6. TERRESTRIAL VEGETATION AND WILDLIFE

This chapter discusses the regulatory setting, study area, affected environment, and potential impacts related to terrestrial vegetation and wildlife present or in close proximity to the proposed project. Terrestrial wildlife refers to animals that predominantly live on land. For this Draft EIS, terrestrial wildlife is considered to include shorebirds, marine birds, and other waterfowl that use both terrestrial and aquatic habitat. Other species that use both terrestrial and aquatic habitat, such as seals and turtles, are discussed in Chapter 7, Marine and Nearshore Resources.

This chapter presents an evaluation of potential impacts related to construction, operations, and maintenance of the proposed project on terrestrial vegetation and wildlife. This chapter also evaluates potential impacts on terrestrial vegetation and wildlife from spills and associated spill response activities.

6.1. LAWS, REGULATIONS, AND GUIDANCE FOR TERRESTRIAL VEGETATION AND WILDLIFE

Table 6-1 provides a summary of the laws, regulations, and guidance applicable to terrestrial vegetation and wildlife potentially impacted by the proposed project.

Table 6-1: Laws, Regulations, and Guidance for Terrestrial Vegetation and Wildlife

Regulation, Policy, or Guideline	Description
Federal	
Endangered Species Act (ESA) (50 CFR Parts 17 and 222)	The federal ESA of 1973 (16 United States Code [USC] §§ 1531 et seq.) provides a program for the conservation of threatened and endangered plants and animals and the habitats in which they are found. All species of plants and animals, except pest insects, are eligible for listing under the ESA. Section 9 of the ESA prohibits the take of any endangered or threatened species of fish or wildlife listed under the ESA. Under the ESA, the term "take" is defined to mean "…to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect" species listed as endangered or threatened, or to attempt to engage in any such conduct.
Migratory Bird Treaty Act (MBTA) (70 Federal Register [FR] 12710; 16 USC § 1532(19))	The MBTA makes it unlawful to take or possess any migratory bird, or any part, nest, or egg of such bird protected under the statute (16 USC § 703). "Take" is defined by regulation as "pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect" (50 CFR § 10.12). The USFWS maintains a list of all species protected under the MBTA, which currently includes over one thousand species (50 CFR § 10.13).
Bald and Golden Eagle Protection Act (BGEPA) (16 USC § 668)	The BGEPA of 1940 (50 CFR 22.26), and its implementing regulations, provides additional protection to bald eagles (*Haliaeetus leucocephalus*) and golden eagles (*Aquila chrysaetos*) such that it is unlawful to take an eagle. In this statute, the definition of "take" is to "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, or molest, or disturb."

Regulation, Policy, or Guideline	Description
State	
Washington Endangered, Threatened and Sensitive Wildlife Species Classification (WAC 232-12-297)	Identifies and classifies native wildlife species that have need of protection and/or management to ensure their survival as free-ranging populations in the state of Washington and defines the process by which listing, management, recovery, and delisting of a species can be achieved. The Threatened and Endangered Species section of the Washington Department of Fish & Wildlife oversees the listing and recovery of those species in danger of being lost in the state. Washington State Department of Fish & Wildlife has developed the Priority Habitats and Species (PHS) Program. Through this program, state biologists have generated countywide maps of areas used by high priority wildlife species, as well as high priority habitat areas. Skagit County includes at least 10 of the possible 24 priority habitat areas, as well as confirmed sightings of at least 12 of 60 priority species.
Washington Department of Agriculture Washington State Noxious Weed Control Board and Weed List (RCW 17.10 and WAC 16-750)	The Washington State Noxious Weed Control Board (WNWCB) (2016) defines noxious weeds as: "Non-native plants introduced to Washington that can be highly destructive, competitive, and difficult to control. These plants invade croplands, rangeland, forests, parks, rivers, lakes, wetlands, and estuaries causing both ecological and economical damage." The WNWCB maintains an official list of noxious weeds that may require control in the state. It also advises the Washington Department of Agriculture for control of noxious weeds and coordinates activities to control noxious weeds throughout the state. The state of Washington classifies noxious weeds into three classes: (WNWCB 2016): • Class A Weeds: Non-native species. Distribution in the state of Washington is limited. • Class B Weeds: Non-native species presently limited to portions of the state. • Class C Weeds: Noxious weeds that are typically widespread in the state of Washington or are of special interest to the state of Washington's agricultural industry. The Class C status allows counties to require control if locally desired.
Local	
Skagit County Parks & Recreation Comprehensive Plan: Wildlife Habitat Conservation	This plan outlines Skagit County's program, including goals and objectives, for wildlife habitat conservation in the County. This plan also includes a program under which the County can apply for habitat conservation grants.
Skagit County Critical Areas Ordinance (SCC 14.24)	Local development regulations are designed to protect environmentally sensitive areas and ecosystems that are designated for protection and management under the Growth Management Act. The designated areas relevant to this chapter are categorized as Fish and Wildlife Habitat Conservation Areas, and include: • Areas with which endangered, threatened, and sensitive species have a primary association. • State priority habitats and areas associated with State priority species as defined in WAC 365-190-080. • Habitats and species of local importance that have been designated by the County. • Areas of rare plant species and high quality ecosystems as identified by the Washington State Department of Natural Resources through the Natural Heritage Program.

A number of regulations in Table 6-1 identify species that require special consideration for impact assessment and management at the state and federal level. For the purposes of this report, these species are collectively referred to as special status species, and include species that are:

- Listed as state endangered, state threatened, state sensitive, or state candidate on the Washington State Species of Concern Lists (WDFW 2016a).
- Listed as threatened or endangered animals and plants under the Endangered Species Act (ESA; 50 CFR 10.21).
- Rare species or ecosystems identified by the Washington Natural Heritage Program (WNHP) as critically imperiled, imperiled, or vulnerable to extirpation or extinction at a state or global scale.

6.2. STUDY AREA AND METHODOLOGY

This section describes the boundaries of the area that were assessed for impacts and the specific procedures used to assess potential impacts of the proposed project on terrestrial vegetation and wildlife, including marine birds.

6.2.1. Study Area

During the scoping period, the public identified a number of geographic areas to be considered in the evaluation of potential impacts on terrestrial vegetation and wildlife. These included March Point, Fidalgo Bay, Padilla Bay, Salish Sea, San Juan Islands, Strait of Georgia, Strait of Juan de Fuca, Vendovi Island, Puget Sound, and international shipping routes. Based on review of these locations and considering potential impact areas, a study area was developed that included the portions of the above geographic areas that could potentially be impacted by the proposed project. The study area includes the proposed project area, as well as areas associated with the marine vessel transportation route. The study area for marine transportation includes the marine vessel transportation route and adjacent waters and shorelines from the Tesoro Anacortes Refinery wharf structure to the edge of U.S. territorial waters in the Pacific Ocean, approximately 12 nautical miles seaward of the entrance to the Strait of Juan de Fuca (see Figure 2-4 in Chapter 2, Proposed Action and Alternatives). Specifically, the terrestrial vegetation and wildlife study area encompasses the following areas:

- The area within or immediately adjacent to the discrete components of the proposed project where soils would be disturbed or excavated and where filling or grading activities would occur. These areas are within the existing refinery boundary or are within the two improvement areas immediately adjacent to the refinery along North Texas Road and collectively are called the proposed project area.
- The marine vessel transportation route, including the wharf and the intertidal shoreline areas that could be impacted if a marine spill would reach the shoreline. Note that because of the behavior of xylenes and reformate in the environment (they do not produce a heavy viscous layer), these materials would not spread outside the intertidal areas.

6.2.2. Methodology

The methodology involved identifying terrestrial vegetation and wildlife resources within the study area, followed by evaluating potential impacts on terrestrial vegetation and wildlife. The specific methodology for evaluating potential impacts on terrestrial vegetation, terrestrial wildlife resources, and special status species are discussed in the following sections.

6.2.2.1. Identification of Terrestrial Vegetation and Wildlife Resources

Baseline conditions were documented from proposed project plans and procedures (Chapter 2, Proposed Action and Alternatives), field studies, public records, and scientific studies.

Field investigations undertaken at the proposed project area included completing:

- A series of wetland delineations, including assessment of upland vegetation, within the proposed project area and nearby areas of the refinery in 2014 and 2015 (Tesoro 2015a)
- A wetland inspection of 10200 West March Point Road (Wetlands 47 and 48) by the U.S. Army Corps of Engineers (Seattle District) in April 2015 (Tesoro 2016, 2015b)
- A site walkover by a state of Washington wetland specialist from the Department of Ecology (Ecology) in June 2015 (Ecology 2015)

No surveys specific to terrestrial wildlife were undertaken as part of the Draft EIS because existing data along with the wetland delineations were used to document wildlife habitat value within the proposed project area.

Database searches and other desktop information were used to identify the special status species with the potential to occur within the study area. The database sources that were used are summarized in Table 6-2. Additional information sources were used to understand each species' biological and ecological characteristics to help inform the impact evaluation. These additional sources are referenced throughout the chapter, as applicable.

Table 6-2: Desktop Sources Used to Identify Special Status Species for Further Consideration

Data Source[a]	Administering Agency	Purpose
IPaC (Information for Planning and Conservation)	USFWS	Database was used to generate a report that identifies species listed under the ESA that have the potential to occur in the study area. The approximate study area was used as the database search area.
Priority Habitat and Species[a] Database	WDFW	Geographical Information System (GIS) data and associated interactive map were searched to identify Priority Habitats and Species[b] on and around March Point.
Marine Bird Density Atlas	WDFW	Displays distributions and density indices for marine birds and diving waterfowl species seen by aerial surveys conducted since 1992 by Washington Department of Fish and Wildlife. The atlas was reviewed for the study area and surrounding region to understand distribution and density of marine birds.

Data Source[a]	Administering Agency	Purpose
NatureMapping	NatureMapping Foundation	Provides distribution maps and species profiles for state of Washington wildlife. Used to identify special status species' distributions that potentially overlap with the study area, and as an informational source for species' biology and ecology.
Nest Watch	Cornell Lab of Ornithology	Database containing data from nationwide monitoring program designed to track status and trends in the reproductive biology of birds.
Washington Natural Heritage Program GIS Data Set	Washington Department of Natural Resources	Used to identify the Rare Plants and High Quality Ecosystems within the study area.
Washington Herp Atlas	Washington Department of Natural Resources	Provides distribution maps and species profiles for amphibian and reptile species. Used to identify if the study area overlapped with special status species' distributions, and as an informational source for species biology and ecology.

USFWS = United States Fish & Wildlife Service; WDFW = Washington Department of Fish and Wildlife
[a] Sources: USFWS 2017, WDFW 2014, WDFW 2015, NatureMapping (undated), WNHP et al. 2009, WNHP 2014
[b] Priority Habitat and Species are state endangered, threatened, sensitive, and candidate species, animals aggregations considered vulnerable, and species of recreational, commercial, or tribal importance considered vulnerable.

6.2.2.2. Impact Evaluation for Terrestrial Vegetation and Wildlife

Potential impacts on terrestrial vegetation and wildlife resources that were evaluated as part of this analysis were determined through a public scoping process and by considering the proposed project's potential to impact these resources. Potential impacts on terrestrial vegetation and wildlife resources that could occur during both construction (short term) and operations (long term) of the proposed project were considered in the analysis. A series of scoping meetings were conducted during the scoping period for the proposed project, with the public, tribes, and government agencies providing verbal and written comments. The primary issues related to terrestrial vegetation and wildlife resources that are addressed in this section include:

- Injury or mortality of terrestrial wildlife, or damage or removal of terrestrial plants
- Disruption to the life cycle of terrestrial vegetation or wildlife
- Changes to terrestrial wildlife habitat, including habitat loss, degradation, or fragmentation
- Modification of the ecological function of vegetation communities and habitat

Impacts on terrestrial vegetation and wildlife associated with the following proposed project activities were evaluated:

- During construction:
  - Vegetation removal
  - Introduction of noxious weeds
  - Release of fugitive dust
  - Increased noise

- During operations:
  - Increased noise
  - Additional nighttime lighting
  - Increased marine vessel traffic
- As a result of unplanned events, including:
  - Fire
  - Spills

Potential impacts from the above activities were evaluated by assessing whether the land disturbances, noise, changes in marine vessel traffic, or potential marine spills would potentially impact terrestrial vegetation and wildlife. A significant impact on terrestrial vegetation or wildlife was defined as an impact that would result in one of the following:

- Injury or mortality (including damage or removal of plants) to an extent that would reduce the viability of a plant or wildlife species, plant community, or wildlife habitat
- Disruption to the life cycle of a species to an extent that would reduce the viability of a population
- Reduced availability or access to habitat used for foraging, reproduction, migration, or shelter to an extent that would reduce the viability of a population
- Specific to vegetation communities, modification of a community to an extent that it no longer provides the same ecological functions

The results of the analysis are summarized using a significance assigned for each potential impact on terrestrial vegetation and wildlife resources. The process for characterizing the significance of each potential impact involved analyzing the magnitude, geographic extent, and duration of the impact (see Chapter 1, Section 1.7, Methodology). Based on the results of this analysis, the significance of each potential adverse impact was then assigned to one of two categories: *less than significant* or *potentially significant*. Criteria for assessing the significance of potential adverse impacts on terrestrial vegetation and wildlife resources are included in Table 1-B.1 in Appendix 1-B, Impact Criteria Tables.

In addition to the potential impacts that could occur during regular and routine construction and operation activities over the life of the proposed project, impacts may also result from an unplanned event. In the case of this chapter, land-based spills at the refinery and marine spills at the refinery wharf or along the marine vessel transportation route fall into this category. The methodology for evaluating impacts related to unplanned events follows the same methodology as for planned events–impacts are characterized as to their potential magnitude, geographic extent, and duration. However, for unplanned events, if the impact of the unplanned event is *potentially significant*, then the likelihood, or probability, of an event occurring is assigned using a qualitative scale of probability categories described as Negligible, Low, Medium, or High (see Chapter 1, Section 1.7, Methodology).

6.2.2.3. Further Impact Evaluation for Special Status Species

For federally threatened or endangered species, a significant impact was defined as an impact that is likely to adversely impact a threatened or endangered species, according to the guidance provided in the *Consultation Handbook Procedures for Conducting Consultation and Conference Activities under Section 7 of the ESA* (USFWS 1998). Specifically, a significant impact would be considered likely to occur if:

- Any adverse impact on an individual federal threatened or endangered species may occur as a direct or indirect result of the proposed action or its interrelated or interdependent actions.
- The impact is not discountable, insignificant, or beneficial.

Insignificant impacts relate to the size of the impact and should never reach the scale where take (to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, as described in Table 6-1) occurs (USFWS 1998).

For state-listed species, a significant impact was defined as an impact that is likely to result in mortality of an individual.

6.3. AFFECTED ENVIRONMENT

The study area for terrestrial vegetation and wildlife includes developed industrial and agricultural lands within the proposed project area; marine habitats in the marine vessel transportation route, which provide habitat for marine birds; and associated nearshore habitats (limited to the intertidal areas), including eelgrass meadows, tidal flats, and salt marshes.

The following sections describe in further detail the terrestrial vegetation and wildlife present in the terrestrial study area and the marine bird habitat in the study area.

6.3.1. Terrestrial Vegetation

6.3.1.1. Proposed Project Area

The proposed project area includes paved/built-up areas as well as vegetated areas dominated by non-native grasses. Shrubs, including common native shrubs and invasive non-native shrubs, are present in the New Tanks Area, and North Texas Road Clearance and Gate 10 Access Refinement areas. Table 6-3 outlines the landcover type for each project component, based on field surveys for wetland delineations. A full list of flora species recorded during wetland delineations is included in Appendix 6-A, Flora Species List for the Proposed Project Area.

Table 6-3: Landcover Types within the Proposed Project Area

Component	Landcover Description
ARU	Developed industrial area
Causeway	Upland vegetation near the causeway consists of a narrow buffer of salt-tolerant grasses and scrub/shrub vegetation. Nearshore vegetation at the causeway is addressed in Chapter 7, Marine and Nearshore Resources.
Isom Unit	Developed industrial area
NHT	Developed industrial area

Component	Landcover Description
MVEC (VCU)	Dominated by pasture grasses, including tall fescue and bentgrass. Also includes non-native forbs, such as narrow leaf plantain (*Plantago lanceolata*) and the noxious weed Canada thistle (*Cirsium arvense*). The area is surrounded by existing refinery operations/structures and is regularly mowed.
New Tanks Area	The New Tanks Area is used as pasture land for cattle. It is comprised of pasture grasses with limited native vegetation. The southwestern portion includes patches of common native shrubs, such as snowberry (*Symphoricarpus albus*) and rose species (*Rosa* sp.), and invasive Himalayan blackberry (*Rubus armeniacus*).
North Texas Road Refinements	Dominated by non-native grasses, with some native shrubs.
Potential Temporary Construction Laydown Area	Dominated by pasture grasses with limited native vegetation.

ARU = Amine Recovery Unit; Isom = Isomerization; NHT = Naphtha Hydrotreater; VCU = Vapor Combustion Unit

Special Status Species

No state or federally listed threatened, endangered, or candidate plant species have been documented within the proposed project area, or the broader refinery. No rare or sensitive plants, historic or current, or ecosystems of special concern have been documented on March Point (see Figure 6-1).

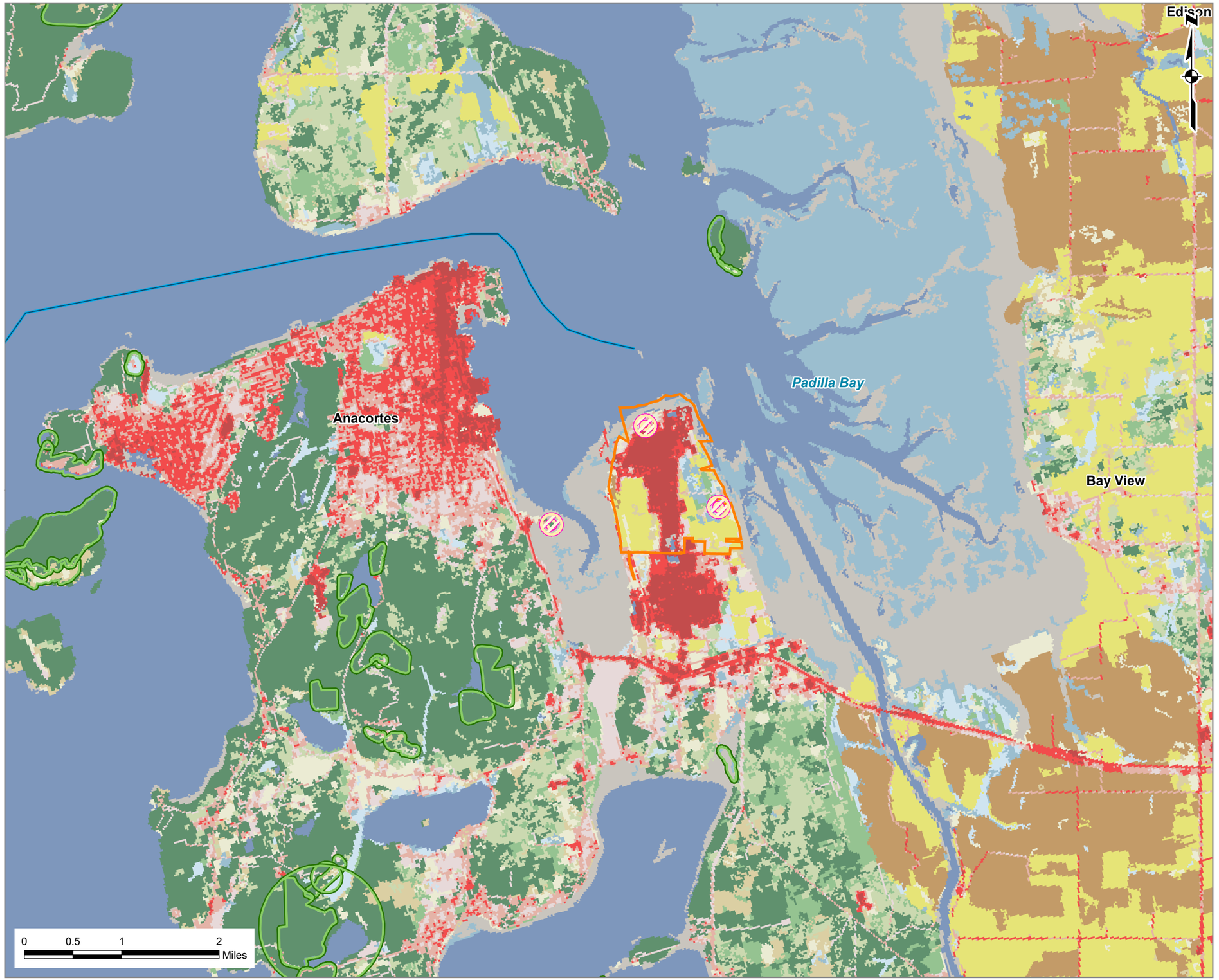
The study area is within the range of one special status flora species, the federally threatened golden paintbrush (*Castilleja levistecta*). The species is rare, with only 11 known populations in 2004 (Caplow 2004). The species is not known to occur in Skagit County (Caplow 2004) and was not recorded within the proposed project area during wetland delineation field surveys. Therefore, the species is considered unlikely to occur in the proposed project area.

Noxious Weeds

No Class A or B noxious weeds are known to occur within the study area. Four species listed as Class C noxious weed species have been documented in the proposed project area: Canada thistle, bull thistle (*Cirsium vulgare*), reed canarygrass (*Phalaris arundinacea*), and Himalayan blackberry. Class C weeds are often widespread or are of special interest to the agricultural industry. The State Weed Board does not require control of Class C noxious weeds. The State and many County Weed Boards provide information on identification and BMPs for these species. A County Weed Board may require landowners to control a Class C weed if it poses a threat to agriculture or natural resources (WNWCB 2016).

6.3.1.2. Marine Vessel Transportation Route

No terrestrial vegetation is present in the marine vessel transportation route component of the study area, as this portion of the study area contains only marine and tidal zone habitats (addressed in Chapter 7, Marine and Nearshore Resources).



Legend

- Tesoro Refinery Boundary
- Marine Vessel Transportation Route
- Bald Eagle Nesting Areas
- Rare Plants and Communities

National Landcover Dataset (2011)

- Open Water
- Developed, Open Space
- Developed, Low Intensity
- Developed, Medium Intensity
- Developed, High Intensity
- Barren Land (Rock/Sand/Clay)
- Deciduous Forest
- Evergreen Forest
- Mixed Forest
- Shrub/Scrub
- Grassland/Herbaceous
- Pasture/Hay
- Cultivated Crops
- Woody Wetlands
- Emergent Herbaceous Wetlands

Source:
ESRI Topographic Web Mapping Service
NAD 1983 UTM Zone 10N

Figure 6-1
Terrestrial Vegetation and Wildlife Resources Near the Proposed Project Area
Tesoro Anacortes Refinery
Clean Products Upgrade Project
Draft Environmental Impact Statement
Anacortes, Washington

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6.3.2. Terrestrial Wildlife

6.3.2.1. Proposed Project Area

Wildlife Habitat

The proposed project area is considered to provide low value wildlife habitat as it contains minimal vegetative cover or sheltering resources. Native vegetation in the refinery is highly fragmented and is near areas of human activity within the refinery. Table 6-4 outlines the habitat resources present at the proposed project area.

Table 6-4: Wildlife Habitat Resources

Landcover Type	Habitat Resources
Developed industrial areas	These areas do not provide wildlife habitat.
Pasture	Pasture at the proposed project area may provide foraging resources for some wildlife species. The pasture is grazed or mowed, although if areas of long grass are present, these may provide shelter for birds, reptiles, and small mammals.
Pasture with shrubs	Areas of pasture with shrubs may provide food and shelter for birds, reptiles and small mammals. Areas of dense shrubs could provide potential nesting habitat.

Wildlife using areas of relatively higher quality habitat in the surrounding areas may pass through or temporarily visit the proposed project area. Examples of wildlife that have been recorded near the proposed project area (Stevens et al. 2015), which are mostly generalists capable of adapting to areas with human activity, that may enter the proposed project area include:

- Eastern cottontail (*Sylvilagus floridanus*)
- Coyote (*Canis latrans*)
- Striped skunks (*Mephitis mephitis*)
- Rodents, such as moles, voles, and mice

Special Status Species

The proposed project area does not provide suitable habitat for special status wildlife species. Special status bird species may fly over the proposed project area when moving between other areas of suitable habitat; however, the proposed project area does not provide stopover habitat and has limited foraging value for these species.

6.3.2.2. Marine Vessel Transportation Route

Terrestrial Wildlife Habitat

Terrestrial wildlife habitat types in the marine vessel transportation route (including associated waters and tidal zones) include bays, estuaries, and coastal wetlands.

A description of marine and nearshore habitat is provided in Chapter 7, Marine and Nearshore Resources.

Terrestrial wildlife that use habitat within the marine vessel transportation route include marine birds, shorebirds, and waterfowl. The study area is in the Pacific Flyway, one of four major north–south migratory bird routes in North America.

Two reserves are located within the study area, and in proximity to, the proposed project area that provide valuable habitat for migratory and resident birds:

- Padilla Bay Reserve, part of the National Estuarine Research Reserve System, west of March Point
- Fidalgo Bay Aquatic Reserve, part of the Department of Natural Resources Aquatic Reserves Program, directly east of March Point

These two reserves form part of the Samish/Padilla Bays Important Bird Area (IBA). The IBA is designated by BirdLife International, and is recognized as an important wintering area for marine birds, shorebirds, and waterfowl (Audubon 2016; see Figure 6-2).

Marine birds in the study area are typically concentrated closer to shore, with lower densities in open waters (see Figure 6-3). A 1979 to 1980 study identified the following islands within the study area as particularly important bird nesting sites: Protection Island, Tatoosh Island, Colville Island, Smith Island, and Minor Island (Wahl et al. 1981). Recent evidence suggests that bird populations in the Salish Sea are declining (WDFW 2016b); however, these islands are likely to continue to provide important bird nesting sites. While the nesting areas are not within the study area, individuals nesting in these areas would use the study area for foraging, dispersal, and staging. The following shorebirds and marine birds have historically nested (and may currently nest) on islands near the study area, and are likely to use habitat in the study area for foraging, dispersal, and staging:

- Storm-petrel species
- Cassin's auklet (*Ptychoramphus aleuticus*)
- Dunlin (*Calidris alpine*)
- Common murre (*Uria aalge*)
- Pelagic cormorant (*Phalacrocorax pelagicus*)
- Black oystercatcher (*Haematopus bachmani*)
- Glaucous-winged gull (*Larus glaucescens*)
- Pigeon guillemot (*Cepphus columba*)
- Tufted puffin (*Fratercula cirrhata*)
- Rhinoceros auklet (*Cerorhinca monocerata*) (Wahl et al. 1981)

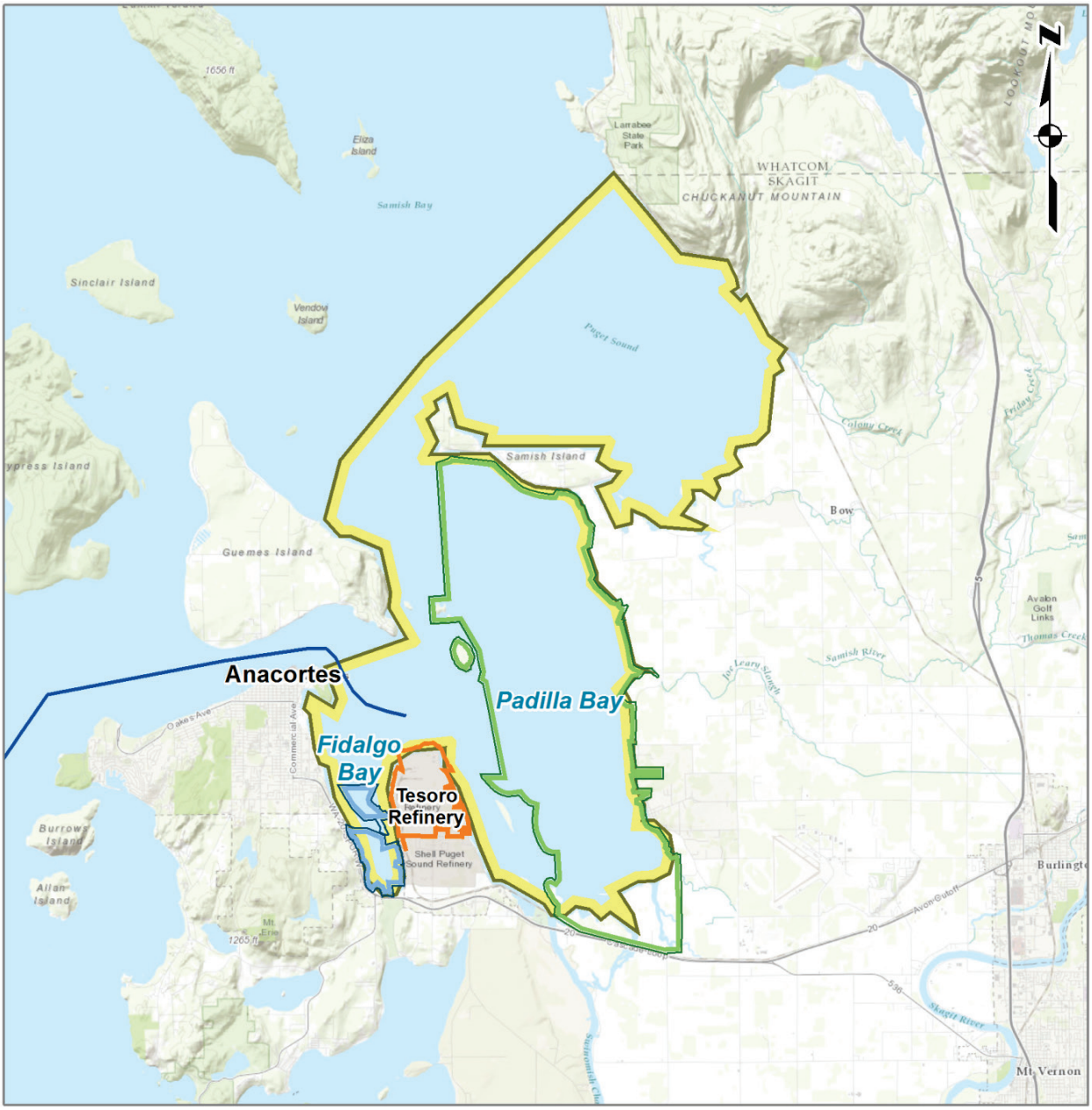

Figure 6-2: Areas of Interest near the Proposed Project Area

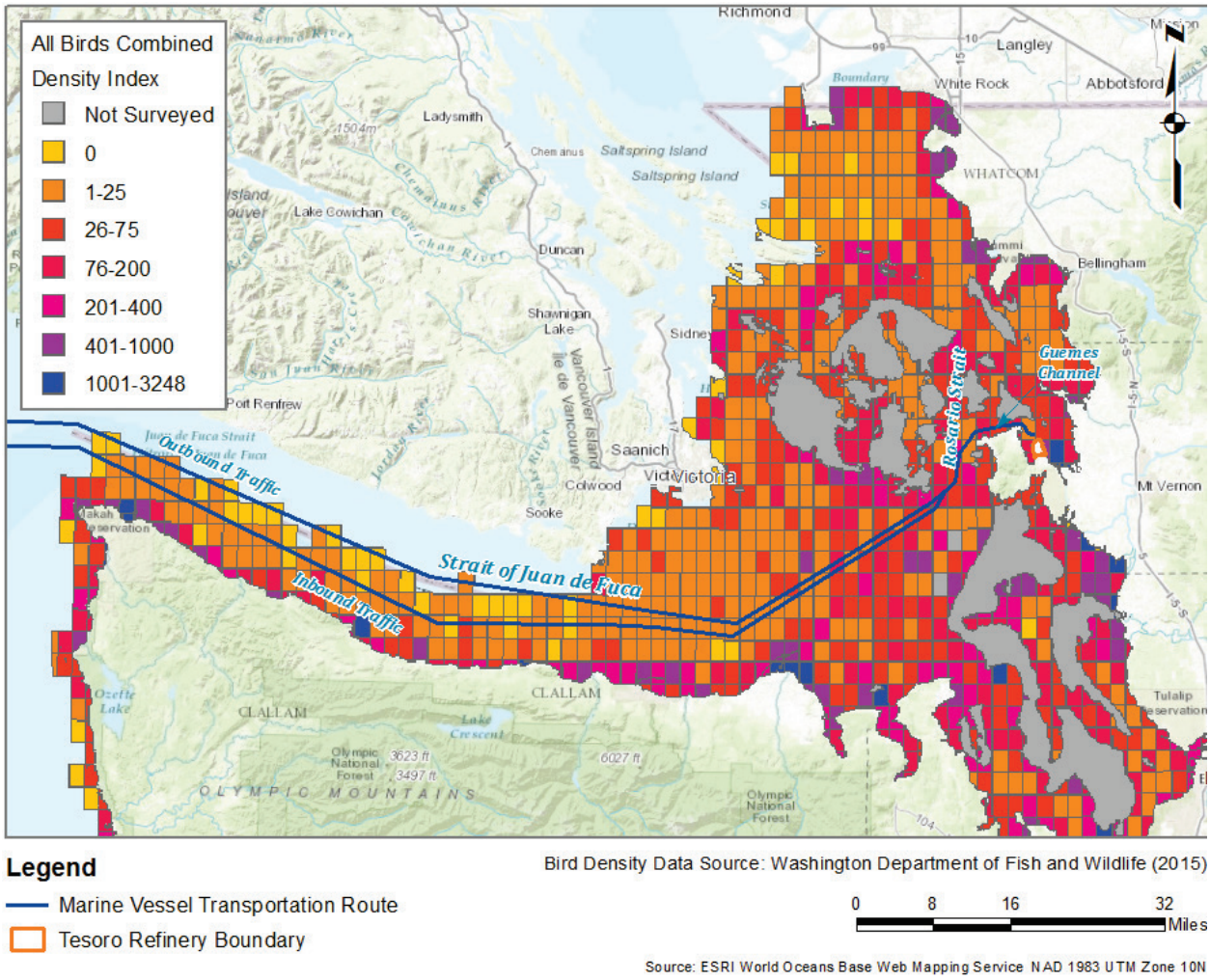

Figure 6-3: Marine Bird Density within the Study Area

Parts of the study area are mapped as supporting regular waterfowl concentrations, which are listed as locally important under the Skagit County Critical Areas Ordinance. In addition, the study area provides important habitat for great blue herons (Ardea herodias) and the western high arctic (or gray-bellied) subpopulation of brant (*Branta bernicla*).

A large colony of great blue herons nests southeast of the refinery (outside the study area) at the March Point Heronry (Skagit Land Trust 2017). Approximately 300 nests were identified within accessible areas of the heronry in 2014, and additional nests are thought to be on nearby private land (Skagit Land Trust 2017). Individuals from the March Point Heronry would use nearshore habitat within the study area.

The Audubon Society notes that the entire global population of the western high arctic brant is thought to winter in Samish and Padilla bays (Audubon 2017). Tracking a sample of western high arctic brant population from 2002 to 2005 indicated that the species overwinters in the southern part of the Salish Sea and the majority of birds winter in Samish Bay and Padilla Bay.

In addition, western high arctic brant concentrate in only a few areas and are expected to be faithful to their breeding, staging, and wintering grounds (Boyd et al. 2014).

Special Status Species

Migratory Species

The study area provides important habitat for migratory birds. Two broad migration periods influence bird life in the study area: the spring migration and the fall migration.

The spring migration occurs in April and May. During this period, birds either temporarily use habitat in the study area while on migration, or for northern breeding species, remain in the area to breed. In particular, the spring migration of black brant (*Branta bernicla nigricans*) may bring tens of thousands of birds that forage in the eelgrass beds of Padilla Bay and surrounding areas.

The fall migration begins in late June to early July with the arrival of western sandpipers (*Calidris mauri*) and Bonaparte's gulls (*Chroicocephalus philadelphia*) from the north. The fall migration has fewer birds, but more species diversity.

During winter, loons, grebes, cormorants, and alcids from many other regions reside in and around the study area. Dabbling and diving ducks, geese, and swans make up a large component of winter bird populations, and large numbers of northern-breeding gulls are added to resident populations of glaucous-winged gulls. Brant, dunlin, and trumpeter swan (*Cygnus buccinator*) have all been recorded in large numbers (more than 1,000 individuals) between 2001 and 2007 in the Samish/Padilla Bay IBA (Audubon 2016). Winter populations are influenced by stress imposed by winter weather conditions, restricted foraging opportunities due to tidal cycles, and limited hours of daylight.

Table 6-5 outlines the migratory bird species listed under the Migratory Bird Treaty Act (MBTA) or Bald and Golden Eagle Protection Act (BGEPA) that may occur within the study area. The table includes listed migratory species that are also listed as state sensitive or state candidate on the Washington State Species of Concern Lists.

Threatened and Endangered Species

Table 6-6 outlines the threatened and endangered species that have ranges that overlap the study area, and were considered for the special status impact evaluation. Threatened and endangered species that have ranges that overlap the study area, but were excluded from the special status impact evaluation are listed in Appendix 6-B, Upland Special Status Terrestrial Vegetation and Wildlife Species.

Other Special Status Species

Table 6-7 outlines the state candidate and state sensitive species that are not listed as federally threatened, federally endangered, or migratory. The study area does not contain nesting habitat for these species; however, it is likely to provide valuable foraging and staging habitat to support breeding activities.

Table 6-5: Migratory Birds Protected under the Migratory Bird Treaty Act

Common Name	Scientific Name	Federal Status	State Status	Source	Species Information	Habitat Evaluation
Marine Birds						
Caspian Tern	*Hydroprogne caspia*	Migratory	-	IPaC	The species uses fresh and saltwater wetlands, especially estuaries, coastal bays, and beaches. The species does not typically occur on open ocean. Nests on low sand or gravel islands with sparse vegetation. In the state of Washington, the birds have shifted their nesting practices from nesting in small groups mixed with gulls to large colonies of only Caspian terns. The species forages on fish, particularly fish swimming close to the surface (Seattle Audubon 2017). The study area is within the species' breeding range (USFWS 2017 IPaC Tool).	Estuaries, coastal bays, and beaches within the study area may provide foraging habitat for breeding individuals. The study area does not contain breeding habitat.
Shorebirds						
Black Oystercatcher	*Haematopus bachmani*	Migratory	-	IPaC	The species occurs on rocky coasts, especially on smaller, offshore islands. The species forages on mussels and other shellfish, and nests on islands well above the high tide mark (Seattle Audubon 2017). The species has been recorded breeding on Seal and Sail Rocks (Wahl et al. 1981). The study area is within the species' year-round range (USFWS 2017 IPaC Tool).	Estuaries, coastal bays, and beaches within the study area may provide foraging habitat for resident individuals, including while breeding. Breeding habitat is not within the tidal zone, and therefore is not included within the study area.
Marbled Godwit	*Limosa fedoa*	Migratory	-	IPaC, Distribution	The study area is within the species' wintering range (USFWS 2017 IPaC Tool). During migration and winter, the species is coastal and forages on mudflats, salt marshes, estuaries, and coastal pools. The species eats crustaceans and other marine creatures, and forages by probing for food under mud with its long bill (Seattle Audubon 2017).	Nearshore habitats in the study area may provide habitat for the species during winter.
Pink-footed Shearwater	*Puffinus creatopus*	Migratory	-	IPaC	The species nests on islands in southern South America, and is a common summer visitor to coastal waters as far north as Alaska. The species occurs on open ocean, typically well off shore over shallow waters. The species typically occurs individually or in mixed flocks. The species feeds on fish and squid (Audubon 2017).	Marine habitats in the study area may be used by the species for foraging and resting. However, the species is more commonly recorded in the open ocean (Seattle Audubon Society 2017).

Common Name	Scientific Name	Federal Status	State Status	Source	Species Information	Habitat Evaluation
Short-billed Dowitcher	*Limnodromus griseus*	Migratory	-	IPaC	The species occurs in mudflats, tidal marshes and pond edges, and feeds on small aquatic invertebrates. The species breeds in Alaska and mid-latitudes of Canada and nests in inland areas. The study area is within the species migration range (Audubon 2017).	The species may use habitat in the study area while on migration.
Waterfowl						
Western Grebe	*Aechmophorus occidentalis*	Migratory	State Candidate	IPaC, Distribution	The study area is within the species' wintering range. The species winters in flocks on sheltered bays or estuaries on the coast. The species feeds mainly on fish (Audubon 2017).	The species may occur in flocks in the study area during winter.
Other Species						
Bald Eagle	*Haliaeetus leucocephalus*	Migratory	State Sensitive	IPaC, Distribution	The species nests in large, mature trees close to large bodies of water (Kalasz and Buchanan 2016). Two bald eagle nest sites are mapped near the proposed project area, within the refinery, on the Priority Habitats and Species database (see Figure 6-1). Two nests on March Point were recorded as active in 2016, and an additional two were recorded as active in 2013 (Skagit County and Ecology 2016). The bald eagle is a scavenger, and primarily feeds on fish (Kalasz and Buchanan 2016).	Suitable nesting sites are not present within the study area; however, marine and nearshore habitats in Padilla and Fidalgo bays are likely to provide valuable foraging habitat for breeding birds.
Peregrine Falcon	*Falco peregrinus*	Migratory	State Sensitive	IPaC, Distribution	The species has a broad distribution across the U.S. and occurs in a wide variety of open habitats. The species often occurs near water and migrants may fly far out to sea. The species usually nests on cliff ledges, and sometimes in trees. The species feeds mostly on birds, including ducks and shorebirds (Audubon 2017).	The species has a broad range and generalist habitat requirements, and therefore may occur within the study area.
Black Swift	*Cypseloides niger*	Migratory	-	IPaC	The species occurs in open sky over mountains and coastal cliffs, and feeds on insects while in flight. The species nests in relatively inaccessible rocky habitats, often behind waterfalls. The study area is within the species' breeding range (Audubon 2017).	The study area does not provide suitable nesting habitat for the species; however, the species could nest in nearby areas and forage over shorelines in the study area.

Sources:
IPaC: Species identified through the USFWS IPaC tool (USFWS 2017).
Distribution: Species distribution, as shown in NatureMapping (undated), WDFW (1995, 2008, 2016a, b) and/or WNHP et al. (2009)

Table 6-6: Threatened and Endangered Species (State and Federal)

Common Name	Scientific Name	Federal Status	State Status	Source	Species Information	Occurrence
Marine Birds						
Marbled Murrelet	*Brachyramphus marmoratus*	Federal Threatened	State Threatened	IPaC	The marbled murrelet forages in the marine environment, usually within approximately 1 to 5 miles from shore (Desimone 2016). The diet predominantly consists of fish (Desimone 2016). The species breeds from April to mid-September up to 55 miles from the ocean (Desimone 2016). The species does not nest in colonies (Desimone 2016). In 2013, the U.S. population was estimated at approximately 20,000 individuals in the U.S. including 4,400 individuals in Puget Sound and Strait of Juan de Fuca (2013). Annual aerial surveys from 1992 through 1999 (Nysewander et al. 2005) consistently observed one to two marbled murrelets in Fidalgo Bay. The IPaC database identified critical habitat for the species near the study area; however, the critical habitat is not located within the study area.	The species is known to occur within the study area, in Fidalgo Bay, and may also occur in other parts of the study area. The study area does not contain suitable terrestrial nesting habitat for the species.
Short-tailed Albatross	*Phoebastria albatrus*	Federal Endangered	State Candidate	IPaC	Short-tailed albatrosses nest on islands off Japan and spend most of their lives at sea. The species is an extremely rare bird off the state of Washington's coastline. Between 1940 and 1990, there were only a few valid records of the species on the West Coast south of Alaska. Since the early 1990s, sightings have increased, and a few birds are reported annually off the West Coast (Seattle Audubon 2017).	Due to the rarity of the species in the state of Washington, it is considered unlikely that the species would occur in the study area. If the species did occur in the study area, it would be expected to occur as a temporary visitor, as the species does not breed in the U.S.
Shorebirds						
Streaked Horned Lark	*Eremophila alpestris strigata*	Federal Threatened	State Endangered	IPaC	The streaked horned lark is a terrestrial species that inhabits sparsely vegetated grasslands, beaches, islands, and agricultural fields (Stinson 2016a). The species typically feeds on grains and insects (Stinson 2016a). The species nests in the southern Puget Sound region, south of Tacoma (Stinson 2016a).	The species may use habitat in the study area for foraging. The species is not known to breed in the study area.

Common Name	Scientific Name	Federal Status	State Status	Source	Species Information	Occurrence
Waterfowl						
American White Pelican	*Pelecanus erythrorhynchos*	Migratory	State Endangered	Public Scoping	The American white pelican is widespread across North America. In 2014, there were an estimated 43,000 birds in the western population (roughly west of the continental divide) (Stinson 2016b). The American white pelican does not typically occur on the Washington coast (Stinson 2016b); however, between 130 and 200 individuals were recorded in Padilla Bay in 2016 (Campbell 2016). The unusual sighting is thought to be a possible effect of birds displaced by drought in California and Oregon (Campbell 2016). The 2016 Washington Department of Fish and Wildlife (WDFW) Periodic Status review for the species recommended downgrading the state listing from endangered to threatened (Stinson 2016b).	The species may continue to use habitat in the study area; however, the study area is not part of the species' typical range. Birds using the study area are a small portion of the total species population.
Brown Pelican	*Pelecanus occidentalis*	Federal Species of Concern	State Endangered	Public Scoping	Brown pelicans are widespread along marine coasts of North America. In Washington, brown pelicans occur from April through November as non-breeding visitors. The species typically occurs on shores and waters of the outer coast; however, small numbers occur in the Strait of Juan de Fuca and Puget Sound (Stinson 2014).The total metapopulation of California brown pelicans has been estimated at 70,000 breeding pairs (Stinson 2014). The 2014 WDFW Periodic Status review for the species recommended removing the species from Washington's list of endangered species (Stinson 2014).	While brown pelicans typically occur on the outer coast, the species may occur in the study area as a non-breeding visitor.

Sources:
IpaC: Species identified through the USFWS IPaC tool (USFWS 2017).
Distribution: Species distribution, as shown in NatureMapping (undated), WDFW (1995, 2008, 2016a, b) and/or WNHP et al. (2009).
Public Scoping: Requested to be included in the Draft EIS as part of the public scoping process.

Table 6-7: Other Special Status Species

Common Name	Scientific Name	Federal Status	State Status	Source	Species Information	Impact Evaluation
Marine Birds						
Common Murre	*Uria aalge*	-	State Candidate	Distribution	The common murre is widespread on the Pacific Coast from Alaska to California. It occurs on the ocean, both offshore and near the coast, and in large bays. The species nests on rocky cliffs and is found closer to rocky shorelines during the breeding season and farther offshore during the non-breeding season (Audubon 2017). The species has been known to breed on Tatoosh Island near the study area (Wahl et al. 1981).	The species is likely to use habitat in the study area. The study area does not contain terrestrial habitat suitable for nesting; however, it is likely to provide valuable foraging habitat to support breeding activities.
Brandt's Cormorant	*Phalacrocorax penicillatus*	-	State Candidate	Distribution	The species occurs in oceans and along the coast on salt or brackish water. The species forages both close to shore and out at sea. Nesting colonies are typically located on slopes rather than cliff ledges, although some state of Washington colonies are located on steep cliffs. The species is gregarious and feeds, roosts, and nests in groups (Audubon 2017).	The species occurs within the study area, including in Padilla and Fidalgo Bays. The study area does not contain terrestrial habitat suitable for nesting; however, it is likely to provide valuable foraging habitat to support breeding activities.
Waterfowl						
Common Loon	*Gavia immer*	-	State Sensitive	Distribution	In the breeding season, common loons can be found on large secluded lakes (at least 49 acres in size) with plenty of room for takeoff, deep inlets and bays, and a good supply of small fish. These lakes can be in forested areas in mountains or lowlands. Islands, logs, and floating debris attract nesting loons. In winter, common loons are usually found on salt water, typically in shallow areas close to shore. They occasionally winter on fresh water (Audubon 2017). The species uses shallow, protected areas of Fidalgo Bay for staging and wintering (Stevens et al. 2015).	The species occurs within the study area, including in Fidalgo Bay. The study area does not contain terrestrial habitat suitable for nesting; however, it is likely to provide valuable foraging habitat to support breeding activities.

Sources:
IpaC: Species identified through the USFWS IPaC tool (USFWS 2017).
Distribution: Species distribution, as shown in NatureMapping (undated), WDFW (1995, 2008, 2016a, b) and/or WNHP et al. (2009)

6.4. POTENTIAL IMPACTS ON TERRESTRIAL VEGETATION AND WILDLIFE

This section evaluates the potential direct and indirect impacts on terrestrial vegetation and wildlife as a result of construction and operation of the proposed project. This section also includes evaluation of impacts associated with unplanned events, such as spills.

Many impacts have the potential to impact both terrestrial vegetation and terrestrial wildlife. The exceptions are noise, which does not perceptibly impact terrestrial vegetation, and marine spills, which do not impact terrestrial vegetation described in this chapter (marine and nearshore vegetation are addressed in Chapter 7, Marine and Nearshore Resources).

Impacts on special status species are discussed in Section 6.5.

6.4.1. Construction

6.4.1.1. Vegetation Removal

The proposed project would require removal of up to 23.5 acres of pasture grasses with areas of native and invasive shrubs. This includes:

- 18 acres for the New Tank Area, including 3 acres to be restored to pasture following construction
- 0.15 acre within developed land at the VCU
- 0.37 acre for the North Texas Road Refinements
- Potentially, 5 acres for the temporary construction laydown area, which would be revegetated following construction

Impacts on Terrestrial Vegetation from Vegetation Removal

Surface disturbances can result in the direct loss of vegetation, and can also inhibit the spread or dispersal of plants across the landscape. Loss of terrestrial vegetation within the proposed project area (within the refinery) is limited to the removal of up to 23.5 acres of actively grazed or mowed non-native grasses, with some native forbs and shrubs, in a modified and highly fragmented landscape. No special status plant species have been recorded in the study area. Vegetation within the proposed project area is of relatively low quality and therefore, the loss of high value plant communities resulting from surface disturbance is not anticipated to occur.

While the impact of vegetation loss is permanent, the magnitude of impact is minimal because predominantly non-native vegetation would be removed. Therefore, direct and indirect impacts on terrestrial vegetation from vegetation removal would be ***less than significant***.

Impacts on Terrestrial Wildlife from Vegetation Removal

Removal of vegetation can impact terrestrial wildlife by:

- Removing habitat provided by vegetation, including food sources
- Fragmenting habitat used by animals, which can prevent animals from moving through the landscape
- Degrading adjacent habitat due to sediment runoff from exposed soils following removal of vegetation
- Injuring or killing wildlife during vegetation removal

Vegetation removal within the proposed project area is limited to non-native grasses and patches of shrubs in an already highly fragmented landscape. Habitat in the proposed project area is of low value, and the loss of 23.5 acres of this low value habitat would have a *less than significant* impact on terrestrial wildlife populations in the area. Vegetation within the proposed project area does not appear to currently provide value for dispersal of plants and animals and therefore, habitat fragmentation is not anticipated.

Degradation of adjacent habitat due to sediment runoff would be controlled through the use of erosion and sediment controls, such as sediment traps. In addition, the temporary laydown area, if used, would be reseeded following construction to prevent further erosion and sediment-laden runoff from that area. Chapter 5, Freshwater Resources, describes the controls in place to minimize the risk of erosion impacting surface waters.

Vegetation removal has the potential to injure or kill wildlife present within the vegetated areas at the time of removal. Many animals avoid injury by moving away from areas with operating machinery. However, ground nesting animals and animals that nest in shrubs, such as some songbird species, may face a greater risk of injury or mortality. BMPs to reduce the risk of injury or mortality of nesting birds include use of an experienced wildlife spotter to identify wildlife present in the clearing area and advise on methods to avoid nest disturbance and/or wildlife injury. Considering the low value of habitat within the proposed project area, it is unlikely that large numbers of animals would be present in the proposed project area during vegetation removal.

Due to the loss of only low quality habitat in a fragmented landscape, and the measures in place to reduce the risk of habitat degradation or injury to wildlife during clearing, it is unlikely that direct injury or mortality to animals would occur to an extent that would impact the viability of a terrestrial wildlife population. Therefore, impact on terrestrial wildlife in the study area from vegetation removal during construction of the proposed project would be ***less than significant***.

6.4.1.2. Introduction or Spread of Noxious Weeds

The proposed project area currently contains four noxious weed species (refer to Section 6.3.1.1). Vegetation removal and ground disturbing activities have the potential to spread propagative material (such as seeds) from existing weed infestations to surrounding areas and/or

create disturbed areas where invasive weeds could become established. In addition, construction activities have the potential to introduce new noxious weeds by transporting propagative materials on vehicles and equipment. Revegetation of the temporary laydown area (if required) could introduce noxious weeds if weed seeds are present in the seed mix.

Impacts on Terrestrial Vegetation from Noxious Weeds

Noxious weeds compete with native plant species and can modify vegetation structure so that it is no longer suitable for native plants. The following measures would be incorporated into a Weed Management Plan and implemented, with direction from the Skagit County Noxious Weed Control Board (Skagit County 2016):

- Propagative material of noxious weeds (such as berries, seeds, and root balls) would be removed from the clearing area immediately after clearing and discarded at a transfer station.
- Wind-dispersive noxious weeds (such as Canada thistle and bull thistle) would be controlled to avoid spreading seeds to surrounding areas during construction.
- Cleaning protocols for equipment and personnel would be implemented to avoid introduction and spread of noxious weeds.
- If revegetation of the temporary laydown area is required, any seed mix used would be certified as free of noxious weeds.
- Vegetated areas surrounding the construction area would be monitored for introduction of any new noxious weed species, and infestations of new noxious weeds would be promptly controlled.

Implementation of these BMPs would reduce the risk of spreading noxious weeds during vegetation removal. Potential risks from failure to implement the BMPs correctly may be offset by benefits to surrounding ecosystems by removing the noxious weeds currently present in the proposed project area.

Implementation of the BMPs outlined above would minimize the chance for introduction of a new invasive weed to the area. If a new invasive weed was introduced during operations and maintenance of the proposed project, the weed would be promptly controlled, according to the Weed Management Plan. Therefore, the impact of the proposed project on terrestrial vegetation from the introduction or spread of invasive weeds in the study area would be ***less than significant***.

Impacts on Terrestrial Wildlife from Noxious Weeds

As described above, noxious weeds have the potential to out-compete native vegetation and modify the structure of vegetation communities. This can modify habitat by changing the food resources provided by native vegetation and changing how wildlife can use vegetation for shelter. Considering implementation of the BMPs described above, it is unlikely that a spread of noxious weeds or introduction of new noxious weeds would occur to an extent that would substantially alter terrestrial wildlife habitat. Therefore, the impact of the proposed project on

terrestrial wildlife from the introduction or spread of noxious weeds in the study area would be ***less than significant***.

6.4.1.3. Release of Fugitive Dust

Dust could be released through ground disturbance, hauling fill material, and vehicle use on unpaved surfaces.

Impacts on Terrestrial Vegetation from Fugitive Dust

Dust deposition on vegetation could interfere with photosynthesis and respiration. Air emissions from construction of the proposed project are discussed further in Chapter 4, Air Quality and Climate Change.

The following BMPs would be implemented during the construction phase to reduce dust deposition on vegetation:

- Wet exposed soils during dry weather
- Cover and/or wet surfaces, as necessary, when transferring excavated materials off-site
- Cover stockpiled materials
- Cover loads on trucks, as necessary

Plant species adjacent to the proposed project area are typically pasture grasses, weeds, and hardy native shrubs. These species are very resilient to disturbance and are unlikely to be impacted by dust deposition. Therefore, dust deposition is unlikely to impact the viability of a population of a species, or the ecological function of an ecological community. The impact of fugitive dust on terrestrial vegetation would be ***less than significant***.

Impacts on Terrestrial Wildlife from Fugitive Dust

If fugitive dust significantly impacted terrestrial vegetation, it could lead to changes in terrestrial wildlife habitat. In addition, substantial amounts of fugitive dust could present a health risk to wildlife. Based on the conclusion of *less than significant* impacts on vegetation above, and the implementation of BMPs to reduce the release of fugitive dust, it is unlikely that fugitive dust would impact terrestrial wildlife to an extent that would impact the viability of a population of a terrestrial wildlife species. Therefore, the impact on terrestrial wildlife in the study area from fugitive dust during construction of the proposed project would be ***less than significant***.

6.4.1.4. Impacts on Terrestrial Wildlife due to Increased Noise

Noise can be generated during both construction and operation of the proposed project. Wildlife can experience the following indirect impacts from noise:

- Interference with communication between animals, which can disrupt breeding and social bonding
- Masking sounds made by predators or nearby prey, which can interfere with both hunting and predator avoidance

- Prolonged stress, resulting in decreased fitness and productivity
- Avoidance of the noisy area, resulting in displacement, change in distribution of prey species, and potentially disrupting migration, breeding, and nesting

While there are unlikely to be many terrestrial animals within the refinery, populations of marine birds in other parts of the study area, including the nearby Fidalgo and Padilla bays, could be impacted.

The proposed project area is characterized by an active industrial facility. Noise from construction of the proposed project is not expected to substantially differ from existing levels in frequency, intensity, or daily/seasonal patterns. In addition, large numbers of animals are unlikely to be in and around the proposed project area due to the existing activity associated with refinery operations.

Standard BMPs for marine vessel activities associated with construction of the proposed project would be implemented to reduce noise impacts on marine birds. These include slow speeds for marine vessels and, to reduce impacts on important prey species, approved work windows for in-water work.

Construction activities and noise levels would be intermittent and would only occur during the day. Noise generated during construction would be temporary, and would not persist following completion of construction activities. Disturbance from construction of the proposed project would not be expected to increase noise levels significantly above existing operational conditions in the study area due to the ongoing operations of an active industrial facility (refer to Chapter 9, Section 9.5, Noise). Further, in Chapter 7, Marine and Nearshore Resources, the impact of noise on fish and prey species important to marine birds adjacent to the refinery boundary (Padilla and Fidalgo bays), was assessed to be *less than significant*. Therefore, direct and indirect impacts on terrestrial wildlife, including marine birds, in the study area due to proposed project construction would be ***less than significant.***

6.4.2. Operations

6.4.2.1. Impacts on Terrestrial Wildlife due to Noise in the Proposed Project Area

As described above, increased noise has the potential to indirectly impact wildlife through a number of mechanisms. Noise from operation of the proposed project is not expected to substantially differ from existing levels in frequency, intensity, or daily/seasonal patterns (refer to Chapter 9, Section 9.5, Noise). In addition, large numbers of animals are unlikely to be in and around the operational areas of the proposed project area. Therefore, potential impacts on terrestrial wildlife from operation of the proposed project would be ***less than significant***.

6.4.2.2. Impacts on Terrestrial Wildlife due to Lighting in the Proposed Project Area

The proposed project would result in additional artificial lighting at night. This has the potential to disturb wildlife behavior in and around the proposed project area. However, the refinery is already characterized by substantial nighttime lighting and the proposed project would not substantially change the character of nighttime lighting (Chapter 10, Land Use and Shoreline

Use). Therefore, the impact on terrestrial wildlife from the proposed project's artificial lighting would be ***less than significant***.

6.4.2.3. Impacts on Terrestrial Wildlife due to Increased Marine Vessel Traffic

The proposed project would result in an additional five marine vessels traveling to and from the refinery wharf per month (60 vessels per year). Potential impacts on terrestrial wildlife as a result of marine vessel operations include:

- Injury or mortality of marine birds due to marine vessel strike
- Stress and disruption of behavior, including avoidance of habitat, due to noise and startling
- Damage to prey resources due to the above mechanisms
- Damage to habitat due to marine vessel wakes

In general, larger birds or breeding individuals show higher degrees of sensitivity to disturbance (Chatwin et al. 2013; Rodgers and Schwikert 2002) and marine birds recover from disturbance more quickly as the distance to moving vessels increases (Schwemmer et al. 2011; Bellefleur et al. 2009; Speckman et al. 2004). Flocks of flightless molting seabirds are at particular risk of marine vessel strike, although collisions with flightless molting flocks of seabirds are dependent on the vessel speed, as birds would generally successfully avoid slow moving vessels. Lower marine vessel speeds reduce collision risk and also create less vessel wake, which avoids disturbance from wake action.

BMPs to reduce disturbance to birds include maintaining low marine vessel speeds in areas of high bird density or in areas containing flightless birds during molt. Marine vessels would travel close to mapped waterfowl concentrations near the refinery wharf. Marine vessels are likely to operate at low speeds as they prepare to dock at the wharf, which would reduce disturbance to birds. Other sections of the marine vessel transportation route are located in deeper seafloor areas that are not mapped as containing waterfowl concentration areas.

Operations and maintenance of the proposed project would not significantly increase marine vessel traffic through the area compared to the existing baseline. Potential disturbance caused by noise, wake, or physical presence of marine vessels would be short in duration as marine vessels pass through a given area. Therefore, impacts on marine bird resources in the study area from marine vessel strikes and wakes would be ***less than significant***.

6.4.3. Unplanned Events

The sections above describe impacts from planned activities associated with the proposed project. This section outlines potential impacts on terrestrial vegetation and wildlife from a fire or spill at the refinery, or a spill in the marine vessel transportation route.

6.4.3.1. Fires during Construction and Operations

An unplanned fire during construction could potentially be caused from vehicle operations, neglected equipment, sparks from metal-on-metal strikes, and cigarette butts.

Impacts on Terrestrial Vegetation from Fire

If a fire occurred and spread outside the proposed project area, the fire could destroy vegetation within and outside the refinery. The refinery has extensive operational control measures in place to prevent fires. The refinery maintains a trained 24-hour fire response crew on-site to address any fires that would occur during operations (refer to Chapter 2, Proposed Action and Alternatives).

Considering these controls, it is considered unlikely that a fire would become established in the proposed project area or spread to areas containing native vegetation. If a fire spread outside the proposed project area and damaged native vegetation, the vegetation could be rehabilitated and the impact would be temporary. Therefore, impacts on terrestrial vegetation as a result of a fire during construction activities would be ***less than significant***.

Impacts on Terrestrial Wildlife from Fire

If a fire occurred and spread outside the proposed project area, the fire could damage wildlife habitat and kill or injure wildlife. Considering the implementation of the fire prevention and response measures above, it is considered unlikely that a fire would become established in the proposed project area or spread to areas containing terrestrial wildlife habitat. If a fire did occur, terrestrial wildlife would be expected to actively avoid the fire, thereby avoiding direct mortality or injury. Therefore, impacts on terrestrial vegetation as a result of a fire during construction activities would be ***less than significant***.

6.4.3.2. Spills to Land at the Refinery during Construction and Operations

Construction activities present a risk of an unplanned release of hazardous materials, such as fuels, lubricants, oils, or hydraulic fluids. Spills during construction would most likely be associated with material storage for fueling, and would be small in volume. Operation of the proposed project could result in releases of hazardous materials such as xylene, reformate, sulfolane, ammonia, perchloroethylene, or other petroleum products. Spills could occur during transfer operations from transfer piping or valve leaks, pump or sump failures, overfilling storage tanks, or from routine maintenance activities. Spills during operation could involve larger spill volumes than during construction.

Impacts on Terrestrial Vegetation from Spills to Land at the Refinery

Spills would have potential to directly damage vegetation, through coming into contact with spilled materials, and indirectly damage vegetation through contamination of soil and groundwater. Further, spill response could require removal of vegetation, and removal of soil that could lead to impacts such as dust, or noxious weeds as described in the construction section above.

Multiple layers of spill prevention and response measures are currently in place at the refinery, and would be in place for the proposed project. These include the following measures:

- Spills would be prevented by constructing facilities in accordance with relevant standards, and undertaking regular monitoring and maintenance of equipment.
- Secondary containment would be used so that if material was released, it would be contained at the immediate release location.
- Stormwater in developed portions of the refinery would be captured in a sewer system, which routes stormwater runoff and oily water to the wastewater treatment plant (WWTP) for treatment.
- For areas outside developed portions of the refinery, temporary stormwater controls would be used during construction.
- Trained personnel would be available to support spill response activities.

These measures are described in further detail in Chapter 2, Section 2.7.6, Construction Site Controls and Appendix 2-A, Existing Programs and Operations.

In the event that one or more of the above controls failed, spilled materials could be released to unpaved areas, where they could damage vegetation and degrade habitat. However, based on the multiple layers of spill prevention and response measures, it is unlikely that spilled materials would, firstly, be spilled, and secondly, reach unpaved areas. Further, the materials, in particular the more volatile materials such as mixed xylenes, reformate, ammonia, and other volatile components of petroleum products, would evaporate and therefore dissipate fairly quickly.

Therefore, the impact on terrestrial vegetation within or adjacent to the proposed project area from spills during operation of the proposed project would be ***less than significant***.

Impacts on Terrestrial Wildlife from Spills to Land at the Refinery

An uncontrolled release of fuel or chemicals to impervious surfaces during construction or operations could contaminate soil and groundwater resources. This could degrade wildlife habitat, and present a risk of injury or mortality of wildlife depending on the toxicity of spilled materials. In addition, spill response involving removal of soils or vegetation could lead to impacts such as noise, dust, or noxious weeds, as described in the construction section.

As described above, spill prevention and response measures would be implemented to minimize the probability of a spill during operations and adequately contain a spill, if a spill did occur, so that any impacts would be localized and restricted to within the refinery. Further, large numbers of animals are unlikely to be in and around the operational areas of the refinery. Therefore, a release of materials to land is unlikely to impact terrestrial wildlife to an extent that would reduce the viability of a population, and impacts on terrestrial wildlife would be ***less than significant***.

6.4.3.3. Spills to the Marine Environment during Operations

Releases to the marine environment of xylenes or reformate could occur during product transfer at the refinery wharf or if product containment is lost from marine vessels traveling to or from the wharf.

Birds that use marine and tidal zone habitats are the terrestrial wildlife resource at risk of impact from releases to the marine environment. Marine birds that come into direct contact with xylene or reformate while trying to preen or from foraging in impacted waters would be exposed to contaminants by inhalation, ingestion, or dermal absorption (see Figure 7-8 in Chapter 7, Marine and Nearshore Resources). The following sections describe the toxicity of xylenes and reformate to marine birds and summarize the spill modeling results in Chapter 13, Marine Transportation, relevant to marine birds in order to assess the potential impacts. Because xylenes do not bioaccumulate, food chain exposures, such as eating contaminated prey, or marine birds being eaten by other species, is not a concern. The bioaccumulation of both xylenes and reformate in marine species is not significant because they are rapidly metabolized and excreted from tissues, precluding uptake in marine organisms (ATSDR 2007; Neff 2002). Additional bioaccumulation information is provided in Chapter 7, Marine and Nearshore Resources.

Xylene and Reformate Toxicity to Terrestrial Wildlife

Xylene and reformate spills do not create viscous layers like heavier fractions of petroleum products (such as crude oil), so they would not coat a bird's feathers to the extent that viscous crude oil does. However, the less viscous layer of xylenes and reformate products on the water surface still does have the potential for some direct toxicity related to feather coating more commonly associated with heavy oil spills, such as lost thermo-regulation and consumption of aromatics during preening, as well as indirect mortality due to compromised flight and foraging ability. Surface dwelling organisms such as seabirds may also inhale toxic doses of petroleum vapor when at the surface in the vicinity of an oil spill (Geraci 1990, Geraci and Williams 1990, as referenced in NRC 2003). However, there appears to be few data that prove inhalation of petroleum vapors, such as xylene and reformate, is a primary source of mortality from xylene or reformate exposure (NRC 2003) and impacts, if present, are generally limited to changes in the circulatory system and irritation or damage to lungs and mucous membranes (Boyd et al. 2001).

Physical/chemical properties indicate that xylene and reformate compounds have a moderate affinity for moving into tissue lipids of aquatic organisms, but bioaccumulation is not significant because the compounds are rapidly metabolized and excreted from tissues, precluding uptake in marine organisms (ATSDR 2007, Neff 2002). Therefore, exposure of terrestrial wildlife to xylene and reformate compounds through the food chain is unlikely to occur.

Studies reviewed during the preparation of this chapter did not report impacts on aquatic life, including birds, for slick thickness levels below 10 µm.[1] Specifically, research on crude oil impacts on wildlife provides the following details:

- Marine birds may be impacted at slick thicknesses in the range of 10 µm and 25 µm (Clark 1984; Jenssen 1994; and Scholten et al. 1996).
- A slick thickness of 1 µm was selected as a conservative threshold for the impacts on wildlife encountering a spill, including marine birds, based on a number of studies that examined toxicity at different dose levels (French 2009).

[1] For reference, 10 µm is less than one ten-thousandths of an inch.

For the purpose of this report, a slick thickness of 0.1 µm, one order of magnitude less than the literature threshold of 1 µm, was selected as the threshold value for when some minor impacts due to exposure could occur, although such impacts would be less than significant. This was selected as a conservative threshold for potential impacts.

Xylene is considered to have a moderate-to-low acute toxicity for aquatic organisms with a small amount of variation between each isomer[2] (WHO 1997; USEPA 2005). Due to the quick degradation, quick volatilization, and the low-to-moderate toxicity to organisms, the World Health Organization (WHO) has ranked the overall risk of xylene isomers to the aquatic environment as low (WHO 1997).

Spill Modeling Summary

Computer models were used to simulate hypothetical, uncontrolled releases of mixed xylene and reformate into the environment for three spill scenarios based on theoretical spill volumes consistent with volumes used for spill response planning purposes: a worst-case scenario, a maximum most probable scenario, and an average most probable scenario (see Chapter 13, Section 13.5, Marine Spills and Spill Response). The spill scenarios were modeled assuming that no response actions would occur, resulting in an uncontrolled release. If an actual spill were to occur, however, the refinery and local and regional response organizations would respond to avoid or minimize impacts from the spill.

In the modeled worst-case spill scenario for locations along the marine vessel transportation route, the area potentially affected under this scenario was estimated to be up to 23.5 square miles of surface water, and up to 11.5 miles of shoreline. The thickness of the floating spilled material immediately after the release was estimated to be10 µm or more, and the thickness reduced to less than 0.1 µm within 2 days as the material dispersed and evaporated. Modeling indicated that 99.5 percent of spilled material evaporated or dissipated within 3 days of the spill, leaving no persistent residue.

In the modeled worst-case spill scenario at the refinery wharf, the area covered by spilled material was estimated at up to 9.3 square miles of surface water, and up to 11.1 miles of shoreline. The thickness of the floating spilled material immediately after the release was estimated to be 10 µm or more, and this thickness was reduced to less than 0.1 µm within 1.5 days as the material dispersed and evaporated. Modeling indicated that 99.5 percent of spilled material would evaporate or dissipate within 16 hours of the spill, leaving no persistent residue.

Under the maximum most probable spill scenario, the estimated spill thickness was initially greater than 10 µm but not as consistently thick as in the worst-case spill scenario. Estimated spill thickness was reduced to less than 0.1 µm within 1.5 days along the marine vessel transportation route and within 1 day at the refinery wharf.

[2] There are three forms of xylene, which are referred to as isomers (i.e., compounds with the same formula but with a different arrangement and properties): meta-xylene, ortho-xylene, and para-xylene.

Under an average most probable spill scenario, the thickness of floating spilled material was estimated to be less than 0.1 µm within 12 hours.

Impacts on Terrestrial Wildlife

In the modeled spill scenarios, xylene and reformate volatilized to levels below those associated with marine bird toxicity within 2 days, and 99.5 percent of spilled material would evaporate or dissipate within 3 days. After this time, spilled materials would not persist in the water column.[3]

Prior to volatilizing, chemicals may be visible and potentially wash upon the shore as a silver sheen. This is not expected to cause direct physical injury to marine birds, as is typically associated with an oil spill, because these products do not form a significant viscous layer, and therefore have a limited ability to coat a bird's feathers. However, the presence of xylene and reformates for up to 3 days presents a risk of potentially sub-lethal impacts due to inhalation, ingestion, and dermal irritation.

Toxicity of mixed xylenes and reformate would be dependent on the spill size (concentration), spill duration, and the organism exposed to the chemicals on the water surface. The highest risks to wildlife would result from a spill in an area with high concentrations of prey, during the breeding season, during migration, or during the winter where many birds are concentrated.

Based on the non-persistent nature of mixed xylenes and reformate, impacts on terrestrial wildlife are expected to be short-term (less than 3 days). A spill is therefore unlikely to directly impact marine bird habitat for more than a few days.

The impacts of a worst-case or maximum most probable spill could have a *potentially significant* impact on marine birds if: such a spill were to occur in an area with important foraging, resting, or staging habitat for marine birds, in particular flightless molting birds, during seasonally high concentrations; and response actions were not successful or failed in some way.

Because a spill is an unplanned event, the significance of a spill is examined within the context of the likelihood of a spill occurring and the potential for the proposed project's vessel traffic to change the potential for a spill over current levels (See Section 13.5.6, Spill Likelihood and Section 13.3 Vessel Traffic, respectively). Based on both the historical record and a spill risk analysis study by Ecology, there is a negligible to low likelihood of a spill occurring, depending on the specific location in the study area. In addition, the risk of a spill occurring at the refinery wharf or along the marine vessel transportation route would not significantly change from existing conditions as a result of the proposed project.

Estimates of the potential impacts and significance of impacts associated with a spill were derived from an uncontrolled spill scenario (i.e., no spill response) of mixed xylenes or reformate into the marine environment. The estimated potential impacts presented in this section are therefore conservatively high. If an actual spill were to occur, response measures governed by

[3] Modeling indicates that 99.5 percent of the petroleum-based products may take up to 60 hours (2.5 days); however, thickness levels would be below 10 µm within 48 hours or less.

regulatory agencies and provided by the refinery, and local and regional response organizations would be implemented to avoid or minimize the potential impacts from a spill.

Safety measures are in place to prevent spills from marine vessels transiting the marine vessel transportation route and for loading and unloading petroleum products safely at the wharf (see Chapter 13, Section 13.4, Vessel Safety, and Appendix 2-A, Existing Programs and Operations). In addition, spill response resources (both equipment and personnel) are available to respond immediately in the event of a spill throughout the study area as described in Chapter 13, Section 13.5.7, Spill Response. For example, if a spill was to occur, response action would involve booming to limit or prevent shoreline impacts and protect sensitive areas such as a marine bird breeding areas. Booming, as shown on Figure 6-4, prevents the spread of the spilled materials to sensitive resources by containing the spilled material. The resources are protected by the booms because the materials float on the water surface and are therefore contained within the area confined by the spill booms.

Source: BTNEP (undated)

Figure 6-4: Example of a Boom Used in Spill Response

6.4.4. Summary of Potential Impacts on Terrestrial Vegetation and Wildlife

In summary, all potential impacts on terrestrial vegetation and wildlife were evaluated as ***less than significant***. Table 6-8 and Table 6-9 summarize the evaluation of potential impacts for terrestrial vegetation and terrestrial wildlife, respectively. Further evaluation specific to special status species is presented in Section 6.5.

Table 6-8: Summary of Potential Impacts on Terrestrial Vegetation

Impact Topic	Impact Summary	Potential Impact Significance	
		Less than Significant	*Potentially Significant*
Construction			
Vegetation Removal	Up to 23.5 acres of terrestrial vegetation would be removed during construction. Approximately 15.5 acres of vegetation would be permanently removed and up to 8 acres of vegetation would be temporarily removed and restored to pasture following completion of construction activities. Implementation of BMPs and permitting requirements would limit vegetation removal to the proposed project area and its immediate vicinity.	✓	
Introduction or Spread of Noxious Weeds	Vegetation removal and ground disturbing activities have the potential to spread noxious weeds, and/or create disturbed areas where invasive and noxious weeds could become established. However, with implementation of BMPs during construction, including the Weed Management Plan, it is unlikely that a new invasive weed would be introduced and become established within disturbed areas.	✓	
Release of Fugitive Dust	Dust deposition during construction activities could interfere with photosynthesis and respiration of vegetation. Plant species adjacent to the proposed project area include pasture grasses, weeds, and hardy native shrubs. These species are resilient to disturbance and are unlikely to be impacted by dust deposition. In addition, the implementation of BMPs would reduce the potential deposition of dust on vegetation.	✓	
Operations			
	No impacts on terrestrial vegetation were identified for the operation of the proposed project.		
Unplanned Events			
Fire	A fire could occur and spread outside the proposed project area and could destroy vegetation within and outside the refinery. However, a fire is considered unlikely due to BMPs, including extensive operational control measures that are in place and would continue to be in place to prevent fires. The refinery maintains a trained 24-hour fire response crew on-site to address any fires.	✓	
Spills to Land	Spills during construction would most likely be associated with material storage for fueling, and would be small in volume. Spills would have potential to directly damage vegetation, through coming into contact with spilled materials, indirectly damage vegetation through contamination of soil and groundwater, and through removal of vegetation and soil during spill response activities. However, due to the multiple layers of spill prevention and response measures in place, it is unlikely that materials would be spilled and then reach unpaved areas.	✓	

Table 6-9: Summary of Potential Impacts on Terrestrial Wildlife

Impact Topic	Impact Summary	Potential Impact Significance	
		Less than Significant	*Potentially Significant*
Construction			
Vegetation Removal	Vegetation removal has the potential to injure or kill wildlife present within the vegetated areas at the time of removal. However, vegetation within the proposed project area does not appear to currently provide value for dispersal of plants and animals and therefore, habitat fragmentation is not anticipated. Due to the loss of only low quality habitat in an already fragmented landscape, and accounting for the measures in place to reduce the risk of habitat degradation or injury to wildlife during clearing, it is unlikely that direct injury or mortality to animals would occur to an extent that would impact the viability of a terrestrial wildlife population.	✓	
Introduction or Spread of Noxious Weeds	Noxious weeds have the potential to out-compete native vegetation and modify the structure of vegetation communities. Weeds can modify habitat by changing the food resources provided by native vegetation and by changing how wildlife can use vegetation for shelter. However, with implementation of BMPs during construction, including the Weed Management Plan, it is unlikely that new invasive weeds would be introduced to and become established within disturbed areas.	✓	
Release of Fugitive Dust	Substantial amounts of fugitive dust could present a direct health risk to wildlife, as well as an indirect risk by causing changes in terrestrial wildlife habitat through impacts to terrestrial vegetation. However, generation of significant amounts of fugitive dust is not expected. Based on the conclusion of less than significant impacts to terrestrial vegetation above, and accounting for BMPs to reduce the release of fugitive dust, it is unlikely that fugitive dust would impact terrestrial wildlife habitat to an extent that would impact the viability of a population of a terrestrial wildlife species.	✓	
Increased Noise	Noise could be generated during construction of the proposed project. Increased noise levels could interfere directly with communication of species by masking sounds, as well as result in avoidance of certain areas and a long-term increase in stress levels for terrestrial wildlife species. While it is unlikely that many terrestrial animals would be within the refinery, populations of marine birds in the nearby Fidalgo and Padilla bays could be impacted. However, the proposed project area is characterized by an active industrial facility and noise from construction of the proposed project is not expected to substantially differ from existing levels in frequency, intensity, or daily/seasonal noise patterns.	✓	

Impact Topic	Impact Summary	Potential Impact Significance	
		Less than Significant	*Potentially Significant*
Operations			
Increased Noise	Noise could be generated during operation of the proposed project. However, it is not expected to substantially differ from existing levels in frequency, intensity, or daily/seasonal patterns. In addition, the proposed project area is characterized by an active industrial facility and large numbers of animals are unlikely to be in and around the operational areas of the proposed project area.	✓	
Lighting	The proposed project would result in additional artificial lighting at night. This has potential to disturb wildlife behavior in and around the proposed project area. However, the refinery is already characterized by substantial nighttime lighting and the proposed project would not substantially change the character of nighttime lighting.	✓	
Marine Vessel Traffic	Five additional marine vessels would travel along the marine vessel transportation route and dock at the refinery wharf each month. Potential impacts to marine birds would include marine vessel strikes, the disruption of behavior, increased stress, reduced prey availability, and damage to habitat. However, the operation of five additional vessels per month would not significantly increase marine vessel traffic through the area compared to the existing baseline traffic levels. Potential disturbance from the presence of marine vessels would be short in duration as marine vessels pass through a given area.	✓	
Unplanned Events			
Fire	It is considered unlikely that a fire would become established in the proposed project area and then spread to areas containing terrestrial wildlife habitat.	✓	
Spill to Land	Construction activities present a risk of an unplanned release of hazardous materials that could contaminate soil and damage vegetation, causing habitat degradation. Implementation of the BMPs is expected to minimize the probability of a spill during operations and adequately contain a spill, if a spill did occur, so that any impacts would be localized and temporary.	✓	
Spill to Marine Environment	The presence of xylene and reformates for up to three days presents a risk of potentially sub-lethal impacts to marine birds due to inhalation, ingestion, and dermal irritation. In a modelled worst-case spill scenario, spilled materials covered up to 23.5 square miles of open water and approximately 11.5 miles of shoreline. Any impacts are expected to be temporary, as xylene and the compounds in reformate rapidly volatilize and do not bioaccumulate. Marine spills have a negligible to low likelihood of occurring.		✓

6.4.5. Potential Impacts of the No Action Alternative

Under the no action alternative, Tesoro would not proceed with the proposed project. Because no construction or operations would take place under the no action alternative, there would be no new impacts on terrestrial vegetation and wildlife resources.

6.4.6. Additional Mitigation Measures

No additional mitigation measures are recommended beyond the embedded controls that are already incorporated into the proposed project design.

6.5. Potential Impacts on Special Status Species

Reasons for species being granted a special status include the species is known to be threatened or endangered, there is doubt about whether the viability of a species' population is secure, or because continued security of the species depends on coordination between multiple governments or authorities. As a result, special status species may be at greater risk of impacts from disturbance compared to common or secure species.

As described in Section 6.4, the proposed project area has limited value for terrestrial vegetation and wildlife, and potential impacts on terrestrial vegetation and wildlife are therefore predominantly associated with impacts from operations and unplanned events within the marine vessel transportation route and surrounding waters (including the tidal zone). For this reason, species that would not typically use the marine and nearshore habitats in the marine vessel transportation route are unlikely to be impacted. Only those species that utilize habitat that could be impacted by a marine spill of xylene or reformate are subject to further evaluation. These habitats include marine habitats, coastal bays and estuaries, and the tidal zone of shorelines. The groups of species identified that may occur within these habitats include marine birds, shorebirds, waterfowl, and other wildlife species that may temporarily enter or fly over the tidal zone. Potential impacts on federal or state sensitive species, and specifically individuals of those species, are further evaluated in this section.

Potential impacts on special status species within these species groups are further evaluated below, using the criteria presented in Section 6.2.2.3. Special status species that were not subject to further evaluation are listed in Appendix 6-B, Upland Special Status Terrestrial Vegetation and Wildlife Species.

6.5.1. Species Protected under the Migratory Bird Treaty Act

The study area provides foraging habitat for a range of migratory birds protected under the MBTA that travel through or winter in the study area. The study area does not provide nesting habitat for migratory birds protected under the MBTA due to the lack of suitable terrestrial habitat features; however, it may provide important habitat for activities required for breeding such as foraging and social behavior. Due to the short-term nature of a xylene or reformate spill (less than 3 days) (see Section 6.4.3.3), the low risk of bioaccumulation resulting from a xylene or reformate spill (see Section 6.4.3.3), and the cumulative increase in marine vessel

traffic in the context of existing marine vessel traffic in the Salish Sea (Section 6.4.2.3), the project is not likely to result in a significant impact on migratory birds protected under the MBTA.

6.5.2. Threatened and Endangered Species (State and Federal)

Three threatened or endangered species are subject to further evaluation and are described below.

6.5.2.1. Marbled Murrelet

The marbled murrelet (*Brachyramphus marmoratus*) has been recorded in Fidalgo Bay (Nysewander et al. 2005) and may occur in other parts of the study area. As described in Section 6.4.3.3, the direct impacts of a spill would be short term (less than 3 days), xylene is not expected to have lethal impacts on marine birds, and the contaminants are unlikely to bioaccumulate. Further, the study area does not provide nesting habitat for the species. Therefore, the impact of the proposed project on the marbled murrelet would be ***less than significant***.

6.5.2.2. Short-tailed Albatross

The short-tailed albatross (*Phoebastria albatrus*) breeds in Japan and is rare in the state of Washington (a few birds are recorded off the west coast annually) (Seattle Audubon Society 2017). If the species did occur in the study area, it is expected to occur as a temporary visitor. As discussed in Section 6.4.3.3, there is a negligible to low likelihood of a spill occurring that would result in a slick thickness sufficient to cause impacts on marine birds lasting for more than 12 hours. Due to the rarity of the bird, and the likelihood of a spill, it is considered unlikely that the species would be present, and therefore subject to direct impacts during a spill event. In addition, as the contaminants are considered unlikely to bioaccumulate, it is unlikely that a spill would result in indirect impacts on the species' foraging resources. Therefore, the impact of the proposed project on the short-tailed albatross would be ***less than significant***.

6.5.2.3. Streaked Horned Lark

The streaked horned lark (*Eremophila alpestris strigata*) does not directly use marine resources. The species does, however, occur on beaches where it forages for grains and insects. The species does not feed on marine biota and is unlikely to come into direct contact with a spill. The only potential exposure pathway is via inhalation of contaminants; however, it is unlikely that the species would be substantially impacted by a spill because xylene is not expected to have lethal impacts on marine birds, a xylene or reformate spill is expected to volatilize within 3 days, and the species is likely to only spend a portion of its time in beach habitats. Therefore, the impact of the proposed project on the streaked horned lark would be ***less than significant***.

6.5.2.4. American White Pelican

The American white pelican (*Pelecanus erythrorhynchos*) does not typically occur in the state of Washington, and recent records of the species in 2016 are thought to be a result of displacement of individuals due to drought within the species' usual range (Campbell 2016). Based on the

evaluation of the proposed project having less than significant impacts on terrestrial wildlife and their habitat (see Section 6.4), it is considered unlikely that the proposed project would reduce the value of the study area as potential dispersal habitat for the American white pelican. Further, due to the rarity of the bird within the study area, and the negligible to low likelihood of a spill, it is considered unlikely that the species would be present, and therefore subject to direct impacts during a spill event. Therefore, the impact of the proposed project on the American white pelican would be ***less than significant***.

6.5.2.5. Brown Pelican

Within Washington, brown pelicans typically occur on the outer coast, but may be found in the Strait of Juan de Fuca and Puget Sound (Stinson 2014). As discussed in Section 6.4.3.3, there is a negligible to low likelihood of a spill occurring that would result in a slick thickness sufficient to cause impacts on marine birds lasting for more than 12 hours. Due to the limited numbers of this species occurring in the Strait of Juan de Fuca and Puget Sound, and the negligible to low likelihood of a spill, it is considered unlikely that the species would be present, and therefore subject to direct impacts during a spill event. As the contaminants are considered unlikely to bioaccumulate, it is unlikely that a spill would result in indirect impacts on the species' foraging resources. Further, the USFWS recognizes that oil spills are localized and infrequent within the species' range and that oil spill risk is not believed to be a significant factor impacting the species throughout its range (USFWS 2009). Therefore, the impact of the proposed project on the brown pelican would be ***less than significant***.

6.5.3. State Sensitive and State Candidate Species

For state sensitive and state candidate species, an action is considered to have a significant impact if it is likely to result in mortality (Section 6.2.2.3). The state sensitive and state candidate species subject to further impact evaluation include marine birds (common murre and Brandt's cormorant), waterfowl (common loon and western grebe), and two birds of prey that occur in coastal areas (bald eagle and peregrine falcon). The study area does not provide nesting habitat for the species; however, it provides valuable foraging habitat to support breeding activities. Potential risks of mortality to these species include marine vessel strike or direct or indirect impacts from marine spills.

As described in Section 6.4.3.3, xylene does not form a viscous layer that would coat a bird's feathers and is not expected to have lethal impacts on marine birds. Therefore, a xylene spill is unlikely to directly result in mortality. In addition, a spill is unlikely to indirectly result in mortality, as modeling indicated that a slick thickness sufficient to cause impacts on marine birds would not last for more than 3 days, and the contaminants are unlikely to bioaccumulate. Therefore, the proposed project is not likely to result in mortality of these species, so the impact on the state candidate and state sensitive species evaluated would be ***less than significant***.

6.5.4. Potential Impacts of the No Action Alternative

Under the no action alternative, Tesoro would not proceed with the proposed project. Because no construction or operations would take place under the no action alternative, there would be no new impacts on terrestrial vegetation and wildlife resources.

6.5.5. Additional Mitigation Measures

No additional mitigation measures are recommended beyond the embedded controls and BMPs that are already incorporated into the proposed project design.

6.6. CUMULATIVE IMPACTS

As described above, construction and operation of the proposed project could result in less than significant impacts to terrestrial vegetation and wildlife. Within the study area, there has been significant past agricultural, industrial, commercial and residential growth that has resulted in impacts to terrestrial vegetation and wildlife. There are no present or reasonably foreseeable future actions that would impact terrestrial vegetation and wildlife in the area of the proposed project that might represent an impact related to loss or change of habitat. Cumulative impacts as a result of the proposed project in addition to the past impacts associated with refinery development on March Point are considered negligible. These impacts would be minimized by construction BMPs and localized to the Tesoro Anacortes Refinery site.

Impacts from operations within the marine vessel transportation corridor (including risk of vessel strike and increased noise) have the potential to combine with impacts from increased marine vessel traffic from other sources that would contribute to cumulative impacts on marine birds. However, the additional five marine vessels traveling to and from the refinery wharf each month (60 vessels per year) are not considered to substantially increase existing marine vessel traffic. It has been estimated that due to increased activity at currently existing facilities and operation of proposed facilities, vessel traffic could be increased by 60 to 120 percent by 2030 (see Chapter 13, Section 13.6, Cumulative Impacts from Marine Transportation). This increase in vessel traffic would increase the likelihood of injury or mortality to marine birds through vessel strike, stress, disruption of behavior, and damage to habitat. Because the proposed project's increase in current large marine vessel traffic is 2.2 percent or less along the marine vessel transportation route, cumulative impacts on marine birds due to the contribution in vessel traffic from the proposed project are not anticipated to be significant.

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