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Peter Cooper

Gowanda, New York
CERCLIS #NYD980530265

Site Exposure Potential

The 20-hectare Peter Cooper facility is located on Cattaraugus Creek in Gowanda, Cattaraugus County, New York (Figure 1). Cattaraugus Creek empties into Lake Erie approximately 29 km downstream from the site (Roy F. Weston 1997).

In about 1904, the Eastern Tanners Glue Company began manufacturing animal glue at the facility. The Peter Cooper Corporation took over on an unknown date and continued processing chromium-contaminated hides and cookhouse sludge for protein glue until 1972. Industrial adhesives were produced from 1972 until the facility closed in 1985 (EPA 1997).

Peter Cooper disposed of sludges high in chromium, arsenic, zinc, and organic compounds from 1925 to 1970 in an unlined landfill on the northwest portion of the property (Figure 2). By 1966, the landfill extended into Cattaraugus Creek. In 1971, the New York State Supreme Court ordered both removal of the waste pile and termination of waste discharges to Cattaraugus Creek. In response, Peter Cooper switched to production of industrial adhesives, and moved approximately 35,000 metric tons of waste from the Gowanda facility to their Markhams, New York facility. The remaining contaminated fill, with an estimated volume of 56,000 m^3, was covered and contained by an armored concrete

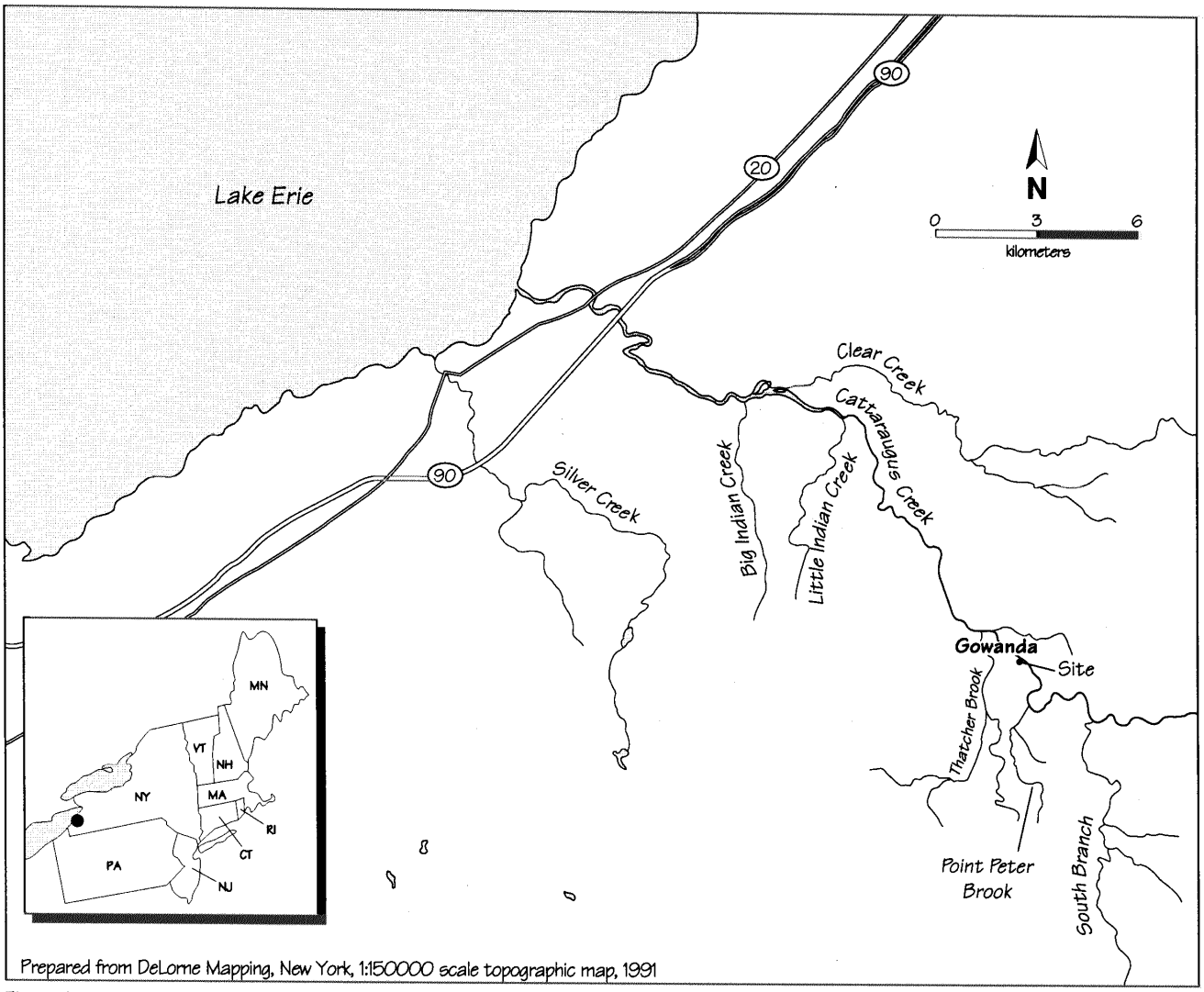

Figure 1. Location of the Peter Cooper site in Gowanda, New York.

wall along the creek. In 1976, the Rousselot Gelatin Corporation purchased the name, assets, and liabilities of the Peter Cooper Corporation and continued operations until the plant was closed in 1985 (Roy F. Weston 1997).

Investigations conducted since 1981 document that the cover material has eroded, exposing the waste pile. In addition, part of the concrete retaining wall collapsed and leachate was observed discharging along 260 m of Cattaraugus Creek (Roy F. Weston 1997). New riprap armored erosion control was constructed in January 1997 under an EPA Administrative Order (EPA 1997).

Surface water runoff, erosion, leachate migration, and groundwater discharge are the potential

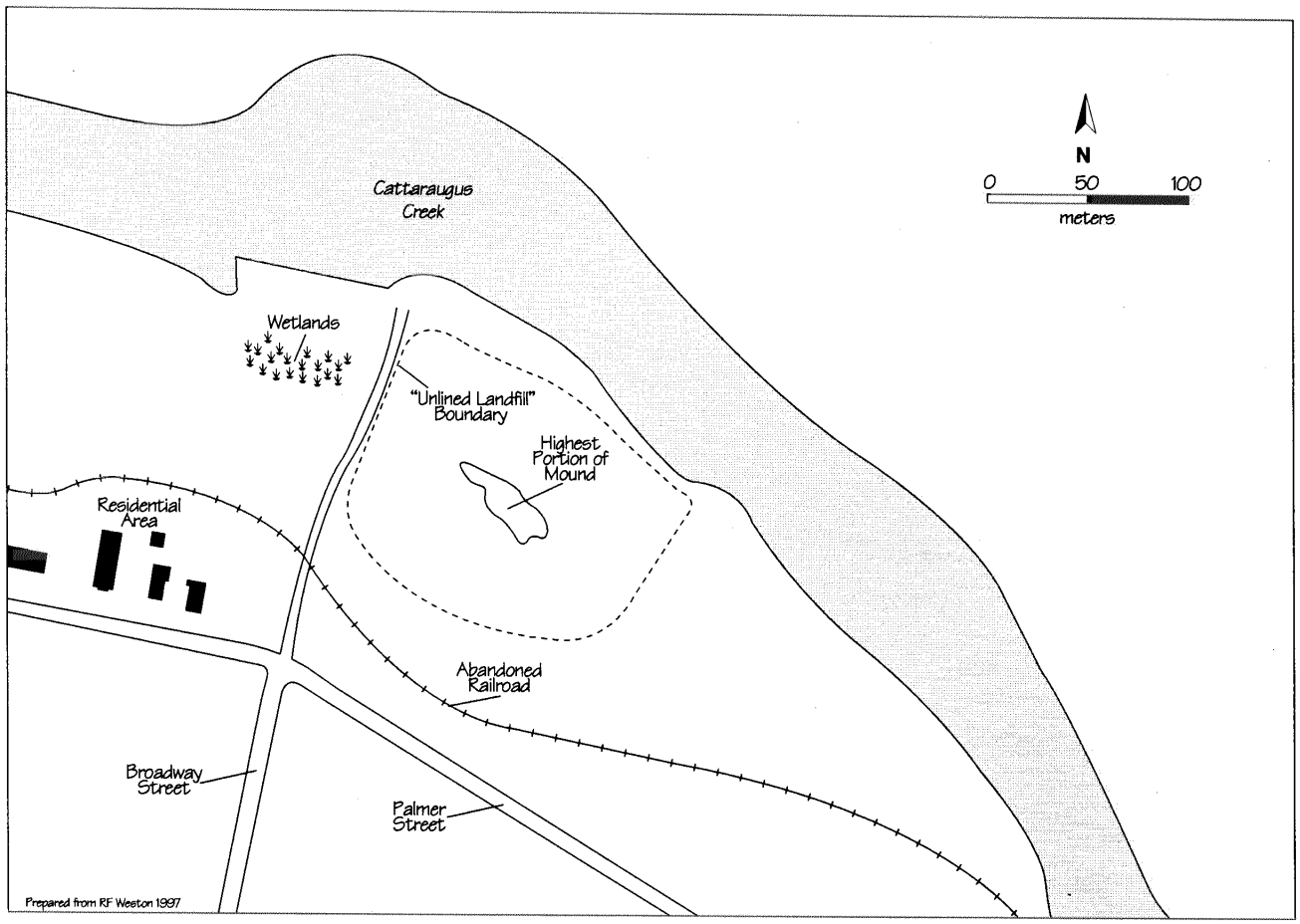

Figure 2. Detail of the Peter Cooper site.

pathways of contaminant transport from the site to NOAA trust resources and associated habitats. The mounded wastes slope to the shoreline of Cattaraugus Creek, helping surface runoff and eroded materials to flow into the creek (EPA 1997; Roy F. Weston 1997).

Groundwater is encountered about 1.5 m below the surface. Groundwater flow is northerly toward Cattaraugus Creek, through both the 3.3-m surface formation of unconsolidated sand, gravel, and silt; and through the deeper shale bedrock. Bedrock slopes down to the north toward the creek. Leachate seeps have been observed where bedrock intersects the creek channel (O'Brien and Gere Engineers, Inc. 1989).

NOAA Trust Habitats and Species

The NOAA trust habitat of concern is Cattaraugus Creek, a medium-sized, moderate-gradient, cold-water stream that discharges into eastern Lake Erie. Near the site, the creek is generally between 50 and 75 m wide and 0.5 to 3 m deep. Mean yearly flow is 740 cfs (Roy F. Weston 1997). Riffle, pool, and run habitats predominate below the site. Substrates range from cobble and rubble in riffle areas to fine sands in pools (Cornelius personal communication 1998).

The creek near the site is designated a Class B and C stream by the New York State Department of Environmental Conservation (NYSDEC). At the site, the creek is designated Class C waters, suitable for fish propagation and survival based on the standards for a trout fishery. Water quality also is suitable for primary and secondary contact recreation, although other factors may limit this use (NYSDEC 1994, 1997).

NOAA trust species found in Cattaraugus Creek include steelhead trout, alewife, chinook salmon, and coho salmon. Cattaraugus Creek is an important recreational salmonid fishery, with recreational anglers observed standing in leachate seeps in order to fish (Roy F. Weston 1997; Pomeroy personal communication 1998). Cattaraugus Creek has been described as "the top salmonid spawning stream of Lake Erie tributaries" (EPA 1998). While migrations of hatchery-bred chinook and coho salmon still occur, the state recently decided to manage the stream for steelhead only (Cornelius personal communication 1998).

Adult steelhead reside in Lake Erie for one to three years before migrating up tributaries during annual spawning runs. Spawning runs are greatest during the fall and winter, but extend from October through April. Eggs incubate in cobble redds over the spring. Juvenile steelhead typically emerge from redds during the late spring and summer, overwinter the following year, and outmigrate as one-year-old fish. The naturally reproducing population of steelhead is supplemented each year by the state (Cornelius personal communication 1998).

Cattaraugus Creek adjacent to the site is a migratory corridor for both spawning and juvenile steelhead. Spawning steelhead have been observed in the tributary streams but have not been documented in the mainstem near the site. Juvenile steelhead are known to use the watershed for more than a year before outmigrating to Lake Erie (Cornelius personal communication 1998).

Most of Cattaraugus Creek downstream of Gowanda, New York flows through lands of the Seneca Indian Nation. Downstream areas support both subsistence and sport fishing. Non-Native American anglers can access tribal waters by purchasing a license from the tribe (Cornelius personal communication 1998).

The New York State Department of Health (NYSDOH) recently issued a health advisory for all of the Lake Erie basin due to elevated concentrations of PCBs in fish tissue. The advisory

recommends that the general population consume no more than one meal per week of chinook salmon longer than 19 inches; or burbot, rock bass, or yellow perch of any size; that women of childbearing age and children under 15 consume no more than one meal per month of these fish; and that pregnant or nursing mothers not consume any fish from the Lake Erie basin (NYSDOH 1998).

Site-Related Contamination

The primary contaminants of concern to NOAA at the Peter Cooper site are the trace elements chromium, arsenic, and zinc, and phenolic organic compounds. Data collected during the remedial investigation in 1988 and subsequent site investigations in 1995 and 1996 indicate that exposed landfill wastes, on-site soils, groundwater, surface water in Cattaraugus Creek, and leachate from the site all contain elevated concentrations of site-related contaminants. Maximum concentrations of these contaminants from the most recent sampling effort are presented in Table 1, along with screening guidelines.

Maximum concentrations of the trace elements arsenic, chromium, and zinc in the landfill and in soil close to the creek exceeded average concentrations for U.S. soils by 5 to 1,000 times (Table 1). Zinc concentrations in groundwater exceeded the chronic AWQC by two orders of magnitude, and were twice the AWQC in creek water collected next to the landfill. Total chromium concentration in samples of the leachate observed discharging to Cattaraugus Creek was nearly three times greater than the AWQC for trivalent ($^{+3}$) chromium, the less toxic valence state. An AWQC for total chromium was not found. However, the available data did not indicate excessive metal concentrations in Creek sediment.

Phenol and phenolic compounds were detected in landfill wastes, on-site soils, groundwater, and surface water (Table 1). No screening guidelines are available for these organic compounds in soil, and although phenol was detected in groundwater at an elevated concentration, it was less than an order of magnitude above the LOEL. Leachate and sediments were not analyzed for phenols.

Several PAHs, including benzanthracene, benzo(a)pyrene, benzo(k)fluoranthene, chrysene, fluoranthene, phenanthrene, and pyrene, were detected in landfill wastes, soils, and sediments at the site, but the reviewed data indicated PAH concentrations below sample quantitation limits, which were less than screening levels.

Summary

Elevated concentrations of the trace elements arsenic, chromium, and zinc have been found in landfill wastes, soils, groundwater, creek water, and leachate from the Peter Cooper site. These

Table 1. Maximum concentrations of contaminants of concern detected in affected media at the Peter Cooper site (Roy F. Weston 1997).

	Soil (mg/kg)			Water (µg/L)				Sediment (mg/kg)	
	Landfill Waste	Soils	Average U.S. a	Ground-water	Creek Surface Water	Leachate	AWQC[b]	Creek Sediment	TEL[c]
Trace Elements									
arsenic	33	25	5.2	100	123	99	190	7	5.9
Chromium +6 (hexavalent)	<10	<9.1	NA	60	8	NR	11	<0.74	NA
chromium +3 (trivalent)	NR	NR	NA	NR	NR	NR	210	NR	NA
total chromium	37,000	750	37	1,100	225	607	NA	12	37
zinc	5,200	520	48	11,000[d]	274	39	110	NR	120
Organic Compounds									
4-methyl phenol	6.4	NR	NA	42,000J	NR	NR	NA	NR	NA
phenol	0.79	97	NA	8,000J	160	NR	2,560[e]	NR	NA

a: Shacklette and Boerngen (1984).
b: Quality Criteria for Water (EPA 1993). Freshwater chronic criteria, unless otherwise noted, 100 mg/L $CaCO_3$ assumed.
c: Threshold effects level; concentration below which adverse biological effects were rarely observed (geometric mean of the 15% concentration in the effects dataset) as compiled by Smith et al. (1996).
d: O'Brien and Gere Engineers, Inc. 1989.
e: Lowest observed effects level, freshwater chronic (EPA 1993).
NA: Screening guidelines not available.
ND: Not detected; detection limit not reported.
NR: Not reported/analyzed.
J: Estimated concentration; not all quality control criteria were met for this sample.

trace element concentrations exceeded screening guidelines for each media in many cases. Phenolic organic compounds also were detected in soils, groundwater, and surface water. Observed releases of leachate seeping from the site into bordering Cattaraugus Creek indicate that contaminants from the site are migrating into trust habitats. Contaminants entering the creek pose a risk to resident juvenile and spawning steelhead trout, and migrating salmon.

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