Ellenville Scrap Iron and Metal

Ellenville, New York

EPA Facility ID: NYSFN0204190

Basin: Rondout

HUC: 02020007

Executive Summary

The Ellenville Scrap Iron and Metal site is an inactive facility in Ellenville, New York, where scrap iron and metal were formerly reclaimed. Waste remaining at the site includes piles of scrap metal and car batteries, as well as a landfill embankment composed of construction and demolition debris. The major contaminants of concern are metals and PCBs. Beer Kill, a secondary tributary of Rondout Creek, borders the site. American eel, a NOAA trust resource, are present in Beer Kill, Sandburg Creek, and upper Rondout Creek; those streams are the NOAA habitats of concern. Two dams on Rondout Creek prevent most other NOAA trust resources from passing upstream. Restoration of one of the dams is tentatively being considered.

Site Background

The Ellenville Scrap Iron and Metal (Ellenville) site is an inactive facility where scrap iron and metal were formerly reclaimed. The Ellenville site is in the rural village of Ellenville, Ulster County, New York (Figure 1). The site encompasses approximately 9.7 ha (24 acres) and is bordered by Cape Road to the north, Beer Kill (a small stream) to the south and west, and residential homes to the east (Figure 2). Waste remaining on the site includes scrap metal piles, a landfill embankment composed of construction and demolition debris, automobile battery piles, and brush piles. The landfill embankment, approximately 12 m (40 ft) in height, runs in a crescent along a northwesterly to southeasterly axis, bisecting and dividing the site into upper and lower sections. The Deteriorated drums are scattered throughout the site property, the majority of which are located in the lower portion of the site, adjacent to Beer Kill (USEPA 2001).

Operations at the Ellenville site began in 1950. The recycling of automobile batteries was the major function at the site and remained so until 1997, when the property changed hands. At that time, the new owner began using the site as a landfill and tire dump. Two major sources of contamination have been identified within the Ellenville site: contaminated soil within the facility's disposal area and the landfill embankment. Other areas of environmental concern at the site include piles of scrap metal, miscellaneous waste, waste tires, railroad ties, and automobile batteries (Weston 2001).

Neither of the Ellenville site's owners received a permit from the New York State Department of Environmental Conservation (NYSDEC) to operate a solid waste management facility or to store tires. In March 1987, owners of the facility proposed a Settlement of Claim with the NYSDEC; the proposed settlement included an acknowledgement by the owners that they had been operating a solid waste management facility without a NYSDEC permit and that the facility had improperly disposed of industrial waste. In addition, the owners agreed to close and cover the area where construction and demolition debris had been disposed of. A subsequent agreement between

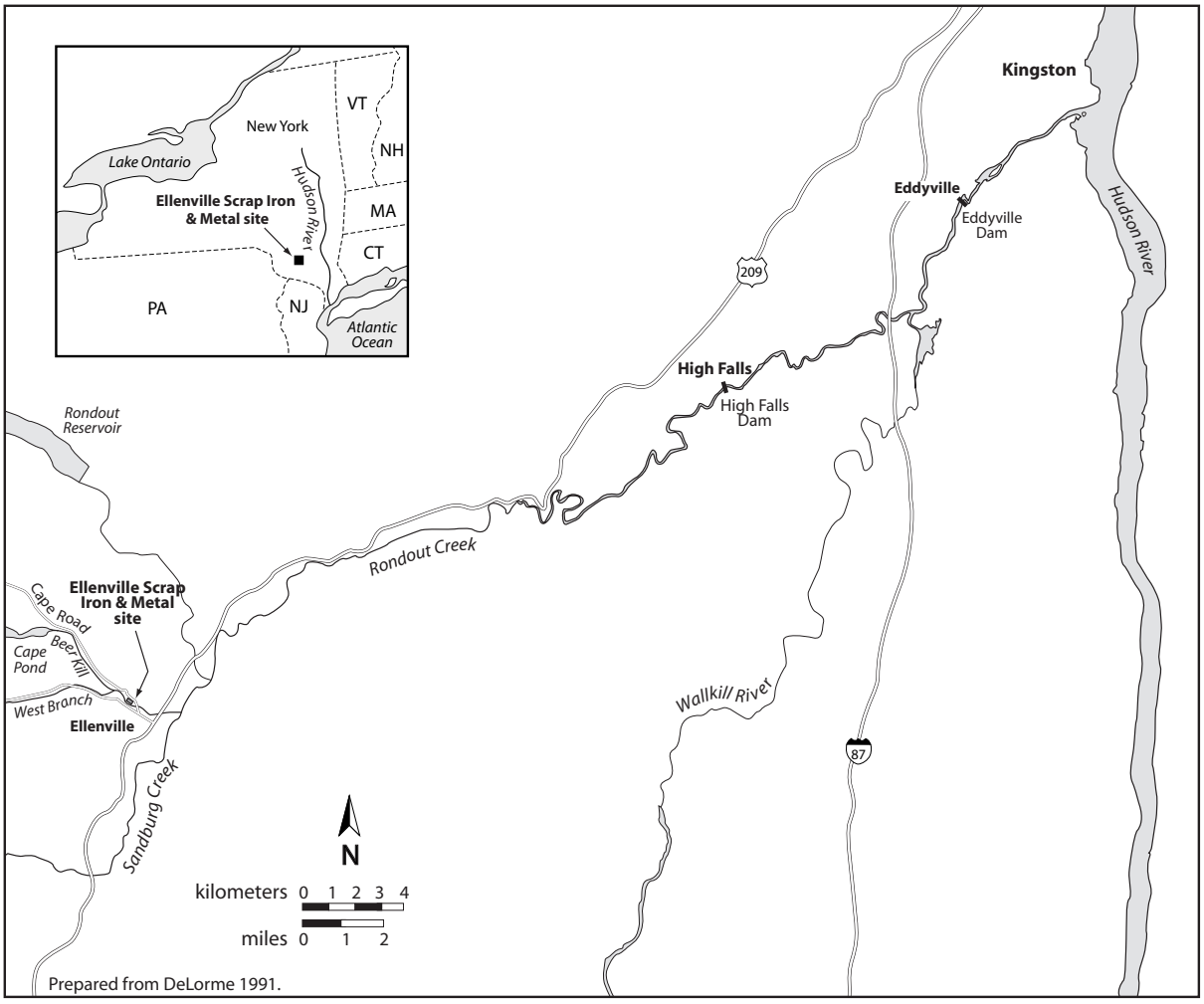

Figure 1. Location of Ellenville Scrap Iron and Metal site, Ellenville, New York.

owners of the Ellenville facility and the NYSDEC called for an evaluation of site conditions, as well as the removal of all debris that did not meet the criteria for exemption from state environmental law concerning construction and demolition. As of June 2000, the debris had not been removed from the site (Weston 2001).

Groundwater is one pathway for the migration of contaminants from the Ellenville site to NOAA trust resources. Leachate has been observed discharging from the landfill embankment, ponding at the base of the embankment, and then flowing to and disappearing beneath a pile of brush (Figure 2). This observation indicates that containment structures within the site are inadequate and allow contaminants to seep into groundwater, as well as run into surface water (Weston 2001). Groundwater beneath the site is part of the unconfined Sandburg Creek Valley Aquifer. It flows southeast from the site and discharges into Sandburg Creek at a rate of approximately 57 million liters (15 million gal) per day (Weston 2001).

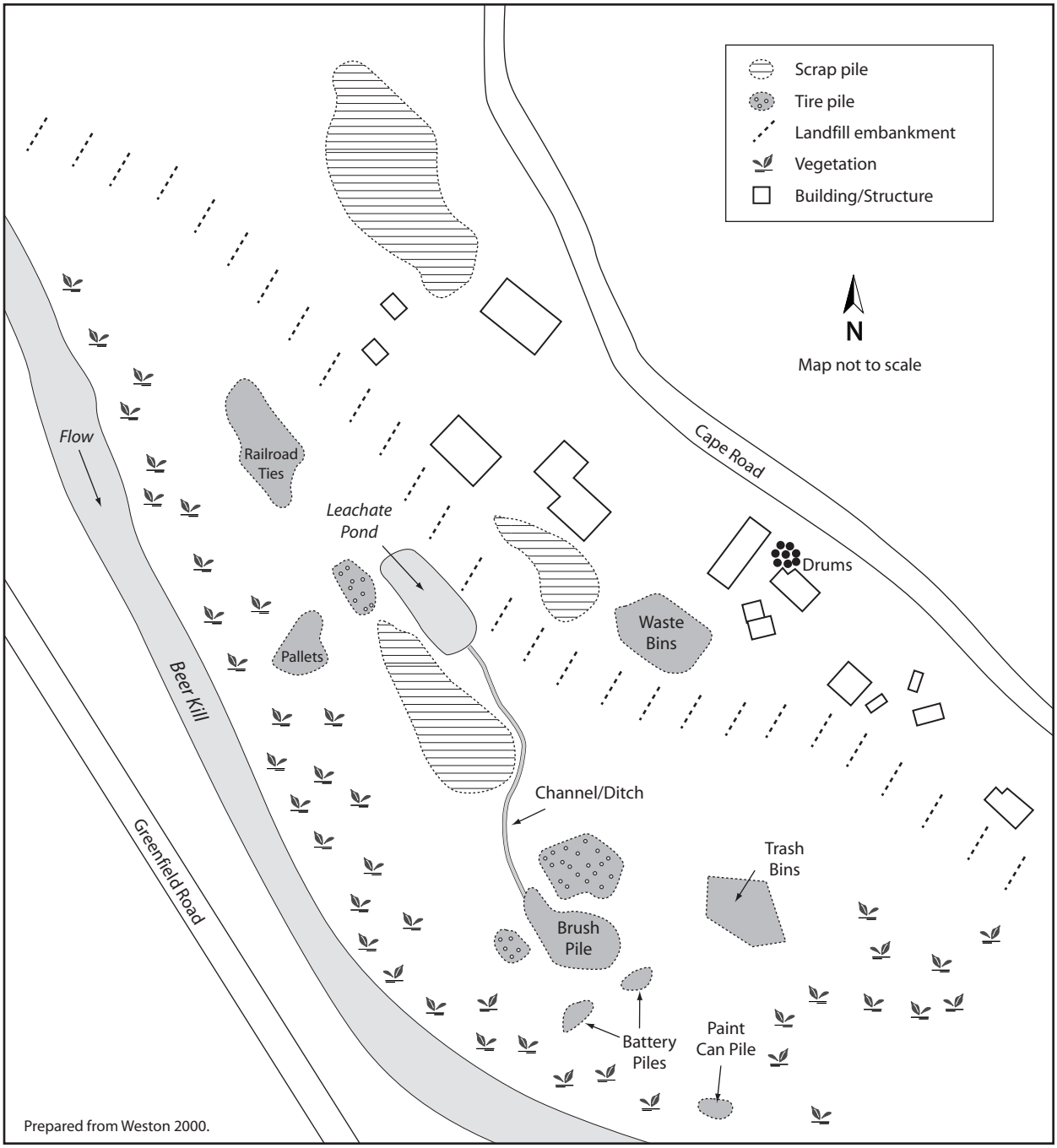

Figure 2. Detail of Ellenville Scrap Iron and Metal site.

Surface water is another pathway for the migration of contaminants from the Ellenville site to NOAA trust resources. Both contaminated soils and waste piles are situated on a hillside that slopes toward Beer Kill. Beer Kill is a tributary of Sandburg Creek, which is a tributary of Rondout Creek. Rondout Creek is a major tributary of the Hudson River, which eventually empties into the Atlantic Ocean. In addition, the lower section of the site, which is in the 100-year flood zone, is the location of contaminated soil, the base of the landfill embankment, and piles of scrap metal and automobile batteries. There is no containment of runoff in this area (Weston 2001).

A site inspection was conducted in March 2001, and a hazard ranking system package for the Ellenville site was completed on September 10, 2001. The Ellenville Scrap Iron and Metal site was proposed to the National Priorities List on September 13, 2001 (USEPA 2001).

NOAA Trust Resources

The surface waters of Beer Kill, Sandburg Creek, and Rondout Creek are the NOAA habitats of concern. The NOAA trust resources found in Rondout Creek are presented in Table 1. Two dams on Rondout Creek prevent most NOAA trust resources from passing upstream. However, American eel can negotiate the dams and are able to migrate upstream as far as Beer Kill.

Table 1. NOAA trust resources found in Rondout Creek and the Hudson River (Flaherty 2002; Kahnle 2002).

Species		**Habitat Use**				**Fisheries**	
Common Name	Scientific Name	Migratory Route	Spawning Area	Nursery Area	Adult Habitat	Comm.	Rec.
ANADROMOUS FISH							
Alewife	*Alosa pseudoharengus*	◆	◆			◆	◆
American shad	*Alosa sapidissma*	◆				◆	◆
Atlantic rainbow smelt*	*Osmerus mordax mordax*	◆	◆				
Blueback herring	*Alosa aestivalis*	◆	◆			◆	◆
Sea lamprey	*Petromyzon marinus*	◆					◆
Striped bass	*Morone saxatilis*	◆					◆
CATADROMOUS FISH							
American eel	*Anguilla rostrata*				◆		◆

* This species abundance has declined precipitously in all Hudson River tributaries, including Rondout Creek, over the last 10-20 years.

Beer Kill, which borders the Ellenville site to the south and west, flows downstream approximately 1.9 km (1.2 mi) from the probable point of entry to its confluence with Sandburg Creek. From there, Sandburg Creek flows approximately 1.6 km (1 mile) to its confluence with Rondout Creek. Approximately 56 km (35 mi) downstream, Rondout Creek joins the Hudson River, which flows approximately 150 km (90 mi) before it reaches the Atlantic Ocean (Weston 2001).

There are no dams along the Hudson River between its mouth and Rondout Creek; however, there are two dams on Rondout Creek: Eddyville Dam and High Falls Dam. Eddyville Dam is located within the tidal portion of Rondout Creek and is not equipped with fish passage facilities. High Falls Dam is a hydroelectric impoundment located approximately 19 km (12 mi) upstream of Eddyville Dam; it also does not have fish passage facilities (Elliot 2001). The possibility of restoration work on Eddyville Dam has been discussed, but there is no specific plan and no schedule for such work. There is currently no plan to restore fish passage at High Falls Dam (Flaherty 2002).

Several NOAA trust resources use Rondout Creek as a migratory corridor and spawning habitat (Table 1). The Eddyville Dam prevents all species except American eel and sea lamprey from

migrating farther upstream. Both American eel and sea lamprey are able to traverse the Eddyville Dam, but only American eel can traverse High Falls Dam and migrate further upstream to Beer Kill.

There are currently no fish consumption advisories in effect for Beer Kill, Sandburg Creek, or upper Rondout Creek (Flaherty 2002). A fish consumption advisory is in effect for species in the Hudson River. The advisory includes the stretch of the Hudson River from Catskill (upstream of the confluence of the Hudson River and Rondout Creek) south to the Upper Bay of New York Harbor and the tidal portion of Rondout Creek. The advisory is in effect because of the concentrations of polychlorinated biphenyls (PCBs) detected in fish tissues, including American eel, Atlantic needlefish, bluefish, rainbow smelt, striped bass, and white perch. The consumption advisory recommends against eating more than one meal per month of those fish species. It also recommends that infants, children under 15, and women of childbearing age not eat any fish taken from the Hudson River (NYSDOH 2002).

Site-Related Contamination

The primary contaminants of concern to NOAA at the Ellenville site are inorganic compounds (primarily metals) and PCBs. In early June 2000, the Region II Superfund Technical Assessment and Response Team collected soil, sediment, and leachate water samples from the Ellenville site. Soil samples were collected from the Ellenville site as well as from adjacent residential properties. Sediment samples were collected from Beer Kill, and leachate samples were collected from the leachate pond and the channel leading from the leachate pond to the brush pile (Figure 2). All samples were analyzed for metals, pesticides, PCBs, volatile organic compounds (VOCs), and semivolatile organic compounds (SVOCs) (Weston 2000). The maximum concentrations of selected contaminants are summarized in Table 2. Surface water samples were not collected because of the high flow rate in Beer Kill at the time of sampling. Groundwater monitoring data was not available for review at the time of this report.

Several contaminants were detected in soil samples collected from the Ellenville site. Maximum concentrations of all metals exceeded the average concentrations found in U.S. soil (mean U.S. soil concentrations). The maximum concentration of lead exceeded the mean U.S. soil concentration by four orders of magnitude; the maximum concentration of silver exceeded the mean U.S. soil concentration by three orders of magnitude; and the maximum concentrations of cadmium, chromium, copper, and zinc exceeded the mean U.S. soil concentration by two orders of magnitude. The maximum concentrations of mercury and nickel exceeded the mean U.S. soil concentration by one order of magnitude, while the maximum concentrations of arsenic and selenium exceeded the mean U.S. soil concentration by factors of approximately four and seven, respectively. The maximum concentrations of copper, selenium, silver, and zinc were detected in a sample collected from an area without vegetation in the southeastern end of the site. The maximum concentrations of lead and arsenic were detected in a sample from one of the residences adjacent to the site, indicating possible migration of contaminants from the site. The maximum concentrations of chromium and nickel were detected in a sample collected northeast of the railroad ties. The maximum concentration of cadmium was detected in a sample from the south end of the site, and the maximum concentration of mercury was detected in a sample collected just east of the channel/ditch.

Table 2. Maximum concentrations of selected contaminants of concern found in soil, leachate water and sediment at the Ellenville Scrap Iron and Metal site and nearby properties (Weston 2000).

	Soil (mg/kg)		Water (µg/L)		Sediment (mg/kg)	
Contaminant	Soil	Mean U.S.[a]	Leachate Water	AWQC[b]	Sediment	TEL[c]
INORGANIC COMPOUNDS						
Arsenic	20	5.2	14	150	4.1	5.9
Cadmium	14	0.06	<0.30	2.2[d]	<0.080	0.596
Chromium[j]	12,000	37	130	11	8.8	37.3
Copper	10,000	17	550	9[d]	9.1	35.7
Lead	230,000	16	540	2.5[d]	13	35
Mercury	1.1	0.058	0.77	0.77[e]	<0.070	0.174
Nickel	480	13	40	52[d]	18	18
Selenium	1.8	0.26	<2.2	5.0[e]	<0.59	NA
Silver	61	0.05	<0.70	0.12[d,f]	<0.18	NA
Zinc	16,000	48	1200	120[d]	88	123.1
SEMIVOLATILE ORGANIC COMPOUNDS						
Acenaphthene	110	NA	57	520[h]	<0.42	NA
Acenaphthylene	1.9	NA	<11	NA	<0.42	NA
Anthracene	51	NA	4	NA	<0.42	NA
Benz(a)anthracene	110	NA	4	NA	<0.42	0.0317
Bis(2-ethylhexyl)phthalate	62	NA	4	NA	1.2	NA
Chrysene	99	NA	5	NA	<0.42	0.0571
Dibenz(a,h)anthracene	7.4	NA	1	NA	<0.42	NA
Fluoranthene	230	NA	11	NA	<0.42	0.111
Fluorene	28	NA	4	NA	<0.42	NA
Naphthalene	26	NA	4	620[h]	<0.42	NA
Pentachlorophenol	99	NA	130	15[k]	<1.1	NA
Phenanthrene	240	NA	11	NA	<0.042	0.0419
Pyrene	240	NA	69	NA	<0.042	0.053
PESTICIDES/PCBs						
Aldrin	0.021	NA	0.29	1.5[f]	<0.0021	NA
DDE	0.063	NA	0.61	NA	0.00029	0.00142[l]
DDT	0.23	NA	0.75	0.0005	0.0005	0.00698[g]
Dieldrin	0.12	NA	0.85	0.056	0.00025	0.00285
Endosulfan (alpha + beta)	0.016	NA	<0.16	0.028	<0.0064	NA
Endrin	0.049	NA	0.93	0.036	0.00022	0.00267
Gamma-BHC (Lindane)	0.028	NA	0.053	0.08	0.000092	0.00094
Heptachlor	0.022	NA	0.34	0.0019	<0.0021	NA
Heptachlor Epoxide	0.00015	NA	<0.053	0.0019	<0.0021	0.0006
PCBs (as Aroclors)	13	0.371[i]	0.54	0.014	<0.042	0.0341
Toxaphene	<410	NA	<5.3	0.0002	<0.22	NA

a: Shacklette and Boerngen (1984), except for cadmium and silver, which represent average concentrations in the earth's crust from Lindsay (1979).

b: Ambient water quality criteria for the protection of aquatic organisms (USEPA 1993, 1999). Freshwater chronic criteria presented.

c: Threshold effects level is the geometric mean of the 15th percentile of the effects data and the 50th percentile of the no-effects data. The TEL is intended to represent the concentration below which adverse biological effects rarely occurred (Smith et al. 1996).

d: Criterion expressed as a function of total hardness; concentrations shown correspond to hardness of 100 mg/L $CaCO_3$.

e: Criterion expressed as total recoverable metal.

f: Chronic criterion not available; acute criterion presented.

g: Expressed as total DDT.

h: Lowest observable effects level (LOEL).

i: Final preliminary remedial goal for the protection of wildlife (Efroymson et al. 1997).

j: Screening guidelines represent concentrations for $Cr.^{+6}$

k: Chronic is pH dependent; concentration shown above corresponds to pH of 7.8.

l: Expressed as p,p-DDE.

<: Not detected above specified detection limit.

NA: Screening guidelines not available.

Several SVOCs were detected in soil samples at maximum concentrations ranging from 1.9 mg/kg (acenaphthylene) to 240 mg/kg (phenanthrene and pyrene). The maximum concentrations of 11 of the 13 SVOCs detected were in a soil sample collected at the base of the landfill embankment. No mean U.S. soil concentrations are currently available for comparison to the maximum concentrations of SVOCs. Several pesticides were also detected; DDT had the greatest concentration. Several of the maximum concentrations of pesticides and PCBs were detected in a sample collected on the banks of the leachate pond. Currently no mean U.S. soil concentrations are available for comparison to the maximum concentrations of pesticides. A final preliminary remediation goal for the protection of wildlife (Efroymson et al. 1997) is available for use as a screening guideline for PCBs. The maximum concentration of PCBs exceeded that screening guideline by one order of magnitude.

Four of seven metals detected in the three leachate samples exceeded ambient water quality criteria (AWQC) screening guidelines. The maximum concentration of lead exceeded the AWQC by two orders of magnitude, while the maximum concentrations of copper and chromium exceeded the AWQC by one order of magnitude, and the maximum concentration of zinc exceeded the AWQC by a factor of nine. Several SVOCs were detected at maximum concentrations ranging from 1 µg/L (dibenz(a,h)anthracene) to 130 µg/L (pentachlorophenol). The maximum concentration of pentachlorophenol exceeded the AWQC by a factor of approximately nine. Currently no AWQC are available for comparison to the maximum concentrations of the other detected SVOCs excepting acenaphthene and naphthalene, which did not exceed AWQC. Maximum concentrations of four of the detected pesticides (DDT, dieldrin, endrin, and heptachlor) exceeded AWQC by one to three orders of magnitude. PCBs were also detected; the maximum concentration exceeded the AWQC by one order of magnitude. All maximum concentrations of metals, SVOCs, pesticides, and PCBs were detected in a sample collected from the leachate pond.

Metals, pesticides, and one SVOC were detected in sediment samples collected from Beer Kill. Of the six metals detected, no maximum concentrations exceeded the threshold effects level (TEL) screening guidelines. The majority of the maximum concentrations of metals occurred in a sample collected approximately 0.6 m (200 ft) downstream of the site. Bis(2-ethylhexyl)phthalate was the only SVOC detected but no TEL is available for comparison to the maximum concentration. Five pesticides were detected in the sediment samples but concentrations did not exceed the TELs. PCBs were not detected in the sediment samples.

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