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Oeser Company

Bellingham, Washington
CERCLIS #WAD008957243

Site Exposure Potential

The Oeser Company (Oeser) site is a 9-ha wood treating facility operating in Bellingham, Whatcom County, Washington (Figure 1). Surrounding land use is mixed residential and industrial. The topography is generally flat with a gentle slope toward the southeast, except due south of the site, where the terrain drops steeply for approximately 12 m to a ravine and Little Squalicum Creek. Approximately 500 m downstream, Little Squalicum Creek enters Bellingham Bay.

The Oeser Company has had a wood-preserving operation at this location since 1948. From 1948 to 1973, Oeser treated utility poles with creosote to retard deterioration of the wood. Oeser began using a pentachorophenol (PCP) in oil treatment in the 1960s, and PCP is the only preservative now used. The wood treatment processes generate process wastewater and a waste sludge material. Until 1986 waste sludge was accumulated on-site and then transported to an approved landfill. The quantity of sludge generated, the frequency of removal, and the method of on-site storage are not known (URS Consultants Inc. 1994).

Until 1973, wastewater from both the PCP and creosote processes was discharged to gravel percolation beds. From 1973 until 1991, process

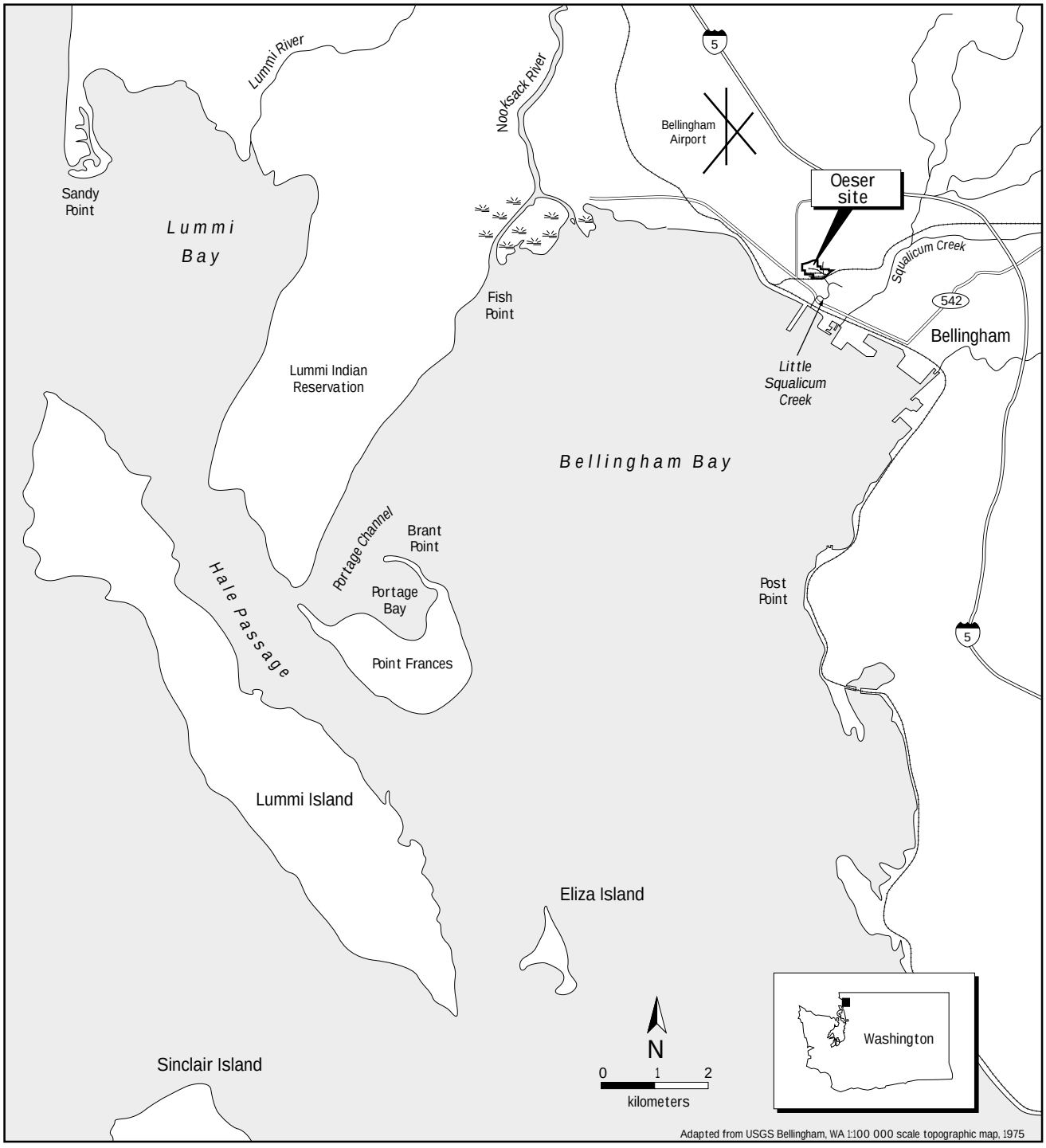

Figure 1. Location of Oeser site in Bellingham, Washington.

wastewater was discharged to an oil/water separator, and subsequently to a storm sewer under an NPDES permit (Figure 2). Since 1991, a zero-discharge wastewater treatment system has been in use (URS Consultants Inc. 1994).

Two spills of PCP preservative have been reported at the site, one in 1971 and another in 1975. In 1971, 190 L or more of the PCP and oil preservative spilled into Little Squalicum Creek. In 1975, the sump pump for an oil/water separator failed, causing overflow of PCP-oil to a drain field and, ultimately, to Little Squalicum Creek. An estimated 110 L of PCP-oil entered the creek from this spill (Ecology and Environment Inc. 1996).

The primary contaminant transport pathways are the storm sewer system, surface water runoff, and groundwater migration. Precipitation that does not infiltrate on-site flows overland to the south or southeast toward Little Squalicum Creek. Excess surface-water runoff is collected by on-site storm drains and subsequently discharged via the Oeser Outfall into Little Squalicum Creek (Figure 2; Ecology and Environment Inc. 1996).

Site geology is predominantly alluvial deposits of glacial outwash sands and gravels (URS Consultants Inc. 1994). Groundwater is present in several shallow zones and in a deeper, unconfined aquifer. Shallow groundwater is encountered 1.5 to 5 m below ground surface (bgs). This shallow groundwater is situated within deposits consisting of stratified sand and gravel, silt, and clay, which extend to approximately 8 m bgs. The deeper aquifer is encountered 7 to 12 m bgs. Groundwater in this deeper aquifer flows in a southwesterly direction in the northern portion of the site, and south-southwest to south in the southern portion of the site (Ecology and Environment Inc. 1996). Groundwater seeps have been observed downgradient from the site near the banks of Little Squalicum Creek.

NOAA Trust Habitats and Species

Habitats of primary concern to NOAA are the surface waters and bottom substrates of Little Squalicum Creek and Bellingham Bay. NOAA trust species of concern include anadromous fish that use Little Squalicum Creek and marine species found in Bellingham Bay (Table 1).

Little Squalicum Creek is located in an abundantly vegetated ravine surrounded by industrial and residential properties. Seasonal palustrine scrub-shrub wetlands are found along 0.8 km of the creek, upgradient from the site. The creek ranges from approximately 0.9 to 2.5 m wide. Near the site, the creek is generally less than 0.3 m deep, with a continuous flow ranging from less than 1 cubic foot per second (cfs) to 10 cfs (Ecology and Environment Inc. 1996).

There are no wetlands on the shore of Bellingham Bay near the mouth of Little Squalicum Creek. However, there are a variety of shoreline habitats in other parts of the Bay, including

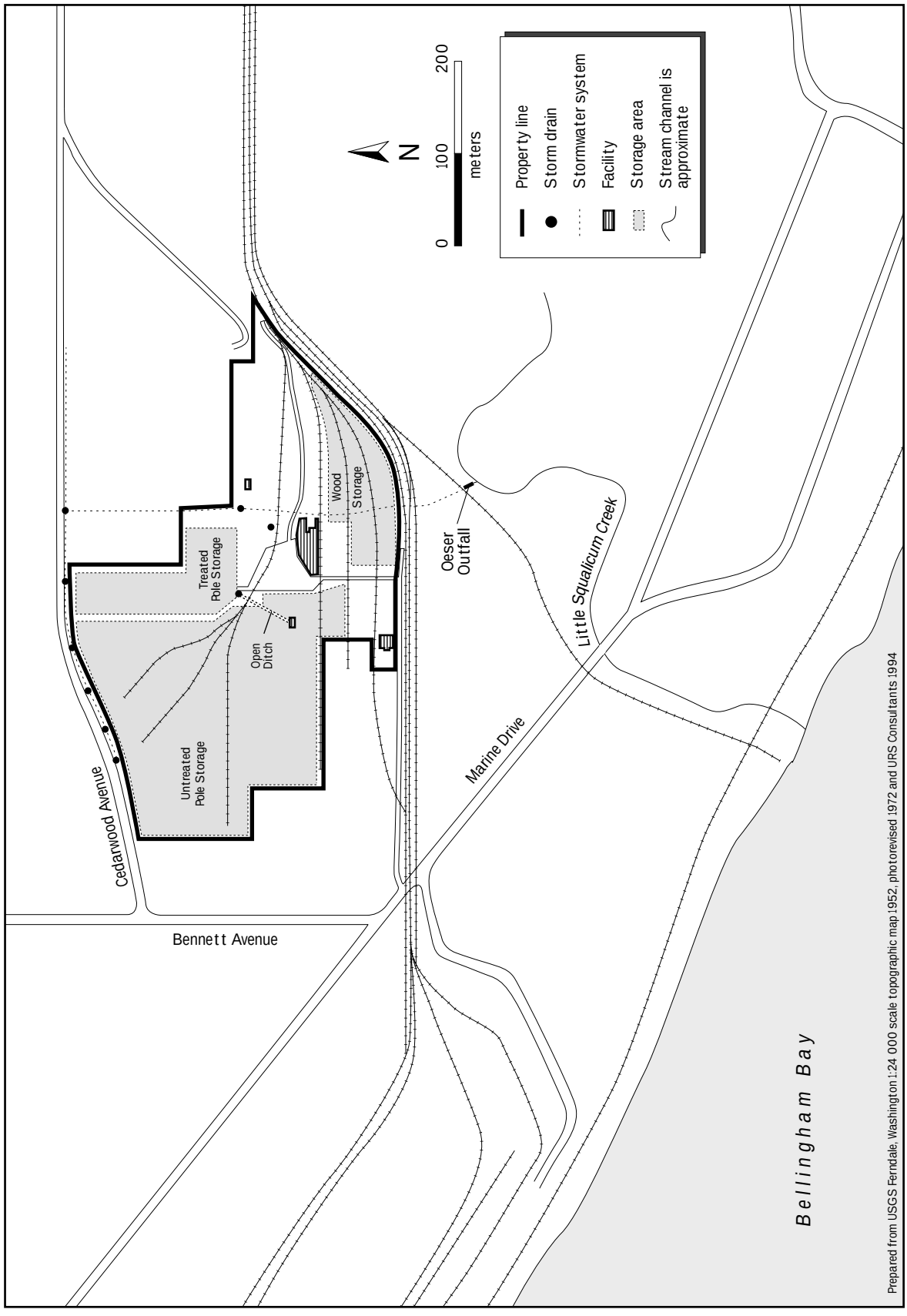

Figure 2. Detail of the Oeser site.

Table 1. NOAA trust species that use Little Squalicum Creek and Bellingham Bay (Ecology 1992).

Species		Habitat			Fisheries	
Common Name	Scientific Name	Spawning ground	Nursery ground	Adult forage	Commercial.	Recreational
ANADROMOUS FISH						
Chinook salmon	*Oncorhynchus tshawytscha*	♦	♦	♦	♦	♦
Chum salmon	*Oncorhynchus keta*	♦	♦	♦	♦	♦
Coho salmon	*Oncorhynchus kisutch*	♦	♦	♦	♦	♦
Cutthroat trout	*Oncorhynchus clarki*	♦	♦	♦		♦
Pink salmon	*Oncorhynchus gorbuscha*	♦	♦	♦	♦	♦
Sockeye salmon	*Oncorhynchus nerka*		♦	♦	♦	♦
Steelhead trout	*Oncorhynchus mykiss*		♦	♦		♦
MARINE FISH						
Cabezon	*Scorpaenichthys marmoratus*	♦	♦	♦	♦	♦
English sole	*Parophyrs vetulus*		♦	♦	♦	♦
Lingcod	*Ophidon elongatus*	♦	♦	♦		
Pacific cod	*Gadus macrocephalus*		♦	♦	♦	♦
Pacific herring	*Clupea harengus pallasi*	♦	♦	♦		
Pile perch	*Rhacochilus vacca*	♦	♦	♦	♦	♦
Rock sole	*Lepidopsetta bilineata*		♦	♦	♦	♦
Rockfish	*Sebastes* spp.	♦	♦	♦		♦
Sablefish	*Anoplopoma fimbris*			♦		♦
Sand sole	*Psettichthys melanostictus*		♦	♦		
Sculpin	*Cottus* spp.	♦	♦	♦		
Starry flounder	*Platichthys stellatus*		♦	♦	♦	
INVERTEBRATE SPECIES						
Blue mussel	*Mytilis galloprovincialis*	♦	♦	♦	♦	♦
Butter clam	*Saxidomus giganteus*	♦	♦	♦	♦	♦
Dungeness crab	*Cancer magister*	♦	♦	♦	♦	♦
Geoduck clam	*Panope generosa*	♦	♦	♦		
Hardshell clam	*Mercenaria mercenaria*	♦	♦	♦		♦
Horse gaper clam	*Tresus spp.*	♦	♦	♦		
Kelp crab	*Pugettia productus*	♦	♦	♦		
Native littleneck clam	*Protothaca staminea*	♦	♦	♦	♦	♦
Octopus	*Octopus dofleini*	♦	♦	♦		
Pacific oyster	*Crassostrea gigas*	♦				
Pink shrimp	*Pandalus* spp.	♦	♦	♦		
Softshell clam	*Mya arenaria*	♦	♦	♦		
Spot shrimp	*Pandalus platyceros*	♦	♦	♦		
MARINE MAMMALS						
California sea lion	*Zalophus californianus*			♦		
Gray whale	*Eschrichtius robustus*			♦		
Harbor seal	*Phoca vitulina*	♦	♦			
Killer whale	*Orcinus orca*			♦		
Minke whale	*Balaenoptera acutorostrata*			♦		

extensive wetlands surrounding the mouth of the Nooksack River, less than 5 km northwest of the site (Figure 1). The shoreline at the mouth of the Nooksack River consists of fine-grained sands with exposed tidal flats in the eastern channel. From this point south-southeast to the town of Bellingham, the shoreline is primarily a wave-cut platform, with some interspersed areas of gravel / cobble / riprap, exposed rocky shorelines, and seawalls. The mid-to-lower eastern portion of the bay consists primarily of exposed rocky shorelines or seawalls. From the mouth of the Nooksack River south-southwest along the Lummi Indian Reservation, the shoreline is primarily gravel / cobble / riprap with sand / gravel beaches located along the southeastern portion of the reservation and along the inner shoreline of Point Frances, just off the southern tip of the Lummi Reservation. Tidal flats are located at the very southern tip of the reservation, as well as surrounding Brant Point at the northern tip of Point Frances (Ecology 1992).

Coho and chum salmon have been observed in Little Squalicum Creek (Chapman 1997). Juvenile salmonids in Little Squalicum Creek probably use favorable areas in the lower reaches as nursery habitat before migrating to more open marine environments (Steel 1997).

Bellingham Bay also supports numerous NOAA trust resources, including chinook, chum, pink, coho, and sockeye salmon. Juvenile salmonids from the Nooksack River may use habitats along Bellingham Bay, including areas near Little Squalicum Creek, for nursery habitat (Steel 1997).

Bellingham Bay supports a variety of marine species common to Puget Sound. Common demersal residents include English and rock sole; several rockfish, sculpin, and sea perch species; and Pacific cod and lingcod. Pelagic residents include Pacific herring and sablefish. Most of these species spawn within the bay or nearby areas of Puget Sound and use the bay as a nursery.

The complex habitats within Bellingham Bay also support numerous shellfisheries (Table 1). Dungeness crab are harvested from most of the bay, as well as from areas surrounding the bay. Hardshell clams are harvested from Portage Bay, Portage Channel, offshore along the entire eastern side of Point Frances, from a small area south-southeast of Point Frances in Hale Passage, and along the eastern edge of Lummi Island (Chapman 1997).

There are marine mammals in Bellingham Bay (Table 1). The Washington State Coastal Sensitive Areas Map for Bellingham shows a harbor seal haulout offshore of Brant Point on Point Frances. Two nearby areas have designated marine mammal sightings, east and southwest of Brant Point, respectively. Species observed for these two areas were not identified, but are probably harbor seals or California sea lions. Cetaceans that migrate through the area include minke whale and gray whale (Ecology 1992).

Bellingham Bay supports important subsistence, commercial, and recreational fisheries. Commercial fishing and sportfishing areas, set net areas, and reef net areas, are mapped within and surrounding the bay in the Washington State Coastal Sensitive Areas Map for Bellingham (Ecology 1992). A large area in the northern portion of Bellingham Bay is used for set netting; this area extends from the mouth of the Nooksack River south to an unnamed point south of Fish Point and across to Post Point in the east-southeastern portion of the bay. Sportfishing takes place around Lummi Island and within Hale Passage.

Bald eagles are resident species of the Bellingham coastal zone that are federally protected under the Endangered Species Act (Ecology 1992). Bald eagles are not a NOAA trust resource, but are known to feed on migrating salmon and other NOAA trust species.

Site-Related Contamination

Investigations at the site indicate that PCP, PAHs, and dioxins/furans are the contaminants of concern to NOAA trust resources. Table 2 illustrates the maximum concentrations of these contaminants from samples collected during a 1996 site inspection. PCPs and PAHs were observed at elevated concentrations in soils, groundwater, surface water, and sediments. Trace elements sometimes associated with wood-treating (e.g., arsenic, copper, and zinc) were not reported to have been used at this site, and did not exceed screening guidelines for environmental media (Ecology and Environment Inc. 1996).

Soil samples were extensivly contaminated with PAHs and PCP. Maximum total PAH concentrations exceeded 1000 mg/kg, while maximum PCP concentrations exceeded 100 mg/kg.

Table 2. Maximum concentrations of selected contaminants detected at the Oeser Company site (Ecology and Environment Inc. 1996; U.S. EPA 1997).

		Water (µg/L)				Sediment (mg/kg)	
Organic Compound	Soil (mg/kg)[a]	NAPL (mg/kg)[b]	Ground-water	Surface Water	Marine Chronic AWQC[c]	Little Squalicum Creek	ERL[d]
Total PAHs	10,300	92,500	6,200	3.0	300[e]	97	4.0
PCP	560	13,000	NR	NR	7.9	2.2	0.36[f]
Dioxins/ Furans	0.03	NR	NR	NR	NA	NR	NA

a Screening guidelines for organic contaminants in U.S. soils are not available.
b Non-aqueous phase liquid in subsurface soils
c Ambient Water Quality Criteria (U.S. EPA 1993)
d Effects range-low (Long and MacDonald 1995)
e Lowest Observable Effect Level
f Apparent Effects Threshold (PTI 1988)
NR Not Reported
NA Not analyzed

Preliminary data indicate widespread contamination, with highest concentrations in subsurface soils south of the treated pole storage area.

PAHs and PCP were detected in both shallow and deep groundwater beneath the site. PAHs and PCP were observed in nine of thirteen wells in shallow groundwater and in all five wells screened in the deeper aquifer. Maximum concentrations of PAHs and PCP each exceeded 10,000 µg/L in the shallow groundwater. Maximum floating NAPL thickness was 2 feet (EPA 1997)

Sediment and surface-water samples collected from Little Squalicum Creek confirmed the presence of PAHs and PCP. Six sediment samples were collected in Little Squalicum Creek downstream of the site; one sample was collected upstream. Downstream sediment stations were 75 to 150 m apart, extending from the storm drain outfall to the mouth of the creek. Total PAHs were observed at all six downgradient sediment samples, ranging from 0.55 to 97 mg/kg. PCP concentrations ranged from 0.039 to 2.2 mg/kg. The highest concentration of PCP was detected in a sediment sample collected near the Oeser outfall. Three surface-water samples were collected downstream from the site at locations corresponding to the three sediment stations farthest downstream. PAH concentrations ranged from 0.031 µg/L to 3.04 µg/L total PAH. PCP concentrations in surface water were not reported. The highest PAH concentrations in surface water were at a creek station located near a groundwater seep.

Summary

High concentrations of PAHs and PCP were found in soil and groundwater at the Oeser site and in sediments of Little Squalicum Creek. PAHs were found in water samples from Little Squalicum Creek, but PCP was not reported. Adult coho and chum salmon have been observed in Little Squalicum Creek. Juvenile salmon likely use the area for nursery habitat. Numerous additional trust resources use nearby areas of Bellingham Bay. Additional information is needed regarding the extent of contamination in Little Squalicum Creek to determine the threat posed to salmon and to better characterize contaminant sources, and potential contaminant pathways, to other trust resources found in Bellingham Bay.

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