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Appendix A
ESA Species List

LISTED AND PROPOSED ENDANGERED AND THREATENED SPECIES AND CRITICAL HABITAT; CANDIDATE SPECIES; AND SPECIES OF CONCERN IN **SNOHOMISH COUNTY** AS PREPARED BY THE U.S. FISH AND WILDLIFE SERVICE WESTERN WASHINGTON FISH AND WILDLIFE OFFICE

(Revised November 1, 2007)

LISTED

Bull trout (*Salvelinus confluentus*)

Canada lynx (*Lynx canadensis*)

Gray wolf (*Canis lupus*)

Grizzly bear (*Ursus arctos = U. a. horribilis*)

Marbled murrelet (*Brachyramphus marmoratus*)

Northern spotted owl (*Strix occidentalis caurina*)

Major concerns that should be addressed in your Biological Assessment of project impacts to listed species include:

1. Level of use of the project area by listed species.
2. Effect of the project on listed species' primary food stocks, prey species, and foraging areas in all areas influenced by the project.
3. Impacts from project activities and implementation (e.g., increased noise levels, increased human activity and/or access, loss or degradation of habitat) that may result in disturbance to listed species and/or their avoidance of the project area.

DESIGNATED

Critical habitat for bull trout

Critical habitat for the marbled murrelet

Critical habitat for the northern spotted owl

PROPOSED

None

CANDIDATE

Oregon spotted frog (*Rana pretiosa*)
Yellow-billed cuckoo (*Coccyzus americanus*)

SPECIES OF CONCERN

Bald eagle (*Haliaeetus leucocephalus*)
Beller's ground beetle (*Agonum belleri*)
California wolverine (*Gulo gulo luteus*)
Cascades frog (*Rana cascadae*)
Long-eared myotis (*Myotis evotis*)
Long-legged myotis (*Myotis volans*)
Northern goshawk (*Accipiter gentilis*)
Olive-sided flycatcher (*Contopus cooperi*)
Pacific lamprey (*Lampetra tridentata*)
Pacific Townsend=s big-eared bat (*Corynorhinus townsendii townsendii*)
Peregrine falcon (*Falco peregrinus*)
River lamprey (*Lampetra ayresi*)
Tailed frog (*Ascaphus truei*)
Western toad (*Bufo boreas*)
Botrychium pedunculosum (stalked moonwort)

ESA-Listed Marine Mammals

Under the jurisdiction of NOAA Fisheries Service that may occur off Washington & Oregon:

- Southern Resident Killer Whale (E), *Orcinus orca*
- Humpback Whale (E), *Megaptera novaeangliae*
- Blue Whale (E), *Balaenoptera musculus*
- Fin Whale (E), *Balaenoptera physalus*
- Sei Whale (E), *Balaenoptera borealis*
- Sperm Whale (E), *Physeter macrocephalus*
- Steller Sea Lion (T), *Eumetopias jubatus*

Under the jurisdiction of NOAA Fisheries Service that may occur in Puget Sound:

- Southern Resident Killer Whale (E), *Orcinus orca*
- Humpback Whale (E), *Megaptera novaeangliae*
- Steller Sea Lion (T), *Eumetopias jubatus*

(E) = Endangered
(T) = Threatened

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Regional Administrator: Bob Lohn
7600 Sand Point Way NE, Seattle, WA 98115-0070
206-526-6150
Email: Webmaster or Content Manager

Page last updated: June 26, 2007

Endangered Species Act Status of West Coast Salmon & Steelhead

(Updated Feb. 26, 2008)

Species[1]			*Endangered Species Act Listing Status*[2]	*ESA Listing Actions Under Review*
Sockeye Salmon (*Oncorhynchus nerka*)	1	Snake River	***Endangered***	
	2	Ozette Lake	***Threatened***	
	3	Baker River	*Not Warranted*	
	4	Okanogan River	*Not Warranted*	
	5	Lake Wenatchee	*Not Warranted*	
	6	Quinalt Lake	*Not Warranted*	
	7	Lake Pleasant	*Not Warranted*	
Chinook Salmon (*O. tshawytscha*)	8	Sacramento River Winter-run	***Endangered***	
	9	Upper Columbia River Spring-run	***Endangered***	
	10	Snake River Spring/Summer-run	***Threatened***	
	11	Snake River Fall-run	***Threatened***	
	12	Puget Sound	***Threatened***	
	13	Lower Columbia River	***Threatened***	
	14	Upper Willamette River	***Threatened***	
	15	Central Valley Spring-run	***Threatened***	
	16	California Coastal	***Threatened***	
	17	Central Valley Fall and Late Fall-run	***Species of Concern***	
	18	Upper Klamath-Trinity Rivers	*Not Warranted*	
	19	Oregon Coast	*Not Warranted*	
	20	Washington Coast	*Not Warranted*	
	21	Middle Columbia River spring-run	*Not Warranted*	
	22	Upper Columbia River summer/fall-run	*Not Warranted*	
	23	Southern Oregon and Northern California Coast	*Not Warranted*	
	24	Deschutes River summer/fall-run	*Not Warranted*	
Coho Salmon (*O. kisutch*)	25	Central California Coast	***Endangered***	
	26	Southern Oregon/Northern California	***Threatened***	
	27	Lower Columbia River	***Threatened***	• Critical habitat
	28	Oregon Coast[2]	***Threatened***	
	29	Southwest Washington	*Undetermined*	
	30	Puget Sound/Strait of Georgia	***Species of Concern***	
	31	Olympic Peninsula	*Not Warranted*	
Chum Salmon (*O. keta*)	32	Hood Canal Summer-run	***Threatened***	
	33	Columbia River	***Threatened***	
	34	Puget Sound/Strait of Georgia	*Not Warranted*	
	35	Pacific Coast	*Not Warranted*	
Steelhead (*O. mykiss*)	36	Southern California	***Endangered***	
	37	Upper Columbia River	***Endangered***	
	38	Central California Coast	***Threatened***	
	39	South Central California Coast	***Threatened***	
	40	Snake River Basin	***Threatened***	
	41	Lower Columbia River	***Threatened***	
	42	California Central Valley	***Threatened***	
	43	Upper Willamette River	***Threatened***	
	44	Middle Columbia River	***Threatened***	
	45	Northern California	***Threatened***	
	46	Oregon Coast	***Species of Concern***	
	47	Southwest Washington	*Not Warranted*	
	48	Olympic Peninsula	*Not Warranted*	
	49	Puget Sound	***Threatened***	• Critical habitat • Protective Regulations
	50	Klamath Mountains Province	*Not Warranted*	
Pink Salmon (*O. gorbuscha*)	51	Even-year	*Not Warranted*	
	52	Odd-year	*Not Warranted*	

1 The ESA defines a "species" to include any distinct population segment of any species of vertebrate fish or wildlife. For Pacific salmon, NOAA Fisheries considers an evolutionarily significant unit, or "ESU," a "species" under the ESA. For Pacific steelhead, NOAA Fisheries has delineated distinct population egments (DPSs) for consideration as "species" under the ESA

2 On Feb. 11, 2008, NOAA Fisheries published a final determination listing Oregon coast coho as threatened (73FR7816). This final rule also designated critical habitat and issued final protective regulations. The listing, critical habitat and protective regulations are effective on **May 12, 2008**.

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Appendix B
Master Development Plan

Notes:
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. can not guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
3. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without permission.

Data Sources:
Preferred Alternate map provided by OliverMcMillan.
Transverse Mercator, Zone 10 N North, North American Datum 1983
North arrow oriented to grid north

Preferred Alternative (Alternative 1) Proposed Site Layout

Everett Riverfront Redevelopment
Everett, Washington

Appendix B

Office: BOIS Path: P:\6\6191002\00\GIS\MXD\6191002\01Pref_Alternate2.3_1.mxd Map Revised: June 26, 2007

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Appendix C
Site Photographs

Photograph 1.
Culvert where Bigelow Creek enters the site, looking west.

Photograph 2.
Bigelow Creek entrance to the site, looking north from culvert.

Photograph 3.
Stormwater catch basin, west of the BNSF mainline, in Bigelow Creek connected to culvert where the creek enters the site.

Photograph 4.
Bigelow creek, as channelized surface flow, in the Lowell neighborhood across 2nd Avenue.

Photograph 5.
Bigelow Creek along the southwest margin of the project area, looking south. Arrow indicates location of the culvert Bigelow Creek flows through prior to discharging into Wetland D.

Photograph 6.
Southwest corner of Wetland D, looking northeast. Bigelow Creek discharges into the wetland.

Photograph 7.
Bigelow Creek, expressed as surface sheet flow across railroad grade, looking north. Arrows indicate areas on surface. Western margin of Wetland D on the right.

Photograph 8.
Partially submerged culvert between Bigelow Creek and West Ditch Drainage.

Photograph 9.
Culvert along West Ditch Drainage, looking south where active and former railroad tracks converge.

Photograph 10.
West Ditch Drainage near Intersection of former railroad alignments, looking west toward culvert visible in Photograph 13

Photograph 11.
Bigelow Creek existing conditions, looking south.

Photograph 12.
Wetland U vegetation.

Photograph 13.
Creosote coated railroad timbers and debris in West Ditch Drainage, looking north.

Photograph 14.
Existing conditions and vegetation within West Ditch Drainage, looking south.

Photograph 15.
Culvert connecting Bigelow Creek to Wetland C, looking north. Bigelow Creek is in the foreground and portions of Wetland C are visible in the background.

Photograph 16.
Northern segment of Bigleow Creek, looking south.

Photograph 17.
West Ditch Drainage looking north

Photograph 18.
Culvert conveying water between West Ditch Drainage and Bigelow Creek. Arrow indicates approximate culvert location.

Photograph 19.
Culvert under the former Milwaukee railroad line, looking east. Bigelow Creek, in the foreground, flows this culvert and discharges into the Snohomish River.

Photograph 20.
Bigelow Creek outfall into Snohomish River, looking east.

Photograph 21.
Proposed location of shoreline and river habitat enhancement, looking south.

Photograph 22.
Western margin of Wetland L, looking north.

Photograph 23.
Existing conditions north of site, looking south. Large pile of debris, up to 50 feet tall, are present on this portion of the former Eclipse Mill site.

Photograph 24.
Existing conditions north of the site along railroad and access road.

Photograph 25.
Fire road access to Simpson Pad, looking east. Boundary of Wetland D on the left and South Simpson Wetlands on the right.

Photograph 26
Wetland D adjacent to above fire road, looking northwest.

Photograph 27.
Southeastern corner of the Simpson Pad, looking northwest.

Photograph 28.
Present buffer conditions, looking south along the western margins of the south Simpson pad.

Photograph 29.
Looking west into Wetland D from the path around the Simpson Development Pad.

Photograph 30.
Path south along western portion of the Simpson Development Pad.

Photograph 31.
Northwestern corner of the Simpson Pad looking south.

Photograph 32.
Existing buffer conditions along the Simpson Development Pad, looking north into Wetland C.

Photograph 33.
Trail towards shoreline at northeastern corner of the Simpson pad.

Photograph 34.
"Finger" wetland, which extends west onto the Simpson Development Pad along the eastern edge of the Development Pad.

Photograph 35.
Wetland D looking south.

Photograph 36.
Evidence of beaver activity along the western edge of Wetland D.

Photograph 37.
Western shoreline adjacent to the Rotary Park parking lot. Southern extent of the Everett Riverside Development project area.

Photograph 38.
Shoreline from eastern bank, looking west.

Photograph 39.
North Bigelow Creek outfall.

Photograph 40.
Western shoreline, north of the proposed marina location. Two culverts which could potentially be removed and each outfall reconstructed. Also, invasive vegetative species and debris which could be potentially removed visible along the shoreline.

Photograph 41.
Newlands Construction property, southern boundary looking north along the shoreline.

Photograph 42.
Western Shoreline north of the Newlands Construction property, looking west. Arrow above the riprap indicates the approximate northern extent of shoreline within the project area.

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Appendix D
Listed Species Life Histories

APPENDIX D
LISTED SPECIES LIFE HISTORIES

SPECIES OF FISH

Bull Trout (Salvelinus Confluentus)

ESA Listing and Stock Status

United States Fish and Wildlife Service (USFWS) identified five Distinct Population Segments (DPS) of bull trout in the western states and, in 1999 listed bull trout in the Coastal-Puget Sound DPS as threatened. The coastal bull trout DPS is composed of 34 sub-populations, including the only anadromous bull trout runs within the contiguous United States (70 FR 56212). The more common life history forms presently recognized for bull trout are resident and fluvial, neither of which use marine waters.

Bull trout have a wide, but very patchy, distribution across their range (Reiman and McIntyre 1993). Bull trout have been extirpated from many of the large rivers within their historic range and exist primarily in isolated headwater populations. The decline of bull trout has been attributed to habitat degradation, blocking of migratory corridors, poor water quality, introduction of non-native species and the effects of past fisheries management practices.

Life History

Bull trout are char native to the Pacific Northwest and western Canada. Bull trout exhibit resident and migratory life history strategies through much of the current range (Rieman and McIntyre 1993). Migratory bull trout spawn in tributary streams where juvenile fish rear from one to four years before migrating to either a lake (adfluvial), river (fluvial), or in certain coastal areas, to saltwater (anadromous), where maturity is reached in one of the three habitats. Resident and migratory forms may be found together and it is suspected that bull trout give rise to offspring exhibiting either resident or migratory behavior (Rieman and McIntyre 1993).

Bull trout have more specific habitat requirements compared to other salmonids (Rieman and McIntyre 1993). Habitat components that appear to influence bull trout distribution and abundance include water temperature, cover, channel form and stability, valley form, spawning and rearing substrates, and migratory corridors. Bull trout typically spawn from August to November during periods of decreasing water temperatures. However migratory bull trout frequently begin spawning migrations as early as April. Bull trout require spawning substrate consisting of loose, clean gravel relatively free of fine sediments. Depending on water temperature, incubation is normally 100 to 145 days, and after hatching, juveniles remain in the substrate. Time from egg deposition to emergence may surpass 200 days. Fry normally emerge from early April through May depending upon water temperatures and increasing stream flows. Bull trout are opportunistic feeders with food habits primarily a function of size and life history strategy. Resident and juvenile migratory bull trout prey on terrestrial and aquatic insects, macro zooplankton and small fish. Adult migratory bull trout are primarily piscivorous, know to feed on various fish species (Rieman and McIntyre 1993).

Puget Sound Chinook Salmon (Oncorhynchus Tshawytscha)

ESA Listing and Stock Status

As a result of the National Marine Fisheries Service's status review of chinook salmon populations in Washington, Oregon, Idaho and California, five Evolutionary Significant Units (ESUs) were defined. The Puget Sound ESU, composed of all naturally spawning spring, summer and fall runs of chinook

salmon populations from the Elwha River to the Nooksack River, was listed as threatened under the Environmental Species Act (ESA) in March 1999 (64 FR 14308-14328) as well as artificial propagation programs (including the Wallace River Hatchery) in 2005 (70 FR 37160-37204). Critical habitat was designated for Puget Sound Chinook in published rules issued in 2005 and became effective on January 2, 2006 (70 FR 52630-52853).

Overall abundance of chinook in the Puget Sound ESU has declined substantially from historic levels, and there has been concern over the effects of a high degree of hatchery supplementation on the genetic fitness of wild stocks. Additional factors leading to declines in the ESU include habitat degradation and high harvest rates, which in recent years have exceeded 90 percent (Myers et al. 1998).

There are two distinct stocks of chinook in the Snohomish listing area in the north Puget Sound (Snoqualmie and Skykomish stocks) (Washington State Salmon and Steelhead Stock Inventory (SaSSI) 2002). The Snoqualmie stock, composed of fish that spawn in the Snoqualmie river and its tributaries, are native stock with wild production. The Skykomish stock, composed of the Snohomish-summer, Wallace-summer, Bridal Veil Creek-fall and a portion of the Snohomish-fall chinook populations, are native stock with composite production (the Wallace River Chinook are released from the Wallace River Hatchery). The SaSSI characterize both stocks as "depressed" due primarily to low productivity.

Life History

Chinook salmon are anadromous. Adults migrate from marine environments and spawn in freshwater, while juveniles rear in freshwater for varying periods of time before migrating out to saltwater where they mature. Chinook use a wide variety of freshwater habitats from headwaters to the estuary, but are typically found in low-gradient streams dominated by gravel and cobble (Scott and Crossman 1973). They require clean gravel for spawning. Juvenile chinook are typically associated with low gradient, meandering, unconstrained stream reaches (Lee et al. 1996) and require abundant habitat complexity such as that associated with accumulations of large woody debris and overhanging vegetation (United States Department of the Interior 1996). Juvenile chinook often move into side channels, beaver ponds and sloughs for over-wintering habitat.

Most juvenile summer/fall chinook salmon in Puget Sound river systems migrate to the marine environment as smolts during their first year although their early life history patterns vary. Some migrate downstream almost immediately after emerging from the gravel. Others migrate downstream and enter side-channels where they may rear for several weeks before migrating to marine waters. A third life history strategy involves a more extended rearing time (up to 2 years) in the river before migrating to salt water.

Juvenile chinook salmon reside for a period of time in shallow intertidal areas before migrating to the sea. The availability of rearing habitat that includes an abundance of food items and security from predation during this early marine phase is critical to their growth and survival.

As smolts mature into juveniles, they move into Puget Sound and the North Pacific to feed and mature into adults. As juveniles, their diet consists usually of either small crustaceans or insects in fresh water and small crustaceans in the sea; as they mature their diet includes a greater proportion of small fish (Royce 1972). As juvenile salmon shift their prey preference to fish species such as juvenile herring and sandlance, they become dependent on these prey species as a forage base and are more likely to be found in shoreline zones containing eelgrass and other habitat features that support their prey.

Puget Sound Steelhead (Oncorhynchus Mykiss)

ESA Listing and Stock Status

On May 11, 2007, National Oceanic and Atmospheric Administration (NOAA) Fisheries issued a final determination to list the distinct population segment (DPS) of steelhead (*Oncorhynchus mykiss*) in Puget Sound, Washington, as a threatened species under the ESA. The effective date of this rule was June 11, 2007 (72 FR 26722-26735. 2007. 50 CFR 223). Final protective regulations and proposed critical habitat for this DPS are expected to be issued in a separate rulemaking. This listing action includes only the anadromous form of *Oncorhynchus mykiss* (71 FR 15666-15680) and was based on wide spread declines in abundance and productivity over the past nine years, particularly for two populations identified as strongholds in a 1996 review.

There are three distinct stocks of winter steelhead (Snohomish/Skykomish, Pilchuck, and Snoqualmie) and three distinct stocks of summer steelhead (North Fork Skykomish, South Fork Skykomish and Tolt) in the Snohomish River sub-basin listing area in the north Puget Sound. In 2002, SaSSI characterized all stocks of the winter steelhead as "depressed", the South Fork Skykomish and the Tolt summer stocks as "healthy" and the North Fork Skykomish summer stock as "unknown" due to inconsistent data collection. All of the winter stocks are native with wild production. The origin of summer stocks vary with no certainty of a truly native origin because the level of non-native hatchery-origin summer steelhead spawning in the wild is unknown and there may be low levels of interaction with nonnative hatchery-origin summer steelhead (SaSSI 2002).

Life History

Steelhead is the name commonly applied to the anadromous (sea-going) form of the biological species *Oncorhynchus mykiss*. Steelhead exhibit perhaps the most complex suite of life-history traits of any species of Pacific salmonid. *Oncorhynchus mykiss* can be anadromous (''steelhead''), or freshwater residents (''rainbow or redband trout''), and under some circumstances yield offspring of the opposite life-history form. Those that are anadromous can spend up to 7 years in freshwater prior to smoltification (the physiological and behavioral changes required for the transition to salt water), and then spend up to 3 years in salt water prior to first spawning. Steelhead are also iteroparous (meaning individuals may spawn more than once), whereas the Pacific salmon species are principally semelparous (meaning individuals generally spawn once and die). Within the range of West Coast steelhead, spawning migrations occur throughout the year, with seasonal peaks of activity. In a given river basin there may be one or more peaks in migration activity; since these ''runs'' are usually named for the season in which the peak occurs, some rivers may have runs known as winter, spring, summer, or fall steelhead (71 FR 15666-15680).

Steelhead in the Snohomish River can be divided into two basic reproductive ecotypes, based on the state of sexual maturity at the time of river entry and duration of spawning migration. The summer or ''stream-maturing'' type enters fresh water in a sexually immature condition between May and October, and requires several months to mature and spawn. The winter or ''ocean-maturing'' type enters fresh water between November and April with well-developed gonads and spawns shortly thereafter (March through June for the Snohomish River). In basins with both summer and winter steelhead runs, the summer run generally occurs where habitat is not fully utilized by the winter run, or where an ephemeral hydrologic barrier separates them, such as a seasonal velocity barrier at a waterfall. Summer steelhead usually spawn farther upstream than winter steelhead (71 FR 15666-15680).

SPECIES OF WILDLIFE

Marbled Murrelet (Brachyramphus marmoratus marmoratus)

ESA Listing and Stock Status

The marbled murrelet is listed as Federally Threatened by the USFWS (61 FR 26256-26320). Final critical habitat for the marbled murrelet was designated on May 24, 1996 (61 FR 26256-26320). Since 1996 the USFWS has completed a 5-year status review of the marbled murrelet (McShane *et al.* 2004). Based upon this report the USFWS has proposed a new Critical Habitat Rule (71 FR 53838-53886) that would reduce designated critical habitat for the marbled murrelet in Washington, Oregon and California by approximately 3,666,108 acres. Additionally is has been proposed that the scientific name of the marbled murrelet be changed from *Brachyramphus marmoratus marmoratus* to *Brachyramphus marmoratus* to reflect recent taxonomic information (71 FR 53838-53886).

Elements essential to provide and support suitable nesting habitat for successful reproduction of the marbled murrelet as identified by USFWS include: individual trees with potential nesting platforms; and forested areas within 0.5 miles of individual trees with potential nesting platforms and with a canopy height of at least one-half the site-potential tree height (61 FR 26256-26320).

Life History

The marbled murrelet is a small dove-sized diving seabird that inhabits the coastal forests and nearshore marine environment along the Pacific coast of the United States from southern California to southern Alaska and the Aleutian Islands (Carter and Morrison 1992, Ralph *et al*. 1995, Nelson 1997).

Marbled murrelets forage in inland saltwater and the ocean within 1.2 miles of shore ranging from the Aleutian Islands to central California. Marbled murrelets require mature and old-growth forest stands for nesting and roosting. In Washington, marbled murrelets have been located in the Coast range, Olympic Peninsula and in the foothills of the western slope of the Cascade Mountains (WDFW 1991).

Nests are built on the ground and on high mossy branches of conifers and generally within 37 miles of the coast. However, birds in Washington tend to commute longer distances than those in other areas (McShane *et al*. 2004). Occupied murrelet habitat has been documented 52 miles from the Washington coast; and a grounded murrelet was found 62 miles from the ocean, the maximum inland distance within the listed range (Hamer and Nelson 1995). Though most murrelets migrate away from nesting grounds after breeding to overwinter elsewhere, substantial portions of murrelet populations have been known to remain inland near nesting year-round in Washington (Cross 1992). In Washington nesting and breeding behavior takes places from late April to early September (Hamer and Nelson 1995)

Steller Sea Lion

ESA Listing and Stock Status

On November 26, 1990, the Steller sea lion was listed as threatened under the ESA. In 1997, the species was split into two separate stocks on the basis of demographic and genetic dissimilarities; the status of the western stock (west of 144° longitude) was changed to endangered, and the status of the eastern stock (east of 144° longitude) was left unchanged (Bickam *et al.* 1996, Loughlin 1997). The proposed rule for establishment of critical habitat for the Steller sea lion was published on April 1, 1993, and the final rule was published on August 27, 1993. Species found along the Washington coast are from the eastern stock and are listed as threatened.

Life History

The Steller sea lion is distributed around the North Pacific rim from the Channel Islands off southern California to northern Hokkaido, Japan. The species distribution extends northward into the Bering Sea and along the eastern shore of the Kamchatka Peninsula. The center of the distribution has been considered to be in the Gulf of Alaska and the Aleutian Islands. Within this distribution, land sites used by Steller sea lions are referred to as rookeries and haulout sites. Rookeries are used during the reproductive season (late May to early July) for mating, pupping, and nursing. Haulout sites are found on jetties, offshore rocks, and coastal islands. Extensive declines of the Steller sea lion population have occurred within the Alaskan and the Russian portions of their range over the last 30 years. Counts in southeast Alaska, British Columbia, and Oregon have remained stable over the same period, and numbers in California have declined.

The areas designated as critical habitat for the Steller sea lion were determined on the basis of the available information on life history pattern of the species, with particular attention paid to land sites where animals haul out to rest, pup, nurse their pups, mate, and molt, and to marine sites considered to be essential foraging areas. The foraging areas were determined on the basis of sightings of sea lions at sea, incidental catch data, and foraging studies using satellite-linked tracking systems. Rookeries in California and Oregon are considered critical habitat, but in Washington there are no breeding rookeries or critical habitat area designations. The nearest rookeries are in southern Oregon and West Vancouver Island. Haulout sites in Washington, Oregon, or California have not been identified as critical habitat. However, prevention of contamination and conservation of prey resources and foraging areas appears essential to the recovery of the Steller sea lion population.

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Appendix E
Example SEWIP Data Sheet

IVA FOR EVERETT VEGETATED WETLANDS

PP – Export of Primary Production
SS – Sediment Stabilization
TR – Toxicant retention
NR – Nutrient retention/transformation

NAN – non-anadromous fish
AN – Anadromous fish
MIG – Migratory birds
OVR – Overwintering birds
BRE – breeding birds

		PP	WATER QUALITY IMPROVEMENT			FISH		BIRDS			OTHER SPECIES		
	Restoration Potential	PP	SS	TR	NR	NAN	AN	MIG	OVR	BRE	INV	HER	MAM
HYDROLOGY													
1 Source of water – tidal	y					3	3						
2 Source of water – stream	n		2			3	3						
3 Source of water – springs, seeps, not evident	y					2	2						
4 Below MHH water	y	3											
5 Above MHH but still tidal	y	2											
6 Only slow velocities < 10cm/sec	y	1	3	2	2								
7 AA has a range of flow velocities	y	2	2	1	1						3		
8 Permanent inlet?						3	3						
9 no outlet	y		3	3	2								
10 Permanent outlet?	y	3				3	3						
11 Is outlet restricted – manmade	y	3	2	2	1	0.1	0.1		0.8	0.6			
12 Is outlet restricted – natural	y	3	2	2	1	0.5	0.5		0.9	0.8			
13 Outlet > one third average width	y	2											
14 Overbank flooding within AA	n	3				2	2					0.5	
15 AA has dendritic channel system	y	3	2	2	2	x2	x2	3		x1.2	x2		3
16 AA contains a channel/stream?	y	2				3	3	1		1	3		2
17 Channel/Stream is sinuous													1
18 Does the AA flood at least once a year?	y	3				1	1				2		
19 Does the AA flood at least once in 5 years?	y	1											
20 Is the AA in the 100 year floodplain?	y		3	2									
21 Dominant Hydroperiod = perm flooded nontidal?	y			2				3	3	3	3	3	3
22 Dominant Hydroperiod = intermit exposed nontidal?								3	3	3	3	3	3
23 Dominant Hydroperiod = seasonally flooded nontidal?								3	3	3	3	3	3
24 Dominant Hydroperiod = saturated nontidal?	y			2				3	3	3	3	3	3
25 Dominant Hydroperiod = temp flooded nontidal?								3	3	3	3	3	3
26 Wettest Hydroperiod = perm flooded nontidal?								3	3	3	3	3	3
27 Wettest Hydroperiod = intermit. exposed nontidal?								3	3	3	3	3	3
28 Wettest Hydroperiod = seasonally flooded nontidal?								3	3	3	3	3	3
29 Wettest Hydroperiod = saturated nontidal?	y	0.1				0.001	0.001	1	1	1	3	1	3
30 Wettest Hydroperiod = temp flooded nontidal?								2	2	2	3	3	3
31 Is AA freshwater tidal	y	x2.0						3	3	3	3	3	3
32 Is AA estuarine tidal	y	x1.8						x2	3	3	3	0.01	3
33 Permanent open water < 10% of AA								2	2	2	2	3	3
34 Permanent open water 10–25% of AA	y					1	1	3	3	3	2	2	3
35 Permanent open water 25–75% of AA	y					3	3	x2	x2	x2	3	1	3

	INDICATOR		Restoration Potential	PP	WATER QUALITY IMPROVEMENT			FISH		BIRDS			OTHER SPECIES		
				PP	SS	TR	NR	NAN	AN	MIG	OVR	BRE	INV	HER	MAM
36	Permanent open water 75–90% of AA		y					1	1	3	3	3	2	x.9	3
37	Permanent open water 90–100% of AA									3	3	3	2	x.8	3
38	Seasonal open water <10% of AA									1	1	1	1	x1.5	
39	Seasonal open water 10–25% of AA		y					0.9	0.9	2	2	2	1	x1.5	
40	Seasonal open water 25–75% of AA									x1.5	x1.5	x1.5	2	x1.5	
41	Seasonal open water 75–90% of AA									2	2	2	1	x1.2	
42	Seasonal open water 90–100% of AA		y					0.5	0.5	2	2	2	1	3	
43	Water depth – OPEN WATER	6–36 inches	y					1	1						
44	at least seasonally	36–60 inches	y					1	1						1
45		> 60 inches	y					1	1						1
46	Water depth – EMERGENT	< 1 inch	y					2	1					1	
47	at least seasonally	1–6 inches	y					3	2					1	
48		6– 24 inches	y					3	3					x2	
49		24–60 inches													1
	PHYSICAL FEATURES														
50	Islands present in AA									3	3	3			3
51	Vegetation–water interspersion = solid		y							1	1	1	1	1	1
52	Vegetation–water interspersion = intermediate		y	2	2	2	2	2	2	2	2	2	2	2	2
53	Vegetation–water interspersion = mosaic		y	3	3	3	3	3	3	3	3	3	3	3	3
54	Upland<– –>Wetland edge irregular?										2	3	3	2	
55	Wind shelter?									1	3	1			
56	Wave protection?									3	3	2	2	2	
57	Stream channel/shores overhanging vegetation>50%		y					3	3				2	3	2
58	Channel/shores overhanging vegetation	20 – 50%	y					1	1				1	2	1
	SOILS														
59	Substrate: organic soils		n			3	3					1	3	3	
60	Substrate: sand?												1		
61	Substrate: mud?		n			2	2					1	3	3	
62	Substrate impacted by wood waste		y	0.1				0.5	0.5	0.8	0.8	0.8	0.1	0.1	
	VEGETATION														
	dominant vegetation > 50% cover														
63	Dominant veg: forest < 50'	1 species	y	1						1	1	1	1	1	1
64		2–3 species	y	1						2	2	2	2	1	2
65		>3 species	y	1						3	3	3	3	2	3
66	Dominant veg: forest > 50'	1 species	y	1						1	1	1	1	1	1
67		2–3 species	y	1						2	2	2	2	1	2
68		>3 species	y	1						3	3	3	3	2	3
	Dominant veg: Scrub–shrub	1 species	y	2	1	3				1	1	1	1	1	1
		2–3 species	y	2	1	3				3	3	3	2	1	2

	INDICATOR		Restoration Potential	PP	WATER QUALITY IMPROVEMENT			FISH		BIRDS			OTHER SPECIES		
				PP	SS	TR	NR	NAN	AN	MIG	OVR	BRE	INV	HER	MAM
71		>3 species	y	2	1	3				3	3	3	3	2	3
72	Dominant veg: Emergent	1 species	y	3	3	3				1	1	1	1	1	1
73		2–3 species	y	3	3	3				2	2	2	2	1	2
74		>3 species	y	3	3	3				3	3	3	3	2	3
75	Dominant Emergent is non–native?		y					0.5	0.5	0.5	0.5	0.5	0.5	0.8	
76	Dominant veg: Aquatic bed	1 species											1	1	2
77		2–3 species											2	1	2
78		>3 species											3	1	2
	secondary vegetation = 10 – 50% cover														
79	Secondary veg: forested	1 species								1	1	1	1	1	1
80		2–3 species								2	2	2	2	1	2
81		>3 species								3	3	3	3	2	3
82	Secondary veg: Scrub–shrub	1 species	y			2				1	1	1	1	1	1
83		2–3 species	y			2				3	3	3	2	1	2
84		>3 species	y			2				3	3	3	3	2	3
85	Secondary veg: Aquatic bed	1 species	n	2				2	2				1	1	2
86		2–3 species	n	2				2	2				2	1	2
87		>3 species	n	2				3	3				3	1	2
88	Secondary veg: Emergent	1 species	y	1		2				1	1	1	1	1	1
89		2–3 species	y	1		2				2	2	2	2	1	2
90		>3 species	y	1		2				3	3	3	3	2	3
91	Vegetation interspersion = low									1	1	1	1		1
92	Vegetation interspersion = moderate		y					1	1	2	2	2	2	1	2
93	Vegetation interspersion = high		y					1	1	3	3	3	3	1	3
94	Average width of erect veg in Zones A + B > 20 feet									2	2	2			2
	BUFFERS														
95	Buffer forest or SS > 150', >50% circumference									3	3	3	1	?	3
96	Buffer forest or SS 20–150 ft, > 50% circumference									2	2	2	1	?	2
97	Buffer forest or SS > 150ft for 25–50% circumference									2	2	2	1	?	2
98	Buffer forest or SS 20–150 ft for 25–50% circumference									1	1	1	1	?	1
99	Buffer > 50% impervious?									0.5	0.5	0.5	0.5	0.5	0.5
100	Buffer > 50% crops									2	2				1
101	Buffer > 50% pasture									1	1	1	1	3	2
102	Buffer > 50% commercial/industrial									0.8	0.8	0.8	0.8	0.5	0.8
103	Dense understory edge?		y	1						3	3	3	2		3
104	Vegetation buffer >100ft for >50% stream channel		y					2	2						
105	Vegetation buffer >100ft for 25–50% of stream channel		y					1	1						
	LANDSCAPE														
106	AA has stream connection to other wetland <200 yds.		n					2	2				2	2	3
107	AA has a year–round stream														2

		Restoration Potential	PP	WATER QUALITY IMPROVEMENT			FISH		BIRDS			OTHER SPECIES		
			PP	SS	TR	NR	NAN	AN	MIG	OVR	BRE	INV	HER	MAM
108	AA has fish in stream or open water								1	2	2		0.1	1
109	AA is fringe on dead end slough	y	1	2	1									
110	AA is fringe on river	y	2	2	1									
111	AA connected to nat. areas (unbroken herbaceous >20' wide)											2	2	2
112	AA connected to nat. areas (unbroken forest/SS >20' wide)								1	1	1	2	3	2
113	AA has water permanent water connection to river or sloug	y					x5	x10						
	SPECIAL HABITAT FEATURES													
114	Plants: waterfowl value?								3	2	3			
115	Evidence of beaver dams	n		2	1	2						1	1	
116	AA has woody debris in water	y					3	3				3	1	1
117	AA has woody debris above water								3	3	3	3	2	3
118	AA has eroding banks for nesting										3			2
119	AA has raptor perches								2	2	2			
120														
	DISTURBANCES													
121	Source of inorganic sediments to AA	n		x10										
122	Primary source of sediment = sheetflow?	n		3										
~~123~~	~~Evidence of impacts from excess sediments~~			~~2~~	~~3~~		~~0.8~~	~~0.8~~				~~0.5~~	~~0.5~~	
124	Evidence of net erosion			0.1	0.5									
125	Evidence of impacts from excess nutrients	y					0.8	0.5				0.8	0.9	
126	Evidence of impacts from stormwater discharges	y					0.8	0.5						
127	Evidence of impacts from toxics	y	0.95						0.9	0.8	0.5	0.5	0.5	0.9
128	Primary source of toxics = sheetflow	y			3									
129	>20% impervious surface in watershed												(.5)	
130	AA is used for grazing	y		0.5		0.8	0.9	0.9			0.2			0.8
131	AA is cultivated	y		0.1	0.5	0.1	0.8	0.8			0.2	0.1		0.7
132	AA has bee ditched or drained	y		0.9	0.9	0.9								
133	Vertical bulkheads present >50% shore or edge	y					0.8	0.7						
134	Vertical bulkheads present 10–50% shore or edge	y					0.9	0.8						

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Appendix F
Plant Descriptions

Douglas Fir (*Pseudotsuga menziesii*): This familiar tree grows well in various soil types, especially in sunny areas. It has flat needles that are sharp-pointed but not prickly, and many medium-sized cones that drop to the ground each fall. The ridged Douglas Fir bark on older trees is fire-resistant because of its thickness. An uncrowded tree has pyramidal crown with dense foliage. Deer and rodents browse on the seedlings, and small birds and mammals eat the seeds. Needs well drained soil and full sun (Thurston County Conservation District 2005). From extremely dry, low elevation sites to moist mountain sites; on the outer south coast it is replaced by western hemlock except on dry, rocky sites or in areas influenced by fire (Pojar and MacKinnon 1994).

Western Red Cedar (*Thuja plicata*): This is a sweet-smelling, coniferous evergreen tree that likes moist soil but can also survive in drier habitats. It grows slowly, but it can grow to heights of between sixty and two hundred feet. As it grows, its crown becomes open and its lower branches droop. Clusters of small brown cones grow at the ends of the branches (Thurston County Conservation District 2005). Instead of needle leaves, it has tiny scales set snugly on the branches and it is resistant to rot and fungus (Polar and MacKinnion et al. 1994). It provides protective and nesting cover for wildlife; it also provides twigs and foliage for browsers. Its bluish-black, berry-like fruit is important to many large and small birds and mammals (Martin et al. 1961).

Western Hemlock (*Tsuga heterophylla*): These tall, graceful trees, characterized by drooping tree tips and branches, thrive in wet shady areas. Western Hemlock has strong furrowed bark and flat, soft needles of varying lengths. Small, papery seed cones ripen during fall and drop during winter. Western Hemlock provides winter cover for mammals and birds, and nesting areas for several bird species. The seeds are eaten by various rodents (Thurston County Conservation District 2005). Fairly dry to wet sites; well adapted to grow on humus and decaying wood, also found on mineral soil; shade tolerant; very common from low to middle elevations (Pojar and MacKinnon 1994).

Bigleaf Maple (*Acer macrophylla*): This tall tree has a massive, squat main trunk and soaring, huge vertical limbs. In the open, it forms a round, spreading crown, while in a dense stand it becomes a tall straight tree. It has long clusters of yellow flowers in the spring, and very large, lobbed leaves which turn yellow in the fall. Various birds eat its two-winged "helicopter" fruits, and the leaves provide foliage for deer and elk. Young trees grow rapidly in the spring (Thurston County Conservation District 2005). Dry to moist sites, often with Douglas-fir, often on sites disturbed by fire, clearing or logging; at low to middle elevations (Pojar and MacKinnon 1994).

Balsam Poplar/Black Cottonwood (*Populus balsamlfera*): 80 to 120 ft. tall deciduous tree; fast-growing 4-5 ft a year in rich, moist, mineral soil is not uncommon. Tolerates seasonal flooding and typically grows along rivers and streams and in floodplain areas. Common associates include Western Red Cedar, Western Hemlock, Red Alder, Salmonberry, Red Osier, Dogwood, and Lady Fern. Important nest tree for great blue heron, nest and roost tree for bald eagle, osprey, other raptors, and nesting birds. Poplars and willows typically have relatively short life spans and are susceptible to various heart rots. After these trees die, woodpeckers often excavate nest cavities in the soft interior; chickadees use old woodpecker holes as nest sites. (Department of Ecology 1993). On low to medium elevation, moist to wet sites; forms extensive stands on islands and flood plains along major rivers and on disturbed upland sites (Pojar and MacKinnon 1994).

Red Alder (*Alnus rubra*): Fast growing 60 to 100 ft tall deciduous tree, usually single-stemmed; forms pure stands or intermixes with Western Red Cedar and Western Hemlock; shade intolerant. Will grow in nitrogen-deficient soils due to its ability to fix atmospheric nitrogen; often seeds prolifically on bare soil areas. Provides food for grouse, pine siskin, black-capped chickadee, kinglet, and beaver; common nest tree for great blue heron. (Department of Ecology 1993). Moist woods, streambanks, floodplains, slide tracks, and recently cleared land, often in pure stands; at low elevations (Pojar and MacKinnon 1994).

Black Hawthorn (*Crataegus douglasii*): A erect scrub or small tree with thick, pale green, oval leaves, sharp pines along the crooked twigs, and dirty gray, rough, scaly bark. After abundant clusters of white flowers appear in late spring, black fruit appears which soon withers, but persists through the winter, providing food for many birds and mammals. This plant grows individually or forms thickets; its dense foliage provides cover for nesting songbirds and other animals (Thurston County Conservation District 2005). Moist, open places; forest edges, thickets, shorelines, streamside areas, roadsides, coastal bluffs; at low to middle elevations (Pojar and MacKinnon 1994).

Vine Maple (*Acer Circinatum*): Vine maple may either stand immediately erect or creep along the ground in pursuit of sunlight before turning upward. It has excellent soil binding characteristics, is tolerant of shade, and provides good forage for wildlife. Birds and small mammals use its twigs, leaves and seedsfor food and cover (Thurston County Conservation District). This small tree or shrub has great aesthetic value with its bright red leaves and petite white flower.

Salal *(Gaultheria shallon)*: A common plant, it is a robust, evergreen shrub which often forms dense thickets. It has lustrous, dark green leaves, showy pink flower clusters, and purplish-black berries that are eaten by birds, rodents, and people. Salal can be damaged by the strawberry root weevil (Thurston County Conservation District 2005). Occurs in coniferous forests, rocky bluffs, to the seashore; low to medium elevations (Pojar and MacKinnon 1994).

Red Huckleberry (*Vaccinium parvifolium*): An erect bush with spreading, green, angular branches. It has bright green leaves and stems and bright red berries (Thurston County Conservation District 2005). Coniferous forest, often at forest edges or under canopy openings, in soils rich in decaying wood, often on stumps or logs; at low to middle elevations (Pojar and MacKinnon 1994).

Evergreen Huckleberry (*Vaccinium ovatum*): Has glossy, dark green leaves on many erect, hairy branches which start at the base of the plant. It produces purplish-black fruits. New shoots are bronzy red, and mature foliage is often reddish purple (Thurston County Conservation District 2005). Coniferous forests (especially edges and openings) at low elevations, often on the beach fringe in the salt spray zone, usually close to tidewater (Pojar and MacKinnon 1994).

Salmonberry (*Rubus spectabilis*): FAC+. Grows 1-3 m high with shredding, light- or golden-brown bark; weak, woody, sparsely-thorned stems; and zigzag twigs. Leaves are deciduous, alternate, and contain three leaflets which are 1-3 inches long, dark green, pointed, sharply toothed, and often wrinkled. Flowers are large (about 1½ inches across), borne singly, and are pink to dark or purplish-red. Large raspberry-like fruits appear in late spring, ripening over a fairly long period to become yellow to red or deep purple (United States Army Corps of Engineers 2005). Grows in moist to wet places, often abundant along stream edges, avalanche tracks and in wet logged areas; at low to sub-alpine elevations. Full sun to full shade. (Pojar and MacKinnon 1994).

Pacific Willow (*Salix scouleriana*): A small tree with one or more leaning, crooked trunks and an upright to rounded form. 20 to 40 ft tall deciduous shrub or tree; grows in coastal dune wetland communities along the outer coast and coastal freshwater swamps around Puget Sound. (Department of Ecology 1993). Tall, slender shrub or tree, to 12m tall; branches brown, twigs glossy, with yellow, duckbill-shaped buds, usually hairless, brittle at base; bark fissured yellowish-brown on older trees. Riverbanks, floodplains, lakeshores, and wet meadows; often standing in quiet, shallow river backwaters; sea levels to middle elevations (Pojar and MacKinnion 1994).

Red Osier Dogwood (*Cornus stolonifera*): Deciduous shrub to 20 ft tall. Often forms thickets along streams and in openings in forested swamps. Also grows as an understory shrub in coniferous and coniferous/deciduous swamps. Widely planted due to its easy availability, wildlife value, erosion control value, aesthetic value, and suitability in many several wetland communities (Department of Ecology 1993). Moist soil, typically in swamps and streamside forest and scrub, but also in open upland forest and thickets and rocky shorelines, bog forest edges and disturbed sites; valley bottoms to middle elevations (Pojar MacKinnon 1994).

Pacific Ninebark (*Physocarpus capitatus*): Deciduous shrub to about 15 ft tall. Limited to western Washington and northern Idaho with occurrences in between. Typically grows in moist but well-drained soils along streams, in full sun to part shade (Department of Ecology 1993). Wet, somewhat open spaces (streamside thickets, edges of moist woods, coastal marshes, meadows, margins of lakes and streams), occasionally on drier, shrubby sites; at low to middle elevations (Pojar and MacKinnon 1994).

Nootka Rose *(Rosa nutkana):* Has large, solitary, pink flowers that produce big purplish pear-shaped rosehips (Thurston County Conservation District 2005). Spindly, to 3 m tall, with a pair of large prickles at the base of each leaf, other prickles usually absent except on some new growth. In a variety of generally open habitats (shorelines, meadows, thickets, streamside areas, roadsides, clearings), at low to middle elevations (Pojar and MacKinnon 1994).

Western Sword Fern (*Polystichum munitum*): Western sword fern is a large evergreen fern with long fronds that can grow 1.5 to 6 feet long. It grows along the Pacific Coast, from southeastern Alaska to california and eastward into northwest Montana and frequents moist forest habitat. Western sword fern is found with black cottonwood an d Douglas fir and indicates high quality site for these species. The fern can contain high levels of potassium, nitrogen, calcium, phosphorus and magnesium when assoicated with red alder. Elk, deer, and black bear will forage on this plant (Crane 1989).

Slough sledge *(Carex obnupta):* 1 to 3 ft tall, spreads by rhizomes to form monotypic stands. Limited to western Washington. Tolerates deep shade or full sun and commonly grows in red alder-dominated swamps in association with skunk cabbage, water parsley, and salmonberry. Tolerates pH of 5.5 to 8.0 (Department of Ecology 1993). Marshes, swamps, bogs, stream-banks, lakeshores, wet forest openings, meadows, clearings; common at low elevations (Pojar and MacKinnon 1994).

Small-fruited bulrush *(Scirpus microcarpus):* 2 to 4 ft tall deciduous perennial herb; spreads by rhizomes to form monotypic stands in saturated soils and shallow seasonal standing water. Common along streams and in freshwater marshes. (Department of Ecology 1993). Stems usually clustered, from a sturdy rhizome, stout, triangular, leafy, to 1.5 m tall. Swamps, sloughs, streambanks, wet ditches and clearings; common at low to middle elevations (Pojar and (MacKinnon 1994).

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