

**Sussex County Landfill
Laurel, Delaware
Region 3
DED980494637**

Site Exposure Potential

The inactive Sussex County Landfill occupies a 15.2-hectare site 3 km southwest of Laurel, Delaware (Figure 1) (EPA 1987). From May 1970 to April 1979, the unpermitted landfill accepted municipal wastes and an unknown quantity of VOCs. The wastes were deposited below the water table. The groundwater flows north at an estimated 12 cm per day. The total volume of the landfill has been estimated to be 298,000 m³.

The landfill is in an area dominated by agriculture and pine forest and is 30.3 to 33.2 meters above mean sea level (EPA 1987). The landfill is mostly vegetated with stands of young pine trees. However, there are scattered patches of dead vegetation and some completely barren areas on the landfill (NUS 1985). Surface waters near the site

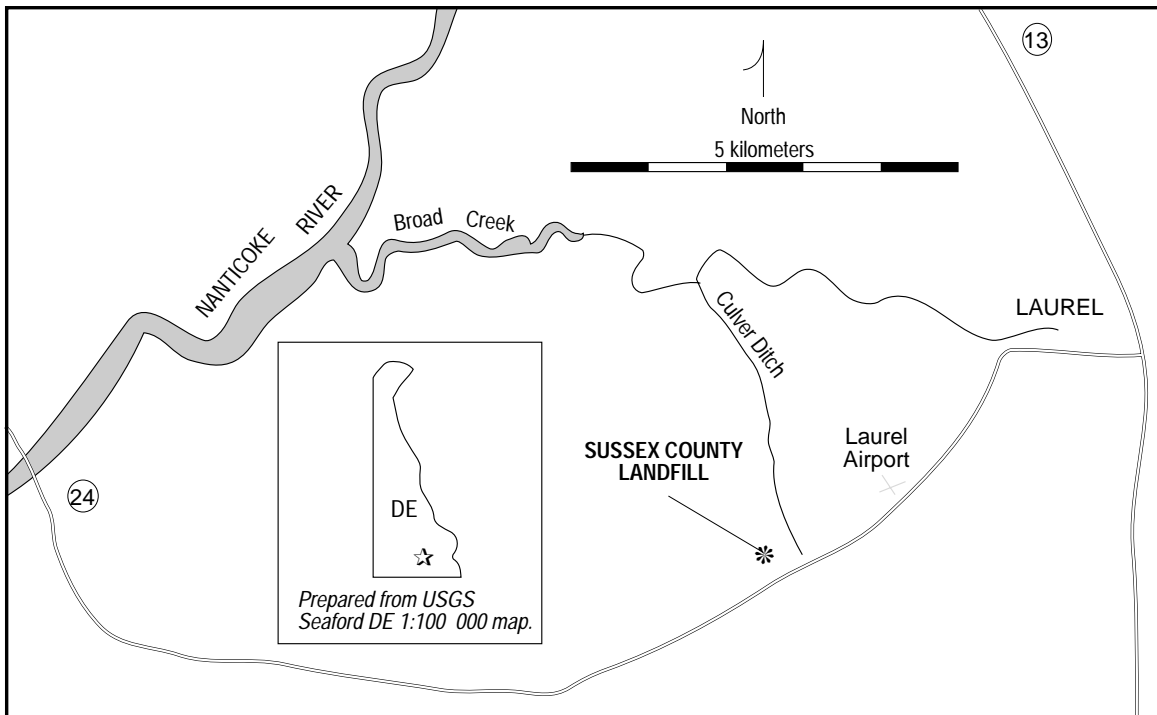


Figure 1. The Sussex County Landfill site in Laurel, Delaware.

include two shallow ponds and a ditch. The two ponds on the site cover 4 m² and 12.5 m², respectively. Culver Ditch runs 0.5 km east of the landfill and feeds into Broad Creek, 3.5 km north of the site. Broad Creek flows west and discharges into the Nanticoke River, 11 km from the site. Nanticoke River enters the Chesapeake Bay 45 km below the confluence of Broad Creek.

Possible contaminant migration pathways to NOAA trust resources are surface water runoff and groundwater flow to Broad Creek and the Nanticoke River.

Site-Related Contamination

The contaminants of concern to NOAA at the site are trace metals (NUS 1985). Seven trace metals were detected in on-site groundwater at concentrations that exceeded AWQC for the protection of freshwater aquatic life (Table 1). In addition, the criteria for cadmium, mercury, silver, and zinc were exceeded in surface water from the ponds. A groundwater plume has been detected extending to a depth of 10.6 meters, approximately 150 meters north of the landfill.

Table 1. Maximum concentrations of selected contaminants at the Sussex County Landfill (NUS 1985); AWQC for the protection of freshwater aquatic life (EPA 1986); concentrations in sediment and soil in mg/kg and in water in µg/l.

Contaminant	On-site Groundwater	Pond Sediment	Pond Surface water	Culver Ditch Sediment	AWQC	
					Acute	Chronic
<u>Volatile Organic Compounds</u>						
acetone	280††	N/A	N/A	N/A	N/D	N/D
benzoic acid	N/A	N/A	N/A	4.68	N/D	N/D
2-butanone	470††	N/A	N/A	N/A	N/D	N/D
<u>Trace Metals</u>						
cadmium	34*	N/A	2.3*	N/A	3.9†	1.1†
chromium	47	N/A	N/A	N/A	16	11
copper	32	3.5	N/A	N/A	18†	12†
lead	64	8.6	N/A	105	82†	3.2†
mercury	6.1*	N/A	2.3*	0.12	2.4	0.012
silver	13*	N/A	13*	N/A	4.1†	0.12
zinc	629*	18*	342*	291	120†	110†
* Questionable data; † Hardness-dependent (based on 100 mg/l CaCO ₃)						
†† Quantitative approximation; N/A: Not available; N/D: Criteria not developed						

NOAA Trust Habitats and Species in Site Vicinity

Habitats of concern to NOAA include Broad Creek and the Nanticoke River. There is insufficient information on Culver Ditch to determine its importance as a habitat. Broad Creek is a slow, continuously flowing, low-gradient stream with 1.5-meter high banks and extensive freshwater wetlands along its shoreline. Near the site, the creek has sandy substrate and is 23 to 30 meters wide and one meter deep. Broad Creek has high water quality and is tidal past its confluence with Culver Ditch. The Nanticoke River, 76 meters wide and three to six meters deep, is the largest river in Delaware. The river is bordered by extensive freshwater wetlands. The substrate in the river is sandy silt and the water quality is high. The Nanticoke Wildlife Area is at the confluence of Broad Creek and the Nanticoke River, less than 8 km downstream from the site (Blosser 1988).

Alewife, blueback herring, white perch, and, possibly, striped bass use Broad Creek as a spawning/nursery area and as a migration route (Table 2) (Miller 1988; Martin 1989). Fish found in Broad Creek, along with American eel and American shad, also use the reach of the Nanticoke River near the mouth of Broad Creek. The State of Delaware has given Broad Creek Exceptional Recreational Ecological Significance (ERES) status, which does not permit the release of any contaminants above background levels. Both Broad Creek and the Nanticoke River are valuable recreational fishing areas (Miller 1988).

Table 2. NOAA trust resource use of Broad Creek and the Nanticoke River (Miller 1988).

Species	Broad Creek	Nanticoke River
alewife	S,N,M	S,N,M
American eel	A	A,M,R
American shad		S,N,M,R
blueback herring	S,N,M	S,N,M
striped bass	S,N,M,R	S,N,M,R
white perch	S,N,M,R	S,N,M,R
S: Spawning area, N: Nursery area, M: Migration route, A: Adult area, R: Recreational fishing		

Response Category: Federal Enforcement Lead

Current Stage of Site Action: RI/FS Workplan

EPA Site Manager

Eric Newman	215-597-9238
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NOAA Coastal Resource Coordinator

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References

Blosser, M., Department of Natural Resources and Environmental Control, Dover, Delaware, personal communication, November 10, 1988.

EPA. 1986. Quality Criteria for Water. Washington, D.C.: Office of Water Regulations and Standards, Criteria and Standards Division. EPA 440/5-86-001.

EPA. 1987. National Priorities List, Superfund Hazardous Waste Site Listed under CERCLA, Sussex County Landfill #5. Philadelphia: U.S. Environmental Protection Agency, Region 3.

Martin, C. fisheries biologist, U.S. Fish and Wildlife Service, Dover, Delaware, personal communication, March 15, 1989.

Miller, R., fisheries biologist, U.S. Fish and Wildlife Service, Dover, Delaware, personal communication, December 12, 1988.

NUS Corporation. 1985. Site Inspection of Sussex County Landfill #5, August 7, 1985. Philadelphia: U.S. Environmental Protection Agency, Region 3.