3.4 PLANTS AND ANIMALS

This section characterizes existing plant and animal habitat conditions on and adjacent to the New Whatcom site. Potential impacts to plant and animal communities from redevelopment under Alternatives 1 through 3 and the No Action Alternative are evaluated. This section is based on the December 2007 Plants and Animals Technical Report prepared by Grette and Associates; the full text of this report is included as **Appendix H.**

3.4.1 Affected Environment

The New Whatcom site contains both upland and aquatic habitat, and the following discussion addresses each aspect separately. The site has been historically used as a marine industrial site with existing in-water and over-water industrial infrastructure and upland facilities. The site includes high levels of development and industrialization in both the upland and aquatic environment.

Upland Habitat

Plants

The character of the upland portions of the site is influenced by the area's history as a maritime industrial and shipping center on Bellingham Bay and includes extensive industrial maritime infrastructure. The upland portions of the site are dominated by existing streets, paved areas and buildings. Upland habitat is limited to small, discontinuous patches of disturbed area that are dominated by weedy vegetation. Portions of the site contain limited, narrow bands of shoreline vegetation. Area 10 contains the most undeveloped upland area on the site; this undeveloped area primarily consists of weedy vegetation.

The specific upland vegetation conditions associated with each of the Redevelopment Areas is presented below.

Redevelopment Area 1

Area 1 encompasses approximately 51.4 acres of highly developed urban/industrial land. Paved areas, roads, and buildings cover approximately 82 percent of this area (approximately 42 acres). The balance of Area 1, approximately 9.1 acres (18 percent of this area) is undeveloped/open space. Vegetation within Area 1 consists almost entirely of invasive/weedy species, including Himalayan blackberry (*Rubus armeniacus*), common tansy (*Tanacetum vulgare* – Class C noxious weed), butterfly bush (*Buddleja davidii* – Class C noxious weed), chicory (*Cichorium intybus*), and white sweet clover (*Melilotus alba*). No riparian vegetation is present in Area 1. Landscaped trees are present along Roeder Avenue. Wildlife habitat is limited within Area 1 and consists of highly fragmented, low quality urban habitat interspersed between paved areas.

The National Wetland Inventory (NWI) shows a wetland in Area 1 in the vicinity of the Georgia Pacific tissue warehouse. A site investigation revealed that no wetland exists at that location; a portion of the identified potential wetland area contains a building, with the remainder in pavement/gravel or vegetated area dominated by invasive/weedy species.

Redevelopment Area 2

Area 2 consists of 22.6 acres of highly developed urban/industrial land. Paved areas, buildings, roads, and over-water structures cover approximately 99 percent (22.4 acres) of Area 2. The balance of Area 2 (0.20 acre) consists of landscaping and weedy vegetation (with similar species as described for Area 1). Thus, native vegetation and wildlife habitat is essentially non-existent in this Area.

Redevelopment Area 3

Area 3 is entirely in buildings, roadways, railroad and other pavement area, with no undeveloped or landscaped area. No vegetation or wildlife habitat is located within this area.

Redevelopment Area 4

Area 4 encompasses 11.4 acres. Roads/parking, buildings, railroad, and over-water structures cover approximately 99 percent of this area, with little undeveloped/open space present. Vegetation is limited to a narrow band overhanging a sandy sloped beach area (in the "log pond") above a vertical bulkhead. Vegetation in this area consists primarily of Himalayan blackberry and other weedy species. Wildlife habitat in Area 4 is limited to this small area and is considered low quality, because it is isolated from larger tracts of habitat and is surrounded by developed upland area.

Redevelopment Area 5

Area 5 contains high levels of development and industrial activity, with roads, buildings and railroad encompassing this entire area. No vegetation and wildlife habitat is located within this redevelopment area.

Redevelopment Area 6

Area 6 encompasses 6.5 acres, which is entirely in roads, paved parking and building area. No undeveloped open space exists and there is no vegetation or wildlife habitat on this area.

Redevelopment Area 7

Area 7 is entirely in road/parking, buildings, and railroad area, with no undeveloped/open space area. Vegetation is present off-site to the east of Area 7 along the existing railroad bed on a steep hillside. Species in this adjacent offsite area include Himalayan blackberry, old man's beard (*Clematis vitalba* – Class C noxious weed), and big-leaf maple (*Acer macrophyllum*). This offsite area may contain wetland communities; refer to **Appendix H** for a map indicating the general location of this potential wetland area.

Redevelopment Area 8

Area 8 encompasses 24.4 acres of paved and gravel roadway/parking area. A very small area (less than 0.1 acre) of non-native vegetation is present along the edge of the log pond area in the northern portion of Area 8. This vegetation does not provide significant wildlife habitat.

Redevelopment Area 9

Area 9 is entirely in road/parking, building footprints, railroad, and over-water coverage area. No undeveloped/open space exists in Area 9. Vegetation is limited to landscaping around existing buildings and limited patches of weedy vegetation. Wildlife habitat is essentially absent from this area.

Redevelopment Area 10

Area 10 encompasses the closed Cornwall landfill and is located along the shoreline of Bellingham Bay. Of the approximately 18.2 acres in Area 10, approximately 14.8 acres are in paved or gravel parking/driveway and buildings. Undeveloped/open space encompasses approximately 3.4 acres of the site, although this consists of flat landfill area dominated by low weedy vegetation. A vegetated drainage swale is present in the southern extent of this area. Public shoreline access is located in the northern corner of Area 10 at the terminus of Cornwall Avenue. The most extensive vegetation in Area 10 is along the railroad and along the shoreline, with the vegetated area of Area 10 consisting of weedy herbaceous species such as red clover (*Trifolium pratense*), curly dock (*Rumex crispus*), yarrow (*Achillea millefolium*), Canada thistle (*Cirsium arvense* – Class C noxious weed), common tansy, and various grasses. A row of Himalayan blackberry with some interspersed native shrubs and small trees is present along the shoreline. Wildlife habitat in Area 10 is limited to this area. Overall, Area 10 provides the most upland habitat of all the onsite redevelopment areas, though such habitat is of low to moderate quality due to its isolation from larger tracts of habitat, lack of native vegetation, and lack of diversity of vegetation.

Aerated Stabilization Basin (ASB)

The approximately 35-acre ASB includes an approximately 28-acre wetted treatment basin and approximately 7 acres in riprap breakwater berm around the basin and paved upland area landward of the basin. Limited terrestrial vegetation is present on the breakwater berm. Although very limited vegetation is present on the inside of the treatment basin, vegetation and wildlife habitat are essentially absent from this area.

Wildlife

As indicated under Plants above, areas of the site in vegetated upland wildlife habitat are extremely limited, with the largest area of undeveloped open space located in Area 10; as indicated above, the wildlife habitat value of this area is low to moderate due to its lack of native vegetation, lack of vegetation diversity and isolation from larger tracts of vegetation.

Wildlife that may be present on the site and in the vicinity is limited to those species typically observed in the City of Bellingham urban environment, including various songbirds, gulls, crows and ravens, as well as raccoon (*Procyon lotor*), opossum (*Didelphis virginiana*), black-tailed deer (*Odocoileus hemionus* ssp. *columbianus*) and possibly coyote (*Canis latrans*). Refer to the discussion on **Aquatic Habitat** below for information on wildlife potentially utilizing aquatic habitat, including bald eagle, marbled murrelet, Chinook salmon and southern resident killer whales, hereafter referred to as orcas.

Aquatic Habitat

In general, aquatic habitat in the vicinity of the site consists of Bellingham Bay, Whatcom Waterway, I & J Waterway, and Whatcom Creek. Habitat in Bellingham Bay and I & J Waterway is typical of nearshore marine habitat, and includes intertidal habitat (+8 ft mean lower low water (MLLW) to -4 ft MLLW), shallow subtidal (-4 ft MLLW to -10 ft MLLW), and subtidal habitat (below -10 ft MLLW); in general, the intertidal and shallow subtidal environments provide higher quality habitat than does subtidal habitat. Whatcom Waterway is at the mouth of Whatcom Creek and forms an estuary where fresh water from Whatcom Creek enters Bellingham Bay. This estuary provides important habitat for aquatic species, including migratory salmonids continuing up Whatcom Creek.

Aquatic conditions on the New Whatcom site consist of urban habitat and are reflective of the area's history as a maritime industrial and shipping center on Bellingham Bay. The site includes over 2.5 miles of shoreline, from the head of the I & J Waterway, around the ASB perimeter, into Whatcom Waterway to the Roeder Avenue bridge, then along the southern shore of Whatcom Waterway west to the western extent of Area 10. The majority of the shoreline contains bulkheads, pile-supported over-water pier structures, wharfs, riprap, or combinations of these to facilitate maritime industrial operations. Sloped shoreline area is limited to the head of I & J Waterway, around the perimeter of the ASB (waterward of the riprap breakwater), at the log pond, and at the western terminus of Cornwall Avenue in Area 9.

The aquatic habitat on and adjacent to the New Whatcom site is utilized by numerous anadromous salmonid species. While many species of salmonids may be present in nearshore estuarine and marine waters of Bellingham Bay, those species that enter saltwater early during their first year (some chinook, chum, and pink salmon) are typically considered to be more nearshore reliant. These fish are predominantly surface oriented, inhabiting the top three to six feet of the water column moving in and out with the tides over shallow subtidal and intertidal areas.

These juvenile salmon are nearshore dependent for two main reasons: forage opportunities and refuge from larger, deeper water predators. They feed on organisms at the water-substrate interface (epibenthos), in the water column (plankton), and at the surface (neuston). A number of physical and biological factors in the nearshore environment interact to create conditions that can enhance or detract from forage and refuge opportunities. Four physical factors in particular, tidal elevation, substrate type, and slope, and salinity influence habitat suitability for these fish, all of which can be modified by exposure to current or waves. Habitat that optimizes each of these factors represents high quality habitat for juvenile salmonids (refer to **Appendix H** for detail on these habitat factors).

The specific aquatic habitat conditions associated with each of the Redevelopment Areas is presented below.

Redevelopment Area 1

Area 1 contains approximately 0.6 linear miles of completely developed shoreline dominated by maritime industrial uses. Creosote timber pile-supported piers and floating docks are present along the I & J and Whatcom Waterways. Both timber and concrete bulkheads are present along the entire southern shoreline of the I & J Waterway and along much of the Whatcom Waterway within Area 1. Riprap is present along the portions of the shoreline in Whatcom

Waterway that do not have a bulkhead. Small areas of more gently sloped shoreline with finer substrate are located at the head of I & J Waterway and at the northern corner of the ASB. Approximately 33 percent of the shoreline of Area 1 has bulkheads (both timber and concrete), 25 percent consists of piers/docks with riprap or bulkhead shorelines, 22 percent consists of sloped, medium to fine substrate shoreline, and 20 percent consists of riprap with no pier or dock coverage. Because approximately 80 percent of the shoreline contains infrastructure that decreases habitat quality, aquatic habitat in Area 1 is considered to be of low quality.

The head of Whatcom Waterway is an estuarine environment, receiving freshwater input from Whatcom Creek. Whatcom Waterway and Whatcom Creek are used for migration and rearing by several species of anadromous salmonids. Spawning occurs in Whatcom Creek approximately one mile upstream of the mouth of the creek. Salmonids also use the shorelines in I & J Waterway; however, this area has higher salinity conditions than the inner portions of Whatcom Waterway, as I & J Waterway does not have a freshwater surface input. Therefore, use of I & J Waterway by juvenile salmonids is expected to be lower than Whatcom Waterway.

Redevelopment Area 2

Area 2 encompasses approximately 900 feet of the southern Whatcom Waterway shoreline, from the Roeder Avenue bridge approximately 900 ft west along the Waterway. This portion of shoreline is the most highly modified shoreline area on the site. Approximately 50 percent of the shoreline consists of creosote timber pile-supported over-water pier structures over bulkheads and/or riprap. Approximately 20 percent consists of sloped shoreline up to a bulkhead, with numerous cut pile stubs. The remaining approximately 30 percent consists of a vertical concrete bulkhead. The Area 2 shoreline provides low quality aquatic habitat.

Redevelopment Area 3

Area 3 encompasses approximately 300 feet of the southern Whatcom Waterway shoreline. The shoreline is highly developed and contains riprap/bulkhead slopes with creosote timber pile-supported over-water pier structure. This area provides low quality aquatic habitat.

Redevelopment Area 4

Area 4 encompasses approximately 1,100 lineal feet of the Whatcom Waterway southern shoreline. This portion of the shoreline includes creosote timber pile-supported over-water pier structures and bulkhead. A pier-supported building present on the shoreline extends southwest along the shoreline. Area 4 includes a portion of the “log pond” area, between the previously mentioned pier-supported building and the southern shoreline. The log pond area, which is no longer used for log storage or transfer, has been capped with sandy dredged material to isolate contaminated sediments and improve habitat conditions. The log pond consists of shallow water and sloping sandy shoreline up to a concrete block bulkhead. The portion of Area 4 with piers and bulkheads provides low quality aquatic habitat, while the log pond area provides high quality aquatic habitat.

Redevelopment Areas 5, 6 and 7

Areas 5, 6 and 7 contain no shoreline area or aquatic habitat.

Redevelopment Area 8

Area 8 contains approximately 700 linear feet of Whatcom Waterway shoreline, including a portion of the log pond. The shoreline consists of sandy substrates and slopes up to a mixed bulkhead and riprap bank. As described for the adjacent Area 4, the portion of Area 8 with piers and bulkheads provides low quality aquatic habitat, while the log pond area provides high quality aquatic habitat

Redevelopment Area 9

Area 9 encompasses approximately 2,300 linear feet of shoreline, including two perpendicular docks/piers and one pier that parallels the shoreline. Approximately 50 percent of Area 9 shoreline is riprap, 30 percent is pile-supported pier structure over riprap/bulkhead shoreline, and the remaining 20 percent is a bulkhead with pile-supported infrastructure. Area 9 includes the southwestern corner of the log pond, which contains a small amount of low-slope, fine substrate shoreline and approximately 375 linear feet of timber bulkhead. Overall, the northern and eastern shorelines of Area 9 provide low quality aquatic habitat, and the western shoreline provides low to moderate quality aquatic habitat.

Redevelopment Area 10

Area 10 includes approximately 2,600 linear feet of shoreline adjacent to Bellingham Bay. No over-water structures exist in Area 10, although numerous cut pile stubs are present along the shoreline. The shoreline in this area primarily consists of riprap/fill, with a small area of low-slope fine substrate at the western terminus of Cornwall Avenue (currently used as informal public access to the water). Patches of eelgrass are present at the north end and southwestern corner of this area. Substrate and slope are consistent with high quality aquatic habitats. The majority of Area 10 is an old municipal landfill, and in the past the refuse eroded onto the shoreline. However, this area provides relatively high quality aquatic habitat.

Aerated Stabilization Basin (ASB)

The inside of the ASB is currently utilized as an industrial water treatment facility and, because it is completely enclosed and separated from Bellingham Bay, provides no aquatic habitat. The bayward side of the ASB consists of a steeply sloped riprap breakwater down to approximately -6 feet MLLW. The breakwater then transitions to low-slope, fine substrate bottom habitat. Overall, the inside of the ASB contains no aquatic habitat and the bayside of the ASB provides approximately 3,500 linear feet of low quality aquatic habitat.

Wildlife

Puget Sound, Bellingham Bay, Whatcom Waterway, I&J Waterway and Whatcom Creek provide habitat for aquatic wildlife species. Aquatic wildlife species that may utilize aquatic habitat in the vicinity of the site are listed in **Table 3.4-1**.

Table 3.4-1
SPECIES POTENTIALLY UTILIZING AQUATIC HABITAT IN THE SITE VICINITY

Fish species	**Birds**	**Marine mammals**	**Crab**
Surf smelt	brant	Harbor seal	Purple crab
Sand lance	snow goose	Sea lion	Graceful crab
Pacific herring	mallard	Orca whale[1]	Red rock crab
Chinook salmon[1]	widgeon	Gray whale	Dungeness crab
Chum salmon	green-winged teal	Harbor porpoise	**Shrimp**
Coho salmon	pintail	**Bivalves**	Pink shrimp
Pink salmon	scoter	Butter clam	Coonstripe shrimp
Cutthroat trout	golden eye	Littleneck clam	Dock shrimp
Steelhead[1]	Glaucous-winged gull	Horse clam	Spot shrimp
Bull trout[1]	Pigeon guillemonts	Soft-shell clams	**Aquatic vegetation**
Numerous groundfish species	Bald eagle	Cockles	Eelgrass
	Peregrine falcon	Geoducks	**Macroalgae**
	Marbled murrelet	Oysters	Green algae

Source: Grette Associates, 2007
[1]Federal Threatened or Endangered Species

Threatened and Endangered Species

Under the Endangered Species Act (ESA), a species likely to become extinct is categorized as "endangered." A species likely to become endangered within the foreseeable future is categorized as "threatened." Threatened and Endangered species likely to utilize aquatic habitat on or in the vicinity of the site are described below.

- **Bald Eagle:** The bald eagle was removed from the Endangered Species list on June 28, 2007, effective August 9, 2007. Bald eagle is included in this Draft EIS due to the recent delisting. Bald eagle nest sites occur in the Nooksack River delta along the shoreline and in inland areas of the Lummi Peninsula, approximately 4 miles from the site. There are also nests along Chuckanut Bay and the shoreline of Portage Island (approximately 3.5 and 6 miles from the site, respectively). Nesting eagles generally forage within 10 square miles of their nest site. Thus, while the site does not have eagle nests, it may provide foraging habitat.

- **Marbled Murrelet:** The U.S. Fish & Wildlife Service has listed marbled murrelet as "threatened". Open water concentrations of marbled murrelets have been recorded in the central portion of Bellingham Bay. The species forages year round in waters generally less than 90 feet deep, sometimes congregating in well-defined areas where food is abundant. These birds generally do not utilize shallower waters less than 30 feet deep. Marbled murrelets reportedly feed on a wide variety of prey, including sand lance, Pacific herring, and other marine taxa such as crustaceans. Murrelets nest in old growth or mature forest composed of conifers, including Douglas fir, western red cedar, Sitka spruce, and western hemlock. There are no known nest sites along the shoreline of Bellingham Bay.

- **Chinook Salmon:** The National Marine Fisheries Service (NMFS) has listed the Puget Sound chinook salmon as a "threatened" species. Two races of chinook salmon (spring and fall) are found in Bellingham Bay. Fall chinook is the most common run of chinook salmon observed in Puget Sound. Juvenile fall chinook generally emigrate to the estuary between February and August as sub-yearlings (within the first year after being spawned) or as yearlings. Individual fish may only use Bellingham Bay for a period of days to a few weeks before heading into the greater Puget Sound estuary.

- **Steelhead:** On June 11, 2007, the National Oceanic and Atmospheric Administration (NOAA) finalized listing of Puget Sound steelhead (*Oncorhynchus mykiss*) as a "threatened" species (NOAA 2007). Winter steelhead are present in Squalicum, Whatcom and Padden Creeks, indicating that steelhead use the site area as a migratory path.

- **Bull Trout:** Bull trout are listed as a threatened species under the ESA. Bull trout likely use the Whatcom Waterway as a refuge and rearing area.

- **Southern Resident Orca Whales:** On November 15, 2005, the National Oceanic and Atmospheric Administration (NOAA) Fisheries announced its decision to list the North Pacific Southern Resident orca whale (*Orcinus orca*) population as endangered under the Endangered Species Act (ESA). The listing, effective on February 6, 2006, is specific to the three resident whale pods (J, K, and L pod) with spring through fall ranges in Puget Sound and the Straits of Georgia and Juan de Fuca. A number of factors have been identified by NOAA Fisheries as having resulted in the listing of these orca whales as endangered. Sound and disturbance from vessel traffic, toxic chemicals which accumulate in top predators, and uncertain prey availability (primarily salmon) all have been identified as concerns for the continued survival of this population.

  On November 29, 2006, NOAA designated critical habitat for Southern Resident orca whale, effective December 29, 2006. The site is located within areas that are designated as critical habitat for the Southern Resident orca whale. In the designation, three "specific areas" were established, in which Southern Resident orca whale critical habitat Primary Constituent Elements (PCEs) are found. Bellingham Bay is located within Area 1: Core Summer Areas, in which approximately 85 percent of all Southern Resident orca whale sightings occur. However, sightings in Bellingham Bay are infrequent. Sightings in Area 1 are most frequent on the western side of the San Juan Islands in Haro Strait and the Strait of Juan de Fuca.

3.4.2 Impacts

The potential for impacts under the alternatives relates to both existing upland and aquatic environments. In general, due to the developed industrial nature of the site and the low quality of existing habitat, redevelopment under Alternatives 1 through 3 would result in overall improvements to upland and aquatic habitat environments. The No Action Alternative (Alternative 4) would provide a lower level of aquatic improvement compared to Alternatives 1 through 3.

Alternatives 1 through 3 primarily include similar improvements to the shoreline and in-water environment, and aquatic conditions would be generally the same under the Redevelopment Alternatives. Upland habitat features (including shoreline vegetation, parks and open space)

differ somewhat among Alternatives 1 through 3; although upland habitat would be improved under all Redevelopment Alternatives, Alternative 1 (which features the greatest amount of new public parks and open space) would result in the greatest upland habitat and Alternative 3 (which features the lowest amount of new public parks and open space area) would result in the least increase in upland habitat. The No Action Alternative would provide no new public park area and would not provide any upland habitat improvement.

The following discusses potential construction and operational impacts associated with redevelopment under the EIS Alternatives.

Alternative 1 - 2016

Construction

Upland Habitat

Redevelopment Area 1 – Construction in Area 1 would be associated with upgrades to the road system, building demolition, building construction, parking development, ground disturbance, paving, and vehicle/machinery use. The new roads, road upgrades and road extensions would typically pass through existing paved or graveled areas. A pedestrian/bicycle trail would be constructed along C Street from Roeder Avenue to the new marina, using the existing roadway. Additionally, parking development, paving and building construction associated with the marina would occur in Area 1. These elements would occur in areas currently devoid of native vegetation or habitat and would thus have negligible impacts on habitat.

Approximately 2.95 acres of new park and shoreline vegetation would be constructed along the shoreline between the marina and Area 1 and between the I&J Waterway and the marina. These elements would convert existing area that consists mainly of weedy vegetation and low quality habitat to parks/open space, including the planting of trees and additional vegetation. Enhancement of vegetation would increase upland habitat in an area that is essentially currently devoid of vegetation. Vegetation and trees in upland park area would provide songbird habitat.

Any stormwater runoff resulting from ground disturbance during construction would have the potential to create temporary erosion and sedimentation impacts. Activities that have the potential for erosion include removal of structures, placement and compacting structural fill, and stockpiling of soils. Appropriate measures would be implemented to minimize this risk (refer to Section 3.3, **Water Resources**, for more information on water quality issues). The potential for impacts and implementation of BMPs would apply to all site construction throughout each of the redevelopment areas.

Redevelopment Area 2 – Redevelopment in Area 2 would include the construction of upland vegetation and shoreline habitat restoration totaling 2.89 acres along approximately 0.17 mile of the Whatcom Waterway shoreline (south side). Primarily consisting of shoreline vegetation buffer and shoreline park area, enhancement of vegetation would benefit upland habitat in an area that is essentially currently devoid of vegetation. Vegetation and trees in upland park area would provide songbird habitat, while the shoreline buffer would provide habitat for a wider range of species. The shoreline vegetation would also increase the quality and function of the adjacent aquatic habitat through the provision of shoreline shading, sources of organic input and food source (insects). These elements would be constructed in existing paved/unvegetated areas and would not result in construction impacts to habitat (refer to the *Aquatic Habitat*

discussion below for a discussion of the existing bulkhead features to be removed to accommodate the restored natural shoreline).

Redevelopment Area 3 – Approximately 1.63 acres of new shoreline vegetation, shoreline park and pocket park area would be constructed in Area 3. Additionally, building demolition, building construction, parking development, ground disturbance, paving, road construction, railroad relocation, and vehicle/machinery use associated with upland construction would occur. Vegetation in Area 3 would increase through the installation of trees and other vegetation in association with the shoreline vegetation buffer and the new parks and trails. Enhancement of vegetation would benefit upland habitat in an area that is essentially devoid of vegetation. These elements would be constructed in existing paved/unvegetated areas and would not result in construction impacts to habitat.

Redevelopment Area 4 – Redevelopment in Area 4 would include the construction of approximately 4.87 acres of new shoreline vegetation and park area. Additionally, building demolition, building construction, parking development, ground disturbance, paving, road construction, and vehicle/machinery use associated with upland construction would occur. The only habitat present in Area 4 is the limited band of non-native vegetation along the shoreline of the log pond area. Construction of the shoreline vegetation buffer would replace the existing limited habitat with native riparian species. This vegetation would provide riparian habitat benefits and would result in improved habitat conditions. Upland improvements would be constructed in existing paved/unvegetated areas and would not result in construction impacts to habitat.

Redevelopment Area 5 – Area 5 currently does not contain upland habitat. Construction associated with Area 5 would include, building demolition, building construction, ground disturbance, paving, road construction, railroad relocation, and vehicle/machinery use associated with upland construction. These construction activities would be anticipated to have no impact to upland habitat, given the lack of habitat present. The installation of landscaping associated with new buildings and roadways would improve upland habitat conditions.

Redevelopment Area 6 – No construction would occur in Area 6 by 2016 (the PSE Encogen facility is assumed to remain in operation through 2016) and no impacts or improvements to upland habitat would occur.

Redevelopment Area 7 – Construction in Area 7 would include roadway development, building demolition, building construction, ground disturbance, paving, vehicle/machinery use and relocation of the existing railroad corridor to the southeast side of Area 7. The new Laurel Street bridge would pass over a section of existing vegetation that would result in minor impacts to plants and animals habitat in this area. The relocated railroad would utilize existing railroad infrastructure, railroad bed and track area that is already present along the southeastern side of Area 7 where the railroad would be located. While this existing infrastructure would require upgrades and repairs, little new construction would be necessary. No significant impacts to habitat are expected from construction in Area 7.

A potential wetland complex is located southeast of Areas 7 and 10, outside of the site (refer to **Appendix H** for detail on this potential offsite wetland area). Redevelopment actions would be expected to have minor impacts to off-site wetlands in the complex. Ground disturbance and stormwater runoff could potentially affect this wetland complex during construction, but would be managed with BMPs to ensure that sediment does not enter the adjacent wetland complex.

The extension of Laurel Street (bridge) would pass over the northern edge of the offsite vegetated area that contains the potential wetland complex, but would not be anticipated to directly affect any wetlands. The bridge structure would be subject to a future permitting and environmental review process; the potential for wetland and habitat impacts could be further evaluated at that time.

Redevelopment Area 8 – Redevelopment in Area 8 would include the construction of approximately 5 acres of new shoreline buffer and park area. Additionally, building demolition, building construction, parking development, ground disturbance, paving, road construction, and vehicle/machinery use associated with upland construction would occur. The new shoreline vegetation and park would convert mainly paved/unvegetated areas to parks/open space, with the exception of the limited shoreline vegetation currently located along the bulkhead adjacent to the log pond. This existing vegetation would be replaced with native riparian vegetation. Enhancement of vegetation (shoreline buffer and upland parks) would benefit upland habitat in an area that is essentially devoid of vegetation. Construction elements would occur in existing paved/unvegetated areas and would not result in significant impacts to habitat.

Redevelopment Area 9 – Upland construction in Area 9 would include building demolition, building construction, parking development, road construction/ improvement, and approximately one acre of shoreline park area. Construction would convert existing paved/unvegetated area and low quality habitat to parks/open space, including the planting of trees and additional vegetation. Upland vegetation and wildlife habitat is extremely limited in Area 9; thus, upland construction would have minor impacts on these existing features. Vegetation in this area would be increased through the installation of trees and other vegetation in association with the parks, and would occur in an area that is currently devoid of vegetation, thereby increasing upland habitat in this Area. Construction elements would occur in existing paved/unvegetated areas and would not result in significant impacts to habitat.

Redevelopment Area 10 – Redevelopment in Area 10 would include the construction of approximately 8.6 acres of new shoreline buffer, shoreline park and trail area. Construction associated with development of buildings, parking and roadways would occur. Existing non-native weedy vegetation would be replaced with new native vegetation through the installation of trees and other vegetation in association with parks and trails; this would convert existing low to moderate quality habitat to moderate quality habitat. Enhancement of vegetation (shoreline buffer and upland parks) would benefit upland habitat in an area that is dominated by non-native weedy vegetation. Building and parking development would result in ground disturbance and other construction-related impacts. These are expected to have minor impacts on habitat.

Site visits did not reveal any evidence of stormwater runoff from the potential offsite wetland complex to the south reaching the shoreline of Area 10; however, the runoff may drain to the beach as groundwater. Redevelopment actions in Area 10 would not be anticipated to result in impacts to this wetland complex or its associated stormwater runoff. If stormwater runoff drains through the site, this runoff would be properly managed and directed to the shoreline for discharge per City of Bellingham requirements.

Aerated Stabilization Basin (ASB) – Construction in this area would include creation of parks/open space along the top of the existing rip rap breakwater enclosing the marina. This would provide new upland habitat in an area where such habitat does not currently exist.

Aquatic Habitat

In general, substantial benefits to aquatic habitat at the New Whatcom site would result from redevelopment. Redevelopment activities under Alternatives 1 through 3 would include a reduction in over-water coverage, removal of creosote-treated piles, reduction of steel piles, conversion of bulkhead or riprap to sloped shoreline, and extensive riparian and aquatic habitat restoration/enhancement. The amount of aquatic habitat improvement is assumed to be generally similar under Alternatives 1 through 3.

Redevelopment Area 1 – Aquatic improvements in Area 1 would include beach habitat restoration at the head of I & J Waterway, two new transient moorage floats along the northern edge of the Whatcom Waterway and a pedestrian bridge suspended over the Whatcom Waterway. Construction of transient moorage would entail pile driving and the use of construction machinery. Potential construction impacts to aquatic resources would include noise from pile driving and construction machinery, temporary turbidity from pile driving, and the potential for spills of materials from construction machinery; with implementation of proposed mitigation measures to minimize the potential for water quality impacts during construction, significant impacts would not be anticipated (see **Mitigation Measures** later in this section for detail). In addition, construction of the transient moorage floats would be timed to not coincide with peak salmonid use of the Whatcom Waterway, to further minimize the potential for significant impacts to salmonids during construction.

Under Alternative 1, it is assumed that a pedestrian bridge between Areas 1 and 3 would be constructed over the Whatcom Waterway to connect the proposed trail system north of the waterway to the trail system south of the waterway. As currently planned, the bridge would be approximately 500 ft long by a maximum of 20 ft wide and would encompass approximately 0.23 acres in area. The bridge would be elevated above the water and would open (vertically or horizontally) to allow passage of larger boats at the transient moorage proposed to be constructed along the northern and southern edges of the Whatcom Waterway. No in-water structures would be required for the bridge, as it is assumed that the bridge would span the waterway. Due to its height above the water, the bridge would not result in significant shading impacts on the water, as would typically occur with a pier or dock, and no in-water piers are anticipated. Significant impacts to aquatic habitat associated with construction of the pedestrian bridge would not be anticipated.

New transient moorage floats would be constructed parallel to the northern edge of the Whatcom Waterway along Area 1. The floats are designed to minimize impacts on aquatic habitat. The floats would be positioned offshore in subtidal habitat rather than in shallow subtidal habitat to minimize shading impacts on nearshore habitat. The floats along Area 1 would result in 0.74 acre of over-water coverage, 0.72 acre of which would be over subtidal habitat (deeper than -10 ft MLLW), and 0.02 acre over intertidal/shallow subtidal habitat (shallower than -10 ft MLLW). These floats would require 64 new piles.

The small increase in over-water coverage (0.72 acre) in the subtidal zone is unlikely to affect habitat productivity as a result of shading. Further, the proposed moorage dock would be narrow enough that substantial light would penetrate under it from the margins. Overall, it is unlikely that the moorage floats would result in decreased habitat productivity at the site due to the small increase in area coverage of the transient moorage and its location over subtidal habitat.

If steel piles are used to anchor the moorage floats, and if they are driven with an impact hammer, there is potential for noise to be generated that could affect aquatic species on a temporary basis. (See **Mitigation Measures** later in this section for detail on measures to minimize noise impacts to aquatic species.) With implementation of proposed mitigation measures, significant impacts to aquatic resources from construction of the moorage floats would not be anticipated.

No dredging would occur as part of Alternatives 1 through 3. Turbidity that would be generated by pile driving would not reach levels that would be expected to impact aquatic species.

Accidental spills of chemicals could occur in conjunction with construction. As part of the proposed BMPs, the construction contractor would be responsible for the preparation of spill response and hazardous material control plans to be used for the duration of the construction period. The plan would outline measures to be taken to prevent the release or spread of hazardous materials, including (but not limited to) gasoline, oils, and chemicals (see **Mitigation Measures**).

Redevelopment Areas 2, 3 and 4 – In-water improvements described here include the entire shoreline that encompasses Areas 2, 3, and 4. In-water work would span the boundaries of these areas, thus they are discussed together and conclusions apply to the combined Areas 2, 3 and 4 shorelines. Shoreline work would include removal of existing concrete piers and associated piles, removal of bulkhead, and cut/fill of approximately 3,000 linear feet to create a sloped shoreline. The intent of these removal activities would be to allow for the creation of a natural shoreline along the southern edge of the Whatcom Waterway and resulting habitat improvements.

Existing over-water structures along the south side of the Whatcom Waterway (along the northern edge of Areas 2, 3 and 4) would be removed, which currently encompass 2.27 acres; 1.59 acres of this structure area is over intertidal or shallow subtidal habitat and 0.68 acre is over subtidal habitat. 560 creosote-treated piles would be removed; 392 of these are in shallow subtidal habitat, and 168 are in subtidal habitat.

New transient moorage floats would be constructed parallel to the southern edge of the Whatcom Waterway. Similar to the north side of the waterway, the floats along Areas 2, 3 and 4 would result in 0.74 acre of over-water coverage, 0.72 acre of which would be over subtidal habitat (deeper than -10 ft MLLW), and 0.02 acre over intertidal/shallow subtidal habitat (shallower than -10 ft MLLW). These floats would require 64 new piles.

The result of these actions (i.e. removal of existing bulkhead and creation of restored natural shoreline, and provision of transient moorage floats) would be a substantial net reduction (1.5 acres) of over-water coverage in intertidal/shallow subtidal habitat within the Whatcom Waterway. The majority of new over-water coverage would occur in subtidal habitat (which is not considered high quality habitat); such coverage would increase by approximately 0.8 acre. Refer to **Table 3.4-2**, later in this section, for a summary of the net new and enhanced aquatic habitat resulting from the proposed in-water improvements.

Potential construction impacts to aquatic resources from the removal of existing shoreline features would include temporary turbidity from pile and bulkhead removal, potential for releasing debris into the water, noise from machinery, and potential spills of harmful materials from machinery. With implementation of the proposed mitigation measures, impacts associated

with turbidity and accidental spills during construction would not be anticipated to result in significant impacts to aquatic resources. As part of future state and federal permitting, measures would be required to avoid or minimize these potential impacts.

Removal of existing piers could cause temporary, localized turbidity during removal of piles. Debris from removed or demolished in-water elements could be accidentally released into the water during demolition and removal of existing piers and docks. There is a small risk of accidental spills of chemicals occurring in conjunction with machinery operation. With implementation of proposed mitigation measures, significant impacts associated with turbidity and accidental spills during removal of existing facilities would not be anticipated.

Redevelopment Area 5, 6 and 7 – Areas 5, 6 and 7 consist entirely of upland area, with no aquatic habitat associated with these areas; no impacts to aquatic habitat would result.

Redevelopment Area 8 – The shoreline of the log pond in Area 8 would be restored to beach and marsh habitat. This would benefit aquatic habitat in the vicinity of the Whatcom Creek Estuary. These shoreline habitat restoration actions would result in high quality habitat that would benefit the aquatic environment by restoring/enhancing the degraded Whatcom Waterway estuary (see **Appendix H** for detail on habitat benefits to aquatic resources).

Redevelopment Area 9 – The northeast shoreline of the log pond in Area 9 would be restored to beach and marsh habitat, similar to that described for Area 8. Similar to improvements in Area 8, these shoreline habitat restoration actions would result in high quality habitat that would benefit the aquatic environment by restoring/enhancing the degraded Whatcom Waterway estuary. As under the No Action Alternative, minor in-water/over-water improvements at the BST will be implemented by the Port; refer to the discussion under the **No Action Alternative** for description and analysis of impacts from these minor improvements.

Redevelopment Area 10 – Beach habitat restoration features resulting in beach and marsh habitat would be provided at the foot of Cornwall Street. These beach and marsh features would result in high quality habitat that does not currently exist.

Aerated Stabilization Basin (ASB) – A marina is planned to be developed by the Port within the remediated ASB, with or without redevelopment of the New Whatcom site. Marina Concept B would be developed under the No Action Alternative; Marina Concept A would be developed under Alternatives 1 through 3 (see **Chapter 2** for more information on the marina concepts). Marina Concept A would differ from Marina Concept B by providing a different configuration of slips, providing public parks along the surrounding breakwater berm and providing additional in-water habitat features within the marina basin. For purposes of this analysis, it is assumed that the marina would be fully constructed and operational by 2016.

Construction of a marina in the ASB (under either Marina Concept A or B) would include the opening of the ASB to Bellingham Bay by breaching the existing berm and creating approximately 28 acres of new aquatic habitat. However, the configuration and aquatic habitat features of the two marina concepts would differ in that more in-water habitat would be placed waterward of the breakwater under Marina Concept A than under Marina Concept B (requiring 200,000 cubic yards of fill for Concept A versus 20,000 cubic yards for Concept B) and the overall amount of intertidal and shallow subtidal habitat (highest quality habitat areas) not covered by structures would be greater under Marina Concept A.

Marina Concept A would result in the creation of approximately 4.69 acres of new intertidal and shallow subtidal aquatic habitat, 0.01 acre of which would be covered by structures. Marina Concept A would also create approximately 23.30 acres of new subtidal aquatic habitat, 2.77 acres of which would be covered by structures. Shallow habitat benches would be created around the perimeter of the breakwater to benefit juvenile salmonids. A fish passage would be created in the breakwater at the opposite end from the entrance to the marina to facilitate fish migration. These features would represent a significant benefit to aquatic habitat by providing a substantial net gain in aquatic area and by enhancing salmonid habitat.

Under Marina Concept A approximately 300 piles would be installed to support 2.77 acres of floats and ramp structures. Noise associated with pile driving could temporally affect aquatic species, although the breakwater berm would contain the noise within the basin, which would minimize the potential reach of noise impacts.

Approximately 200,000 cubic yards of fill would be placed along the breakwater to reconfigure the breakwater for a marina and to create shallow aquatic habitat benches. Placement of fill inside the breakwater would be contained within the basin, limiting the potential reach of temporary impacts from turbidity. Placement of fill outside the breakwater could result in temporary turbidity, minor construction noise, and the potential for spills of hazardous material. These impacts would be minimized by BMPs listed in **Mitigation Measures** later in this section.

Overall, due to its current degraded state and isolation from Bellingham Bay, redevelopment of the ASB as a marina would result in substantial benefits through the creation of new aquatic habitat and provision of beach habitat. The overall aquatic benefits associated with Marina Concept A would be greater than those associated with Marina Concept B, although both marina concepts would benefit aquatic habitat conditions (additional discussion on Marina Concept B, and comparison with Marina Concept A is provided later in this section under the **No Action Alternative**).

Aquatic Habitat Summary – **Table 3.4-2** summarizes the changes in aquatic habitat under the Redevelopment Alternatives (Alternatives 1 through 3 with Marina Concept A). As indicated in **Table 3.4-2**, the result of proposed over-water and in-water improvements under the Redevelopment Alternatives (including removal of piers/wharfs, natural shoreline features, development of temporary moorage floats and development of a marina) would be a net increase in new or enhanced aquatic habitat in the Whatcom Waterway and marina basin.

Specifically, intertidal and shallow subtidal over-water coverage in Whatcom Waterway would be reduced by 1.53 acres, substantially improving nearshore juvenile salmonid habitat. Increases in over-water coverage would occur in subtidal habitat, where the resultant shading would not result in significant adverse impacts in aquatic habitat. Approximately 2.4 acres of new sloped shoreline would be provided in place of bulkheads on the south side of the Whatcom Waterway, also substantially improving aquatic habitat. Approximately 4.7 acres of intertidal and shallow subtidal habitat and approximately 20.5 acres of unshaded subtidal habitat would be provided in association with the marina.

Table 3.4-2
CHANGES IN AQUATIC HABITAT ASSOCIATED WITH ALTERNATIVES 1 THROUGH 3

New Intertidal & Shallow Subtidal Habitat (marina)	
not covered by structures (acres)	4.69
covered by structures (acres)	0.01
New Subtidal Habitat (marina)	
not covered by structures (acres)	20.53
covered by structures (acres)	2.77
Marina Subtotal	**28**
Changes to Intertidal & Shallow Subtidal Habitat (Whatcom Waterway)	
Net reduction in over-water coverage (acres)	1.53[1]
slope or substrate enhanced (acres)	0.88[2]
Changes to Subtidal Habitat (Whatcom Waterway)	
Net increase in over-water coverage (acres)	- (0.75)[3]
slope or substrate enhanced (acres)	0
Net Whatcom Waterway Subtotal	**1.66**
Total Net New/Enhanced Habitat	**29.66**
Creosote piles removed (number)	560

Source: Grette Associates, 2007

[1] Includes removal of 1.59 acres of intertidal/shallow subtidal coverage through demolition of south Whatcom Waterway pier/wharfs and addition of 0.06 acre of new intertidal/shallow subtidal coverage from ramps associated with transient moorage float ramps: **overall decrease in intertidal/shallow subtidal coverage is 1.53 acres.**

[2] 1,500 feet of shoreline by 70 feet wide (below MHHW) along the southern edge of the Whatcom Waterway would be enhanced after removal of the pier/wharf/bulkhead. Total area of slope or substrate enhancement would be 2.41 acres, most of which would be in the area of the removed pier/wharf/bulkhead. To avoid double-counting of area, this total includes only the enhanced slope area that is not counted as reduction in over-water coverage.

[3] Includes removal of 0.68 acre of subtidal coverage through demolition of south Whatcom Waterway pier/wharfs and addition of 1.43 acres of new subtidal coverage associated with transient moorage floats and ramps: **overall increase in subtidal coverage is 0.75 acres.**

Operations

Upland Habitat

In general, impacts to upland habitat relate to the elimination of existing habitat or creation of new habitat features on the site that could decrease or increase the amount or value of habitat on the site; upland conditions associated with elimination of habitat and creation of new upland habitat are discussed under Construction. Operational characteristics of redevelopment (including traffic, noise and air pollution) would be typical of urban environments and would not

be anticipated to significantly impact either existing upland habitat or new upland habitat established on the site.

The existing potential forested wetland complex located immediately south of Areas 7 and 10 would not be anticipated to be significantly impacted by operation of new uses on the site or by operation of trains on the relocated railroad corridor.

Aquatic Habitat

In general, operational impacts to aquatic habitat relate to the potential for water pollution associated with stormwater runoff on the site, as well as increased activity in the water environment, including the potential for increased boat use.

Redevelopment Area 1 – Three new stormwater outfalls would be constructed in Area 1 to accommodate stormwater runoff from this area (Outfalls F, G, and H; see Section 3.3, **Water Resources**). Stormwater runoff originating on all pollution-generating surfaces (i.e. roadways and parking areas) would be treated prior to discharge to Bellingham Bay via water quality facilities. Treatment facilities would be provided consistent with the Ecology 2005 Stormwater Management Manual and City of Bellingham requirements. Stormwater runoff originating from roofs constructed with inert materials (i.e. non-pollution generating surfaces) would be conveyed directly to outfalls. New stormwater infrastructure would improve the overall quality of water discharged into Bellingham Bay, compared to existing conditions, representing operational benefits to area aquatic habitat. In addition, the specific location of the outfalls would be sited so as to maximize the provision of treated freshwater to the Bay to provide additional support to saltmarsh vegetation.

The use of new transient moorage floats along the northern edge of the Whatcom Waterway would result in the potential for operational impacts associated with recreational boat traffic and increased risk of spills of harmful materials. With implementation of proposed mitigation measures, significant impacts related to spills associated with boating activity would not be anticipated. Boat traffic could also result in a negligible increase in the risk of disturbance on Southern Resident orca whale (see discussion below of the marina, the potential for impacts in the Whatcom Waterway associated with boat traffic, and the potential for whale disturbance in Bellingham Bay).

Recreational boats utilizing the transient moorage facilities (and marina) would produce wakes as they enter and exit the Whatcom Waterway. Boat wakes could create the potential to disturb sediments in intertidal and shallow subtidal areas, and create the potential for shoreline erosion; these wakes could potentially affect newly restored sloped shoreline along the southern edge of the Whatcom Waterway. However, wakes produced by boats are typically substantially smaller than natural wind-driven waves. Although vessel wakes can be additive to natural waves, this potential is limited by human behavior and navigation patterns (i.e. recreational boat traffic is generally curtailed during periods of storm activity). Additionally, because historic and current industrial-related boat traffic in the Whatcom Waterway would be replaced by generally smaller recreational boats, the size of boat wakes would be reduced from current conditions. Thus, considering that wakes produced by recreational boats would be smaller than natural wind-driven waves, and that wakes associated with recreational boats would be generally smaller than wakes associated with current industrial boat activity, significant impacts to subtidal and shoreline areas from boat wakes would not be anticipated.

Redevelopment Area 2, 3 and 4 – Up to three new stormwater outfalls would be constructed in Areas 2, 3 and 4 to accommodate stormwater runoff from this area (Outfalls A, B, and C; see Section 3.3, **Water Resources**). Two of the outfalls would be new; one located in Area 2 (Outfall A) and one in Area 4 (Outfall C). Stormwater would be treated as described under Area 1 and would result in similar operational benefits to water quality. Existing stormwater outfalls that discharge runoff from offsite areas would not be affected by redevelopment on the site, and would continue to discharge at these present locations.

The use of new transient moorage floats along the southern edge of the Whatcom Waterway would result in the potential for operational impacts related to recreational boat traffic and risk of spills of harmful materials. With implementation of proposed mitigation measures, significant impacts related to spills associated with boating activity would not be anticipated. As described for Area 1 above, boat traffic could also result in a negligible increase in the risk of disturbance on Southern Resident orca whale (see Marina section below for a further discussion on the potential for impacts in the Whatcom Waterway associated with boat traffic, and on the potential for whale disturbance in Bellingham Bay).

The potential for wake impacts associated with recreational boats would be as described for Area 1; significant impacts would not be anticipated.

Redevelopment Area 5, 6 and 7 – Areas 5, 6 and 7 contain no aquatic habitat and redevelopment would not result in the potential for direct operational impacts to aquatic habitat. Stormwater runoff generated on Areas 5, 6 and 7 would be treated and conveyed to Bellingham Bay via water quality facilities and outfalls in Areas 2, 3 and 4; runoff from the western portion of Area 6 would discharge at a new outfall (Outfall E). Proposed stormwater treatment facilities would result in improved water quality compared to existing conditions and would represent an overall benefit to aquatic habitat.

Redevelopment Area 8 – No new outfalls would be constructed in Redevelopment Area 8; stormwater from Area 8 would be conveyed to Bellingham Bay via water quality facilities and new outfalls in Areas 2, 3 and 4; runoff from a small portion in the southwest corner of the area would discharge via Outfall E in Area 6. Stormwater would be treated as described under Area 1 and would represent similar operational benefits to water quality.

Redevelopment Area 9 – Existing Outfall D would be reconstructed to accommodate stormwater runoff from Area 9. Runoff from a portion of Area 9 would be accommodated by Outfall E in Area 6. Stormwater would be treated as described for Area 1 and would represent operational benefits to water quality.

Redevelopment Area 10 – Stormwater in Area 10 would be treated and directed to Bellingham Bay via multiple linear dissipaters. Proposed stormwater treatment facilities would result in improved water quality compared to existing conditions and would represent an overall benefit to aquatic habitat.

Marina – As indicated earlier, Bellingham Bay is located within Southern Resident orca whale Specific Area 1 (Core Summer Areas); the majority of Area 1 sightings of orca whales occur around and west of the San Juan Islands. The boat traffic resulting from moorage in the marina, as well as boat traffic associated with transient moorage facilities, could result in a slightly increased risk of Southern Resident orca whale disturbance through more small recreational vessels traveling through whale core habitat. However, the increase in small recreational

vessels would be offset by a decrease in large vessels associated with industrial uses as a result of redevelopment (see **Appendix I** for more details). Therefore, a significant increased risk of disturbance to Southern Resident orca whale would not be expected. Further, NOAA has established guidelines for whale watching boats to minimize disturbance to whales. The Port would establish programs to educate boaters, consistent with NOAA guidance and subsequent updates, on how to avoid disturbing Southern Resident orca whales.

Operation of the marina (and transient moorage facilities) could result in impacts to aquatic habitat typical of a marina, such as the potential for accidental spills of harmful materials and boat wakes. For the marina, it is proposed that operation of the marina adhere to the guidelines found in the Washington State Department of Ecology Resource Manual for Pollution Prevention in Marinas. These guidelines focus on reducing pollution such as discharge of oil or oil-based products during engine maintenance/repair and operation, hazardous materials used on-board or during repairs, trash and plastics, spill prevention/response, and the introduction of exotic species (refer to **Appendix G** for additional detail on water quality conditions associated with operation of the marina).

The potential for wake impacts associated with recreational boats would be as described for Area 1 and significant impacts would not be anticipated.

Alternative 1 - 2026

Upland Habitat

Impacts to upland habitat primarily relates to the elimination of existing habitat or creation of new habitat features. Because the site contains little to no existing upland habitat (depending on the specific area) and all new habitat features (in the form of shoreline buffer, parks and other open space features) are assumed to be provided by 2016, construction impacts in 2026 would be similar to those described for 2016.

However, certain roadway improvements assumed for 2026 would relate to existing upland habitat area. For example, the assumed Wharf Street Flyway would pass through the offsite vegetated slope area south of Area 7. This offsite vegetated area does not provide substantial upland habitat, although some wetland habitat may be located in this area; this flyway structure would be subject to a future permitting and environmental review process, and the potential for wetland and habitat impacts would be further evaluated at that time. Construction of other roadways and buildings by 2026 would not be anticipated to significantly impact upland habitat.

Although the amount of operational vehicle traffic, pedestrian traffic and noise on the site would be anticipated to be greater in 2026 than in 2016, these levels would be typical of urban environments and significant impacts to the newly created habitat in onsite park and shoreline buffer areas would not be anticipated.

Aquatic Habitat

As described under *Upland Habitat* above, all in-water and over-water features and construction work assumed on the site would occur by 2016; therefore, no additional impacts or enhancements to aquatic habitat is assumed to occur between 2016 and 2026.

Operational conditions associated with stormwater runoff quality and in-water activity (boat traffic) would be generally as described for 2016, and significant impacts would not be anticipated.

Alternative 2

Upland Habitat

Similar to Alternative 1, redevelopment under Alternative 2 would provide new shoreline buffer, parks and open space on the site and would result in an overall improvement to the upland habitat environment. However, the overall amount of new upland habitat would be less, with approximately 2 acres of shoreline buffer and 13 acres of public parks (compared to 2 acres of shoreline buffer and 26 acres of parks under Alternative 1).

As under Alternative 1, shoreline buffer area would be provided along the southern edge of the Whatcom Waterway in Areas 2, 3 and 4. Additional upland habitat features also provided under Alternative 2 include: park area at the head of the I and J Waterway and the shoreline park along the southern edge of the Whatcom Waterway (upland from the shoreline buffer). Overall, upland habitat conditions on the site would be substantially improved under Alternative 2 compared to existing conditions, although not to the extent as under Alternative 1.

Operational impacts to upland habitat associated with redevelopment (including increases in vehicle traffic, pedestrian traffic and noise) would be less than under Alternative 1; however, as under Alternative 1, these activities would be typical of urban environments and significant impacts to the newly created habitat in onsite park and shoreline buffer area, as well as to existing upland habitat in the immediate vicinity, would not be anticipated.

Aquatic Habitat

In-water and over-water features and work under Alternative 2 are assumed to be the same as described for Alternative 1, and impacts and benefits to aquatic resources would also be the same as those described for Alternative 1. However, the over-water pedestrian bridge spanning the Whatcom Waterway assumed under Alternative 1 would not be provided under Alternative 2.

Operational conditions under Alternative 2 would be similar to those described for Alternative 1, including the same number of stormwater outfalls to Bellingham Bay, and amount of boat traffic associated with the marina and transient moorage floats. As under Alternative 1, significant impacts associated with operations would not be anticipated.

Alternative 2A

Alternative 2A, a sub-alternative to Alternative 2, differs from Alternative 2 in that it is assumed that the relocation of the BNSF railroad corridor would occur by 2026 as opposed to by 2016. Upland and aquatic conditions associated with Alternative 2A would be similar to those under Alternative 2, although potential impacts to the offsite vegetated area south of Area 7 associated with relocation of the railroad corridor would be delayed to 2026. As under Alternative 2, significant impacts to upland and aquatic habitat from construction and operation of New Whatcom redevelopment would not be anticipated.

Alternative 3

Upland Habitat

Similar to Alternatives 1 and 2, redevelopment under Alternative 3 would provide new shoreline buffer, parks and open space on the site and would result in an overall improvement to the upland habitat environment. However, the overall amount of new upland habitat would be less, with approximately 2 acres of new shoreline buffer and 5 acres of parks (compared to 2 acres of shoreline buffer and 26 acres of parks under Alternative 1).

As under Alternative 1, shoreline buffer area would be provided along the southern edge of the Whatcom Waterway in Areas 2, 3 and 4. Upland habitat features provided under Alternative 1 that would not be provided under Alternative 3 include: park area at the head of the I and J Waterway, shoreline park along the southern edge of the Whatcom Waterway (upland from the shoreline buffer in Areas 2, 3 and 4) and park area in Area 10. Overall, upland habitat conditions on the site would be substantially improved under Alternative 3 compared to existing conditions, although not to the extent as under Alternatives 1 and 2.

Operational impacts to upland habitat associated with redevelopment (including increases in vehicle traffic, pedestrian traffic and noise) would be less than under Alternatives 1 and 2. As under Alternatives 1 and 2, these activities would by typical of urban environments and significant impacts to the newly created habitat in onsite park and shoreline buffer, as well as to existing upland habitat in the site vicinity, would not be anticipated. Because the BNSF railroad corridor would not be relocated, there would be no potential for impacts to the offsite vegetated area to the south of Area 7 as a result of railroad corridor relocation.

Aquatic Habitat

In-water and over-water features and work under Alternative 3 are assumed to be the same as described for Alternative 1, and impacts and benefits to aquatic resources would also be the same. The over-water pedestrian bridge spanning the Whatcom Waterway described for Alternative 1 would not be provided under Alternative 3.

Operational conditions under Alternative 3 would be similar to those described for Alternative 1. The number of new stormwater outfalls to Bellingham Bay would be the same as under Alternative 1, as would the anticipated boat traffic associated with the marina and transient moorage floats. As under Alternative 1, significant impacts to aquatic habitat associated with operations would not be anticipated.

Alternative 4 – No Action

The No Action Alternative assumes that future redevelopment of the site would be consistent with the existing industrial zoning designation. This alternative assumes future development of new light/marine industrial and warehouse uses, as well as reuse of certain existing industrial space. No new upland shoreline buffer or park habitat area would be provided. A marina would be developed within the remediated ASB. This marina (Marina Concept B) would differ from the marina assumed under Alternatives 1 through 3 (Marina Concept A) in that it would provide more slips (up to 600 compared to up to 460 under Marina Concept A), less in-water habitat, and no park or open space along the top of the breakwater berm.

Upland Habitat

Under the No Action Alternative, onsite roadways, buildings and parking areas could be provided on the majority of the site, including over existing low-quality vegetation habitat in Areas 1 and 10. No new shoreline buffer or park open space habitat would be provided on the site. On an overall basis, the amount and value of upland habitat on the site would be less, compared to substantial upland habitat enhancement under Alternatives 1 through 3.

Impacts to the offsite vegetated area to the south of Area 7 would be similar to those under Alternatives 1 through 3. Potential impacts to this offsite area associated with relocation of the BNSF railroad corridor would not occur (similar to Alternative 3).

Aquatic Habitat

Under the No Action Alternative, the aquatic benefits under Alternatives 1 through 3 associated with removal of existing over-water bulkhead/wharf features along the southern edge of the Whatcom Waterway (northern edge of Areas 2, 3 and 4), and restoration of the natural shoreline and creation of new in-water habitat (subtidal, intertidal and shallow subtidal habitat) in the Waterway would not be provided. The transient moorage floats within the Whatcom Waterway assumed under Alternatives 1 through 3, would also not be provided. The potential for temporary impacts to aquatic resources associated with removal of bulkhead/wharf and construction of the moorage floats would not occur.

To accommodate continued operations at the Port of Bellingham Shipping Terminal (BST), periodic maintenance and minor in-water/over-water improvements will be required at the BST (Area 9) with or without New Whatcom redevelopment. At the north pier of the BST, these improvements include: replacement of 400 linear feet of existing bulkhead with sheet piling; installation of 21 H-pile supports to support the sheet piling; and 3,600 cubic yards of backfill placed waterward of the MHHW (covering 8,000 square feet of area below the MHHM). At the south end of the BST, these improvements would include replacement of approximately 1,250 linear feet of main pier fender system, including removal of 105 creosote fender piles for replacement with 64 steel fender piles.

Potential impacts to aquatic resources from minor improvements at the BST would include the potential for temporary turbidity from pile and bulkhead removal, potential for release of debris into the water, noise from machinery, and potential spills of harmful materials from machinery. With implementation of identified mitigation measures, impacts associated with construction would not be anticipated to result in significant impacts to aquatic resources. Permit conditions as part of future state and federal permitting addressing such potential impacts would also be followed. These minor improvements would also be assumed as part of Alternatives 1 through 3.

Construction of a marina in the remediated ASB under either Marina Concept A or B would include the opening of the ASB to Bellingham Bay by breaching the existing berm and creating approximately 28 acres of new habitat. The configuration of Marina Concept B would differ from Marina Concept A (Alternatives 1 through 3) in that more boat slips would be provided and less in-water habitat area would be created (requiring 20,000 cubic yards of fill versus 200,000 cubic yards for Concept A), and the overall amount of intertidal and shallow subtidal habitat not covered by structures would be less. Potential impacts to aquatic resources associated with construction of Marina Concept B would be similar to those for Marina Concept A.

As indicated in **Table 3.4-3**, on an overall basis approximately 28 acres of net new and enhanced habitat would be provided under the No Action Alternative compared to approximately 30 acres under Alternatives 1 through 3.

The number of new outfalls to Bellingham Bay would be assumed to be the same as under Alternatives 1 through 3 and water quality treatment would be provided as part of new industrial development in compliance with Ecology and City of Bellingham requirements. Overall, water quality associated with stormwater runoff under the No Action Alternative would be somewhat poorer than under Alternatives 1 through 3; however, water quality would be within state standards (refer to Section 3.3, **Water Resources**, for detail).

Table 3.4-3
CHANGES IN AQUATIC HABITAT ASSOCIATED WITH ALTERNATIVES 1-4

	Alternatives 1-3, Marina Concept A	**Alternative 4 (No Action), Marina Concept B**
New Intertidal & Shallow Subtidal Habitat (Marina)		
not covered by structures (acres)	4.69	3.69
covered by structures (acres)	0.01	0.01
New Subtidal Habitat (Marina)		
not covered by structures (acres)	20.53	21.09
covered by structures (acres)	2.77	3.21
Marina Subtotal	**28**	**28**
Changes to Intertidal & Shallow Subtidal Habitat (Whatcom Waterway)		
Net reduction in over-water coverage (acres)	1.53[1]	0
slope or substrate enhanced (acres)	0.88[2]	0
Changes to Subtidal Habitat Whatcom Waterway)[1]		
Net increase in over-water coverage (acres)	- (0.75)[3]	0
slope or substrate enhanced (acres)	0	0
Whatcom Waterway Subtotal	**1.66**	**0**
Total Net New/Enhanced Habitat	**29.66**	**28**
Creosote piles removed[1] (number)	560	0

Source: Grette Associates, 2007

[1] Includes removal of 1.59 acres of intertidal/shallow subtidal coverage through demolition of South Whatcom Waterway pier/wharfs and addition of 0.06 acre of new intertidal/shallow subtidal coverage from ramps associates with transient moorage float ramps: **overall decrease in intertidal/shallow subtidal coverage is 1.53 acres.**

[2] 1,500 ft of shoreline by 70 ft wide (below MHHW) along south Whatcom Waterway would be enhanced by creating a shallower slope along with pier/wharf/bulkhead removal. Total area of slope or substrate enhancement would be **2.41 acres**, most of which is under the area where intertidal/shallow subtidal over-water coverage will be reduced. To avoid double-counting this area, this total includes only the enhanced slope area that is not included in net reduction of over-water coverage (2.41 minus 1.53).

[3] Includes removal of 0.68 acre of subtidal coverage through demolition of South Whatcom Waterway pier/wharfs and 1.43 acres of additional subtidal coverage from transient moorage floats and ramps: **overall increase in subtidal coverage is 0.75 acres.**

Indirect/Cumulative Impacts

Separate projects known to be planned or proposed on the site and in the site vicinity that relate to either upland or aquatic habitat resources are as follows:

Shipping Terminal Improvements – The Port of Bellingham is planning for potential use of the Bellingham Shipping Terminal (BST) in Area 9 by vessels associated with the National Oceanic and Atmospheric Administration (NOAA). To accommodate potential use of the BST by NOAA, the Port plans to develop two piers at the BST, with associated floats, fender system, piles, and gangway. These piers would encompass a total of 0.55 acres of intertidal/shallow subtidal coverage and 2.29 acres of subtidal coverage, and would include a total of 1,334 new piles (refer to **Figure 2-44** of **Chapter 2** for an illustration of the potential NOAA piers).

To accommodate the new piers, the existing chemical dock along with associated piles, catwalks, and rail spans in Area 9 would be demolished. This would remove 0.04 acre of intertidal/shallow subtidal coverage and 0.32 acre of subtidal coverage, and 354 creosote piles. Approximately 58,000 cubic yards of dredging would occur in this location, including both contaminated and clean sediment, to accommodate the piers and provide sufficient depth for navigation.

In addition to the demolitions and improvements associated with the new piers described above, additional improvements at the north pier and south end of the BST are planned, including new moorage dolphins with up to 120 associated piles. New catwalks would be constructed, encompassing 0.06 acre of subtidal over-water coverage. Old fender piles, catwalks, and catwalk piles would be demolished, including 121 piles and 0.03 acre of subtidal coverage.

Impacts to aquatic resources from planned improvements at the BST would include the potential for temporary turbidity from construction and demolition, potential for release of debris into the water, noise from machinery, and potential for spills of harmful materials. Mitigation measures similar to those identified for proposed in-water improvements under Alternatives 1 through 3 would likely minimize the potential for impacts to aquatic resources (see **Mitigation Measures** later in this section for such measures). Permit conditions as part of future state and federal permitting would also be followed.

The use of the new piers by NOAA vessels (or other large vessels) would result in the potential for impacts to intertidal/shallow subtidal areas, including the potential for wake impacts. However, given the anticipated infrequency of use by NOAA and the location of the piers primarily over deeper subtidal habitat area, significant impacts associated with ships utilizing the piers would not be anticipated. Further, the level of large vessel traffic would likely be similar to or less than historic navigation levels in this area of the Bay (see Section 3.12, **Transportation**, for more information on vessel traffic and navigation patterns).

Improvements along the South Side of the I & J Waterway – The Port anticipates that maintenance and certain in-water/over-water improvements will be required along the south side of the I & J Waterway. These improvements would include the construction of two new piers and floats, encompassing 0.02 acre of intertidal/shallow subtidal coverage and 0.16 acre of subtidal coverage, and up to 24 piles. Approximately 0.22 mile of bulkhead would be replaced with sheet pile bulkhead, including up to 58 H-piles. Existing piers would be demolished along with associated piles; this would result in the removal of 0.15 acre of existing

subtidal coverage and approximately 20 piles (refer to **Figure 2-45** of **Chapter 2** for an illustration of planned improvements).

Impacts to aquatic resources from planned improvements along the south side of the I & J Waterway would include the potential for temporary turbidity from construction and demolition, potential for release of debris into the water, noise from machinery, and potential for spills of harmful materials. Mitigation measures similar to those identified for proposed in-water improvements under Alternatives 1 through 3 would minimize the potential for impacts to aquatic resources. Permit conditions as part of future state and federal permitting would also be followed.

North Side of Whatcom Waterway Improvements – The Port contemplates that periodic maintenance and minor in-water/over-water improvements will be required to maintain the wharf/bulkhead along the northern edge of the Whatcom Waterway in the future. The Port anticipates that several piers along the north edge of the Whatcom Waterway would be demolished, removing 0.08 acre of intertidal/shallow subtidal over-water coverage; up to 10 dolphins would also be demolished, including approximately 40 creosote piles. These removed facilities would be replaced with new sheet pile bulkhead and H-piles (refer to **Figure 2-46** of **Chapter 2** for an illustration of planned improvements).

Impacts to aquatic resources from planned improvements along the north site of the Whatcom Waterway would be similar to those discussed under the south side of the I & J Waterway above, and significant impacts would not be anticipated.

Over-Water Trail to Boulevard Park – The City of Bellingham anticipates that it will design, permit and build an over-water trail connection between the western end of the New Whatcom site (Area 10) and the eastern end of Boulevard Park. This trail connection would provide an additional link to the South Bay Trail system. This trail could be approximately 0.4 miles long and approximately 10 feet wide, and would entail driving piles. The trail would pass over intertidal/shallow subtidal habitat and subtidal habitat, some of which contains scattered eelgrass patches. Impacts to eelgrass from the over-water trail could include damaging eelgrass shoots within the footprint of piles during pile driving and shading of the eelgrass by the trail that could affect photosynthesis. The over-water trail would be subject to a future permitting and environmental review process; the potential for aquatic habitat impacts would be further evaluated at that time. In addition to the over-water trail, the City is planning a “high-speed” bicycle trail near the base of the bluff through the perimeter of the site. Construction of this trail could result in minor impacts to existing upland habitat; however, given the general lack of habitat on the site, such impacts would not be significant. This “high-speed” trail would also be subject to a separate environmental review and permitting process in the future.

Summary – The in-water and over-water improvements assumed under the Redevelopment Alternatives (Alternatives 1 through 3) in combination with the in-water and over-water improvements identified as separate actions/background projects would provide approximately 28 acres of new aquatic habitat, a reduction of intertidal/shallow subtidal over-water coverage of 0.53 acres, an increase in overall over-water coverage by 2.26 acres, up to 3.4 acres of enhanced shoreline habitat/substrate, and the removal of 1,559 creosote piles. Overall, redevelopment assumed under the Redevelopment Alternatives in combination with separate actions would result in an increase in the amount and quality of aquatic habitat as compared to existing conditions (refer to **Appendix H** for detail).

3.4.3 Mitigation Measures

Upland

As part of redevelopment under Alternatives 1 through 3, a substantial park and open space network would be created onsite, much of which would be located in the shoreline environment. New onsite parks and shoreline vegetation, as well as landscaping associated with new buildings and roadways, would replace and/or improve the vegetation and wildlife habitats on the site. No significant impacts to upland habitat would result; therefore, no additional mitigation measures would be required.

Aquatic

Construction projects in or near aquatic habitat would generate minor impacts such as turbidity, noise from machinery and pile driving, and the potential for spills of fuels and/or other toxic materials. The following measures and Best Management Practices (BMPs) could be implemented to avoid and minimize these potential impacts.

- In-water work would occur when juvenile salmonids are absent or present in very low numbers.

- Care would be taken to prevent any petroleum products, chemicals, or other toxic or deleterious materials from entering the water. Fuel hoses, oil drums, oil or fuel transfer valves and fittings, etc., would be checked regularly for drips or leaks, and would be maintained and stored properly to prevent spills into waters. Proper security would also be maintained to prevent vandalism.

- The contractor would have a spill containment kit, including oil-absorbent materials, on site to be used in the event of a spill or if any oil product is observed in the water.

- If a spill were to occur, work would be stopped immediately, steps would be taken to contain the material, and appropriate agency notifications would be made. The contractor would be responsible for the preparation of spill response and hazardous material control plans to be used for the duration of construction.

- Spills and/or conditions resulting in distressed or dying fish would be reported immediately to Ecology's Northwest Regional Spill Response Office.

- If fish are observed in distress or a fish kill occurs, work would be stopped immediately. The Washington State Departments of Fish and Wildlife and Ecology, and other applicable agencies, would be contacted and work would not resume until further approval is given.

- A boom would be installed around the work area prior to removal of piles, piers, bulkhead, or other in-water elements to contain and collect debris. Debris would be disposed of at an approved upland location.

- Every effort would be made to minimize the release of adhering sediments when extracting piles that are pulled from the water, and piles would be placed on a receiving barge or on the adjacent wharf.

- The receiving barge or wharf site on which the extracted pilings are placed would be fitted for control of drainage, such that any sediment or creosote treated wood fragments present on the extracted piling would be contained. The containment basin would be sufficiently durable to function as a continuous confinement mechanism.

- A bubble curtain would be used to minimize noise impacts to aquatic species when steel piles are driven with an impact hammer.

- A Stormwater Pollution Prevention Plan (SWPPP) would be prepared for the redevelopment as required by Ecology (as part of NPDES permits), which would include BMPs associated with temporary erosion and sedimentation control measures that would be implemented to prevent significant water quality impacts during construction (refer to Section 3.3, **Water Resources**, for more information on BMPs).

Measures included as part of New Whatcom redevelopment to create and enhance aquatic habitat are as follows:

- Within the Whatcom Waterway, New Whatcom redevelopment would result in a decrease in over-water coverage by structures in intertidal/shallow subtidal habitat of 1.53 acres, and an increase in sloped intertidal/shallow subtidal habitat of 0.88 acre, substantially improving aquatic habitat conditions in the site area.

- Up to 560 existing creosote treated piles would be removed from the aquatic environment.

- The upgraded stormwater system would improve the quality of discharge of stormwater to the Whatcom Waterway and Bellingham Bay, as compared to existing conditions. Stormwater outfalls could be sited to provide a freshwater input source to the Bay to support saltmarsh vegetation.

- Under all of the EIS Alternatives, construction of a marina in the ASB would include the opening of the ASB to Bellingham Bay by breaching the existing berm and creating approximately 28 acres of new aquatic habitat.

3.4.4 Significant Unavoidable Adverse Impacts

The overall result of redevelopment under Alternatives 1 through 3 would be substantial improvements to upland and aquatic habitat on the site and in the site area; significant unavoidable adverse impacts would not be anticipated.

With implementation of the identified mitigation measures, significant impacts associated with in-water and over-water construction would not be anticipated.