

Kent Highlands Landfill
Kent, Washington
Region 10
WAD980639462

Site Exposure Potential

The City of Seattle operated the Kent Highlands Landfill in Kent, Washington, 22 km south of Seattle, from June 1968 to December 1986 (Figure 1). The landfill accepted municipal wastes from Kent and Seattle, and may have accepted minor amounts of sand-blasting grit, some industrial sludges, and other industrial wastes. The landfill occupies 24 hectares of a 36-hectare site and consists of 80 percent waste and 20 percent cover soil. The landfill is in a ravine that slopes east toward the Green River. The elevation of the landfill varies from about 91 meters above mean sea level (MSL) near the western site boundary to about 12 meters above MSL near the river. Landfilling operations began on the western side of the site and proceeded eastward down the ravine, forming a steep slope toward the river (Parametrix 1987).

The start of landfilling operations in 1968 diverted a small tributary of the Green River (Parametrix 1987). The springs that feed the stream are still active and are intercepted by drains within the landfill. Most of the surface water runoff from the site is channeled to two ponds. Water from the ponds is either pumped into the city sewer or discharged into the Green River through a submerged pipe. A small, shallow stream, Midway Creek, flows through the landfill and discharges into the Green River 50 meters from the site (Parametrix 1987). The Green River flows into Duwamish River 8 km below the site, and the Duwamish River discharges into Elliott Bay, an embayment of Puget Sound, 26 km from the site.

Contaminant migration pathways to NOAA trust resources are surface water runoff, groundwater flow, and leachate seepage to the Green River.

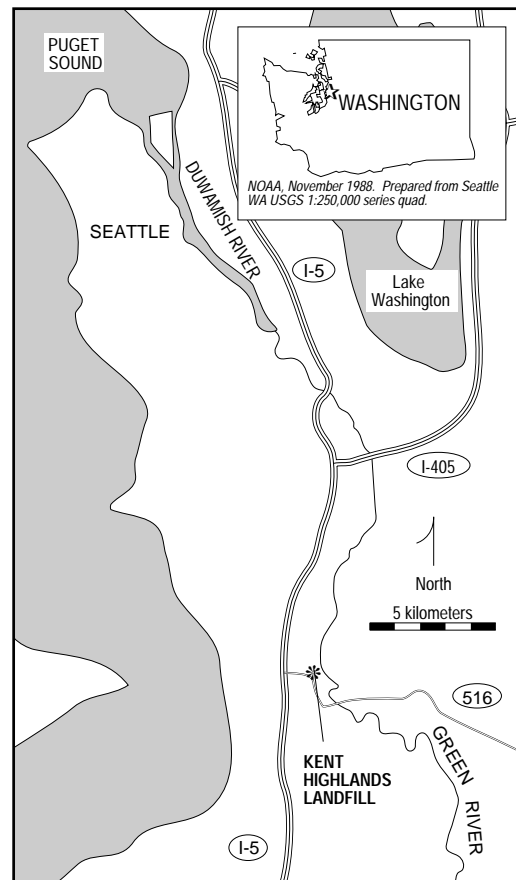


Figure 1. The Kent Highlands Landfill site in Kent, Washington.

Site-Related Contamination

The principal contaminants of concern at the site are trace metals, which have been detected in groundwater, seeps, and Midway Creek in concentrations exceeding AWQC for the protection of freshwater aquatic life (Table 1) (EPA 1986; Parametrix 1986, 1987). High levels of cadmium, copper, iron, nickel, and zinc have been observed in leachate from the

landfill and high concentrations of copper, iron, and zinc have been observed in Midway Creek.

Table 1. Maximum concentrations of selected contaminants at the Kent Highlands site (Parametrix 1986, 1987); AWQC for the protection of freshwater aquatic life (EPA 1986); concentrations in µg/l.

Contaminant	Ground-water	Leachate	Leachate Pond	Upper North Pond	South Pond	Midway Creek	Green River	AWQC Acute	
Chronic									
ORGANIC COMPOUNDS									
Volatile									
toluene	140	N/A	45.6	N/A	N/A	N/A	N/A	17,500*	N/A
Semi-Volatile									
bis 2-ethyl hexyl phthalate	1100	N/A	ND	N/A	N/A	N/A	N/A	940	3
INORGANIC SUBSTANCES									
Trace metals									
arsenic	38	N/A	33	8	<5	9	<5	360	190
cadmium	<1	350	<1	<1	<1	<30	<1	3.9†	1.1†
chromium	<5	<170	7	<5	<5	<170	<5	16	11
copper	74	700	<5	<5	<5	190	<5	18†	12†
iron	85,000	191,700	20,000	880	430	16,000	370	N/A	1,000
lead	31	<500	<5	<5	<5	<500	<5	82†	3.2†
mercury	<0.2	N/A	<0.2	<0.2	<0.2	<0.2	<0.2	2.4	0.012
nickel	23	6,060	33	11	10	<300	<5	1400†	160†
zinc	1,990	5,710	130	2	11	3,570	2	120†	110†
N/A: Not available; ND: Not detected; * LOEL; † Hardness-dependent (based on 100 mg/l CaCO ₃)									

NOAA Trust Habitats and Species in Site Vicinity

The Green River is the only major trust habitat near the site. This river drains 1,034 km² and is characterized as a slow, continuously flowing, low-gradient river system with an unconsolidated bottom of sand, cobble, and gravel. The river, 20 to 30 meters wide and two to three meters deep near the site, is a coolwater, high-oxygen system with suitable habitat for salmonids. The banks are steep and heavily vegetated with grasses and shrubs.

The Green River supports significant runs of chinook, chum, and coho salmon; and searun steelhead, cutthroat, and Dolly Varden trout (Table 2) (Parametrix 1987). Most of the chinook salmon use the river during the fall (WDF 1975). Chinook spawning grounds are primarily above the site, but occasional spawning occurs near the landfill. Juvenile chinook rear in the entire length of the river, where they stay for three months before

Table 2. NOAA trust resource use of the Green River near the Kent Highlands Landfill (WDF 1975; Parametrix 1987).

Species	Migration Route	Spawning Area	Nursery Area	Recreational Fishery
Chinook salmon	X	X	X	X
chum salmon	X	X	X	X
coho salmon	X		X	X
cutthroat			X	X
Dolly Varden			X	X
steelhead			X	X

migrating to Puget Sound. Chum salmon use the slow-flowing section of the Green River, including the stretch near the site, as spawning grounds. The chum spawning season lasts from November to January and juveniles migrate soon after to the lower 10 to 13 km of the Duwamish River. Coho salmon use virtually all accessible streams and tributaries in the Green River watershed. The chinook and coho spawning season lasts from November through January; juveniles rear throughout the Green River for one year before migrating to Puget Sound.

Both juvenile chinook and coho salmon use the section of Midway Creek that flows on landfill property as nursery habitat. Neither species spawns in the creek because there is no suitable substrate (Arnold 1988).

Response Category: State Enforcement Lead

Current Stage of Site Action: A RI/FS is scheduled to be completed in April 1989.

State Site Manager

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References

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