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Kingston Dump/ URI Disposal Area

South Kingston, Rhode Island
Cerclis# RID981063993

Site Exposure Potential

The West Kingston Town Dump/URI Disposal Area site is located along the eastern side of the Chipuxet River Valley in South Kingston, Rhode Island. The 2.6-hectare site is on land that had been part of a sand and gravel quarry since the 1930s and is surrounded on all sides by property at a higher elevation. The West Kingston Town Dump was used as a solid waste dump from 1951 to 1978. Household, commercial, institutional, and industrial wastes were disposed of at the dump. The URI Disposal Area includes at least three separate disposal areas which operated from 1945 to 1987. Wastes disposed of included empty paint cans, oil containers, pesticide containers, lab wastes, lab equipment, machinery, drums, and old tanks (U.S. EPA, 1991).

Surface water in the site vicinity includes Hundred Acre Pond, 500 m west of the site, and Thirty Acre Pond, immediately south of Hundred Acre Pond. The Chipuxet River flows south from Thirty Acre Pond, entering Worden Pond 5.6 km downstream of the site. The Pawcatuck River drains Worden Pond and flows east, entering Little Narragansett Bay approximately 60 km downstream of Worden Pond (Figure 1).

The site lies within the Chipuxet River Basin, a major groundwater reservoir that includes 21 m of discontinuous silt, sand, and gravel above the underlying bedrock. The water table is 6 m below ground surface; the overburden and bedrock are treated as a single aquifer due to the absence of any confining layers within a 6.5-km radius of the site (U.S. EPA, 1991).

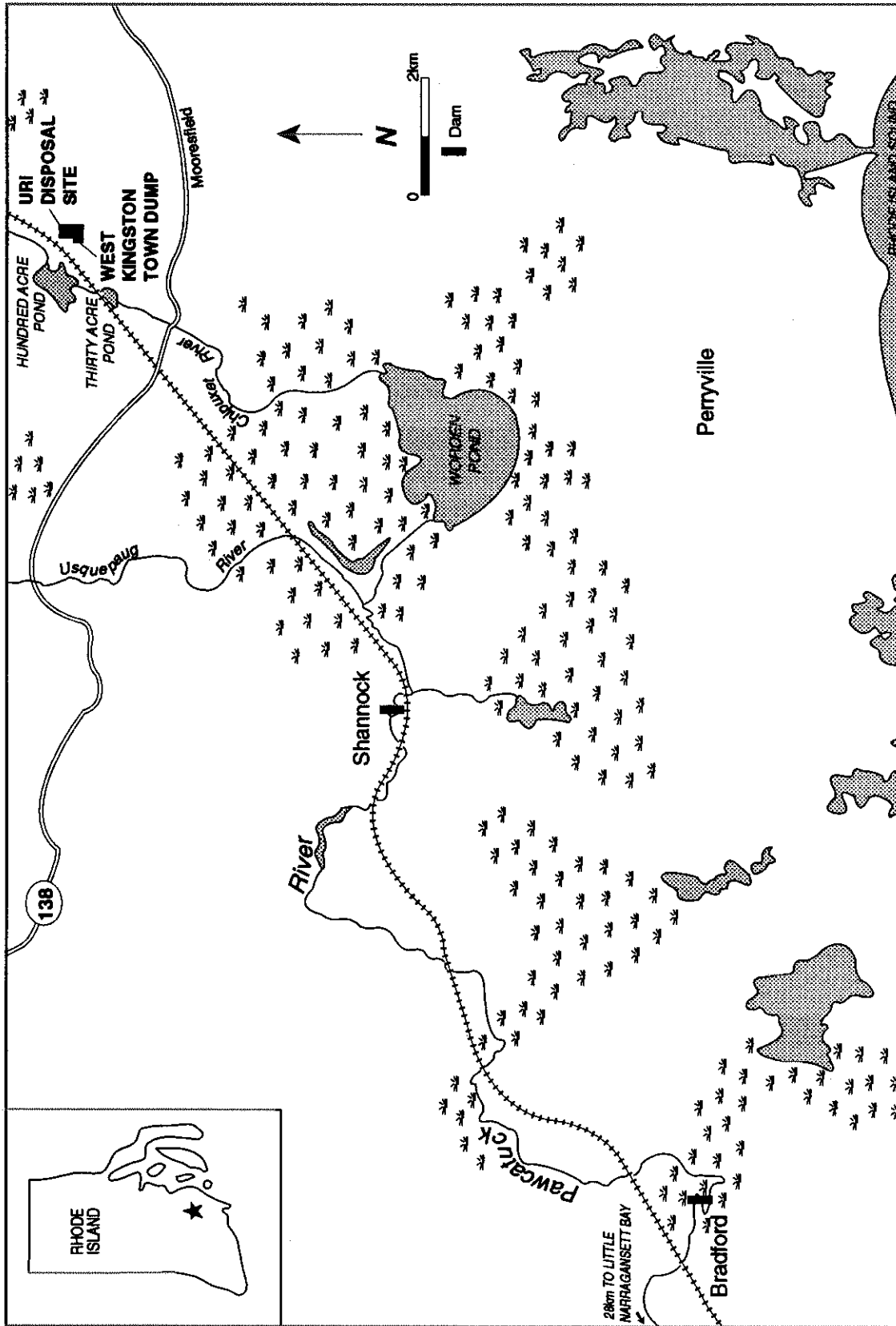


Figure 1. Location of the West Kingston Town Dump/URI Disposal Area in West Kingston, Rhode Island.

Groundwater is the major pathway by which site-related contaminants can migrate to trust habitats. Regionally, groundwater flows southwest while local flow is west toward Hundred Acre Pond. Due to a history of sand and gravel excavation, the majority of the site is lower in elevation than the surrounding area. Therefore, it is not possible for hazardous substances to migrate offsite via surface water flow (U.S. EPA, 1991).

NOAA Trust Habitats and Species

American eel is the only NOAA trust resource in Hundred Acre Pond, Thirty Acre Pond, and the Chipuxet River, the habitats potentially affected by the site. There are four dams on the Pawcatuck River: Potter Hill dam, approximately 32 km downstream of the site; Bradford dam, approximately 25 km downstream of the site; and two dams at Shannock, approximately 10 km downstream of the site. The dams at Potter Hill and Bradford are equipped with fish passage facilities. The first dam at Shannock is low enough to permit fish passage. The second dam, Horseshoe Dam, is approximately 2 m high and does not have fish passage facilities. This dam limits all upstream fish migration. Although fish passage facilities have been proposed, restoration plans are not definite (Gibson, personal communication 1992). Hundred Acre Pond, Thirty

Acre Pond, and the Chipuxet River are natural, shallow, freshwater habitats. The upper reaches of the Pawcatuck River provide non-tidal freshwater habitat. The lower reaches provide low-salinity estuarine habitat (Gibson, personal communication 1992; Gold, personal communication 1992).

The upper reaches of the Pawcatuck River below Horseshoe Dam provide spawning, nursery, and adult habitat for NOAA trust species (Table 1; Lapin, personal communication 1992). American eel is the only trust species known to migrate beyond Horseshoe Dam (Gibson, personal communication 1992). Atlantic salmon are trapped at the Potter Hill dam and relocated to the Perryville State Trout Hatchery in Perryville, 10 km south of the site. Fingerlings are later reintroduced in Usquepaug River, a tributary that joins the Pawcatuck River just below Worden Pond, and other smaller unnamed tributaries of these two rivers. Atlantic salmon are known to escape occasionally and could conceivably use the Pawcatuck River for spawning and nursery habitat, but this remains undocumented (Gibson, personal communication, 1992).

The Pawcatuck River, Worden Pond, the Chipuxet River, Thirty Acre Pond, and Hundred Acre Pond are used for freshwater recreational fisheries. There is no commercial fishing in these waterbodies (Gibson, personal communication 1992).

Table I. Species, habitat use, and fisheries in the Pawcatuck River below Horseshoe Dam.

Species		Habitat			Fisheries	
Common Name	Scientific Name	Spawning	Nursery	Adult Forage	Comm.	Recr.
ANADROMOUS SPECIES						
American shad	<i>Alosa sapidissima</i>	♦	♦	♦		♦
Atlantic sturgeon ¹	<i>Acipenser oxyrinchus oxyrinchus</i>	♦	♦	♦		♦
Atlantic salmon ²	<i>Salmo salar</i>			♦		♦
alewife	<i>Alosa pseudoharengus</i>	♦	♦	♦		♦
rainbow smelt	<i>Osmerus mordax</i>					
CATADROMOUS SPECIES						
American eel	<i>Anguilla rostrata</i>		♦	♦		
1 Rare and infrequent in the Pawcatuck River.						
2 Atlantic salmon are relocated to hatcheries for spawning.						

Site-Related Contamination

Data collected during preliminary site investigations at the site have focused on groundwater sampling. No soil samples have been collected, nor has offsite surface water, sediment, or biota sampling been conducted.

In 1987, five VOCs were detected in groundwater sampled from private wells near the site. The same VOCs were detected in surface water from an on-site pond. Groundwater monitoring conducted in 1989 detected several VOCs and lead in groundwater flowing west towards Hundred Acre Pond at concentrations exceeding those in groundwater collected upgradient of the site (Table 2; U.S. EPA, 1991). Lead was the only contaminant detected in groundwater that exceeded the ambient water quality criterion

(AWQC; U.S. EPA, 1986) for the protection of aquatic life. However, the maximum concentration of lead did not exceed the screening criterion (ten-times AWQC).

References

Gibson, M., Fisheries Biologist, Rhode Island Department of Environmental Management, Division of Fish and Wildlife, Wakefield, personal communication, March 5, 1992.

Gold, A., Professor of Natural Resources Science, University of Rhode Island, Kingston, personal communication, February 26, 1992.

Table 2. Maximum concentrations of contaminants detected in groundwater at the Kingston Dump/URI Disposal Area site.

	Groundwater		Water
	Upgradient µg/l	On-site µg/l	AWQC ¹ µg/l
ORGANIC SUBSTANCES			
<u>Volatile Organic Compounds</u>			
1,1 dichloroethane	<1	4	20,000*
1,2 dichloroethene	<1	30	ND
tetrachloroethene	<1	52	840*
1,1,1 trichloroethane	<1	12	9,400*
trichloroethylene	<1	95	21,900*
INORGANIC SUBSTANCES			
<u>Trace Elements</u>			
lead	<1.1	12	3.2*
¹ : Ambient water quality criteria for the protection of aquatic organisms. Freshwater chronic criteria presented (U.S. EPA, 1986). *: Insufficient data to develop criteria; value presented is the Lowest Observed Effects Level. +: Hardness-dependent criteria (100 mg/l CaCO ₃ used). NA: Screening level not available.			

Lapin, B., Fisheries Biologist, Rhode Island Department of Environmental Management, Division of Fish and Wildlife, Wakefield, personal communication, March 4, 1992.

U.S. EPA. 1986. Quality criteria for water. EPA 440/5-87-003. Washington, D.C.: U.S. Environmental Protection Agency, Office of Water Regulation and Standards, Criteria and Standards Division.

U.S. EPA. 1991. HRS Package for West Kingston Town Dump/URI Disposal Area site. Washington, D.C.: U.S. Environmental Protection Agency, Office of Emergency and Remedial Response, Hazardous Site Evaluation Division, Site Assessment Branch.