HRS DOCUMENTATION RECORD - REVIEW COVER SHEET

Name of Site: Big John Salvage–Hoult Road Site
Fairmont, Marion County, West Virginia

Site Contact: Bill Wentworth, U.S. Environmental Protection Agency, Region III
NPL/HRS Coordinator
(215) 814-3184

Pathways, Components, or Threats Not Scored

The ground water migration pathway was not scored because of the limited number of targets that may potentially be affected by the site. Residents living near the site depend on a municipal water supply from a surface water intake for their potable water supply. The groundwater aquifers in the area around the site are considered unusable due to low yield or poor quality.

The soil exposure pathway was not scored because of the lack of targets. No residences, schools or day-care centers are located within 200 feet of the site.

The air migration pathway was not scored because of the lack of analytical data.

HRS DOCUMENTATION RECORD

Name of Site:	Big John Salvage–Hoult Road
EPA Region:	III
Date Prepared:	04 November 1999
Street Address of Site:	Approximately two miles north of the city of Fairmont, West Virginia along WV Route 150 (Hoult Road).
County and State:	Marion County, West Virginia (WV)
General Location: in the State	Northeast
Topographic Map:	USGS (U.S. Geological Survey). West Virginia. (7.5-minute series topographic maps). Rivesville, WV, 1960; photorevised 1976; Fairmont West, WV, 1958; photorevised 1976; Fairmont East, WV, 1958; photorevised 1976; Grant Town, WV, 1960; photorevised 1976.
Latitude:	39° 29' 50" N
Longitude:	80° 07' 23" W

Scores

Air Pathway		NS
Ground Water Pathway	NS	
Soil Exposure Pathway	NS	
Surface Water Pathway	97.13	
HRS SITE SCORE		48.57

NS = Not scored

WORKSHEET FOR COMPUTING HRS SITE SCORE

		S	S^2
1.	Ground Water Migration Pathway Score (S_{gw}) (from HRS Table 3-1, line 13)	NS	
1b.	Surface Water Overland/Flood Migration Component (from HRS Table 4-1, line 30)	97.13	
2b.	Ground Water to Surface Water Migration Component (from HRS Table 4-25, line 28)	NS	
2c.	Surface Water Migration Pathway Score (S_{sw}) Enter the larger of lines 2a and 2b as the pathway score.	97.13	9,434.24
3.	Soil Exposure Pathway Score (S_s) (from HRS Table 5-1, Line 22)	NS	
4.	Air Migration Pathway Score (S_a) (from HRS Table 6-1, line 12)	NS	
5.	Total of $S_{gw}^2 + S_{sw}^2 + S_s^2 + S_a^2$		9,434.24
6.	HRS Site Score Divide the value on line 5 by 4 and take the square root	48.57	

SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT SCORESHEET

Factor Categories and Factors	Maximum Value	Value Assigned
DRINKING WATER THREAT		
Likelihood of Release to Aquifer		
1. Observed Release	550	550
2. Potential to Release by Overland Flow		
2a. Containment	10	0
2b. Runoff	25	0
2c. Distance to Surface Water	25	0
2d. Potential to Release by Overland Flow (lines 2a x (2b + 2c))	500	0
3. Potential to Release by Flood		
3a. Containment (Flood)	10	0
3b. Flood Frequency	50	0
3c. Potential to Release by Flood (lines 3a x 3b)	500	0
4. Potential to Release (lines 2d + 3c)	500	0
5. Likelihood of Release (higher of lines 1 and 4)	550	550
Waste Characteristics		
6. Toxicity/Persistence	(a)	10,000
7. Hazardous Waste Quantity	(a)	100
8. Waste Characteristics	100	32
Targets		
9. Nearest Intake	50	0
10. Population		
10a. Level I Concentrations	(b)	0
10b. Level II Concentrations	(b)	0
10c. Potential Contamination	(b)	0
10d. Population (lines 10a + 10b + 10c)	(b)	0
11. Resources	5	5
12. Targets (lines 9 + 10d + 11)	(b)	5
Drinking Water Threat Score		
13. Drinking Water Threat Score (lines 5 x 8 x12)/82,500	100	1.07
HUMAN FOOD CHAIN THREAT		
Likelihood of Release		
14. Likelihood of Release (same value as line 5)	550	550
Waste Characteristics		
15. Toxicity/Persistence/Bioaccumulation	(a)	$5x10^{8}$
16. Hazardous Waste Quantity	(a)	100
17. Waste Characteristics	1,000	320
Targets		
18. Food Chain Individual	50	45
19. Population		
19a. Level I Concentrations	(b)	0
19b. Level II Concentrations	(b)	0.03
19c. Potential Human Food Chain Contamination	(b)	$3x10^{-6}$
19d. Population (lines 19a + 19b + 19c)	(b)	0.03

SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT SCORESHEET (Continued)

Factor Categories and Factors	Maximum Value	Value Assigned
20. Targets (lines 18 + 19d)	(b)	45.03
Human Food Chain Threat Score		
21. Human Food Chain Threat Score (lines 14 x 17 x 20)/82,500	100	96.06
ENVIRONMENTAL THREAT		
Likelihood of Release		
22. Likelihood of Release (same value as line 5)	550	550
Waste Characteristics		
23. Ecosystem Toxicity/Persistence/Bioaccumulation	(a)	$5x10^8$
24. Hazardous Waste Quantity	(a)	100
25. Waste Characteristics	1,000	320
Targets		
26. Sensitive Environments		
26a. Level I Concentrations	(b)	0
26b. Level II Concentrations	(b)	0
26c. Potential Contamination	(b)	0
26d. Sensitive Environments (lines 26a + 26b + 26c)	(b)	0
27. Targets (value from line 26d)	(b)	0
Environmental Threat Score		
28. Environmental Threat Score (lines 22 x 25 x 27)/82,500	60	0
SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT SCORE FOR A WATERSHED		
29. Watershed Score (c) (lines 13 + 21 + 28)	100	97.13
SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT SCORE		
30. Component Score (S_{of}) (c) (highest score from line 29 for all watersheds)	100	97.13

(a) Maximum value applies to waste characteristics category.
(b) Maximum value not applicable.
(c) Do not round to nearest integer.

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Number **Description of the Reference**

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ACRONYMS AND ABBREVIATIONS

General

ATSDR	Agency for Toxic Substances and Disease Registry
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
CRQL	Contract required quantitation limit
CLP	Contract Laboratory Program
EPA	U.S. Environmental Protection Agency
ERT	Environmental Response Team
GPS	Global positioning system
HRS	Hazard Ranking System
HWQ	Hazardous waste quantity
NPL	National Priorities List
NS	Not scored
OSC	On-Scene Coordinator
p.	Page
pp.	Pages
PAH	Polynuclear aromatic hydrocarbons
PPE	Probable point of entry
QA/QC	Quality assurance/quality control
Ref.	Reference
RCRA	Resource Conservation Recovery Act
SATA	Site Assessment Technical Assistance (EPA contract)
SCDM	Superfund Chemical Data Matrix
SI	Site Inspection
SQL	Sample quantitation limit
SVOC	Semivolatile organic compound
TAT	Technical Assistance Team
TDL	Target distance limit
USACOE	U.S. Army Corps of Engineers
USGS	U.S. Geological Survey
WVDEP	West Virginia Division of Environmental Protection
WVDH	West Virginia Department of Health
WVDNR	West Virginia Department of Natural Resources
WVSWC	West Virginia State Water Commission

Measurement Units

cfs	Cubic feet per second
ft	Feet
ft^2	Square feet
mg/kg	Milligrams per kilogram
mg/g	Micrograms per gram
mg/kg	Micrograms per kilogram
mg/L	Micrograms per liter
ppm	Parts per million
ppb	Parts per billion

INTRODUCTION

The Big John Salvage – Hoult Road Site is located in Marion County, a predominantly industrial/rural county of north central West Virginia (Reference 7, p. 02; Reference 13, p. 13; Figure 1; Figure 2). The site is approximately 20 acres and is situated in a mixed commercial/residential area of Fairmont, West Virginia (Reference 5, Reference 13, p. 13; Reference 40, p. 1). The site lies along the eastern edge of WV Route 150 (Hoult Road), approximately 1,320 feet east of the Monongahela River (Reference 7, p. 06). The site is bordered on the north and east by wooded terrain (Reference 5, p.1). The Sharon Steel (Fairmont Coke) Superfund Site is located on the southern side of the site (Reference 7, p. 06; Figure 1). The Monongahela River lies on the western side of the site (Reference 4; Reference 5, p. 1). An unnamed tributary of the Monongahela River flows along the southern border of the site for approximately 0.25 miles and drains into the Monongahela River (Reference 6, pp. 2, 3; Reference 7, p. 02, 323; Figure 1).

The site property was originally owned by the Reilly Tar and Chemical Corporation (RTCC) which began operations at the site in 1932 (Reference 7, p. 330). In January 1973, the RTCC sold its property on Hoult Road to Big John Salvage (Reference 7, pp. 330 ,331). The site had operated as a salvage yard for scrap metal and crushed glass for approximately 17 years between 1973 and 1990 (Reference 7, pp. 330, 331; Reference 41). In 1990, the property was acquired by the state of West Virginia for nonpayment of taxes (Reference 41, p. 2). In August 1992, the property was turned over to Marion County by the state of West Virginia (Reference 41, p. 4). In November 1997, the property was purchased by Steel Fabricators Incorporated from Marion County, West Virginia (Reference 42, pp. 1, 6).

Approximately 12,000 gallons of crude tar waste from the nearby Domestic Coke Corporation and Dupont Coke plants were processed at the RTCC site daily from 1932 until the 1940s. Crude tar was pumped from tank cars to storage tanks and later separated by distillation and condensation processes. The creosote product was removed, stored, and sold as a wood preserving compound. Acid oil was removed and treated at an extraction unit to remove phenol, and the tar was sold to the state road commission for road repair and construction purposes. The oil would then be cooled to remove naphthalene which was stored on site. Any remaining crude acids were shipped to other Reilly plants for final processing (Reference 7, p. 330; Reference 35, pp. 1, 2).

Wastes generated by RTCC were retained in a unlined pond near the southern property line. This pond also received wastes from three on-site sewers and several drainage ditches. All cooling waters, acid wastes, and tar wastes were supposed to pass through the pond. Discharge from the retention pond flowed through a pipe in the center of the pond which emptied into an unnamed tributary of the Monongahela River (Reference 35, p. 2).

A copy of Figure 1 is available at the EPA Headquarters Superfund Docket:

U.S. CERCLA Docket Office
Crystal Gateway #1, 1st Floor
1235 Jefferson Davis Highway
Arlington, VA 22202

Telephone: (703) 603-8917
E-Mail: superfund.docket@epa.gov

A copy of Figure 2 is available at the EPA Headquarters Superfund Docket:

U.S. CERCLA Docket Office
Crystal Gateway #1, 1st Floor
1235 Jefferson Davis Highway
Arlington, VA 22202

Telephone: (703) 603-8917
E-Mail: superfund.docket@epa.gov

The West Virginia Department of Health (WVDH) investigated the RTCC due to phenol and tar problems at the Morgantown water plant. RTCC was a potential source for phenol and tar contamination in the Monongahela River between Buffalo Creek and the Morgantown water plant. The Morgantown water plant is located 24 miles downstream from the site (Reference 7, p. 73). Samples collected from the unnamed tributary in October 1940 by the WVDH contained phenol ranging from 117 to 287 parts per million (ppm) (Reference 35, p. 1). Samples collected from the discharge point of the unnamed tributary by WVDH in March 1944 contained phenol (308 ppm) (Reference 36).

In 1957, following requests from the WVDH, the RTCC planned to add a hay filter to its discharge system to reduce the release of phenols and other wastes from the site. Letters of correspondence between WV State Water Commission (WVSWC) officials indicate that this filtering device had not been constructed (Reference 32).

In January 1960, approximately 20,000 gallons of coal tar spilled and subsequently flowed into the Monongahela River (Reference 31).

In December 1982, the EPA learned that wastes were being received at the site from the nearby Westinghouse Electric Corporation (WEC) facility. These wastes included oils which contained mercury in levels ranging from 0.9 to 18.8 ppm (Reference 34). Following a request from EPA, WEC terminated the transfer of mercury-containing wastes to the site and began using a mercury refining company. Big John Salvage, Inc. had also been engaged in salvaging scrap metal and crushed glass (cullet piles) from WEC (Reference 7, pp. 04 ,330).

In July 1983, the EPA Technical Assistance Team (TAT) and the EPA Environmental Response Team (ERT) collected tar, surface water, sediment, and biological samples from the site. The following compounds were detected in on-site soil near the coal tar deposits: naphthalene (4,200 ppm), acenaphthylene (370 ppm), acenaphthene (2,400 ppm), fluorene (3,900 ppm), fluoranthene (4,600 ppm), phenanthrene (11,000 ppm), pyrene (4,200 ppm), chrysene (700 ppm) and ethylbenzene (15,000 ppm). The following compounds were detected in sediment at the confluence of the unnamed tributary and the Monongahela River: acenaphthylene (2.1 ppm), chrysene (4.0 ppm), fluoranthene, (7.6 ppm) and phenanthrene (10.3 ppm). Samples collected from the cullet piles contained elevated levels of cadmium (36.5 ppm) and mercury (12.0 ppm) (Reference 7, pp. 18, 65, 256, 345, 346, 361).

In January 1984, the EPA entered into a consent order with the owner of Big John Salvage Inc. requiring removal of all drums and cullet piles (Reference 7, p. 320). The order also required Big John Salvage to drain the on-site oil separator and remove the cullet piles by June 1984 (Reference 7, p. 341). As of 11 June 1984, the removal of the cullet piles had not been completed by the time required by the consent order and the owner was in violation of the consent order (Reference 7, p. 9). In July 1984, upon receipt of funding approval, EPA issued oral demands to the owners of Big John Salvage and RTCC to clean up the site (Reference 7, p. 9). Big John Salvage agreed to address the cullet piles and RTCC agreed to initiate cleanup activities under the direction of the On-Scene Coordinator (OSC) (Reference 7, p. 8).
A consent order was executed with RTCC requiring the removal of all on-site coal tar related wastes (Reference 7, p. 8). Satisfactory cleanup operations occurred from October 1984 through 16 April 1985 (Reference 7, p. 8). In May 1984, Big John Salvage increased the size and improved the integrity of the berms surrounding the cullet piles (Reference 7, p. 30).

In the fall of 1992, the EPA Region III Superfund Removal Branch conducted a cleanup at the Big John Salvage property which focused on the removal of drums containing hazardous materials. EPA OSC Bill Steuteville oversaw the initial response, characterization, segregation and removal of several drums containing flammable and corrosive liquids (Reference 40, pp. 1 and 2).

In April 1998, the West Virginia Division of Environmental Protection (WVDEP) Resource Conservation Recovery Act (RCRA) Inspector John Hando, while overseeing the containment of a coal tar spill at the Sharon Steel (Fairmont Coke) Superfund Site, requested that EPA OSC Dodd investigate two large excavation pits on the Big John property containing used oil and glass cullet (Reference 42, p. 8). Sampling conducted by SATA confirmed the presence of oil, antifreeze, and diesel fuel in these pits. WVDEP also collected soil samples from a glass cullet pile and confirmed the presence of lead in the soil adjacent to the cullet pile (Reference 42, pp. 1,10)

In December 1998, EPA Region III OSC Jeff Dodd completed a removal action at the site in which the oil pits and surrounding contaminated soil were removed (Reference 42, p. 2).

The lack of any substantial containment for surface water runoff has been a problem at the site (Reference 7, pp. 21, 22, 24 and 31). Surface water runoff from the site has drained westward into the unnamed tributary of the Monongahela River on the southern border of the site, carrying runoff into the Monongahela River (Reference 7, p. 323; Reference 8, p. 9; Figure 1). Sampling results indicate that hazardous substances from the site have contaminated the Monongahela River which the public uses as a fishery (Reference 5, p. 9; Reference 28).

During the March 1999 Site Inspection (SI), environmental media samples were collected to assess the environmental impact the site had on the Monongahela River (Reference 5, pp. 7, 8, 9). These sampling results provide evidence that hazardous substances are migrating from the site into the environment. The March 1999 SI sampling results show that the surface water of the Monongahela River is being contaminated with elevated levels of polynuclear aromatic hydrocarbons (PAH). The unnamed tributary of the Monongahela River is also being impacted by contamination from sources at the site (Reference 5, p. 9; Figure 4). Benzo(a)pyrene was found in the unnamed tributary of the Monongahela River at concentrations above environmental benchmarks. At other sampling locations within the unnamed tributary areas, benzo(a)pyrene and other PAHs were found to be elevated over background levels. Benzo(a)pyrene is of special concern because this hazardous substance tends to bioaccumulate within human food chain organisms.

SOURCE DESCRIPTION

2.2 Source Characterization

Number of the source: 1

Name and description of the source: Contaminated Soil

The Big John Salvage–Hoult Road Site had operated as a salvage yard for scrap metal and crushed glass (Reference 7, pp. 330, 331).

Coal tar seeps were observed throughout the site during the March 1999 SI site reconnaissance and during the 1998 removal action (Reference 45). Coal tar is the main source of PAHs (Reference 23) that were detected in samples collected from the soil/waste sources located on the site. PAHs were detected at elevated concentrations in four of the March 1999 SI samples collected from the sources at the site, including waste/soil source samples SS1, SS2, SS3 and CT-01 (Reference 5, Attachment 2; Reference 14 and Reference 15).

Approximately 12,000 gallons of crude tar waste from the nearby Domestic Coke Corporation and Dupont Coke plants were processed at the RTCC site daily from 1932 to approximately 1940. Crude tar was pumped from tank cars to storage tanks, and later separated by distillation and condensation processes. The creosote product was removed, stored, and sold as a wood preserving compound. Acid oil was removed and treated at an extraction unit to remove phenol, and the tar was sold to the state road commission for road repair and construction purposes. The oil would then be cooled to remove naphthalene, which was stored on site. Any remaining crude acids were shipped to other Reilly plants for final processing (Reference 35, pp. 1, 2).

The RTCC facility had been dismantled by 1979. But the effects from the numerous coal tar spills that had occurred on the facility were still evident by the coal tar waste and stained soil that remained on the property (Reference 8, p. 3). Significant coal tar deposits from the runoff from the RTCC facility have accumulated in the area by the confluence of the unnamed tributary of the Monongahela River with the Monongahela River. Stream erosion has revealed several layers of coal tar deposits. A soil boring taken during the April 1984 EPA ERT Health and Environmental Risk Assessment discovered an unbroken layer of coal tar reaching to a depth of approximately 4 feet with no confining subsurface layer (Reference 7, p. 257). The large amounts of coal tar waste on site has resulted in off site contamination (Reference 7, p. 248). High concentrations of PAHs from the site are readily being transported by surface water runoff into the unnamed tributary of the Monongahela River (Reference 7, p. 230).

The lack of any substantial containment for surface water runoff has been a problem at the site (Reference 7, p. 323). Surface water runoff from the site has drained westward into the unnamed tributary of the Monongahela River on the southern border of the site, carrying runoff into the Monongahela River (Reference 7, pp. 18, 323; Reference 8, p. 9; Figure 1). Sampling results indicate that hazardous substances from the site have contaminated the Monongahela River that the public uses as a fishery (Reference 28; Reference 29).

Reportedly no floor liners were used in waste disposal areas, no erosion control or storm water management facilities were used, and no facilities were installed to prevent contaminated surface runoff from discharging into the unnamed tributary (Reference7, p. 323).

A removal action was performed by EPA at the site between 1984 and 1985. During this removal action, EPA removed and disposed of 4,100 tons of coal tar waste, 18,500 gallons of non-hazardous liquid waste and 75 to 100 drums (Reference 7, p. 2). In 1992 a second removal action was performed. Several drums of hazardous waste were removed and disposed of from the site (Reference 40, pp. 1,2). A third removal action took place in 1998. During this removal action 12,000 gallons of waste oil and 521.4 tons of non-hazardous soil were removed and disposed of from the site (Reference 42, p.5).

At the 1998 EPA removal action, SATA observed several coal seeps on the site property (Reference 45). During the March 1999 SI sampling event SATA observed coal tar waste throughout the southern portion of the site (Reference 5, p.5).

Location of the source, with reference to a map of the site:

The source, made up of contaminated soil, encompasses much of the site located immediately south of Hoult Road approximately two miles north of WV Route 150, approximately 1,320 feet east of the Monongahela River (Reference 7, p. 06)). The southern edge of the site abuts the former Sharon Steel facility (Fairmont Coke NPL Site) (Reference 7, p. 06; Figure 1). Figure 1 shows the general location of the source in relation to the Monongahela River.

Containment:

Gas release to air:

Not scored (NS).

Particulate release to air:

NS

Release to ground water:

NS

Release via overland migration and/or flood:

No evidence of a maintained, engineered cover or a functioning, maintained run-on control system and runoff management system has been identified at the site (Reference 7, p. 323). Therefore, for Source No. 1, a containment factor value of 10 is assigned for the surface water migration pathway (Reference 1, HRS Table 4-2, p. 51609).

2.4.1 Hazardous Substances

The waste that is known to have contaminated the site is coal tar waste (Reference 42, p. 1). Surface water, sediment and soil samples collected at the site during the March 1999 SI revealed elevated concentrations of a number of semi-volatile organic compounds. Figure 3 shows the approximate locations of these 1999 SI samples.

Surface soil sample SS5, collected from a residence located approximately 0.50 miles northeast of the site (Figure 3), was used to establish site-specific background concentrations for semi-volatile organic compounds (SVOC) and metals.

SVOCs and metals were detected in surface water, sediment and soil samples collected from the Big John Salvage-Hoult Road Site during the 1999 SI sampling event (Reference 5, Attachment 2).

A copy of Figure 3 is available at the EPA Headquarters Superfund Docket:

U.S. CERCLA Docket Office
Crystal Gateway #1, 1st Floor
1235 Jefferson Davis Highway
Arlington, VA 22202

Telephone: (703) 603-8917
E-Mail: superfund.docket@epa.gov

TABLE 1
HAZARDOUS SUBSTANCES
ASSOCIATED WITH SOURCE NO. 1

Hazardous Substance	Evidence/ Sample No. (depth)/ [Lab Sample No.]	Sample Concentration	Reference(s)
Acenaphthene	BJS SS1 (surficial) [P9038801]	1,900 J mg/kg	5, Attachment 2, Table I, p. 5 15, p. 18 38, p. 325
	BJS SS2D1 (surficial) [O68800D1]	589,200 J mg/kg	5, Attachment 2, Table I, p. 5 39, p. 19
	CT-01D2 (surficial) [O68802D2]	1,551,300 J mg/kg	5, Attachment 2, Table I, p. 5 39, p. 41
Acenaphthylene	BJS SS1 (surficial) [P9038801]	4,200 mg/kg	5, Attachment 2, Table I, p. 5 15, p. 18 38, p. 325
	BJS SS2 (surficial) [O68800]	22,600 J mg/kg	5, Attachment 2, Table I, p. 5 39, p. 13
	CT-01D2 (surficial) [O68802D2]	678,200 J mg/kg	5, Attachment 2, Table I, p. 5 39, p. 41
Anthracene	BJS SS1 (surficial) [P9038801]	16,000 mg/kg	5, Attachment 2, Table I, p. 5 15, p. 18 38, p. 326
	BJS SS2D1 (surficial) [O68800D1]	423,900 mg/kg	5, Attachment 2, Table I, p. 6 39, p. 20
	CT-01D2 (surficial) [O68802D2]	5,507,700 J mg/kg	5, Attachment 2, Table I, p. 6 39, p. 42
Benzo(a)anthracene	BJS SS1 (surficial) [P9038801]	22,000 mg/kg	5, Attachment 2, Table I, p. 6 15, p. 18 38, p. 326
	BJS SS2D1 (surficial) [O68800D1]	190,400 J mg/kg	5, Attachment 2, Table I, p. 6 39, p. 20
	CT-01D2 (surficial) [O68802D2]	2,814,100 J mg/kg	5, Attachment 2, Table I, p. 6 39, p. 42
Benzo(a)pyrene	BJS SS1 (surficial) [P9038801]	20,000 mg/kg	5, Attachment 2, Table I, p. 6 15, p. 18 38, p. 326
	BJS SS2 (surficial) [O68800]	124,300 J mg/kg	5, Attachment 2, Table I, p. 6 39, p. 14
	CT-01D2 (surficial) [O68802D2]	2,506,600 J mg/kg	5, Attachment 2, Table I, p. 6 39, p. 42
Benzo(b)fluoranthene	BJS SS1 (surficial) [P038801]	29,000 mg/kg	5, Attachment 2, Table I, p. 6 15, p. 18 38, p. 326
	BJS SS2D1 (surficial) [O68800D1]	141,600 J mg/kg	5, Attachment 2, Table I, p. 6 39, p. 20
	CT-01D2 (surficial) [O68802D2]	2,402,600 J mg/kg	5, Attachment 2, Table I, p. 6 39, p. 42

Notes:
J = Analyte present. Reported value is estimated. The analytical results for source samples SS2, SS3and CT-01 were qualified as "J" because the technical extraction holding times for EPA Region III were exceeded for these samples but the contractual holding time was not exceeded by the laboratory (Reference 14).
µg/kg = Micrograms per kilogram.

TABLE 1
HAZARDOUS SUBSTANCES
ASSOCIATED WITH SOURCE NO. 1 (continued)

Hazardous Substance	Evidence/ Sample No. (depth)/ [Lab Sample No.]	Sample Concentration	Reference(s)
Benzo(g,h,i)perylene	BJS SS1 (surficial) [P9038801]	9,900 mg/kg	5, Attachment 2, Table I, p. 6 15, p. 18 38, p. 326
	BJS SS2 (surficial) [O68800]	24,700 J mg/kg	5, Attachment 2, Table I, p. 6 39, p. 14
	CT-01D2 (surficial) [O68802D2]	1,147,400 J mg/kg	5, Attachment 2, Table I, p. 6 39, p. 42
Benzo(k)fluoranthene	BJS SS1 (surficial) [P9038801]	33,000 mg/kg	5, Attachment 2, Table I, p. 6 15, p. 18 38, p. 326
	BJS SS2 (surficial) [O68800]	142,300 J mg/kg	5, Attachment 2, Table I, p. 6 39, p. 14
	BJS SS3 (surficial) [O68801]	3,800 J mg/kg	5, Attachment 2, Table I, p. 6 39, p. 28
	CT-01D2 (surficial) [O68802D2]	1,875,600 J mg/kg	5, Attachment 2, Table I, p. 6 39, p. 42
Carbazole	BJS SS1 (surficial) [P9038801]	5,600 mg/kg	5, Attachment 2, Table I, p. 6 15, p. 18 38, p. 326
	BJS SS2 (surficial) [O68800]	141,000 J mg/kg	5, Attachment 2, Table I, p. 6 39, p. 14
	CT-01D2 (surficial) [O68802D2]	2,876,900 J mg/kg	5, Attachment 2, Table I, p. 6 39, p. 42
Chrysene	BJS SS1 (surficial) [P9038801]	21,000 mg/kg	5, Attachment 2, Table I, p. 6 15, p. 18 38, p. 326
	BJS SS2D1 (surficial) [O68800D1]	204,100 J mg/kg	5, Attachment 2, Table I, p. 6 39, p. 20
	CT-01D2 (surficial) [O68802D2]	2,666,700 J mg/kg	5, Attachment 2, Table I, p. 6 39, p. 42
Dibenz(a,h)anthracene	BJS SS2 (surficial) [O68800]	11,300 J mg/kg	5, Attachment 2, Table I, p. 6 39, p. 14
Fluoranthene	BJS SS1 (surficial) [P9038801]	41,000 mg/kg	5, Attachment 2, Table I, p. 6 15, p. 18 38, p. 329
	BJS SS2D1 (surficial) [O68800D1]	747,200 J mg/kg	5, Attachment 2, Table I, p. 6 39, p. 20
	BJS SS3 (surficial) [O68801]	20,600 J mg/kg	5, Attachment 2, Table I, p. 6 39, p. 28
	CT-01D2 (surficial) [O68802D2]	8,061,500 J mg/kg	5, Attachment 2, Table I, p. 6 39, p. 42

Notes:
J = Analyte present. Reported value is estimated. The analytical results for source samples SS2, SS3and CT-01 were qualified as "J" because the technical extraction holding times for EPA Region III were exceeded for these samples but the contractual holding time was not exceeded by the laboratory (Reference 14).
µg/kg = Micrograms per kilogram.

TABLE 1
HAZARDOUS SUBSTANCES
ASSOCIATED WITH SOURCE NO. 1 (continued)

Hazardous Substance	Evidence/ Sample No. (depth)/ [Lab Sample No.]	Sample Concentration	Reference(s)
Fluorene	BJS SS2D1 (surficial) [O68800D1]	727,400 J mg/kg	5, Attachment 2, Table I, p. 6 39, p. 20
	BJS SS3 (surficial) [O68801]	3,500 J mg/kg	5, Attachment 2, Table I, p. 6 39, p. 28
	CT-01D2 (surficial) [O68802D2]	3,771,800 J mg/kg	5, Attachment 2, Table I, p. 6 39, p. 42
Indeno(1,2,3-cd)pyrene	BJS SS1 (surficial) [P9038801]	12,000 mg/kg	5, Attachment 2, Table I, p. 6 15, p. 18 38, p. 326
	BJS SS2 (surficial) [O68800]	21,800 J mg/kg	5, Attachment 2, Table I, p. 6 39, p. 14
	CT-01D2 (surficial) [O68802D2]	1,151,300 J mg/kg	5, Attachment 2, Table I, p. 6 39, p. 42
Methylnaphthalene-2	BJS SS2D1 (surficial) [O68800D1]	752,300 J mg/kg	5, Attachment 2, Table I, p. 5 39, p. 19
	CT-01D2 (surficial) [O68802D2]	2,510,300 J mg/kg	5, Attachment 2, Table I, p. 5 39, p. 41
Naphthalene	BJS SS2D1 (surficial) [O68800D1]	652,700 J mg/kg	5, Attachment 2, Table I, p. 5 39, p. 19
	CT-01D2 (surficial) [O68802D2]	13,970,500 J mg/kg	5, Attachment 2, Table I, p. 5 39, p. 41
Phenanthrene	BJS SS1 (surficial) [P9038801]	22,000 mg/kg	5, Attachment 2, Table I, p. 6 15, p. 18 38, p. 326
	BJS SS2D1 (surficial) [O68800D1]	1,538,100 J mg/k	5, Attachment 2, Table I, p. 6 39, p. 20
	BJS SS3 (surficial) [O68801]	19,500 J mg/kg	5, Attachment 2, Table I, p. 6 39, p. 28
	CT-01D2 (surficial) [O68802D2]	12,133,300 J mg/kg	5, Attachment 2, Table I, p. 6 39, p. 42
Pyrene	BJS SS1 (surficial) [P9038801]	31,000 mg/kg	5, Attachment 2, Table I, p. 6 15, p. 18 38, p. 326
	BJS SS2D1 (surficial) [O68800D1]	497,200 J mg/kg	5, Attachment 2, Table I, p. 6 39, p. 20
	BJS SS3 (surficial) [O68801]	15,300 J mg/kg	5, Attachment 2, Table I, p. 6 39, p. 28
	CT-01D2 (surficial) [O68802D2]	5,957,700 J mg/kg	5, Attachment 2, Table I, p. 6 39, p. 42

Notes:
J = Analyte present. Reported value is estimated. The analytical results for source samples SS2, SS3and CT-01 were qualified as "J" because the technical extraction holding times for EPA Region III were exceeded for these samples but the contractual holding time was not exceeded by the laboratory (Reference 14).
mg/kg = Micrograms per kilogram.

TABLE 1
HAZARDOUS SUBSTANCES
ASSOCIATED WITH SOURCE NO. 1 (continued)

Hazardous Substance	Evidence/ Sample No. (depth)/ Lab Sample No.]	Sample Concentration	Reference(s)
Aluminum	BJS SS1 (surficial) [MCSZ94]	9,830 mg/kg	5, Attachment 2, Table VII, p. 3 16, p. 10 38, p. 214
	BJS/SS2 (surficial) [68800S]	9,690 mg/kg	5, Attachment 2, Table VII, p. 3 39, p. 23
	BJS/SS3 (surficial) [68801S]	16,100 mg/kg	5, Attachment 2, Table VII, p. 3 39, p. 31
Arsenic	BJS SS1 (surficial) [MCSZ94]	10.6 mg/kg	5, Attachment 2, Table VII, p. 3 16, p. 10 38, p. 214
	BJS/SS2 (surficial) [68800S]	39.4 mg/kg	5, Attachment 2, Table VII, p. 3 39, p. 23
	BJS/SS3 (surficial) [68801S]	13.1 mg/kg	5, Attachment 2, Table VII, p. 3 39, p. 31
	CT-01 (surficial) [68802S]	13.2 mg/kg	5, Attachment 2, Table VII, p. 3 39, p. 45
Cadmium	BJS SS1 (surficial) [P9038801]	1.5 mg/kg	5, Attachment 2, Table VII, p. 3 16, p. 10 38, p. 214
	CT-01 (surficial) [68802S]	3.1 mg/kg	5, Attachment 2, Table VII, p. 3 39, p. 45
Lead	BJS SS1 (surficial) [P9038801]	190 mg/kg	5, Attachment 2, Table VII, p. 3 16, p. 10 38, p. 214
	BJS SS2D1 (surficial) [O68800D1]	103 mg/kg	5, Attachment 2, Table VII, p. 3 39, p. 23
	BJS SS3 (surficial) [O68801]	46.1 mg/kg	5, Attachment 2, Table VII, p. 3 39, p. 31
	CT-01D2 (surficial) [O68802D2]	131 mg/kg	5, Attachment 2, Table VII, p. 3 39, p. 45
Mercury	BJS SS1 (surficial) [P9038801]	1.3 mg/kg	5, Attachment 2, Table VII, p. 3 16, p. 10 38, p. 214
	BJS SS2D1 (surficial) [O68800D1]	0.4 mg/kg	5, Attachment 2, Table VII, p. 3 39, p. 23
	BJS SS3 (surficial) [O68801]	0.6 mg/kg	5, Attachment 2, Table VII, p. 3 39, p. 31
	CT-01D2 (surficial) [O68802D2]	2.1 mg/kg	5, Attachment 2, Table VII, p. 3 39, p. 45

Notes:
mg/kg = Milligrams per kilogram.

2.4.2 Hazardous Waste Quantity

No documentation is available to determine the quantity of hazardous substances on the site.

2.4.2.1.1 Hazardous Constituent Quantity

No information was available to determine hazardous constituent quantity.

Sum (pounds): NS

Reference(s): 1, pp. 51590-51591

Hazardous Constituent Quantity Value (S): NS

2.4.2.1.2 Hazardous Wastestream Quantity

The Hazardous Wastestream Quantity was not evaluated for this source. No documentation is available for this measurement.

Sum (pounds): NS

References: 1, p. 51591

Hazardous Wastestream Quantity Value (W): NS

2.4.2.1.3 Volume

Volume was not evaluated for this documentation record. Information on the exact depths of the waste disposal areas on the site are not available.

Dimension of source (yd^3): NS

Reference(s): 1, p. 51591
7, p. III-18

Volume Assigned Value: 0

2.4.2.1.4 Area

The area of the contaminated soil located on the Big John Salvage – Hoult Road Site, Source 1, is reportedly 22 acres (Reference 5, p. 1; Figure 2). The calculation for converting acres to square feet (ft^2) is presented below:

22 acres x 43,560 ft^2/acre = 958,320 ft^2

The HRS divisor for determining the area assigned value is 34,000 (Reference 1, HRS Table 2-5, p. 51591). The calculation of the area assigned value is presented below.

958,320 ft^2/34,000 (area divisor) = 28.19

Area of source (ft^2): 958,320

Reference(s): 1, p. 51591
7, p. III-18

Area Assigned Value: 28.19

2.4.2.1.5 Source Hazardous Waste Quantity Value

For the Big John Salvage–Hoult Road Site, the highest Hazardous Waste Quantity (HWQ) value is based on the area of the contaminated soil (Reference 1, p. 51591).

Source Hazardous Waste Quantity Value: 28.19

SITE SUMMARY OF SOURCE DESCRIPTIONS

Source No.	Source Name	Source HWQ Value	Containment Ground Water	Surface Water	Gas	Particulate
1	Contaminated soil	28.19	NS	10	NS	NS
Sum of Source HWQ Value		**28.19**				

4.0 SURFACE WATER MIGRATION PATHWAY

The surface water migration pathway can be evaluated based on the overland flow/flood migration component. For this HRS documentation record, the overland flow/flood component is being evaluated.

4.1 OVERLAND/FLOOD MIGRATION COMPONENT

The Big John Salvage–Hoult Road Site is located within Marion County, which is part of the Valley and Ridge Physiographic Province of West Virginia (Reference 5, p. 1; Reference 25, p. L-15). The site lies approximately 1,320 feet east of the Monongahela River (Reference 7, pp. 02, 06). It straddles the eastern flood plain of the Monongahela River (see Figure 1) (Reference 37). The site is bordered on the north by an intermittent stream. The southern end of the site is bordered by an unnamed perennial tributary of the Monongahela River which receives drainage from the site (Reference 5, p. 1; Reference 7, p. 323; Reference 27). Figure 1 of this documentation record shows the location of the unnamed tributary and the Monongahela River relative to the site.

The Monongahela River has been identified as a fishery (Reference 12, pp. 1, 2, 14; 15, 16; Reference 28; Reference 29 and Reference 30). According to a local West Virginia state fish biologist, the whole Opekiska water pool which is located between mile marker 115.4 and mile marker 130 on the Monongahela River is fished. The site is located between mile marker 125 and 126. A water pool area is defined as an area of water that is impounded by dams. (Reference 30). Numerous fishing tournaments are held annually in the Monongahela River near the site. In 1999, a total of 26 bass fishing tournaments were held in the Opekiska water pool (Reference 12, pp. 1, 2, 14; 15, 16; Reference 28; Reference 29 and Reference 30). According to West Virginia state officials, there are no sensitive environments or endangered species present along the surface water migration pathway (Reference 11).

4.1.1 DEFINITION OF HAZARDOUS SUBSTANCE MIGRATION PATH FOR OVERLAND/FLOOD COMPONENT

During the March SI field event, two westward-trending streams were observed bordering the site (Reference 6, pp. 3 and 4). These two tributaries are shown in Figure 1. The upstream or southern unnamed tributary depicted on the map is perennial and flows directly into the Monongahela River (Reference 6, pp. 3, 4; Reference 7, p. 323; Reference 27). The downstream or northern unnamed tributary appears to be an intermittent stream (Reference 27). This is based on Site Assessment Technical Assistance (SATA) field observations made during the March 1999 SI sampling event.

The overland surface water runoff from the approximate 20-acre site follows one of two different drainage pathways. The southern drainage pathway receives site runoff which then flows over the site and down an adjacent hillside located on the eastern side of the site discharging into the unnamed tributary of the Monongahela River. This stream then flows directly into the Monongahela River. A small spring originating in the eastern hillside also contributes to the perennial flow of the unnamed tributary. Sample SW/SD6 is located near the head waters of the southern tributary and is the probable point of entry (PPE) of hazardous substances from the site into perennially-flowing surface water (Reference 5, p. 8; Reference 6, p. 3; Figure 3; Reference 27).

Based on site observations made by the SATA sampling team during the 1999 SI sampling event, the northern tributary appeared to be intermittent due to the lack of water in the stream. For this reason the northern tributary was not evaluated as part of the surface water migration pathway for this documentation record (Reference 5, p. 8; Reference 6, p. 3; Figure 3; Reference 27).

The runoff mixture draining from the site discharges into the unnamed tributary, which empties into the Monongahela River approximately 0.30 miles downstream from the site (Figure 3; Reference 4). The Monongahela River flows northward for the entire 15-mile surface water migration pathway (Reference 4). The hazardous substance migration pathway is defined below. Segment distances are based on field and Global Positioning System (GPS) measurements made on 8 April 1999. The downstream measurements for the Monongahela River were taken from Reference 4, a topographic map which also illustrates the 15-mile target distance limit (TDL) and the location of the PPE.

Segment ID	Segment Description	In-Water Segment Length (ft)	Cumulative Length (ft/mile)
Overland	From southeastern edge of site to the beginning of the unnamed tributary, which is the designated PPE.	---	---
1	PPE at the unnamed tributary to SI sample location SW/SD6. ~ 2-3 feet wide and ~ 6 inches deep. (Reference 5, p.16) Water seemed to have an oily sheen, and the sediment seemed to be saturated with an oily substance. (Reference 6, p. 10).	50 [a]	50/0.01
2	SI sample location SW/SD-06 downstream to SI sampling location SW/SD4. Water slightly turbid. Sediment is mostly silt with small pebbles/gravel. (Reference 6, p.9).	925 [a]	975/0.18
3	SI sample location SW/SD4 downstream to SI sample location SW/SD9 in the Monongahela River. Water slightly turbid. Sediment is mostly silt with small pebbles/gravel (Reference 6, p.9). ~ 5-6 feet wide and ~<1 foot deep (Reference 5, p. 15.)	620 [a]	1,595/0.30
4	Monongahela River to 15-mile TDL. Right after confluence of the unnamed tributary with the Monongahela River, the sediment is very silty, and the water is very discolored (Reference 6, p. 14).	77,605 [b]	79,200/15

Notes:

[a] Distance measured from GPS coordinates (Reference 43; Reference 44)

[b] Distance measured from USGS topographic map, Reference 4

4.1.2.1 LIKELIHOOD OF RELEASE

Documentation by chemical analysis is available to support observed releases to the unnamed tributary of the Monongahela River located on Big John Salvage–Hoult Road Site property, and to the Monongahela River. Figures 1 and 2 show this area.

4.1.2.1.1 Observed Release - Unnamed Tributary On Big John Salvage-Hoult Road Site Property And the Monongahela River

Data from the March 1999 SI sampling event is presented below to document an observed release to the unnamed tributary to the Monongahela River located on Big John Salvage–Hoult Road Site property and to the Monongahela River.

Chemical Analysis

Analytical results from aqueous samples collected from the unnamed tributary (SI samples SW/SD6 and SW/SD4) and from the Monongahela River (SI samples SW/SD9) document an observed release of various metals and polynuclear aromatic hydrocarbons (PAH) to surface water as presented below. These samples were collected from the southern perennial flowing unnamed tributary of the Monongahela River and from the Monongahela River as shown in Figure 3. During the SI sampling event, the entire southern tributary appeared to be perennial and is located within the site property (Reference 5, p. 6 (Figure 2); Reference 6, p. 3; Reference 27). All of the SI samples were analyzed for complete organic and inorganic Contract Laboratory Program (CLP) parameters using CLP laboratory protocols (Reference 14; Reference 15; Reference 16). Figure 3 shows all the surface water and sediment sampling locations used for this investigation. Sampling results that support a release to the surface water migration pathway are depicted on Figure 4.

Background Concentrations

During the 1999 SI sampling event, two sets of background samples (SW/SD10 and SW/SD13) were collected on the Monongahela River. Background samples (SW/SD10) for aqueous and sediment samples were collected from the Monongahela River, approximately 0.55 miles upstream of the site (Reference 5, p. 8; Reference 6, p. 16; Figure 3). The purpose of these samples (SW/SD-10) were to determine background concentrations for the surface water migration pathway. Background aqueous and sediment samples (SW/SD13) were collected from the Monongahela River adjacent to the Fairmont Coke (Sharon Steel) Site, approximately 0.02 miles upstream of the Big John Salvage – Hoult Road Site (Reference 5, p. 9; Reference 6, pp. 20 and 21; Figure 3). The purpose of these samples (SW/SD-13) were to isolate the Big John Salvage – Hoult Road Site from the Fairmont Coke (Sharon Steel) Site. Figure 3 shows the approximate locations of these background samples. Analytical results for these background samples are summarized in Reference 5, Attachment 2, Tables I through VIII).

Other possible sources of contamination in the unnamed tributary and/or the Monongahela River include the Sharon Steel (Fairmont Coke) National Priorities List (NPL) Site (Reference 5, p. 1; Reference 13, p. 10, 14). During the March 1999 SI sampling event, four samples (SW/SD5 and SW/SD7) were collected from two branches of the unnamed tributary of the Monongahela River originating on Sharon Steel (Fairmont Coke) NPL Site property (Reference 5, pp. 7,8; Reference 6, pp. 8,9). These samples were collected from surface waters with similar characteristics to those waters where SW/SD4 and SW/SD6 were collected. The analytical results for these samples (SW/SD5 and SW/SD7)were used to determine if the Sharon Steel (Fairmont Coke) NPL Site contributed to, or was the major source of contamination to the unnamed tributary. The results indicated that the surface water/sediments from the Sharon Steel (Fairmont Coke) property were contaminated. However, samples SW/SD6 that were collected from the branch of the

unnamed tributary of the Monongahela River, that is located on the Big John Salvage – Hoult Road Site, revealed much higher levels of contaminants. Because this branch appears to originate on the Big John Salvage – Hoult Road Site property, no upstream (background sample) could be collected. Figure 3 shows the approximate locations of these samples. Analytical results for these are summarized in Reference 5, Attachment 2, Tables I through VIII.

Background Sample ID [lab number]	Sampling Location	Date	Reference(s)
SW10 Organic [P9038912]	On the Monongahela River 0.55 miles upstream from the PPE.	10 March 1999	Figure 3 43, p. 3 15, p. 21 38, pp. 94 and 95
SW10 Inorganic [MCRZ18]	On the Monongahela River 0.55 miles upstream from the PPE.	10 March 1999	Figure 3 43, p. 3 16, p. 11 38, p. 174
SD10 Organic [P9038814]	On the Monongahela River 0.55 miles upstream from the PPE.	10 March 1999	Figure 3 43, p. 3 15, p. 19 38, pp. 307 and 308
SD10 Inorganic [MCRZ19]	On the Monongahela River 0.55 miles upstream from the PPE.	10 March 1999	Figure 3 43, p. 3 16, p. 9 38, p. 210
SW13 Inorganic [MCRZ75]	On the Monongahela River 0.02 miles upstream of the site adjacent to the Fairmont Coke (Sharon Steel) Site	10 March 1999	Figure 3 43, p. 3 16, p. 12 38, p. 177
SD13 Inorganic [MCRZ76]	On the Monongahela River 0.02 miles upstream of the site adjacent to the Fairmont Coke (Sharon Steel) Site	10 March 1999	Figure 3 43, p. 3 16, p. 10 38, p. 213
SD13 Organic [P9038815]	On the Monongahela River 0.02 miles upstream of the site adjacent to the Fairmont Coke (Sharon Steel) Site	11 March 1999	Figure 3 43, p. 3 15, p. 19 38, pp. 322 and 323

The background concentrations of hazardous substances for which observed releases to the unnamed tributary of the Monongahela River and the Monongahela River can be established are provided below. Contract required quantitation limits (CRQL) were provided for these samples which were reviewed by the EPA Region III, Office of Analytical Services and Quality Assurance. Sample quantitation limits (SQL) were used to determine if an observed release had occurred at the site (Reference 1, p. 51589). The CRQLs were converted to SQLs using the following formula. The CRQL was divided by the percent solids and then that result was divided by 100. The samples were analyzed through CLP.

Background Sample ID [lab number]	Hazardous Substance	Concentration	SQL	Reference(s)
SW10 [P9038912]	Acenaphthene	<10 mg/L	10 mg/L	5, Attachment 2, Table II, p. 1 15, p. 21 38, p. 94
	Acenaphthylene	<10 mg/L	10mg/L	5, Attachment 2, Table II, p. 1 15, p. 21 38, p. 94
	Methylnaphthalene-2	3 J mg/L (30) [b]	10mg/L	5, Attachment 2, Table II, p. 1 15, p. 21 38, p. 94
	Naphthalene	10 mg/L	10mg/L	5, Attachment 2, Table II, p. 1 15, p. 21 38, p. 94
	Phenol	<10 mg/L	10mg/L	5, Attachment 2, Table II, p. 1 15, p. 21 38, p. 94

Notes:
SQL = Sample quantitation limit.
< Hazardous substance was not detected above the sample quantitation limit.
mg/L = Micrograms per liter.
J = Analyte present. Reported value is estimated; concentration is outside the range of accurate quantitation (Reference 14).
[b] = Adjusted value was calculated by multiplying the reported value by a correction factor (Reference 33).
CRQL = Contract required quantitation limit. SQL = (CRQL*Dilution Factor)/Percent Solid

Background Sample ID [lab number]	Hazardous Substance	Concentration	SQL	Reference(s)
SW10 [MCRZ18]	Aluminum	496 mg/L	200 mg/L	5, Attachment 2, Table VIII, p. 1 16, p. 11 38, p. 174
	Lead	<3 mg/L	3 mg/L	5, Attachment 2, Table VIII, p. 1 16, p. 11 38, p. 174
	Mercury	<0.2 mg/L	0.2 mg/L	5, Attachment 2, Table VIII, p. 1 16, p. 11 38, p. 174
SW13 [MCRZ75]	Aluminum	710 mg/L	200 mg/L	5, Attachment 2, Table VIII, p. 1 16, p. 12 38, p. 177

Notes:
SQL = Sample quantitation limit
mg/L= Micrograms per liter.
< Hazardous substance was not detected above the sample required quantitation limit.
CRDL = Contract required detection limit. SQL = (CRQL*Dilution Factor)/Percent Solid

Background Sample ID [lab number]	Hazardous Substance	Concentration	SQL	Reference(s)
SD10 [P9038814]	Acenaphthene	<730 mg/kg	730 mg/kg	5, Attachment 2, Table I, p. 1 15, p. 19 38, p. 307
	Acenaphthylene	<730 mg/kg	730 mg/kg	5, Attachment 2, Table I, p. 1 15, p. 19 38, p. 307
	Anthracene	130 J mg/kg (1,300)[b]	730 mg/kg	5, Attachment 2, Table I, p. 2 15, p. 19 38, p. 308
	Benzo(a)anthracene	330 J mg/kg (3,300)[b]	730 mg/kg	5, Attachment 2, Table I, p. 2 15, p. 19 38, p. 308
	Benzo(a)pyrene	380 J mg/kg (3,800)[b]	730 mg/kg	5, Attachment 2, Table I, p. 2 15, p. 19 38, p. 308
	Benzo(b)fluoranthene	680 J mg/kg (6,800)[b]	730 mg/kg	5, Attachment 2, Table I, p. 2 15, p. 19 38, p. 308
	Benzo(g,h,i)perylene	1,100 mg/kg	730 mg/kg	5, Attachment 2, Table I, p. 2 15, p. 19 38, p. 308
	Benzo(k)fluoranthene	<730 mg/kg	730 mg/kg	5, Attachment 2, Table I, p. 2 15, p. 19 38, p. 308
	Carbazole	<730 mg/kg	730 mg/kg	5, Attachment 2, Table I, p. 2 15, p. 19 38, p. 308
	Chrysene	340 J mg/kg (3,400)[b]	730 mg/kg	5, Attachment 2, Table I, p. 2 15, p. 19 38, p. 308
	Dibenz(a,h)anthracene	<730 mg/kg	730 mg/kg	5, Attachment 2, Table I, p. 2 15, p. 19 38, p. 308
	Dibenzofuran	<730 mg/kg	730 mg/kg	5, Attachment 2, Table I, p. 2 15, p. 19 38, p. 308

Notes:
SQL = Sample quantitation limit.
< Hazardous substance was not detected above the sample quantitation limit.
mg/kg = Micrograms per kilogram.
J = Analyte present. Reported value is estimated; concentration is outside the range of accurate quantitation (Reference 14).
[b] = Adjusted value was calculated by multiplying the reported value by a correction factor (Reference 33).
CRQL = Contract required quantitation limit. SQL = (CRQL*Dilution Factor)/Percent Solid

Background Sample ID [lab number]	Hazardous Substance	Concentration	SQL	Reference(s)
SD10 [P9038814]	Fluoranthene	780 mg/kg	730 mg/kg	5, Attachment 2, Table I, p. 2 15, p. 19 38, p. 308
	Fluorene	<730 mg/kg	730 mg/kg	5, Attachment 2, Table I, p. 2 15, p. 19 38, p. 308
	Indeno(1,2,3-cd)pyrene	220 J mg/kg (2,200) [b]	730 mg/kg	5, Attachment 2, Table I, p. 2 15, p. 19 38, p. 308
	Methylnaphthalene-2	120 J mg/kg (1,200) [b]	730 mg/kg	5, Attachment 2, Table I, p. 1 15, p. 19 38, p. 307
	Naphthalene	110 J mg/kg (1,100) [b]	730 mg/kg	5, Attachment 2, Table I, p. 1 15, p. 19 38, p. 307
	Phenanthrene	480 J mg/kg (4,800) [b]	730 mg/kg	5, Attachment 2, Table I, p. 2 15, p. 19 38, p. 308
	Phenol	<730 mg/kg	730 mg/kg	5, Attachment 2, Table I, p. 1 15, p. 19 38, p. 307
	Pyrene	490 J mg/kg (5,811.4) [b]	730 mg/kg	5, Attachment 2, Table I, p. 2 15, p. 19 38, p. 308
SD13 [P9038815]	Acenaphthene	560 J mg/kg (2,620.8) [b]	800 mg/kg	5, Attachment 2, Table I, p. 1 15, p. 19 38, p. 322
	Acenaphthylene	330 J mg/kg (3,300) [b]	800 mg/kg	5, Attachment 2, Table I, p. 1 15, p. 19 38, p. 322
	Anthracene	1,800 mg/kg	800 mg/kg	5, Attachment 2, Table I, p. 2 15, p. 19 38, p. 323
	Benzo(a)anthracene	2,200 mg/kg	800 mg/kg	5, Attachment 2, Table I, p. 2 15, p. 19 38, p. 323
	Benzo(a)pyrene	1,800 mg/kg	800 mg/kg	5, Attachment 2, Table I, p. 2 15, p. 19 38, p. 323
	Benzo(b)fluoranthene	3,400 mg/kg	800 mg/kg	5, Attachment 2, Table I, p. 2 15, p. 19 38, p. 323

Notes:
SQL = Sample quantitation limit.
mg/kg = Micrograms per kilogram.
< Hazardous substance was not detected above the sample quantitation limit.
J = Analyte present. Reported value is estimated; concentration is outside the range of accurate quantitation (Reference 14).
[b] = Adjusted value was calculated by multiplying the reported value by a correction factor (Reference 33).
CRQL = Contract required quantitation limit. SQL = (CRQL*Dilution Factor)/Percent Solid

Background Sample ID [lab number]	Hazardous Substance	Concentration	SQL	Reference(s)
SD13 [P9038815]	Benzo(g,h,i)perylene	980 mg/kg	800 mg/kg	5, Attachment 2, Table I, p. 2 15, p. 19 38, p. 323
	Benzo(k)fluoranthene	<800 mg/kg	800 mg/kg	5, Attachment 2, Table I, p. 2 15, p. 19 38, p. 323
	Carbazole	540 J mg/kg (5,400) [b]	800 mg/kg	5, Attachment 2, Table I, p. 2 15, p. 19 38, p. 323
	Chrysene	2,100 mg/kg	330 mg/kg	5, Attachment 2, Table I, p. 2 15, p. 19 38, p. 323
	Dibenz(a,h)anthracene	410 J mg/kg (4,100) [b]	800 mg/kg	5, Attachment 2, Table I, p. 2 15, p. 19 38, p. 323
	Dibenzofuran	470 J mg/kg (4,700) [b]	800 mg/kg	5, Attachment 2, Table I, p. 2 15, p. 19 38, p. 323
	Fluoranthene	5,500 mg/kg	800 mg/kg	5, Attachment 2, Table I, p. 2 15, p. 19 38, p. 323
	Fluorene	830 J mg/kg (8,300) [b]	800 mg/kg	5, Attachment 2, Table I, p. 2 15, p. 19 38, p. 323
	Indeno(1,2,3-cd)pyrene	1,100 mg/kg	800 mg/kg	5, Attachment 2, Table I, p. 2 15, p. 19 38, p. 323
	Methylnaphthalene-2	220 J mg/kg (2,200) [b]	800 mg/kg	5, Attachment 2, Table I, p. 1 15, p. 19 38, p. 322
	Naphthalene	300 J mg/kg (3,000) [b]	800 mg/kg	5, Attachment 2, Table I, p. 1 15, p. 19 38, p. 322
	Phenanthrene	3,800 mg/kg	800 mg/kg	5, Attachment 2, Table I, p. 2 15, p. 19 38, p. 323
	Phenol	100 J mg/kg (385) [b]	800 mg/kg	5, Attachment 2, Table I, p. 1 15, p. 19 38, p. 322
	Pyrene	3,400 mg/kg	800 mg/kg	5, Attachment 2, Table I, p. 2 15, p. 19 38, p. 323

Notes:
SQL = Sample quantitation limit.
mg/kg = Micrograms per kilogram.
< Hazardous substance was not detected above the sample quantitation limit.
J = Analyte present. Reported value is estimated; concentration is outside the range of accurate quantitation (Reference 14).
[B] = Adjusted value was calculated by multiplying the reported value by a correction factor (Reference 33).
CRQL = Contract required quantitation limit. SQL = (CRQL*Dilution Factor)/Percent Solid

Background Sample ID [lab number]	Hazardous Substance	Concentration	SQL	Reference(s)
SD10 [MCRZ19]	Arsenic	11.4 mg/kg	5.5 mg/kg	5, Attachment 2, Table VII, p. 1 16, p. 19 38, p. 210
	Cadmium	<1 mg/kg	2.8 mg/kg	5, Attachment 2, Table VII, p. 1 16, p. 19 38, p. 210
	Lead	57.2 mg/kg	1.7 mg/kg	5, Attachment 2, Table VII, p. 1 16, p. 11 38, p. 210
	Mercury	0.4 mg/kg	0.6 mg/kg	5, Attachment 2, Table VII, p. 1 16, p. 19 38, p. 210
SD13 [MCRZ76]	Arsenic	10.9 mg/kg	6 mg/kg	5, Attachment 2, Table VII, p. 1 16, p. 10 38, p. 213
	Lead	48.5 mg/kg	1.8 mg/kg	5, Attachment 2, Table VII, p. 1 16, p. 10 38, p. 213
	Mercury	0.36 mg/kg	0.6 mg/kg	5, Attachment 2, Table VII, p. 1 16, p. 10 38, p. 213

Notes:
SQL = Sample quantitation limit.
mg/kg = Milligrams per kilogram.
< Hazardous substance was not detected above the sample quantitation limit.
CRDL = Contract required detection limit. SQL = (CRQL*Dilution Factor)/Percent Solid

Release Samples

Sample locations for SW/SD6, SD4 and SD9 that support observed releases to the unnamed tributary of the Monongahela River and the Monongahela River are listed below. Figure 3 shows these sampling locations. Listed in the table below are aqueous and sediment samples that contained hazardous substances attributable to the source at the site. These hazardous substances were detected at least three times the background levels or, if background levels were non-detect, were detected at levels at least above the contract required quantitation limits.

Aluminum, arsenic, cadmium, lead, mercury and PAHs have been found at observed release concentrations in the unnamed tributary and Monongahela River samples collected during the March 1999 SI as compared with background concentrations detected in samples SW10 and SD10. Sampling results that establish observed releases to the unnamed tributary and Monongahela River are presented in the table below. For aqueous and sediment samples, results are presented from the most upstream to the most downstream sample. The most downstream unnamed tributary and Monongahela River samples demonstrating an observed release are SW/SD9 which were collected 0.30 downstream miles (1,595 ft.) from the PPE.

Release Sample ID [lab number]	Sampling Location	Depth	Date	Reference(s)
SW6 Organic [P9038908]	Approximately 50 feet downstream from the PPE in the unnamed tributary.	Not applicable	9 March 1999	5, p. 6, Figure 2 and p. 8 15, p. 15 38, pp. 79 and 80
SW6 Inorganic [MCRZ13]	Approximately 50 feet downstream from the PPE in the unnamed tributary.	Not applicable	9 March 1999	5, p. 6, Figure 2 and p. 8 16, p. 12 38, p. 169
SD6 Organic [068803, O68803D1 and O68803D2]	Approximately 50 feet downstream from the PPE in the unnamed tributary.	0-3 inches	9 March 1999	5, p. 6, Figure 2 and p. 8 39, pp. 49, 50, 55, 57, 58
SW4 Inorganic [MCRZ11]	Approximately 975 feet downstream from the PPE in the unnamed tributary.	Not applicable	9 March 1999	5, p. 6, Figure 2 and p. 7 16, p. 11 38, p. 167
SD4 Inorganic [MCRZ02]	Approximately 975 feet downstream from the PPE in the unnamed tributary.	0-3 inches	9 March 1999	5, p. 6, Figure 2 and p. 7 16, p. 9 38, p. 205
SD4 Organic [P9038807]	Approximately 975 feet downstream from the PPE in the unnamed tributary.	0-3 inches	9 March 1999	5, p. 6, Figure 2 and p. 7 15, p. 13 38, pp. 355 and 356
SW9 Inorganic [MCRZ16]	Approximately 1,595 feet downstream of unnamed tributary in the Monongahela River.	Not applicable	10 March 1999	5, p. 6, Figure 2 and p. 8 16, p. 11 38, p. 172
SD9 Organic [P9038811]	Approximately 1,595 feet downstream of unnamed tributary in the Monongahela River.	0-3 inches	10 March 1999	5, p. 6, Figure 2 and p. 8 15, p. 11 38, pp. 301and 302

Aluminum, arsenic, cadmium, lead, mercury and various PAHs including benzo(a)pyrene have been found at observed release concentrations in the unnamed tributary of the Monongahela River (samples SW/SD6, SW/SD4) and in the Monongahela River (sample SW/SD9) as compared with background concentrations at sample locations SW/SD10 and SW/SD13. These hazardous substances were detected at greater than three times the background concentration.

Release Sample ID [lab number]	Hazardous Substance	Concentration	SQL	Reference(s)
SW6 [P9038908]	Acenaphthene	3,800 mg/L	10 mg/L	5, Attachment 2, Table II, p. 3 15, p. 21 38, p. 79
	Acenaphthylene	470 J mg/L (47)[a]	10 mg/L	5, Attachment 2, Table II, p. 3 15, p. 21 38, p. 79
	Anthracene	1,700 mg/L	10 mg/L	5, Attachment 2, Table II, p. 4 15, p. 21 38, p. 80
	Benzo(a)anthracene	1,100 mg/L	10 mg/L	5, Attachment 2, Table II, p. 4 15, p. 21 38, p. 80
	Benzo(a)pyrene	600 J mg/L (60)[a]	10 mg/L	5, Attachment 2, Table II, p. 4 15, p. 21 38, p. 80
	Benzo(b)fluoranthene	1,300 mg/L	10 mg/L	5, Attachment 2, Table II, p. 4 15, p. 21 38, p. 80
	Benzo(g,h,i)perylene	230 J mg/L (23)[a]	10 mg/L	5, Attachment 2, Table II, p. 4 15, p. 21 38, p. 80
	Carbazole	790 J mg/L (79)[a]	10 mg/L	5, Attachment 2, Table II, p. 4 15, p. 21 38, p. 80
	Chrysene	930 J mg/L (93)[a]	10 mg/L	5, Attachment 2, Table II, p. 4 15, p. 21 38, p. 80
	Dibenzofuran	3,400 mg/L	10 mg/L	5, Attachment 2, Table II, p. 4 15, p. 21 38, p. 80
	Fluoranthene	4,900 mg/L	10 mg/L	5, Attachment 2, Table II, p. 4 15, p. 21 38, p. 80
	Fluorene	3,800 mg/L	10 mg/L	5, Attachment 2, Table II, p. 4 15, p. 21 38, p. 80
	Indeno(1,2,3-cd)pyrene	240 J mg/L (24)[a]	10 mg/L	5, Attachment 2, Table II, p. 4 15, p. 21 38, p.80
	Methylnaphthalene-2	5,800 mg/L	10 mg/L	5, Attachment 2, Table II, p. 3 15, p. 21 38, p. 79
	Naphthalene	16,000 mg/L	10 mg/L	5, Attachment 2, Table II, p. 3 15, p. 21 38, p. 82

Notes:
SQL = Sample quantitation limit.
mg/L= Micrograms per liter.
J = Analyte present. Reported value is estimated; concentration is outside the range of accurate quantitation (Reference 14).
[a] = Adjusted value was calculated by dividing the reported value by a correction factor (Reference 33).
CRQL = Contract required quantitation limit. SQL = (CRQL*Dilution Factor)/Percent Solid

Release Sample ID [lab number]	Hazardous Substance	Concentration	SQL	Reference(s)
SW6 [P9038908]	Phenanthrene	7,100 mg/L	10 mg/L	5, Attachment 2, Table II, p. 4 15, p. 21 38, p.80
	Phenol	160 J mg/L (48.5)[a]	10 mg/L	5, Attachment 2, Table II, p. 3 15, p. 21 38, p. 79
	Pyrene	3,300 mg/L	10 mg/L	5, Attachment 2, Table II, p. 4 15, p. 21 38, p. 80
SW6 [MCRZ13]	Lead	11.7 mg/L	3 mg/L	5, Attachment 2, Table VIII, p. 2 16, p. 12 38, p. 169
SW4 [MCRZ11]	Aluminum	13,000 mg/L	200 mg/L	5, Attachment 2, Table VIII, p. 1 16, p. 11 38, p. 167
	Lead	16 mg/L	3mg/L	5, Attachment 2, Table VIII, p. 1 16, p. 11 38, p. 167
	Mercury	0.77 mg/L	0.2 mg/L	5, Attachment 2, Table VIII, p. 1 16, p. 11 38, p. 167
SW9 [MCRZ16]	Aluminum	8,920 mg/L	200 mg/L	5, Attachment 2, Table VIII, p. 2 16, p. 11 38, p. 172
SD6 [068803D2]*	Acenaphthene	1,489,100 J mg/kg (318,183.8)[a]	48000 mg/kg	5, Attachment 2, Table I, p. 3 39, p. 57
[068803D1]*	Acenaphthylene	81,100 J mg/kg (8,110)[a]	4800 mg/kg	5, Attachment 2, Table I, p. 3 39, p. 49
[068803D2]*	Anthracene	740,600 J mg/kg (74,060)[a]	48000 mg/kg	5, Attachment 2, Table I, p. 4 39, p. 58
[068803D1]*	Benzo(a)anthracene	421,900 J mg/kg (42,190)[a]	4800 mg/kg	5, Attachment 2, Table I, p. 4 39, p. 50

Notes:
SQL = Sample quantitation limit.
mg/L= Micrograms per liter.
J = Analyte present. Reported value is estimated. The analytical results for release sample SD6 was qualified as "J" because the technical extraction holding time for EPA Region III was exceeded for this sample but the contractual holding time was not exceeded by the laboratory (Reference 14).
[a] = Adjusted value was calculated by dividing the reported value by a correction factor (Reference 33).
mg/kg = Micrograms per kilogram.
CRQL = Contract required quantitation limit (organic). SQL = (CRQL or CRDL * Dilution Factor)/Percent Solid

CRDL = Contract required detection limit (inorganic).

* D1= Duplicate 1
D2=Duplicate 2

Release Sample ID [lab number]	Hazardous Substance	Concentration	SQL	Reference(s)
SD6 [068803D1]*	Benzo(a)pyrene	244,900 J mg/kg (24,490) [a]	4800 mg/kg	5, Attachment 2, Table I, p. 4 39, p. 50
[068803D1]*	Benzo(b)fluoranthene	302,200 J mg/kg (30,220) [a]	4800mg/kg	5, Attachment 2, Table I, p. 4 39, p. 50
[068803D1]*	Benzo(g,h,i)perylene	62,700 J mg/kg (6,270) [a]	4800 mg/kg	5, Attachment 2, Table I, p. 4 39, p. 50
[068803D1]*	Benzo(k)fluoranthene	173,400 J mg/kg (17,340) [a]	4800mg/kg	5, Attachment 2, Table I, p. 4 39, p. 50
[068803D1]*	Carbazole	430,900 J mg/kg (43,090) [a]	4800mg/kg	5, Attachment 2, Table I, p. 4 39, p. 50
[068803D1]*	Chrysene	402,000 J mg/kg (40,200) [a]	4800mg/kg	5, Attachment 2, Table I, p. 4 39, p. 50
[068803D1]*	Dibenz(a,h)anthracene	33,600 J mg/kg (3,360) [a]	4800mg/kg	5, Attachment 2, Table I, p. 4 39, p. 50
[068803D1]*	Dibenzofuran	1,086,500 J mg/kg (108,650) [a]	4800mg/kg	5, Attachment 2, Table I, p. 4 39, p. 50
[068803D2]*	Fluoranthene	1,692,800 J mg/kg (169,280) [a]	48000mg/kg	5, Attachment 2, Table I, p. 4 39, p. 58
[068803D2]*	Fluorene	1,547,800 J mg/kg (154,780) [a]	48000mg/kg	5, Attachment 2, Table I, p. 4 39, p. 58
[068803D2]*	Indeno(1,2,3-cd)pyrene	70,200 J mg/kg (7,020) [a]	48000mg/kg	5, Attachment 2, Table I, p. 4 39, p. 58
[068803D1]*	Methylnaphthalene-2	1,885,500 J mg/kg (188,550) [a]	4800mg/kg	5, Attachment 2, Table I, p. 4 39, p. 50
[068803D2]*	Naphthalene	3,905,800 J mg/kg (390,580) [a]	48000mg/kg	5, Attachment 2, Table I, p. 3 39, p. 57
[068803D2]*	Phenanthrene	3,522,500 J mg/kg (352,250) [a]	48000mg/kg	5, Attachment 2, Table I, p. 3 39, p. 57
[068803D1]*	Pyrene	1,008,300 J mg/kg (85,016.9) [a]	4800mg/kg	5, Attachment 2, Table I, p. 4 39, p. 50

Notes:
SQL = Sample quantitation limit.
J = Analyte present. Reported value is estimated. The analytical results for release sample SD6 was qualified as "J" because the technical extraction holding time for EPA Region III was exceeded for this sample but the contractual holding time was not exceeded by the laboratory (Reference 14).
mg/kg = Micrograms per kilogram.
[a] = Adjusted value was calculated by dividing the reported value by a correction factor (Reference 33).
CRQL = Contract required quantitation limit. SQL = (CRQL*Dilution Factor)/Percent Solid

* D1= Duplicate 1
D2=Duplicate 2

Release Sample ID [lab number]	Hazardous Substance	Concentration	SQL	Reference(s)
SD4 [MCRZ02]	Arsenic	106 mg/kg	3.3 mg/kg	5, Attachment 2, Table VII, p. 1 16, p. 9 38, p. 205
	Cadmium	63.7 mg/kg	1.7 mg/kg	5, Attachment 2, Table VII, p. 1 16, p. 9 38, p. 205
	Lead	3,790 mg/kg	1 mg/kg	5, Attachment 2, Table VII, p. 1 16, p. 9 38, p. 205
	Mercury	58 mg/g	0.3 mg/kg	5, Attachment 2, Table VII, p. 1 16, p. 9 38, p. 205
SD4 [P9038807]	Acenaphthene	3,900 mg/kg	1,800 mg/kg	5, Attachment 2, Table I, p. 1 15, p. 17 38, p. 355
	Acenaphthylene	1,800 mg/kg	1,800 mg/kg	5, Attachment 2, Table I, p. 1 15, p. 17 38, p. 355
	Anthracene	10,000 mg/kg	1,800 mg/kg	5, Attachment 2, Table I, p. 2 15, p. 17 38, p. 356
	Benzo(a)anthracene	7,000 mg/kg	1,800 mg/kg	5, Attachment 2, Table I, p. 2 15, p. 17 38, p. 359
	Benzo(a)pyrene	12,000 mg/kg	1,800 mg/kg	5, Attachment 2, Table I, p. 2 15, p. 17 38, p. 356
	Benzo(g,h,i)perylene	9,100 mg/kg	1,800 mg/kg	5, Attachment 2, Table I, p. 2 15, p. 17 38, p. 356
	Benzo(k)fluoranthene	2,400 mg/kg	1,800 mg/kg	5, Attachment 2, Table I, p. 2 15, p. 17 38, p. 356
	Carbazole	5,200 mg/kg	1,800 mg/kg	5, Attachment 2, Table I, p. 2 15, p. 17 38, p. 356
	Chrysene	11,000 mg/kg	1,800 mg/kg	5, Attachment 2, Table I, p. 2 15, p. 17 38, p. 356

Notes:
SQL = Sample quantitation limit
mg/kg = Milligrams per kilogram.
mg/kg = Micrograms per kilogram.
CRDL = Contract required detection limit. SQL = (CRQL or CRDL * Dilution Factor)/Percent Solid

CRQL = Contract required quantitation limit.

Release Sample ID [lab number]	Hazardous Substance	Concentration	SQL	Reference(s)
SD4 [P9038807]	Dibenzofuran	3,200 mg/kg	1,800 mg/kg	5, Attachment 2, Table I, p. 2 15, p. 17 38, p. 356
	Fluorene	5,200 mg/kg	1,800 mg/kg	5, Attachment 2, Table I, p. 2 15, p. 17 38, p. 356
	Indeno(1,2,3-cd)pyrene	8,500 mg/kg	1,800 mg/kg	5, Attachment 2, Table I, p. 2 15, p. 17 38, p. 356
	Naphthalene	1,800 mg/kg	1,800 mg/kg	5, Attachment 2, Table I, p. 1 15, p. 17 38, p. 355
SD9 [P9038811]	Acenaphthene	8,700 mg/kg	5,500 mg/kg	5, Attachment 2, Table I, p. 3 15, p. 19 38, p. 301
	Acenaphthylene	9,100 mg/kg	5,500 mg/kg	5, Attachment 2, Table I, p. 3 15, p. 19 38, p. 301
	Anthracene	39,000 mg/kg	5,500 mg/kg	5, Attachment 2, Table I, p. 4 15, p. 19 38, p. 302
	Benzo(a)anthracene	29,000 mg/kg	5,500 mg/kg	5, Attachment 2, Table I, p. 4 15, p. 19 38, p. 302
	Benzo(a)pyrene	21,000 mg/kg	5,500 mg/kg	5, Attachment 2, Table I, p. 4 15, p. 19 38, p. 302
	Benzo(b)fluoranthene	31,000 mg/kg	5,500 mg/kg	5, Attachment 2, Table I, p. 4 15, p. 19 38, p. 302
	Benzo(g,h,i)perylene	7,600 mg/kg	5,500 mg/kg	5, Attachment 2, Table I, p. 4 15, p. 19 38, p. 302
	Carbazole	9,700 mg/kg	5,500 mg/kg	5, Attachment 2, Table I, p. 4 15, p. 19 38, p. 302
	Chrysene	19,000 mg/kg	5,500 mg/kg	5, Attachment 2, Table I, p. 4 15, p. 19 38, p. 302

Notes:
SQL = Sample quantitation limit
mg/kg = Micrograms per kilogram.
CRQL = Contract required quantitation limit. SQL = (CRQL*Dilution Factor)/Percent Solid

Release Sample ID [lab number]	Hazardous Substance	Concentration	SQL	Reference(s)
SD9 [P9038811]	Dibenzofuran	11,000 mg/kg	5,500 mg/kg	5, Attachment 2, Table I, p. 4 15, p. 19 38, p. 302
	Fluoranthene	75,000 mg/kg	5,500 mg/kg	5, Attachment 2, Table I, p. 4 15, p. 19 38, p. 305
	Fluorene	23,000 mg/kg	5,500 mg/kg	5, Attachment 2, Table I, p. 4 15, p. 19 38, p. 302
	Indeno(1,2,3-cd)pyrene	9,100 mg/kg	5,500 mg/kg	5, Attachment 2, Table I, p. 4 15, p. 19 38, p. 302
	Phenanthrene	36,000 mg/kg	5,500 mg/kg	5, Attachment 2, Table I, p. 4 15, p. 19 38, p. 302
	Pyrene	34,000 mg/kg	5,500 mg/kg	5, Attachment 2, Table I, p. 4 15, p. 19 38, p. 302

Notes:
SQL = Sample quantitation limit
mg/kg = Micrograms per kilogram.
CRQL = Contract required quantitation limit. SQL = (CRQL*Dilution Factor)/Percent Solid

Attribution

During the March 1999 SI, various PAH compounds were detected at elevated concentrations over background in two surface water bodies that receive runoff from the site (the unnamed tributary of the Monongahela River and the Monongahela River). Contamination of these water bodies can be attributed at least partially to the source at the site because these same hazardous substances have been found to be elevated in source samples. The pattern PAH compound contamination in the unnamed tributary of the Monongahela River and in the Monongahela River support that these hazardous substances are being released from sources at the site. This is illustrated by Figure 4 which traces the PAH contamination from the source/waste samples to the unnamed tributary of the Monongahela River and to the Monongahela River.

All of the waste/soil source samples were collected on Big John Salvage–Hoult Road Site property (Reference 5, p. 9; Figure 2). These samples were collected over a wide area of the site. Historically this site was used for many years as a coal tar manufacturing facility. Approximately 12,000 gallons of crude coal tar waste per day were processed at the facility. The processed coal tar was sold to the state of West Virginia for road repairs and construction purposes (Reference 35). Several chemical byproducts such as creosote (Reference 22), phenol (Reference 46) and naphthalene (Reference 24) were also produced by the facility (Reference 35). The PAH compounds (Reference 18, Reference 19, Reference 20 and Reference 21) found in the waste/soil source samples are characteristic and consistent with hazardous substances associated with coal tar (Reference 7, p. 237).

Other possible sources of contamination in the unnamed tributary and/or the Monongahela River include the Sharon Steel (Fairmont Coke) National Priorities List (NPL) Site (Reference 5, p. 1; Reference 13, p. 10, 14). During the March 1999 SI sampling event, four samples (SW/SD5 and SW/SD7) were collected from two branches of the unnamed tributary of the Monongahela River originating on Sharon Steel (Fairmont Coke) NPL Site property (Reference 5, pp. 7,8; Reference 6, pp. 8,9). These samples were collected from surface waters with similar characteristics to those waters where SW/SD4 and SW/SD6 were collected. The analytical results for these samples (SW/SD5 and SW/SD7) were used to determine if the Sharon Steel (Fairmont Coke) NPL Site contributed to, or was the major source of contamination to the unnamed tributary. The results indicated that the surface water/sediments from the Sharon Steel (Fairmont Coke) property were contaminated. However, samples SW/SD6 that were collected from the branch of the unnamed tributary of the Monongahela River, that is located on the Big John Salvage – Hoult Road Site, revealed much higher levels of contaminants. Because this branch appears to originate on the Big John Salvage – Hoult Road Site property, no upstream (background sample) could be collected. Figure 3 shows the approximate locations of these samples. Analytical results for these samples are summarized in Reference 5, Attachment 2, Tables I through VIII.

As noted above, the contamination in the unnamed tributary and the Monongahela River is at least partially attributable to the site.

A copy of Figure 4 is available at the EPA Headquarters Superfund Docket:

U.S. CERCLA Docket Office
Crystal Gateway #1, 1st Floor
1235 Jefferson Davis Highway
Arlington, VA 22202

Telephone: (703) 603-8917
E-Mail: superfund.docket@epa.gov

Hazardous Substances Released:

Acenaphthene
Acenaphthylene
Aluminum
Anthracene
Arsenic
Benzo(a)anthracene
Benzo(a)pyrene
Benzo(b)fluoranthene
Benzo(g,h,i)perylene
Benzo(k)fluoranthene
Carbazole
Cadmium
Chrysene
Dibenzofuran
Dibenz(a,h)anthracene
Fluoranthene
Fluorene
Indeno(1,2,3-cd)pyrene
Lead
Mercury
Methylnaphthalene-2
Naphthalene
Phenanthrene
Phenol
Pyrene

Observed Release Factor Value: 550

4.1.2.2 WASTE CHARACTERISTICS

4.1.2.2.1 Toxicity/Persistence

Several semi-volatile organics are among the hazardous substances known to be associated with the source at the site. The toxicity and persistence factor values for these hazardous substances are obtained from the Superfund Chemical Data Matrix (SCDM) (Reference 2). The combined toxicity/persistence factor values are obtained from the HRS Table 4-12 (Reference 1, p. 51613).

Hazardous Substance	Source No.	Toxicity Factor Value	Persistence Factor Value	Toxicity/Persistence Factor Value (HRS Table 4-12)	Reference(s)
Acenaphthene	1	10	0.4	4	2, p. B-1
Acenaphthylene	1	---	0.4	---	2, p. B-1
Anthracene	1	10	1	10	2, p. B-2
Benzo(a)anthracene	1	1,000	1	1,000	2, p. B-2
Benzo(a)pyrene	1	10,000	1	10,000	2, p. B-2
Benzo(b)fluoranthene	1	1,000	1	1,000	2, p. B-3
Benzo(g,h,i)perylene	1	---	1	---	2, p. B-3
Benzo(k)fluoranthene	1	100	1	100	2, p. B-3
Carbazole	1	10	0.4	4	2, p. B-4
Chrysene	1	10	1	10	2, p. B-5
Dibenz(a,h)anthracene	1	10,000	1	10,000	2, p. B-7
Dibenzofuran	1	---	1	---	2, p. B-7
Fluoranthene	1	100	1	100	2, p. B-10
Fluorene	1	100	1	100	2, p. B-10
Indeno(1,2,3-cd)pyrene	1	1,000	1	1,000	2, p. B-12
Methylnaphthalene-2	1	---	0.4	---	2, p. B-14
Naphthalene	1	100	0.4	40	2, p. B-14
Phenanthrene	1	---	1	---	2, p. B-16
Phenol	1	1	1	1	2, p. B-16
Pyrene	1	100	1	100	2, p. B-17

Notes:
--- = No value available.

The maximum toxicity/persistence factor value (10,000) is assigned for hazardous substances including benzo(a)pyrene and dibenz(a,h)anthracene.

Toxicity/Persistence Factor Value: 10,000

1.4.2.2.2 Hazardous Waste Quantity

The source HWQ value assigned for source 1 was obtained from the area measurements (see Section 2.4.2.1.5 of the documentation record). The source HWQ value for the contaminated soil was calculated based on the HWQ evaluation equation in HRS Table 2-5 (Reference 1, p. 51591).

Source No.	Source Name	Source Hazardous Waste Quantity Value (HRS Section 2.4.2.1.5)	Source hazardous constituent quantity data complete? (Yes/No)
1	Contaminated Soil	28.19	No
	Sum of Values:	**28.19**	

The value from the HRS Table 2-6 (Reference 1, p. 51591) would be one, but because of the exception found on page 51592 of the HRS (Reference 1), 100 was assigned. This factor is used because the human food chain migration pathway is subject to Level II concentrations (Reference 1, p. 51592).

Hazardous Waste Quantity Factor Value: 100

4.1.2.2.3 Waste Characteristics Factor Category Value

The waste characteristics product is determined by multiplying the highest toxicity/persistence factor value (10,000) by the HWQ factor value (100). The result is 1×10^{6}. The assigned waste characteristics factor category value is 32 (Reference 1, HRS Table 2-7, p. 51592).

Toxicity/Persistence Factor Value: 10,000
Hazardous Waste Quantity Factor Value: 100

Hazardous Waste Quantity Factor Value: 100
Waste Characteristics Factor Category Value: 32

4.1.2.3 DRINKING WATER TARGETS

There are no drinking water intakes within the 15-mile downstream target distance limit. The groundwater aquifers in the area around the site are considered unusable due to low yield or poor quality (Reference 13, p. 12). The major drinking water supply for the study area comes from an intake that is located approximately 3.75 miles upstream of the site by the confluence of the west fork of the Monongahela River with the Tygart Valley River. The water intake is located approximately 0.5 miles upstream on the Tygart Valley River (Reference 17; Reference 26; Figure 5).

Resources

Major or designated recreation area, excluding drinking-water use:

The Monongahela River is known to be used for multiple recreational purposes including boating and sport fishing. This river is protected as a warm-water fishery and, according to the regional fish biologist for the West Virginia Department of Natural Resources, the state stocks the Monongahela River in the area of the site with fish (Reference 28; Reference 29).

In accordance with Section 4.1.2.3.3 of the HRS Final Rule, a resources factor value of 5 has been assigned for the watershed (Reference 1, p. 51617).

Resources Factor Value: 5

4.1.3 HUMAN FOOD CHAIN THREAT

4.1.3.2 WASTE CHARACTERISTICS

4.1.3.2.1 Toxicity/Persistence/Bioaccumulation

Toxicity, persistence, and bioaccumulation factor values for those hazardous substances detected in surface water and sediment as observed releases or associated with the source at the site are presented below. These values are obtained from the SCDM (Reference 2). The combined toxicity/persistence/bioaccumulation potential factor values are obtained from HRS Table 4-16 (Reference 1, p. 51619).

Hazardous Substance	Source No.	Toxicity Factor Value	Persistence Factor Value	Food Chain Bioaccumulation Value	Toxicity/ Persistence/ Bioaccumulation/ Factor Value (HRS Table 4-16)	Reference
Acenaphthene	1	10	0.4	500	2,000	2, p. B-1
Acenaphthylene	1	---	0.4	500	--	2, p. B-1
Anthracene	1	10	1	5,000	$5x10^{4}$	2, p. B-2
Benzo(a)anthracene	1	1,000	1	50,000	$5x10^{7}$	2, p. B-2
Benzo(a)pyrene	1	10,000	1	50,000	$5x10^{8}$	2, p. B-2
Benzo(b)fluoranthene	1	1,000	1	50,000	$5x10^{7}$	2, p. B-3
Benzo(g,h,i)perylene	1	---	1	50,000	---	2, p. B-3
Benzo(k)fluoranthene	1	100	1	50,000	$5x10^{6}$	2, p. B-3
Carbazole	1	10	0.4	500	2,000	2, p. B-4
Chrysene	1	10	1	500	5,000	2, p. B-5
Dibenz(a,h)anthracene	1	10,000	1	50,000	$5x10^{8}$	2, p. B-7
Dibenzofuran	1	---	1	500	---	2, p. B-7
Fluoranthene	1	100	1	5,000	$5x10^{5}$	2, p. B-10
Fluorene	1	100	1	5,000	$5x10^{5}$	2, p. B-10
Indeno(1,2,3-cd)pyrene	1	1,000	1	50,000	$5x10^{7}$	2, p. B-12
Methylnaphthalene-2	1	---	0.4	5,000	---	2, p. B-14
Naphthalene	1	100	0.4	500	$2x10^{4}$	2, p. B-14
Phenanthrene	1	---	1	50	---	2, p. B-16
Phenol	1	1	1	5	5	2, p. B-16
Pyrene	1	100	1	50	5,000	2, p. B-17

Notes:
-- = No value available.

Toxicity/Persistence/Bioaccumulation Factor Value: $5x10^{8}$

4.1.3.2.2 Hazardous Waste Quantity

The HWQ value assigned for source 1 was obtained from the area measurements (see Section 2.4.2.1.5 of the documentation record). The source HWQ value for the contaminated soil was calculated based on the HWQ evaluation equation in HRS Table 2-5 (Reference 1, p. 51591).

Source No.	Source Name	Source Hazardous Waste Quantity Value (HRS Section 2.4.2.1.5)	Source hazardous constituent quantity data complete? (Yes/No)
1	Contaminated Soil	28.19	No
	Sum of Values:	**28.19**	

The value from the HRS Table 2-6 (Reference 1, p. 51591) would be one, but because of the exception found on page 51592 of the HRS (Reference 1), 100 was assigned. This factor is used because the human food chain migration pathway is subject to Level II concentrations (Reference 1, p. 51592).

Hazardous Waste Quantity Factor Value: 100

4.1.3.2.3 Waste Characteristics Factor Category Value

The waste characteristics factor category value for the threat to the human food chain is calculated below as specified in Section 4.1.3.2.3 of the HRS Final Rule (Reference 1, p.51620):

Toxicity/persistence factor value = 10,000
HWQ factor value = 100
Bioaccumulation potential factor value = $5x10^{4}$

(Toxicity/persistence x HWQ) = 10,000 x 100 = $1x10^{6}$
(Toxicity/persistence x HWQ) x (Bioaccumulation potential factor value) = $(1x10^{6})$ x $(5x10^{4})$ = $5x10^{10}$

The waste characteristics product ($5x10^{10}$) yields a waste characteristics factor category value of 320 (Reference 1, HRS Table 2-7, p. 51592).

Toxicity/Persistence Factor Value x Hazardous Waste Quantity Factor Value: $1x10^{6}$
(Toxicity/Persistence x HWQ) x Bioaccumulation Potential Factor Value: $5x10^{10}$

Hazardous Waste Quantity Assigned Value: 100
Waste Characteristics Factor Category Value: 320

4.1.3.3 HUMAN FOOD CHAIN THREAT - TARGETS

According to a representative of the West Virginia Department of Natural Resources, the Monongahela River is used for recreational fishing (Reference 12; Reference 28; Reference 29 and Reference 30). The Monongahela River has been classified by the state of West Virginia as a warm water fishery and is stocked with fish by the state for recreational fishing. The water pool area by the site is fished. A water pool There were 26 bass tournaments held in the Monongahela River by the site. (Reference 12; Reference 28; Reference 29 and Reference 30).

Actual Human Food Chain Contamination

Actual contamination of this fishery has been demonstrated with aqueous and sediment sample results from the March 1999 SI. Each aqueous and sediment sample collected from this fishery that contains a hazardous substance with a bioaccumulation potential factor value of 500 or greater and meeting the criteria for an observed release is listed below (Reference 1, p. 51620).

Level I Concentrations

No Level I concentrations have been established within this fishery.

Most Distant Level II Sample:

Sampling of the fishery in March 1999 detected several PAHs at observed release concentrations attributable to sources at the site. Benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene and indeno(1,2,3-cd)pyrene were found at observed release concentrations in the unnamed tributary of the Monongahela River and in one downstream location within the fishery. The most downstream Level II samples are SW/SD-09 as shown in Figure 3.

Sample ID: SW/SD-09
Distance from the probable point of entry: 1,595 feet (0.30 miles)
Reference(s): Reference 5, p. 8; Reference 6, p. 14; Figures 3

Level II Fisheries

Identity of Fishery	Extent of the Level II Fishery (Relative to Probable Point of Entry)
Monongahela River	0.30 miles

4.1.3.3.1 Food Chain Individual

Sample locations (SW/SD9) in the Monongahela River fishery are subject to Level II concentrations of benzo(a)pyrene. This water body is a documented fishery (Reference 12, Reference 28, Reference 29 and Reference 30). Therefore, in accordance with Section 4.1.3.3.1 of the HRS Final Rule, the assigned food chain individual factor value is 45 (Reference 1, p. 51620).

Food Chain Individual Factor Value: 45

4.1.3.3.2 Population

4.1.3.3.2.1 Level I Concentrations

Actual contamination of the Monongahela River fishery has been documented using aqueous and sediment sample results only (no tissue samples were cited). Therefore, no fishery within the target distance limit for the site has been evaluated for Level I concentrations.

Sum of Human Food Chain Population Values: 0

Level I Concentrations Factor Value: 0

4.1.3.3.2.2 Level II Concentrations

Level II concentrations of several PAHs and metals have been documented in the Monongahela River fishery (Reference 12; Reference 15; Reference 16; Reference 28; Reference 29; Reference 30 and Reference 38). Although production data are not available for this water body, fishing for consumption has been observed in the Monongahela River (Reference 12; Reference 28; Reference 29 and Reference 30). Fishery production in this area of actual contamination is therefore greater than zero, and the minimum production value is assigned. The human food chain population value is obtained from HRS Table 4-18 (Reference 1, p. 51621).

Identity of Fishery	Annual Production (pounds)	Reference(s)	Human Food Chain Population Value
Monongahela River	>0 to 100	1, p. 51621 12 28 29	0.03

Level II Concentrations Factor Value: 0.03

4.1.3.3.2.3 Potential Human Food Chain Contamination

The surface water target distance limit for the site is delineated on the Reference 4 topographic map. Approximately 15 miles of the Monongahela River are within the target distance limit (see the in-water segments defined in Section 4.1.1 of this HRS documentation record). This river is documented as a fishery (Reference 12; Reference 28; Reference 29 and Reference 30). Because fishery production values for this water body are not available, the minimum annual production value (>0 to 100 pounds) is assigned for the river (Reference 1, p. 51613, Table 4-13 and p. 51621 Table 4-18).

Identity of Fishery	Annual Production (pounds)	Type of Surface Water Body	Average Annual Flow (cfs)	Refs.	Population Value (P_i)	Dilution Weight (D_i)	$P_i \times D_i$
Monongahela River	>0 to 100	Large Stream to River	4,000	1, p. 51621 9 10 12 28 29	0.03	0.001	3×10^{-5}

Sum of ($P_i \times D_i$): 3×10^{-5}
(Sum of $P_i \times D_i$)/10: 3×10^{-6}

Potential Human Food Chain Contamination Factor Value: 3×10^{-6}

A copy of Figure 5 is available at the EPA Headquarters Superfund Docket:

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1235 Jefferson Davis Highway
Arlington, VA 22202

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