CRITICAL AREAS ASSESSMENT AND CONCEPTUAL MITIGATION PLAN

CARRICK COURT
MUKILTEO, WASHINGTON

Prepared for

214-WLD Carrick Court, LLC

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Summary

Client:	214-WLD Carrick Court, LLC 1010 Market Street Kirkland, WA 98033
Project site:	9.57-acre site, Parcel Nos. 06611600013600, 00611600013500, 00611600013402 located at the intersection of Mukilteo Speedway (SR-525) and 88th Street SW, Mukilteo, Washington.
Critical Area Assessed:	Wetland A – Category IV; 0.45AC; slope/depressional Drainage 1 – Type 5 Stream Drainage 2 – Minor Stormwater Feature/Not Typed
Regulatory Guidance:	MMC 17.52B.100 establishes the following wetland categories and standard buffers: Category III wetland – 60 to 225 feet Category IV wetland – 40 feet MMC 17.52C.090 establishes the following stream types (based on WAC 222-16-030 water types) and standards buffer widths: Type 3 – 150 feet Type 4 – 50 to 75 feet Type 5 – 50 feet

Introduction

This Critical Area Assessment (CAA) and Conceptual Mitigation Plan was prepared for 214-WLD Carrick Court, LLC, by Green Earth Operations, Inc. (GEO). GEO conducted site investigations to document the occurrence of regulated wetland and streams within and adjacent to the project site. This report is consistent with the requirements of Mukilteo Wetland Regulations (Mukilteo Municipal Code [MMC] 17.52B) and uses the 2014 Updated *Washington State Wetland Rating System for Western Washington* (Hruby 2014). The report includes characterization of existing site conditions, review of existing information sources, wetland assessment, drainage survey, and conceptual mitigation plan. The intent of this report is to get confirmation from the City of Mukilteo on the presence of critical areas documented in this report, assess impacts, and present a conceptual mitigation plan for a proposed development project.

The Critical Areas Assessment (CAA) was submitted for preliminary review in the fall of 2020. GEO has revised sections of the CAA in this document per the pre-application call and meeting notes.

Field work and report preparation was led by Mark Merkelbach, GEO principal and professional wetland scientist (PWS - #001837).

Project Summary

The project, currently referred to as *Carrick Court*, is a combined multi-family/commercial project with twenty-two (22) buildings containing a total of 120 new single-family residential townhome units. Four (4) of these building along the west frontage of SR 525 include 9,600 square feet each of commercial retail space on an approximately 9.6-acre site in the north-central portion of the City of Mukilteo, Washington (**Appendix A/Figure 1**). This project was formerly referred to as the "Strickland Property." This will involve demolition of the existing building structures on Parcels B and C followed by site grading, roadway, stormwater treatment infrastructure, and other utility construction. Residential buildings will be configured around contiguous common open space areas with convenient pedestrian access and amenities for the residents. The project also includes a nearly 2-acre natural open space area along its southern boundary. This natural open space area will be the project's onsite mitigation area for wetland and stream impacts. It will be a protected NGPA and act as a green buffer between the development and 88th Street SW.

Site Location

The project site is in Mukilteo, Washington, and consists of three rectangular parcels (referred to as "Parcel A", "Parcel B", and "Parcel C" hereinafter) located northwest of the intersection of Mukilteo Speedway (SR-525) and 88th Street SW in Section 16 of Township 28N and Range 4E W.M. (Appendix A/Figure 1). All three parcels (Parcel A 06611600013600, Parcel B

00611600013500, Parcel C 00611600013402) are approximately 9.6 acres. The western and southern approximately 6.5-acre portion of the site are zoned Planned Community Business (PCB) and the remaining north and northeast frontages are zoned Community Business (CB). This area is within the Naketa Beach Drainage Basin which drains directly to Puget Sound (**Appendix A/Figure 2**).

Site Summary

Parcel A contains a mix of upland and wetland areas (**Appendix X/Figure 3**). An upland forested area is located at the intersection of Mukilteo Speedway and 88th Street SW and extends westward. An elongated wetland area, central to the parcel, follows a small unnamed seasonal drainage which starts from a culvert under Mukilteo Speedway and flows east to west, exiting at the southwest corner of the parcel. Garbage piles and former encampment debris from transient communities are present.

Parcel B contains a house with several sheds, parking areas, and an open grass meadow. Within the lowest elevation point of this parcel, a detention pond with fence is present. The pond was excavated around 1995 based on a review of site aerials (Appendix A/Figure 3) (CM 2020b). It is approximately 4,000 square feet and was constructed to support a planned development that was never built. All that remains is the pond with woody vegetation, a partially upright enclosure fence with gate, and an unconstrainted outlet pipe which conveys flow to the unnamed drainage in Parcel A (**Photos 1 and 2**). Detention facilities are not considered wetlands and thus are not a regulated critical area (MMC 17.08.020).

Parcel C contain a small house and driveway. The property slopes toward to the west. Most of the site is vegetated with upland shrubs and forested species. Stormwater flow from a second culvert under Mukilteo Speedway, enters a rock lined swale within the road right-of-way easement adjacent to Parcel B. The swale ends in Parcel C's southeast corner and spreads flow across the forest floor. A consulting report has also identified this flow path (Confluence 2019).

North of Parcel B and West of Parcel C, a residential development was under construction. Most of the site has been regraded except for a wetland area located at the west edge of this offsite parcel.

	
Photo 1: Existing stormwater pond on west side of the project site. Photo taken October 2020.	**Photo 2**: Existing stormwater pond outlet culvert. Photo taken October 2020.

A review of aerial photos shows a steady pattern of land disturbance, specifically in Parcel B and portions of Parcel C. These areas have been partially cleared for agricultural/grazing uses over the past several decades (**Appendix A/Figure 3**). Parcel A however has remained relatively intact over this same period.

Methods

Wetland Delineation, Identification, and Classification

Waters of the United States (U.S.), including wetlands, were delineated within the project site boundaries consistent with the technical approaches outlined in the U.S. Army Corps of Engineers (USACE) *Wetlands Delineation Manual* (Environmental Laboratory 1987) and the *Regional Supplement to USACE Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region* (Version 2.0) (Environmental Laboratory 2010). The wetland definition provided in the Mukilteo Municipal Code (MMC) (MMC 17.08.020) was applied throughout the study.

In general, wetland delineation consisted of three main tasks: (1) assessing vegetation, soil, and hydrologic characteristics to identify areas meeting the wetland identification criteria, (2) evaluating constructed drainage features to determine if they would be regulated as wetlands, and (3) marking wetland boundaries.

Sampling locations were selected at sites representative of the area. Dominant plant species in each of the three strata (tree, sapling/shrub, and herb) were identified using northwest flora field guides (Cook 1997 and Pojar 1994). Unless otherwise noted in field data sheets due to local conditions, trees were identified within a 30-foot radius of an established data plot, scrub/shrub vegetation was identified within a 5-foot radius, and herbaceous vegetation was identified within a 5-foot radius. A determination of the presence of hydrophytic vegetation was made at each observation point in accordance with the USACE guidelines (Environmental Laboratory 2010).

The determination of the presence of hydric soils was consistent with the USACE Regional Supplement (Environmental Laboratory 2010). The Soil Survey of Snohomish County Area (NRCS 2020a) provided information regarding the general characterization of the soils in the area, the parent material, as well as series, taxonomy and subgroup information. Soils were examined to a depth of approximately 20 inches, or the depth at which it could be confirmed that positive indicators were either present or absent. Soil colors were described in data forms using the Munsell soil color charts' numbering system (Munsell Color 2000). This numeric color classification system is used by the USACE Regional Supplement in determining if hydric soil indicators are present in a sample.

Hydrology data was collected from field observations and reference documents. Annual climate records and monthly precipitation during the site visits were obtained from weather stations located at Everett, WA (NRCS 2020c). Upon site inspection, the presence of direct and indirect hydrologic indicators was used to infer wetland hydrology. Field indicators of wetland hydrology were determined in accordance with the USACE guidelines (Environmental Laboratory 2010).

The wetland observed on the subject property was classified according to the USFWS classification system (Cowardin et al. 1979). This system is based on an evaluation of attributes such as vegetation class, hydrologic regime, salinity, and substrate. The wetland was also classified according to the hydrogeomorphic (HGM) wetland classification system, which is based on an evaluation of attributes such as the position of the wetland within the surrounding landscape, the source and location of water just before it enters the wetland, and the pattern of water movement in the wetland (Brinson 1993).

Wetland Rating

MMC 17.52.090 requires the classification of wetlands using the *Washington State Wetland Rating System for Western Washington: 2014 Update* (Hruby 2014). The rating system assesses a wetland's potential to provide water quality, hydrologic, and habitat functions at a site-specific level as well as in relation to existing land use in the surrounding landscape. It also incorporates consideration of the wetland's hydrologic and geomorphic conditions into the system by assigning the wetland an hydrogeomorphic (HGM) classification. This allows for a more accurate rating of how well the wetland functions based on its position in the landscape, water source, and the flow and fluctuation of the water once in the wetland. The 2014 Rating System divides wetlands into four hierarchical categories based on specific attributes such as rarity, sensitivity to disturbance and our ability to replace them. The classification hierarchy ranges from Category I wetlands, which exhibit outstanding features (rare wetland type, relatively undisturbed or a high sensitivity to disturbance, high level of functions) to Category IV wetlands, which have the lowest levels of function and are often heavily disturbed. The rating categories are used to identify permitted uses in the wetland and its buffer, to determine the width of buffers needed to protect the wetland from adjacent development, and to identify the mitigation ratios required to compensate for potential impacts on wetlands.

Ratings forms were completed with information gathered in the field and through online research (Appendix C). Following determination of the wetland rating, the wetland buffer width was determined according to that rating, per MMC 17.52B.100.

Stream Classification

Streams were noted within the vicinity of the site. Washington State defines a watercourse, river, or stream as "any portion of a channel, bed, bank, or bottom waterward of the ordinary high-water line of waters of the state, including areas in which fish may spawn, reside, or pass, and tributary waters with defined bed or banks, which influence the quality of fish habitat downstream. This includes watercourses which flow on an intermittent basis or which fluctuate in level during the year and applies to the entire bed of such watercourse whether or not the water is at peak level. This definition does not include irrigation ditches, canals, storm water run-off devices, or other entirely artificial watercourses, except where they exist in a natural watercourse that has been altered by humans" (WAC 2020; 220-660-030 [153]).

An unnamed drainage through Parcel A was classified using the stream typing system in MMC 17.52C.080, which states, "Stream types shall be classified according to WAC 222-16-31". No Type 1 or Type 2 streams are located within the City of Mukilteo. Other stream types are described generally below:

> Type 3 Waters that have five or more feet between each bank's ordinary high-water mark, and a moderate to slight use and are moderately important from a water quality standpoint for domestic use, public recreation, and fish and wildlife habitat.
>
> Type 4 Waters that are perennial non-fish habitat streams.
>
> Type 5 Seasonal, non-fish habitat streams in which surface flow is not present for at least some portion of the year and are not located downstream from any stream reach that is a Type 4 water.

Determination of Fish and Wildlife Habitat Conservation Areas

The presence of fish and wildlife habitats of importance on the site were determined based on the following criteria listed in MMC 17.52C.030:

> (1) Areas with endangered, threatened, and sensitive species;
>
> (2) Habitats and species of local importance that have been designated by the City;
>
> (3) Waters of the state as defined by WAC 222-16-30;
>
> (4) State natural area preserves and natural resource conservation areas;
>
> (5) State Priority Habitats and Areas Associated with State Priority Species. Priority habitats and species are priorities for conservation and management. Priority species require protective measures for their perpetuation due to their population status, sensitivity to habitat alteration, and/or recreational, commercial, or tribal importance. Priority habitats are those habitat types or elements with unique or significant value to a diverse assemblage of species. A priority habitat may consist of a unique vegetation type or dominant plant species, a described successional stage, or a specific structural element. Priority habitats and species are identified by the state Department of Fish and Wildlife.
>
> (6) Areas of rare plant species and high-quality ecosystems as identified by the Washington State Department of Natural Resources.

Existing Information Review

Aerial photographs and project maps of the area were reviewed. Existing information concerning the project area was reviewed prior to fieldwork to identify vegetation patterns, topography, soils, streams, and other natural resources potentially located within the project boundaries.

Stream and Wetland Inventory

The National Wetland Inventory (NWI) is compiled by the U.S. Department of Interior Fish and Wildlife Service (USFWS 2020). NWI relies upon visual aerial photo interpretation of wetland indicators including hydrologic, vegetation and topographic signatures. Wetland areas identified under NWI are also classified in accordance with the Cowardin classification system (Cowardin et al. 1979). The NWI map does not identify any wetland or riverine habitats with the project vicinity (**Appendix A/Figure 4**).

The City of Mukilteo has compiled a map of streams, drainage basins, and potential wetlands (ESA 2011). This map was developed by the city to aid property owners, developers, and biologists with identifying potential critical areas within city limits and identifying appropriate mitigation sites. The map does not identify streams or wetland within the project site. A stream or gulch however is identified northwest of the project site which crosses 84th Street SW (**Appendix A/Figure 2**).

Two previous wetland assessments were conducted on this property by Talasaea Consultants Inc. Two wetland areas were previously mapped along a drainage pattern running through the site (Talasaea 2018). They also noted a stormwater discharge from Mukilteo Speedway that directs flows across Parcel C (**Appendix A/Figure 3**). A more recent survey by Confluence Engineering Group LLC also identified similar wetland areas but questioned whether this wetland was regulated as its main source of hydrology is stormwater (Confluence 2019). A letter from the Department of Ecology noted the presence of the drainage pattern and wetlands and confirmed that the would be regulated (Ecology 2019).

Soil Survey of Snohomish County

The National Resource Conservation Service soil survey indicates that most soils within the site are mapped as Alderwood-Urban land complex, 2 to 8 percent slopes (NRCS 2020a) (**Appendix A/Figure 5**). This soil is moderately to well drained and is grouped into Hydrologic Soil Group B. Group B soils have unimpeded subsurface water movement due to low clay concentrations (USDA 209). This soil not listed as hydric on the national hydric soil list (NRCS 2020b).

Alderwood-Urban land complex, 8 to 15 percent slopes, is mapped along the east quarter of the project site (Appendix A/Figure 5). This soil is also moderately to well drained and is grouped into Hydrologic Soil Group B. Group B soils have unimpeded subsurface water movement due

to low clay concentrations (USDA 2009). This soil not listed as hydric on the national hydric soil list (NRCS 2020b).

Based on recent infiltration tests performed onsite (depth below ground surface 4 to 4.5 feet), rates varied between 0.1 and 0.63 inches per hour (Kindred 2020). This infers that underlaying site soils may drain slower than what was described in the mapped soil descriptions. Further, these infiltration rates are more closely associated with Group C/D hydrologic soil groups where water transmission through this soil is more restrictive (USDA 2009).

Existing Conditions

Water Features

The project site is located within the Naketa Beach watershed (**Appendix A/Figure 2**). A water vector map (**Appendix A/Figure 6**) was developed using GIS and LIDAR coverage to generate a slope map with computed surface flow pathways. The drainage lines (blue) do not reflect actual streams, just general surface water pathways based on topography. This figure identifies property slopes generally running east to west with an unnamed drainage pattern, referred to as Drainage 1 and a wetland occurring in Parcel A (**Appendix A/Figure 6**).

	
Photo 3: Drainage 1 upstream culvert. Photo taken February 2020.	**Photo 4**: Drainage 1 upstream culvert. Photo taken August 2020.

Drainage 1 starts at a 12-inch concrete culvert that conveys flows across Mukilteo Speedway from the east. This drainage is seasonal as flow was present during February field visit (**Photo 3**) but absent in the corresponding August visit (**Photo 4**).

A second flow path in Parcel C (**Appendix A/Figure 6**), referred to as Drainage 2, begins from a culvert under Mukilteo Speedway, flows through a sparsely vegetated rocky swale (**Photo 5**) and transitions to the forest floor (**Photo 6**) where water sheet flows across the site.

Photo 5: Drainage 2, looking east, swale section with angular rocks after a morning rain. Photo taken October 21, 2020.

Photo 6: Drainage 2, looking west, swale along Mukilteo Speedway, water sheet flows across the forest floor. Photo taken October 21, 2020.

Approximately 0.72 inches of rainfall was recorded during the month of July and August in Everett prior to August 4th field work (NRCS 2020c). In comparison, 7.12 inches of rainfall were recorded during the month of February. (NRCS 2020c)

The principal source of hydrology to the area appears to be localized precipitation and offsite stormwater originating from the culvert under Mukilteo Speedway. During the February field visit, flow was observed in the drainage and adjacent soils were saturated. The lower reach of Drainage 1 and the associated wetland had standing water. In contrast, no flow, standing water, or saturated condition were present in August.

A minor hydrologic contribution is made from intermittent flows from a man-made detention pond located in the southwest corner of Parcel B (**Photos 1 and 2**). Water from the detention

pond exits the pond via a pipe that outlets to Parcel A, approximately 225 feet north of Drainage 1 (**Appendix A/Figure 7**).

The local growing season in the lower Snohomish basin is approximately 271 days in length, typically from March 1 to November 26 (using the 5 years in 10 criteria and 28˚ C) (NRCS 2020c). The USACE Delineation Manual requires that the area must be inundated or saturated for two consecutive weeks of the growing season in order to have wetland hydrology (Environmental Laboratory 2010).

Plant Community

The project is located within the Puget Sound western hemlock (*Tsuga heterophylla*) major vegetation area (Franklin and Dyrness 1973). The south half of the project site is forested and dominated by western red cedar (Thuja plicata), Douglas fir (*Pseudotsuga menziesii*), red alder (*Alnus rubra*), and big-leaf maple (*Acer macrophyllum*) (**Photo 7**). Drainage 1 and a delineated wetland were also found in the south half of the site. The herbaceous plants are dominated by reed canarygrass (*Phalaris arundinacea*), creeping buttercup (*Ranunculus repens*), and western lady fern (*Athyrium cyclosorum*). Salmonberry (*Rubus spectabilis*) and Himalayan blackberry (*Rubus armeniacus*) are the dominant shrub species. Refer to **Appendix B** for data forms.

Moving north of Parcel A are two lots that contains open grass meadows and mix of horticultural plantings and typical native shrub and grass species.

The site contains Japanese knotweed (*Polygonum boehimicum*) and English holly (*Ilex aquifolium*), noxious weeds that have been identified on Snohomish County's noxious weed list (SSNW 2020) (**Appendix D/Sheet 1**). Two patches of Japanese knotweed are located onsite. The first patch is on the north side of the upper reach of Drainage 1 in Parcel A. The second path is located south of the abandoned house on Parcel C. Knotweed is a Class B Weed Designate which means it is a common weed in the County and is not required by the State Weed Board to be controlled, however Snohomish County has chosen to control these weeds. English ivy is a non-regulated noxious weed and ubiquitous in urban and disturbed settings. Property owners in Snohomish County are not required to control this species, but control is recommended. Ivy is mostly located in the lower reach of Drainage 1/Wetland A.

Photo 7: Upland forest conditions with Douglas fir, western red cedar, and trailing blackberry dominant at SP-4 in Parcel A. Photo taken August 4, 2020.

Wetland and Watercourse Summaries

Multiple site visits were made in the winter and summer of 2020. GEO's original involvement with this project pertained to wetland investigative services for the previous landowner on February 24, 2020. Wetlands and streams were delineated on August 4 and 7, 2020.

One wetland was identified (Wetland A) within the project site (**Table 1**) and a second wetland was identified offsite to the north. The onsite wetland is 0.45 acres (**Appendix A/Figure 7).** Normal circumstances were present during the field visits (USACE 1990 and NRCS 2011). Two drainages were also identified within the project site (Drainage 1 and Drainage 2) (**Table 2**). Only Drainage 1 is identified as a Type Ns Stream. Drainage 2 is not significant enough to be a Typed water. The wetland and stream areas onsite were delineated on August 4, 2020. A subsequent site visit occurred on October 21, 2020. Refer to **Appendix B** for wetland data sheets, **Appendix C** for wetland rating forms, and **Appendix D/Sheet 1** for detailed survey and detailed wetland and stream mapping (including soil pit [SP-X] locations).

Table 1. Wetland Summary Table

Wetland	Wetland Area (SF)	Wetland Area (ac)	Wetland Class[1]	Standard Wetland Buffers[2]
A	19,774	0.45	IV	40

[1] Based on Ecology 2014 wetland rating (Hruby 2014)

[2] Based on MMC 17.52B.100

[3] Offsite Wetland does not impact the project site, thus was not included in Table 1.

Table 2. Stream Summary Table

Streams	Stream Type	Standard Stream Buffers[1]
Drainage 1	5 (Low mass wasting)	50
Drainage 2	Minor stormwater drainage/Not a stream/Not Typed	N/A

[1] Based on MMC 17.52C.080 and MMC 17.52C.090

Wetland A

Wetland A (19,774 square feet/0.45 ac) contains a palustrine emergent (PEM) wetland Cowardin class located in the eastern portion of the site; and palustrine scrub-shrub (PSS) and forested (PFO) areas in central and western extents (Cowardin, et al 1979) (**Appendix A/Figure 7; Appendix D/Sheet 1**). The PEM classes were confined by a sloped topography that contains

Drainage 1. This area consisted of reed canarygrass and creeping buttercup with Himalayan blackberry and salmonberry in the PSS class (**Photo 8**). As the slope of the wetland decreases westward, there was greater prevalence of PFO and PSS classes. The dominant species were Pacific willow (*Salix lucida*), western red cedar in the PFO class and hardhack (*Spiraea douglasii*), Pacific willow, and salmonberry in the PSS class. The wetland was assessed using soil pits SP-1, SP-2, SP-3, and SP-4. The wetland edge in the PEM area was delineated between the canarygrass limits and sword fern (*Polystichum munitum*) and bracken fern (Pteridium aquilinum). More pronounced topographic breaks and vegetation breaks along sword fern edges were used to flag the PFO and PSS classes.

Photo 8: Wetland A emergent vegetation. August 7, 2020.

Photo 9: SP-3 location in a seasonal ponded (dry) area within Wetland A. August 7, 2020.

This wetland receives direct precipitation runoff, groundwater seepage and occasional overflow from Drainage 1. The outlet is slightly constrained by a shallow berm on the west end of the site adjacent to 88th Street SW. This berm is likely be the result of ditch clearing activities over time along 88th Street SW. There, water flows to a roadside drainage ditch and flows west. Water from the un-maintained detention pond in Parcel B also enters the western portion of the wetland. Water flow and soil saturation was present in a February 2020 site visit but absent in the subsequent August field visit (**Photo 9**).

This wetland contains both slope and depressional HGM class (Hruby 2014). The depressional class in the lower reach is at least 30% of the total wetland area. As this exceed the 10% criteria of HGM types, the depressional rating form was applied (Hruby 2014).

The soil texture is sandy loam (10YR 3/1) to a depth of 5 inches and matches the description of the mapped Alderwood-Urban soil map unit (NRCS 2020b). The texture changes to sandy clay loam (10YR 3/1 with 20% redox concentrations present) to at least 16 inches. The soil exhibited wetland soil indicator redox dark surface (F6) with low chroma matrix and distinct concentrations (**Photo 10**).

Wetland A received 15 total points based on all functions. Sloped wetland portions and the slightly constrained outlet resulted in a moderate to low rating for stormwater retention. The wetlands habitat score of 5 was related to the presence of multiple plant communities and snags and logs which is a priority habitat. Wetlands that score between 9 and 15 total points are rated a Category IV depressional wetland (Hruby 2014).

Photo 10: SP-1 soil profile in Wetland A.
Photo taken August 7, 2020.

This wetland would require a 40-foot standard buffer (MMC 17.52B.100). This wetland meets the hydrology, hydric soils, and hydrophytic vegetation parameters; normal circumstances occur; and it drains a ditch along 88th Street SW that eventually enters the Naketa Beach drainage ravine. A previous site visit by the Department of Ecology (DOE) to assess wetland site conditions confirmed that the State would "regulate these wetland and streams" (Ecology 2019). Therefore, it is GEO's opinion that Wetland A will be regulated by DOE and is likely considered jurisdictional under USACE guidelines.

Drainage 1

Drainage 1 is a seasonal non-fish habitat "Type 5" stream located in Parcel A and within Wetland A; MMC 17.52C.080) (**Appendix A/Figures 6 and 7**). Type 5 streams are equivalent to Type Ns streams using Washington State Department of Natural Resources water type classification (WDNR 2020a). The ordinary high-water mark (OHWM) was not flagged as the channel width was very narrow (**Photo 11**). A 50-foot standard buffer width is required for Type 5 streams (MMC 17.52C.090). Please note, the edges of the stream's 50-foot buffer are almost entirely within the wetland's 40-foot buffers, because the wetland generally extends more than 10 feet outward from the stream bank edge.

Photo 11: Drainage 1 flowing through upper reaches of Parcel A. Photo taken February, 2020.

This drainage has a defined bed and bank with visible signs of bedload transport. The bed width varies, but in general is less than 2 feet in the upper reaches. Slopes than range between 3 to 8 percent. The channel width expands as the site flattens out with slopes approaching 2 percent (Photo 12). The drainage flows into a roadside ditch along 88th Street SW and flows west eventually joining the Naketa Beach drainage ravine.

The riparian area is densely vegetated with emergent, shrub, and forested vegetation communities present. Most of this vegetation is associated with Wetland A. It contains stands dominated by red alder and western red cedar, whose diameter at breast height (dbh) is greater than 4 inches. The understory is a mix of salmonberry and Himalayan blackberry.

Drainage 2

Drainage 2 transitions from a swale (**Photo 12**) along the Mukilteo Speedway right-of-way to forest floor where water sheet flows across the property (**Photo 6**). The water vector map (**Appendix A/Figure 6**) shows this flow path exiting Parcel C in the southwest corner. The adjacent development to the west, Courtyard Townhomes, has installed a 12-inch inlet at the southeast corner of their property to capture these intermittent sheet flows and convey them to the Cat. IV offsite wetland (RAM 2020).

Photo 12: Drainage 2 swale, with angular rock along Mukilteo Speedway. Photo taken October 21, 2020.

This drainage does not meet the WAC 222-16-031 definition of a stream as there is no defined bed or bank through the site. This determination is also supported by the approved Wetland Resources, Inc Critical Area Study (WR 2016) which did not identify wetlands or streams in areas immediately adjacent (referring to Parcel C) to the subject property.
The flow path begins by traveling through an understory of bracken fern (FACU), dandelion (*Taraxcum officinale*-FACU), trailing blackberry (FACU), and a stand of European ask (*Populus tremula*-NI)). A soil pit (SP-5) halfway along this flow path did not exhibit any hydric soil

indicators (**Photo 13**). The soil was a sandy loam with gravels, which is representative of the Alderwood—Urban land complex soil series. No hydrology was present even though it has rained earlier in the day. Corresponding vegetation midway and to the west consisted of Douglas fir and bigleaf maple (both FACU species) in the tree canopy followed by patches of Japanese knotweed and Himalayan blackberry in the understory (**Photo 14**). Minimal herbaceous species were present. The lack of hydrology, presence of porous soils without hydric indicators, and dominant non-hydrophytic plant communities does not meet the criteria for wetlands along this flow path.

Photo 13: Soil pit existing upland soil characteristics along Drainage 2 flow path (SP-5. Photo taken October 21, 2020.

Photo 14: Parcel C, Drainage 2 flow path and forest floor looking east at SP-5. Photo taken October 21, 2020.

Combined Critical Area Buffer

There are distinct differences between the critical area buffers conditions and structure between the north and south buffer edges. The southern buffer which extends to 88th Street SW contains a 2 and 3rd growth upland forest (**Photo 15**). Dominant species include Douglas fir, western red cedar, and vine maple in the understory. Scattered sword ferns are mounded in areas which are typical of Western Washington upland forests. These buffer conditions persist

between the upstream and downstream portions (**Appendix A/Figure 6**). Some debris piles of garbage from transient communities is present in this portion of the site.

Photo 15: Forested south buffer conditions, facing west. Photo taken February 24, 2020.

Photo 16: North buffer conditions, upper reach with Himalayan blackberry thicket and knotweed pockets. Photo taken February 24, 2020.

The north buffer contains varying degrees of disturbance from former site clearing and invasive species encroachment (**Photo 16**). The upper reach contains few conifers trees and is an early-successional red alder shrub community. Thickets of Himalayan blackberry and knotweed pockets are found along these slopes. The lower reach transitions to a forested community that contains more conifer species. In this area, English ivy, an invasive species, cover portions of the upland forest floor and some tree trunks (**Photo 17**).

Photo 17: North forested buffer conditions with English ivy infestation on the west-side, downstream end of the site. Photo taken February 24, 2020.

Off-site Wetland

A forested wetland, north of the northwest corner of Parcel B was observed (Appendix A/Figure 7; Appendix D/Sheets 1) from the Strickland property boundary. A consulting report rated this a Category IV wetland with a corresponding 40-foot buffer (WR 2016). This area has been designated as a Native Growth Protection Area (NGPA) (MMC 17.52.035). The buffer does not encroach on the Strickland Property per the drawing.

There was no access to this wetland as this offsite parcel was under construction. Standing from the Strickland property boundary edge looking north (Photo 11), a silt fence was erected along the property line, the wetland and portions of the buffer edge were protected by orange barrier fencing in the background. A cleared area between the silt fence and orange barrier fence per the photo occurs along the edge of the mapped wetland buffer as shown on the engineering map (RAM 2020).

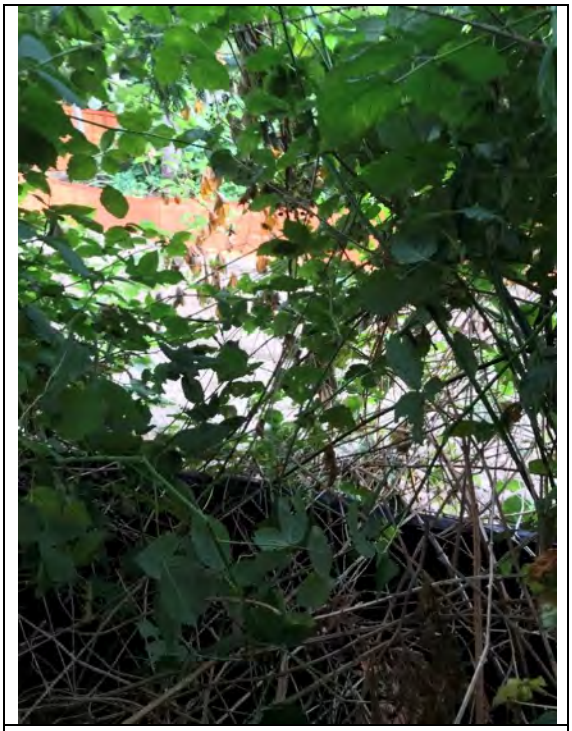

Photo 17: Off-site wetland/buffer edge with orange barrier fence looking north from Parcel B. Photo taken February 24, 2020.

Existing Critical Area Functions and Values

Wetland A Functions

Wetlands A receives 15 points for functions based on the WA Ecology Rating System which assigned it a Category IV wetland (Hruby 2014) (**Table 2**). According to MMC 17.52B.100 a standard 40-foot buffer applies to Category IV wetlands. **Tables 2 and 3** provide baseline summaries for how this wetland supports existing functions on this site as well as within the larger landscape. See Wetland A's functions sections below for details.

Table 2. Wetland Category, Rating, and Buffers Summary Table

Wetland	Wetland Rating Score Total (Habitat Score)	Wetland Category	Wetland Buffer [1] (ft)
A	15 (Habitat = 5)	IV	40

[1]MMC 17.52B.100 (D)

Table 4. Wetland Functions Summary Table

Wetland	FUNCTION	Water Quality	Hydrologic	Habitat
A	Site Potential	M	L	M
	Landscape Potential	M	H	L
	Value	L	L	M
	Summary	**5**	**5**	**5**

[1]L=Low; M=Moderate; H=High functions (Hruby 2014).

Wetland A scored moderate in its existing functions for water quality in both its site potential to provide services and its landscape potential (**Table 3**) (Hruby). Water quality functions are limited due to sloped portions of the wetland and an unconstrainted outlet to the ditch along 88th Street SW. The wetland rated low for value as it is not located within a basin that contains an Total Maximum Daily Load (TMDL) nor does it flow to a 303(d) listed, impaired aquatic resource.

Wetland A rated moderate to low for hydrologic functions due to a unconstricted outlet, shallow depth of ponding, and narrow wetland width relative to its flow-through stream in the sloped portions of the site. This wetland is not located within a basin that has flooding problems. Wetland A's low habitat functions score are due to the lack of accessible and undisturbed habitats within the basin. Further there are limited priority habitats adjacent to this wetland. Overall, Wetland A's current conditions offer ample opportunity for functional equivalence from restoration and rehabilitation activities.

Drainage 1 Functions

As described within earlier sections, Stream 1 is a seasonal drainage with roadway and upstream development stormwater runoff the primary hydrologic sources. It is an isolated drainage which receives water from and discharges water to roadside ditches. As discussed in wetland functions, portions of the stream exceed 5 percent slopes and the outlet is unconstrainted which provides limited water storage functions. Due to adjacent residential lot to the west, there would be limited opportunities to pond more water onsite as this could cause offsite flooding. The onsite wetland has the ability to export organic materials to the stream but the lack of connectivity to adjacent habitats creates a lost opportunity. Given current conditions there are opportunities for restorative actions and functional uplift.

Table 5. Summary Table of Drainage 1 Existing Functions and Values

Watercourse	Functions	Specific Functions/Values[1]	Low	Medium	High
Drainage 1	Hydrologic	Surface Water Storage	X		
		Sub/Surface Transfer		X	
		Flow Variation	X		
	Geomorphic	Sediment Continuity	X		
		Substrate Mobility	X		
	Biologic	Maintaining Biodiversity	X		
		Creation/Maintenance of Habitat	X		
		Sustained Trophic Structure	X		
	Water Quality	Nutrient Cycling and Transport		X	
		Chemical Regulation		X	
		Thermal Regulation	X		

[1]Source for Stream Functional Assessment Criteria from SFAM Oregon Department of State Lands and Environmental Protection Agency (EPA).

Drainage 2 Functions

This untyped drainage sheet flows across an upland forested floor. The soil in that portion of the site allows for permeability and infiltration and does not appear to impound water. The lack significant drainage volume or a defined channel does not allow for sediment or organic export functions to occur. Typical functions outlined in **Table 5** are non-existent in Drainage 2.

Combined Critical Area Buffer Functions

The existing critical area buffer consists of a majority of relatively undisturbed maturing forest. Trees and understory vegetation at this site captures and slows rainfall and the resulting surface and sub-surface drainage along the gradient towards Drainage 1 and Wetland A. The forested buffer and surrounding uplands at this site also function to filter air, light, and sound pollution in this densely urban environment. Some areas within the existing buffer have been disturbed by historic logging and clearing activities. The presence and establishment of invasive vegetation like English ivy, Japanese knotweed, and Himalayan blackberry in some areas has reduced native plant richness, diversity of forest understory structure, as well as potentially having negative affect on soil stability in sloped areas.

Due to the limiting factors of urbanization and development, all remaining upland buffers associated with Puget Sound lowland streams and wetlands are highly valuable to society for the ecological functions and services they provided or have the potential to within an urban systems. In urban settings, upland buffers generally provide vital stormwater infiltration and groundwater recharge, water quality filtration, and flood attenuation while also being refuge for wildlife that would otherwise have little to no presence or habitat in urban areas.

As discussed previously, this site is unlikely providing habitat for T&E species or local species of importance. However, urban-adapted species such as deer, coyote, eastern gray squirrel, cottontail, raccoon, common opossum, as well as resident and migratory songbirds likely utilize this site for nesting, foraging, or migration. Due to the landscape proximity to the Puget Sound shoreline and the presence of maturing coniferous species, bald eagles, great blue heron, osprey and other local falcon and hawk species are likely to utilize this site.

Sensitive Plants, Fish, Wildlife, and Habitats

According to the Washington State Department of Natural Resources (WDNR) Washington Natural Heritage Program database, neither threatened/endangered plant species nor high-quality ecosystems are present in the section, township, and range in which the site is located (T28N/R4E/S16) (WDNR 2020b).

WDFW Priority Habitats and Species (PHS) data does not identify any PHS areas within or adjacent to the project site (WDFW 2020a).

Critical Areas Impacts

Regulatory Review

Wetland A and Stream 1 (Type Ns) are subject to development restrictions and critical areas protections under federal, state, and local regulatory authority. The Site Plan has been designed to maximize the available upland space, minimize impacts to the extent economically practicable, and mitigate for unavoidable wetland and stream impacts. Impacts to portions of this combined critical area are necessary to provide for a feasible number of units to justify the costs to purchase and develop the property. As a part of the SEPA process, a critical area conceptual mitigation plan has been developed (MMC 17.52B140 and MMC 17.52C,149). This conceptual mitigation plan was developed concurrent with consultations with the City of Mukilteo.

Mitigation Sequencing

The proposed project and its approach towards "no-net loss of critical areas and/or their functions and values" applies mitigation sequencing as required by MMC 17.52B.120. Table 6 provides a summary of the mitigation sequencing applied to this project. Full details of site selection, avoidance, minimization, and compensation are provided further below.

Table 6. Project Mitigation Sequencing Summary

Sequencing[1]	Project Elements
Avoid	• The development footprint is placed primarily on the north side of the project area and as far from the critical areas as possible. • Re-alignment of the combined wetland and stream corridor avoids all critical area buffer impacts. • Due to the City-required access road along 88th Street SW, the number of units required for project feasibility, and the location of the existing critical areas on this parcel make avoidance of all impacts not possible. • Proposing fewer units than what code allows. • The current proposal (including impacts) is a reasonable use of the property in order to build housing units, provide required access and infrastructure.
Minimize	• The realignment of Drainage 1 is both a minimization of impacts as well as a compensation for them (see below). • In realigning the stream, its functions will also be engineered to enhance its functions and value to society.

	• Moving the stream to the proposed alignment, buffer impacts are also kept to a minimum and full 50-foot stream buffers can be provided in the mitigation area. • The entire remaining footprint of buildable area on the parcel is necessary for the proposed development; therefore, further minimizing impacts to wetlands is not practicable.
Rectify	• N/A; no temporary disturbance is proposed. • All impacts are permanent.
Reduce or eliminate through preservation or maintenance	• All remaining as well as proposed areas of wetland and buffer on these parcels will be protected and preserved within a fenced NGPA area and off-limits to further access and development.
Compensate	• On-site mitigation is proposed to off-set unavoidable impacts to critical areas. • See Mitigation Measures Section below for details.

[1]Based on MMC 17.52B.120

Site Selection

The applicant was intent on finding a developable track of land in the midtown Mukilteo Overlay that could provide commercial space, live-work spaces, and residential units. This type of project would address the ongoing shortages of new residential units and support new or existing companies (ie. aerospace) within the region. The applicant sought a lot between 8 and 10 acres to support this vision. After an extensive review of areas within the overlay, these three parcels (A, B, and C) were the only area meeting the requirements that was vacant and available for purchase. There are no alternative available lots to support a similar development project within the overlay.

Avoiding Impacts

The proposed project has been designed to avoid impacts where possible to on-site critical areas and buffers to the maximum extent practicable. Impact avoidance was addressed in the following ways during project design phases:

- The development is focused in as much of the northern and north-central, buildable upland areas as is feasible. The project is proposing fewer building units than what code allows. With reduced building unis, impacts to the west half of existing Wetland A are avoided.

Due to the site constraints, only 122 townhouse units are proposed which is less than the maximum allowable density of 138 units. This development proposal and lot layout constitutes

a reasonable use. The proposal justifies the significant costs in both purchasing the property during a high market value period as well as the costs to develop it. Some impacts to the stream and wetland are unavoidable due to this unit development threshold as well as the City-required new entrance road from the south side of the property at 88th Street SW. The entrance road alone requires placement of the stream into a culvert crossing causing direct impacts to Wetland A/Drainage 1. Due to the need for the space to fit enough townhouse units, stream realignment and impacts to the wetland and stream are also unavoidable. An unavoidable area of indirect wetland impact will also occur along what is proposed as the north side of Wetland A (**Appendix D/C-2**).

- Per MCC 17.52B.120.B.3 and MMC 17.52B.120.C.3 the project proposal will avoid net loss of wetlands or their functions.

The project will provide equivalent or better wetland, stream, and buffer functions through on-site compensative strategies. Avoidance of impacts to critical areas at this site is not possible. At a minimum, impacts are necessary in order to construct the required road access infrastructure into the site.

- Temporary construction impacts to Wetland A will be avoidable with construction sequencing and utilizing different points of access into the project site.

There will be no need to disturb or impact the existing wetland or stream during construction. The majority of the mitigation areas south and east of the existing Wetland A are accessible by the new road access at 88th Street SW. A small portion of mitigation area on the north side of existing Wetland A is accessible through uplands accessed from the north side of the site via Mukilteo Speedway.

Minimizing Impacts

Impacts to critical areas were minimized in the following ways:

- Re-locating Drainage 1 to the south provides the opportunity to minimize long-term impacts to the critical areas.

In its proposed alignment, Drainage 1 shall be engineered with enhanced hydraulic function. Additionally, Wetland A will be larger with more hydrologic exchange with the stream, as well as flood attenuation and water quality function. Functions in both critical area features shall be enhanced. Moving the upstream half of Drainage 1 to the proposed location greatly minimizes impacts to the stream/wetland corridor as well as creating the opportunity to provide adequate buffers.

- Per 17.52B.120.C.1, "All feasible and reasonable measures will be taken to reduce impacts and losses to the wetlands, or to avoid impacts where avoidance is required by these regulations;"

In order to develop this property, impacts to the existing wetland and stream are unavoidable. All feasible efforts have been made to reduce impacts to Wetland A. The best possible outcome that meets or exceeds feasibility for development as well as environmental responsibility is to reduce and mitigate for the impacts to the critical areas. This project proposes to invest in all on-site mitigation measures that will satisfy or exceed City requirements for critical area impact off-sets.

- No untreated stormwater generated from this Project's new impervious surfaces will enter the created or rehabilitated wetland or stream.

Stormwater management for this project was designed specifically to pre-treat and protect critical areas and their restored functions from increased runoff from untreated stormwater. See "LID Stormwater Management" section for details on the stormwater infrastructure design and how it prevents potential impacts and contributes to no net loss in critical area functions.

Mitigating Impacts

Following impact avoidance and minimization steps, on-site and off-site mitigation opportunities were considered. It was determined there are no approved mitigation banks that include this site within their service area. Subsequently it was determined there are opportunities to mitigate on-site. On-site mitigation is the applicant's preferred way to approach impact offsets. The City of Mukilteo allows or permits mitigation strategies as compensation for alterations to wetlands and/or their buffers under the following criteria:

- Per MMC 17.52.120.B.3: *"Activities and uses that result in unavoidable and necessary impacts may be permitted in Category IV wetlands and associated buffers in accordance with an approved critical area report and mitigation plan, and only if the proposed activity is the only reasonable alternative that will accomplish the applicant's objective.* ***Full mitigation for the acreage and lost functions will be provided under the requirements of this chapter****."*

This proposal satisfies all the compensatory mitigation requirements required by City, State, and federal regulatory authorities. The proposal achieves on-site mitigation with no net loss of wetland or buffer area or wetland or buffer functions. The project cannot achieve equivalent stream length; however, it will provide improved stream functions through its mitigation measures. Additionally, due to gradient and gravity constraints and the need for maximizing capacity of stormwater detention vaults, there are no alternative feasible locations to place the proposed stormwater discharge infrastructure. Unavoidable permanent buffer impacts from stormwater features shall have no significant adverse impact on buffer habitat, shall occur only

within the outer twenty-five percent of the buffer, and shall be mitigated for through buffer enhancement per MMC 17.52B.100.I and MMC 17.52C.090.F.

- Per MMC 17.52B.120.C: "*Proposals which include less preferred and/or compensatory mitigation shall demonstrate that:*
    1. *All feasible and reasonable measures will be taken to reduce impacts and losses to the wetlands, or to avoid impacts where avoidance is required by these regulations;*

All feasible measures have considered and/or proposed to reduce impacts and losses or avoid them. Gravity-fed stormwater dispersion trenches proposed within the wetland buffer could not be re-located outside the buffer due to less optimal gradients and the need to maximize detention vault storage capacity. Buffer impacts from stormwater infrastructure could not be avoided. The City of Mukilteo allows alterations to Category IV wetlands and their buffers per MMC 17.52.120.B.3.

2. *The restored, created, or enhanced wetland will be as available and persistent as the wetland it replaces;*

The new wetland creation areas will provide equal or greater replacement in area and function for the portions of Wetland A they replace.

3. *No overall loss will occur in wetland area, function, or values;*

Under this proposal there will be no net loss in wetland area, function, or values.

4. *The applicant has the financial resources and technical expertise to satisfactorily complete the project;*

The applicant has conducted a thorough financial analysis and this proposal is the financially-feasible, preferred alternative. The applicant has retained a professional civil engineer and biologist to conduct their reports and prepare the Site Plans. The applicant will work with experienced contractors to construct and complete the project.

5. *The applicant can demonstrate the capacity to monitor the site and make corrections during the monitoring period if the project fails to meet projected goals; and*

This mitigation plan includes a monitoring plan which provides the duration, measures, and details the applicant will agree to adhere to during the monitoring period. A long-term monitoring plan (required by the City) will also be implemented.

6. *The applicant can protect and manage or provide for the protection and management of the compensation area to avoid further development or degradation and to provide long-term persistence of the project area*."

The mitigation area and all critical areas shall be placed within a Native Growth Protection Area (NGPA) which shall be placed in a separate tract on which development is prohibited (per MMC 17.52.035).

- Per MMC 17.52B.120.D: Owners of property with Category I through IV wetlands may also provide a comparable alternative mitigation plan which will result in equal or better wetland quality. (Ord. 1112 § 13 (part), 2005)

This proposal provides standard compensatory mitigation in accordance with MMC17.52B.130.B. This proposal will achieve equivalent or better wetland quality, function, and value to society.

Proposed Critical Area Impacts Summary

Unavoidable impacts to Wetland A, Drainage 1, and their combined buffer are proposed for the feasible construction of this development project (**Appendix D/Sheet C-2/4**). The proposed impacts to the combined critical areas will occur within the upper half of the stream corridor. This area contains a narrow riparian wetland and the intermittent Type 5 non-fish bearing stream channel. The impacted wetland contains PEM and PSS plant communities.

The planned townhouse community has been designed to maximize available developable space while complying with City of Mukilteo development codes and utilizing Best Management Practices (BMPs). The proposal provides full on-site mitigation for all unavoidable adverse impacts to the functions and values of the impacted critical areas.

Direct wetland impacts are based on the construction of a new access roadway and development of townhouse lots. Indirect impacts to the wetland are based on the stream realignment. All impacts are summarized below (**Tables 7 and 8**) and in the following sections.

Table 7. Wetland Impact Summary Table

Wetland	Cowardin Classification	Wetland Class[1]	Wetland Area (acre)	Wetland Area (sq ft)	Direct Permanent Impacts (sq ft)	Indirect Permanent Impacts (sq ft)
A	PEM/PSS/PFO	IV	0.45	19,744	8,535	996

[1]Wetland A classification per Ecology 2014 wetland rating and City of Mukilteo (MMC 17.52B.090)

Table 8. Stream Impact Summary Table

Stream	City of Mukilteo Stream Type[2]	Total Stream Length (linear feet)	Permanent Impacts (linear feet)
Drainage 1	Type 5 (L)	715	491

[1]Drainage 1 stream typing per City of Mukilteo (WAC 222-16-031; MMC 17.52C.080)

Wetland A Proposed Impacts

The proposed townhouse configuration in the northern and central portions of the property will fill 8,535 SF of Wetland A (**Table 7**) (**Appendix D/C-2**). Per MCC 17.52B.120.A.5 permit applicants must provide a mitigation plan to address impacts to affected wetland functions and values and comply with MCC 17.52B.130 to the greatest extent feasible. This conceptual mitigation plan has been prepared to address and compensate for impacts to wetlands and their functions and values at ratios specified by the Mukilteo municipal code (MCC 17.52B.120 and MCC 17.52B.130).

Re-alignment of Drainage 1 to the south and abandoning 78 linear feet of channel will result in 996 square feet of indirect wetland impact within Wetland A (**Appendix D/C-2**). Under the proposed project, there is not sufficient area remaining around this portion of Wetland A to provide the standard minimum buffer. Additionally, this 996 square-foot area is situated higher in gradient than the remaining and proposed new area of Wetland A. The source of hydrology to this portion of Wetland A will be effectively cut off with the stream realignment. This existing portion of Wetland A will be retained without direct construction impacts; however, due to the loss of its source hydrology it will likely be a permanent, long-term impact through conversion from wetland to upland buffer vegetation and function.

Drainage 1 Proposed Impacts

Approximately 491 linear feet of stream channel will be filled (413 LF) or abandoned (78 LF) and relocated to the south (**Table 8 and Appendix D/C-2**). This impact is required to convey flows through a newly engineered alignment that provides mitigation through stream creation with improved functions. A 48-foot long, 36-inch-wide arched culvert will be installed to provide for the 88th Street SW access road over the realigned stream. This results in the creation of 346 linear feet of new stream channel (a net loss of 145 linear feet).

Per Mukilteo Municipal Code relocation of a stream may occur when it is part of an approved mitigation plan and will result in equal or better habitat and water quality and will not diminish the flow capacity of the stream (MCC 17.52C.B.3). New culverts may also be placed in Type 5 streams for required street or driveway crossings (MCC 17.52C.110.B.4.a).

Impacts to Wetland Functions and Values

A total of 8,535 SF of wetland area and 491 linear feet of stream channel will be impacted under this proposal (**Tables 7 and 8**). The proposed project will have both temporary and permanent impacts to critical areas; however, there are no anticipated permanent impacts to their functions and values. Temporal impacts to functions and values will also be greatly reduced due to construction sequencing. Wetland A will be left untouched and functional while the mitigation areas are being constructed. Drainage 1 and Wetland A shall function normally until the site is ready to connect and open the new channel at its upstream inlet. Long-term functions and values lost by the proposed permanent impacts will be replaced and enhanced as discussed in the mitigation section. Some minor temporal loss of functions may occur between the time period from its completion and connection of the new stream channel and when the stream and wetland can be planted. Details of the impacts to water quality, hydrologic, and habitat functions are discussed below.

Wetland Water Quality Function Impact

Existing soils and plants within unimpacted portions of Wetland A which slow water, trap sediments, and filter pollutants will function as normal during construction. If storm events do occur during the dry-season construction window, Drainage 1 runoff will be conveyed to Wetland A as normal. Impacts to water quality function are anticipated to occur in the time period between the connection of Drainage 1 to the new alignment (likely late spring/summer) and when plants can be installed and established in new wetland areas (fall). During this gap of time some water quality function will be temporarily lost.

Wetland Hydrology Function Impact

Wetland A has low existing hydrologic site potential function and value. As discussed above, construction will occur during the driest period of the year. Wetland A will function as normal during this period. Should a storm event occur during the construction period, no loss to Wetland A's stormwater inputs and hydrologic function will occur. BMPs will also be employed in case of dry season storm events. Post-construction and connection of the new channel, little to no existing hydrologic functional loss in Wetland A is anticipated. Post construction there will be more wetland surface area with greater capacity to slow, spread, and store surface flows.

Wetland Habitat Function Impact

As Wetland A and Drainage 1 are non-fish bearing features, occur within an urban setting, and are isolated from other larger tracts of undeveloped lands and high-value habitats, the habitat functions and values on this site are already low to moderate. During construction, some reduction to general, urban wildlife habitat will occur due to increased human presence, noise from machinery, and other disturbances.

Though some functions may be lost during construction, they are anticipated to be temporary and minor. Net gains in water quality, hydrologic, and habitat functions and values to the development, surrounding, and downstream community associated with this proposed project will far outweigh the impacts. For further details on anticipated uplifts see the Mitigation Section and Comparison of Existing versus Anticipated Functions and Values discussion below.

Impacts to Stream Functions and Values

Drainage 1 has relatively low existing functions and values (**Table 5**). A total of 491 linear feet of the upstream portion of Drainage 1 will be permanently impacted (**Table 8**). This portion of the Drainage 1 shall be re-routed to the south and the existing channel will be impacted through excavation and filling activities. All impact activities occurring over or within the existing stream channel shall occur after Drainage 1 flows are redirected to the new channel. Construction of the new Drainage 1 stream channel shall occur during the dry season (June to September); therefore, no in-water work is anticipated with this project. Proposed impact activities associated with Drainage 1 are necessary to provide needed road access and housing infrastructure while also directly addressing the stream realignment and wetland creation portions of the project. The following sections provide detail on possible temporary or long-term impacts (if any) to the functions and values of Drainage 1.

Stream Water Quality Function Impact

No long-term impacts to water quality function or value are anticipated. The majority of water quality function for Drainage 1 occurs as the functions and value of Wetland A (see above).

Due to site constraints, less channel length is being proposed than will be impacted; however, left bank and right bank Wetland A margin sizes and their water quality function will be greatly increased. The creation of additional wetland margins along Drainage 1 will provide equivalent or greater water quality function within this seasonal stream corridor, particularly during storm events. In the long-term, equivalent or greater water quality function are anticipated. Some temporal loss of water quality function in Drainage 1 will be lost in the timing window between connection of Drainage 1 flows to the new alignment (late spring/summer) and when plants can be installed along the stream bank (fall). Long-term overall gains in water quality function are anticipated.

Stream Hydrologic Function Impact

No long term or temporary losses in hydrologic function or value are anticipated. The proposed stream will provide greater functions and values as those lost by the impact of the existing stream channel. As soon as the new stream alignment channel is completed and connected at its upstream inlet it will begin providing equivalent or greater function. All surface flows, storage, and flow variation/flood attenuation will be better than historic function.

Stream Geomorphic Function Impact

No long- or short-term losses in Geomorphic function or value are anticipated. Large wood will be installed at various points along the new stream channel, providing check dams (falls and pools) which will regulate flow variation and trap and slow transport fine sediments across the site and downstream. Substrate mobility (mainly stormwater derived fine sands) during high flow events is anticipated to be equivalent to existing conditions. Overall, gains in geomorphic function are anticipated but limited as this site is confined between roadside ditch networks.

Stream Biological Function Impact

No long-term losses in biological function or value are anticipated; all proposed aspects of this project will lead to increased biodiversity of native plant communities along the new channel of Stream 1 and in the stream buffer. A protective covenant placed on this portion of the property will further protect and maintain habitat functions as the site continues to mature and increase in on-site habitat function. Some minor and temporary exclusion of present urban-adapted wildlife use is likely to occur due to increased human presence, noise, and clearing/grading activities during construction. Though uplifts in habitat function may be minor due to the constraints of this isolated site and its urban landscape, overall long-term gains in biological function are anticipated.

Critical Area Buffer Impacts

The proposed mitigation plan will be able to provide the existing and proposed critical areas with sufficient buffers for a majority of their perimeter. During site development, portion of the north buffer will be regraded that results in shrub and tree loss. There are also two minor areas where necessary stormwater infrastructure would require encroachment into the outer 25-percent of the combined critical area buffer when applying the standard minimum buffers. The project proposes to revegetate disturbed buffers through enhancement at an 1:1 ratio and avoid impacts in stormwater discharge locations through buffer averaging per MMC 17.52B.100.G (**Appendix D/C-3**). A total of 5,841 square feet of critical area buffer impacts are anticipated under this proposal due to site grading and unavoidable placement of stormwater infrastructure within the outer buffer and due to site access needed for construction of the wetland creation areas.

Table 9. Combined Critical Area Buffer Impact Summary Table

Critical Area	Cowardin Classification	Wetland Category[1]/ Stream Class [2]	Standard Buffer[1,2] (feet)	Temporary Buffer Impacts[3] (sq ft)
Wetland A	PEM/PSS/PFO	IV	40	5,841
Drainage 1	N/A	5	50	

[1]Wetland A categorization and buffer based upon MMC 17.52B.090 and MMC 17.52B.100.D.
[2]Stream classification and buffer based upon MMC 17.52C.080 and MMC 17.52C.090.A.
[3]Impacted area are associated with construction clearing/grading limits.

Of the 5,841 SF of impact, a portion represents the proposed stormwater detention vault in the southwest corner of the site up to the edge of the critical area buffer (**Table 9**) (**Appendix D/C-3**). Temporary clearing limits for its construction will impact 435 square feet of the outer buffer edge in this location. The soils and vegetation in this area shall be restored upon completion of the detention vault.

The west detention vault will then outfall (Outfall #1) via two spreader trenches (one 30-foot by five-feet and one fifty-foot by five feet in size) in this same general area. Here, the buffer is proposed for averaging to avoid permanent impacts to the buffer. These spreader trenches would otherwise have resulted in 400 square feet of permanent buffer impacts. A second stormwater outfall feature (Outfall #2) is proposed consisting of an approximately six- to eight-foot-long buried pipe and a nine-square foot quarry-spall splash pad outfall. Buffer averaging is proposed here that would otherwise result in nine square feet of permanent impact. The buried outfall pipe represents approximately 16 square feet of additional temporary impacts; however, all soils and vegetation disturbed by trenching shall be replaced and restored upon completion.

There is an area on the west side (downstream portion) of Wetland A where adequate buffer cannot be provided due to required road infrastructure. This section of inadequate buffer is considered an indirect wetland impact (not a buffer impact) and will be compensated for using wetland mitigation ratio requirements (see Wetland Impacts section for details).

Tree Impacts

A total of 66 trees within the existing uplands are likely to be impacted and require removal in order to construct a new entrance road from 88th Street SW and to re-grade the new stream channel. **Table 10** provides a summary of the trees identified for impact and removal by the project. The areas proposed for new stream and wetland area are upland areas and will require significant recontouring consisting of earth work and vegetation clearing. As many 16 of the existing trees in the proposed mitigation area are anticipated to be retained. Western red cedars shall especially be preserved (where possible) in order to incorporate them into wetland creation areas (see also **Appendix D/C-5**).

Several of the impacted trees in the mitigation areas are considered significant trees (24 inches diameter or greater); however, this site is not located within the City's Shoreline management zone and as such is not subject to upland tree preservation restrictions per MMC 17.52C.095 (see Tree Removal and Retention Plan section below for details). Removal of a range of small to mature-size trees in uplands along the southern boundary of the site will be necessary in order to convert upland areas to functional wetland and stream corridor. Using Best Management Practices in the mitigation approach, woody debris from trees which require removal shall be utilized on-site in construction of the stream mitigation portion of the project. Large woody debris shall be installed within the upper stream portion as well as buried within the lower, downstream portions of the wetland creation area. For more detail on the use of large wood in the wetland creation and stream creation areas see the Mitigation Measures section below.

Table 10. Tree Impact Summary

Tree Species	Size (diameter/ DBH)	Impact Counts
Big leaf maple	2-33”	18
Western red cedar	12-28”	21
Douglas fir	8-36”	11
Western hemlock	18-31”	14
Red alder	14”	1
Unknown Deciduous	14”	1
TOTALS		**66**

Proposed Mitigation Measures

The project is proposing to mitigate for critical area impacts through several measures:

- Stream Re-alignment and Rehabilitation;
- Wetland Creation;
- Wetland Rehabilitation;
- Noxious Weed Control;
- Buffer Averaging and Restoration;
- Tree Preservation and Replacement; and
- LID Stormwater Management.

Tables 11-12 provides a summary of how these measures address the City's code required mitigation offsets for impacts to critical areas. **Table 13** summarizes the proposed mitigation measures and compares code requirements to anticipated equivalent results and/or net gains from mitigation actions. The proposed wetland and stream mitigation areas are depicted in detail in **Appendix D**.

Table 11. Proposed Wetland and Buffer Impact to Compensatory Mitigation Type/Area Summary Table.

Critical Area	Cowardin Classification	Wetland Class	Impact Type	Mitigation Type	Mitigation Ratio[1]	Mitigation Area (sq ft)
Wetland A	PEM/PSS/PFO	IV	Direct Permanent Impact		1.5:1	12,802
Wetland A	PEM/PSS/PFO	IV	Indirect Permanent Impact		0.75:1[2]	747
				TOTAL REQUIRED WETLAND MITIGATION		**13,549**
New Wetland	PEM/PSS/PFO	IV	N/A	Creation	1:1	13,321
Wetland A (portion of)	PEM/PSS/PFO	IV	N/A	Rehabilitation	3:1[2]	1,360
				TOTAL PROPOSED WETLAND MITIGATION		**14,681**
Combined Critical Area Buffer	N/A		Temporary			5,291
	N/A		Permanent (outfalls)			565
				TOTAL REQUIRED BUFFER MITIGATION		**5,856**
Combined Critical Area Buffer	N/A		N/A	Restoration	1:1	5,291
	N/A		N/A	Buffer Averaging	1:1	565
				TOTAL PROPOSED BUFFER MITIGATION		**5,856**

[1] Based on MMC 17.52B.130

[2] Based on interagency policies and guidance on wetland mitigation for permanent conversion (6B.4.4) in Washington State (Ecology, 2021).
[3] Based on interagency policies and guidance on wetland mitigation (Table 6B-1) in Washington State (Ecology, 2021)

The proposed mitigation is anticipated to result in a 1,135 square foot net gain in wetland area through both wetland creation and wetland rehabilitation. Equivalent wetland functions are anticipated with the increase in wetland area as well as in large part to an improved stream channel and stream functions. Overall uplifts in wetland function are anticipated from greater connectivity and exchange between wetland and stream areas. Overall increases in habitat function area also anticipated from removal of invasive species, understory planting, and placement/burying of woody debris.

Table 12. Stream Mitigation Summary Table

Stream	Stream Type	Impact Type	Mitigation Type[1]	Relocated Stream Length (linear feet)
Drainage 1	5	Excavation/Fill	Relocation and Enhancement	346

[1] Based on MMC 17.52C.110

A net loss of 145 linear feet of stream channel is anticipated; however, overall equivalent or greater stream functions and values is anticipated compared to existing conditions. This proposal achieves or exceeds the required 1.5:1 and 0.75:1 mitigation for direct and indirect wetland impact replacement ratios on-site. Additionally, a 1:1 replacement ratio for buffer impacts is also achieved. All proposed mitigation measures and anticipated net gains are described in further detail in the sections below.

The preserved and enhanced wetland, created wetland, the relocated stream and their combined critical area buffers will be designated collectively as a Native Growth Protection Area (NGPAs). The NGPA (in this case, Wetland A, Drainage 1, and their buffer) shall be shown on the development site plans or final plat maps per MMC 17.52.35.

Stream Re-alignment and Functional Enhancement

Of the 715 linear feet of existing stream, 491 feet will be impacted, and 346 linear feet of new stream channel will be created (**Table 12**) (**Appendix D/C-2/3)**.

Construction of the stream channel consists of several components:

- Excavating and re-grading within the necessary upland areas to mimic a natural stream channel gradient, relatively controlled flow volume, as well as the appropriate side slope benches to support wetland vegetation and wetland soil formation.

- Installation of 4 log weirs in the upper half of the new stream channel mitigation area in order to provide check dams with pools which will regulate flow velocity and sediment transport. All woody debris will come from on-site trees that required removal.
- Stream gravel will be placed within the stream centerline and in pool areas downstream of the weir to provide scour protection.

The new stream channel design is intended to handle the existing seasonal flows in Drainage 1. The new channel itself will be approximately 2-3 feet wide with 6 inches deep during average winter flows. In the eastern half of the new stream (upstream of the proposed access road) the natural gradient of the site has been broken down into a series of four terrace and log weir steps. The sloped terraces will average between 30 and 50 feet in length with log weir drops between grade breaks. A preliminary review of channel hydraulics were reviewed to ensure there are no erosive water velocities generated during 25- and 100-year events. A more refined hydraulic report will be prepared to accompany the final mitigation plan. To address potential gradient issues in the upper half of the new stream, channel spanning log weirs will extend into created wetland benches at several locations to spread water horizontally to further slow water and support wetland vegetation along the banks. Spanning wood will consist of several stepped conifer logs. Their placement is designed to raise storage capacity in the stream and wetlands by approximately six inches. The installed wood also functions as debris dams and energy dissipaters. Channel spanning log weirs have been identified in stream restoration as "critical in-stream structures" for the retention of organic matter during high flow events (Muotka and Laasonen 2002). A single, low-flow notch will be cut in each of the logs to direct a portion of water during low flows. Since this section of stream is non-fish bearing, fish passage is not an issue.

Upon completion of construction, Drainage 1 will be relocated from the existing culvert under Mukilteo Speedway and routed south and then west running in parallel to 88th Street SW. This will result in a net loss of 145 linear feet of stream channel; however, stream/wetland functions in the new channel in combination with the enhancements to the existing wetland area are overall anticipated to be equivalent or greater than existing functions. As stated previously, the City of Mukilteo allows stream relocation when it is part of an approved mitigation plan (MMC 17.52C.110. B.3).

The stream will then be conveyed under the new 88th Street SW access road through a new 36-inch wide, 48-foot long section of pipe. These measures result in equivalent function for organic export and small mammal and amphibian movement along the stream channel during dry periods.

In the western half of the new stream channel (downstream of the access road) gradients will more gently slope and new and existing wetland areas will be significantly wider. Here, large wood will be placed and somewhat buried throughout the stream channel and wetland areas. Flood waters from Drainage 1 will spread and disperse throughout supporting diverse forested wetland structure and functions.

Wetland Creation

Of the 19,744 square feet of existing wetland, 8,535 feet will be permanently impacted by the development, 996 square feet of the existing portion of wetland A will be indirectly impacted by conversion from lack of hydrology and adequate buffer. Under this proposal, a total of 13,321 square feet of new wetland area will be created in upland areas in order to mitigate a combination of permanent direct and indirect wetland impacts (**Table 11**) (**Appendix D**). Additionally, 4,078 square feet of the existing portions of Wetland A to remain shall be enhanced through removal of invasive species (e.g. English ivy) and hydrologic functions will be increased through placement of large woody debris.

New wetland areas shall be constructed through excavation and re-grading and then planted during the fall rainy season (**Appendix D/C-6**). A dense array of shade-tolerant trees, shrub, and emergent species shall be installed. Emergent species shall be installed along the stream channel wetland margins and lowest gradient portions. A mix of wetland trees and shrubs shall be planted throughout. A planting plan with full schedule will be provided in the Final Mitigation Construction Set. **Table 13** provides a proposed species list for wetland creation areas:

Table 13. Wetland/Stream Mitigation Planting Mix

Latin Name	**Common Name**
Trees	
Thuja plicata	Western red cedar
Tsuga heterophylla	Western hemlock
Shrubs	
Acer circinatum	Vine maple
Cornus sericea	Red-osier dogwood
Lonicera involucrata	Black twinberry
Rubus spectabilis	salmonberry
Ribes bracteosum	Stink currant
Ribes diveracatum	Spreading gooseberry
Ribes lacustre	Black gooseberry
Sambucus racemosa	Red elderberry

Emergents	
Carex obnupta	Slough sedge
Carex deweyana var. *leptopoda*	Dewey's sedge /Slender-foot sedge
Glyceria grandis	Reed mannagrass
Glyceria elata	Tall mannagrass

Recognizing the difficultly of conserving and maintaining riparian wildlife habitats in urbanized areas, measures will be taken to establish areas of thin-stemmed emergent vegetation (planted and volunteer) where seasonal ponding is most likely near spanning wood structures. Dense woody planting areas coupled with spanning wood structures (e.g. LWD) add much needed habitat complexity in these types of wetlands. Habitat piles will complement the LWD inputs. These piles, referred to as "critter condos" provide some of the functions of large down logs found in older forests. Wildlife such as song birds, voles, chipmunks, squirrels, rabbits,, frogs, lizards, snakes, and insects use piles as dens or nesting spots, to shelter from bad weather, to escape predators, and to forage.

The design of these riparian wetland creation areas can mediate the intensity and frequency of downstream flooding and play a significant role in nutrient cycling and water quality function. Diverse understory shrub structure will also provide greater support to biologic and trophic community function. Studies show stream invertebrate communities heavily depend on allochthonous detritus which enters the streams mainly in the form of autumn-shed leaves (Muotka and Laasonen 2002).

Wetland Rehabilitation

Within the remaining and unimpacted portions of Wetland A there are opportunities for rehabilitation (**Appendix A/C-3**). Under this proposal, the following rehabilitation measures will be taken within a total of 4,078 square feet of existing wetland area:

- Debris/trash removal;
- Placement of large woody debris at multiple points across the stream/wetland areas perpendicular to the upland edges to improve the hydrologic regime;
- Placement of habitat wood piles for increased habitat diversity.
- Removal of noxious or invasive plants; and

Debris Removal

Trash piles and debris associated with transient communities will be removed throughout the existing wetland and upland critical area buffers.

Wood Placement

As described previously in the wetland and stream creation sections, channel and wetland spanning wood can significantly increase stormwater attenuation as well as low flow storage. Improvements in hydrologic function helps the establishment of diverse wetland vegetation at variable gradients with multiple strata. It is anticipated that wetland trees, shrub, and emergent species will benefit from rehabilitation measures in the unimpacted portion of Wetland A. Habitat piles from wood pieces harvested onsite will be placed within the wetland to provide additional habitat complexity.

It should be noted that the addition of spanning wood will likely not increase the depth of storage beyond what the wetland already provides or lead to a net increase of depressional wetland area; however, these activities will result micro-hydrologic regime changes along the wetland profile which will lead to an uplift in wetland functions in this portion of Wetland A. This mitigation measure adds further insurance against "no net loss of wetland area, function, or values" per MMC 17.52B.120.C.3.

Noxious Weed Control

Unimpacted portions of Wetland A and the proposed critical area buffer contain areas of established invasive species such as English ivy and Himalayan blackberry. Removal of all invasive species within creation, rehabilitation, and buffer areas will allow for wetland and buffer plants to re-establish dominance within the critical areas – further increasing water quality and habitat functions.

In the interim time period between construction of wetland creation areas (spring/summer) and planting (in fall) invasive species within the critical areas (wetland and buffers) shall be eradicated. Noxious weed control activities shall utilize Best Management Practices as described by the King County Noxious Weed Control Program. All material will be disposed of off-site at designated municipal yard waste disposal transfer stations with the exception of Japanese knotweed (should it be encountered). If encountered, eradication methods will adjust between hand-grubbing, mechanical, or chemical-treatments on a case-by-case scenario.

There is a significant patch of Japanese knotweed within the existing stream/wetland corridor to be impacted. Proposed construction activities in this location are excavation of all surface soils. It will be imperative during construction that excavation of soils containing Japanese knotweed roots, stalks, stems, or leaves is ***not moved around the site*** for re-grading purposes. The roots of this plant can extend as much as 10 feet deep and all parts of the plant (including leaves) re-grow new plants when in contact with sufficient soil, light, and moisture. Construction activities and equipment very often spread this plant unknowingly when not properly managed. Additionally, this plant and its surrounding excavated soils should be disposed of as trash/land-filling and not placed in the yard waste stream intended for composting as even municipal composting methods may not be hot enough to kill it. If mechanical equipment is used to eradicate knotweed, excavation equipment should also be washed and thoroughly inspected to remove all material that may contain plant parts prior to being used for other activities.

Buffer Averaging and Restoration

The proposed project will provide the required minimum buffers on both north and south sides of the combined critical area (**Appendix D/C-4**). The south buffer consists of relatively undisturbed and in-tact native forest. The north side is more open in the understory, will be accessed by large equipment during construction, contains invasive species, and be graded in select locations with stormwater infrastructure placement.

Buffer Averaging

There are two small areas where stormwater infrastructure will need to be placed at or within the buffer (at the standard widths). These two areas are proposed for averaging in accordance with MMC 17.52B.100.G. Buffer will be reduced at Outfall # 1 and #2 (**Appendix D/C-4**). An equivalent area of 656 square feet of new buffer area shall be added and enhanced/restored on the east side of the proposed project to compensate for the small portion of the buffer to be averaged related to new stormwater infrastructure (**Appendix D/C-4**).

Buffer Restoration and Enhancement

Approximately 5,291 square feet of the north buffer area shall be restored and enhanced through removal of invasive species and re-planting with native vegetation to compensate for 5,291 square feet of construction impacts (**Appendix D/C-4**). Enhancement will involve removing English ivy over a 3,008 square foot area that contains both buffer and wetland areas. The restoration and preservation of a diverse, high-function forested buffer between the critical areas, the proposed new development, and high-traffic roadways within this urban landscape provides noise reduction, has been linked to air quality improvements (Bolund and Hunhammar 1999), provides habitat for urban wildlife, and is generally perceived as valuable to local residents.

Restoration/Enhancement measures are aimed at restoring forest understory structure and species diversity as well as assisting the trajectory of lowland forest succession. All restoration/enhancement activities will begin with complete removal of non-native invasive species by mowing and grubbing where thickets occur and selective cutting and grubbing by hand where native vegetation is also present. Bare ground in all buffer restoration areas shall be installed with approximately 4-inches of arborist chip mulch following all planting to increase water retention in soils, amend soils with beneficial microbes and long-term nitrogen and carbon, and decrease competition from weeds. **Table 14** provides an example list of species for restoration planting within the critical area buffer.

Table 14. Combined Critical Area Buffer Mitigation Planting Mix

Latin Name	Common Name
Trees	
Pseudotsuga menziesii	Douglas fir
Tsuga heterophylla	western hemlock
Shrubs	
Corylus cornuta	Beaked hazelnut
Mahonia nervosa	dull Oregon grape
Oemleria cerasiformus	Indian plum
Rosa gymnocarpa	baldhip rose
Rubus parviflorus	thimbleberry
Symphoricarpos albus	snowberry
Groundcovers	
Polystichum munitum	western sword fern
Vines	
Lonicera ciliosa	Orange trumpet honeysuckle

Tree Management Plan

The City of Mukilteo has requirements for tree retention within the Shoreline Management Zone (MMC 17.52C.095) which does not allow cutting of significant trees (greater than 24-inches diameter). This site is not within 200-feet of a Shoreline zone and is therefore not within shoreline jurisdiction; therefore, this requirement does not apply. This proposed project will require removal of a total of 66 trees in order to effectively construct the proposed riparian wetland and stream corridor. A few of the trees proposed for removal are significantly-sized. See **Appendix D/C-6** for details on the species, size, and locations of trees anticipated for removal as well as the trees to be retained.

All tree removals will occur within areas which are currently uplands and non-critical areas. There are no code-specific requirements for mitigation or replacement ratios; however, this

project proposes to provide an in-kind forest restoration by planting trees in opportunistic areas throughout the wetland creation areas and critical area buffer. No specific tree replacement planting plan is provided; however, the planting of trees within the wetland/stream creation and buffer restoration areas is optional. Equivalent compensatory wetland/stream functions can be achieved through installing woody shrub species and relying on natural forest recruitment. This project proposes to accelerate and ensure that trajectory by installing and establishing an equivalent or greater number of trees. See **Table 13** and **Table 14** for tree species to be planted.

Through a careful consideration process the project also anticipates retention of 12 trees (2 of these considered significant size), specifically western red cedars, within the proposed riparian wetland/stream corridor. These trees are species which tolerate increased hydrology and are in locations where significant excavation and grading is not required. For western red cedars that can be retained within the wetland/stream creation areas, hummock-like conditions shall be constructed around their root base to provide sufficient protection during flood events and sufficient rooting zone for gas exchange above the wet season high water table.

Stormwater Management

All stormwater controls will be designed and ultimately constructed in accordance with City of Mukilteo Public Works and surface water standards per the adopted 2012 Department of Ecology Stormwater Management Manual for Western Washington as amended in December 2014. Project stormwater will be discharged at two location, Outlet #1 and #2 to augment wetland and stream hydrology (**Appendix D/C-3**).

Stormwater generated from all new impervious surfaces within the proposed development will be detained in a below-grade detention vault and flow control riser in the southwest portion of the site to mitigate increased runoff volumes and rates. A proprietary filtration vault will also be located immediately downstream of this vault to treat the controlled release rate for the 2-year event under developed conditions prior to releasing flows via two dispersion trenches (Outlet #1) to the adjacent critical area buffer. Two narrow, rock-lined spreader trenches - one 150 square feet in size and a second one 250 square feet in size. A second discharge, Outlet #2, is an eight-foot-long buried pipe that will convey stormwater collected from roofs and foundation drain to the east which are non-pollution generating sources. Water will infiltrate over the upland forested surface, will sufficiently mimic natural dispersal, infiltration, and act as secondary water source entering Wetland A/Drainage 1.

Anticipated Equivalency or Uplift in Functions and Values

Overall, equivalent or greater functions and values are anticipated as a direct result of this development and mitigation proposal. **Tables 15** and **16** provide a summary of the tangible

ways in which this trajectory of functional equivalency and "no net loss" may be evaluated and observable following construction and over time.

Table 15. Comparison of Existing to Anticipated Equivalency or Greater Critical Area Functions and Values

Critical Area Feature	Existing Cowardin Class	Existing Wetland Category	Existing Wetland Area (SF)	Equivalency or Lift in Wetland Area/Functions
Wetland A	PFO/PSS	IV	19,744	1,135 SF net gain of wetland area
			N/A	Net gain in hydrologic, water quality, and habitat function in all existing and new wetland areas
Critical Area Feature	**Stream Type**	**Existing Stream Length**	**Proposed Stream Length**	**Equivalency or Lift in Stream Functions**
Drainage 1	Type 5	715 linear feet	570	Enhanced function in flow variation, flood attenuation, sediment trapping and transport, nutrient production and transport.

This proposal focuses on a "no net loss" of critical area functions and values. This proposal achieves a net gain (beyond the area required for mitigation) of 1,135 square feet of wetland area. A net gain is also anticipated in overall functions and values within Wetland A from the enhanced stream function. Enhanced stream functions largely due to the log weir steps and pools and large woody debris installed perpendicular to the stream and wetland margins will provide additional hydrologic and water quality function throughout Wetland A. The addition of channel spanning wood across the site as well as a meandering stream channel amidst the downstream section of Wetland A more widely disperses flood waters during storms. The addition of wetland trees, shrubs, and emergent vegetation adjacent to large wood and areas in contact with longer duration of surface inundation or saturation will provide significantly more water quality function than current conditions.

An equivalency of stream length cannot be achieved; however, sections of the upper portion of the existing stream run through previously impacted and degraded areas. Enhanced stream conditions as well as stream functions and values within the proposed and re-aligned stream channel are anticipated under the new design. As described above, the addition of complexity from large wood, stream gravel, and native riparian vegetation along the new channel is expected to greatly increase stream functions through the site. Additionally, this critical area is

a combined riparian wetland/stream corridor. Lifts in either wetland or stream function directly correlate to lifts in the functions and values of the other. Equivalent or greater wetland area and wetland/stream functions are anticipated by this project proposal in compliance with MMC 17.52B.120.B.3. and MMC 17.52B.120.C.3. This project results in a net loss of stream length; however, compensatory mitigation for this loss is projected to achieve "*equivalent or greater stream and wildlife habitat functions*" in compliance with MCC 17.52C.110.A.5 and MCC 17.52C.110.B.2 and B.3.

Table 16. Comparison of Existing and Anticipated Critical Area Functions and Values.

Critical Area Feature	Overall Existing Critical Area Functions and Values	Projected Overall Critical Area Functions and Values
Wetland A	Degraded conditions in upper and lower sections with invasive species present/human intrusion/trash/historic upstream impacts; **Low to Moderate**	**Moderate** or greater
Drainage 1	Degraded conditions in upper section with invasive species/increased sheet flow/low stream complexity or over-bank flood potential/historic upstream impacts; **Primarily Low with some Medium function**	**Medium** or greater than existing
Combined Critical Area Buffer	Somewhat degraded/human intrusion/trash/invasive species present; **Moderate**	Restored native forest/**Moderate** or greater function than existing

Likelihood of Project Success

This conceptual wetland mitigation plan provides the required compensatory replacements and equivalencies in critical area functions and values. The project design incorporates inter-agency approved wetland mitigation guidance (Ecology 2021) and Best Available Science in accordance with MCC chapters 17.52B and 17.52C.

The primary reason for failure of wetland mitigation sites is inadequate wetland hydrology at the depth or duration to support wetland vegetation and thus wetland biological and chemical functions. This wetland area will continue to receive upstream hydrologic input plus additional volumes of treated water generated from the development. The additional sources of water will enter the wetland at Outfall #1 and #2 (**Appendix D/C-3**) This added hydrology will extend periods of saturation within the wetland. A wetland hydrologic and hydraulic design memo will be prepared to further quantify improvements to the hydrologic regime in the Final Mitigation Design package.

Further site soils, even within the upland areas are suitable to support the wetland creation area. A technical memorandum by Kindred Hydro, Inc. dated September 22, 2020 provided the following evidence to support the likelihood of success at this site:

"*Kindred conducted three infiltration tests in the southern portion of the property near the proposed wetland mitigation footprint. Glacial till was encountered in all three test locations and the infiltration rate was 0.46 in./hr for IT-3, 0.10 in./hr for IT-4, and 0.07 in./hr for IT-5. These are very low infiltration rates. Given that the tests were conducted in August when soils are dry, the infiltration rates are likely close to zero during winter months when surface soils are saturated. Compaction of the soils within the mitigation footprint after re-grading should further reduce the infiltration rate and provide an impermeable surface that can support wetlands during the wet season. No additional amendment is recommended*."

Given the preliminary drainage testing and professional engineering- and biologist-designed mitigation areas, there is **a high likelihood of project success** within the proposed mitigation areas. To further ensure success of the project a mitigation monitoring program will follow installation in compliance with MMC 17.52B.140 and 17.52B.150.

Mitigation and Monitoring

Goals, Objectives, and Performance Standards

Performance standards, monitoring, and maintenance standards outlined in this report are in accordance with requirements of MCC 17.52B.140, MCC 17.52B.150, and WSDOT performance standard guidance (WSDOT 2017).

Goal 1:

Establish equivalent or greater water quality and habitat functions through the establishment of a more diverse and functioning vegetative community in on-site critical areas.

Objective 1:

Plant and maintain a diverse mix of native woody species (trees and shrubs) and persistent thin-stemmed vegetation (emergents and groundcovers) during a 10-year period of establishment and maintenance in all wetland/stream creation areas and buffer restoration/enhancement areas.

Performance Standard:

(Year 1)

- At the end of Year 1, native trees and shrubs (planted and volunteer) in the wetland and buffer areas will have 100 percent survival. Direct counts shall be performed. Any mortality shall be replaced by the end of the year during the fall planting season (late September-November); and

- Non-designate Class B and Class C Noxious weeds or other species of concern will have no greater than 10% cover in all wetland and buffer planting zones.

(Year 2)

- Native trees and shrubs (planted and volunteer) shall have at least 15% aerial cover and at least 3 species of tree or shrub will be present within sampling plots;

- Non-designate Class B and Class C Noxious weeds or other species of concern will have no greater than 10% cover in all wetland and buffer planting zones.

(Year 3)

- Native trees and shrubs (planted and volunteer) shall have at least 25% aerial cover and at least 3 species of tree or shrub will be present within sampling plots;

- Non-designate Class B and Class C Noxious weeds or other species of concern will have no greater than 10% cover in all wetland and buffer planting zones.

(Year 5)

- Native trees and shrubs (planted and volunteer) shall have at least 40% aerial cover and at least 3 species of tree or shrub will be present within sampling plots;

- Non-designate Class B and Class C Noxious weeds or other species of concern shall not exceed 10% aerial cover in all wetland and buffer planting zones.

(Year 7)

- Native trees and shrubs (planted and volunteer) shall have at least 60% aerial cover and at least 3 species of tree or shrub will be present within sampling plots;

- Non-designate Class B and Class C Noxious weeds or other species of concern shall not exceed 10% aerial cover in all wetland and buffer planting zones.

(Year 10)

- Native trees and shrubs (planted and volunteer) shall have at least 80% aerial cover and at least 3 species of tree or shrub will be present within sampling plots;

- Non-designate Class B and Class C Noxious weeds or other species of concern shall not exceed 10% aerial cover in all wetland and buffer planting zones.

See Monitoring Methods section below for specific details and methods for achieving performance standard during the monitoring period.

Goal 2:

Establish a re-aligned and functioning stream channel with enhanced hydrology and overall urban riparian functions.

Objective 1:

Drainage 1's channel shall be designed to convey high flows during storm events through establishment of a new stream channel location, creation of a natural stream bed and substrate materials, ensuring high flow saturation and ponding within adjacent wetland margins.

Objective 2:

Channel spanning log weirs with a low flow notch will be installed approximately every 50 feet of the restored stream channel upstream of the new access road. Channel and wetland spanning logs will be installed perpendicular to the channel and wetland boundary throughout the downstream portions of the wetland creation and rehabilitation areas.

Performance Standard:

(Year 1)

- Permanent photo points shall be established and photos taken at six separate locations at: 1) the new upper channel alignment in Drainage1/Wetland A, 2) the upstream and 3) downstream ends of the culvert, and 4-6) at three installed channel-spanning log weirs in order to track site changes, any issues of erosion, and the establishment of riparian wetland vegetation.

- Monitor wetland hydrology by establishing four permanent locations for soil pits. Soil pit hydrology data shall be collected in the early growing season. Within each soil pit, depth to water table will be measured and recorded. Two out of four pits shall have saturation within 12-inches in order to meet criteria for successful wetland hydrology. See the "Monitoring Methods for Wetland Hydrology" section below for more specific details on methodology and criteria for judging success.

(Year 2)

- Take photos at each of the six permanent photo point locations established in Year 1.

- Establish the presence and duration of inundation and/or shallow water table during the early growing by direct observation within the four established soil pit locations. Two out of four pits (during 2 consecutive visits 28 days apart) should have saturation within 12-inches.

(Year 3)

- Take photos at each of the six permanent photo point locations established in Year 1.

- Establish the presence and duration of inundation and/or shallow water table during the early growing by direct observation within the four established soil pit locations. Two out of four pits (during 2 consecutive visits 28 days apart) should have saturation within 12-inches.

(Year 5)

- Take photos at each of the 6 permanent photo point locations established in Year 1.

- Establish the presence and duration of inundation and/or a shallow water table during the early growing by direct observation within the four established soil pit locations. Two out of four pits (during 2 consecutive visits 28 days apart) should have saturation within 12-inches.

(Year 7)

- Take photos at each of the four permanent photo point locations established in Year 1.

- Establish the presence and duration of inundation and/or a shallow water table during the early growing by direct observation within the four established soil pit locations. Two out of four pits (during 2 consecutive visits 28 days apart) should have saturation within 12-inches.

(Year 10)

- Take photos at each of the 6 permanent photo point locations established in Year 1.

- Establish the presence and duration of inundation and/or a shallow water table during the early growing by direct observation within the four established soil pit locations. Two out of four pits (during 2 consecutive visits 28 days apart) should have saturation within 12-inches.

See Monitoring Methods section below for specific details and methods for achieving performance standard during the monitoring period.

Monitoring Methods

The following monitoring methods shall be employed to evaluate project performance standards during the monitoring period.

Vegetation Monitoring

Permanent vegetation sampling plots shall be established in Year 1 using random generation. Six 10 x 10 or 20 x 20 (400 SF) plots (depending on size of area to be monitored) shall be established and marked with a stake or other permanent marker. Four plots shall be established in the wetland planting zone; two in the buffer planting zone. Species and percent aerial cover of woody vegetation will be evaluated. The following data shall be gathered for each monitoring plot:

1. General appearance and any relevant observations of health/herbivory/damage;
2. Species, percent survival, and estimated percent aerial cover of native and volunteer woody species;
3. Estimated percent aerial cover of invasive and/or noxious weeds.

Established vegetation monitoring plots will be monitored in Years 1, 2, 3, 5, 7, and 10 and compared to the performance standards for survival and aerial cover in those years. Vegetation sampling plot locations shall be depicted on a map submitted with each end-of-year monitoring report.

Photo Point Documentation

Photo-point locations shall be established in the field and shown on a map and submitted with the baseline assessment report and end-of-season monitoring reports. These shall consist of the following:

Permanent photo points of the major Stream Restoration Elements shall be established in 6 separate locations at: 1) the new upper channel alignment in Drainage1/Wetland A, 2) the upstream and 3) downstream ends of the culvert, and 4-6) at three installed channel-spanning log weirs.

At each of the six vegetation monitoring plots, additional photopoints shall be taken at the center point of the plot and taken in the four cardinal directions (N, E, S, W) throughout the monitoring period to record vegetation community establishment and change in aerial cover.

Wetland Hydrology

Wetland hydrology monitoring shall be performed in the following method: A total of four (4) soil pits, two (2) in each of the new wetland creations areas (upstream and downstream of the 88th Street access road) are to be excavated to a depth of 16 inches in the early growing season (late February-April) during normal or wetter than normal conditions. Photos of each soil pit or soil profile will be taken to document the presence/absence of saturation and/or ponding. Two field visits to monitor Wetland Hydrology (soil pit investigations) shall occur: one visit in the early growing season (late February-April) and a second visit 28 days or more later (March-May) in each monitoring year.

These two spring visits are intended to effectively observe and capture data on the presence of seasonal wetland hydrology. Criteria for observing and confirming successful presence of wetland hydrology in the rehabilitated wetland areas: two out of four pits must have inundation, saturation, or shallow water table (within 12-inches) to confirm the presence of wetland hydrology on-site.

Site Stability

Observations will be recorded of the general stability of slopes and soils in the mitigation areas during each monitoring visit and reporting year. Any erosion of soils or slumping of slopes will be reported immediately to the client and County and corrective erosion control measures shall be taken.

Monitoring Reports

Each monitoring report will adhere to applicable City of Mukilteo standards per MMC 17.52B.150.A. Monitoring reports shall include: 1) Project Overview, 2) Monitoring Requirements from the approved Mitigation Plan, 3) Summary Monitoring Data for the current year in comparison to previous years, 4) Maps and Plans, and 5) Conclusions and Maintenance Recommendations. Monitoring reports shall be submitted to the client, County, and any other applicable agencies by August 1st of each monitoring year requiring reporting. If the performance criteria are met, monitoring for the City will cease at the end of year ten, unless objectives are met at an earlier date and the City accepts the mitigation project as successfully completed.

Monitoring Schedule

Performance monitoring of the mitigation areas will be conducted for a period of ten years. Monitoring will be conducted according to the schedule presented in **Table 17**. Monitoring will be performed by a qualified biologist or ecologist.

Year 0 of the monitoring period shall begin upon submittal of the Baseline Conditions (As-Built) Report to the City and any other applicable agencies. If the As-Built Report is generated in the spring season, Year 1 monitoring and maintenance shall begin and be performed within that same year followed by the submittal of a Year 1 monitoring report by August 1st. If construction completes and the As-Built is submitted in the fall or winter of a given year, Year 1 monitoring shall begin the following spring.

Maintenance activities (as described in Maintenance and Contingency) shall be performed twice yearly (in spring and fall) for the duration of the monitoring period in order to ensure the dominant establishment of native plantings and the elimination or minimization of non-native, competitive vegetation. See Performance Standards section for details on native planting establishment and volunteer recruitment thresholds as well as non-native vegetation.

Table 17. Monitoring and Maintenance Schedules

Year	Date	Maintenance Review and Actions	Performance Monitoring	Reporting Schedule
0		X (Spring/Fall)		Baseline Report[1]
1	August 1	X (Spring/Fall)	X (Spring)	Year 1 Report
2	August 1	X (Spring/Fall)	X (Spring)	Year 2 Report
3	August 1	X (Spring/Fall)	X (Spring)	Year 3 Report
5	August 1	X (Spring/Fall)	X (Spring)	Year 5 Report
7	August 1	X (Spring/Fall)	X (Spring)	Year 7 Report
10	August 1	X (Spring/Fall)	X (Spring)	Year 10 Report

[1]Baseline conditions shall be determined by the creation and submittal of an As-Built report; As-Built to be generated and submitted to the City and all applicable agencies upon completion of construction. This may occur at any point during the planting season (October – April).

Construction Sequencing and Management

Wetland and stream work involves in-channel wood, streambed construction, and upland re-grading activities. This work will be coordinated with the installation of a new entrance road and culvert installation. All stream and wetland work will occur during the dry season (July-September). No in water work is expected.

Sequencing

The following provides the general sequence of construction activities necessary to complete this mitigation project. In order to limit temporal loss of stream and wetland functions, the wetland and stream mitigation areas and the new entrance road along 88th St. SW will be constructed during the same period. It is anticipated that work will occur during the spring/summer conditions when the site is at its driest. This will involve the following tasks:

1. Critical area boundaries and buffers per the mitigation plan will be protected with orange fencing;
2. Areas within the entrance road limits from 88th St. SW will be cleared and grubbed;
3. All Class A and Class B designate noxious weeds and other non-designate weeds shall be cut and/or hand-grubbed and removed from the site;
4. Clearing and grading will occur along the new stream channel alignment. This will involve tree removal along the channel centerline. It is anticipated that 58 trees will be removed;
5. Wetland creation areas and buffer edges will be graded as shown in the grading plan. Note that the site's natural contours require minimal grading of buffer edges;
6. Where possible, cedars trees within the wetland creation areas will remain in place. These trees will be flagged, and grading will try to minimize root disturbance. After final grading and compaction, these remaining cedar trees will be situated on hummocks adding microtopographic ecological elements. Douglas fir and big leaf maples within the wetland/stream creation zone will be removed and reincorporated as either habitat wood piles or tree trunk sections used to build log weirs along the stream;
7. Log weir sections will be cut to size (using either Douglas fir or cedar trees harvested onsite) and installed along the stream channel alignment. A series of four log weir steps will be constructed east of the road to create a stream step pool system with wetland terraces. Stream gravel will be placed within the stream centerline and in pool areas downstream of the weir to provide scour protection;
8. A 36-inch culvert (48 feet in length) will be installed to convey the seasonal stream and connect the two wetlands areas. The roadway retaining walls and roadbed will then be built up to final grade;
9. Wetland areas downstream of the culvert will be graded with a maximum side slope of 1 percent. Conifer logs will be placed in the wetland rehabilitation area and wetland creation areas perpendicular to stream flow to impound and spread water. The small portion of Wetland A creation area in the northwest corner shall be accessed for grading from the north road entrance to avoid any need to cross existing wetland areas;

10. After completion of the mitigation areas and new culvert, stream flow will then be redirected to the new channel. This will involve construction of a new manhole (Type 2) within the Mukilteo ROW to intercept flows from the existing 15-inch concrete storm pipe. A 74 foot, 18-inch storm pipe will be installed (open/cut trench) from the manhole to the head of mitigation site in the east. Storm flow will exit the pipe and flow down a 38-foot cobble channel set at roughly 12 percent slope. This channel then intercepts the first stream/wetland terrace. This work will be done in the dry and a water management plan will be developed to handle stream flows if they occur during this period; and
11. Plants will be installed in wetland and buffer areas in the late fall. Bare ground between plantings in buffers restoration areas shall be installed with four to six inches of arborist chip mulch.

Post-Construction Approval

GEO shall notify the City in writing when the mitigation planting is completed for a final site inspection and subsequent final approval. Once final approval is obtained in writing from the City, the monitoring period will begin.

Post-Construction Assessment

Once construction is approved, a qualified wetland ecologist from GEO shall conduct a post-construction assessment. The purpose of this assessment will be to establish baseline conditions at Year 0 of the required monitoring period. A Baseline Assessment report including "As-Built" drawings will be submitted to the City and all other applicable agencies. The As-Built plan set will identify and describe any changes in grading, planting or other constructed features in relation to the original approved plan.

Maintenance and Contingency

Regular maintenance reviews will be performed according to schedule presented in **Table 17** to address any conditions that could jeopardize the success of the mitigation project per MMC 17.52B.140.A.4. Following maintenance reviews by the biologist or ecologist, required maintenance on the site will be implemented within ten (10) business days of submission of a maintenance memo to the maintenance contractor and permittee.

Established performance standards for the project will be compared to the yearly monitoring results to judge the success of the mitigation. If, during the course of the monitoring period, there appears to be a significant problem with achieving the performance standards, the permittee shall work with the City to develop a Contingency Plan in order to get the project back into compliance with the performance standards. Contingency plans can include, but are not limited to, the following actions: additional plant installation, erosion control, modifications to hydrology, and plant substitutions of type, size, quantity, and/or location. If required, a

Contingency Plan shall be submitted to City by December 31st of any year when deficiencies are discovered.

The following list includes examples of maintenance (M) and contingency (C) actions that may be implemented during the course of the monitoring period. This list is not intended to be exhaustive, and other actions may be implemented as deemed necessary.

- During year one, replace all dead woody plant material (M).
- Replace dead plants with the same species or a substitute species that meets the goals and objectives of the mitigation plan, subject to Green Earth Operations and agency approval (C).
- Re-plant area after reason for failure has been identified (e.g., moisture regime, poor plant stock, disease, shade/sun conditions, wildlife damage, etc.) (C).
- After consulting with City staff, minor excavations, if deemed to be more beneficial to the existing conditions than currently exists, will be made to correct surface drainage patterns (C).
- Remove/control weedy or exotic invasive plants (e.g., English ivy, Scot's broom (*Cytisus scoparius*), reed canarygrass, Himalayan blackberry, purple loosestrife (*Lythrum salicaria*), Japanese knotweed, etc.) by manual or chemical means approved by permitting agencies. Use of herbicides or pesticides within the mitigation area would only be implemented if other measures failed or were considered unlikely to be successful and would require prior agency approval. All non- native vegetation must be removed and disposed of off-site. (C & M).
- Remove trash and other debris from the mitigation areas twice a year (M).
- Selectively prune woody plants at the direction of Green Earth Operations or Consultants to meet the mitigation plan's goal and objectives (e.g., thinning and removal of dead or diseased
  portions of trees/shrubs) (M).
- Repair or replace damaged structures signs and fences (M).

Performance and Maintenance Surety

Pursuant to MCC 52B.150.A.1 and A.2., performance surety shall be provided to assure that all required wetland mitigation and buffer restoration is satisfactorily completed in accordance with the approved Mitigation Plan and final plat, specification, permits or approval requirements, and applicable regulations. When site improvements cannot be completed prior to final acceptance due to weather conditions which may negatively affect the success of the project, a performance surety may be used. The client will provide this surety bond, a performance bond, assignment of savings account or an irrevocable letter of credit guaranteed by an acceptable financial institution with terms and conditions acceptable to the City. A performance monitoring security shall be provided for all installed mitigation after final inspection and acceptance by the department and prior to issuance of a certificate of occupancy.

The performance surety shall equal one hundred fifty percent of the cost of the mitigation project, and the required improvements shall be installed in a satisfactory manner within six months or less (MMC 17.52B.150.B.1). The amount of the maintenance surety shall be equal to fifteen percent of the cost of the mitigation project and the term of the surety shall reflect that of the monitoring program (MMC 17.52B.150.B.2.a).

Long-term Maintenance

In compliance with MCC 17.52B.150.C and to ensure the long-term success of the wetland, stream, and buffer areas, all critical areas shall be placed within a covenant-protected NGPA upon the completion of construction. The development community shall be responsible for the long-term maintenance of the wetland and its associated buffer once the site has successfully completed its monitoring period and the performance and maintenance sureties have been released. In perpetuity, the critical areas shall be kept clear of weeds, invasive plant material, lawn clippings, junk, debris, and other impacting intrusions.

Disclaimer

Green Earth Operations, Inc (GEO) has prepared this Critical Area Assessment and Conceptual Mitigation Plan at the request of 214-WLD Carrick Court, LLC. The information contained herein is, to our knowledge, correct and accurate. It should be recognized that the establishment of stream and wetland boundaries is an inexact science. Streams are subject to weather patterns, in addition to upstream and downstream activities. Wetlands are, by definition, transition areas, and wetland boundaries often change with time. The presence of wetland indicators may also vary depending on the time of year. Additionally, individual professionals may disagree on the precise location of wetland boundaries and/or the functions and values of a wetland. All stream and wetland boundaries, classifications, and buffer widths should be considered subject to change until reviewed and approved by the appropriate regulatory agencies with jurisdiction. GEO recommends obtaining jurisdictional approval before completing final site plans and/or beginning construction activities. Final determination of U.S. federal jurisdiction is the responsibility of the U.S. Army Corps of Engineers (Corps), Seattle District. Wetlands considered to be "Waters of the State" are regulated by Washington State, and jurisdiction is determined by the Washington State Department of Ecology (DOE). Based on Corps and DOE final determinations, wetland buffer and mitigation requirements must follow the City of Mukilteo code requirements. This report is not intended for use in the application for state and/or federal permits unless otherwise noted. GEO is not responsible for the accuracy of information provided by others.

Within the limitations of schedule, budget, and scope of work, GEO warrants that this study was conducted in accordance with generally accepted environmental science practices, including the technical guidelines and criteria in effect at the time of this study. The results and conclusions of this report represent the author's best professional judgment based upon information provided by the project proponent and information obtained during this study. No other warranty, expressed or implied, is made.

In the event of any changes in the nature, design, or locations of the project site features, the conclusion and recommendations in this report would not be valid unless the changes are reviewed and the conclusions of this report are verified in writing with GEO. GEO is not responsible for any claims, damages or liabilities associated with the interpretation of these findings or reuse of the analysis without the express written authorization of GEO.

GEO and project staff are not attorneys, and this report should not be construed to be a legal representation or interpretation of environmental laws, rules, or regulations.

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Appendix A - Report Figures

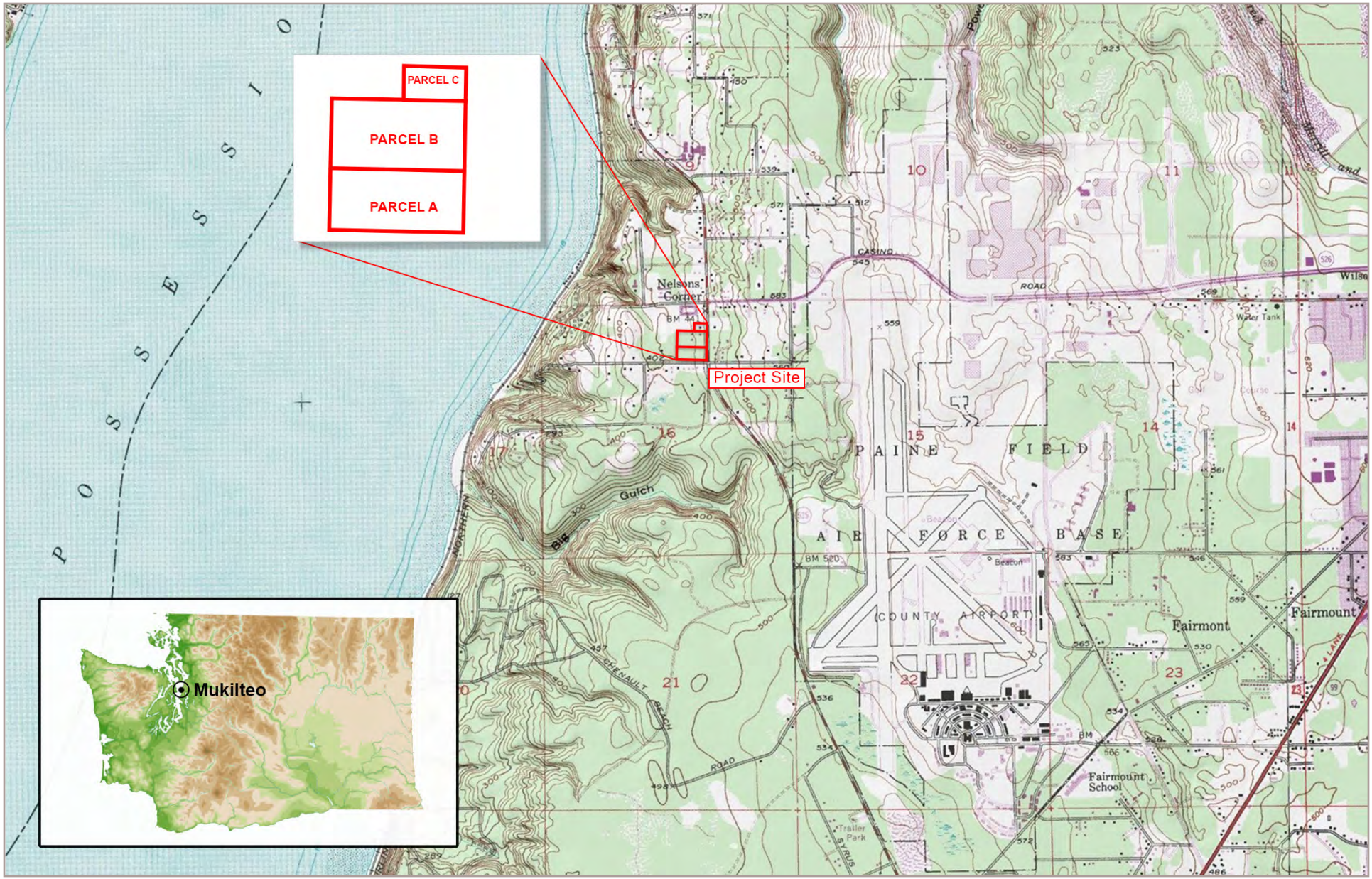
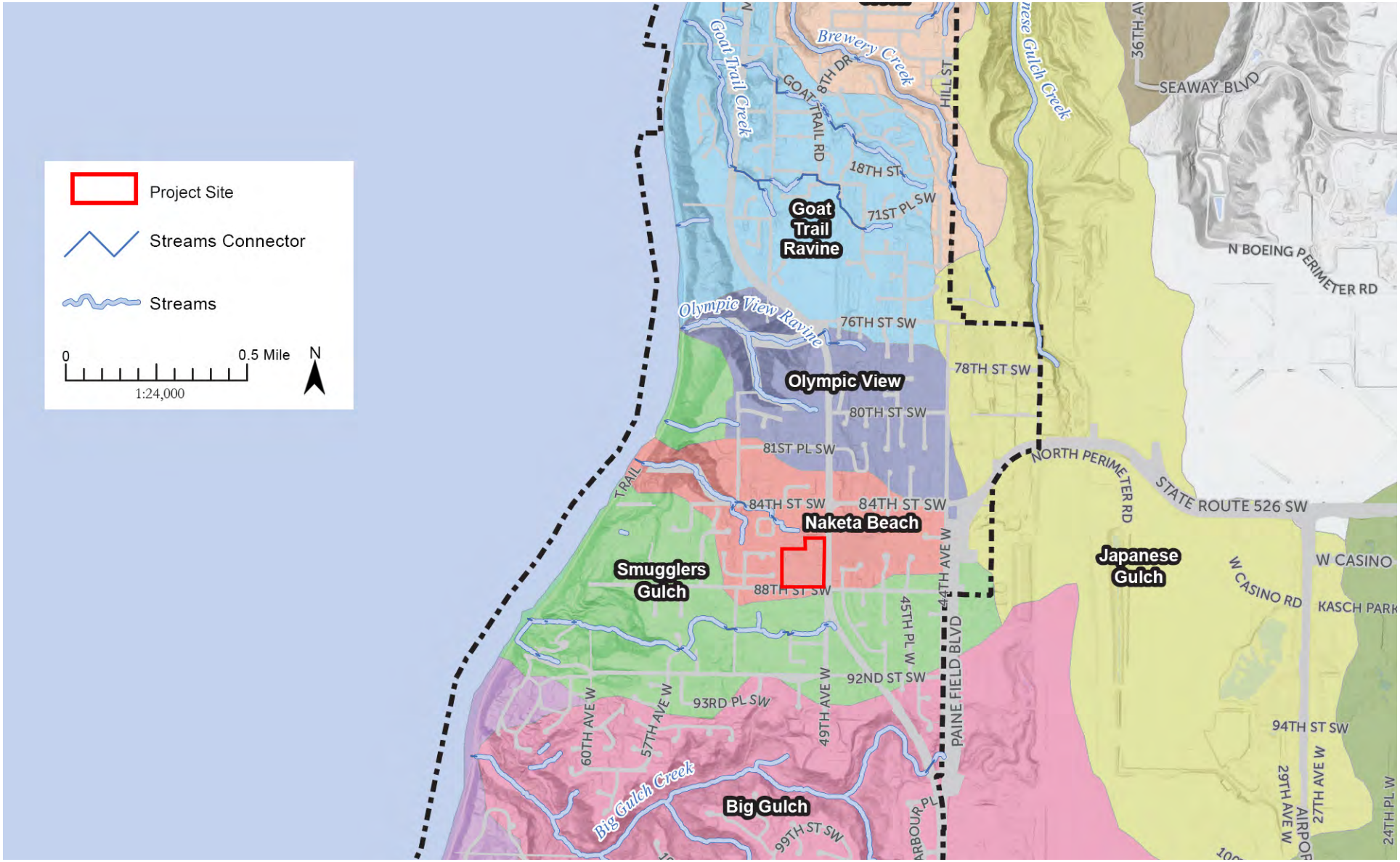


FIGURE 1: VICINITY MAP

Carrick Court, Mukilteo

GREEN EARTH OPERATIONS

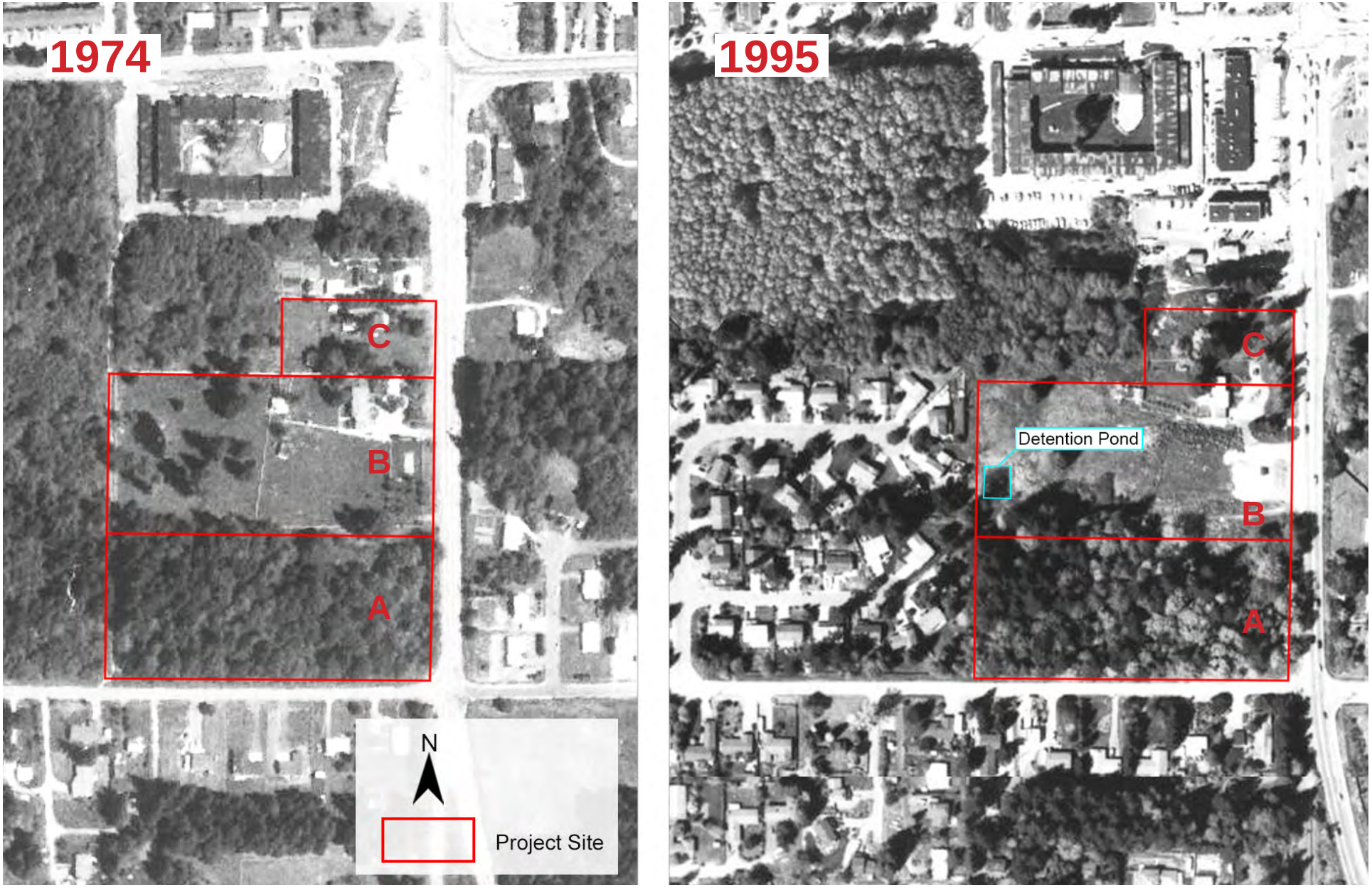


Source: CM 2020a

FIGURE 2: CITY OF MUKILTEO STREAMS AND WATERSHEDS

Carrick Court, Mukilteo

GREEN EARTH OPERATIONS



Source: CM 2020b

GREEN EARTH
OPERATIONS

FIGURE 3: 1974 &1995 AERIAL PHOTO

Carrick Court, Mukilteo

Source: U.S. Fish and Wildlife Service, National Standards

FIGURE 4: NATIONAL WETLAND INVENTORY MAP

Carrick Court, Mukilteo

GREEN EARTH
OPERATIONS

Source: NRCS 2020a

Map Unit Legend

Map Unit Symbol	Map Unit Name
5	Alderwood-Urban land complex, 2 to 8 percent slopes
6	Alderwood-Urban land complex, 8 to 15 percent slopes

Soil Map Unit Polygons

Project Site

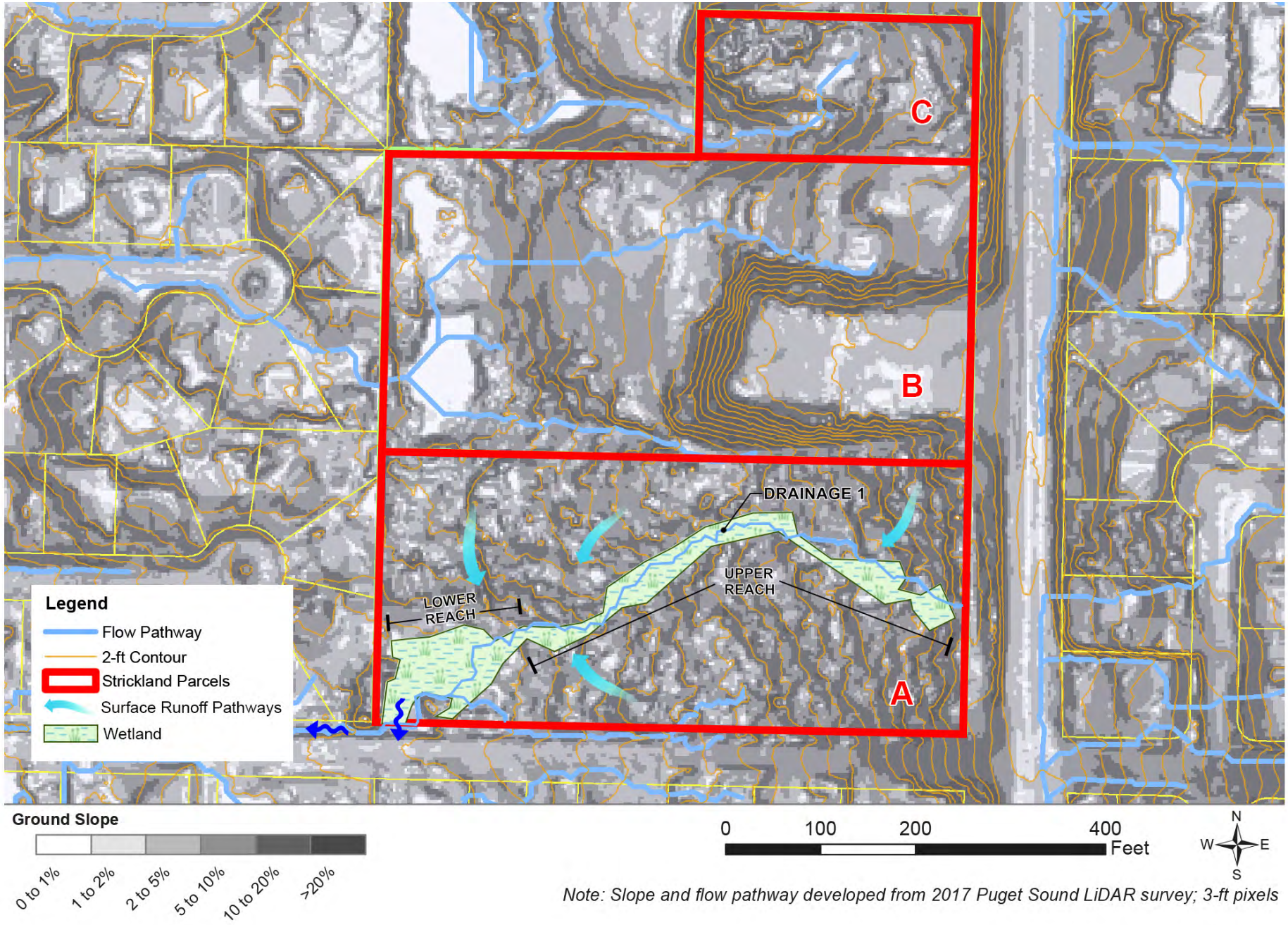
0 100 200 Feet

Map projection: Web Mercator Corner coordinates: WGS84
Edge tics: UTM Zone 10N WGS84

FIGURE 5: SOIL SURVEY MAP

Carrick Court, Mukilteo

GREEN EARTH OPERATIONS

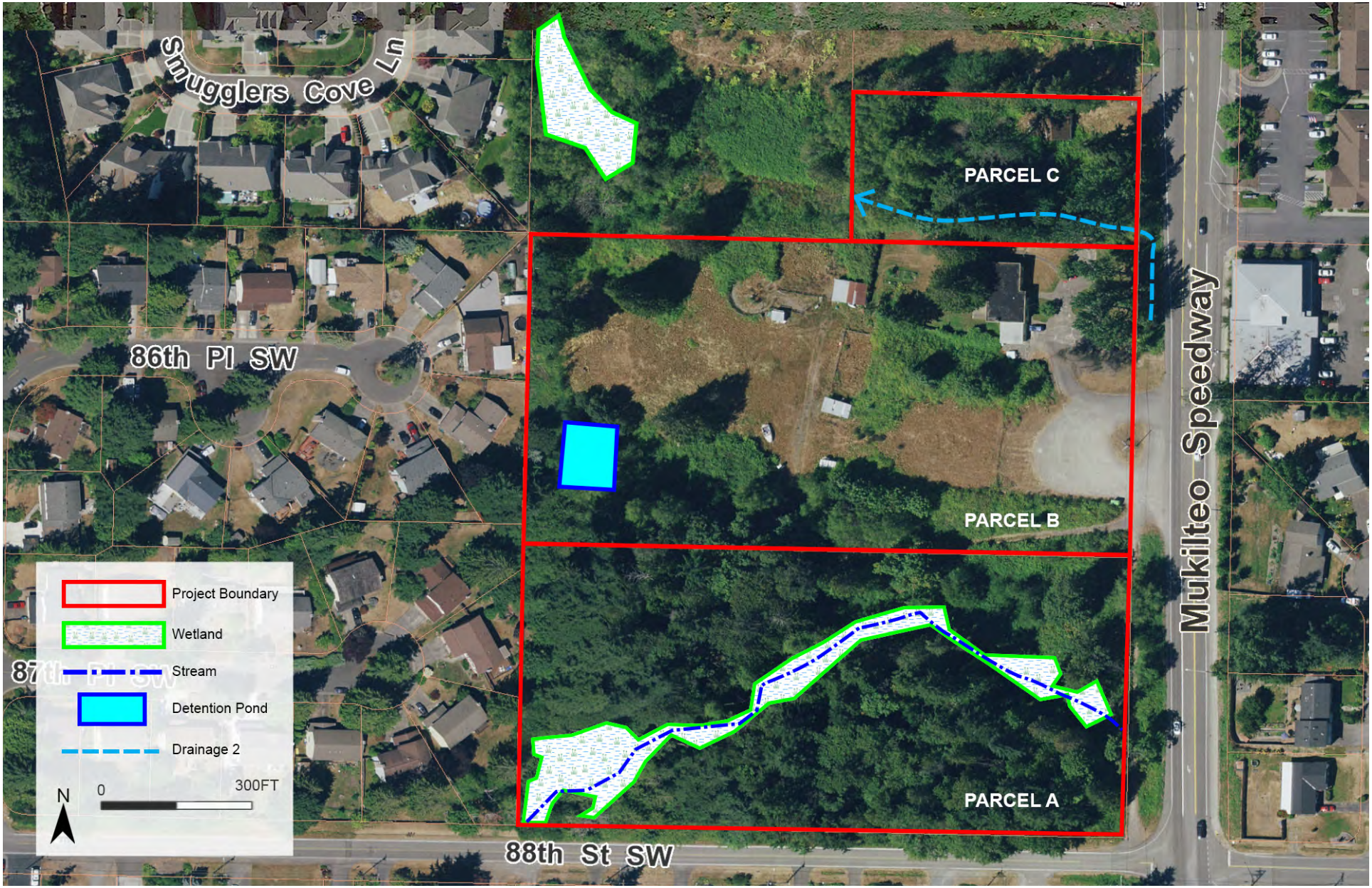


Note: Slope and flow pathway developed from 2017 Puget Sound LiDAR survey; 3-ft pixels

GREEN EARTH OPERATIONS

FIGURE 6: WATER VECTOR MAP

Carrick Court, Mukilteo



NOTE:

1. See Appendix E for delineation flagging details.
2. The offsite wetland was digitized from RAM Engineering As-Built Plans (RAM 2020).

GREEN EARTH OPERATIONS

FIGURE 7: OVERALL WETLAND MAP

Carrick Court, Mukilteo

Contributing Basin (approx. 974,695 sf.)
Wetland A (approx. 19,774 sf.)
Carrick Court, Mukilteo

GREEN EARTH
OPERATIONS

RATING FIGURE A1 (WETLAND A)
150' RADIUS / PLANT CLASS / HYDROPERIOD

Source: Google Earth 2018

RATING FIGURE A2 (WETLAND A)
H2.0 HABITAT / LAND USE CALCULATIONS
Carrick Court, Mukilteo

GREEN EARTH
OPERATIONS

50.21% High Intensity Landuse
0.33% Accessible Undisturbed Habitat
21.09% Unaccessible Undisturbed Habitat
0.03% Wetland
1km Area (orange circle) = 62,221,182 sq ft

Appendix B - Wetland Data Forms

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Mukilteo Strickland City/County: Kirkland Sampling Date: 2020-08-04

Applicant/Owner: Wescott Holdings, Inc State: Washington Sampling Point: SP-1

Investigator(s): M. Merkelbach Section, Township, Range: S16, T28N, R4E

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 3

Subregion (LRR): A 2 Lat: 47.9190674 Long: -122.3004669 Datum: WGS 84

Soil Map Unit Name: Alderwood-Urban land complex, 8 to 15 percent slopes (6) NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔	No _____	**Is the Sampled Area within a Wetland?** Yes ✔ No _____
Hydric Soil Present?	Yes ✔	No _____	
Wetland Hydrology Present?	Yes ✔	No _____	

Remarks:
Soil pit located next to dry bare ground drainage pattern.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Alnus rubra	20	✔	FAC
2. Acer macrophyllum	15	✔	FACU
3. Thuja plicata	10	✔	FAC
4.			
	45%	= Total Cover	
Sapling/Shrub Stratum (Plot size: 10 ft r)			
1. Rubus spectabilis	25	✔	FAC
2.			
3.			
4.			
5.			
	25%	= Total Cover	
Herb Stratum (Plot size: 5 ft r)			
1. Phalaris arundinacea	70	✔	FACW
2. Ranunculus repens	30	✔	FAC
3. Equisetum arvense	25		FAC
4. Athyrium cyclosorum	10		FAC
5. Species 1	10		
6.			
7.			
8.			
9.			
10.			
11.			
	145%	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
		= Total Cover	

% Bare Ground in Herb Stratum _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 83 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	70	x 2 =	140
FAC species	120	x 3 =	360
FACU species	15	x 4 =	60
UPL species	0	x 5 =	0
Column Totals:	205 (A)		560 (B)

Prevalence Index = B/A = 2.7

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

✔ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 5 - Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✔ No _____

Remarks:
Meets dominance test.

SOIL

Sampling Point: SP-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 5	10YR 3/1	100					Sandy loam	Soil is moist, roots concentrated in top5"
5 - 16	10YR 3/1	80	7.5YR 4/6	20	C	M	Sandy clay loam	Tighter soil, minor presence of charcoal
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (**except MLRA 1**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ✔ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✔ **No** _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ✔ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Vis ble on Aerial Imagery (B7)
- ✔ Sparsely Vegetated Concave Surface (B8)
- ✔ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- ✔ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes _____ No ✔ Depth (inches): _____

Water Table Present? Yes _____ No ✔ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✔ Depth (inches): _____

Wetland Hydrology Present? Yes ✔ **No** _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Soil saturation and overland flow observed in previous field visit in February 2020.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Mukilteo Strickland City/County: Kirkland Sampling Date: 2020-08-04

Applicant/Owner: Wescott Holdings, Inc State: Washington Sampling Point: SP-2

Investigator(s): M. Merkelbach Section, Township, Range: S16, T28N, R4E

Landform (hillslope, terrace, etc.): Upland, Hillslope Local relief (concave, convex, none): Convex Slope (%): 5

Subregion (LRR): A 2 Lat: 47.9201965 Long: -122.3000665 Datum: WGS 84

Soil Map Unit Name: Alderwood-Urban land complex, 8 to 15 percent slopes (6) NWI classification: _____

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✔	**Is the Sampled Area within a Wetland?** Yes _____ No ✔
Hydric Soil Present?	Yes _____	No ✔	
Wetland Hydrology Present?	Yes _____	No ✔	

Remarks:
Upland pit adjacent to SP-1

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Acer macrophyllum	30	✔	FACU
2. Alnus rubra	20	✔	FAC
3. Thuja plicata	10		FAC
4.			
	60%	= Total Cover	
Sapling/Shrub Stratum (Plot size: 5 ft r)			
1. Rubus armeniacus	25	✔	FACU
2. Rubus spectabilis	10	✔	FAC
3.			
4.			
5.			
	35%	= Total Cover	
Herb Stratum (Plot size: 5 ft r)			
1. Pteridium aquilinum	75	✔	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	75%	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
	_____	= Total Cover	

% Bare Ground in Herb Stratum _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 40 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	40	x 3 =	120
FACU species	130	x 4 =	520
UPL species	0	x 5 =	0
Column Totals:	170 (A)		640 (B)

Prevalence Index = B/A = 3.8

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 5 - Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✔

Remarks:
Very marginal FAC vegetation present in the presence of bracken fern.

SOIL

Sampling Point: SP-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0 - 1							Peat	Duff layer
1 - 4	10YR 3/2	100					Sandy loam	W/ gravels
4 - 9	10YR 3/2	100					Sandy loam	Small chunks of wood debris
9 - 16	10YR 5/6	100					Sandy loam	W/ gravels
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (**except MLRA 1**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✔

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Vis ble on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes _____ No ✔ Depth (inches): _____

Water Table Present? Yes _____ No ✔ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✔ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No hydrologic indicators present.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Mukilteo Strickland City/County: Kirkland Sampling Date: 2020-08-04

Applicant/Owner: Wescott Holdings, Inc State: Washington Sampling Point: SP-3

Investigator(s): M. Merkelbach Section, Township, Range: S16, T28N, R4E

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1

Subregion (LRR): A 2 Lat: 47.9185181 Long: -122.3028934 Datum: WGS 84

Soil Map Unit Name: McKenna NWI classification: PFO

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✔ No _____	**Is the Sampled Area within a Wetland?** Yes _____ No ✔
Hydric Soil Present?	Yes ✔ No _____	
Wetland Hydrology Present?	Yes ✔ No _____	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Salix lucida	60	✔	FACW
2. Thuja plicata	30	✔	FAC
3.			
4.			
	90%	= Total Cover	
Sapling/Shrub Stratum (Plot size: 5 ft r)			
1. Spiraea douglasii	40	✔	FACW
2. Salix lucida	20	✔	FACW
3. Rubus spectabilis	15	✔	FAC
4.			
5.			
	75%	= Total Cover	
Herb Stratum (Plot size: 5 ft r)			
1. Ranunculus repens	40	✔	FAC
2. Hedera helix	10		FACU
3. Species 3	5		
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	55%	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
	_____	= Total Cover	

% Bare Ground in Herb Stratum 50

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	120	x 2 =	240
FAC species	85	x 3 =	255
FACU species	10	x 4 =	40
UPL species	0	x 5 =	0
Column Totals:	215 (A)		535 (B)

Prevalence Index = B/A = 2.5

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

✔ 2 - Dominance Test is >50%

✔ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 5 - Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✔ No _____

Remarks:

Hydrophytuc veg present

SOIL

Sampling Point: SP-3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 5							Peat	Leaves and woody debris
5 - 9	10YR 3/1	100					Loamy sand	W/ large gravels
9 - 16	10YR 3/1	100					Sand	Fine sand w gravel
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ✔ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ✔ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (**except MLRA 1**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ✔ **No** ___

Remarks:

Soil pit located in an area that seasonally ponds ~4 inches of standing water during February 2020 field visit. Flat topo causing sand deposits from the drainage.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ✔ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Vis ble on Aerial Imagery (B7)
- ✔ Sparsely Vegetated Concave Surface (B8)
- ✔ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ✔ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- ✔ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ✔ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ___ No ✔ Depth (inches): _____

Water Table Present? Yes ___ No ✔ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ___ No ✔ Depth (inches): _____

Wetland Hydrology Present? Yes ✔ **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Site is dry but ponding was observed during February 2020 site visit. Bare ground and water stained leaves is evidence of seasonal ponding.

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Mukilteo Strickland City/County: Kirkland Sampling Date: 2020-08-04

Applicant/Owner: Wescott Holdings, Inc State: Washington Sampling Point: SP-4

Investigator(s): M. Merkelbach Section, Township, Range: S16, T28N, R4E

Landform (hillslope, terrace, etc.): Upland Local relief (concave, convex, none): Undulating Slope (%): 3

Subregion (LRR): A 2 Lat: 47.9184875 Long: -122.3023582 Datum: WGS 84

Soil Map Unit Name: Alderwood-Urban land complex, 2 to 8 percent slopes NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✔	**Is the Sampled Area within a Wetland?** Yes _____ No ✔
Hydric Soil Present?	Yes _____	No ✔	
Wetland Hydrology Present?	Yes _____	No ✔	

Remarks:
Upland soil pit in proposed onsite mitigation area.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Thuja plicata	95	✔	FAC
2.			
3.			
4.			
	95% = Total Cover		
Sapling/Shrub Stratum (Plot size: 5 ft r)			
1. Rubus ursinus	25	✔	FACU
2. Gaultheria shallon	15	✔	FACU
3. Rododendron sp	15	✔	
4. Rubus spectabilis	5		FAC
5.			
	60% = Total Cover		
Herb Stratum (Plot size: 5 ft r)			
1. Polystichum munitum	20	✔	FACU
2. Athyrium cyclosorum	15	✔	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	35% = Total Cover		
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
	_____ = Total Cover		

% Bare Ground in Herb Stratum 60

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 40 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	115	x 3 =	345
FACU species	60	x 4 =	240
UPL species	0	x 5 =	0
Column Totals:	175 (A)		585 (B)

Prevalence Index = B/A = 3.3

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 5 - Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✔

Remarks:
Forest duff layer from cedar leaf fall

SOIL

Sampling Point: SP-4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 4								Root/forest duff layer
4 - 9	10YR 4/3	100					Loamy sand	
9 - 16	10YR 3/2	100					Loamy sand	W/ large gravels
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (**except MLRA 1**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✔

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Vis ble on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes _____ No ✔ Depth (inches): _____

Water Table Present? Yes _____ No ✔ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✔ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No hydrologic indicators

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Mukilteo Strickland City/County: Kirkland Sampling Date: 2020-10-21

Applicant/Owner: Wescott Holdings, Inc State: Washington Sampling Point: SP-5

Investigator(s): M. Merkelbach Section, Township, Range: S16, T28N, R4E

Landform (hillslope, terrace, etc.): Upland, Hillslope Local relief (concave, convex, none): Concave Slope (%): 2

Subregion (LRR): A 2 Lat: 47.9208984 Long: -122.3003700 Datum: WGS 84

Soil Map Unit Name: Alderwood-Urban land complex NWI classification:

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ✔ No _____ (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____	No ✔	**Is the Sampled Area within a Wetland?** Yes _____ No ✔
Hydric Soil Present?	Yes _____	No ✔	
Wetland Hydrology Present?	Yes _____	No ✔	

Remarks:

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft r)	Absolute % Cover	Dominant Species?	Indicator Status
1. Pseudotsuga menziesii	40	✔	FACU
2. Acer macrophyllum	25	✔	FACU
3. Alnus rubra	10		FAC
4.			
	75%	= Total Cover	
Sapling/Shrub Stratum (Plot size: 5 ft r)			
1. Fallopia japonica	40	✔	FACU
2. Rubus armeniacus	30	✔	FACU
3. Rubus ursinus	15		FACU
4. Ilex aquifolium	5		FACU
5.			
	90%	= Total Cover	
Herb Stratum (Plot size: 5 ft r)			
1. Hedera helix	20	✔	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	20%	= Total Cover	
Woody Vine Stratum (Plot size: 30 ft r)			
1.			
2.			
	_____	= Total Cover	

% Bare Ground in Herb Stratum _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	10	x 3 =	30
FACU species	175	x 4 =	700
UPL species	0	x 5 =	0
Column Totals:	185 (A)		730 (B)

Prevalence Index = B/A = 3.9

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ 5 - Wetland Non-Vascular Plants[1]

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ✔

Remarks:

Does not meet dominance test

SOIL

Sampling Point: SP-5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 - 5	10YR 3/3	100					Sandy loam	Med gravel, Lots of roots, earth worms present
5 - 16	10YR 3/2	100					Sandy loam	Very gravely and dense roots present
-								
-								
-								
-								
-								
-								

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) (**except MLRA 1**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (TF2)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✔

Remarks:

No hydric soils present

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Vis ble on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2, 4A, and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes _____ No ✔ Depth (inches): _____

Water Table Present? Yes _____ No ✔ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✔ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✔

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No hydrology present

Appendix C - Wetland Rating Forms and Rating Figures

Wetland name or number A

RATING SUMMARY – Western Washington

Name of wetland (or ID #): Wetland A Date of site visit: 8/4/2020

Rated by M. Merkelbach Trained by Ecology? X Yes ___No Date of training MARCH 2019

HGM Class used for rating Depressional Wetland has multiple HGM classes? X Y ___N

Slope + Depressional

NOTE: Form is not complete without the figures requested *(figures can be combined).*

Source of base aerial photo/map Google Earth 2020

OVERALL WETLAND CATEGORY IV (based on functions___ or special characteristics___)

1. Category of wetland based on FUNCTIONS

___**Category I** – Total score = 23 - 27

___**Category II** – Total score = 20 - 22

___**Category III** – Total score = 16 - 19

X **Category IV** – Total score = 9 - 15

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
	Circle the appropriate ratings			
Site Potential	H (M) L	H M (L)	H (M) L	
Landscape Potential	H (M) L	(H) M L	H M (L)	
Value	H M (L)	H M (L)	H (M) L	TOTAL
Score Based on Ratings	5	5	5	15

Score for each function based on three ratings *(order of ratings is not important)*

9 = H,H,H
8 = H,H,M
7 = H,H,L
7 = H,M,M
6 = H,M,L
6 = M,M,M
5 = H,L,L
5 = M,M,L
4 = M,L,L
3 = L,L,L

2. Category based on SPECIAL CHARACTERISTICS of wetland

CHARACTERISTIC	CATEGORY
Estuarine	I II
Wetland of High Conservation Value	I
Bog	I
Mature Forest	I
Old Growth Forest	I
Coastal Lagoon	I II
Interdunal	I II III IV
None of the above	

Wetland name or number A

Maps and figures required to answer questions correctly for Western Washington

Depressional Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	D 1.3, H 1.1, H 1.4	A1
Hydroperiods	D 1.4, H 1.2	A1
Location of outlet (*can be added to map of hydroperiods)*	D 1.1, D 4.1	A1
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	D 2.2, D 5.2	A1
Map of the contributing basin	D 4.3, D 5.3	A1
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	A2
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	Rating Fig 1
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	D 3.3	Rating Fig 2

Riverine Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	
Hydroperiods	H 1.2	
Ponded depressions	R 1.1	
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	R 2.4	
Plant cover of trees, shrubs, and herbaceous plants	R 1.2, R 4.2	
Width of unit vs. width of stream *(can be added to another figure)*	R 4.1	
Map of the contributing basin	R 2.2, R 2.3, R 5.2	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	R 3.1	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	R 3.2, R 3.3	

Lake Fringe Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	L 1.1, L 4.1, H 1.1, H 1.4	
Plant cover of trees, shrubs, and herbaceous plants	L 1.2	
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	L 2.2	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	L 3.1, L 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	L 3.3	

Slope Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	
Hydroperiods	H 1.2	
Plant cover of **dense** trees, shrubs, and herbaceous plants	S 1.3	
Plant cover of **dense, rigid** trees, shrubs, and herbaceous plants (*can be added to figure above)*	S 4.1	
Boundary of 150 ft buffer (can be added to another figure)	S 2.1, S 5.1	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	S 3.1, S 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	S 3.3	

Wetland name or number A

HGM Classification of Wetlands in Western Washington

For questions 1-7, the criteria described must apply to the entire unit being rated.

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1-7 apply, and go to Question 8.

1. Are the water levels in the entire unit usually controlled by tides except during floods?

   NO – go to 2 **YES** – the wetland class is **Tidal Fringe** – go to 1.1

   1.1 Is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?

   NO – Saltwater Tidal Fringe (Estuarine) **YES – Freshwater Tidal Fringe**
   *If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands. If it is Saltwater Tidal Fringe it is an **Estuarine** wetland and is not scored. This method **cannot** be used to score functions for estuarine wetlands.*

2. The entire wetland unit is flat and precipitation is the only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.

   NO – go to 3 **YES** – The wetland class is **Flats**
   *If your wetland can be classified as a Flats wetland, use the form for **Depressional** wetlands.*

3. Does the entire wetland unit **meet all** of the following criteria?
   __The vegetated part of the wetland is on the shores of a body of permanent open water (without any plants on the surface at any time of the year) at least 20 ac (8 ha) in size;
   __At least 30% of the open water area is deeper than 6.6 ft (2 m).

   NO – go to 4 **YES** – The wetland class is **Lake Fringe** (Lacustrine Fringe)

4. Does the entire wetland unit **meet all** of the following criteria?
   ✓ The wetland is on a slope (*slope can be very gradual*),
   ✓ The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks,
   ___The water leaves the wetland **without being impounded**.

   NO – go to 5 **YES** – The wetland class is **Slope**

   NOTE: Surface water does not pond in these type of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 ft deep).

5. Does the entire wetland unit **meet all** of the following criteria?
   ___The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river,
   ___The overbank flooding occurs at least once every 2 years.

Wetland name or number A

NO – go to 6 **YES** – The wetland class is **Riverine**

NOTE: The Riverine unit can contain depressions that are filled with water when the river is not flooding

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time during the year? *This means that any outlet, if present, is higher than the interior of the wetland.*

NO – go to 7 **YES** – The wetland class is **Depressional**

7. Is the entire wetland unit located in a very flat area with no obvious depression and no overbank flooding? The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.

NO – go to 8 **YES** – The wetland class is **Depressional**

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a Depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within the wetland unit being scored.

NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the HGM class listed in column 2 is less than 10% of the unit; classify the wetland using the class that represents more than 90% of the total area.

HGM classes within the wetland unit being rated	HGM class to use in rating
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake Fringe	Lake Fringe
Depressional + Riverine along stream within boundary of depression	Depressional
Depressional + Lake Fringe	Depressional
Riverine + Lake Fringe	Riverine
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE

If you are still unable to determine which of the above criteria apply to your wetland, or if you have ***more than 2 HGM classes*** *within a wetland boundary, classify the wetland as Depressional for the rating.*

Wetland name or number A

DEPRESSIONAL AND FLATS WETLANDS

Water Quality Functions - Indicators that the site functions to improve water quality

D 1.0. Does the site have the potential to improve water quality?	
D 1.1. Characteristics of surface water outflows from the wetland: Wetland is a depression or flat depression (QUESTION 7 on key) with no surface water leaving it (no outlet). points = 3 Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet. points = 2 Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing points = 1 Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch. points = 1	2
D 1.2. The soil 2 in below the surface (or duff layer) is true clay or true organic *(use NRCS definitions)*. Yes = 4 No = 0	
D 1.3. Characteristics and distribution of persistent plants (Emergent, Scrub-shrub, and/or Forested Cowardin classes): Wetland has persistent, ungrazed, plants > 95% of area points = 5 Wetland has persistent, ungrazed, plants > ½ of area points = 3 Wetland has persistent, ungrazed plants > $^1/_{10}$ of area points = 1 Wetland has persistent, ungrazed plants < $^1/_{10}$ of area points = 0	5
D 1.4. Characteristics of seasonal ponding or inundation: *This is the area that is ponded for at least 2 months. See description in manual.* Area seasonally ponded is > ½ total area of wetland points = 4 Area seasonally ponded is > ¼ total area of wetland points = 2 Area seasonally ponded is < ¼ total area of wetland points = 0	2
Total for D 1 Add the points in the boxes above	9

Rating of Site Potential If score is: ___ **12-16 = H** X **6-11 = M** ___ **0-5 = L** *Record the rating on the first page*

D 2.0. Does the landscape have the potential to support the water quality function of the site?	
D 2.1. Does the wetland unit receive stormwater discharges? Yes = 1 No = 0	1
D 2.2. Is > 10% of the area within 150 ft of the wetland in land uses that generate pollutants? Yes = 1 No = 0	1
D 2.3. Are there septic systems within 250 ft of the wetland? Yes = 1 No = 0	0
D 2.4. Are there other sources of pollutants coming into the wetland that are not listed in questions D 2.1-D 2.3? Source_____ Yes = 1 No = 0	0
Total for D 2 Add the points in the boxes above	2

Rating of Landscape Potential If score is: ___ **3 or 4 = H** X **1 or 2 = M** ___ **0 = L** *Record the rating on the first page*

D 3.0. Is the water quality improvement provided by the site valuable to society?	
D 3.1. Does the wetland discharge directly (i.e., within 1 mi) to a stream, river, lake, or marine water that is on the 303(d) list? Yes = 1 No = 0	0
D 3.2. Is the wetland in a basin or sub-basin where an aquatic resource is on the 303(d) list? Yes = 1 No = 0	0
D 3.3. Has the site been identified in a watershed or local plan as important for maintaining water quality (*answer YES if there is a TMDL for the basin in which the unit is found*)? Yes = 2 No = 0	0
Total for D 3 Add the points in the boxes above	0

Rating of Value If score is: ___ **2-4 = H** ___ **1 = M** X **0 = L** *Record the rating on the first page*

Wetland name or number A

DEPRESSIONAL AND FLATS WETLANDS

Hydrologic Functions - Indicators that the site functions to reduce flooding and stream degradation

D 4.0. Does the site have the potential to reduce flooding and erosion?	
D 4.1. Characteristics of surface water outflows from the wetland: Wetland is a depression or flat depression with no surface water leaving it (no outlet) points = 4 Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet points = 2 Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch points = 1 Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing points = 0	2
D 4.2. Depth of storage during wet periods: *Estimate the height of ponding above the bottom of the outlet. For wetlands with no outlet, measure from the surface of permanent water or if dry, the deepest part.* Marks of ponding are 3 ft or more above the surface or bottom of outlet points = 7 Marks of ponding between 2 ft to < 3 ft from surface or bottom of outlet points = 5 Marks are at least 0.5 ft to < 2 ft from surface or bottom of outlet points = 3 The wetland is a "headwater" wetland points = 3 Wetland is flat but has small depressions on the surface that trap water points = 1 Marks of ponding less than 0.5 ft (6 in) points = 0	0
D 4.3. Contribution of the wetland to storage in the watershed: *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.* The area of the basin is less than 10 times the area of the unit points = 5 The area of the basin is 10 to 100 times the area of the unit ~ 49X points = 3 The area of the basin is more than 100 times the area of the unit points = 0 Entire wetland is in the Flats class points = 5	3
Total for D 4 Add the points in the boxes above	5

Rating of Site Potential If score is: ___ **12-16 = H** ___ **6-11 = M** X **0-5 = L** *Record the rating on the first page*

D 5.0. Does the landscape have the potential to support hydrologic functions of the site?	
D 5.1. Does the wetland receive stormwater discharges? Yes = 1 No = 0	1
D 5.2. Is >10% of the area within 150 ft of the wetland in land uses that generate excess runoff? Yes = 1 No = 0	1
D 5.3. Is more than 25% of the contributing basin of the wetland covered with intensive human land uses (residential at >1 residence/ac, urban, commercial, agriculture, etc.)? Yes = 1 No = 0	1
Total for D 5 Add the points in the boxes above	3

Rating of Landscape Potential If score is: X **3 = H** ___ **1 or 2 = M** ___ **0 = L** *Record the rating on the first page*

D 6.0. Are the hydrologic functions provided by the site valuable to society?	
D 6.1. The unit is in a landscape that has flooding problems. *Choose the description that best matches conditions around the wetland unit being rated. Do not add points. Choose the highest score if more than one condition is met.* The wetland captures surface water that would otherwise flow down-gradient into areas where flooding has damaged human or natural resources (e.g., houses or salmon redds): • Flooding occurs in a sub-basin that is immediately down-gradient of unit. points = 2 • Surface flooding problems are in a sub-basin farther down-gradient. points = 1 Flooding from groundwater is an issue in the sub-basin. points = 1 The existing or potential outflow from the wetland is so constrained by human or natural conditions that the water stored by the wetland cannot reach areas that flood. *Explain why* _____ points = 0 There are no problems with flooding downstream of the wetland. points = 0	0
D 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan? Yes = 2 No = 0	0
Total for D 6 Add the points in the boxes above	0

Rating of Value If score is: ___ **2-4 = H** ___ **1 = M** X **0 = L** *Record the rating on the first page*

Wetland name or number A

These questions apply to wetlands of all HGM classes.

HABITAT FUNCTIONS - Indicators that site functions to provide important habitat

H 1.0. Does the site have the potential to provide habitat?

H 1.1. Structure of plant community: *Indicators are Cowardin classes and strata within the Forested class.* Check the Cowardin plant classes in the wetland. *Up to 10 patches may be combined for each class to meet the threshold of ¼ ac or more than 10% of the unit if it is smaller than 2.5 ac. Add the number of structures checked.*

____Aquatic bed	4 structures or more: points = 4
_X_ Emergent	3 structures: points = 2
_X_ Scrub-shrub (areas where shrubs have > 30% cover)	2 structures: points = 1
_X_ Forested (areas where trees have > 30% cover)	1 structure: points = 0

If the unit has a Forested class, check if:

____The Forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the Forested polygon

3

H 1.2. Hydroperiods

Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ ac to count (*see text for descriptions of hydroperiods*).

____Permanently flooded or inundated	4 or more types present: points = 3
_X_ Seasonally flooded or inundated	3 types present: points = 2
_X_ Occasionally flooded or inundated	2 types present: points = 1
_X_ Saturated only	1 type present: points = 0
____Permanently flowing stream or river in, or adjacent to, the wetland	
_X_ Seasonally flowing stream in, or adjacent to, the wetland	
____**Lake Fringe wetland**	**2 points**
____**Freshwater tidal wetland**	**2 points**

3

H 1.3. Richness of plant species

Count the number of plant species in the wetland that cover at least 10 ft^2.

Different patches of the same species can be combined to meet the size threshold and you do not have to name the species. ***Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle***

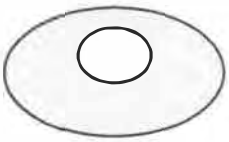
If you counted: > 19 species	points = 2
5 - 19 species	points = 1
< 5 species	points = 0

1

H 1.4. Interspersion of habitats

Decide from the diagrams below whether interspersion among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. *If you have four or more plant classes or three classes and open water, the rating is always high.*

None = 0 points



Low = 1 point

Moderate = 2 points

All three diagrams in this row are **HIGH** = 3points

2

Wetland name or number A

H 1.5. Special habitat features: Check the habitat features that are present in the wetland. *The number of checks is the number of points.* X Large, downed, woody debris within the wetland (> 4 in diameter and 6 ft long). X Standing snags (dbh > 4 in) within the wetland ___ Undercut banks are present for at least 6.6 ft (2 m) **and/or** overhanging plants extends at least 3.3 ft (1 m) over a stream (or ditch) in, or contiguous with the wetland, for at least 33 ft (10 m) ___ Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet weathered where wood is exposed)* ___ At least ¼ ac of thin-stemmed persistent plants or woody branches are present in areas that are permanently or seasonally inundated *(structures for egg-laying by amphibians)* ___ Invasive plants cover less than 25% of the wetland area in every stratum of plants (*see H 1.1 for list of strata*) English IVY / PHAR / Knotweed > 25%	2
Total for H 1 Add the points in the boxes above	11

Rating of Site Potential If score is: ___ 15-18 = H X 7-14 = M ___ 0-6 = L *Record the rating on the first page*

H 2.0. Does the landscape have the potential to support the habitat functions of the site?	
H 2.1. Accessible habitat (include *only habitat that directly abuts wetland unit*). *Calculate:* 0.33 % undisturbed habitat 0 + [(% moderate and low intensity land uses)/2] ___ = 033 % If total accessible habitat is: > 1/3 (33.3%) of 1 km Polygon points = 3 20-33% of 1 km Polygon points = 2 10-19% of 1 km Polygon points = 1 < 10% of 1 km Polygon points = 0	0
H 2.2. Undisturbed habitat in 1 km Polygon around the wetland. *Calculate:* 21 % undisturbed habitat 0 + [(% moderate and low intensity land uses)/2] ___ = 21 % Undisturbed habitat > 50% of Polygon points = 3 Undisturbed habitat 10-50% and in 1-3 patches points = 2 Undisturbed habitat 10-50% and > 3 patches points = 1 Undisturbed habitat < 10% of 1 km Polygon points = 0	1
H 2.3. Land use intensity in 1 km Polygon: If > 50% of 1 km Polygon is high intensity land use points = (-2) ≤ 50% of 1 km Polygon is high intensity points = 0	-2
Total for H 2 Add the points in the boxes above	-1

Rating of Landscape Potential If score is: ___ 4-6 = H ___ 1-3 = M X < 1 = L *Record the rating on the first page*

H 3.0. Is the habitat provided by the site valuable to society?	
H 3.1. Does the site provide habitat for species valued in laws, regulations, or policies? *Choose only the highest score that applies to the wetland being rated.* Site meets ANY of the following criteria: points = 2 — It has 3 or more priority habitats within 100 m (see next page) — It provides habitat for Threatened or Endangered species (any plant or animal on the state or federal lists) — It is mapped as a location for an individual WDFW priority species — It is a Wetland of High Conservation Value as determined by the Department of Natural Resources — It has been categorized as an important habitat site in a local or regional comprehensive plan, in a Shoreline Master Plan, or in a watershed plan Site has 1 or 2 priority habitats (listed on next page) within 100 m points = 1 Site does not meet any of the criteria above ~~points = 0~~	1

Rating of Value If score is: ___ 2 = H X 1 = M ___ 0 = L *Record the rating on the first page*

Wetland name or number A

WDFW Priority Habitats

Priority habitats listed by WDFW (see complete descriptions of WDFW priority habitats, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008. Priority Habitat and Species List. Olympia, Washington. 177 pp. http://wdfw.wa.gov/publications/00165/wdfw00165.pdf or access the list from here: http://wdfw.wa.gov/conservation/phs/list/)

Count how many of the following priority habitats are within 330 ft (100 m) of the wetland unit: ***NOTE:*** *This question is independent of the land use between the wetland unit and the priority habitat.*

— **Aspen Stands:** Pure or mixed stands of aspen greater than 1 ac (0.4 ha).

— **Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report*).

— **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock.

X **Old-growth/Mature forests:** Old-growth west of Cascade crest – Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) > 32 in (81 cm) dbh or > 200 years of age. Mature forests – Stands with average diameters exceeding 21 in (53 cm) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80-200 years old west of the Cascade crest.

— **Oregon White Oak:** Woodland stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158 – see web link above*).

— **Riparian:** The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.

— **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161 – see web link above*).

— **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources.

— **Nearshore**: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report – see web link on previous page).*

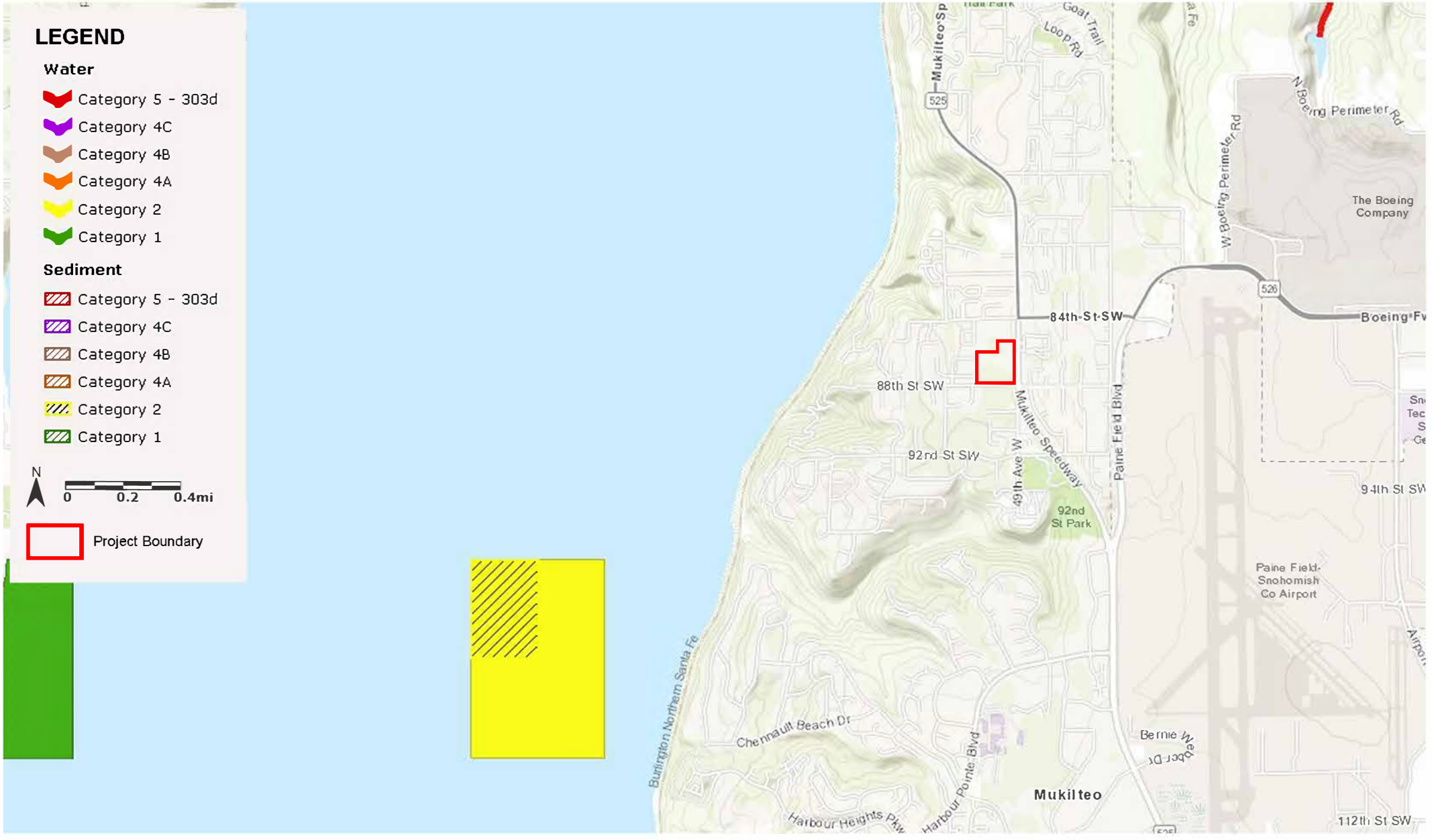
— **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.

— **Cliffs:** Greater than 25 ft (7.6 m) high and occurring below 5000 ft elevation.

— **Talus:** Homogenous areas of rock rubble ranging in average size 0.5 - 6.5 ft (0.15 - 2.0 m), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.

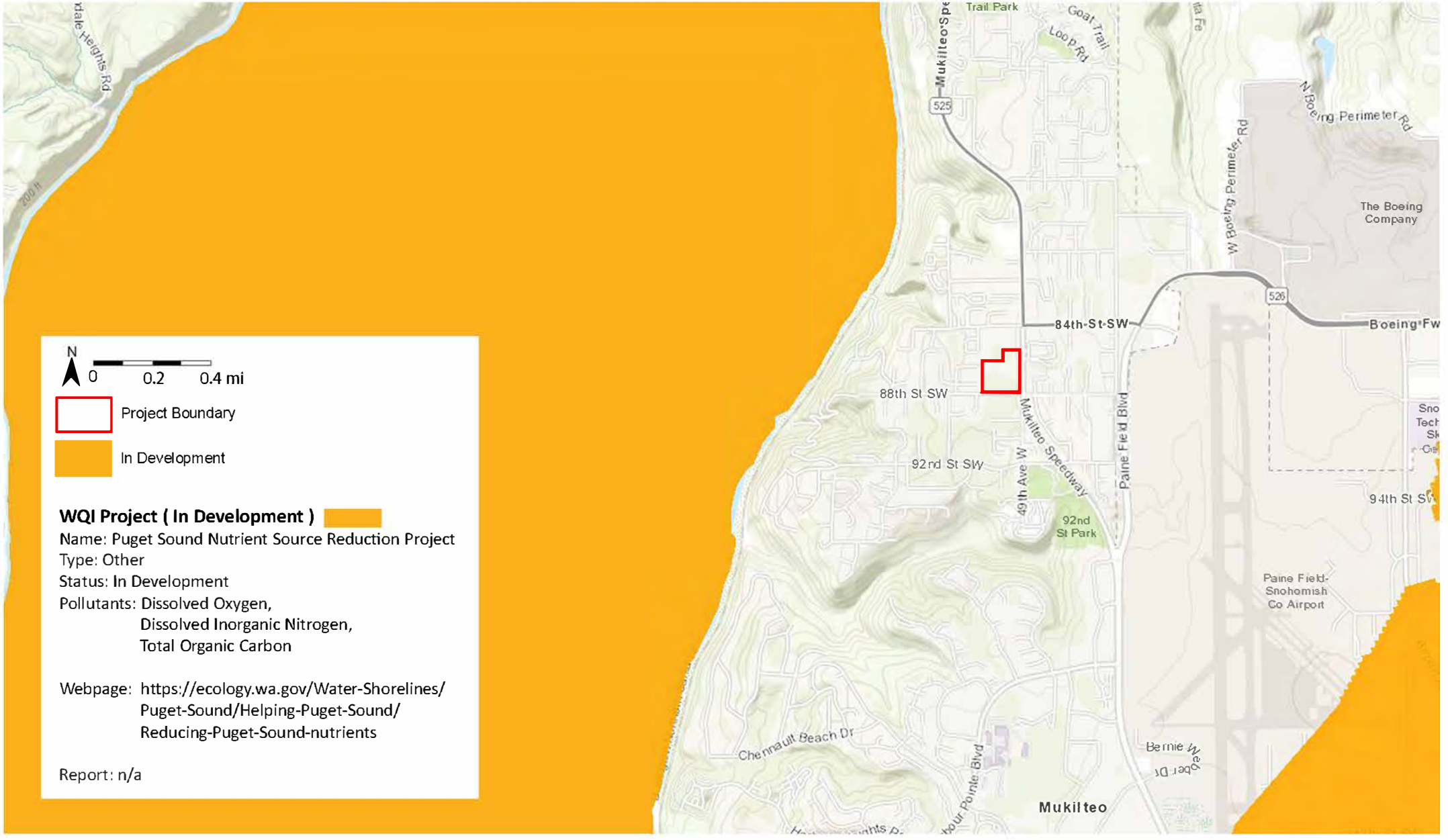
X **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 20 in (51 cm) in western Washington and are > 6.5 ft (2 m) in height. Priority logs are > 12 in (30 cm) in diameter at the largest end, and > 20 ft (6 m) long.

Note: All vegetated wetlands are by definition a priority habitat but are not included in this list because they are addressed elsewhere.



GREEN EARTH
OPERATIONS

RATING FIGURE 1 (All Wetlands)
WATERS on the 303(d) LIST
Carrick Court



GREEN EARTH
OPERATIONS

RATING FIGURE 2 (All Wetlands)
TMDL's for the SITE
Carrick Court

Contributing Basin (approx. 974,695 sf.)
Wetland A (approx. 19,774 sf.)
Carrick Court, Mukilteo

GREEN EARTH
OPERATIONS

RATING FIGURE A1 (WETLAND A)
150' RADIUS / PLANT CLASS / HYDROPERIOD

Source: Google Earth 2018

RATING FIGURE A2 (WETLAND A)
H2.0 HABITAT / LAND USE CALCULATIONS
Carrick Court, Mukilteo

GREEN EARTH
OPERATIONS

50.21% High Intensity Landuse
0.33% Accessible Undisturbed Habitat
21.09% Unaccessible Undisturbed Habitat
0.03% Wetland
1km Area (orange circle) = 62,221,182 sq ft

Appendix D - Conceptual Mitigation Plan Sheets

OLD DETENTION POND

PARCEL A
#00611600013600

FLOWLINE DITCH

ENGLISH IVY

40'

50'

50'

40'

STREAM (DRAINAGE 1)
715 LF

WETLAND A CAT. IV
(19,774 SF)

KNOTWEED PATCH

SP-1

SP-2

SP-3

SP-4

CULVERT

OUTLET TO DITCH

DITCH

A

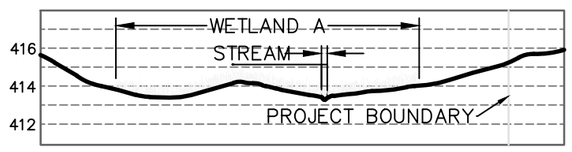
B

88TH ST. SW

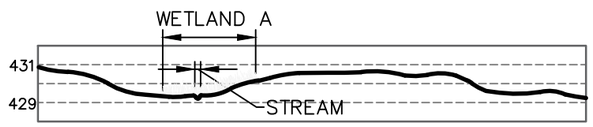
MUKILTEO SPEEDWAY

LEGEND

- PROPERTY BOUNDARY
- WETLAND
- STREAM (DRAINAGE 1)
- DITCH
- SP-X SOIL PITS
- EXISTING TREE
- WETLAND BUFFER
- STREAM BUFFER



SECTION A-A HORIZONTAL: 1"=40' VERTICAL: 1"=8'



SECTION B-B HORIZONTAL: 1"=40' VERTICAL: 1"=8'

N

0 60

SCALE: 1" = 60'

SCALE	
DATE	12/16/2021
DRAWING TITLE	EXISTING CONDITIONS
CLASS\SHEET	C-1
SHEET	01 OF 06

CARRICK COURT

REV:	DESCRIPTION:	BY:

DRAWN: JZ

CHECKED: MRM

APPROVED: MRM

PROJECT # 20-100

CLIENT: 214-WLD CARRICK COURT, LLC

LOCATION: MUKILTEO, WA

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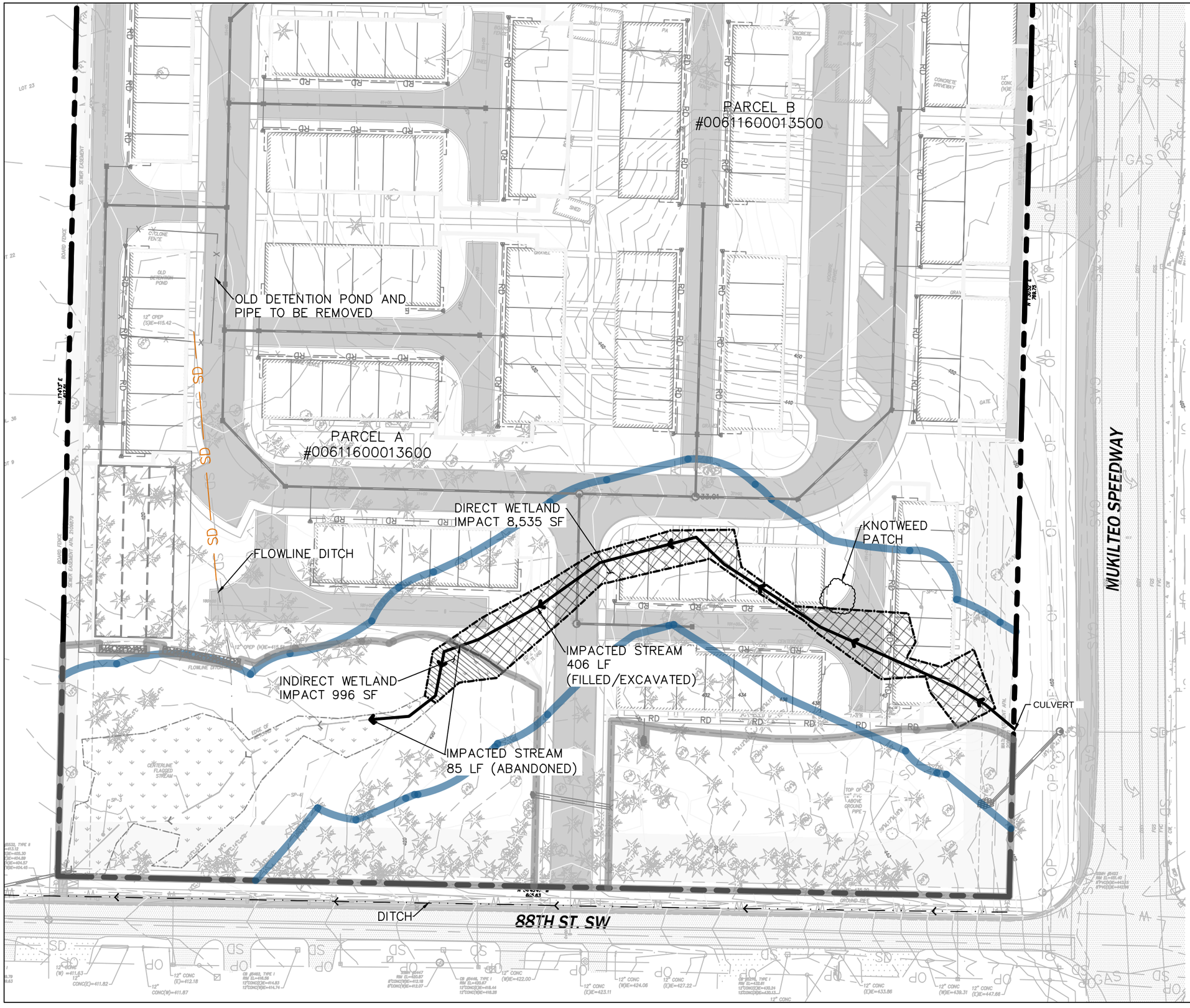

SITE	IMPACT (SF)	MITIGATION RATIO	REQUIREMENTS (SF)
DIRECT IMPACT	8,535	1.5	12,803
INDIRECT IMPACT	996	0.75	747
TOTAL REQUIREMENTS (SF)			13,550

LEGEND

- PROPERTY BOUNDARY
- PROJECT BOUNDARY
- DIRECT WETLAND IMPACT
- INDIRECT WETLAND IMPACT
- IMPACTED STREAM (DRAINAGE 1)
- DITCH
- EXISTING TREE
- COMBINED BUFFER

0 60

SCALE: 1" = 60'

SCALE

DATE 12/16/2021

DRAWING TITLE
STREAM AND WETLAND IMPACTS

SHEET 02 OF 06

CLASS\SHEET C-2

CARRICK COURT

REV:	DATE:	DESCRIPTION:	BY:

DRAWN: JZ

CHECKED: MRM

APPROVED: MRM

PROJECT # 20-100

CLIENT: 214-WLD CARRICK COURT, LLC

LOCATION: MUKILTEO, WA

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SCALE: 1" = 40'

STORMWATER OUTFALL #1

12" CPEP (N)IE=415.51

FLOWLINE DITCH

WETLAND REHABILITATION 4,078 SF

STREAM REALIGNMENT 117 LF

EXISTING STREAM 224 LF

CENTERLINE FLAGGED STREAM

PROPOSED WETLAND CREATION AREA: 13,321 SF

18" CULVERT TO 88TH ST SW NORTH ROADSIDE DITCH

DITCH

88TH ST. SW

STORMWATER OUTFALL #2

36" CULVERT

LOG WEIR

50'

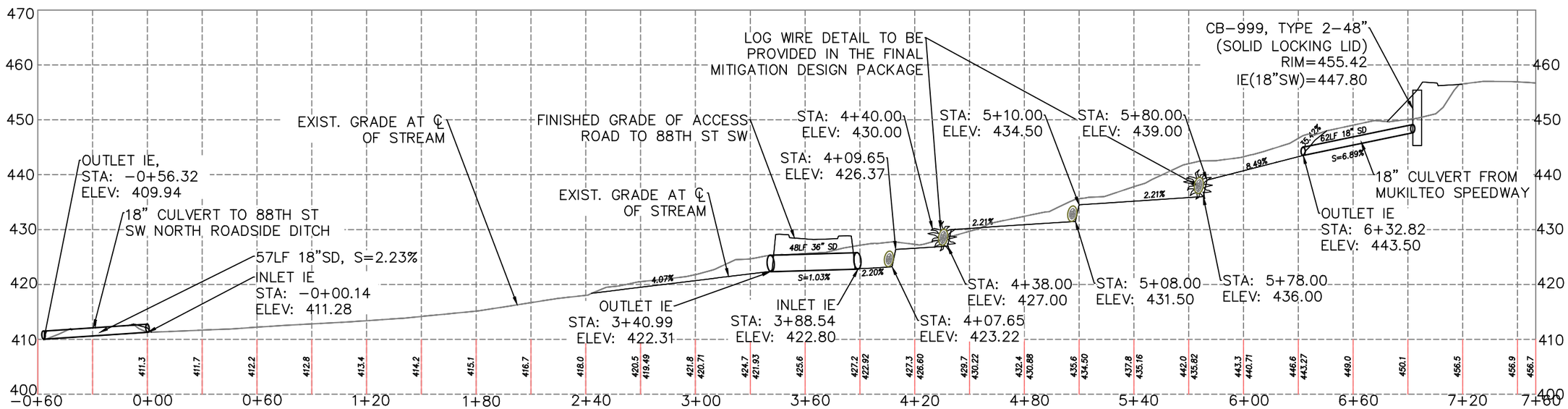
18" CULVERT

40'

STREAM REALIGNMENT 229 LF

LEGEND

- PROPERTY BOUNDARY
- PROJECT BOUNDARY
- EXISTING WETLAND 10,251 SF
- WETLAND CREATION 13,321 SF
- WETLAND REHABILITATION 4,078 SF
- EXISTING STREAM
- STREAM REALIGNMENT
- HABITAT WOOD PILE
- NGPA SIGN
- NGPA FENCE (TYP)



STREAM PROFILE

SCALE: HORIZ 1'=60" VERT 1'=15"

1 / C-3

SCALE | DATE 12/16/2021

DRAWING TITLE: MITIGATION PLAN | SHEET 03 OF 06 | CLASS\SHEET C-3

CARRICK COURT

REV: | DATE: | DESCRIPTION: | BY:

DRAWN: JZ | CHECKED: MRM | APPROVED: MRM

PROJECT # 20-100 | CLIENT: 214-WLD CARRICK COURT, LLC | LOCATION: MUKILTEO, WA

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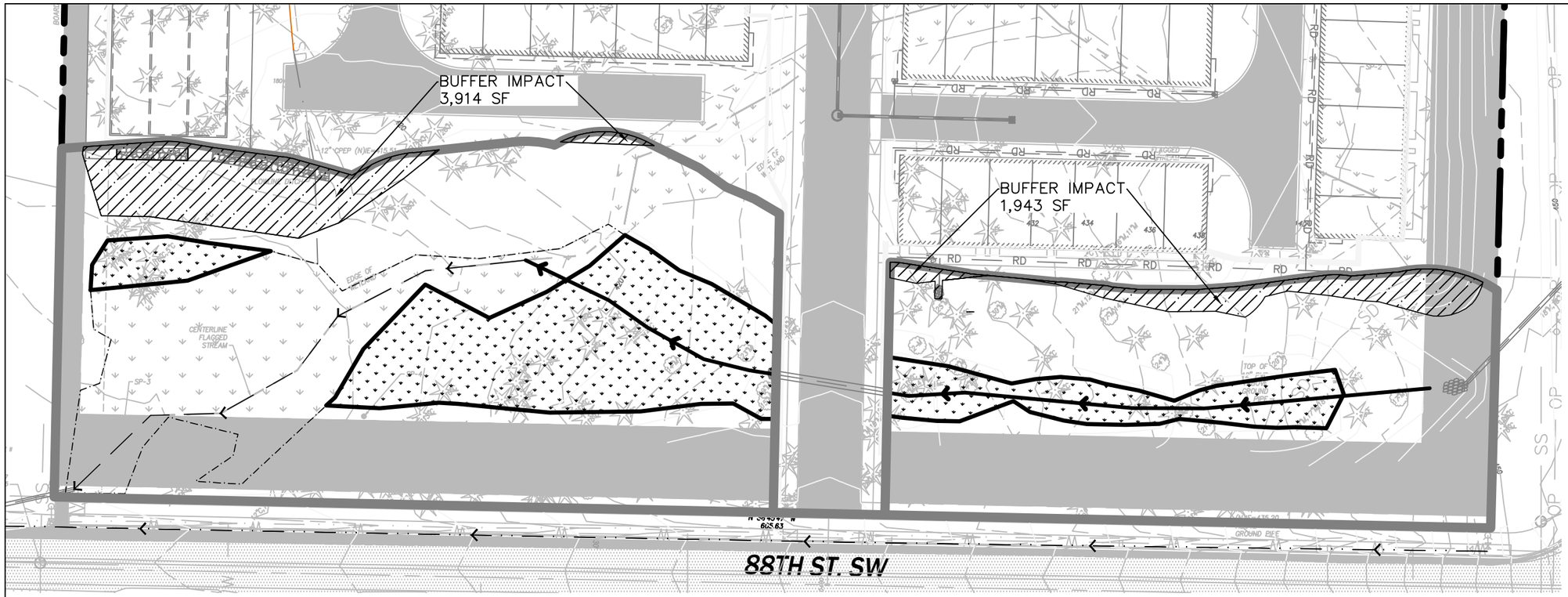
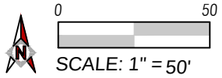
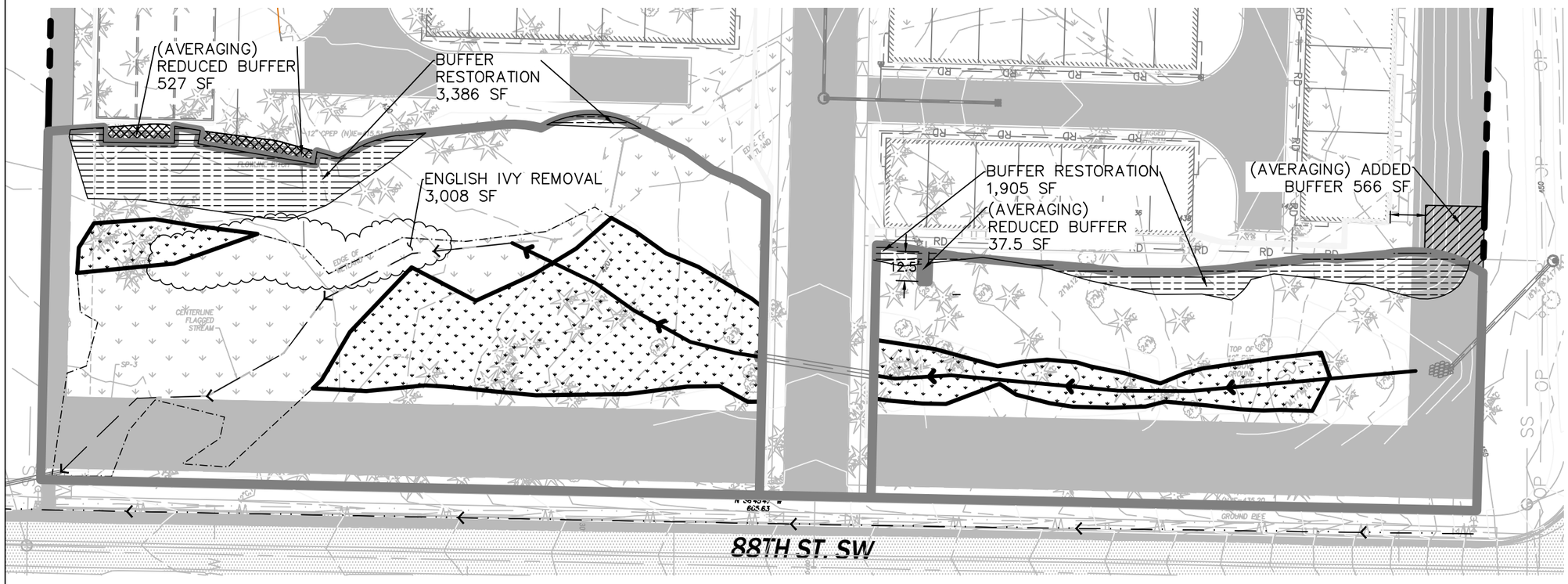


BUFFER IMPACT

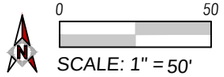


LEGEND

- PROPERTY BOUNDARY
- PROJECT BOUNDARY
- BUFFER IMPACT 5,857 SF



BUFFER MITIGATION PLAN



LEGEND

- PROPERTY BOUNDARY
- PROJECT BOUNDARY
- REDUCED BUFFER
- ADDED BUFFER
- BUFFER RESTORATION 5,291 SF

SCALE

DATE 12/16/2021

DRAWING TITLE
BUFFER IMPACTS AND MITIGATION PLAN

CLASS\SHEET C-4 | SHEET 04 OF 06

CARRICK COURT

REV: | DATE: | DESCRIPTION: | BY:

DRAWN: JZ | CHECKED: MRM | APPROVED: MRM

PROJECT # 20-100

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LOCATION: MUKILTEO, WA

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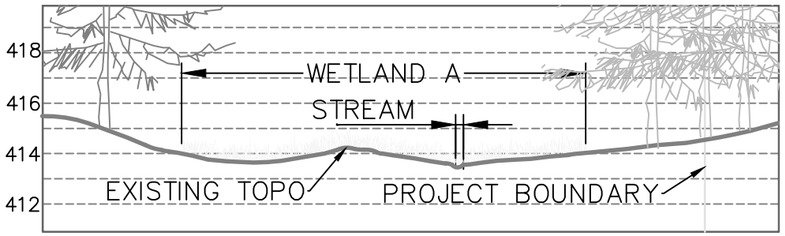
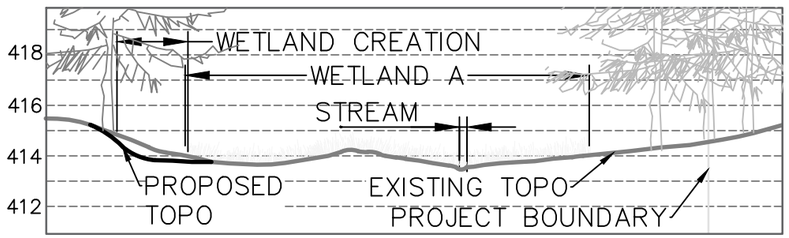
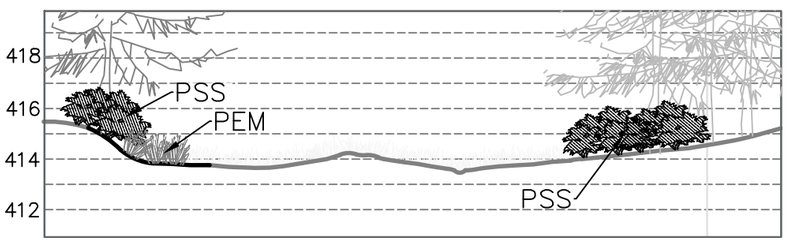


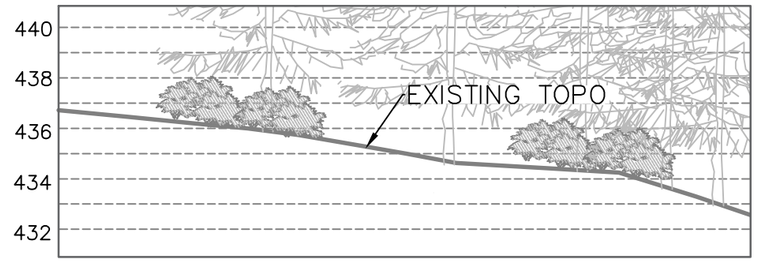
EXISTING ELEVATION 1–1 / C–5
SCALE: HORIZ 1'=30" VERT 1'=6"



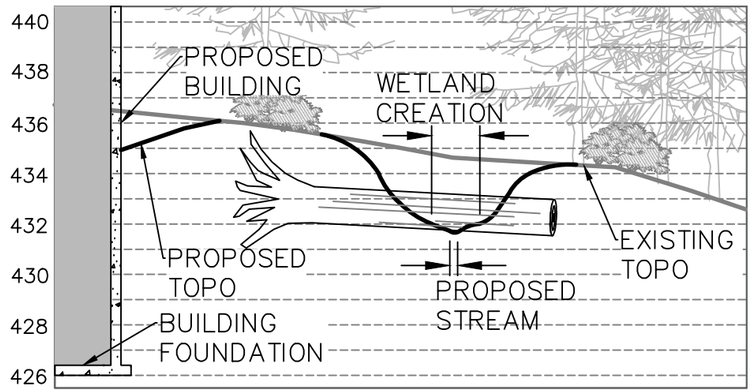
PROPOSED GRADING 1–2 / C–5
SCALE: HORIZ 1'=30" VERT 1'=6"



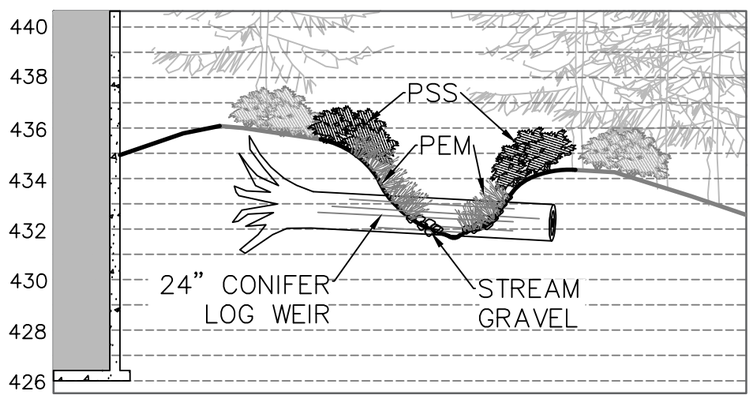
PROPOSED FUTURE VEGETATION COMMUNITIES 1–3 / C–5
SCALE: HORIZ 1'=30" VERT 1'=6"



EXISTING ELEVATION 2–1 / C–5
SCALE: HORIZ 1'=30" VERT 1'=6"



PROPOSED GRADING 2–2 / C–5
SCALE: HORIZ 1'=30" VERT 1'=6"



PROPOSED FUTURE VEGETATION COMMUNITIES 2–3 / C–5
SCALE: HORIZ 1'=30" VERT 1'=6"

SCALE
DATE 12/16/2021
DRAWING TITLE MITIGATION PLAN SECTIONS
CLASS\SHEET C-5
SHEET 05 OF 06
CARRICK COURT
BY:
DESCRIPTION:
DATE:
REV:
DRAWN: JZ
CHECKED: MRM
APPROVED: MRM
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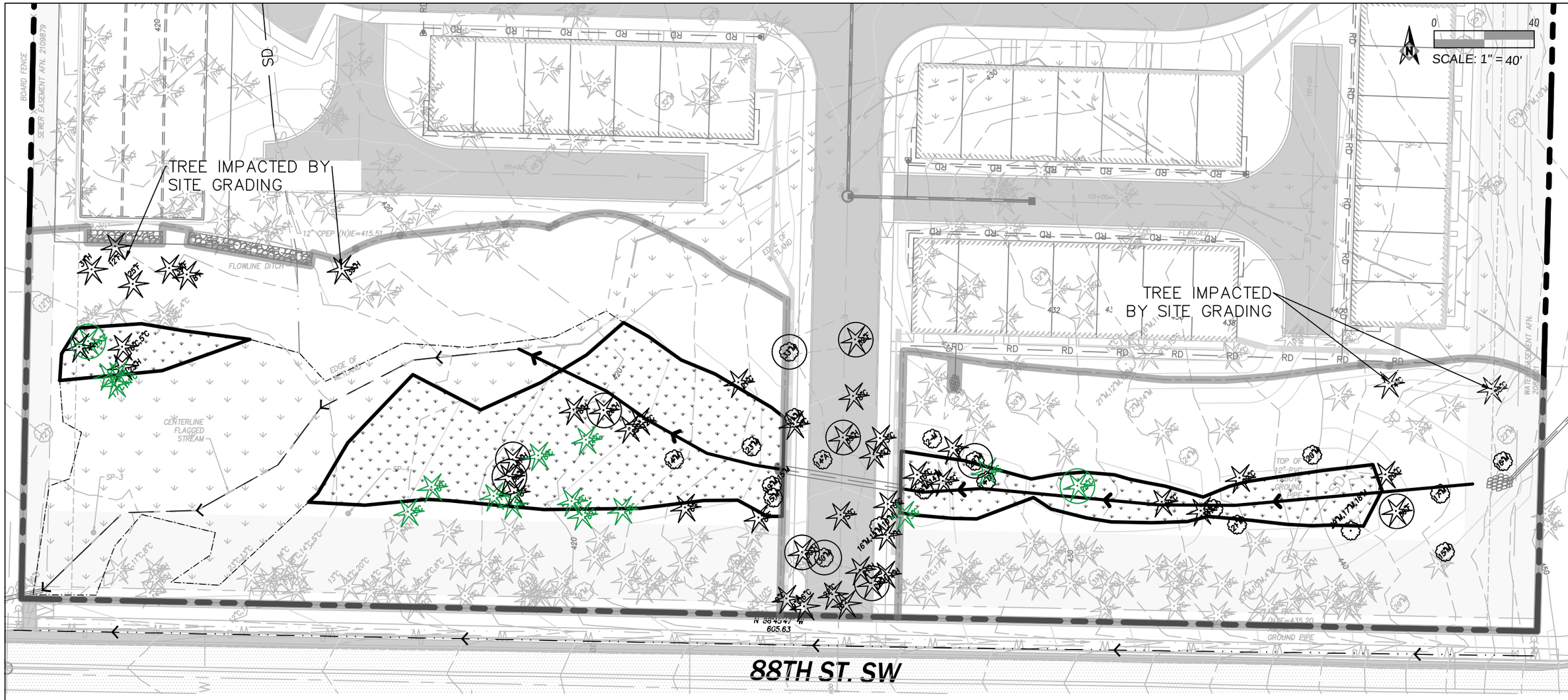

EXISTING TREES TO BE REMOVED (66)

TREE CATEGORY	IMPACT COUNTS
MAPLE	18
CEDAR	21
FIR	11
HEMLOCK	14
ALDER	1
UNKNOWN DECIDUOUS	1
TOTAL	66

LEGEND

- PROPERTY BOUNDARY
- PROJECT BOUNDARY
- EXISTING TREES TO BE PRESERVED (16)
- EXISTING TREES TO BE REMOVED (58)
- > 24-INCH DBH (13)

SCALE

DATE: 12/16/2021

DRAWING TITLE: TREE MANAGEMENT PLAN

CLASS\SHEET: C-6

SHEET: 06 OF 06

CARRICK COURT

REV: | DATE: | DESCRIPTION: | BY:

DRAWN: JZ

CHECKED: MRM

APPROVED: MRM

PROJECT # 20-100

CLIENT: 214-WLD CARRICK COURT, LLC

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