habitat restoration actions. As such, the proposed activities in the shoreline jurisdiction do not require a shoreline variance.

15. *Critical area buffer regulations shall not apply to the removal of noxious weeds, aquatic weeds and freshwater algae when conducted in accordance with WAC 173-201.*

The maintenance and monitoring for the proposed restoration will include treatment and removal of non-native invasive species and noxious weeds to ensure success of the restoration actions.

16. *The Administrator may approve removal of vegetation that exceeds the 15% limit outlined in item 13 above, when the applicant commits through an approved mitigation plan to re-establish and maintain plantings that are documented to provide a greater benefit to ecological functions than what would be provided by strict application of this section.*

No permanent vegetation removal is proposed. Compensatory flood storage areas will be excavated and graded within the shoreline jurisdiction and stream buffers which are currently comprised of managed agricultural fields and non-native invasive species. The proposed buffer restoration plan will install native trees, shrubs, and groundcover throughout the entire shoreline jurisdiction and onsite buffer areas to improve ecological functions when compared to the existing degraded condition. The plantings will be monitored for a period of 5 years to ensure successful establishment.

17. *Facilities, landscape areas, vegetation areas, uses, structures, etc. legally in existence prior to the adoption date of this Program shall be allowed to be maintained and repaired to their existing condition.*

No existing facilities, landscape areas, vegetation areas, uses, structures, et cetera are present that will be maintained or repaired under the proposed project.

18. *Aquatic vegetation control shall occur only where native plant communities and associated habitats are threatened or where an existing water-dependent use is restricted by the presence of vegetation. Aquatic vegetation control shall be conducted in the least invasive manner possible and in compliance with all other applicable local, state and federal regulations.*

No aquatic vegetation control is proposed.

Per CSMP 5.8, the following water quality regulations are applicable when considering stormwater discharges to the onsite shoreline areas and construction activities within the shoreline jurisdiction:

1. *Stormwater management systems shall be designed, constructed and maintained in accordance with all current local, state and federal regulations.*

The proposed stormwater discharge is part of a greater stormwater management system consisting of four stormwater ponds and two outfall structures: one stormwater discharge outfall and one outfall for emergency overflow. All stormwater infrastructure is located outside of the shoreline jurisdiction and critical area buffers onsite. The stormwater facilities will be

designed, constructed, and maintained in accordance with all current local, state, and federal regulations and will incorporate enhanced water quality treatment and flow control structures.

2. *Best management practices for erosion and sediment control shall be implemented. A Temporary Erosion and Sediment Control plan (TESC) will be required for applicable developments.*

BMPs for erosion and sediment control, including silt fencing between the Skookumchuck River, Coffee Creek, and the areas proposed to be excavated for compensatory flood storage will be implemented to minimize impacts to the identified streams during construction. A TESC plan has been prepared by the Project Engineer under separate cover for the proposed project.

3. *Structures that may come in contact with water shall be constructed of materials that will not adversely impact water quality, aquatic plants or animals. Materials used for decking and other structural components shall be approved by the applicable agencies to avoid discharge of pollutants from waves, rain or runoff.*

The proposed stormwater infrastructure is located outside of the shoreline jurisdiction and will not adversely impact water quality, aquatic plants, or animals.

Shoreline Modification Regulations

Chapter 6 of the CSMP outlines regulations applicable for modifications to the shoreline environment. The proposed excavation of shoreline areas for compensatory flood storage (exceeding 500 cubic yards) and habitat restoration activities are considered shoreline modifications.

Per CSMP 6.1, the following general regulations are applicable when modifications are proposed in the shoreline jurisdiction:

1. *Structural shoreline modifications shall be allowed only when necessary to support an allowed primary structure or legally existing shoreline use, or when necessary for mitigation or enhancement.*

No structural shoreline modifications are proposed.

2. *The applicant shall provide all necessary scientific, technical and comprehensive analysis data, as required by the Administrator, in order to make an informed decision.*

Calculations to support the compensatory flood storage plan will be provided by the Project Engineer under separate cover. The frequency and duration of the compensatory flood storage areas and proposed topography throughout the restoration areas were the primary factors in determining the proposed plantings for the restoration plan as discussed in greater detail in the “Habitat Restoration Plan” below.

3. *Shoreline modifications shall be limited in number and extent to the greatest extent feasible.*

The excavation of compensatory flood storage areas within the shoreline jurisdiction and stream buffers is the minimum necessary for the project development to ensure no net rise of floodplain elevation. Given the large special needs for any industrial development and the entire site mapped within 100-year floodplain, no design modifications would result in less floodplain fill. The Applicant is proposing four stormwater detention ponds throughout the upland areas onsite and outside of the shoreline jurisdiction to fulfill as much of the required compensatory storage as possible. However, due to the large amount of compensatory storage

needed, additional flood compensation is needed within the shoreline jurisdiction and stream buffers to meet the no net rise requirement. Adherence to the general standards for floodplain development under CMC 16.21.170 are demonstrated in the site plans provided under separate cover by the Project Engineer. All shoreline and buffer areas disturbed during excavation will be fully restored with native trees, shrubs, and groundcover to ensure no net loss of shoreline or buffer ecological functions onsite.

4. *Shoreline modifications must be designed and located to ensure no net loss of ecological functions and no significant adverse impact to shoreline uses, resources and values pursuant to RCW 90.58.020.*

The excavation of compensatory flood storage areas within the shoreline jurisdiction is required to ensure no net rise in floodplain elevations onsite. The existing shoreline areas are largely degraded due to the presence of maintained agricultural fields and non-native invasive species. Therefore, the required excavation, clearing, and grading for floodplain compensation will result in limited habitat removal. Immediately following excavation, all areas within shoreline jurisdiction and the stream buffers will be planted with native trees, shrubs, and groundcover. These actions will provide a net lift in ecological functions onsite and in the greater Upper Chehalis watershed and will ensure no significant adverse impacts to shoreline uses, resources, or values occur pursuant to RCW 90.58.020. Further details are provided in the “Habitat Restoration Plan” section below.

5. *Shoreline modifications and uses shall be designed, constructed and maintained to prevent degradation of water quality and natural hydrographic conditions.*

The excavation of compensatory flood storage areas and habitat restoration activities will be designed, constructed, and maintained to prevent the degradation of water quality and natural hydrographic conditions. The compensatory flood storage areas are necessary to offset fill within the 100-year floodplain areas located onsite but outside of the shoreline jurisdiction and will help prevent increases in stream flows and downgradient flooding issues. The proposed habitat restoration actions will provide a dense suite of native trees and shrubs that will improve water quality and hydrologic functions by providing increased plant structure to filter sediments and pollutants and slow and attenuate flooding when compared to the existing maintained agricultural fields and non-native invasive species present in the shoreline areas onsite.

6. *Existing structures may be maintained, repaired and operated as existed prior to the adoption date of this Program. Shoreline modification standards shall not apply retroactively to legally existing modifications.*

No existing structures are present in the shoreline jurisdiction onsite.

7. *All disturbed areas shall be protected from erosion by planting native vegetation or other approved methods.*

All areas disturbed during excavation of compensatory flood storage areas will be fully restored with native trees, shrubs, and groundcover which will stabilize soils and minimize erosion. Further, all shoreline and buffer areas proposed for flood storage and restoration will incorporate all appropriate BMPs and TESC measures during construction to minimize runoff and erosion.

8. *All shoreline modifications waterward of the OHWM are subject to all applicable local, state and federal regulations.*

No shoreline modifications are proposed waterward of the OHWM of the Skookumchuck River or Coffee Creek.

9. *All shoreline modifications are subject to the mitigation sequencing process outlined in section 5.4. If other critical areas within shoreline jurisdiction are subject to impact, the requirements of section 5.7 may also be applicable.*

Mitigation sequencing is addressed in the “Critical Area Regulations” section below.

Per CSMP 6.8, the following regulations are applicable when fill, grading, and/or excavation activities are proposed in the shoreline jurisdiction:

1. *The use of solid waste and organic debris, such as wood and other vegetative materials, in a fill shall be prohibited.*

No solid waste or organic debris will be placed as fill material in the shoreline jurisdiction. Any proposed fill will be limited to a layer of native topsoil if determined necessary for the successful establishment of habitat restoration plantings following excavation of the compensatory flood storage areas.

2. *Fills shall consist of clean materials including such earth materials as clay, sand and gravel. In addition, concrete may be included in fill material if it is not likely to pollute ground water and is approved by the Administrator or Department.*

Any fill material will consist of clean soils similar to those currently present onsite and will be sourced onsite or from an approved supplier. No concrete fill material will be utilized.

3. *Fill, grading and excavation shall be designed, constructed and maintained to prevent, minimize and control all material movement, erosion and sedimentation from the affected area.*

BMPs and TESC measures will be implemented for the duration of excavation activities within the shoreline jurisdiction to prevent, minimize, and control all material movement, erosion, and sedimentation from the affected area. Immediately following the completion of excavation activities, all disturbed areas will be planted with native trees, shrubs, and groundcover to stabilize the affected areas and prevent future erosion and sedimentation.

4. *Fill, grading and excavation areas shall be covered with sufficient earth material to support native vegetative ground cover and replanted with vegetation to blend with the surrounding environment.*

If necessary, areas excavated for the purpose of compensatory flood storage will be covered with sufficient earth material to ensure the success of proposed habitat restoration plantings.

5. *Fill, grading and excavation may be allowed only when it can be demonstrated that the proposed action will not result in significant damage to water quality, fish, shellfish and/or wildlife habitat; adversely alter natural drainage and circulation patterns, currents, river flows; or significantly reduce flood water capacities.*

The excavation of compensatory flood storage areas within the shoreline jurisdiction and stream buffers is the minimum necessary for the project development to ensure no net rise of

floodplain elevation. These actions will not result in significant damage to water quality, fish, shellfish, and/or wildlife habitat, adversely alter natural drainage patterns, or significantly reduce flood water capacities. The existing shoreline areas are largely degraded due to the presence of maintained agricultural fields and non-native invasive species. Therefore, the required excavation, clearing, and grading for floodplain compensation will result in limited habitat removal. Immediately following excavation, all areas within shoreline jurisdiction and the stream buffers will be planted with native trees, shrubs, and groundcover to ensure no net loss of ecological functions. The proposed compensatory flood storage is necessary to avoid adverse alterations to drainage and circulation patterns, currents, river flows, and flood water capacity. The proposed habitat restoration activities will improve habitat and screening between the Skookumchuck River, Coffee Creek, and the proposed development. The restoration actions will improve habitat suitability and complexity with the addition of woody plant species. Water quality and hydrologic functions will improve with the increased plant structure to filter pollutants and slow and attenuate flooding when compared to the existing shoreline and stream buffer areas that consist primarily of native and non-native grasses typical of agricultural fields. Overall, these actions are anticipated to provide a net lift in ecological functions onsite and in the greater Upper Chehalis watershed. Additional details are provided in the “Habitat Restoration Plan” section below.

6. *Fill, grading and excavation which will interfere with public rights of navigation shall be prohibited unless there is an overriding public interest.*

No fill, grading, or excavation is proposed within public rights of navigation.

7. *Fill for the purpose of providing land for a septic tank drainfield is prohibited.*

No fill for the purpose of providing a septic tank or drainfield is proposed.

8. *Filling and grading for the sole purpose of creating new dry land is prohibited.*

No filling or grading for the purpose of creating new dry land is proposed.

9. *Fill within a 100-year floodplain shall meet the requirements of CMC Title 16, as incorporation into this SMP, and CMC Title 18.*

Fill within the 100-year floodplain areas is located outside of the shoreline jurisdiction; nonetheless, the proposed fill activities have been designed to meet the requirements of CMC Title 16 and CMC Title 18 as demonstrated by the Project Engineer under separate cover.

10. *Fill within a floodway is prohibited, except as outlined in section 5.5.B(7).*

No fill is proposed within the floodway.

11. *Fill located waterward of the ordinary high water mark for the purpose of ecological restoration may be allowed subject to a shoreline substantial development permit.*

No fill is proposed waterward of the OHW of the Skookumchuck River or Coffee Creek.

12. *Fill may be allowed waterward of the ordinary high water mark only for cleanup and disposal of contaminated sediments, public access, mitigation and water dependent uses, and shall require a Conditional Use Permit.*

No fill is proposed waterward of the OHW of the Skookumchuck River or Coffee Creek.

Per CSMP 6.11, the following regulations are applicable for restoration and enhancement activities in the shoreline jurisdiction:

1. *Restoration shall be carried out in accordance with the policies and regulations of this Program. The Shoreline Restoration Plan, and the plans of the Chehalis Basin Lead Entity, and other salmon recovery lead entities, identify potential restoration priorities and project in shoreline areas. These plans may be used as a guide for shoreline restoration and enhancement projects.*

All habitat restoration activities in the shoreline jurisdiction have been designed and will be carried out in accordance with the policies and regulations of the CSMP. The overall goal of the restoration plan is to increase ecological functions within the floodplain associated with two stream systems that will benefit salmonids. This large area of shoreline is currently in active agricultural management, contains non-native invasive species, and lacks hydrologic connection to the Skookumchuck River other than being situated adjacent to the river. Therefore, in its existing condition, the shoreline area and floodplain do not provide a high level of function. The Chehalis Basin Lead Entity identifies several major habitat restoration goals within the Chehalis watershed, including “restore and preserve properly functioning riparian areas” and “restore floodplain and stream channel function” (Kleim & Holden, 2011). The proposed habitat restoration plan will remove non-native invasive vegetation, excavate flood compensation areas with various hydrologic regimes that will occasionally be hydrologically connected to the Skookumchuck River, and replant the entire shoreline and buffer areas with primarily native woody species which are currently lacking. The proposed habitat restoration actions will significantly improve sediment and pollutant filtration, slow surface water runoff and provide designated flood storage areas connected to the river, screen the shoreline from the proposed industrial site use, and increase habitat suitability and complexity for a wide range of urban fauna including salmonid species.

2. *Restoration and enhancement projects that include shoreline modification actions or measures may be authorized if the primary purpose of such action is clearly restoration of the natural character and ecological functions of the shoreline.*

The excavation of compensatory flood storage areas within the shoreline jurisdiction and stream buffers is the minimum necessary for the project development to ensure no net rise of floodplain elevation. As part of the habitat restoration plan, these actions along with the removal of non-native invasive vegetation, and replanting with native woody species will significantly increase ecological functions when compared to the current degraded condition of the shoreline and buffer areas. As discussed above, the overall goal of the restoration plan is to increase ecological functions within the floodplain associated with two stream systems that will benefit salmonids. See the “Habitat Restoration Plan” below for further details.

Per CSMP 6.12, the following regulations are applicable for compensatory flood storage in the shoreline jurisdiction:

1. *The amount of compensatory mitigation for lost flood water storage area required within the floodplain is determined by the following:*
 - a. *Zero to five hundred cubic yards of fill: No mitigation is required unless the project will cause adverse impacts to flood levels, as determined by the Shoreline Administrator.*

- b. More than five hundred cubic yards of fill: Mitigation is required which is a zero- rise or a minimum of a one-to-one ratio which means new excavated storage volume shall be equivalent to the flood storage capacity eliminated by filling or grading. "Equivalent" shall mean that the storage removed shall be replaced by equal live storage volume.*

The proposed project requires approximately 151,000 cubic yards of fill within the 100-year floodplain areas located outside of the shoreline jurisdiction. As such, approximately 151,000 cubic yards will be excavated from the shoreline and stream buffer areas onsite to mitigate for the loss of flood storage at a 1:1 ratio and ensure zero rise.

- 2. The compensatory mitigation area shall meet the mitigation sequence requirements of section 5.4, and the fill, grading and excavation requirements of section 6.8.*

The mitigation sequencing requirements of CSMP 5.4.B(4) are demonstrated in the "Mitigation Sequencing" section below. The grading and excavation requirements of CSMP 6.8 is demonstrated above.

- 3. Documentation by a qualified professional shall indicate, to the satisfaction of the Administrator and all other applicable agencies with jurisdiction, that zero- rise and no net loss of ecological functions are achieved. Documentation may include hydraulic, hydrological, geomorphological and/or other analyses.*

A no net rise analysis has been prepared under separate cover by the Project Engineer. The documentation provided herein is intended to demonstrate no net loss of ecological functions achieved by the proposed project. The large area of shoreline onsite is currently in active agricultural management, contains non-native invasive species, and lacks hydrologic connection to the Skookumchuck River other than being situated adjacent to the river. Therefore, in its existing condition, the shoreline area and floodplain do not provide a high level of function. The proposed habitat restoration plan will remove non-native invasive vegetation, excavate flood compensation areas with various hydrologic regimes that will occasionally be hydrologically connected to the Skookumchuck River, and replant the entire shoreline and buffer areas with primarily native woody species which are currently lacking. The proposed habitat restoration actions will significantly improve sediment and pollutant filtration, slow surface water runoff and provide designated flood storage areas connected to the river, screen the shoreline from the proposed industrial site use, and increase habitat suitability and complexity for a wide range of urban fauna including salmonid species. Therefore, it is anticipated that the proposed project will increase ecological functions onsite and within the Chehalis River basin.

- 4. Mitigation storage may be located off site but must be located within the city of Centralia jurisdictional boundaries unless the director approves other alternatives if it is within the same drainage area.*

All compensatory flood storage areas are proposed onsite via four stormwater detention ponds outside of the shoreline jurisdiction and excavated flood storage areas within the shoreline jurisdiction.

- 5. All mitigation storage areas must be documented by a legally binding contract that maintains the storage in perpetuity, or until such time as the official shoreline map is amended and compensatory mitigation is no longer required. This document must be recorded with the Lewis County Assessor's Office.*

The compensatory flood storage areas will be documented and placed in a separate tract or easement to be maintained in perpetuity. The tract or easement will be recorded with the Lewis County Assessor's office.

Critical Area Considerations

Local Buffer Requirements

The City of Centralia has adopted the current wetland rating system for western Washington (Hruby, 2014). Category IV wetlands have the lowest level of functions (scores less than 16 points) and are often heavily disturbed.

Centralia Municipal Code (CMC) 16.17.050.F establishes wetland buffers based on wetland rating, wetland water quality and/or habitat score, and the intensity of land use proposed on the development site. Wetland A is classified as a Category IV wetland with a low habitat score and is subject to a standard 50-foot buffer based on the proposed high-intensity land use per CMC 16.17.050.F. The projected 50-foot buffer does not extend onsite.

Coffee Creek is a Type F (Fish-Bearing) stream and subject to a standard 150-foot buffer per CMC 16.20.080.A. The Skookumchuck River is classified as a Type S (Shoreline of the State) stream and subject to a standard 175-foot buffer.

Allowed Uses

The proposed project requires clearing and grading activities in the buffer areas associated with the Skookumchuck River to support the excavation of compensatory flood storage areas required to meet the floodplain development standards. Per CMC 16.20.100.A, when clearing and grading is permitted as part of an authorized use or activity, the following standards apply:

1. *Grading is allowed only during the dry season, which is typically regarded as beginning on May 1st and ending on October 31st of each year. This period may be extended or shortened by community development on a case-by-case basis, determined by weather conditions, soil types and topography.*

Compensatory flood storage areas will be excavated and graded during the dry season.

2. *Filling or modification of a wetland or wetland buffer is permitted only if it is conducted as part of an approved wetland alteration.*

No filling or modification of a wetland or wetland buffer is proposed.

3. *The soil duff layer shall remain undisturbed to the maximum extent possible. Where feasible, any soil disturbed shall be redistributed to other areas of the project area.*

Soils within the buffer of the Skookumchuck River and Coffee Creek will be excavated to a depth necessary to provide compensatory flood storage required to meet the floodplain development standards of CMC 16.21.170. Following excavation, topsoil will be installed if needed to allow for the successful establishment of habitat restoration plantings.

4. *The moisture holding capacity of the topsoil layer shall be maintained by minimizing soil compaction or reestablishing natural soil structure and infiltrative capacity on all areas of the project area not covered by impervious surfaces.*

Soil compaction will be minimized to the greatest extent feasible through the implementation of BMPs specified by the Project Engineer under separate cover. In addition, following excavation and grading within the stream buffer areas onsite, a layer of native topsoil will be placed if applicable to ensure the success of native plantings to be installed as part of the proposed habitat restoration activities. The installation of topsoil if needed will also re-establish natural soil structure and infiltrative capacity within the compensatory flood storage areas. No impervious surfaces are proposed within the onsite stream buffer areas.

5. *Erosion and sediment control that meets or exceeds the standards set forth in the Stormwater Manual for Western Washington as adopted by Centralia as it exists now or hereafter amended shall be provided.*

BMPs and TESC measures that meet the standards set forth in the Stormwater Manual for Western Washington will be implemented for the duration of excavation activities within the stream buffers to minimize impacts from erosion and sedimentation. Further details are provided Project Engineer under separate cover.

Habitat Management Plan

The proposed project requires development within the FEMA 100-year floodplain and excavation activities within the buffers of the Skookumchuck River and Coffee Creek for compensatory flood storage. The Skookumchuck River and Coffee Creek are both considered fish and wildlife habitat areas based on the criteria under CMC 16.20.030. Per CMC 16.30.050.A, proposals within 200 feet of or requiring impacts to fish and wildlife habitat areas shall submit a Habitat Management Plan (HMP). Per CMC 16.30.050.C, a HMP shall include an assessment of habitats including the following at a minimum:

1. *Detailed description of vegetation on and adjacent to the project area.*

As documented in the *Wetland and Fish and Wildlife Habitat Assessment – Skookumchuck Commerce Center* (SVC, 2023), vegetation is variable throughout the subject property. The northwest corner of the subject property was previously cleared and graded with gravelly substrate. Vegetation on this portion of the site consists of small patches of bedstraw, perennial ryegrass, and non-native invasive Himalayan blackberry, reed canarygrass, and teasel that have begun to emerge over time. The remainder of the subject property consists predominantly of fields dominated by grasses typical of agricultural fields including perennial ryegrass, orchard grass, and tall fescue. Scrub-shrub patches are also present along the eastern, southern, and portions of the western boundary of the subject property, and are dominated by perennial ryegrass and non-native invasive Himalayan blackberry and reed canarygrass. A few Oregon ash were also observed in small forested patches on the eastern and southern boundaries of the subject property.

2. *Identification of any species of local importance, priority species, or endangered, threatened, sensitive or candidate species that have a primary association with habitat on or adjacent to the project area, and assessment of potential project impacts to the use of the site by the species.*

WDFW identifies the following habitats on or within 200 feet of the subject property: Coffee Creek and the Skookumchuck River on the eastern and southern property boundaries, respectively, and Oregon white oak woodlands offsite, adjacent to the western and southern property boundaries. WDFW also identifies the following priority species on or within 200 feet of the subject property: Chinook and coho salmon and steelhead, rainbow, and cutthroat trout documented or presumed in Coffee Creek and/or the Skookumchuck River. In addition, the occurrence of big brown bat is documented in the same township as the project area, although not necessarily onsite, and the USFWS IPaC mapping database identifies marbled murrelet, streaked horned lark, yellow-billed cuckoo, bull trout, and Taylor's checkerspot as having the potential to occur in on/within 200 feet of the project area.

The subject property is approximately 56.29 acres in size, is located over 20 miles from marine waters, and is degraded by past agricultural activities, earthwork, and other anthropogenic disturbances. A majority of the subject property consists of maintained agricultural fields, although riparian habitat areas with trees and shrubs are present offsite and minimally along the eastern and southern property boundaries. These riparian habitat areas are also degraded due to the dominance of non-native invasive Himalayan blackberry and reed canarygrass.

The identified salmonids may be present in Coffee Creek and the Skookumchuck River; however, no work is proposed below the OHW of the identified streams. The excavation of compensatory flood storage areas in the adjacent shoreline and stream buffer areas will occur during the dry season and with the implementation of BMPs and TESC measures to minimize impacts during excavation and prevent erosion and sediment inputs from reaching the streams. In addition, following excavation, the disturbed areas will be planted with native trees, shrubs, and groundcover. These plantings will improve habitat by providing overhanging vegetation, improve water quality by providing increased shading along the stream channels and increased plant structure to filter pollutants and sediments, and improve screening between the stream channels and the proposed industrial development. As such, the proposed project is not anticipated to adversely affect these species.

Due to the offsite location of the Oregon white oak woodlands identified by WDFW, no adverse impacts to these areas or associated species are anticipated/proposed.

Big brown bats are known to roost communally in trees, buildings, bridges, and other structures. Preferred roosting habitat typically consists of trees with a diameter at breast height (DBH) of 50 centimeters or more, height of 18 meters or taller, and evidence of decay (Hayes and Wiles, 2013). The subject property consists predominantly of field areas previously maintained for agriculture. A majority of the habitat for big brown bat is located offsite or on the eastern and southern property boundaries. If big brown bats are present during construction activities, they would avoid the project area and remain in the forested areas offsite. As such, the proposed project is not anticipated to adversely affect Big brown bats.

The Cornell Lab of Ornithology Species Map does not identify any documented sightings of marbled murrelet, streaked horned lark, or yellow-billed cuckoo on or within 200 feet of the subject property. In addition, no habitat for these species is present on or near the subject

property. Marbled murrelet are year-round residents on coastal waters and require tree stands 5 acres or more in size composed of 50 percent or more conifer cover (WSDOT, 2014). Yellow-billed cuckoo habitat consists of low to mid-level riparian forests; suitable habitat is 100 to 198 acres in size and wider than 200 meters, marginal habitat is 20 to 100 acres and 100 to 200 meters wide, and unsuitable habitat is smaller than 37 acres and less than 100 meters wide (Wiles and Kalasz, 2017). Streaked horned lark are found primarily in prairies or unvegetated to sparsely vegetated open habitats 300 acres or greater in size (USFWS, 2013). The subject property does not contain the necessary suitable habitat. As such, these species are not anticipated to occur on or adjacent to the proposed project.

WDFW does not identify documented or presumed presence of bull trout in Coffee Creek or the Skookumchuck River. Bull trout have the most specific habitat requirements of salmonids. They require cold water temperatures, clean stream substrates for spawning and rearing, complex habitats including streams with riffles and deep pools, undercut banks and large logs, and they also rely on river, lake, and ocean habitats that connect to headwater streams for annual spawning and feeding migrations (Shellberg, 2002). As the riparian areas in the vicinity of the project area are largely degraded by surrounding development, bull trout are not likely to be present on or adjacent to the proposed project; nonetheless, the proposed project activities will be located entirely landward of the OHW of the identified streams and will provide a net lift in adjacent shoreline and stream buffer functions. As such, the proposed project is not anticipated to adversely affect bull trout.

Taylor's checkerspot is found primarily in open prairie and grass/oak woodland habitat (Potter, 2016). In Washington, there are seven populations remaining and are primarily found on coastal bluffs and estuarine grasslands along the Strait of Juan de Fuca and in post-glacial, gravelly outwash prairies in Thurston, Mason, Pierce and Lewis counties. Females lay eggs in April and May, depositing up to 1,200 eggs on the undersides of host plants, which can include members of the figwort or snapdragon family, harsh paintbrush, marsh speedwell, American brooklime, native seashore plantain, goose tongue as well as golden paintbrush and non-native species such as ribwort plantain and thyme-leaved speedwell (WDFW, 2013). The subject property and surrounding areas are largely degraded due to the extent of development. The subject property itself is a large, maintained agricultural field that lacks suitable host plants for Taylor's checkerspot. As such, Taylor's checkerspot are not anticipated to be present on or in the vicinity of the proposed project.

Steelhead need productive, well-oxygenated streams for spawning that have riffles, pools, overhanging vegetation, boulders and gravel to lay their eggs. They prefer fast water in small-to-large mainstem rivers, and medium-to-large tributaries. Steelhead are sensitive to sedimentation and channel scouring. Steelhead presence is documented in the Skookumchuck River and Coffee Creek. The Skookumchuck River contains mostly silty substrate with some areas of gravel and has minimal functional, vegetated buffer onsite for shading and organic inputs. Coffee Creek has similar habitat conditions. Therefore, minimal habitat for this species is present.

In freshwater, spawning chinook require deep, coarse gravel with adequate irrigation to build their redds. Water temperatures must not exceed 14 degrees Celsius and as chinook are larger salmon, they are able to spawn in faster flowing rivers compared to other species. Chinook will spawn in a variety of habitats from small, shallow tributaries to the main stem of a large river. Chinook presence is documented in the Skookumchuck River. The Skookumchuck

River contains mostly silty substrate with some areas of gravel and has minimal functional, vegetated buffer onsite for shading and organic inputs. Therefore, minimal habitat for this species is present.

3. *A discussion of any federal, state, or local special management recommendations, including Department of Fish and Wildlife habitat management recommendations, that have been developed for species or habitats located on or adjacent to the project area;*

WDFW management recommendations for salmonid species documented in Coffee Creek and the Skookumchuck River generally consist of maintaining riparian vegetation through the establishment of a protective buffer in order to control stream temperatures, provide cover, and protect against lateral erosion (WDFW, 1991). WDFW identifies similar management recommendations for riparian habitats, with the goal of maintaining or enhancing the structural and functional integrity of riparian habitat and associated aquatic systems needed to perpetually support fish and wildlife populations on both site and landscape levels (WDFW, 1997). The proposed habitat restoration activities within the shoreline and stream buffer areas associated with the Skookumchuck River and Coffee Creek are consistent with these management recommendations as they have been designed to provide a net lift in riparian functions onsite and in the greater Upper Chehalis watershed.

Big brown bats are not anticipated to be present in the project area; however, may be present in offsite forested areas. WDFW's *Living with Wildlife – Bats* document (WDFW, 2005) recommends excluding bats by closing off access to homes and buildings during their hibernation period (from mid-October to mid-March), creating an undesirable atmosphere with noise and light, or installing exclusion devices. If bats are present in onsite structures prior to construction, these measures will be implemented; however, this is not anticipated to be necessary as any bats are anticipated to be present outside of the project area.

WDFW's management recommendations for Oregon white oak woodlands largely focus on maintaining and protecting Oregon white oak habitat (WDFW, 1998). As the identified Oregon white oak trees are located entirely offsite, they will not be impacted by the proposed project activities consistent with these recommendations.

4. *A discussion of the project's effects on fish and wildlife habitat;*

All industrial development activities are located outside of the shoreline and stream buffer areas onsite. Activities within these areas are limited to the excavation of compensatory flood storage areas which will occur entirely landward of the OHW of the Skookumchuck River and Coffee Creek. As mentioned above, existing habitat within these areas is degraded due to the presence of maintained agricultural fields and non-native invasive species; therefore, there will be limited functional habitat removal. In addition, following excavation, disturbed areas will be restored with a diverse assortment of native trees, shrubs, and groundcover. The proposed restoration activities will improve fish and wildlife habitat by increasing plant diversity, providing stream shading along the banks of the Skookumchuck River and Coffee Creek, and improving screening between the identified streams and the proposed development.

5. *A discussion of measures, including avoidance, minimization and mitigation, proposed to preserve existing habitats;*

See the “Mitigation Sequencing” section below.

6. *A discussion of proposed measures which mitigate the impacts of the project;*

See the “Habitat Restoration Plan” section below. In general, shoreline and stream buffer areas be fully restored through the creation of flood compensation areas with varying hydrologic regimes and replanting with native trees, shrubs, and groundcover which will provide a net lift in shoreline and stream buffer functions when compared to the existing degraded areas present onsite.

7. *An evaluation of the effectiveness of the proposed mitigation measures;*

See the “Habitat Restoration Plan” section below. The proposed restoration actions are anticipated to result in a net increase in ecological functions onsite and within the greater watershed when compared to the existing degraded condition of the shoreline and buffer areas.

8. *A discussion of ongoing management practices that will protect habitat after the project site has been developed, including proposed monitoring and maintenance programs; and*

Habitat restoration actions will be maintained and the site will be kept free of non-native invasive species, trash, and debris. A Maintenance and Monitoring Plan will be implemented for a period of 5 years to meet specific performance standards to ensure the success of the proposed habitat restoration actions. See the “Habitat Management Plan” section below for further details.

9. *Any additional information necessary to determine the impacts of a proposal and mitigation of the impacts.*

Additional details are provided in the “Habitat Management Plan” section below.

Mitigation Sequencing

The proposed project requires fill of FEMA 100-year floodplain areas onsite that will require excavation of compensatory flood storage areas in the shoreline area as part of the habitat restoration plan. Per CSMP 5.4.B(4) and CMC 16.30.050.C.5, impacts to the shoreline, critical areas, and associated buffer areas should be mitigated in the following sequence:

- a. *Avoid the impact completely by redesigning, restructuring and/or relocating the development components.*

The Applicant proposes industrial development of the subject property consisting of two warehouses: Building A (approximately 483,276 square feet in size) and Building B (approximately 295,356 square feet in size) and associated site access, parking, truck loading and turnaround, stormwater facilities, utilities, and associated infrastructure. Stormwater infrastructure will consist of four interconnected stormwater ponds that will discharge treated stormwater at two points landward of the 200-foot shoreline management area with flow paths to both the Skookumchuck River and Coffee Creek. The proposed project has been carefully designed to avoid direct impacts to all identified critical areas, and all site development will be

located outside of the 200-foot shoreline management area. However, the entire subject property is located within the FEMA 100-year floodplain and will need to be cleared, graded, and raised above the current elevation to support the proposed industrial development. The excavation of compensatory flood storage areas within the shoreline jurisdiction and stream buffers is the minimum necessary for the project development to ensure no net rise of floodplain elevation. Given the large special needs for any industrial development and the entire site mapped within 100-year floodplain, no design modifications would result in less floodplain fill. The Applicant is proposing four stormwater detention ponds throughout the upland areas onsite and outside of the shoreline jurisdiction to fulfill as much of the required compensatory storage as possible. However, due to the large amount of compensatory storage needed, additional flood compensation is needed within the shoreline jurisdiction and stream buffers to meet the no net rise requirement. A total of 151,000 cubic yards of fill within the FEMA 100-year floodplain areas will be compensated by providing 151,000 cubic yards of flood storage via upland detention ponds and excavated ponds within the buffers associated with the Skookumchuck River and Coffee Creek. All excavation activities will be located landward of the ordinary high water (OHW) mark of the Skookumchuck River and Coffee Creek.

- b. Minimize the impact by limiting the magnitude of the action and its implementation by using appropriate technology and/or taking affirmative action.*

BMPs and TESC measures will be implemented for the duration of the proposed excavation and grading activities within the shoreline and stream buffer areas to minimize construction impacts to the Skookumchuck River, Coffee Creek, and the associated buffer areas. Further details are provided in the SWPPP plan prepared by the Project Engineer under separate cover.

- c. Rectify the impact by repairing, rehabilitating or restoring the impacted environment to its original state.*

The current buffers and shoreline management area are degraded and consist of maintained fields and non-native invasive Himalayan blackberry (*Rubus armeniacus*) and reed canarygrass (*Phalaris arundinacea*) and lack woody vegetation and tree cover. The proposed riparian habitat restoration actions will include excavating flood storage areas, removing non-native invasive species, providing soil amendments, and replanting with native trees, shrubs, and groundcover suitable for occasionally flooded and upland buffer areas to increase water quality, hydrologic, and habitat functions onsite. The flood compensation will ensure no net rise in floodplain elevations per CMC 16.21.170.F.1.b and CSMP 6.12.B(1)(b). Further details are provided in the “Habitat Restoration Plan” section below.

- d. Reduce or eliminate the impact over time by preservation and maintenance actions.*

For the proposed habitat restoration actions, reduction of the impact over time will be implemented through a Maintenance and Monitoring Plan that will meet specific performance standards to ensure the success of the actions. Non-native invasive species will be removed during the excavation of compensatory flood storage areas, and the shoreline and stream buffer areas onsite will be kept free of trash and debris. Additionally, the habitat restoration areas will be placed in a conservation easement or similar protective mechanism to protect and preserve the Skookumchuck River, Coffee Creek, and the associated buffer and shoreline areas in perpetuity consistent with CMC 16.20.080.A.

- e. *Compensate for the impact by replacing, enhancing and/or providing substitute resources and/or environments.*

Fill activities within the 100-year floodplain areas onsite will be compensated by providing compensatory flood storage onsite at a 1:1 ratio consistent with the requirement of CMC 16.21.170.F.1.b and CSMP 6.12.B(1)(b). These actions will be part of the habitat restoration actions that will also include installation of native trees, shrubs, and groundcover which will provide a net lift in shoreline and stream buffer functions when compared to the existing degraded conditions.

- f. *Monitor the impact and compensation projects and take appropriate corrective measures as required.*

The Applicant is committed to compliance with the Habitat Restoration Plan provided herein and, as such, will continue to maintain the project, keeping the site free of invasive vegetation, trash, and debris. A Maintenance and Monitoring Plan will be implemented for a period of 5 years to meet specific performance standards to ensure the success of the proposed habitat restoration actions.

Abbreviated State and Federal Considerations

The Skookumchuck River, Coffee Creek, and offsite Wetland A are all likely regulated by the U.S Army Corps of Engineers (USACE) under Section 404 of the Clean Water Act (CWA). Coffee Creek is a tributary to the Skookumchuck River onsite, and the Skookumchuck River is a tributary to the Chehalis River, a traditional navigable water. Wetland A is likely regulated due to its proximity to the Skookumchuck River.

The identified waters above are considered natural surface waters and also subject to regulation by the Washington State Department of Ecology (WSDOE) through the Revised Code of Washington (RCW) 90.48.

No in-water work or wetland fill is proposed. As such, no formal permitting through the USACE or WSDOE is anticipated.

Habitat Restoration Plan

This section discuss the habitat restoration actions proposed within the shoreline and stream buffer areas associated with the Skookumchuck River and Coffee Creek onsite within the Urban Conservancy Shoreline Environment.

Description of Project Elements

The Applicant proposes industrial development of the subject property consisting of two warehouses: Building A (approximately 483,276 square feet in size) and Building B (approximately 295,356 square feet in size) and associated site access, parking, truck loading and turnaround, stormwater facilities, utilities, and associated infrastructure. Stormwater infrastructure will consist of four interconnected stormwater ponds that will discharge treated stormwater at two points landward of the 200-foot shoreline management area with flow paths to both the Skookumchuck River and Coffee Creek. The proposed project has been carefully designed to avoid direct impacts to all identified critical areas, and all site development will be located outside of the 200-foot shoreline management area. However, the entire subject property is located within the FEMA 100-year floodplain and will need to be cleared, graded, and raised above the current elevation to support the proposed industrial development. As

such, compensatory flood storage is required to meet the general standards for floodplain development under CMC 16.21.170. A total of 151,000 cubic yards of fill within the FEMA 100-year floodplain areas will be compensated by providing 151,000 cubic yards of flood storage via excavated ponds within the buffers associated with the Skookumchuck River and Coffee Creek. All excavation activities will be located landward of the ordinary high water (OHW) mark of the Skookumchuck River and Coffee Creek. All appropriate BMPs and TESC measures will be implemented for the duration of project activities to minimize potential construction impacts to the identified streams.

Habitat Restoration Plan

The current buffers and shoreline management area are degraded and consist of maintained fields and non-native invasive Himalayan blackberry (*Rubus armeniacus*) and reed canarygrass (*Phalaris arundinacea*) and lack woody vegetation and tree cover. The proposed riparian habitat restoration actions will include excavating flood storage areas, removing non-native invasive species, providing soil amendments, and replanting with native trees, shrubs, and groundcover suitable for occasionally flooded and upland buffer areas to increase water quality, hydrologic, and habitat functions onsite. The flood compensation will ensure no net rise in floodplain elevations per CMC 16.21.170.F.1.b and CSMP 6.12.B(1)(b).

Areas within the onsite buffers will be graded to provide a large shallow depression that will store occasional floodwaters and can accommodate up to the 100-year modeled flood event. The shallow depression will have a low topographic point (i.e. outlet) that will allow the occasional floodwaters to recede. As such, the flood compensation area will not hold water for long durations. Rather, the flood compensation areas will be replanted with primarily facultative (FAC) to facultative-wetland (FACW) native vegetation – species that can withstand short periods of inundation and would otherwise likely survive in drier conditions adjacent to the stream and provide terrestrial habitat and screening. The general upland buffer areas will be planted with FAC to facultative-upland (FACU) plant species more suitable to drier areas. As such, the restored buffer areas will function as standard buffers and occasionally as flood compensation areas. Flood models will be provided by the Project Engineer to determine anticipated frequency and duration of flooding within the flood compensation areas, if needed.

The establishment of dense assortment of native trees, shrubs, and groundcover will provide screening between the Skookumchuck River, Coffee Creek, and the proposed industrial development, and will improve habitat conditions onsite by providing a vertically and horizontally diverse native plant community and shading along the identified stream channels. In addition, the plantings will improve water quality and hydrologic functions onsite by providing increased plant structure to filter pollutants, stabilize soils, and slow and attenuate flooding. The transition of upland and occasionally flooded areas within the buffers will significantly increase habitat interspersion and complexity, providing a functional riparian corridor beneficial to common urban fauna. Overall, these habitat restoration actions are anticipated to provide a net lift in shoreline and stream buffer functions onsite and result in no net rise within the 100-year floodplain.

The habitat restoration and general project minimization actions include the following:

- Clear and grade the shoreline and buffer to create the appropriate flood compensation and upland buffer areas.
- Install a layer of native topsoil within the habitat restoration area to ensure successful plant establishment.

- An approved native seed mix will be used to seed the disturbed areas after the excavation of compensatory flood storage areas to reduce short-term erosion potential.
- Replant all buffer enhancement areas with native trees, shrubs, and/or groundcovers listed in Appendix A, or substitutes approved by the responsible Project Biologist, to help retain soils, filter stormwater, and increase biodiversity.
- Maintain and control invasive plants annually, at a minimum, or more frequently if necessary. Maintenance to reduce the growth and spread of invasive plants is not restricted to chemical applications but may include hand removal, if warranted.
- Provide dry-season irrigation as necessary to ensure native plant survival.
- Install critical area fencing along the outer boundary of the shoreline and stream buffer areas facing the proposed development.
- Direct exterior lights away from the shoreline and stream buffer areas wherever possible; and
- Place all activities that generate excessive noise (e.g., generators and air conditioning equipment) away from the shoreline and stream buffer areas where feasible.

Restoration Implementation

The onsite habitat restoration actions will occur concurrently with the development of the project. A pre-construction meeting should occur between the Applicant, general contractor, and the Project Biologist to discuss the project and limitations specifically related to protection of critical areas and implementation of mitigation actions.

Equipment used will be typical for land clearing, grading, and excavation activities and will be kept in good working conditions and free of leaks. Equipment to be used will likely include excavators, backhoes, bulldozers, dump trucks, graders, et cetera. All equipment staging and materials stockpiles for the proposed development will be kept out of streams and regulated shoreline and stream buffer areas, and the area will be kept free of spills and/or hazardous materials. Equipment and materials necessary to excavate compensatory flood storage areas and perform habitat restoration actions may be allowed within buffers.

All appropriate BMPs and TESC measures, including dedicated construction entrance(s), silt fencing, and brush barriers, will be installed prior to and maintained throughout construction in order to minimize potential temporary impacts to the onsite streams and associate shoreline and buffer areas.

The recommended project sequencing is as follows:

- Pre-construction conferences and regulatory notifications;
- Install TESC measures;
- Excavate compensatory flood storage areas;
- Prepare grounds for planting by installing native topsoils within the habitat restoration area;
- Seed entire restoration area;
- Plant inspections;
- Install plant materials;
- Post-construction inspection and as-built survey; and
- Post-construction maintenance, monitoring, and annual reporting.

Performance Standards

The overarching goals for the habitat restoration actions are to improve shoreline and stream buffer functions and increase screening between the proposed development and identified streams by

removing non-native invasive species and establishing native riparian forest habitat onsite. Non-native invasive species present within the shoreline and stream buffer areas will be removed during the excavation of areas for compensatory flood storage, and disturbed areas will be planted with a dense suite of native trees, shrubs, and groundcover. These actions will improve water quality, hydrologic, and habitat functions onsite when compared to the existing conditions which consist primarily of maintained agricultural fields encumbered by non-native invasive species.

Goal 1 – Restore and improve habitat functions within the shoreline and stream buffer areas associated with the Skookumchuck River and Coffee Creek onsite.

Objective 1.1 – Establish a forested and shrub riparian plant community within the shoreline and stream buffer areas onsite by planting a dense suite of native trees, shrubs, and groundcover.

Performance Standard 1.1.1 – Minimum plant survivorship within the habitat restoration area will be 80 percent of installed trees and shrubs at the end of Year 1.

Performance Standard 1.1.2 – Native plant species (including existing vegetation, planted trees/shrubs, and volunteer species) will cover at least 20 percent of the habitat restoration area at the end of Year 2, 30 percent at the end of Year 3, 50 percent by the end of Year 4, and 60 percent at the end of Year 5.

Performance Standard 1.1.3 – At least 5 native shrub and/or tree species will be present in the habitat restoration area in all monitoring years, including volunteer species.

Objective 2 – Effectively control and/or eliminate non-native invasive species from the habitat restoration area.

Performance Standard 4.2.1 – Non-native invasive plants will not make up more than 15 percent total cover in any growing season during the monitoring period following Year 1. Any state-listed noxious weeds and other non-native invasive species including Himalayan blackberry and reed canarygrass observed at any time during construction, monitoring and maintenance activities within the habitat restoration area will be marked for immediate treatment and/or removal.

Mitigation Specifications

The following specifications are established as a set of minimum standards for proper implementation of the proposed habitat restoration actions. Additional actions, modifications, and/or substitutions may be approved in advance by the responsible Project Biologist.

Plant Scheduling, Species, Density, and Location

All planting should occur between September 1 and May 1 to ensure plants do not dry out after installation, or temporary irrigation measures may be necessary. All planting will be installed per the procedures detailed in the following subsections using the species and densities outlined in Attachment A of this Technical Memorandum.

Shoreline and buffer areas associated with the Skookumchuck River and Coffee Creek shall be replanted with the native species listed in Attachment A in addition to a native grass seed mix,

following the excavation of compensatory flood storage areas and removal of invasive species. The proposed planting plan will result in an improvement in existing onsite shoreline and stream buffer conditions and restore habitat functions to the extent possible.

Plant Materials

All plant materials to be used on the site will be nursery grown stock from a reputable, local source. Only native species are to be used; no hybrids or cultivars will be allowed. Plant material provided will be typical of their species or variety; if not cuttings, 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 disease and infestation.

Any container stock provided in-lieu of specified bare root stock shall have been grown in its delivery container for not less than six months but not more than two years. Plants shall not exhibit rootbound conditions. Under no circumstances shall container stock be handled by their trunks, stems, or tops. Seed mixture used for hand shall contain fresh, clean, and new crop seed mixed by an approved method.

All plant material shall be inspected upon delivery. Plant material not conforming to the specifications above will be rejected and replaced. Rejected plant materials shall be immediately removed from the site.

Fertilizer will be in the form of Agraform plant tabs or an approved like form. Mulch will consist of sterile wheat straw or clean recycled wood chips approximately 1/2 inch to 1 inch in size and 1/2 inch thick. If free of invasive plant species, the mulch material may be sourced from woody materials salvaged from the land clearing activities for the proposed residence.

Quality Control for Planting Plan

All plant material shall be inspected by the Project Biologist upon delivery. Plant material not conforming to the specifications above will be rejected and replaced by the planting contractor. Rejected plant materials shall be immediately removed from the site. Under no circumstances shall container stock be handled by their trunks, stems, or tops.

The landscape contractor shall provide the Project Biologist with documentation of plant material that includes the supplying nursery contact information, plant species, plant quantities, and plant sizes.

Product Handling, Delivery, and Storage

All seed and fertilizer should be delivered in original, unopened, and undamaged containers showing weight, analysis, and name of manufacturer. This material should be stored in a manner to prevent wetting and deterioration. All precautions customary in good trade practice shall be taken in preparing plants for moving. Workmanship that fails to meet industry standards will be rejected. Plants will be packed, transported, and handled with care to ensure protection against injury and from drying out. If plants cannot be planted immediately upon delivery they should be protected with soil, wet peat, or moss. Plants, fertilizer, and mulch not installed immediately upon delivery shall be secured on the site to prevent theft or tampering. No plant shall be bound with rope or wire in a manner that could damage or break the branches. Plants transported on open vehicles should be secured with a protective covering to prevent windburn.

Preparation and Installation of Plant Materials

The Applicant or the landscape contractor will verify the location of all elements of the planting plan, prior to installation. The Applicant or landscape contractor may adjust the locations of landscape elements during the installation period as appropriate. If obstructions are encountered that are not shown on the drawings, planting operations will cease until alternate plant locations have been selected by and/or approved by the Project Scientist.

Prior to plant installation, native topsoil will be installed within the areas excavated for compensatory flood storage to provide suitable substrate for native plant establishment.

Circular plant pits with vertical sides will be excavated for all stock with roots. The pits should be at least twelve (12) inches in diameter, and the depth of the pit should accommodate the entire root system. The bottom of each pit will be scarified to a depth of four (4) inches.

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 Agraform tablets. Water pits again upon completion of backfilling. No filling should occur around trunks or 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, and install a four- to six-inch layer of mulch around the base of each container plant.

Optional Temporary Irrigation Specifications

While the native species selected for habitat restoration are hardy and typically thrive in northwest conditions, and the proposed mitigation actions are planned in areas with sufficient hydroperiods for the species selected, some individual plants might perish due to dry conditions. Therefore, irrigation or regular watering may be provided as necessary for the duration of the first two growing seasons while the native plantings become established.

Invasive Plant Control and Removal

Invasive species to be controlled include reed canarygrass, Himalayan blackberry, and all listed noxious weeds. These species can also be found nearby; therefore, to ensure these species do not expand following the mitigation actions, invasive shrubs within the mitigation area should be pretreated with a root-killing herbicide approved for use in aquatic sites (i.e. Rodeo) a minimum of two weeks prior to being cleared and removed from the targeted buffer enhancement areas. Treated invasive plant material may be left on steep hillsides or cut flush with the ground surface at the discretion of the Project Biologist. The pre-treatment with herbicide should occur prior to all planned mitigation actions, and spot treatment of any surviving other invasive vegetation should be performed again each fall prior to leaf senescence for a minimum of three years.

Maintenance and Monitoring Plan

Maintenance and Monitoring Plans are described below in accordance with CMC 16.20.050.C.8 and CSMP 5.4.B(4)(f). The Applicant is committed to compliance with the enhancement plan and overall success of the project. As such, the Applicant will continue to maintain the project, keeping the site free from non-native invasive vegetation, trash, and waste.

The habitat restoration plan will require continued monitoring and maintenance to ensure the actions are successful. Therefore, the project site will be monitored for a period of five years with formal inspections by a qualified Project Scientist. Monitoring events will be scheduled at the time of construction, 30 days after planting, early in the growing season and the end of the growing season for Year 1, twice during Year 2, and annually in Years 3, 4, and 5. Closeout assessment will also be conducted in Year 5 to ensure the enhancement area was established.

Monitoring will consist of percent cover measurements at permanent monitoring stations, walk-through surveys to identify invasive species presence and dead or dying enhancement plantings, photographs taken at fixed photo points, wildlife observations, and general qualitative habitat, shoreline, and stream buffer function observations.

To determine percent cover, observed vegetation will be identified and recorded by species and an estimate of areal cover of dominant species within each sampling plots. Circular sample plots, approximately 30 feet in diameter (706 square feet), are centered at each monitoring station. The sample plots encompass the specified wetland areas and terminate at the observed wetland boundary. Trees and shrubs within each 30-foot diameter monitoring plot are then recorded to species and areal cover. Herbaceous vegetation is sampled from a 10-foot diameter (78.5 square feet) within each monitoring plot, established at the same location as the center of each tree and shrub sample plot. Herbaceous vegetation within each monitoring plot is then recorded to genus and includes an estimate of percent areal cover. A list of observed tree, shrub, and herbaceous species including percent areal cover of each species and wetland status is included within the monitoring report.

Reporting

Following each monitoring event, a brief monitoring report detailing the current ecological status of the habitat restoration actions, measurement of performance standards, and management recommendations will be prepared and submitted to the City within 90 days of each monitoring event to ensure full compliance with the restoration plan.

Contingency Plan

If monitoring results indicate that performance standards are not being met, it may be necessary to implement all or part of the contingency plan. Careful attention to maintenance is essential in ensuring that problems do not arise. Should any portion of the site fail to meet the success criteria, a contingency plan will be developed and implemented with City approval. Such plans are adaptive and should be prepared on a case-by-case basis to reflect the failed enhancement characteristics. Contingency plans can include additional plant installation, erosion control, and plant substitutions including type, size, and location. The Contingency measures outlined below can also be utilized in perpetuity to maintain the shoreline and stream buffer areas associated with the proposed project site.

Contingency/maintenance activities may include, but are not limited to:

1. Using plugs instead of seed for emergent vegetation coverage where seeded material does not become well-established;
2. Replacing plants lost to vandalism, drought, or disease, as necessary;
3. Replacing any plant species with a 20 percent or greater mortality rate after 2 growing seasons with the same species or native species of similar form and function;
4. Irrigating the restoration areas only as necessary during dry weather if plants appear to be too dry, with a minimal quantity of water;

5. Reseeding and/or repair of shoreline/buffer areas as necessary if erosion or sedimentation occurs;
6. Spot treat non-native invasive plant species;
7. Removing all trash or undesirable debris from the shoreline and stream buffer areas as necessary, and
8. Removing additional shrub species or girdling additional trees to ensure better light penetration

Critical Area Protective Measures

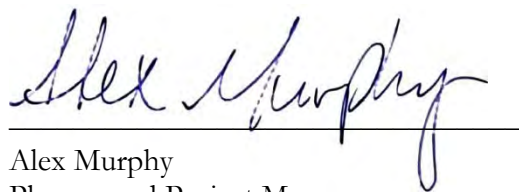
Per CMC 16.20.080.A, stream buffers shall be established by a permanent protective easement, public or private land trust dedication, or similar protective mechanism as approved by the Director. The Skookumchuck River, Coffee Creek, and the associated shoreline and stream buffer areas will be placed in a permanent protective easement for protection in perpetuity. This easement will be shown on the face of the deed applicable to the property and recorder with the Lewis County recording department.

Performance and Monitoring Security

CMC 16.16.130 contains provisions and requirements for providing financial security to guarantee that projects with mitigation elements are completed in a manner that complies with the conditions of approval and that any associated monitoring requirements are followed. Prior to final inspection, a maintenance and warranty security (bond) shall be obtained in an amount equal to 150 percent of the estimated cost for mitigation and/or monitoring. A bond quantity worksheet will be provided with a Final Mitigation Plan.

If you have any further questions, please contact us at your earliest convenience.

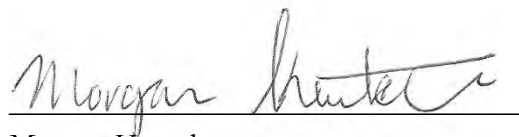
Sincerely,



Alex Murphy
Planner and Project Manager

May 23, 2023

Date



Morgan Kentch
Environmental Scientist

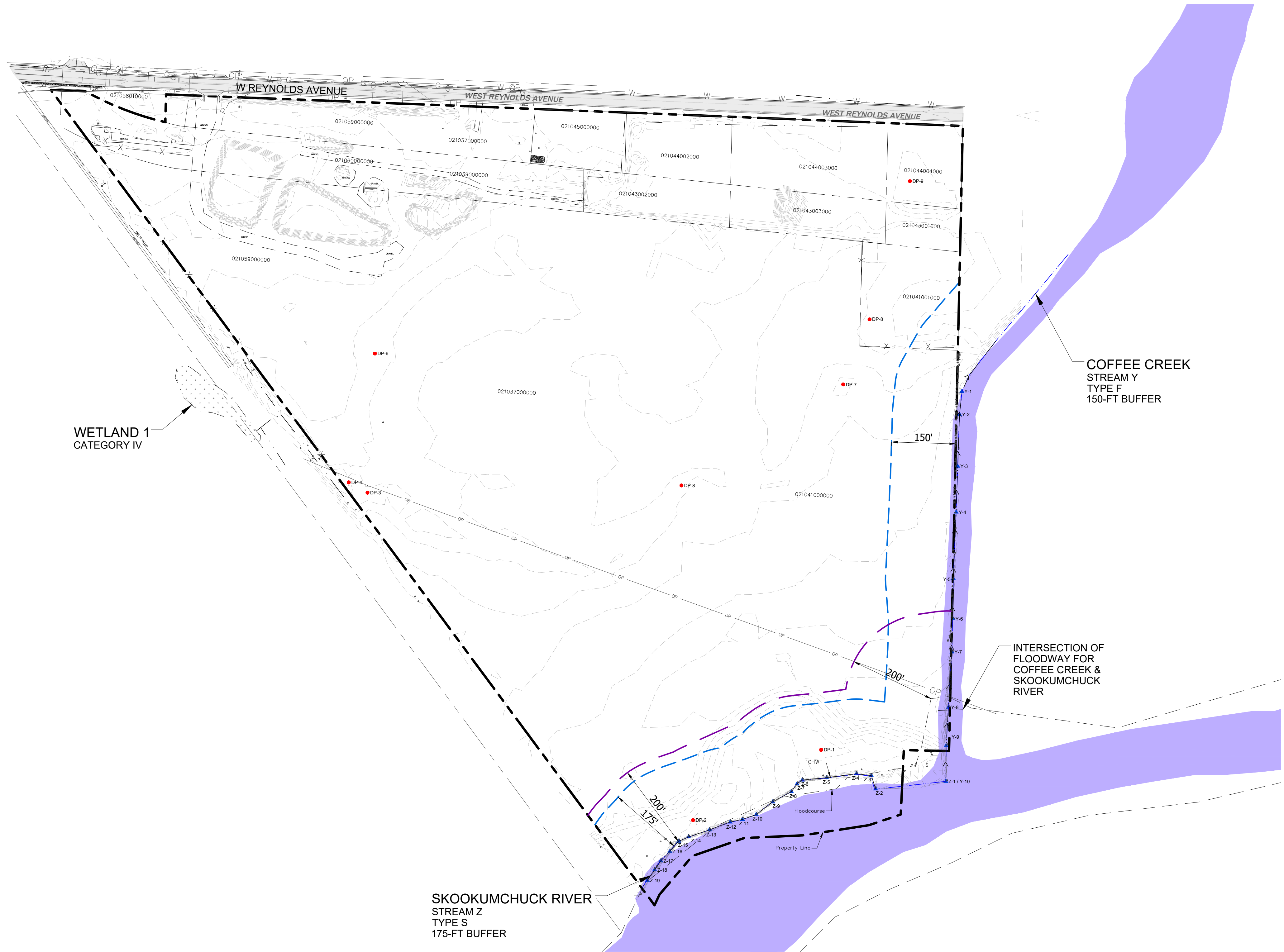
May 23, 2023

Date

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Attachment A – Proposed Project and Habitat Restoration Plan



VICINITY MAP



SOURCE: ESRI (ACCESSED 03/13/2023)

LOCATION

THE NW/NE ¼ OF SECTION 05/06,
TOWNSHIP 14N, RANGE 2W, WM

APPLICANT/OWNER

NAME: PDC SEATTLE LP/IV BB/TH, LLC
ADDRESS: 1821 DOCK STREET, SUITE 100
TACOMA, WA 98402
CONTACT: DARREN PEUGH
PHONE: 206-248-0283
E-MAIL: DPEUGH@PANATTONI.COM

ENVIRONMENTAL CONSULTANT

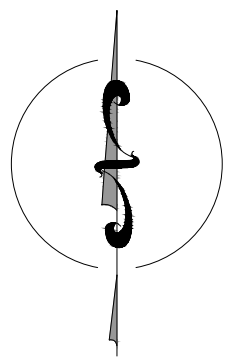
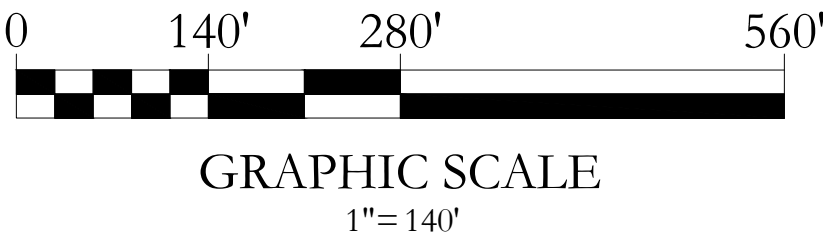
SOUNDVIEW CONSULTANTS LLC
2907 HARBORVIEW DRIVE
GIG HARBOR, WA 98355
(253) 514-8952

SHEET INDEX

SHEET NUMBER	SHEET TITLE
1	EXISTING CONDITIONS
2	PROPOSED SITE PLAN, IMPACTS & MITIGATION PLANTING PLAN
3	CROSS-SECTIONS & CONCEPTUAL FLOOD STORAGE DETAIL
4	PLANT SCHEDULE, NOTES, & DETAILS

PLAN LEGEND

	PROPERTY LINE
	APPROXIMATED WETLAND BOUNDARY (NOT SURVEYED)
	DATA PLOT LOCATION
	STREAM CENTERLINE
	STREAM BUFFER
	SHORELINE JURISDICTION
	STREAM OHW (ORDINARY HIGH WATER) FLAG LOCATION
	FLOODCOURSE
	FLOODWAY
	DITCH CENTERLINE
	EXISTING CONTOUR
	EXISTING TREES
	CONFIROUS - DECIDUOUS

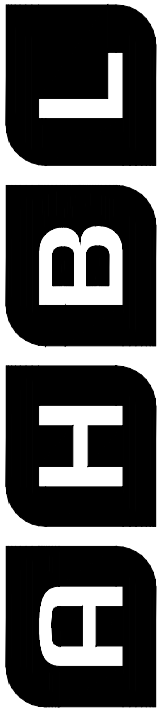


PRELIMINARY
INFORMATION ONLY

NOT FOR CONSTRUCTION

SOUNDVIEW CONSULTANTS LLC ASSUMES
NO LIABILITY OR RESPONSIBILITY FOR
CONSTRUCTION, IMPROVEMENTS, OR
ESTIMATES BASED ON THIS PLAN SET

SOURCES:



TACOMA • SEATTLE • SPOKANE • TRI-CITIES
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253.383.2422 TEL 253.383.2577 FAX www.ahbl.com WEB

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SKOOKUMCHUCK COMMERCE

CENTER
1406 & 1620 W REYNOLDS AVENUE,
CENTRALIA, WA 98531

LEWIS COUNTY PARCEL NUMBER(S):
021058010000, 021059000000, 021037000000, 021045000000,
021044002000, 021044003000, 021060000000, 021043003000,
021059000000, 021037000000, 021041000000

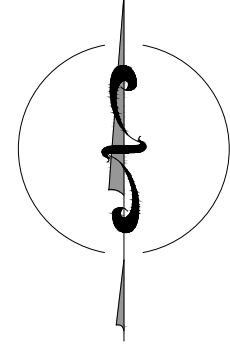
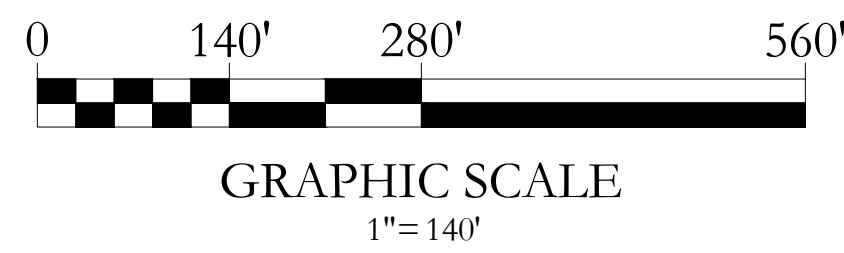
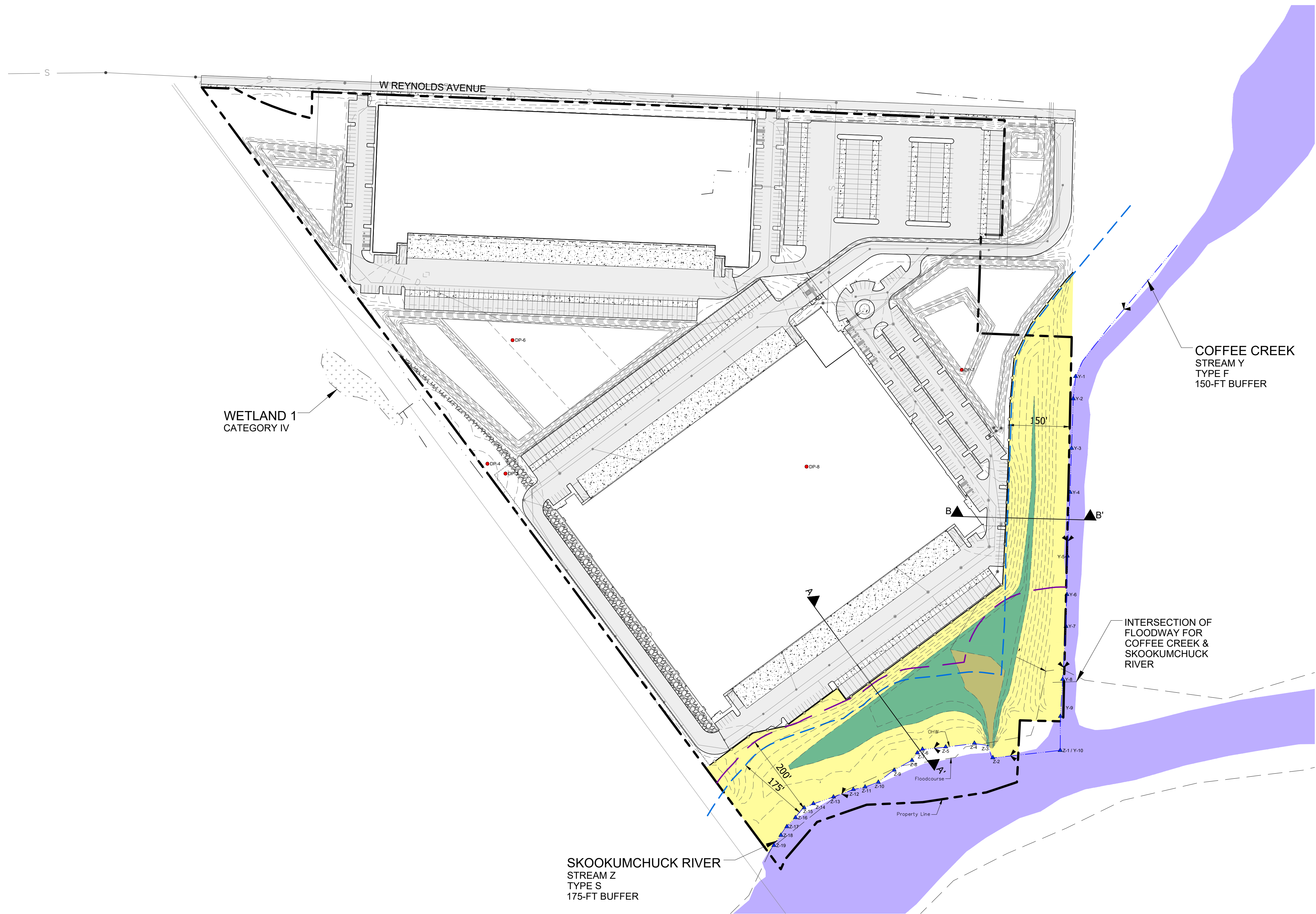
DATE: 05/23/2023

JOB: 1144.0036

BY: DLS

SCALE: AS SHOWN

SHEET: 1



PLAN LEGEND

- PROPERTY LINE
- APPROXIMATED WETLAND BOUNDARY (NOT SURVEYED)
- DATA PLOT LOCATION (DP-#)
- STREAM CENTERLINE
- STREAM BUFFER
- SHORELINE JURISDICTION
- STREAM OHW (ORDINARY HIGH WATER) FLAG LOCATION (O-#)
- FLOODCOURSE
- FLOODWAY
- DITCH CENTERLINE
- CRITICAL AREA FENCING
- EXISTING CONTOUR
- EXISTING TREES (CONIFEROUS - DECIDUOUS)

RESTORATION LEGEND
FLOOD STORAGE HABITAT

UPPER FLOOD STORAGE AREA	250,129 SF
LOWER FLOOD STORAGE AREA	69,467 SF
FLOW BASIN	12,980 SF
TOTAL RESTORATION:	332,576 SF

PRELIMINARY
INFORMATION ONLY

NOT FOR CONSTRUCTION

SOUNDVIEW CONSULTANTS LLC ASSUMES
NO LIABILITY OR RESPONSIBILITY FOR
CONSTRUCTION, IMPROVEMENTS, OR
ESTIMATES BASED ON THIS PLAN SET

SOURCES:

A H B L

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SKOOKUMCHUCK COMMERCE CENTER

1406 & 1620 W REYNOLDS AVENUE, CENTRALIA, WA 98531

LEWIS COUNTY PARCEL NUMBER(S): 021058010000, 021059000000, 021057000000, 021045000000, 021044002000, 021044003000, 021060000000, 021043003000, 021059000000, 021057000000, 021041000000

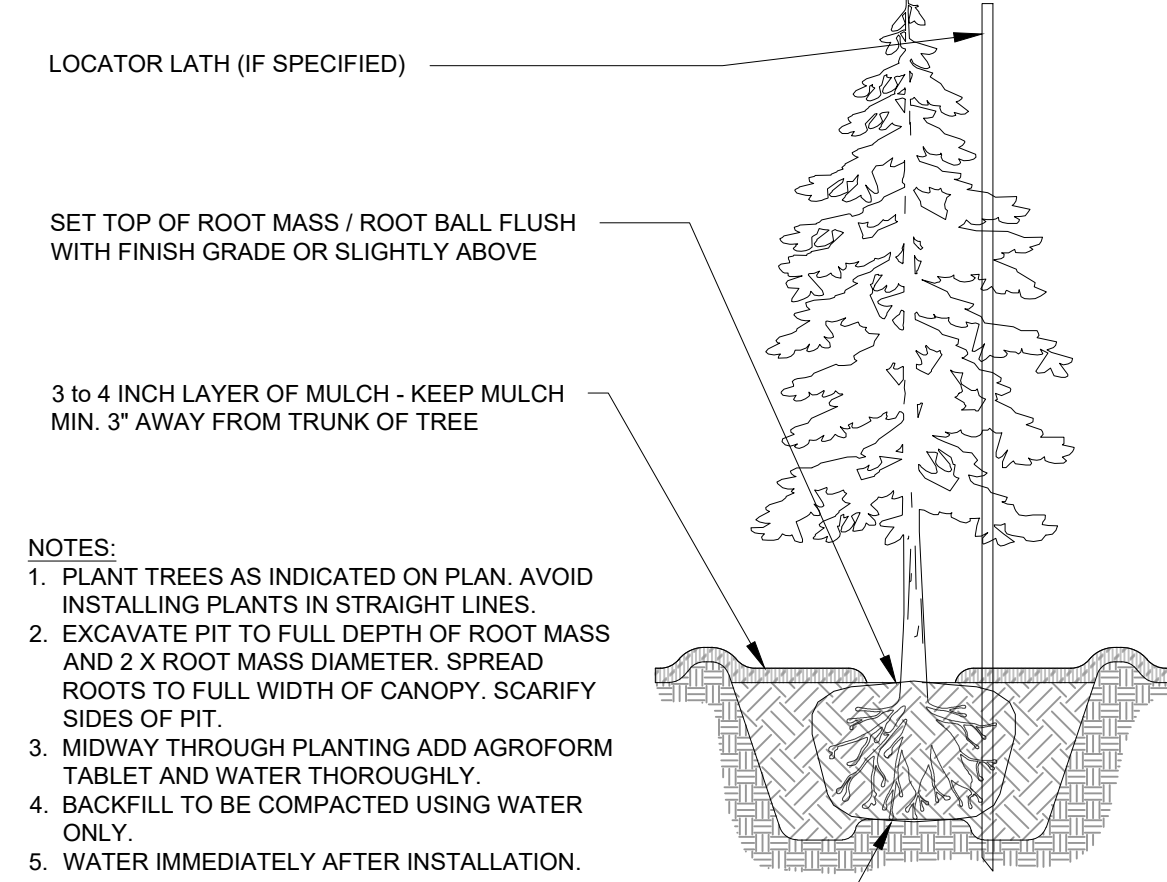
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JOB: 1144.0036
BY: DLS
SCALE: AS SHOWN
SHEET: 2

S:\CURRENT\1144 Final\Construction\1144.0036 Skookumchuck Commerce Center\Graphics & Maps\CD04 - CURRENT SITE DRAWINGS\A - Current Base DWG\1144.0036 (0523-05) base.dwg
Plotted: May 23, 2023

		Area (sf):	250,129	69,467	12,980	332,576					
		Cov'g (%):	100	100	100						
		Trees (%):	50	50	0						
		Shrubs (%):	50	50	0						
Scientific Name	Common Name	WL Status	UPPER FLOOD STORAGE AREA	LOWER FLOOD STORAGE AREA	FLOW BASIN	TOTAL	Spacing (min.)	Height (min.)	Size (min.)	Planting Area	
TREES			(Qty)	(Qty)	(Qty)	(Qty)					
<i>Alnus rubra</i>	red alder	FAC	52	0	0	52	10 ft	3 ft	1 gal	Dry/Moist - on hummock	
<i>Frangula purshiana (Rhamnus p.)</i>	cascara	FAC	104	0	0	104	10 ft	3 ft	1 gal	Dry	
<i>Fraxinus latifolia</i>	Oregon ash	FACW	0	31	0	31	12 ft	3 ft	2 gal	Wet - in wetland	
<i>Malus fusca (Pyrus f.)</i>	Pacific crabapple	FACW	0	22	0	22	10 ft	3 ft	2 gal	Wet - in wetland	
<i>Picea sitchensis</i>	Sitka spruce	FAC	312	44	0	356	10 ft	3 ft	2 gal	Moist - on hummock	
<i>Populus trichocarpa</i>	black cottonwood	FAC	0	22	0	22	10 ft	3 ft	1 gal	Moist/Wet - on hummock	
<i>Salix lasiandra</i>	Pacific willow	FACW	11	22	0	33	10 ft	4 ft	Stakes	Wet	
<i>Salix scouleriana</i>	Scouler's willow	FAC	541	0	0	541	5 ft	4 ft	Stakes	Dry	
<i>Salix stichensis</i>	Sitka willow	FACW	0	262	0	262	5 ft	4 ft	Stakes	Moist/Wet	
<i>Thuja plicata</i>	western redcedar	FAC	416	0	0	416	10 ft	3 ft	2 gal	Moist - on hummock	
<i>Tsuga heterophylla</i>	western hemlock	FACU	11	0	0	11	10 ft	3 ft	2 gal	Moist - on hummock	
Total:			1447	403	0	1850					
SHRUBS			(Qty)	(Qty)	(Qty)	(Qty)					
<i>Acer circinatum</i>	vine maple	FAC	127	52	0	179	10 ft	4 ft	2 gal	Dry/Moist	
<i>Amelanchier alnifolia</i>	serviceberry	FACU	198	0	0	198	8 ft	3 ft	2 gal	Dry	
<i>Cornus stolonifera</i>	red-osier dogwood	FACW	0	532	0	532	4 ft	3 ft	1 gal	Moist/Wet	
<i>Corylus cornuta var. californica</i>	western hazlenut	FACU	0	35	0	35	10 ft	2 ft	2 gal	Moist	
<i>Crataegus douglasii</i>	Douglas hawthorn	FAC	505	137	0	642	5 ft	3 ft	2 gal	Moist	
<i>Holodiscus discolor</i>	oceanspray	FACU	505	0	0	505	5 ft	2 ft	1 gal	Dry	
<i>Lonicera involucrata</i>	black twinberry	FAC	789	213	0	1002	4 ft	2 ft	1 gal	Moist/Wet	
<i>Mahonia aquifolium</i>	tall Oregon grape	FACU	789	0	0	789	4 ft	2 ft	1 gal	Dry	
<i>Ribes sanguineum</i>	red-flowering currant	FACU	505	0	0	505	5 ft	2 ft	1 gal	Dry/Moist	
<i>Rosa nutkana</i>	Nootka rose	FAC	789	0	0	789	4 ft	2 ft	1 gal	Dry	
<i>Rubus spectabilis var. spectabilis</i>	salmonberry	FAC	0	213	0	213	4 ft	2 ft	1 gal	Moist	
<i>Spiraea douglasii</i>	Douglas spirea	FACW	0	426	0	426	4 ft	2 ft	1 gal	Moist/Wet	
<i>Symphoricarpos albus var. laevigatus</i>	common snowberry	FACU	789	0	0	789	4 ft	2 ft	1 gal	Dry	
<i>Vaccinium ovatum</i>	evergreen huckleberry	FACU	789	0	0	789	4 ft	2 ft	1 gal	Dry/Moist	
Total:			5785	1608	0	7393					
SEED MIXES (www.riverrefugeseed.com)		WL Status	UPPER FLOOD STORAGE AREA	LOWER FLOOD STORAGE AREA	FLOW BASIN	TOTAL					
Bio-swale Mix #8		20 lbs/acre	(Qty)	(Qty)	(Qty)	(Qty)					
<i>Beckmannia syzigachne</i>	American sloughgrass	15%									
<i>Hordeum brachyantherum</i>	Meadow barley	10%									
<i>Bromus carinatus</i>	California brome	10%									
<i>Elymus glaucus</i>	Blue wildrye	10%									
<i>Agrostis exarata</i>	Spike bentgrass	10%									
<i>Deschampsia cespitosa</i>	Tufted hairgrass	10%									
<i>Festuca roemerii</i>	Roemer's fescue	10%									
<i>Alopecurus aequalis</i>	Shortawn foxtail	5%									
<i>Eleocharis palustris</i>	Creeping spikerush	5%									
<i>Deschampsia elongata</i>	Slender hairgrass	5%									
<i>Carex unilateralis</i>	One-sided sedge	5%									
<i>Juncus tenuis</i>	Slender rush	2.5%									
<i>Juncus bnfonius</i>	Toad rush	2.5%									
		Total (lbs):	0	32	0	32					
Native Upland Grass Mix #9		20 lbs/acre	(Qty)	(Qty)	(Qty)	(Qty)					
<i>Elymus glaucus</i>	Blue wildrye	30%									
<i>Bromus carinatus</i>	California brome	25%									
<i>Hordeum brachyantherum</i>	Meadow barley	10%									
<i>Festuca roemerii</i>	Roemer's fescue	10%									
<i>Deschampsia elongata</i>	Slender hairgrass	10%									
<i>Agrostis exarata</i>	Spike bentgrass	5%									
<i>Deschampsia cespitosa</i>	Tufted hairgrass	5%									
<i>Festuca rubra var. rubra</i>	Red fescue	5%									
		Total (lbs):	115	0	0	115					
Native Moist Soil Mgmt Mix #12		20 lbs/acre	(Qty)	(Qty)	(Qty)	(Qty)					
<i>Glyceria occidentalis</i>	Western mannagrass	35%									
<i>Alisma subcordatum</i>	American water plantain	15%									
<i>Polygonum pensylvanicum</i>	Pennsylvania smartweed	15%									
<i>Beckmannia syzigachne</i>	American sloughgrass	10%									
<i>Alopecurus aequalis</i>	Shortawn foxtail	5%									
<i>Eleocharis palustris</i>	Creeping spikerush	5%									
<i>Hordeum brachyantherum</i>	Meadow barley	5%									
<i>Eleocharis ovata</i>	Ovate spikerush	4%									
<i>Leersia oryzoides</i>	Rice cutgrass	3%									
<i>Scirpus tabernaemontani</i>	Softstem bulrush	3%									
		Total (lbs):	0	0	6	6					
1 - Scientific names and species identification taken from <i>Flora of the Pacific Northwest, 2nd Edition (Hitchcock and Cronquist, Ed. by Gihlin, Ledger, Zika, and Olmstead, 2018).</i>											
2 - Over-sized container plants are suitable for replacement pending Wetland Scientist approval.											
3 - Alternate native plant species may be substituted or added with Wetland Scientist approval.											
4 - All disturbed and bare soil areas in the buffer to be seeded with a native grass seed mix.											
5 - Shrub calculations based upon 5-ft average spacing.											
6 - Tree calculations based upon 10-ft average spacing.											

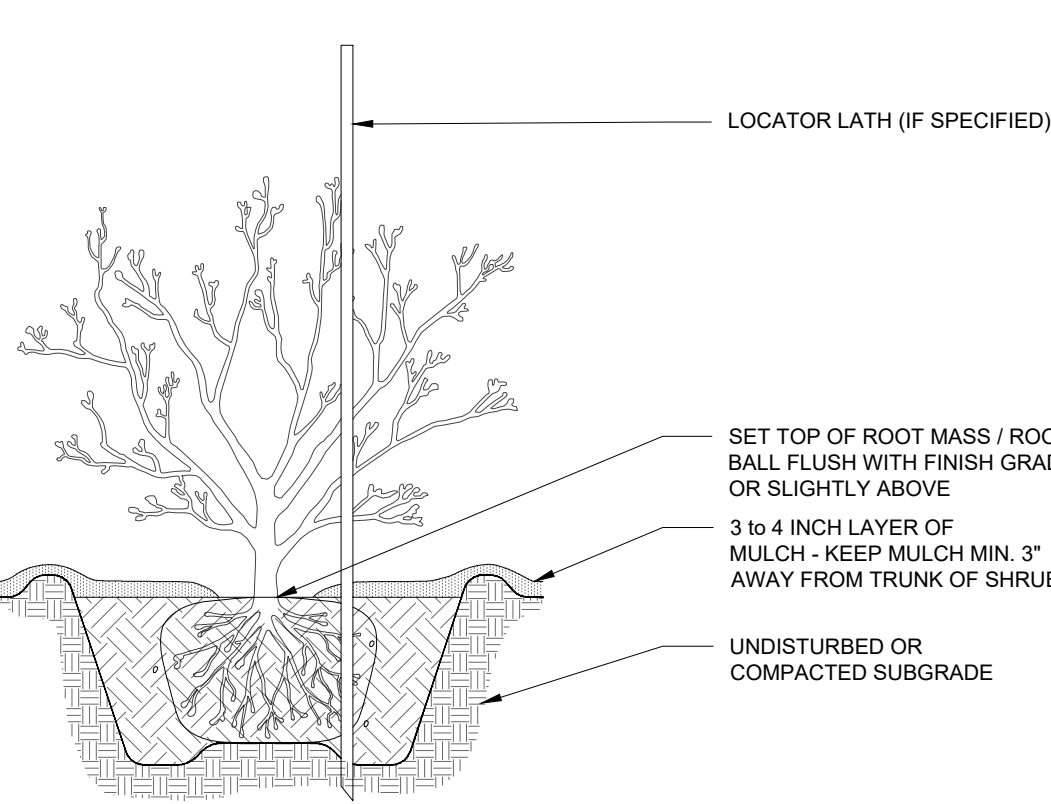
CONIFEROUS TREE PLANTING DETAIL (TYPICAL)

NOT TO SCALE



TREE AND SHRUB PLANTING DETAIL (TYPICAL)

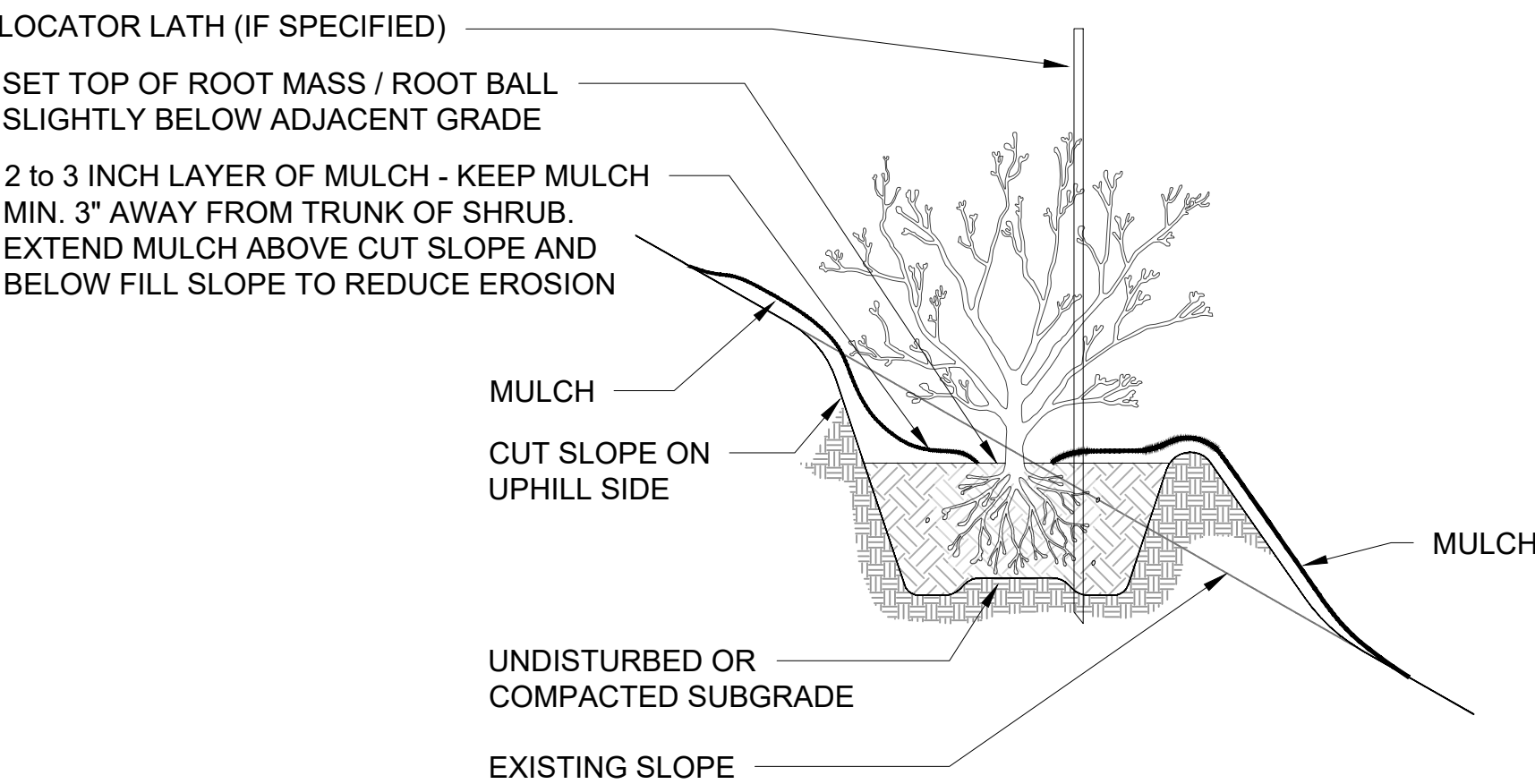
NOT TO SCALE



- NOTES:
1. PLANT SHRUBS OF THE SAME SPECIES IN GROUPS OF 3 to 9 AS APPROPRIATE, OR AS SHOWN ON PLAN. AVOID INSTALLING PLANTS IN STRAIGHT LINES TO ACHIEVE A NATURAL-LOOKING LAYOUT.
 2. EXCAVATE PIT TO FULL DEPTH OF ROOT MASS AND 2 X ROOT MASS DIAMETER. SPREAD ROOTS TO FULL WIDTH OF CANOPY. SCARIFY SIDES OF PIT.
 3. MIDWAY THROUGH PLANTING ADD AGROFORM TABLET AND WATER THOROUGHLY.
 4. BACKFILL TO BE COMPACTED USING WATER ONLY.
 5. WATER IMMEDIATELY AFTER INSTALLATION.

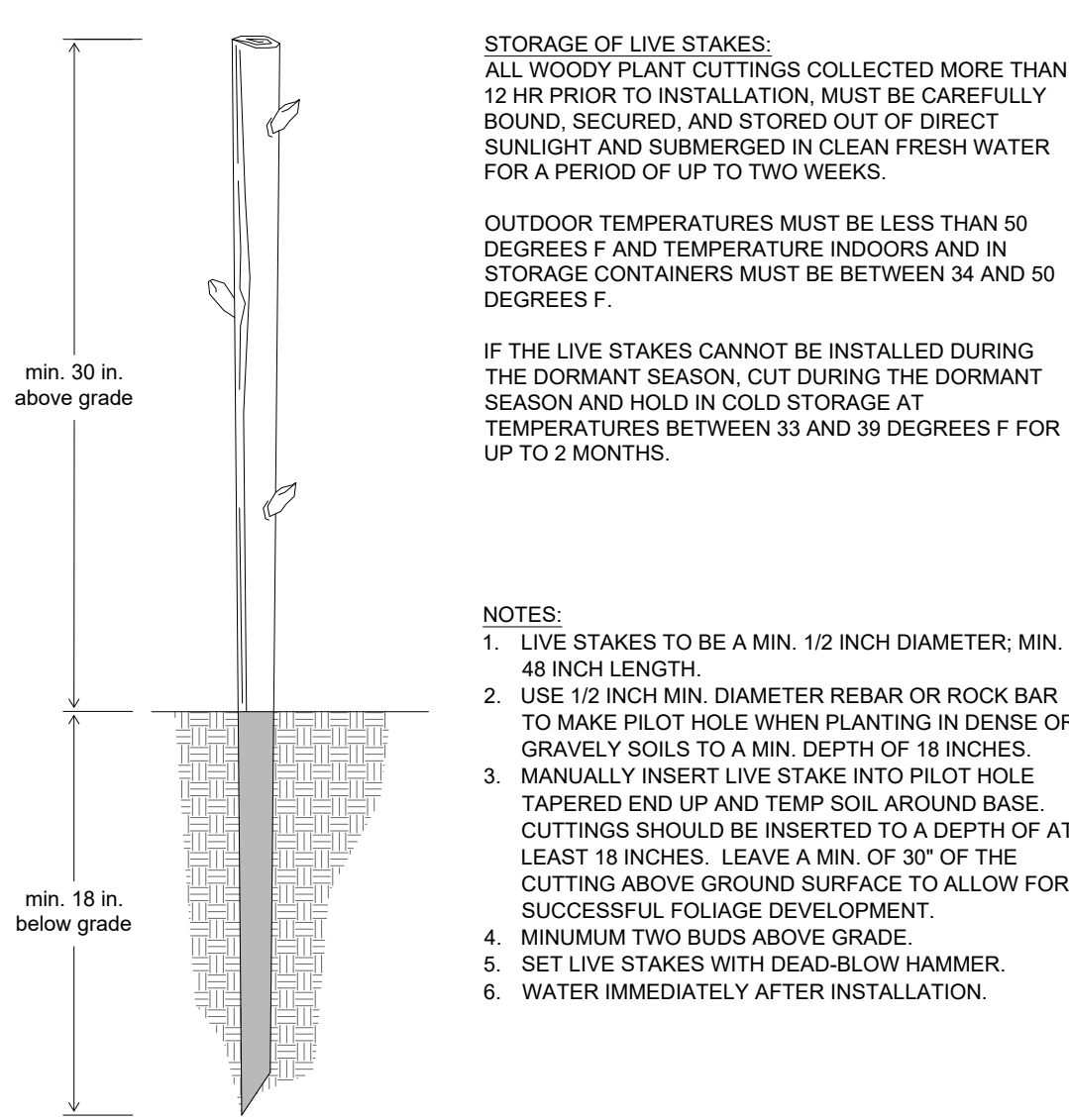
TREE AND SHRUB PLANTING ON STEEP SLOPE

NOT TO SCALE



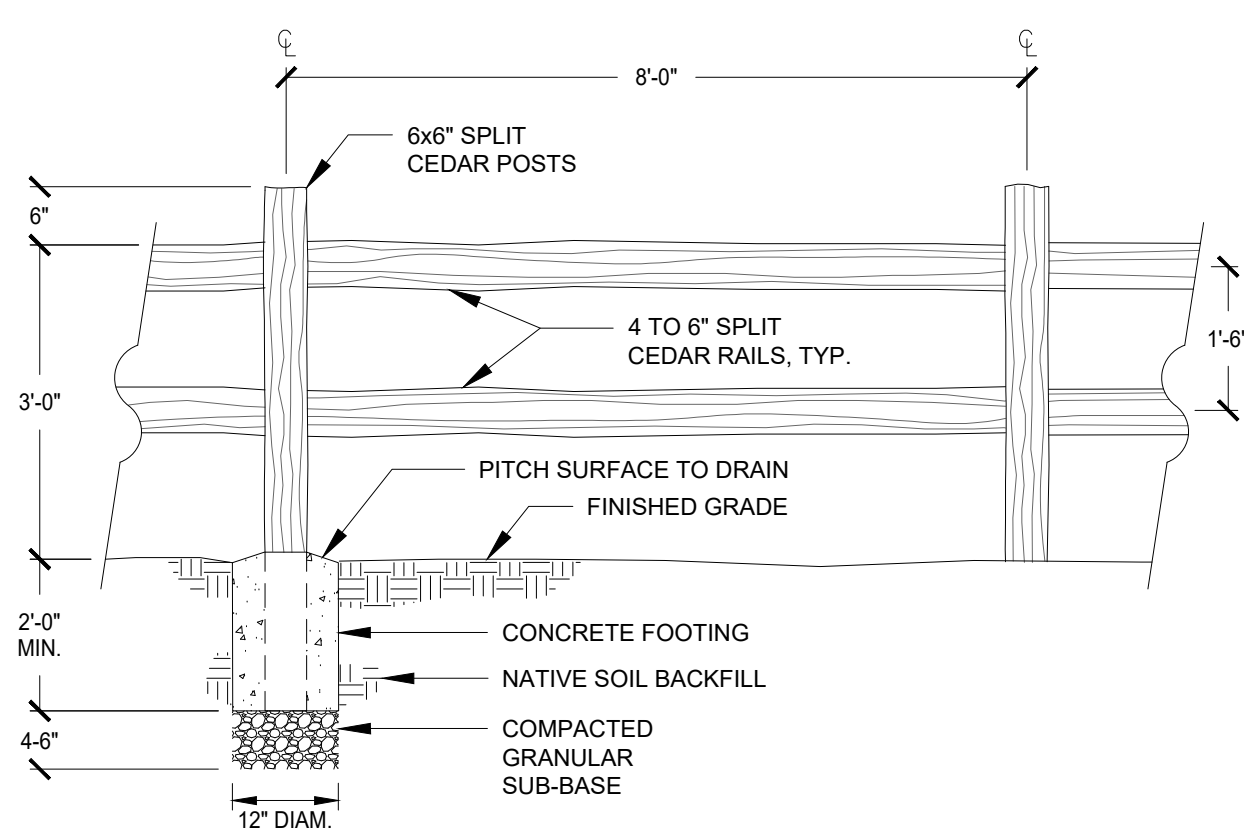
LIVE STAKE PLANTING DETAIL (TYPICAL)

NOT TO SCALE



SPLIT RAIL FENCE DETAIL

NOT TO SCALE



- NOTES:
1. POSTS AND RAILINGS PRE-CUT FOR ASSEMBLY.
 2. 3-RAIL DESIGNS ARE PERMITTED.
 3. FENCE SHALL BE PLACED AT APPROVED BUFFER EDGE.

PRELIMINARY
INFORMATION ONLY

NOT FOR CONSTRUCTION

SOUNDVIEW CONSULTANTS LLC ASSUMES
NO LIABILITY OR RESPONSIBILITY FOR
CONSTRUCTION, IMPROVEMENTS, OR
ESTIMATES BASED ON THIS PLAN SET

SOURCES:



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SKOOKUMCHUCK COMMERCE

CENTER
1406 & 1620 W REYNOLDS AVENUE,
CENTRALIA, WA 98531

LEWIS COUNTY PARCEL NUMBER(S):
021058010000, 021059000000, 021037000000, 021045000000,
021044002000, 021044003000, 021060000000, 021043003000,
021059000000, 021037000000, 021041000000

DATE: 05/23/2023

JOB: 1144.0036

BY: DLS

SCALE: AS SHOWN

SHEET: 4

Attachment B – Qualifications

All field inspections, wetland determinations, habitat assessments, and supporting documentation, including this *Shoreline No Net Loss Analysis* prepared for the *Skookumchuck Commerce Center Project* were prepared by, or under the direction of, Alex Murphy of SVC. In addition, report preparation was completed by Morgan Kentch, with final quality assurance completed by Kyla Caddey.

Alex Murphy, AICP

Planner & Project Manager

Professional Experience: 7 years

Alex Murphy is a Planner and Project Manager with a background in land use planning, site planning & design, permitting, and project management. He has over 7 years of experience working for local jurisdictions in the Intermountain West and Pacific Northwest with an emphasis on maximizing opportunities for culturally and environmentally sensitive projects.

Alex earned a Bachelor of Landscape Architecture degree from Utah State University. He is a Certified Planner through the American Institute of Certified Planners and has received formal training in climate adaptation planning for coastal communities from NOAA. Mr. Murphy currently assists in wetland, stream, and shoreline delineations and fish and wildlife habitat assessments; conducts environmental code analysis; and prepares environmental assessment and mitigation reports. He also manages development projects, supporting clients through the regulatory and planning process for various land use proposals.

Kyla Caddey, PWS, Certified Ecologist

Senior Environmental Scientist

Professional Experience: 8 years

Kyla Caddey is a Senior Environmental Scientist with a diverse background in stream and wetland ecology, wildlife ecology and conservation, wildlife and natural resource assessments and monitoring, and riparian habitat restoration at various public and private entities. Kyla has field experience performing in-depth studies in both the Pacific Northwest and Central American ecosystems which included various environmental science research and statistical analysis. Kyla has advanced expertise in federal- and state-listed endangered, threatened, and sensitive species surveys and assessment of aquatic and terrestrial systems throughout the Puget Sound region. She has completed hundreds of wetland delineations and has extensive knowledge and interest in hydric soil identification. As the senior writer, she provides informed project oversight and performs final quality assurance / quality control on various types of scientific reports for agency submittal, including: Biological Assessments/Evaluations; Wetland, Shoreline, and Fish and Wildlife Habitat Assessments; Mitigation Plans, and Mitigation Monitoring Reports. She currently performs wetland, stream, and shoreline delineations and fish and wildlife habitat assessments; prepares scientific reports; and provides environmental permitting and regulatory compliance assistance to support a wide range of industrial, industrial, and multi-family residential land use projects.

Kyla earned a Bachelor of Science degree in Environmental Science and Resource Management from the University of Washington, Seattle with a focus in Wildlife Conservation and a minor in Quantitative Science. She has also completed additional coursework in Comprehensive Bird Biology from Cornell University. Ms. Caddey is a Certified Professional Wetland Scientist (PWS #3479) through the Society of Wetland Scientists and Certified Ecologist through the Ecological Society of America. She has received 40-hour wetland delineation training (Western Mtns, Valleys, & Coast and

Arid West Regional Supplement), is a Pierce County Qualified Wetland Specialist and Wildlife Biologist, and is a USFWS-approved Mazama pocket gopher survey biologist. Kyla has been formally trained through the Washington State Department of Ecology, Coastal Training Program, and the Washington Native Plant Society in winter twig and grass, sedge, and rush identification for Western WA; Using the Credit-Debit Method in Estimating Wetland Mitigation Needs; How to Determine the Ordinary High Water Mark; Using Field Indicators for Hydric Soils; How to Administer Development Permits in Washington Shorelines; Puget Sound Coastal Processes; and Forage Fish Survey Techniques. Additionally, she has received formal training in preparing WSDOT Biological Assessments.

Morgan Kentch

Environmental Scientist

Professional Experience: 4 years

Morgan Kentch is an Environmental Scientist with a background in marine and freshwater ecology, wildlife and natural resource assessments, and monitoring wetland and riparian habitat restoration sites in the Pacific Northwest. Morgan has field experience conducting wetland, stream, and shoreline delineations and fish and wildlife habitat assessments in Washington State. She currently assists with performing wetland, stream, and shoreline delineations and fish and wildlife habitat assessments, conducting environmental code analysis, and preparing and/or providing final quality assurance/control for various types of scientific reports and permits for agency submittal.

Morgan earned her Bachelor of Science degree in Biology with Marine Emphasis from Western Washington University, Bellingham. There she received extensive, hands-on experience working in lab and field settings, conducting scientific background research, and performing statistical analyses. She has also received 40-hour wetland delineation training (Western Mountains, Valleys, and Coast and Arid West Regional Supplements) and has received formal training through the Washington State Department of Ecology and Coastal Training Program in Using the 2014 Wetland Rating System and How to Determine the Ordinary High Water Mark.