

**WEST BAY DEVELOPMENT GROUP, LLC
WEST BAY YARDS PROJECT**

**IMPORTANT HABITATS AND SPECIES –HABITAT
MANAGEMENT PLAN**

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1 INTRODUCTION

West Bay Development, LLC (the developer) proposes to construct a mixed-use/multi-family development and shoreline restoration project (the “project”) at its site in Olympia, WA. The project includes work above and below the Ordinary High-Water Mark (OHWM). Work above the OHWM includes the construction of a 468-unit development with five buildings placed at street level as well as a plaza with surface and structured parking below. A waterfront esplanade with beach access would also be constructed. Work below the OHWM consists of shoreline restoration including the placement of select substrate materials to restore a natural beach gradient, as well as the planting of saltmarsh and riparian vegetation and the addition of large woody debris. The property is located at 1210 West Bay Drive NW on Budd Inlet in Olympia, Thurston County, Washington. The subject property parcel numbers are 72600200100 and 91013100000.

The developer has submitted an application for a Shoreline Substantial Development Permit with the City of Olympia (City). This report is intended to address potential impacts to important habitats and species on the site and in surrounding areas and explain how the proposed project will avoid and minimize adverse impacts to those habitats and species.

The shoreline restoration component of the project builds on the concept laid out in the City’s 2016 West Bay Environmental Restoration Assessment - Final Report (CHE 2016). The enhancement/restoration design concept maintains the existing uplands and shoreline plan form but creates fronting intertidal beach and marsh areas primarily through placing beach substrates offshore of the existing revetment. Riparian plantings are planned to be installed above the beach. Sea level rise adaptation is included in this concept.

This Important Habitats and Species Report – Management Plan (MP) addresses the potential effects of the proposed project on the habitats and species summarized in Table 1, pursuant to the City’s Shoreline Master Program (SMP) Chapter 18.20 and Critical Areas Ordinance Chapter 18.32. The species list in Table 1 is based on the Project’s USFWS Information for Planning and Consultation (IPaC; USFWS 2021a), information from the National Oceanic and Atmospheric Administration (NOAA) Fisheries, and information from the Washington Department of Fish and Wildlife’s Priority Habitats and Species maps.

Figure 1. Project vicinity map.



Table 1. Important Habitats and Species which may occur within 1,000 feet of the subject parcel.

Species / Habitat	State Status	Federal Status
Aquatic Habitat and Species		
Puget Sound Nearshore Habitat	N/A	N/A
Submerged Aquatic Vegetation	N/A	N/A
Instream (Schneider Creek)	N/A	N/A
Puget Sound Chinook Salmon (<i>Oncorhynchus tshawytscha</i>)	candidate	threatened
Coho Salmon (<i>Oncorhynchus kisutch</i>)	N/A	N/A
Chum Salmon (<i>Oncorhynchus keta</i>)	N/A	N/A
Pink Salmon (<i>Oncorhynchus gorbuscha</i>)	N/A	N/A
Puget Sound Steelhead Trout (<i>Oncorhynchus mykiss</i>)	candidate	threatened
Bull Trout (<i>Salvelinus confluentus</i>)	candidate	threatened
Surf Smelt (<i>Hypomesus pretiosus</i>)	N/A	N/A
Southern Resident Killer Whale (<i>Orcinus orca</i>)	endangered	endangered
Humpback Whale (<i>Megaptera novaeangliae</i>)	endangered	endangered, threatened ¹
Terrestrial Habitat and Species		
Riparian Habitat	N/A	N/A
Marbled Murrelet (<i>Brachyramphus marmoratus</i>)	endangered	threatened
Fisher (<i>Pekania pennanti</i>)	endangered	N/A
Streaked Horned Lark (<i>Eremophila alpestris strigata</i>)	endangered	threatened
Yellow-Billed Cuckoo (<i>Coccyzus americanus</i>)	endangered	threatened
Great Blue Heron (<i>Ardea herodias</i>)	N/A	N/A

Big Brown Bat (<i>Eptesicus fuscus</i>)	N/A	N/A
Little Brown Bat (<i>Myotis lucifugus</i>)	N/A	N/A
Yuma Myotis (<i>Myotis yumanensis</i>)	N/A	N/A

¹ As of October 11, 2016 humpback whales are categorized into 14 Distinct Population Segments (DPS). Two listed DPS occur on the west coast of the U.S, Mexico (threatened) and Central America (endangered).

2 PROJECT DESCRIPTION

The proposed project contains two primary elements: upland construction of a mixed-use, multi-family development, and a shoreline restoration action.

2.1 Upland Construction

The proposed project will develop a 478-unit mixed-use development on the property. The development will consist of five separate buildings with above and below-ground parking, utilities, and native landscaping, as well as cafes, restaurants, and other building amenities. A public waterfront esplanade will be developed to include beach access points, viewing platforms, and other public access amenities.

The five buildings are designed around a primary plaza with community amenities and public access to the waterfront esplanade.

A 30-foot-wide Vegetation Conservation Area (VCA) totaling approximately 36,172 sq ft will be established and planted, extending landward from the OHWM to the esplanade. A mix of native trees and shrubs will be planted in the VCA, including bigleaf maple, Douglas fir, shore pine, and Pacific madrone. Native shrubs would include oceanspray, willow, and elderberry. Native groundcover species to be planted in the VCA include yarrow, coastal strawberry, and sword fern. The VCA will provide a buffer between the esplanade and the shoreline habitat, and will include a tree tract containing 50% of the tree density required under Olympia Municipal Code (OMC) Chapter 18.36.

For a more detailed description of the proposed upland development for the site, refer to the SEPA Checklist prepared for the project prepared for the project.

2.2 Shoreline Restoration

As part of the March 31, 2021 development agreement between the developer and the City, the developer is required to enhance and restore the West Bay shoreline along the project site. The development agreement calls for the proposed shoreline restoration action to be based on the restoration alternative for the Hardel site in the City's 2016 West Bay Environmental Restoration Assessment – Final Report (CHE 2016).

Before shoreline restoration actions begin, derelict concrete debris, pilings, and metal beams will be removed from the shoreline mudflat and disposed of at an appropriate upland facility. This will include the removal of approximately 179 creosote-treated timber piling¹ along with several large concrete structures in the intertidal zone.

Shoreline enhancement/restoration elements described in the City's West Bay Environmental Restoration Assessment – Final Report and incorporated into the West Bay Yards project include creation of intertidal beach and saltmarsh areas through substrate placement, transitional plantings along the backshore, and removal and restoration of the intertidal structure areas. The enhancement/restoration design concept maintains the existing uplands and shoreline plan form while creating fronting intertidal beach and saltmarsh areas primarily through placing beach substrates offshore of the existing revetment.

¹ Timber pile stubs that do not extend above the existing ground surface will be cut off below the existing mudline and buried in place.

Gravel base fill would be placed along the face of the existing riprap slope and extending offshore at a slope of 4:1. This material will provide bedding for the placement of the beach material. Sand and gravel beach material will be placed over the gravel bed at a slope of 8:1, extending offshore from the OHWM approximately 100-150 feet. Saltmarsh (e.g., gumweed, pickleweed, jaumea, plantain) and transitional riparian plantings (e.g., oceanspray, willow, silverweed, tufted hairgrass) would be established along the top of the beach below the OHWM. Large woody debris would be incorporated into the upper intertidal and transition zones to provide shoreline stability and habitat enhancement.

Construction of the shoreline restoration would entail the placement of approximately 39,530 cubic yards of select fill material over approximately 165,000 square feet of the aquatic substrate below the OHWM.

3 EXISTING SITE CONDITIONS

3.1 Upland Existing Conditions

The subject property was first developed in 1924 and was used as a sawmill. Various other industrial uses occurred on the site over the years until 1980, when the subject property was occupied by Hardel Mutual Plywood Corp. plywood manufacturing facility. The facility stopped operations in 1996 and the buildings were demolished in the late 1990s. Since that time the site has been vacant. The site is set below the grade of West Bay Drive and is primarily flat. A long, linear depression associated with two rail spur lines runs along the length of the west parcel boundary, parallel to West Bay Drive. Within and along with this depression shrub and herbaceous vegetation has been established, including willows, Himalayan blackberry, and butterfly bush. The central portions of the site are primarily unvegetated, with patches of asphalt and crushed concrete throughout. Shrubby vegetation that is present consists of occasional birch saplings, blackberry, butterfly bush, yellow sweet clover, and low grasses and forbs. Shell hash is also prevalent, likely the result of seagulls and crows dropping shellfish from height during foraging.

Habitat quality on the upland portions of the site is low. While the site does contain dense vegetation along the west property line associated with the linear depression, invasive blackberry has reduced the habitat potential in this area. There is very little foraging opportunity within the remainder of the site. Sparse non-native grasses and forbs are present, though they represent low-quality browse for terrestrial species such as deer, which would likely prefer foraging opportunities along the hillside west of the site. Terrestrial species likely to use the site include those species associated with disturbed urban sites, including raccoons and opossum.

3.2 Shoreline Existing Conditions

The existing shoreline is composed primarily of an upland fill area and approximately 1,100 linear feet of steep riprap armored shoreline that abruptly transitions to intertidal mudflats and deeper subtidal areas. The shoreline of the subject property is degraded and is entirely stabilized by riprap. The area immediately above the top of the bank is characterized by sparse invasive plant species growing through asphalt, fill and riprap (see JARPA photo attachment). Invasive shrubs such as Himalayan blackberry and scotch broom are present along portions of the top of the slope, with occasional larger shrubs such as red elderberry also present. Small trees including Pacific madrone and big leaf maple are also present in places. In addition, various invasive and non-native forbs occur along the top of the slope above the riprap.

Below the top of the slope, the upper shoreline consists entirely of riprap and is almost entirely unvegetated. The slope is fairly steep, approximately 1:1. At the base of the riprap slope (approximately +5 ft Mean Lower Low Water [MLLW]), the lower shoreline flattens to a gentler slope. The substrate immediately below the riprap slope consists of gravel and shell hash intermixed with timber pile stubs and metal debris down to approximately 0 ft MLLW. Below, the lower intertidal substrate consists of unconsolidated silt, with sparse wood waste, debris, and gravel. Shellfish, primarily clams, and barnacles are present within the mudflat habitat. Several large, derelict concrete structures and sunken barge remains are present below the toe of the riprap slope. These structures appear to have been part of the former plywood manufacturing facility.

In addition to these structures, an area of dense wooden pilings and concrete rubble is present along the northern shoreline. This debris includes approximately 70 derelict timber piles and is located waterward of the toe of the armor slope at approximately +6 ft MLLW.

Habitat quality along the shoreline, both marine riparian and aquatic, is low. Vegetation along the shoreline is limited and consists mostly of invasive and non-native species. Habitat along the base of the slope is also limited. Small pockets of gravel and shell hash are present at the base of the riprap, and while these pockets could provide a spawning habitat for sand lance depending on the elevation, they represent a very small percentage of the overall substrate coverage in the area. No saltmarsh or other beneficial marine aquatic vegetation was observed along the mid-to-lower intertidal shoreline. As such, the site does not provide quality foraging habitat for juvenile or adult salmonids.

The shoreline armoring covering the property shoreline consists of one- to two-man basalt riprap. The armoring extends from the top of the slope along the entire property shoreline (approximately +17 ft MLLW) down to the toe of the slope at approximately +5 ft MLLW. Scattered timber pile stubs are present, broken off at the riprap surface, as is occasional metal and wood debris, particularly at lower elevations on the slope.

Behind the riprap, the soil consists of fill material of unknown origin and wood debris (Pioneer 2020). The Hardel site has undergone sporadic filling over the last 150 years and was first developed in 1924. The current configuration and armoring of the shoreline were achieved around 1980 when Hardel took over the site.

Six existing corrugated metal pipe (CMP) culvert outfalls are present along the shoreline, ranging in size from 8 inches to 18 inches in diameter. Three of the culverts are abandoned and will be abandoned/removed as part of the proposed project. The other three outfalls are active and will be retained/protected. These outfalls convey surface runoff from West Bay Drive and the properties west of West Bay Drive through the shoreline and into Budd Inlet.

4 IMPORTANT HABITATS AND SPECIES REVIEW

As defined in OMC 18.32.305, important habitats and species are “habitats or species known to occur within Thurston County and which may be found within the City of Olympia, and which are not receiving habitat protection by another critical area category (e.g., Streams, Wetlands, or Landslide Hazard Areas) ...” Such habitats and/or species must be addressed with respect to potential impacts resulting from construction and operation of a proposed project.

4.1 Study Area

In accordance with OMC 18.32.315, the City may restrict the uses and activities of a development proposal when a proposal is located within 1,000 feet of an important habitat or species location. Therefore, this HMP must address habitats and species located within 1,000 feet of the project parcel, and describe any potential impacts to those habitats and species from proposed project activities (including construction and operation). Figure 2 below illustrates the extent of the Study Area for the Important Habitats and Species Report – Habitat Management Plan.

Figure 2. Extent of Study Area (subject parcel in red).



4.2 Important Habitats Assessment

The following sections provide background and presence information for the habitats listed in Table 1. These habitats have the potential to occur within 1,000 feet of the subject site.

4.2.1. Puget Sound Nearshore Habitat

Marine nearshore habitat is present along the eastern border of the subject site. The intertidal portions of the site are composed of a steeply-sloped riprap revetment above mudflat which includes areas of debris and concrete structure. Relic creosote-treated timber pile stubs are scattered through the middle intertidal habitat, as are piles of metal debris. The shoreline revetment extends from approximately +17 ft down to approximately +5 ft MLLW. This structure is composed of 1- to 2-man riprap, and is marked by occasional metal debris and pile stubs. Habitat quality is low, as wave energy and refraction are high during storm events.

Habitat for benthic shellfish is present below the riprap revetment, extending offshore from approximately +5 ft MLLW. The substrate in this area ranges from cobble and concrete /asphalt rubble to silt and mud.

The substrates offshore of the property within West Bay contain known chemical constituents (e.g., dioxins/furans, polycyclic aromatic hydrocarbons). The presence of these contaminants reduces the habitat quality of the lower intertidal zone along the property shoreline.

4.2.2. Submerged Aquatic Vegetation

Submerged aquatic vegetation (SAV) includes both macroalgae and vascular plant species that occur within the nearshore habitats of Puget Sound. This includes species such as bull kelp, sugar kelp, eelgrass, and saltmarsh. These species are vital to the health of the nearshore marine ecosystem, and provide spawning and foraging opportunities for a variety of organisms including adult and juvenile salmonids, herring and other forage fish, and marine birds.

Based on several low-tide walks along the subject site, there is very little SAV present. Minimal macroalgae is present, and what is present are drift species such as *Ulva* sp. That provide little habitat function. No large-bladed macroalgae, such as bull or sugar kelp, are present. Likewise, no eelgrass or saltmarsh species are present on the site.

4.2.3. Instream Habitat

Instream habitat is located immediately north and northwest of the subject site. Schneider Creek is located north of the site, emptying into Budd Inlet at the northwest property corner. This creek originates from hillside seeps along the ridge west of West Bay Drive, flowing north along the western slope of the ridge before turning east and then under West Bay Drive. Schneider Creek is designated as a Type F stream by the WA Department of Natural Resources from its headwaters to its mouth north of the site (WDNR 2021). The WDFW documents the presence of Coho salmon in Schneider Creek, while resident sculpin and cutthroat trout are also likely present.

Instream habitat within Schneider Creek is located approximately 500 feet west of the subject site, across West Bay Drive and west of a commercial development.

4.2.4. Marine Riparian Habitat

The marine riparian habitat along the east boundary of the subject site is quite degraded, consisting of sparse, stressed Pacific madrone, black cottonwood, and big-leaf maple along with Scotch broom and Himalayan blackberry. These species are growing in a mixture of broken and crushed concrete and asphalt surfacing, resulting in their stressed and stunted condition. Besides this vegetation, the remainder of the riparian zone along the site shoreline is unvegetated and consists of recycled concrete fill and asphalt.

4.3 Important Species Assessment

4.3.1. Puget Sound Chinook Salmon (*Oncorhynchus tshawytscha*)

The only streams with spawning populations of Chinook salmon that empty into Budd Inlet are the Deschutes River, Percival Creek, and Moxlie Creek (fall run; Streamnet 2021). The Deschutes River population is a manufactured run (Native Fish Society 2021) supported by the Tumwater Falls Hatchery (SWIFD 2021), which is not included in the Puget Sound Chinook Listing (NOAA Fisheries 2005a). Percival Creek includes documented spawning up to Black Lake (SWIFD 2021), and Moxlie Creek is largely underground before reaching its headwaters, artesian springs in the City of Olympia. Small numbers of juvenile Chinook spawned in these creeks may pass through the Study Area. However, the South Sound tributaries in which Chinook currently spawn are not considered to be viable populations due to 1) relatively small size of the tributaries and low late-season water make them atypical Chinook habitat; 2) current escapements (which are low) are likely a result of strays from other South Sound populations or hatcheries; 3) fall Chinook were not historically self-sustaining in these streams and have little chance of being naturally self-perpetuating (Thurston County 2004).

Other streams farther from the Study Area that bear Chinook salmon include Woodland Creek (27 shoreline miles), the Nisqually River/McAllister Creek (46 shoreline miles), Purdy Creek (74 shoreline miles), Burley Creek (74 shoreline miles), and the Puyallup River (77 shoreline miles). Juveniles from these streams are unlikely to enter the Study Area due to the distance and remoteness of the Action Area from these streams.

In summary, though Budd Inlet does not support native, self-sustaining populations of Chinook, nor listed hatcheries, juveniles, and adults from other systems do potentially use the Study Area.

4.3.2. Coho (*O. kisutch*), Chum (*O. keta*), and Pink (*O. gorbuscha*) Salmon and Cutthroat Trout (*O. clarki clarki*)

Coho and chum salmon and resident coastal cutthroat trout occur within many of the streams and rivers throughout the south Puget Sound, including within Budd Inlet. This includes both mainstem and tributary reaches of the Deschutes River, Schneider Creek, and Moxlie Creek (WDFW 2021). Coho salmon and cutthroat trout utilize smaller tributaries for spawning, while chum salmon typically spawn in the lower reaches of mainstem channels. Coho and cutthroat both utilize off-channel habitat for rearing, and coho will typically remain in their natal streams for 1-2 years before outmigrating. Resident coastal cutthroat trout are a freshwater species and do not outmigrate. Chum salmon do not rear in freshwater; they move into estuarine habitats shortly after emergence, where they rear for several months before migrating to the ocean (WDFW 2021). Based on the proximity of the subject site to streams supporting runs of coho and chum salmon, juveniles of these species could be present within the Study Area outside of the authorized in-water work window.

Pink salmon are only found in the larger rivers in the Puget Sound basin. The nearest river supporting a run of pink salmon is the Nisqually River, approximately 19 miles to the west. Similar to chum salmon, pink salmon spawn in the lower reaches of main river channels and migrate downstream into estuarine and marine habitats shortly after emergence. They then typically migrate to the ocean within a couple of months (WDFW 2021). Because of the distance to the nearest run and the short amount of time from emergence to ocean migration, pink salmon are not likely to be present within the Study Area at any time.

4.3.3. Puget Sound Steelhead Trout (*O. mykiss*)

In Puget Sound, steelhead refers only to the native, naturally spawning anadromous runs, except for two hatchery stocks in the Green and Hamma Hamma rivers.

The Deschutes Subbasin, which empties into Budd Inlet, supports a winter steelhead run. In the Deschutes River, spawning is mapped approximately 1.3 miles upstream of Capitol Lake. The Nisqually River—approximately 46 shoreline miles from the Study Area—includes a native winter steelhead stock with wild production (WDFW 2021).

Approximately 79-95% of all Puget Sound steelhead outmigrate after two years of freshwater rearing (Busby et al. 1996), with the remaining smolts outmigrating after one or three years (Blanton et al. 2011). Once in the ocean, it is generally thought that they move offshore quickly. Steelhead spend 1-2 years in the ocean before returning to spawn for the first time, with summer-run adults returning May through November, and winter-run adults returning November through July (Blanton et al. 2011).

Based on the above information, juvenile steelhead may move rapidly through the Study Area between March and June but are not expected to be present in the Study Area during the approved in-water work window. Adult steelhead would likely pass by the Study Area for migration back to spawning grounds, in low numbers during any month of the year.

4.3.4. Coastal Puget Sound Bull Trout (*Salvelinus confluentus*)

The Coastal/Puget Sound distinct population segment (DPS) is thought to contain the only anadromous forms of bull trout in the coterminous United States and is the only DPS that displays all known bull trout migratory behaviors: resident, fluvial (river migration), adfluvial (migration to lakes or reservoirs), and amphidromous (migration between freshwater and saltwater) (USFWS 1999).

No freshwater streams in WRIA 13 are known to support a bull trout population, though sub-adult and adult bull trout likely use the nearshore marine habitat of Budd Inlet (Thurston County 2004). The Deschutes River is not mapped as supporting a bull trout population. The Nisqually River is the nearest river to the Study Area that includes a bull trout population, and it is mapped as migration only; no spawning is present in the Nisqually River system, nor in any other river system south of Commencement Bay (StreamNet 2021).

4.3.5. Surf Smelt (*Hypomesus pretiosus*)

The WDFW has mapped the presence of surf smelt spawning on the subject site (WDFW 2021). The shoreline of the subject site consists entirely of a riprap slope in the upper intertidal areas, which transitions to gravel/cobble in middle to lower intertidal areas and then sand and mud in subtidal areas. Surf smelt spawning occurs in a mixture of coarse sand and fine gravel in the upper intertidal zone (WDFW 2015). The existing conditions on the subject site do not include this type of habitat, and surf smelt spawning likely does not currently occur at the site.

4.3.6. Southern Resident Killer Whale (*Orcinus orca*)

The Southern Resident killer whale listing is specific to the distinct population segment (DPS) consisting of three resident whale pods (J, K, and L pod) with spring-fall ranges that include Puget Sound and the Straits of Georgia and Juan de Fuca. J, K, and L pods are generally most commonly present in northern Puget Sound and the straits. J pod periodically transits into the interior of Puget

Sound, while the K and L pods frequently travel to the outer coast (Marine Mammal Commission 2021, Wiles 2016). All three pods often spend October through June on the outer coast. The K and L pods have in the past occasionally been sighted in Puget Sound during winter (Orca Network 2021). However, since 2013, the pods have trended toward spending significantly less time in inland waters in favor of the outer coast, ranging from San Francisco to Southeast Alaska (Marine Mammal Commission 2021). There are no recorded sightings of the Southern Resident pods in Budd Inlet, though a pod of transient orca (Bigg's killer whales) were observed in 2013 (Orca Network 2021).

Based on available information, it is extremely unlikely that Southern Resident killer whale would be present in the Study Area.

4.3.7. *Humpback Whale (Megaptera novaengliae)*

Most humpback whales spend winter months in warmer, temperate to tropical waters, such as the Hawaiian Islands, for breeding and reproduction (NOAA Fisheries 1991). Humpbacks undertake long migrations between wintering waters and more productive waters for a summer feeding period (NOAA Fisheries 1991). Summer feeding range extends from approximately 40° to 75° north latitude.

Humpback whales typically inhabit the continental shelf coastal areas because of the productivity of these habitats. However, in recent years, sightings within the inland waters of the Salish Sea have become more common (Orca Network 2021). Prior to 2003, only three individual whales had been observed in these inland waters, with most sightings occurring in the Straits and not in Puget Sound (Falcone et al. 2005). In subsequent years, sightings of humpback whales in Puget Sound have been reported more frequently. In Budd Inlet, the Orca Network reports at least one sighting during the in-water work window each year since 2015, even as far south as the Study Area (Orca Network 2021). However, water depths in the Study Area are very shallow (approximately -10 ft MLLW or shallower), and humpback whale are not expected to enter the Study Area at any time.

Based on their increasingly frequent use of Puget Sound, and regular sightings in Budd Inlet, it is possible that an individual humpback whale would approach the Study Area during the work period, but highly unlikely that they would enter the shallow Study Area.

4.3.8. *Marbled Murrelet (Brachyramphus marmoratus)*

Marbled murrelet feed in marine waters but nest in old-growth coniferous forests. Murrelet nest in old growth or mature forest composed of conifers, which does not occur in or near the Study Area.

Based on WDFW survey data, the nearest breeding occurrences to the Study Area are in the Nisqually River delta, several miles east (Desimone 2016). No foraging occurrences have been observed in southern Puget Sound (Desimone 2016). As mentioned above, the maximum depth of marine habitat offshore of the Study Area is approximately -10 ft MLLW, which is shallower than typical murrelet foraging habitat.

4.3.9. *Fisher (Pekania pennanti)*

Fisher are a state-endangered species that typically utilize forested habitat. A member of the weasel family, they typically inhabit coniferous and mixed coniferous-deciduous forests and tend to avoid areas without substantial tree cover or with significant human activity/development (WDFW 2021). In North America, they only occur in boreal and temperate forests, establishing

large home ranges characterized by mixed-age forests that provide moderate to high canopy closure and the presence of large woody structures with cavities that are commonly used for rest and den sites.

Based on their relative scarcity, preferred habitat type, avoidance of populated or developed areas and unusually large home ranges, fisher are highly unlikely to be present within or near the Study Area at any time.

4.3.10. Streaked Horned Lark (Eremophila alpestris strigata)

Streaked horned lark (STHL) are small, ground dwelling birds. They prefer large (<300 acres), sparsely vegetated, treeless areas with substantial areas of bare ground (16 to 17 percent, perhaps more at breeding sites), historically including prairie and open coastal areas. Vegetation height is generally less than 13 inches.

Over a century ago, STHL were common in the prairies of the south Puget Sound region. However, by the mid-1990's only a few scattered breeding populations existed in the south Puget Sound on remnant prairies and near airports (USFWS 2013). Recent studies have found only six current breeding sites; four within Joint Base Lewis-McChord, one at the Olympia Regional Airport, and one at Sanderson Field near Shelton (USFWS 2013).

Based on the relative rarity of STHL in the south Puget Sound region, the upland vegetation present on the site (mix of small trees, shrubs, and open areas), and small size of the upland site (~8 acres), it is highly unlikely that STHL would be present in or near the Study Area.

4.3.11. Yellow-Billed Cuckoo (Coccyzus americanus)

The Pacific Northwest, including Thurston County, is within the historic breeding range for this species where it occurred locally in moist riparian habitat, conifer woodlands and open, brushy hillsides in western Washington. The last confirmed breeding records for this species in Washington are from the 1930s. Incidental sightings in Washington and Oregon since that time have been rare, and have primarily occurred east of the Cascade Mountains. Currently, the species no longer breeds in the northwestern continental U.S., including Washington, Oregon, and Montana (USFWS 2014). The USFWS has designated critical habitat for the western DPS of the yellow-billed cuckoo; however no critical habitat occurs within Washington (USFWS 2021b).

It is extremely unlikely that Yellow-billed cuckoo currently breed within or seasonally occupy Thurston County, and are therefore highly unlikely to be present in the Study Area at any time.

4.3.12. Great Blue Heron (Ardea herodias)

The great blue heron's North American breeding range runs from southeast Alaska east to Nova Scotia and south to northwestern Mexico, and ranges from the higher Cascade and Olympic ranges in Washington. Heron can nest in large groups or small assemblages, and typically forage close to the nesting colony ("rookery"). During the breeding season, herons feed in the shallow margins of various coastal and freshwater habitats, utilizing eelgrass meadows and estuarine ecosystems (Azerrad 2012). WDFW prioritizes avoiding impacts to heron management areas which consist of a seasonal buffer and foraging habitat. The WDFW PHS mapper identifies two small rookeries of great blue heron located southeast of the subject property. These areas are located on the forested slope above West Bay Drive approximately 720 feet southwest of the subject property. This

distance exceeds the 200-foot year-round buffer plus 300-foot seasonal buffer (500-foot total buffer) applied to heron rookeries by OMC 18.32.320.

Great blue heron likely utilize the mudflat habitat located immediately east of the subject property during periods of low tide for foraging. Heron can likely be found on or near the site year-round, and would also be expected to utilize other low-intertidal mudflat habitats throughout Budd Inlet.

4.3.13. Big Brown Bat (Eptesicus fuscus)

Big brown bat habitat ranges from Canada to Northern South America and the Caribbean (WDFW 2021). The species is present throughout Washington. The productive females are colonial, with roosting primarily occurring in older buildings or large live or dead trees in the early stages of decay. Ponderosa pine, aspen, and Douglas-fir are among the main tree species used for roosting (WDFW 2021).

Big brown bats generally utilize opportunistic dwellings, including buildings, caves, mines, and rock crevices, but the utilization of other natural sites is unknown. The WDFW prioritizes maternity roosts and sizeable hibernacula as a priority for conservation.

The subject site does not contain structures suitable for big brown bat roosting or hibernation. The site to the south of the subject site contains the older, dilapidated structures that represent potential big brown bat habitat. These structures will not be disturbed by the actions of the proposed project.

4.3.14. Little Brown Bat (Myotis lucifugus)

Little brown bat habitat ranges from North America, Alaska, and Northern Canada to California, Colorado, and the Southeastern United States. The species occurs throughout Washington (WDFW 2021). Similar to the big brown bat, this species roosts primarily in dilapidated buildings or large live or dead trees in the early stages of decay. Nightly foraging movements usually range 1-14 kilometers from the day roost (WDFW, 2021)

Similar to big brown bats, little brown bats generally utilize opportunistic dwellings, including buildings, caves, mines, and rock crevices, but the utilization of other natural sites is unknown. The WDFW prioritizes maternity roosts and sizeable hibernacula as a priority for conservation.

The subject site does not contain structures suitable for little brown bat roosting or hibernation. The site to the south of the subject site contains the older, dilapidated structures that represent potential little brown bat habitat. These structures will not be disturbed by the actions of the proposed project.

4.3.15. Yuma Myotis (Myotis yumanensis)

Yuma myotis habitat is distributed throughout Southeast Alaska, western Montana to western Texas, and central Mexico. Yuma myotis are widely distributed in Washington, with records existing for nearly all counties (WDFW 2021). Foraging occurs at nighttime an average of 1.6 km from day roosts in ponderosa pine forests in Washington and Oregon. One of the largest known colonies of Yuma myotis is located near Olympia (about 2,000 adults) (WDFW 2021).

Similar to little brown bats, Yuma myotis generally utilize opportunistic structures for roosting, including buildings, bridges, caves, mines, and rock crevices, but the selection of winter roost sites in the Pacific Northwest is poorly known (WDFW 2021). Nurse roosts are often shared with other bat species, including little brown bat.

The subject site does not contain structures suitable for Yuma myotis roosting or hibernation. The site to the south of the subject site contains the older, dilapidated structures that represent potential little brown bat habitat. These structures will not be disturbed by the actions of the proposed project.

5 POTENTIAL EFFECTS OF THE PROJECT ON IMPORTANT HABITATS AND SPECIES

Potential project effects to important habitat and species within 1,000 feet of the site are organized according to construction-related effects and long-term effects on habitat from operations. Broadly, the potential effects of project activities for important habitats and species in the Study Area include the effects of upland construction noise and activity, effects of continued human presence on the site after construction, construction-related turbidity and water quality effects along the shoreline, and restoration of shoreline ecological functions on the site. The effects of these elements on the important species and habitats are analyzed below.

5.1 Construction Effects

5.1.1 Site Clearing and Debris Removal

Prior to upland development, the upland portions of the site will be cleared of vegetation. This will include the use of earth-moving machinery such as bulldozers, excavators, dump trucks, etc. This activity will generate typical construction-related noise and dust, primarily during the daylight hours. Active site clearing will occur during times specified by permits and approvals from the City of Olympia. Construction Best Management Practices (BMPs) will be utilized during site clearing to avoid generation and export of dust from the site. Additionally, noise generated from construction will be minimized where possible, such as avoiding idling heavy equipment when not in active use.

Debris removal will include the removal of derelict structures including 179 creosote-treated piles, the outline of a dilapidated timber dock, and several old concrete structures. In addition, various debris including concrete debris, metal iron beams, wood logs, rock, and iron pipes will also be removed. Debris removal will be completed using land-based excavators at low tide to minimize impacts to water quality. A dozer and loader could also be used to remove large pieces of debris from the site. Haul trucks will be used to dispose of materials. Debris will be collected and disposed of at an appropriately authorized waste disposal facility.

While work would be done in the dry, minor increase in turbidity may occur upon the first tidal inundation after intertidal debris removal. It is expected that this increase in turbidity would not extend beyond the 150-foot mixing zone allowed by WAC 173-201A-210.

5.1.2 Fill Placement

Up to 26,255 cy of mixed sand and gravel fill (2.5-inch minus) and 13,053 cy of washed gravel fill will be added to the shoreline to improve habitat. The newly constructed beach will be sloped at approximately 8H:1V. The washed gravel will be placed above and below OHW by land-based equipment. Topsoil and sand will only be placed above OWH to reduce material loss due to wave action and reduce maintenance costs. Material placement atop existing grade will result in the conversion of 0.77 acres of degraded aquatic habitat to upland habitat. The creation of intertidal beaches, salt marsh, and riparian planting would substantially improve substrate quality and enhance ecological functions of existing natural resources, and their buffers.

5.1.3 Habitat Conversion

The riparian planting area will occur along the outer edge of the topsoil fill which will elevate the upland project area by two feet. This material placement atop the existing grade will result in the

conversion of approximately 0.77 acres of degraded aquatic habitat to upland habitat. This proposed action will incidentally result in the shift of the OHWM further waterward away from the area of upland fill. The resulting OHWM will be approximately 30 feet waterward from the existing OHWM. The creation of intertidal beaches, salt marsh, and riparian plantings will substantially improve substrate quality and enhance ecological functions of existing natural resources. The removal of derelict structures including 179 creosote-treated piles, the outline of a dilapidated timber dock, old concrete structures, various concrete debris, metal iron beams, wood logs, rock, and iron pipe will improve habitat function and water quality. The overall improvement of habitat will significantly benefit fish and wildlife by creating a more natural shoreline resistant to erosion. The proposed actions will provide improved habitat for fish and other natural resources, and improve ecosystem services, water quality, and nutrient storage to increase ecosystem stability over time. Overall, the proposed 0.77-acre habitat conversion area will result in a significant improvement to the nearshore habitat, resulting in a substrate with higher primary productivity of epibenthic organisms.

Improvement of the various habitat functions provided by the area of habitat conversion, as well as the shoreline restoration as a whole, will directly benefit many of the species and habitats listed above in Section 4. The increase in riparian trees, shrubs and groundcover vegetation within the VCA planting zone will significantly improve the quality of the marine riparian habitat, which will also directly and indirectly benefit Puget Sound nearshore habitat, submerged aquatic vegetation, marbled murrelet, surf smelt, the various salmonids, Southern Resident killer whales, great blue heron, and many other important organisms and habitats in the vicinity of the shoreline restoration.

5.2 Water Quality Effects

5.2.1. Turbidity

Pile extraction, concrete structure removal, and clean gravel and sand placement are activities that disturb the substrate, which could result in localized and minimal increases in turbidity upon tidal inundation. Temporary turbidity associated with pile extraction and debris removal is typically minimal and highly localized. As these activities would be conducted in the dry during low tides, any temporary turbidity would only occur during the first tidal inundation of the work area and is expected to be minimal and localized.

Project construction will comply with Washington State water quality standards as administered by the Department of Ecology under WAC 173-201A-210(1)(e)(i). Based on the WAC, temporary exceedances for turbidity would be allowed within a 150-foot radius from the sediment disturbing activities. While exceedances of this mixing zone are not expected, the contractor could implement BMPs such as silt curtains during tidal inundation of work areas to further limit the spread of turbidity from the site.

Salmonids

The potential effects of increased turbidity on salmonids have been investigated by a number of studies (Servizi and Martens 1987 and 1992, Noggle 1978, Simenstad 1988, Redding et al. 1987, Mortensen et al. 1976, Berg and Northcote 1985, LaSalle 1988). The potential mechanisms by which turbidity could affect salmonids include direct mortality, sublethal effects (stress, gill damage, and increased susceptibility to disease), and behavioral responses (disruptions to feeding or migration). Turbidity levels that might result in direct harm are typically associated with activities such as dredging in very fine sediments. There is no expectation that debris removal and placing clean material along the shoreline would generate turbidity approaching those levels. Turbidity increases would only occur during these activities and are anticipated to be localized, temporary, and minimal during tidal inundation. No harm or direct mortality of salmonids or other aquatic habitats or species would occur. It is also extremely unlikely that a behavioral response such as avoidance of a small-scale and temporary turbidity exceedance would adversely affect any fish present in the Study Area.

Overall, the effects of increased turbidity on salmonids are expected to be insignificant and also largely discountable due to work timing.

Non-Salmonid Species

As described, temporary turbidity from Project activities would be minimal and highly localized. Project compliance with the Ecology Water Quality Certification would limit increases in turbidity to within 150 feet of active work. Such small-scale, temporary turbidity would be insignificant to any marine mammals or murrelets potentially in close proximity to construction. Due to the shallow nature of the waters in close proximity to the subject site as well as construction occurring in the dry at low tide, there is no expectation that Southern Resident killer whales or humpback whales would experience project-related turbidity. Overall, effects of temporary, minimal, and highly localized increases turbidity would be insignificant to these species.

Important Habitats (Instream, SAV, Nearshore)

Impacts to important habitats from construction-related turbidity are highly unlikely. As described above, construction would be expected to comply with the 150-foot mixing zone established for marine waters. Additionally, filling related to shoreline restoration construction would occur in the dry during low tide. This will limit the potential for turbidity to the periods when the construction location is first inundated by tidal waters. Turbidity that is generated is expected to be localized and of such a short duration that any impacts to surrounding habitats would be insignificant.

As the project is located approximately 500 feet southeast of the nearest instream habitat (Schneider Creek), there will be no impacts to instream habitat from the project.

5.2.2. Potential Spills

During construction, there is minor potential for accidental spills from the machinery or materials that could be potentially harmful to important habitats and species. However, to minimize the potential for an accidental spill during construction, a number of BMPs will be incorporated into the project. BMPs to be implemented during project construction include keeping construction equipment well maintained, inspecting construction equipment daily for leaks, developing a spill

prevention containment, and control plan and keeping oil absorbent material on-site during construction. Overall, the risk of an accidental spill is negligible.

Project construction includes the removal of derelict structures including 179 creosote-treated piles, the outline of a dilapidated timber dock, and an old concrete structure. These actions would be mobilized from the shoreline, but no construction equipment will be operated in the water.

During all project construction, there is a risk of minimal, localized, and temporary water quality impacts from the unintentional release of fuel, lubricants, or hydraulic fluid from construction machinery. All prudent and necessary actions would be taken to avoid such a discharge, including regular maintenance and checks for potential contamination sources. In the event of a spill, containment and cleanup would take precedence over continued work, ensuring that effects would be temporary and extremely localized relative to the Study Area as a whole.

There would be potential for construction material or debris to enter the water during construction. This risk will be managed through adherence to standard above-water and in-water construction BMPs. Pile and debris removal could affect water quality through turbidity (addressed above) as well as through mechanisms such as creosote releases or pile breakage. Standard BMPs for pile removal will be followed during any such activities. Backfilling the concrete structure voids with clean material is a preventative measure against releases of remnant contaminants.

Adherence to these BMPs would make the likelihood and potential for harm during intertidal work and debris removal so low as to be insignificant. Overall, potential chemical contamination is not expected to adversely affect any important habitat or species present within the Study Area.

5.3 Substrate Productivity

The placement of a new gravel/sand beach substrate will smother the existing epibenthic community below the riprap revetment, resulting in a temporary reduction in primary productivity while the substrate is recolonized. Cetaceans and murrelets are unlikely to be directly affected by a temporary reduction in epibenthic productivity since these species do not utilize epibenthic organisms as prey items.

Effects on juvenile salmonid prey are expected to be temporary, as recolonization of epibenthic communities is expected relatively rapidly. Multiple studies have documented that the epibenthic community rapidly recovers after disturbance. A number of studies at the Port of Tacoma, Port of Seattle, and other locations within urban environments have examined the recolonization of intertidal and shallow subtidal substrate that has been disturbed (Jones & Stokes Associates 1990a, 1990b, 1995, Hiss et al. 1990). The results indicated that recolonization is rapid and that substantial densities of prey are available within a short period (months) of substrate disturbance.

For example, a layer of fine substrate was placed over riprap under pier aprons at Terminals 18 and 30 in the Port of Seattle. The substrate blanket at Terminal 18 was in place about a year prior to the initiation of the study, and the blanket at Terminal 30 had been in place for about 2 weeks. Sampling indicated that epibenthic prey densities were similar at both mitigation sites, and they were higher than the unmodified riprap areas (Parametrix 1985).

At the Milwaukee Habitat Area, in Commencement Bay, epibenthic monitoring occurred just over a month after completion of construction (mid-March). Sampling took place in April, May, and June 1995 with mean densities ranging from 49,543 to 333 per m², with the highest levels in April. Taxa richness ranged from 6 – 10 with the highest levels in May (Parametrix 1996). In subsequent

years mean salmon prey densities stayed within the same range as 1995, with taxa richness increasing in 1996 (Pacific International Engineering and Parametrix 1998), and 1998 (Pacific International Engineering 2000). These numbers indicate that after only a few months a healthy epibenthic community is present. Taxa richness does seem to increase with time but may reach peak levels after only a year.

Based on these data, epibenthic infauna recovers to abundance and biomass levels comparable to reference sites within months to two years. During this time of recolonization, foraging juvenile salmonids would be expected to utilize other beaches in the vicinity of the subject site.

5.4 Long Term Effects

The project would improve the shoreline habitat through the placement of sand and gravel over the existing armored slope, removal of derelict creosote-treated timber piles, and removal of concrete structures.

Partially in response to sea level rise, the upland site is being lifted approximately 2 feet higher than the existing elevation. Because of this lift, as well as the placement of mixed sand and gravel over the existing riprap, approximately 0.77 acre of aquatic area will be converted to upland. Further, the design requires the installation of a drift sill at the southern extent of the subject site to retain the restored beach material on the site.

5.4.1. Effects on Nearshore Substrate

The proposed Project would effectively eliminate existing riprap and anthropogenic debris through the placement of sand and gravel, as well as select removal of structural material. The new shoreline would create a gently-sloping (~8H:1V) intertidal beach. The newly-created beach area would consist of 2.5-inch minus sand and gravel over 3.49 acres. Of that 3.49 acres, approximately 0.2 acre would be planted with salt marsh vegetation, and 0.13 acre would be planted (below OHW) with native riparian vegetation, which would extend into the upland in a band approximately 30 ft wide. The remaining 2.44 acres of aquatic habitat would be unvegetated sand/gravel intertidal habitat, sloped at 8H:1V. A rock drift sill on the southern boundary of the property would support the aquatic habitat by preventing the beach material from migrating off the site to the south. However, shoreline fill placement would move the OHWM waterward approximately 12 to 30 ft. Additionally, the top of the new drift sill would extend above the OHWM to an elevation of approximately +18 ft MLLW. In total, the action would convert approximately 0.77 acre from aquatic habitat to upland habitat.

Proposed salt marsh vegetation would substantially improve the productivity of nearshore habitat. Marsh vegetation is recognized as enhancing the productivity of animals and plants living in and on the sediment, providing a more complex community structure, providing refuge habitat for juvenile salmonids and other fishes, and generating valuable detritus to the ecosystem (NOAA Fisheries 2013).

In summary, the Project will substantially reduce anthropogenic debris and armoring in the aquatic environment—covering of 1.14 acres of riprap, removal of piles and concrete debris, and installation of 0.1 acre of rock associated with the drift sill. The project will increase the acreage of moderate- to highly-functioning intertidal habitat (sand/gravel, salt marsh, or riparian) from 3.20 to 3.49 acres. The Project will install 0.2 acre of highly productive salt marsh vegetation, and 0.13 acre of nearshore riparian vegetation, neither of which currently exist at the site. The Project

will eliminate steeply-sloped shoreline riprap at the site. Overall, though the acreage of aquatic area will be reduced by 0.77 acre, the action will result in a substantial improvement of the nearshore habitat at the site.

5.4.2. Effects on Upland Habitats and Species

Construction and operation of the upland mixed-use development will modify the existing character of the area west of West Bay Drive on the project site. The presence of five residential buildings and the associated drive lanes, pedestrian paths and other infrastructure will increase human activity in the area. However, the residential and commercial properties along the hillside west of the site and the industrial activities at the Port of Olympia to the east of the site all contribute to the various human-related disturbances experienced by the terrestrial species that may encounter the site. These species (great blue heron, big and little brown bats, Yuma myotis), where present near the subject site, have become habituated to human disturbances and activities. The great blue herons that roost southwest of the site routinely fly over residential and commercial properties and West Bay Drive to access their foraging grounds, foraging grounds that are also adjacent to industrial activities at the Port of Olympia. Similar habituation would be expected of brown bats and myotis, that prefer to roost in buildings, bridges, train trestles, and other frequently disturbed areas as a life history strategy.

The presence of the upland mixed-use development and public access amenities will increase human activity on the project site. However, the activity on the project site is not novel when compared to the activity experienced by these terrestrial species in the surrounding areas.

In addition, the planting of a dense, native VCA along the project shoreline along with the installation of trees, shrubs, and groundcover vegetation along the upper intertidal areas of the site, will significantly improve foraging and refuge habitat for these species. The organic material distributed to the beach from the planted riparian vegetation will provide nutrients to organisms on which heron feed. Further, the forested canopy will provide resting and foraging habitat for myotis and mats.

Therefore, the upland development on the project site would not be expected to negatively affect the continued survival of these species.

6 PROPOSED BUFFERS AND MANAGEMENT RECOMMENDATIONS

6.1 Vegetation Conservation Area

Upon project completion, an approximately 30-foot-wide, 36,172-sq ft VCA will be established along the east side of the site between the public esplanade and the restored beach. This 30-foot wide VCA will function as the buffer for the protection of the marine shoreline. The VCA will be preserved from trimming or clearing, and will be retained to function as a buffer between the developed uplands and the restored shoreline.

Public access to the shoreline will be provided by small trails through the VCA that lead out onto the beach. These access points will be established such that the public is prevented from widening the access points or creating new ones through the use of fencing or other deterrents. Large woody debris (LWD) will also be utilized to prevent access to areas of the riparian corridor. Strategic placement of large beach logs and other LWD will prevent access along portions of the upper beach, prevent habitat degradation in those areas.

Periodic monitoring of the riparian vegetation within the VCA during the first several years after construction will ensure the development and function of the vegetation. A monitoring plan that complies with the OMC is provided in the Restoration and Mitigation Plan prepared for the project.

6.2 Shoreline Construction Conservation Measures

As discussed above, several important habitats and species occur along the project shoreline, including juvenile salmonids and surf smelt. To avoid disturbance to these species during construction, several conservation measures will be employed. First, in-water construction (i.e., construction below OHW) will be limited to the time period between July 16 and February 15, or as conditioned in the relevant permits issued to the project. This time period is designated as the allowable in-water construction period at the project site by the U.S. Army Corps of Engineers and WDFW, due to the relative absence of migrating juvenile salmonids in the area.

Furthermore, as the in-water construction period for surf smelt is April 1 to June 30, and these time periods do not overlap, the project will employ forage fish spawning surveys to confirm the absence of surf smelt spawning prior to and during construction. Conducting surveys prior to active construction on the shoreline will prevent impacts to surf smelt eggs located along the project shoreline during construction.

The contractor will also employ the use of construction BMPs during construction, such as the following:

- a silt curtain to contain any turbidity generated from the tidal inundation of disturbed sediments during debris removal and beach filling.
- Any machinery to be used on the beach will only operate in the dry during periods of low tide.
- All such machinery will be checked daily for hydraulic or fuel leaks, and will be stored in the uplands a minimum of 100 feet landward from the top of the shoreline slope when not in use.
- Fuels and other commodities for use during construction will be stored in the uplands and a minimum of 100 feet landward of the top of the shoreline slope. They will also be

protected from vandalism, and care will be taken to ensure no runoff from the storage area could enter the shoreline.

- Erosion control BMPs will be installed and maintained during construction to prevent erosion of surface soils. The contractor will prepare and abide by a temporary erosion and sediment control (TESC) plan or other plan as required by the City of Olympia to prevent erosion during rain events.

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- Washington Department of Fish and Wildlife (WDFW). 2021. Conservation: Nisqually River winter steelhead. URL: https://fortress.wa.gov/dfw/score/score/species/population_details.jsp?stockId=6203. Retrieved on 06/08/21.
- Washington Department of Natural Resources (WDNR). 2021. Forest Practices Application Mapping Tool [map online]. Streams and Water Type Breaks. Queried November 9, 2021. URL: <https://fortress.wa.gov/dnr/protectiongis/fpamt/index.html>
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TIDAL AND GEODETIC DATUMS:

HIGHEST OBSERVED WATER LEVEL (12/15/1977)	+17.94'
MEAN HIGHER HIGH WATER (MHHW)	+14.56'
MEAN HIGH WATER (MHW)	+13.55'
MEAN SEA LEVEL (MSL)	+8.35'
MEAN TIDE LEVEL (MTL)	+8.31'
NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88)	+3.99'
MEAN LOW WATER (MLW)	+3.07'
MEAN LOWER LOW WATER (MLLW)	+0.00'
LOWEST OBSERVED WATER LEVEL (1/2/1977)	-4.33'

REFERENCE: NOAA STATION 946969

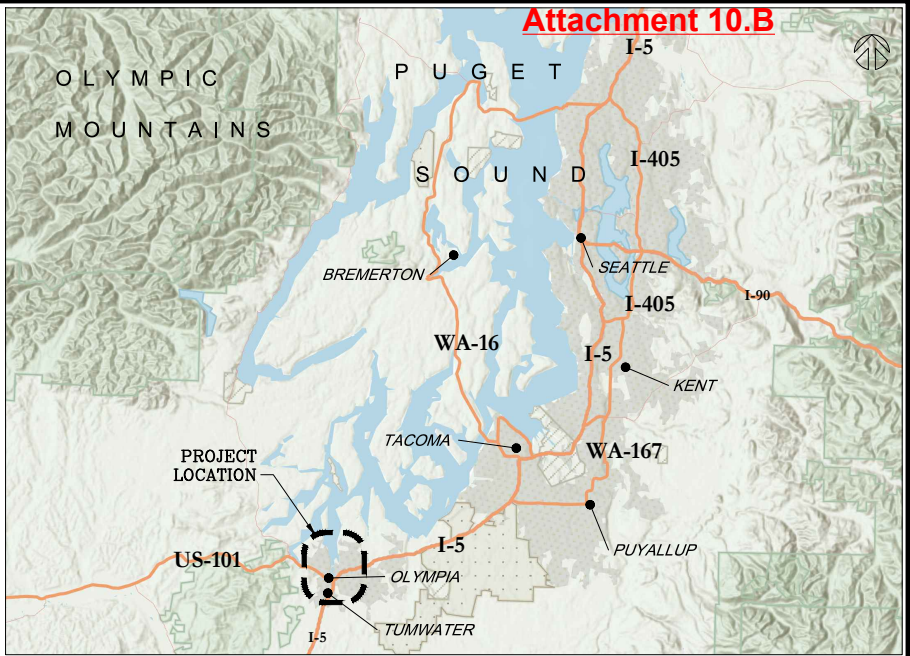
WATER LEVELS:

HIGH TIDE LINE (HTL)	+15.90'
ORDINARY HIGH WATER MARK (OHWM)	+15.50'

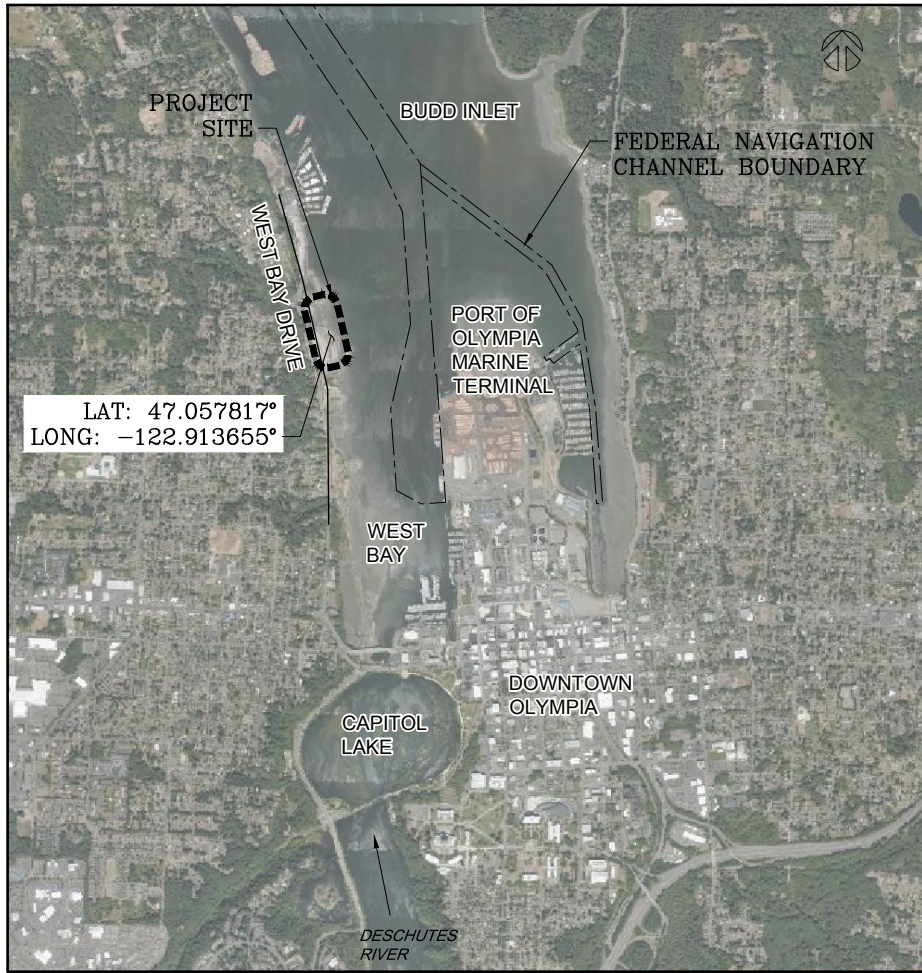
REFERENCE: FIELD DELINEATION BY A MARINE BIOLOGIST ON APRIL 28th, 2021 AND TIDAL DATA

LIST OF DRAWINGS

SHEET NUMBER	SHEET TITLE
FIG-001	COVER SHEET
FIG-002	EXISTING SITE PLAN
FIG-003	DEBRIS REMOVAL AND DEMOLITION
FIG-004	PROPOSED GRADING PLAN
FIG-005	PROPOSED PLANTING PLAN
FIG-006	SECTIONS



VICINITY MAP
SCALE: NTS



LOCATION PLAN
SCALE: NTS

PURPOSE: SHORELINE ENHANCEMENT AND RESTORATION

ADJACENT PROPERTY OWNERS:

- 1) DELTA ILLAHEE LIMITED PARTNERSHIP
- 2) SQUAXIN ISLAND TRIBE
- 3) DROGBA LLC

APPLICANT: WEST BAY DEVELOPMENT

USACE REFERENCE # TBD

LOCATION ADDRESS: 1210 WEST BAY DRIVE
NORTHWEST OLYMPIA,
WA 98502

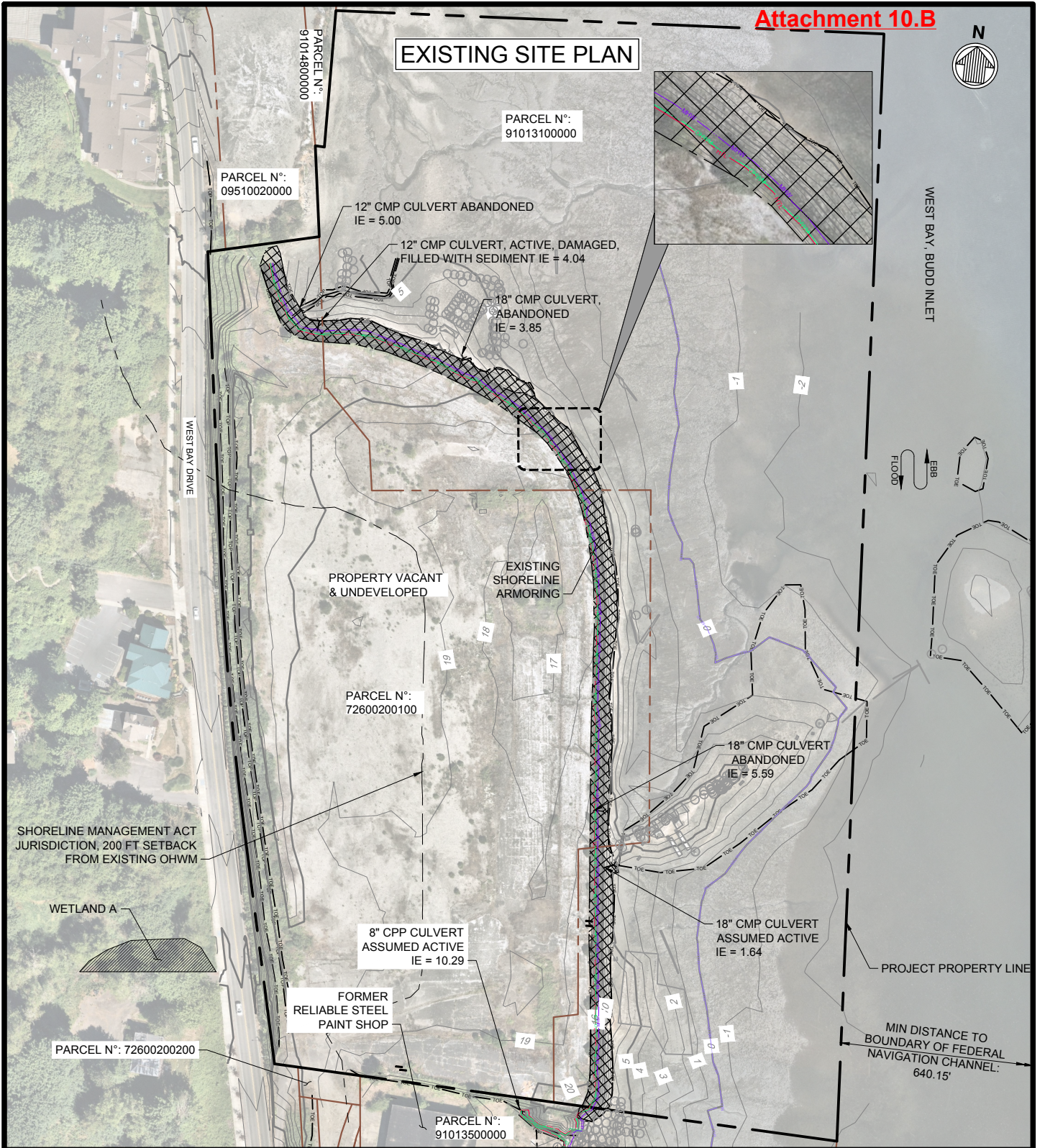
PROPOSED PROJECT: OLYMPIA WEST BAY - SHORELINE ENHANCEMENT AND RESTORATION

IN: OLYMPIA, WA
DATUM: MLLW = 0.0ft
SEC: 1 **T:** 32 N
COUNTY: THURSTON COUNTY
SHEET: 1 OF 6

R: 1 E
STATE: WA
DATE: JUNE 1, 2021

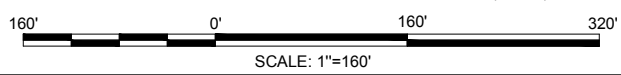


EXISTING SITE PLAN



NOTES

1. EXISTING CONDITIONS (INCLUDING ELEVATION CONTOURS AND DEBRIS DELINEATION) BASED ON A TOPOGRAPHIC SURVEY PROVIDED BY MTN 2 COAST LLC DATED 2020-06-08.
2. AERIAL: NEARMAP 2019-06-25.
3. PARCEL LINES ARE FROM THURSTON COUNTY GEODATA CENTER.
4. VERTICAL DATUM AND UNIT: MEAN LOWER LOW WATER (MLLW) AND FT.



LEGEND

- RELIC PILES
- RELIC CONCRETE STRUCTURES
- ▨ EXISTING ARMOR
- PARCEL LINE
- PROPERTY LINE
- 15— EXISTING CONTOUR (ELEVATION FT, MLLW)
- Y OUTFALL
- HTL (+15.90 FT MLLW)
- OHWM (+15.50 FT MLLW)
- MHW (+13.55 FT MLLW)
- MLLW (0.00 FT MLLW)

PURPOSE: SHORELINE ENHANCEMENT AND RESTORATION

ADJACENT PROPERTY OWNERS:

- 1) DELTA ILLAHEE LIMITED PARTNERSHIP
- 2) SQUAXIN ISLAND TRIBE
- 3) DROGBA LLC

APPLICANT: WEST BAY DEVELOPMENT

USACE REFERENCE # TBD

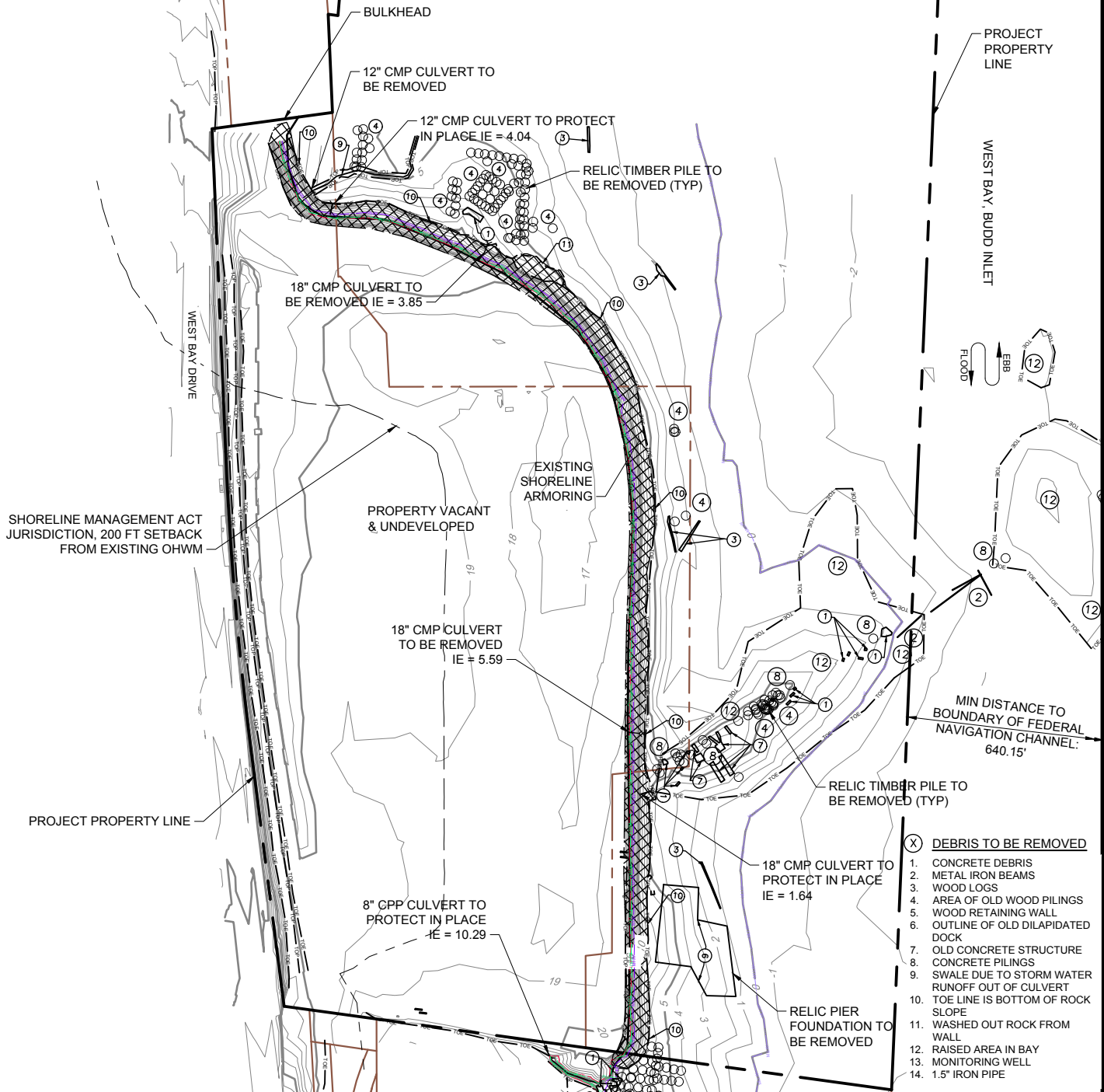
LOCATION ADDRESS: 1210 WEST BAY DRIVE
NORTHWESTOLYMPIA,
WA 98502

PROPOSED PROJECT: OLYMPIA WEST BAY - SHORELINE ENHANCEMENT AND RESTORATION

IN: OLYMPIA, WA
DATUM: MLLW = 0.0ft
SEC: 1 **T:** 32 N
COUNTY: THURSTON COUNTY
SHEET: 2 OF 6

R: 1 E
STATE: WA
DATE: JUNE 1, 2021

DEBRIS REMOVAL AND DEMOLITION



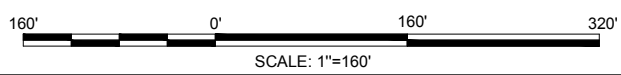
- (X) DEBRIS TO BE REMOVED**
1. CONCRETE DEBRIS
 2. METAL IRON BEAMS
 3. WOOD LOGS
 4. AREA OF OLD WOOD PILINGS
 5. WOOD RETAINING WALL
 6. OUTLINE OF OLD DILAPIDATED DOCK
 7. OLD CONCRETE STRUCTURE
 8. CONCRETE PILINGS
 9. SWALE DUE TO STORM WATER RUNOFF OUT OF CULVERT
 10. TOE LINE IS BOTTOM OF ROCK SLOPE
 11. WASHED OUT ROCK FROM WALL
 12. RAISED AREA IN BAY
 13. MONITORING WELL
 14. 1.5" IRON PIPE

NOTES

1. EXISTING CONDITIONS (INCLUDING ELEVATION CONTOURS AND DEBRIS DELINEATION) BASED ON A TOPOGRAPHIC SURVEY PROVIDED BY MTN 2 COAST LLC DATED 2020-06-08.
2. PARCEL LINES ARE FROM THURSTON COUNTY GEODATA CENTER.
3. VERTICAL DATUM AND UNIT: MEAN LOWER LOW WATER (MLLW) AND FT.

LEGEND

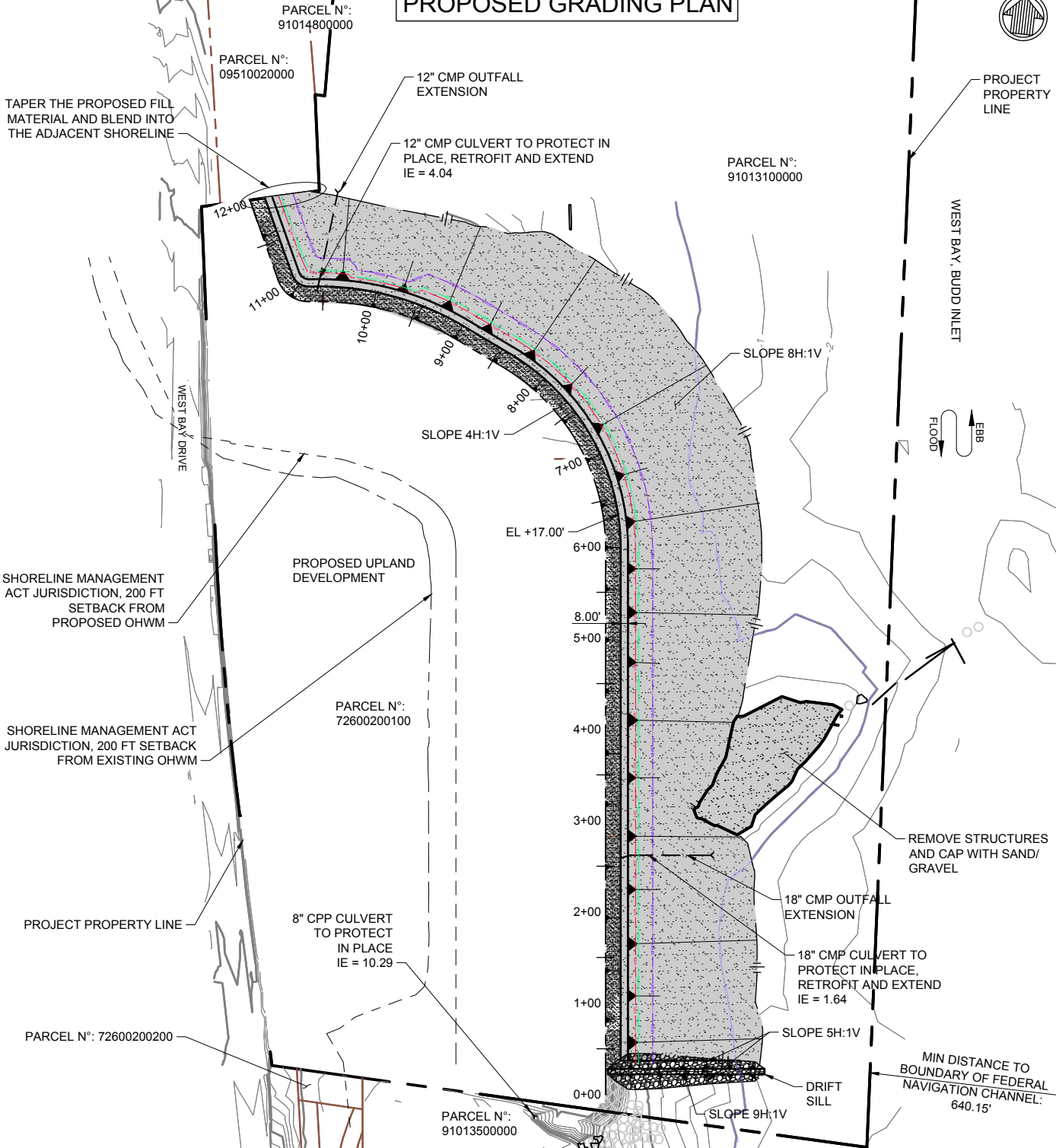
- RELIC PILES TO BE REMOVED
- RELIC CONCRETE STRUCTURES TO BE REMOVED
- ▨ EXISTING ARMOR
- PARCEL LINE
- PROPERTY LINE
- EXISTING CONTOUR (ELEVATION FT., MLLW)
- OUTFALL
- HTL (+15.90 FT MLLW)
- OHWM (+15.50 FT MLLW)
- MHW (+13.55 FT MLLW)
- MLLW (0.00 FT MLLW)



<p>PURPOSE: SHORELINE ENHANCEMENT AND RESTORATION</p> <p>ADJACENT PROPERTY OWNERS:</p> <ol style="list-style-type: none"> 1) DELTA ILLAHEE LIMITED PARTNERSHIP 2) SQUAXIN ISLAND TRIBE 3) DROGBA LLC 	<p>APPLICANT: WEST BAY DEVELOPMENT</p> <p>USACE REFERENCE # TBD</p> <p>LOCATION ADDRESS: 1210 WEST BAY DRIVE NORTHWESTOLYMPIA, WA 98502</p>	<p>PROPOSED PROJECT: OLYMPIA WEST BAY - SHORELINE ENHANCEMENT AND RESTORATION</p> <p>IN: OLYMPIA, WA DATUM: MLLW = 0.0ft SEC: 1 T: 32 N COUNTY: THURSTON COUNTY SHEET: 3 OF 6</p> <p>R: 1 E STATE: WA DATE: JUNE 1, 2021</p>
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PROPOSED GRADING PLAN

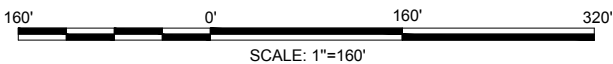


NOTES

1. EXISTING CONDITIONS (INCLUDING ELEVATION CONTOURS AND DEBRIS DELINEATION) BASED ON A TOPOGRAPHIC SURVEY PROVIDED BY MTN 2 COAST LLC DATED 2020-06-08.
2. PARCEL LINES ARE FROM THURSTON COUNTY GEODATA CENTER.
3. VERTICAL DATUM AND UNIT: MEAN LOWER LOW WATER (MLLW) AND FT.

LEGEND

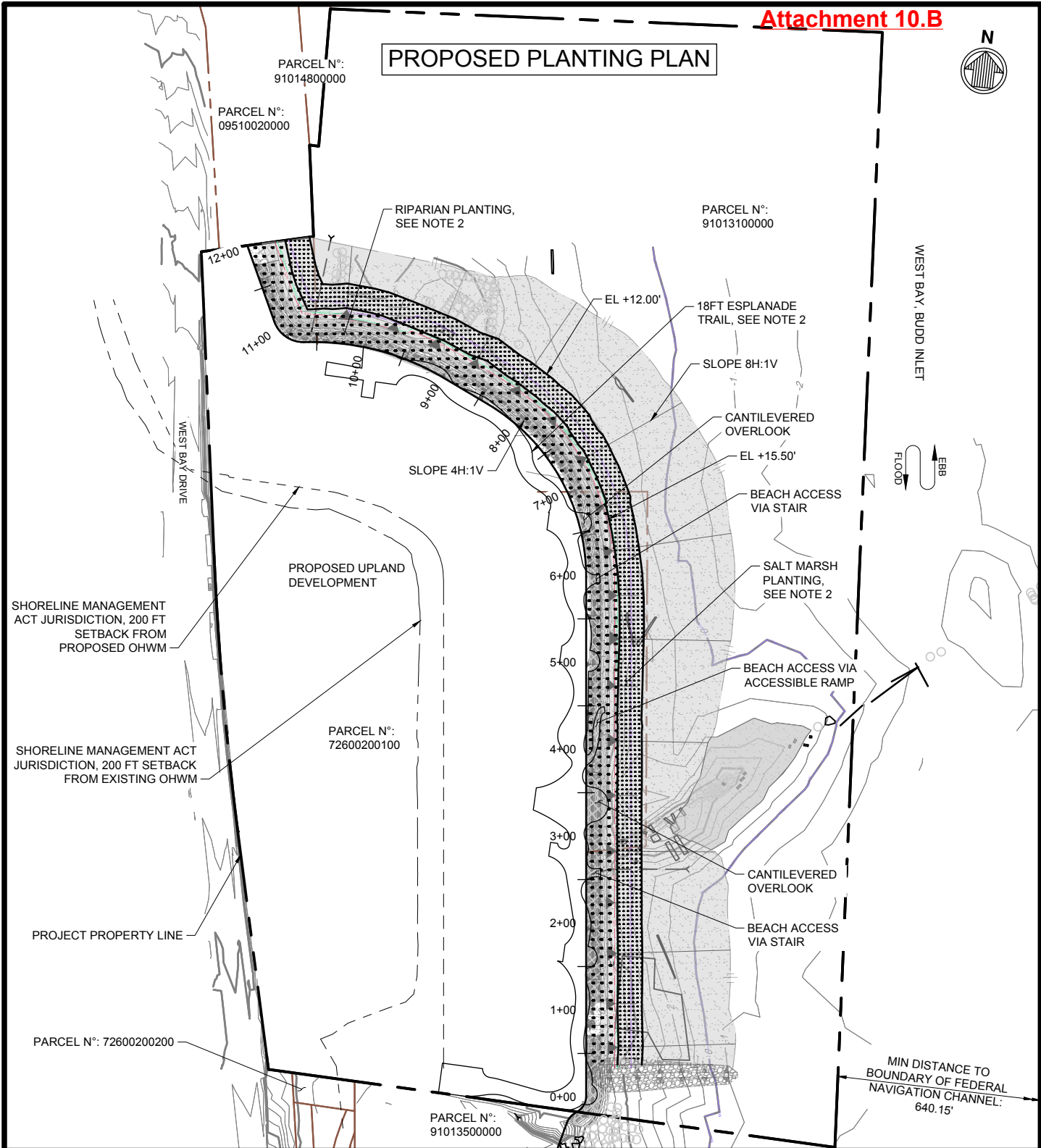
TOP SOIL	EXISTING CONTOUR (ELEVATION FT, MLLW)
MIXED SAND/ GRAVEL FORESHORE	OUTFALL
ARMOR STONE	HTL (+15.90 FT MLLW)
PARCEL LINE	OHWM (+15.50 FT MLLW)
PROPERTY LINE	MHW (+13.55 FT MLLW)
	MLLW (0.00 FT MLLW)



<p>PURPOSE: SHORELINE ENHANCEMENT AND RESTORATION</p> <p>ADJACENT PROPERTY OWNERS:</p> <ol style="list-style-type: none"> 1) DELTA ILLAHEE LIMITED PARTNERSHIP 2) SQUAXIN ISLAND TRIBE 3) DROGBA LLC 	<p>APPLICANT: WEST BAY DEVELOPMENT</p> <p>USACE REFERENCE # TBD</p> <p>LOCATION ADDRESS: 1210 WEST BAY DRIVE NORTHWESTOLYMPIA, WA 98502</p>	<p>PROPOSED PROJECT: OLYMPIA WEST BAY - SHORELINE ENHANCEMENT AND RESTORATION</p> <p>IN: OLYMPIA, WA DATUM: MLLW = 0.0ft SEC: 1 T: 32 N COUNTY: THURSTON COUNTY SHEET: 4 OF 6</p> <p style="text-align: right;">R: 1 E STATE: WA DATE: JUNE 1, 2021</p>
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PROPOSED PLANTING PLAN

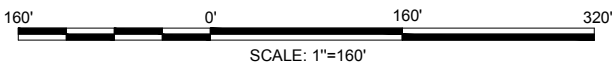


NOTES

1. PARCEL LINES ARE FROM THURSTON COUNTY GEODATA CENTER ACCORDING TO: THURSTON COUNTY GEODATA CENTER.
2. SEE LANDSCAPE ARCHITECTURE DRAWINGS FOR DETAILS.

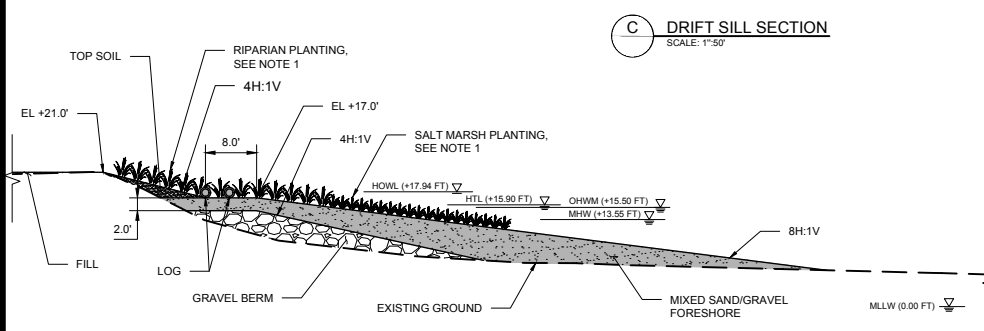
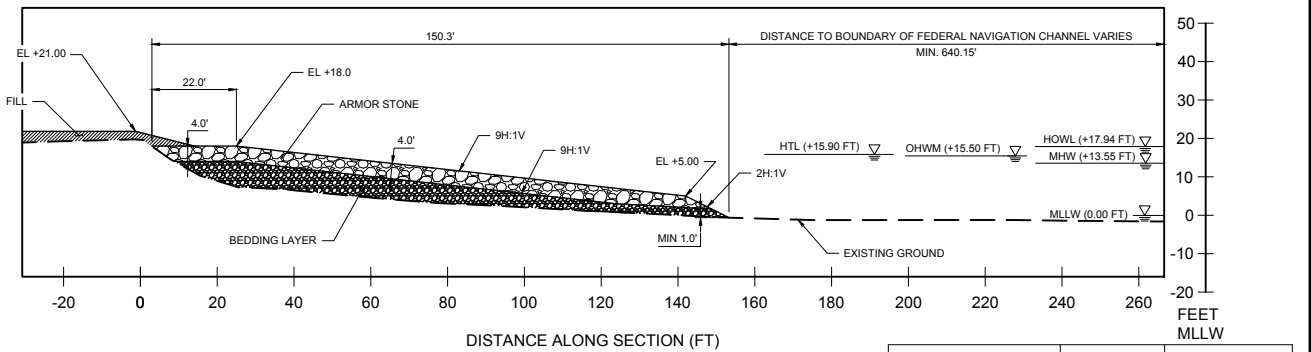
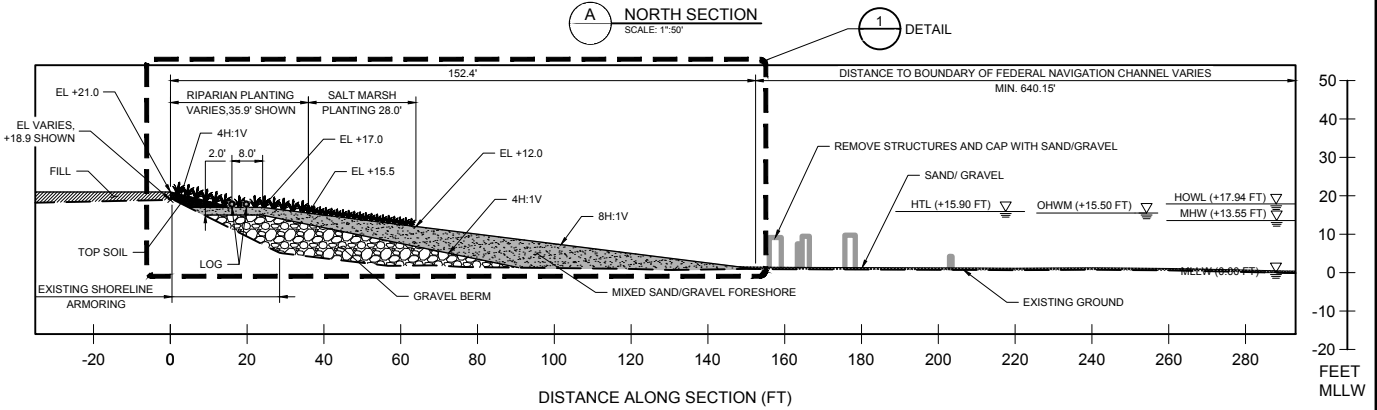
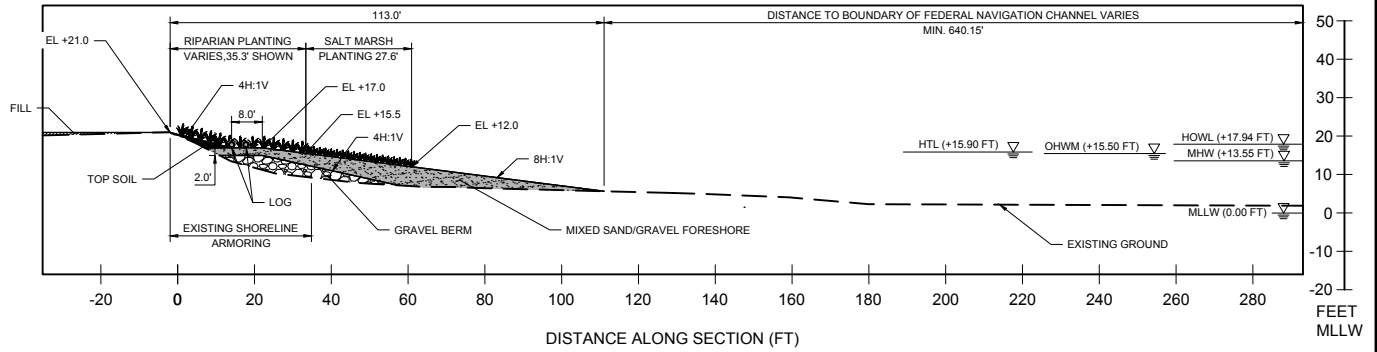
LEGEND

- TOP SOIL
- MIXED SAND/ GRAVEL FORESHORE
- ARMOR STONE
- RIPARIAN PLANTING
- SALT MARSH PLANTING
- PARCEL LINE
- PROPERTY LINE
- EXISTING CONTOUR (ELEVATION FT, MLLW)
- OUTFALL
- HTL (+15.90 FT MLLW)
- OHWM (+15.50 FT MLLW)
- MHW (+13.55 FT MLLW)
- MLLW (0.00 FT MLLW)



<p>PURPOSE: SHORELINE ENHANCEMENT AND RESTORATION</p>	<p>APPLICANT: WEST BAY DEVELOPMENT</p>	<p>PROPOSED PROJECT: OLYMPIA WEST BAY - SHORELINE ENHANCEMENT AND RESTORATION</p>
<p>ADJACENT PROPERTY OWNERS:</p> <ol style="list-style-type: none"> 1) DELTA ILLAHEE LIMITED PARTNERSHIP 2) SQUAXIN ISLAND TRIBE 3) DROGBA LLC 	<p>USACE REFERENCE # TBD</p> <p>LOCATION ADDRESS: 1210 WEST BAY DRIVE NORTHWESTOLYMPIA, WA 98502</p>	<p>IN: OLYMPIA, WA DATUM: MLLW = 0.0ft SEC: 1 T: 32 N COUNTY: THURSTON COUNTY SHEET: 5 OF 6</p> <p>R: 1 E STATE: WA DATE: JUNE 1, 2021</p>

SECTIONS



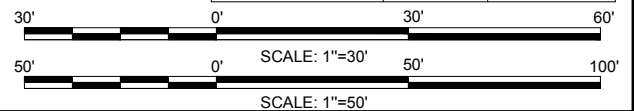
Fill Material/Debris	Estimated Total Volume (yd ³)	Estimated Volume Seaward of HTL (yd ³)
Beach - Topsoil	1,047	-
Beach - Sand/ Gravel	26,255	25,025
Beach - Gravel Berm	13,053	13,053
Drift Sill - Armor Stone	615	540
Drift Sill - Bedding Layer	403	403
Cap after Debris Removal - Sand/ Gravel	508	508
Debris Removal - Concrete Debris	115	115
Debris Removal - Old concrete Structure	156	156
Debris Removal - Timber Treated Piles	179	179
Outfall Splash Pad - Coarse Gravel	1.5	1.5

NOTES

1. SEE LANDSCAPE ARCHITECTURE DRAWINGS FOR DETAILS.

LEGEND

- × LIMITS OF EXISTING SHORELINE ARMOR
- EXISTING GROUND
- PROPOSED GRADE
- TOP SOIL
- MIXED SAND/ GRAVEL FORESHORE
- GRAVEL BERM
- ROCK REVETMENT
- BEDDING LAYER
- FILL



PURPOSE: SHORELINE ENHANCEMENT AND RESTORATION

APPLICANT: WEST BAY DEVELOPMENT

PROPOSED PROJECT: OLYMPIA WEST BAY - SHORELINE ENHANCEMENT AND RESTORATION

ADJACENT PROPERTY OWNERS:

- 1) DELTA ILLAHEE LIMITED PARTNERSHIP
- 2) SQUAXIN ISLAND TRIBE
- 3) DROGBA LLC

USACE REFERENCE # TBD

LOCATION ADDRESS: 1210 WEST BAY DRIVE
NORTHWEST OLYMPIA, WA 98502

DATUM: MLLW = 0.0ft

SEC: 1 **T:** 32 N
COUNTY: THURSTON COUNTY
SHEET: 6 OF 6

R: 1 E
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DATE: JUNE 1, 2021