Anne Arundel County Landfill
Glen Burnie, Maryland
Region 3
MDD980705057

Site Exposure Potential

The Anne Arundel County Landfill covers 52.6 hectares in an industrial and commercial section of Glen Burnie, Maryland (Figure 1). From the late 1950s to 1970, 12 hectares of the site were a privately-owned landfill, with no disposal records kept. Anne Arundel County closed the old landfill in 1970 and operated it as a municipal solid waste landfill until 1982. The closure in 1970 consisted of capping with 0.3-0.6 meters of clay, revegetation, and installation of 50 vents. Under county ownership, the only recorded disposal of hazardous wastes at the site was 91 metric tons of inorganic salts and solids from Diamond Shamrock Corporation's plant in Baltimore (EPA 1987).

The Anne Arundel County Landfill site is on the northern bank of Furnace Creek (EPA 1987), which flows east and enters Curtis Creek 1.5 km from the site (USFWS 1980). Curtis Creek flows north and discharges into the Patapsco River 5 km further downstream. The Patapsco River enters Chesapeake Bay 15 km from the site.

Contaminant migration pathways to NOAA trust resources are surface water runoff and groundwater flow to Furnace and Curtis creeks.

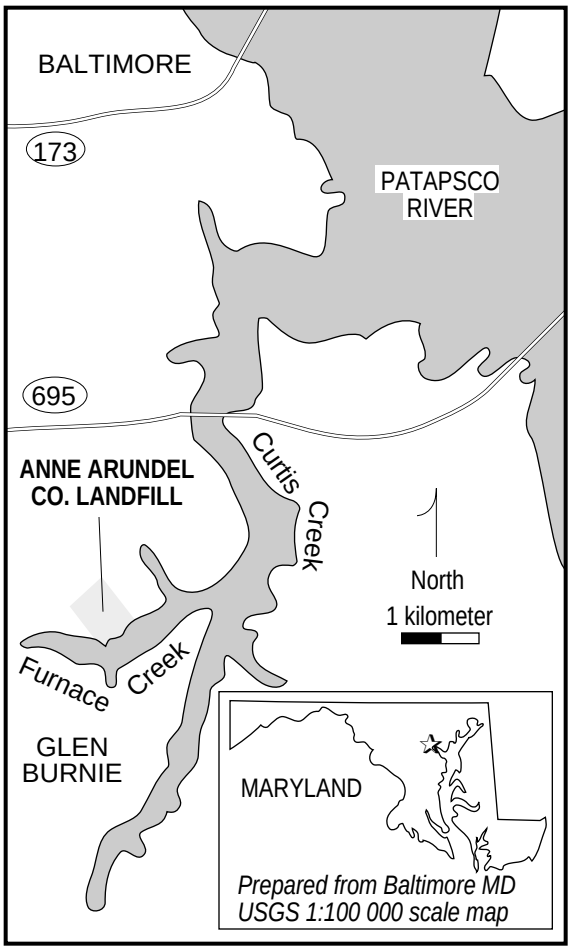

Figure 1. The Anne Arundel Landfill in Glen Burnie, Maryland.

Site-Related Contamination

The contaminants of concern to NOAA at the site are trace metals and cyanide (Table 1). These inorganic contaminants were observed in groundwater at concentrations exceeding AWQC for the protection of saltwater aquatic life by up to 584 times. Concentrations of copper, lead, mercury, zinc, and cyanide exceeding AWQC were measured in Furnace Creek. Because Furnace Creek is tidally influenced, areas both upstream and downstream of the site could be influenced by contaminants leaving the site (NUS 1984).

Table 1. Maximum concentrations of selected contaminants at the Anne Arundel County Landfill site (NUS 1984); AWQC for the protection of saltwater aquatic life (EPA 1986); concentrations in μg/l.

	Furnace Creek				
		Surface Water		AWQC	
Contaminant	Groundwater	Downstream	Upstream	Acute	Chronic
INORGANIC SUBSTANCES					
Trace Metals					
arsenic	294	1.26	2.05	69	36
chromium	307	2.1	3.3	1100	50
copper	272	N/A	4.7	2.9	2.9
lead	16	70	68	140	5.6
mercury	14.6*	12.7*	6.3*	2.1	0.025
nickel	227*	N/A	3.7*	75	8.3
zinc	628	89*	32*	95	86
Other					
cyanide	110	42	110	1.0	1.0

* Questionable data

NOAA Trust Habitats and Species in Site Vicinity

The major habitat of concern to NOAA is Curtis Creek (Table 2). Under base flow conditions, Curtis Creek is 200 to 300 meters wide at its confluence with Furnace Creek. The depth in the upper reaches of Curtis Creek ranges from 3 to 6 meters; the creek is dredged to a depth of eight meters in the lower reaches. Due to the larger volume of water and higher flow, the water quality in Curtis Creek is fairly good. Curtis Creek supports a diverse population of marine and anadromous fish species, benthic organisms, and zooplankton (USFWS 1980). A commercial and recreational fishery exists for many of these species in Curtis Creek and the Patapsco River.

Table 2. NOAA trust resource use of Curtis Creek (USFWS 1980; VIMS 1983).

Species	Spawning Area	Nursery Area	Adult Area	Migration Route	Commercial Fishery	Recreational Fishery
alewife	X	X		X	X	X
American eel			X		X	X
American shad		X		X	X	X
Atlantic sturgeon				X		
blueback herring	X	X		X	X	X
hickory shad	X	X		X		X
gizzard shad	X	X		X	X	X
striped bass				X	X	X
white perch	X	X	X	X	X	X

Furnace Creek, which is adjacent to the site, is an estuarine tidal system 60 to 90 meters wide and up to four meters deep. Large parts of the creek are organic-rich mud flats that are covered by shallow water or exposed during low tide (Butler 1988; Garrison 1988). The tide ranges from 0.3 to 0.5 meters and the salinity ranges from 0.5 to 5 ppt. Urban runoff has degraded the water quality in Furnace Creek. Low, dissolved oxygen caused by algal blooms has been a recurring problem and there have been fish kills of white perch and menhaden in the upper parts of the creek. Furnace Creek has a less diverse population of aquatic organisms than Curtis Creek and does not support runs of anadromous fish. However, most fish species using Curtis Creek may be present in Furnace Creek.

Response Category: Federal Enforcement Lead

Current Stage of Site Action: RI/FS Workplan

EPA Site Manager

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References

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