

NOAA Hazardous Waste Site Report

Delaware Sand & Gravel Landfill (III-4)
New Castle County, Delaware
April 13, 1984

Location and Nature of Site:

The Delaware Sand and Gravel Landfill covers ten acres and is located about two miles southwest of New Castle, Delaware along the southeastern bank of Army Creek (Figure 1). The site, formerly a sand and gravel pit, was operated as a municipal and industrial landfill from 1969 to 1976. During that time, 48,000 cubic yards of inert wastes had been disposed of yearly. A 150,000 cubic ft. pit on the northern part of the property was used for the disposal of about 7,500 drums of liquid and contains about 375,000 gallons of industrial chemical waste.

The landfill ceased operation in 1976 following a Delaware State Court action. The landfill was covered with sand and gravel, which are very permeable. The underlying aquifer and surrounding surface waters are contaminated by organic and inorganic hazardous substances.

Delaware Sand and Gravel is a corporation, owned by Vincent and Joseph Dell Aversano, which operated the sand and gravel pit and landfill on land owned by Vincent and Marcella Dell Aversano. The corporation declared bankruptcy when the State of Delaware filed enforcement action in 1976.

Establishing the degree of contamination from the Delaware Sand and Gravel Landfill is complicated by the presence of the adjacent Army Creek (Llangollen) Landfill (NOAA site III-2). The two sites are so close that the resulting contamination of local groundwater aquifers most likely results from the combined effect of both sites.

Groundwater contamination in the vicinity of the sites presents the most serious threat to public health. Surface waters, apparently contaminated principally by the recovered groundwater from the Army Creek Landfill is another, although lesser, concern.

Proximity of Chemical Hazard to Marine Resources:

The site is situated on Army Creek one mile from the Delaware River. Liquid wastes were transported to the site in drums and emptied into the unlined liquid waste disposal pit. The potential for the migration of contaminants into the surrounding environment is accelerated because the majority of wastes on the site are not in containers. Contamination of surface water in Army Creek is reflected in Table 1.

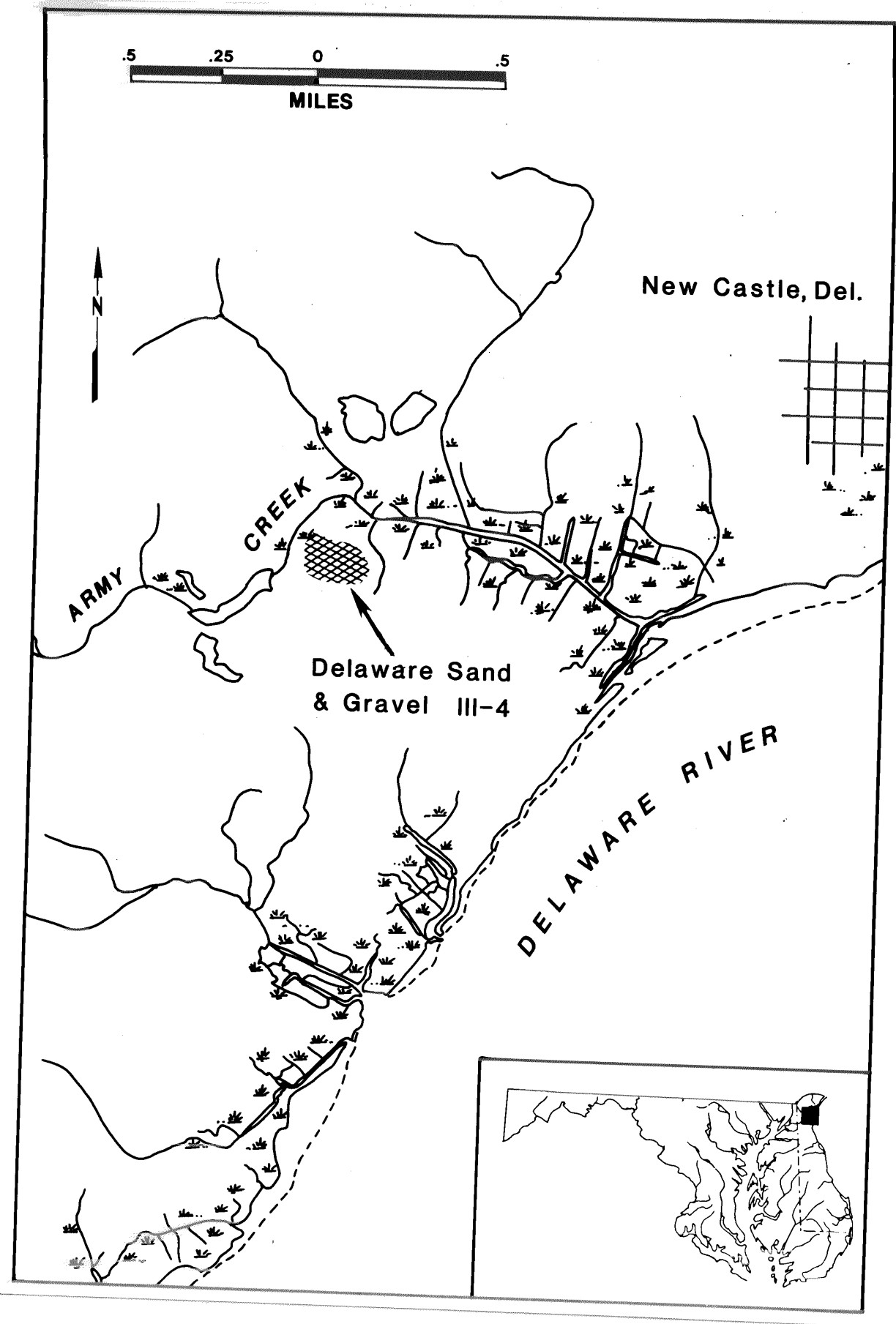


FIGURE 1. Site location.

Table 1. Analytical Results of Surface Water Samples
in Army Creek - November 1981 (6)

Parameter	Stream Sample I	Stream Sample II	Stream Sample III	Stream Sample IV	Stream Sample V
<u>Organic (ppb)</u>					
Phenol			<10		
Bis (2-Ethyl Hexyl) Phthalate	<10	<10	<10	<10	<10
Butyl Benzyl Phthalate					<10
Di-N-Butyl Phthalate	<10	<10			<10
<u>Inorganic (ppb)</u>					
Aluminum	350	400	300	150	400
Chromium	<10	<10	<10	<10	<10
Barium	60	170	270	90	210
Beryllium	<2	<2	<2	<2	<2
Cadmium	<5	<5	<5	<5	<5
Cobalt	<10	<10	<20	<10	50
Copper	<20	<20	<20	<20	200
Iron	1760	2160	25,000	880	167,000
Lead	<40	<40	<40	<40	<40
Nickel	<20	<20	<20	<20	<20
Manganese	290	590	830	130	470
Zinc	50	50	20	20	150
Boron	50	80	10	30	10
Vanadium	<10	<10	<10	<10	<10
Calcium	21,800	13,600	20,100	20,700	11,400
Magnesium	7,700	6,700	7,500	7,800	5,400
Sodium	17,900	28,300	36,500	26,700	13,000
Arsenic	<10	<10	<10	<10	<10
Antimony	<20	<20	<20	<20	<20
Selenium	<10	<10	<10	<10	<10
Thallium	<10	<10	<10	<10	<10
Mercury	<1	<1	<1	<1	<1
Tin	<20	<20	<20	<20	<20
Silver	<20	<20	<20	<20	<20

- I - U.S. Route 13 bridge
 II - Near Monitoring Well #48
 III - Near Monitoring Well #42
 IV - Near Recovery Well #4
 V - U.S. Route 9 bridge

Marine Resources at Risk:

The waters of Army Creek are not used for water supply, recreational or industrial purposes, however, the Delaware River and its tributaries provide significant habitat for a variety of finfish resources (See Table 2).

Table 2. Fishery Resources of Tidally Influenced Regions of the Delaware River (1, 2, 5)

Finfish Species	Adult Habitat	Spawning Area	Nursery Area	Commer. Fish.	Rec. Fish.	Migr. Route
<u>Anadromous</u>						
Alewife	x	x	x	x	x	x
Blueback herring	x	x	x	x	x	x
American shad	x	x	x	x	x	x
Shortnose sturgeon (Note 1)						
Atlantic sturgeon		x				
Striped bass		x	x	x	x	x
Gizzard shad	x	x	x			
<u>Non-anadromous</u>						
Atlantic menhaden			x			
White perch		x	x	x	x	x
Flounder	x					
Northern kingfish	x					
Bluefish			x			
Atlantic croaker			x			
Spotted seatrout					x	
Channel catfish	x					
White catfish				x	x	
Brown bullhead				x	x	
Bluegill	x				x	
Black crappie	x				x	

Note 1. Shortnose sturgeon is a species of special federal concern.

Anadromous fish migrate through the Delaware Bay estuarine system during the early spring on their way to freshwater spawning grounds. For most of the anadromous fish of the Delaware Bay this occurs upstream of Burlington, New Jersey, although some spawning does occur in freshwater tributaries (4). The adults return to the lower parts of Delaware Bay. Juvenile fish, hatched in the spring, remain in the upper parts of Delaware Bay until the late summer and early fall when they also migrate back into the lower parts of the Bay (3).

The Army Creek watershed is located within two miles of known spawning grounds of the Atlantic sturgeon at Supawna Meadows National

Wildlife Refuge. The Atlantic sturgeon is a species of special concern to the State of Delaware.

It is unknown to what extent other species of finfish utilize the Army Creek watershed area, but this region of the Delaware River is unlikely to be an important nursery or spawning area for other anadromous fish due to the fairly high level of development in this area and to their preference for less saline waters for spawning. Blueback herring, American shad, and striped bass may utilize this area as nursery grounds.

Some tidal wetlands are present at the mouth of Army Creek, and some species of fish may be harvested by recreational and commercial fishermen in the Delaware River adjacent to Army Creek.

The Delaware Bay estuarine system is an important wintering area for many waterfowl and seabirds, particularly loons, grebes, and gannet. They tend to concentrate in coastal bays and wetland areas. Bald eagles nest at Augustine Wildlife Area and Appoquinimink Wildlife Area.

Several State and Federal Management Areas are located on the Delaware River in the vicinity of Army Creek:

Chesapeake and Delaware Canal Wildlife Area	7 mi. downstream
Augustine Wildlife Area	12 mi. downstream
Ft. Mott State Park	2 mi. downstream
Ft. Delaware State Park	5 mi. downstream
Supawna Meadows National Wildlife Refuge	5 mi. downstream
Appoquinimink Wildlife Area	13 mi. downstream

Summary of Site-Related Actions:

EPA completed a Remedial Action Master Plan in June, 1983 (6) outlining the investigations needed to determine the full extent of cleanup required at the site. Any measures taken at the site will be in conjunction with activities proposed at the Army Creek site.

A State of Delaware suit against the site owner is not yet resolved.

An emergency cleanup of the surface contamination, including drum and soil removal, is presently underway. Buried drums and other materials in the 15-ft. deep pit will be removed at a later date as a remedial activity.

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References:

1. Angler's Guide to the United States Atlantic Coast, 1974. National Marine Fisheries Service.
2. Atlantic Coast Ecological Inventory, 1980. U.S. Fish and Wildlife Service.
3. Breder, C.N., and D.E. Rosen, 1966. Modes of Reproduction in Fishes. TFH Publications.
4. Byrne, D. Personal communication, Delaware River Anadromous Fishery Project, U.S. Fish and Wildlife Service.
5. Environmental Sensitivity Atlas. Research Planning Institute, Columbia, South Carolina. Unpublished.
6. Draft Remedial Action Master Plan. Environmental Protection Agency, Washington, D.C. April 1983.