

R3RP



FIELD INVESTIGATION TEAM ACTIVITIES AT UNCONTROLLED HAZARDOUS SUBSTANCES FACILITIES — ZONE I

NUS CORPORATION SUPERFUND DIVISION

# FINAL DRAFT HAZARD RANKING SYSTEM REPORT HUDSON RIVER PSYCHIATRIC CENTER POUGHKEEPSIE, DUTCHESS COUNTY, NEW YORK

### PREPARED UNDER

TECHNICAL DIRECTIVE DOCUMENT NO. 02-8611-63
CONTRACT NO. 68-01-7346

FOR THE

ENVIRONMENTAL SERVICES DIVISION
U.S. ENVIRONMENTAL PROTECTION AGENCY

NOVEMBER 4, 1988

NUS CORPORATION
SUPERFUND DIVISION

SUBMITTED BY:

EDWARD L. LEONARD

PROJECT MANAGER

ANTHONY F. CULMONE JR.

SITE MANAGER

REVIEWED/APPROVED BY:

RONALD M. NAMAN

FIT OFFICE MANAGER

### CONTENTS

### Section

- 1. Hazard Ranking System Report Executive Summary
- 2. Documentation Records for Hazard Ranking System
- 3. Hazard Ranking System Scoring Forms
- 4. Bibliography of Information Sources

# SECTION 1 HAZARD RANKING SYSTEM REPORT EXECUTIVE SUMMARY



02-8611-63-HR Rev. No. 0

### POTENTIAL HAZARDOUS WASTE SITE HAZARD RANKING SYSTEM REPORT EXECUTIVE SUMMARY

Address	TDD Number	
Dutchess Co., NY	02-8611-63	
Route 9, Poughkeepsie,		
Site Name	EPA Site ID Number	
Psychiatric Center	NYD980779490	
Hudson River		

### SITE DESCRIPTION

The Hudson River Psychiatric Center (HRPC) is located in the Hudson River Valley just north of the urbanized community of Poughkeepsie, Dutchess County, New York. HRPC has six inactive landfill sites, approximately 50 acres in aggregate size, that were used between 1950 and 1979 by the Town of Poughkeepsie. HRPC disposed of institutional wastes on site for approximately 100 years. HRPC is owned by the State of New York and occupies approximately 740 acres.

There are no records of any hazardous wastes ever having been disposed of at any of these sites. Each site is located primarily in lowlands with streams running through or along disposal areas 1, 2, 5, and 6. The two unnamed streams are tributaries of the Hudson River. The Municipality of Poughkeepsie and Town of Lloyd have surface water intakes nearby in the Hudson River, for the public water supply. Also, there are a number of nonmunicipal community and private wells used in the area.

NUS Corp. Region 2 FIT conducted a site inspection at the HRPC on February 26, 1987. During the site inspection eight surface water samples were collected along with corresponding sediment samples and one leachate sample. Analytical results indicate the presence of a polychlorinated biphenyl (PCB), pesticides, polynuclear aromatic hydrocarbons (PAHs), cadmium, and silver.

HAZARD RANKING SCORE:  $S_{M}=40.74$  ( $S_{gw}=39.37$   $S_{sw}=58.46$   $S_{a}=0$ )  $S_{FE}=$  Not Scored  $S_{DC}=50.00$ 

Prepared by:	Anthony F. Culmone Jr.		8/28/88	
	of NUS Corporation	on		

# SECTION 2 DOCUMENTATION RECORDS FOR HAZARD RANKING SYSTEM

### FIT QUALITY ASSURANCE TEAM

### DOCUMENTATION RECORDS

### FOR

### HAZARD RANKING SYSTEM

INSTRUCTIONS:

As briefly as possible summarize the information you used to assign the score for each factor (e.g., "Waste quantity = 4,230 drums plus 800 cubic yards of sludges"). The source of information should be provided for each entry and should be a bibliographic-type reference. Include the location of the document.

FACILITY NAME: Hudson River Psychiatric Center

LOCATION: Route 9 Poughkeepsie, Dutchess Co., New York

DATE SCORED: 08/23/88

PERSONSCORING: Anthony F.Culmone Jr.

PRIMARY SOURCE(S) OF INFORMATION (e.g., EPA region, state, FIT, etc.):

Primary sources of information are found in the Hudson River Psychiatric Center Site Inspection Report, TDD No. 02-8611-63.

### FACTORS NOT SCORED DUE TO INSUFFICIENT INFORMATION:

None.

### COMMENTS OR QUALIFICATIONS:

The air route was scored zero because no readings above background were noted on the OVA flame ionization detector or the HNu photoionization detector during the site inspection on 2/26/87. The fire and explosion route was not scored as there were no readings above background on the air monitoring instruments, and the disposal areas are covered. There is no past record of problems at this site, and the current conditions indicate that there is no present hazard.

### GROUNDWATER ROUTE

### 1 OBSERVED RELEASE

Contaminants detected (5 maximum):

Not Applicable

Rationale for attributing the contaminants to the facility:

No groundwater samples were collected during the site inspection conducted on 2/26/87; therefore, an observed release cannot be scored.

Ref. No. 1

\* \* \*

### 2 ROUTE CHARACTERISTICS

### Depth to Aquifer of Concern

Name/description of aquifer(s) of concern:

The aquifer of concern is the Hudson River Formation, which is the most extensive bedrock formation in Dutchess County. Yields average 16 gallons per minute (gpm). The water is moderately soft and fairly low in dissolved solids, but hydrogen sulfide was reported in some wells. The Hudson River Formation is composed of shale or slate, chiefly gray or black but locally red, purple, and green. Glacial till is the predominant unconsolidated deposit. Glacial till, derived from the area bedrock, is composed largely of clay. Additional small areas of unconsolidated deposits exist near the site. Lacustrine deposits composed of clay and silt act as a confining bed where underlain by permeable deposits. Sand and gravel may be found to be irregularly interbedded and interlensing in the region. The sand and gravel deposits are the most productive source of groundwater in the county, though restricted in areal extent to portions of main stream valleys. Since there is no continuous confining layer, it is assumed that the unconsolidated deposits and the bedrock aquifer are hydraulically connected.

Ref. Nos. 3, 4

Depth(s) from the ground surface to the highest seasonal level of the saturated zone water table(s) of the aquifer of concern:

The closest well, Well No. Du 468, is located approximately 0.38 mi. southeast of disposal area No. 6. This well is not used for potable purposes. The depth to groundwater in this well is 15 feet. Since the immediate depth to groundwater is unknown, but outcrops of bedrock are present in the area, a depth of 15 feet is assumed.

Ref. Nos. 3, pp. 4-5; 4, p. 71

Depth from the ground surface to the lowest point of waste disposal/storage:

The depth to the lowest point of waste disposal is unknown, so a depth of 6 feet is assumed.

2

### Net Precipitation

Mean annual or seasonal precipitation (list months for seasonal):

44 inches

Ref. No. 2

Mean annual lake or seasonal evaporation (list months for seasonal):

29 inches

Ref. No. 2

Net precipitation (subtract the above figures):

15 inches

Ref. No. 2

### Permeability of Unsaturated Zone

### Soil type in unsaturated zone:

Glacial till composed of clay and compact till is the primary unconsolidated deposit; however, lacustrine deposits and stratified drifts of sand and gravel can be found interlensing throughout the region. All three types of unconsolidated deposits exist locally.

Ref. Nos. 2, 4

### Permeability associated with soil type:

The sand and gravel drifts will be considered for the permeability of the unsaturated zone. The permeability associated with this material is greater than 10<sup>-3</sup> cm/sec. A score of 3 is assigned.

Ref. Nos. 2, 4

### Physical State

Physical state of substances at time of disposal (or at present time for generated gases):

Documentation indicates disposal of institutional and municipal refuse. Analytical data indicate the presence of contaminants; however, the physical state of the waste is unknown. A score of 1 is assigned.

Ref. Nos. 1, 2, 3, 12, 13, 14, 15

### 3 CONTAINMENT

### Containment

### Method(s) of waste or leachate containment evaluated:

The landfills on site were used for municipal and institutional wastes. Analytical data indicate that contaminants are leaching from the disposal areas to the adjacent stream sediments; therefore, it is assumed that there are no known liners or other methods of containment.

Ref. Nos. 1, 13

### Method with highest score:

Unlined landfill scores 3.

Ref. No. 2

### 4 WASTE CHARACTERISTICS

### Toxicity and Persistence

### Compound(s) evaluated:

Sediment samples were used to evaluate the presence of contaminants on site. The following contaminants have leached from the landfill areas into the sediments of the adjacent streams; this represents a partial list of contaminants that may percolate into groundwater.

Aroclor-1260

4,4'-DDE

Fluoranthene

Cadmium

4,4'-DDD

Pyrene

Silver

4,4'-DDT

Chrysene

Ref. No. 13

### Compound with highest score:

Each of the contaminants listed above scores 18.

Ref. Nos. 2, 13, 18

### Hazardous Waste Quantity

Total quantity of hazardous substances at the facility, excluding those with a containment score of 0 (Give a reasonable estimate even if quantity is above maximum):

Documentation indicates the disposal of institutional and municipal refuse. Analytical data reveal the presence of contaminants; however, the total quantity of hazardous waste is unknown.

Ref. Nos. 3, 12, 13, 14, 15

### Basis of estimating and/or computing waste quantity:

Laboratory analyses have detected the presence of the contaminants, but the total quantity of hazardous waste is unknown. A minimum score of 1 is assigned for waste quantity.

Ref. Nos. 2, 3, 12, 13, 14, 15

### 5 TARGETS

### Groundwater Use

### Use(s) of aquifer(s) of concern within a 3-mile radius of the facility:

The Hudson River Formation is the aquifer of concern. The nine nonmunicipal community wells and six identified private wells within a 3-mile radius are located in the aquifer of concern. These wells serve approximately 1042 individuals. There is no alternative municipal water source available. The score is a 3 as per the HRS Manual.

Ref. Nos. 2, 3, 4, 6, 7, 8, 19, 20

### Distance to Nearest Well

Location of nearest well drawing from <u>aquifer of concern</u> or occupied building not served by a public water supply:

The nearest well is the Dutch Garden Apartments well located approximately 0.9 mile northwest of the site.

Ref. Nos. 3, 4, 6, 8, 19, 20

### Distance to above well or building:

Approximately 0.9 mile

Score: 3

Ref. Nos. 2, 3, 4, 7

### Population Served by Groundwater Wells Within a 3-Mile Radius

Identified water-supply well(s) drawing from <u>aquifer(s) of concern</u> within a 3-mile radius and populations served by each:

There are nine nonmunicipal community wells and six identified private residence wells within a 3-mile radius supplying a population of approximately 1042 individuals. These wells are

Wells	Population Served
Dutch Garden Apartments	450
Eleanor Roosevelt	200
Frantoni Villas	50
Green Meadow Trailer Court	44
Hyde Park Terrace Apartments	70
M and D Mobil Home Park	108
Valley Forge Mobil Home Park	60
Willow Tree Park	30
Woodfield Apartments	7
	1019

(As per HRS Manual assume that there are 3.8 residents per each private residence well.)

6 wells x 3.8 persons = 23 persons 1019 + 23 = 1042 persons Ref. Nos. 2, 3, 4, 6, 7, 8, 19, 20

02-8611-63-HR Rev. No. 0

Computation of land area irrigated by supply well(s) drawing from aquifer(s) of concern within a 3-mile radius, and conversion to population (1.5 people per acre).

The Dutchess County Soil Conservation Service indicated that there is no commercial farming and there are no irrigation practices within 3 miles of the site. Ref. No. 11

Total population served by groundwater within a 3-mile radius:

Approximately 1042 persons are served by groundwater within a 3-mile radius. Ref. Nos. 3, 4, 6, 7, 8, 11, 19, 20

### SURFACE WATER ROUTE

### 1 OBSERVED RELEASE

Contaminants detected in surface water at the facility or downhill from it (5 maximum):

The contaminants listed below are a partial list of those detected in sediment samples collected on 2/26/87.

Silver 4,4'-DDT Fluoranthene

Benzo (a) pyrene 4,4'-DDD Pyrene

Cadmium 4,4'-DDE Chrysene

Ref. Nos. 1, 13

### Rationale for attributing the contaminants to the facility:

Cadmium was detected at a concentration 105 ug/kg in sediment sample SED-6. There was no detection of cadmium in the upstream sample, SED-8.

Silver was detected at a concentration of 53 ug/kg in sediment sample SED-3; there were no detected quantities in the upstream sample, SED-4.

4,4'-DDT, 4,4'-DDE, and 4,4'-DDD were detected at concentrations of 170 to 250 ug/kg in sediment sample SED-6. 4,4'-DDT, 4,4'-DDE, and 4,4'-DDD were not detected in upstream sample SED-8. The lab data indicate migration of the contaminants downstream, as detection of the contaminants also occurred in sample SED-5.

Polynuclear aromatic hydrocarbons were detected in sediment sample SED-1, in concentrations ranging from 920 to 9000 ug/kg. PAHs were not detected in the upstream sample, SED-2.

Since the HRPC site is an aggregation of six on-site landfills, only Area No. 6 will be used in the description of the route characteristics. Area No. 6 contains the greatest variety and concentrations of all the contaminants found on site.

Ref. Nos. 2, 13

\*\*\*

### 2 ROUTE CHARACTERISTICS

Facility Slope and Intervening Terrain

### Average slope of facility in percent:

The average slope of the facility measuring from disposal area No. 2 through disposal area No. 6 is as follows:

250ft MSL-110ft MSL = 3.4%

4100ft

Ref. No. 7

### Name/description of nearest downslope surface water:

The nearest downslope surface water are the two unnamed on-site perennial streams.

Ref. No. 7

## Average slope of terrain between facility and above-cited surface ater body in percent:

There is no intervening terrain since the analytical data indicate the presence of contaminants in the stream sediments.

Ref. Nos. 7, 13

### Is the facility located either totally or partically in surface water?

Two unnamed perennial streams are adjacent to or flow through the disposal areas. Ref. Nos. 7, 16

### Is the facility completely surrounded by areas of higher elevation?

The site grades from east to west toward the Hudson River Valley. Ref. Nos. 1, 7

### 1-Year 24-Hour Rainfall in Inches

3.0 inches

Ref. No. 2

### Distance to Nearest Downslope Surface Water

There are two unnamed streams which are tributaries to the Hudson River that traverse the HRPC property either along or through disposal areas 1, 2, 5, and 6. The Hudson River is approximately 0.5 mile from area No. 6, the nearest of the landfill locations.

Ref. Nos. 1, 7

### Physical State of Waste

Documentation indicates disposal of institutional and municipal refuse. Analytical data reveal the presence of contaminants; however, the physical state of the wastes is unknown. A score of 1 is assigned.

Ref. Nos. 1, 2, 3, 12, 13, 14, 15

\* \* \*

### 3 CONTAINMENT

### Containment

### Method(s) of waste or leachate containment evaluated:

The landfill areas have no known diversion systems or other methods of containment.

Ref. Nos. 1, 13

### Method with highest score:

Landfills with no diversion and leachate systems score a 3.

Ref. No. 2

### 4 WASTE CHARACTERISTICS

### Toxicity and Persistence

### Compound(s) evaluated

Sediment samples were used to evaluate the presence of contaminants on site. This is a partial list of the contaminants which the analytical data have indicated to have leached from the disposal areas.

Aroclor-1260 Cadmium

4,4'-DDE 4,4'-DDD

Chrysene Pyrene Fluoranthene

Silver

4,4'-DDT

Ref. No. 13

### Compound with highest score:

Each of the compounds evaluated scores 18.

Ref. Nos. 13, 18

### Hazardous Waste Quantity

Total quantity of hazardous substances at the facility, excluding those with a containment score of 0 (Give a reasonable estimate even if quantity is above maximum):

Documentation indicates the disposal of institutional and municipal refuse. Analytical data reveal the presence of contaminants; however, the total quantity of hazardous waste is unknown.

Ref. Nos. 3, 12, 13, 14, 15

### Basis of estimating and/or computing waste quantity:

Laboratory analyses have detected the presence of contaminants, but the total quantity of hazardous waste is unknown. A minimum score of a 1 is assigned for waste quantity.

Ref. Nos. 2, 3, 13, 14, 15

\* \* \*

### 5 TARGETS

### Surface Water Use

### Use(s) of surface water within 3 miles downstream of the hazardous substance:

The surface water intakes for the municipal water supply of the City and Town of Poughkeepsie are located in the Hudson River approximately 0.7 mile downstream from the site. There is a municipal surface water intake for the Town of Lloyd in the Hudson River approximately 1.5 miles downstream of the site.

Score: 3

Ref. Nos. 2, 7, 8, 17, 19, 20

### Is there tidal influence?

There is no tidal influence of the on-site streams. There is a tidal influence in the Hudson River.

Ref. Nos. 5, 7

### Distance to a Sensitive Environment

Distance to 5-acre (minimum) coastal wetland, if 2 miles or less:

There are no coastal wetlands within 2 miles of the site.

Ref. No. 7

Distance to 5-acre (minimum) fresh-water wetland, if I mile or less:

There are no freshwater wetlands greater than 5 acres in size located within 1 mile of the site.

Score: 0

Ref. Nos. 2, 7

## Distance to critical habitat of an endangered species or national wildlife refuge, if I mile or less:

The distance to critical habitat of an endangered species is greater than 1 mile; however, the Hudson River, 0.5 mile west of the site, is a wintering habitat for the endangered species, the shortnose sturgeon (Acipensor brevirostrum). A commercial fishery for shad (Alosa sapidissima) exists in this region of the Hudson River.

Ref. Nos. 2, 3, 5, 7, 9

### Population Served by Surface Water

Location(s) of water-supply intake(s) within 3 miles (free-flowing bodies) or 1 mile (static water bodies) downstream of the hazardous substance and population served by each intake:

The water intake for the municipal water supply of the City and Town of Poughkeepsie is located approximately 0.7 mile downstream from disposal area No. 6. This intake serves at least 60,000 people. The water intake for the Town of Lloyd is located approximately 1.5 miles downstream from disposal area No. 6. This intake serves approximately 4, 370 individuals.

Score: 35

Ref. Nos. 2, 7, 8, 17, 19

02-8611-63-HR Rev. No. 0

# Computation of land area irrigated by above-cited intake(s) and conversion to population (1.5 people per acre):

The Dutchess County Soil Conservation Service indicated that there is no commercial farming and there are no irrigation practices employed within 3 miles of the site.

Ref. No. 11

### Total population served:

A total population of greater than 64, 370 is served by the Hudson River intakes. Ref. Nos. 6, 8, 17, 19

### Name/description of nearest of above water bodies:

The Hudson River has a tidal influence in this area. The river is approximately 0.5 mile wide with an average depth of 60 ft in this area.

### Distance to above-cited intakes, measured in stream miles.

The Poughkeepsie intake is approximately 0.7 mile downstream of disposal area No. 6 and the intake for the Town of Lloyd is approximately 1.5 miles downstream of disposal area No. 6.

Ref. No. 7, 8, 17, 19

Ref. Nos. 5, 7

### AIR ROUTE

### 1 OBSERVED RELEASE

### Contaminants detected:

There were no readings above background levels on the air monitoring instruments. Ref. No. 1

Date and location of detection of contaminants
Not applicable

Methods used to detect the contaminants: HNu photoionization detector OVA flame ionization detector Ref. No. 1

Rationale for attributing the contaminants to the site:
Not applicable

2 WASTE CHARACTERISTICS

Reactivity and Incompatibility

Most reactive compound:

Not applicable

Most incompatible pair of compounds: Not applicable

### Toxicity

Most toxic compound:

Not applicable

### Hazardous Waste Quantity

Total quantity of hazardous waste:

Not applicable

Basis of estimating and/or computing waste quantity:

Not applicable

3 TARGETS

Population Within 4-Mile Radius

Circle radius used, give population, and indicate how determined:

0 to 4 mi

0 to 1 mi

0 to 1/2 mi

0 to 1/4 mi

Not applicable

### Distance to a Sensitive Environment

Distance to 5-acre (minimum) coastal wetland, if 2 miles or less: Not applicable

Distance to 5-acre (minimum) fresh-water wetland, if 1 mile or less: Not applicable Distance to critical habitat of an endangered species, if 1 mile or less: Not applicable

### Land Use

Distance to commercial/industrial area, if I mile or less: Not applicable

Distance to national or state park, forest, or wildlife reserve, if 2 miles or less: Not applicable

Distance to residential area, if 2 miles or less: Not applicable

Distance to agricultural land in production within past 5 years, if 1 mile or less: Not applicable

Distance to prime agricultural land in production within past 5 years, if 2 miles or less:

Not applicable

Is a historic or landmark site (National Register or Historic Places and National Natural Landmarks) within the view of the site?

Not applicable

### FIRE AND EXPLOSION

### 1 CONTAINMENT

### Hazardous substances present:

The fire and explosion route was not scored as there were no readings above background on the air monitoring instruments, and the disposal areas are covered. There is no record of past problems at this site, and the current conditions indicate that there is no present hazard.

Ref. Nos. 1, 3

Type of containment, if applicable:

Not applicable

### 2 WASTE CHARACTERISTICS

### Direct Evidence

Type of instrument and measurements:

Not applicable

### Ignitability

Compound used:

Not applicable

### Reactivity

Most reactive compound:

Not applicable

### Incompatibility

Most incompatible pair of compounds:

Not applicable

### Hazardous Waste Quantity

Total quantity of hazardous substances at the facility:

Not applicable

Basis of estimating and/or computing waste quantity:

Not applicable

3 TARGETS

Distance to Nearest Population

Not applicable

Distance to Nearest Building

Not applicable

Distance to Sensitive Environment

Distance to wetlands:

Not applicable

Distance to critical habitat:

Not applicable

Land Use

Distance to commercial/industrial area, if 1 mile or less:

Not applicable

02-8611-63-HR Rev. No. 0

Distance to national or state park, forest, or wildlife reserve, if 2 miles or less: Not applicable

Distance to residential area, if 2 miles or less: Not applicable

Distance to agricultural land in production within past 5 years, if 1 mile or less: Not applicable

Distance to prime agricultural land in production within past 5 years, if 2 miles or less:

Not applicable

Is a historic or landmark site (National Register or Historic Places and National Natural Landmarks) within the view of the site?

Not applicable

### Population Within 2-Mile Radius

Not applicable

### Buildings Within 2-Mile Radius

Not applicable

### DIRECT CONTACT

### 1 OBSERVED INCIDENT

### Date, location, and pertinent details of incident:

There are no reported incidents of exposure to contaminants through direct contact.

### \* \* \*

### 2 ACCESSIBILITY

### Describe type of barrier(s):

There are no fences or other means of preventing access to these landfill areas and shallow streams for both the staff and the residents of the HRPC facility.

Score: 3

Ref. Nos. 1, 2

### \* \* \*

### 3 CONTAINMENT

### Type of containment, if applicable:

It is unknown if each of the disposal areas is properly capped; however, analytical data indicate that contaminants have leached from the disposal areas to adjacent stream sediments. Leachate was observed at disposal area No. 1.

Score: 15

Ref. Nos. 1, 2, 3, 13

### \* \* \*

### 4 WASTE CHARACTERISTICS

### Toxicity

### Compounds evaluated:

Analytical data indicated the presence of the contaminants. Below is a partial list of contaminants detected in the sediment samples collected February 26, 1987.

Aroclor-1260	4,4'-DDE	Fluoranthene
Cadmium	4,4'-DDD	Pyrene
Silver	4,4'-DDT	Chrysene

Ref. Nos. 1, 13

### Compound with highest score:

Each of the above elements has a toxicity score of 3.

Ref. Nos. 2, 13, 18

### 5 TARGETS

### Population Within One-Mile Radius

Approximately 5038 people live within 1 mile of the HRPC.

Score: 4

Ref. Nos. 2, 10

### Distance to Critical Habitat (of Endangered Species)

The distance to a critical habitat of an endangered species is greater than 1 mile; however, the Hudson River, 0.5 mile west of the site, is a wintering habitat for the endangered species, the shortnose sturgeon (Acipensor brevirostrum). A commercial fishery for shad (Alosa sapidissima) exists in this region of the Hudson River.

Ref. Nos. 2, 3, 5, 7, 9

# SECTION 3 HAZARD RANKING SYSTEM SCORING FORMS

Facility name: Hudson River Psychiatric Center

Location: Route 9, Poughkeepsie, Dutchess Co., New York

EPA Region: 2

Persons(s) in charge of the facility: Robert Coffey

Branch B, North Rd.

Poughkeepsie, New York

Name of Reviewer: Anthony F. Culmone Jr.

Date: August 22, 1988

General description of the facility:

(For example: landfill, surface impoundment, pile, container; types of hazardous substances; location of the facility; contamination route of major concern; type of information needed for rating; agency action, etc.)

The Hudson River Psychiatric Center (HRPC) is located in the Hudson River Valley just north of the urbanized community of Poughkeepsie, Dutchess County, New York. HRPC has six inactive landfill sites, approximately 50 acres in aggregate size, that were used between 1950 and 1979 by the Town of Poughkeepsie. HRPC disposed of institutional wastes on site for approximately 100 years. HRPC is owned by the State of New York and occupies approximately 740 acres.

There are no records of any hazardous wastes ever having been disposed of at any of these sites. Each site is located primarily in lowlands with streams running through or along disposal areas 1, 2, 5, and 6. The two unnamed streams are tributaries of the Hudson River. The primary concern is contamination of the Hudson River. The municipality of Poughkeepsie and Town of Lloyd have surface water intakes nearby in the Hudson River, for the public water supply. Also, there are a number of non-municipal community and private wells used in the area.

NUS Corp. Region 2 FIT conducted a site inspection at the HRPC on February 26, 1987. During the site inspection eight surface water samples were collected with corresponding sediment samples and one leachate sample. Analytical results of the laboratory analyses indicated the presence of a polychlorinated biphenyl (PCB), pesticides, polynuclear aromatic hydrocarbons (PAHs), cadmium, and silver.

Score:  $S_{M} = 40.74$ 

 $(S_{gw} = 39.37 S_{sw} = 58.46 S_{a} = 0)$ 

SFE = Not Scored  $S_{DC} = 50.00$ 

HRS COVER SHEET

Rati	ng Factor	Multi- plier	Score	Score	Section		
1 065	erved Release	0	45	1	0	45	3.1
If o	bserved release is g	iven a score of 45, priven a score of 0, pr	roceed to line	4.			
2 Roo	ate Characteristics	0 1 2	-	2	6	6	3.2
2	Concern et Precipitation ermeability of the	0 1 (2)	3	1	2	3	
	Unsaturated Zone hysical State	0 1 2		1	Ĭ.	3	
		Total Route Cha	racteristics Sc	ore	12	15	
3 co	ntainment	0 1 2	3	1	3	3	3.3
1	ste Characteristics oxicity/Persistence dazardous Waste Quantity	0 3 6 0 1 2	9 12 15 (18) 3 4 5 6	7 8 1	18	18	3.4
		Total Waste Ch	aracteristics S	core	19	26	
	rgets Ground Water Use Distance to Nearest Well/Population Served	0 1 0 4 12 16 24 30	2 (3) 6 8 10 18 20 32 35 40	3	9 24	9	3.5
a		Total Ta	argets Score		33	49	
	line 1 is 45, multine 1 is 0, multi		5 4 x 5	• 11	22572	57.330	

GROUND WATER ROUTE WORK SHEET

	Rating Factor	As	Cir	nec	One	lue e)		Multi- plier	Score	Max. Score	Ref. (Section
1	Observed Release	0				43		1	45	45	4.1
	If observed release is given a	value o	f 45	o, p	roce	ed to lin	ne 4. e 2.				
2	Route Characteristics							T.			4.2
	Facility Slope and Intervenin	ng 0	1	2	3			1		3	
	1-vr. 24-hr. Rainfall	0	1	2	3			1		3	
	Distance to Nearest Surface	9 0	1	2	3			2		6	
	Physical State	0	1	2	3			1		3	
	Т	otal Rou	te (	Cha	ract	eristics	Score			15	
3	Containment	0	1	2	3			1		3	4.3
4	Waste Characteristics Toxicity/Persistence Hazardous Waste Quantity	0	3 ①	6 2	3	12 15 (	<b>3</b> 0 6 7 8	1	18	18	
		Total Wa	ste	Ch	arac	teristic	Score		19	26	
5	Targets										4.5
	Surface Water Use	0		1	2	03		3	9	9	
	Distance to a Sensitive	0	>	1	2	3		2	0	ь	
	Population Served/Distance to Water Intake Downstream	12	1 3	6 80	6 18 32	20_	0	1	35	40	
ę		т	otal	Ta	rget	s Score	,		144	55	
6	If line 1 is 45, multiply If line 1 is 0, multiply					5			37620	64.350	

SURFACE WATER ROUTE WORK SHEET

	Ai	r Rout	e Work	She	et				
Rating Factor		signer Circle	One)			Multi- plier	Score	Max. Score	Ref. (Section)
Observed Release	0		45			1	0	45	5.1
	Hudson Ri						Febru	ary 2,	1987.
Sampling Protocol: 0	Na flama	lon lor	izate	n c	detecti detect	for			
If line 1 is 0, the Sa If line 1 is 45, then p	= 0. Enter or proceed to lin	e 2	<b>5</b> .					-	
2 Waste Characteristics									5.2
Reactivity and Incompatibility	0	1 2	3			1		3	
Toxicity	- 0	1 2	3		7 8	3		9	
Hazardous Waste Quantity	0	1 2	3 4	5 0	, , 8	1		0	
	Total Was	ste Chi	aracter	stics	Score			20	
3 -									5.3
Targets Population Within	) 0	9 12	15 18			1		30	0.0
4-Mile Radius		24 27	30			1027			
Distance to Sensitive	0	1 2	3			2		6	
Environment Land Use	0	.1 2	3			1		3	
	To	otal Ta	rgets S	core				39	
4 Multiply 1 x 2 x	3							35,100	
5 Divide line 4 by 35.	100 and multi	ply by	100			Sa	•	0	

AIR ROUTE WORK SHEET

	s	s²
Groundwater Route Score (Sgw)	39.37	1550.00
Surface Water Route Score (Ssw)	58.46	3417.57
Air Route Score (Sa)	0	0
$s_{gw}^2 + s_{sw}^2 + s_a^2$		4967.57
$\sqrt{s_{gw}^2 + s_{sw}^2 + s_a^2}$		70,48
$\sqrt{s_{gw}^2 + s_{sw}^2 + s_a^2} / 1.73 = s_M =$		40.74

## WORKSHEET FOR COMPUTING SM

Rating Factor	As	Sig	ned cle	Va One	iue				Multi- plier	Score	Max. Score	Section
Containment	1				3				1		3	7.1
Waste Characteristics												7.2
Direct Evidence	0			3					1		3	
Ignitability	0	1	2	3					1		3	
Reactivity			2	3					1		3	
Hazardous Waste Quantity	0	1	2	3	4	5	6	7	8 1		8	
	Total Was	ste	Cha	rac	teri	stic	s Sc	ore			20	
3 Targets											5	7.3
Distance to Nearest Population	0	1		3	4	5			1		3	
Distance to Nearest Building	0		2	3					1		3	
Distance to Sensitive Environment	0								1		3	
Population Within	0		2		4	5			1		5	
2-Mile Radius Buildings Within 2-Mile Radius	o	1	2	3	4	5			1		5	
	. 1	ota	ı Ta	arge	ts S	Sco	re			T	24	
4 Multiply 1 x 2 x 3											1,44	0

FIRE AND EXPLOSION WORK SHEET

Rating Factor	Assigned Value (Circle One)	Multi- plier	Score	Max. Score	Ref. (Section)
1 Observed incident	<b>3</b> 45	1	0	45	8.1
If line 1 is 45, proceed to the line 1 is 0, proceed to	to line 4 o line 2				
2 Accessibility	0 1 2 3	1	3	3	8.2
3 Containment	0 (13)	1	15	15	8.3
4 Waste Characteristics Toxicity	0 1 2 3	5	15	15	8.4
Targets  Population Within a 1-Mile Radius Distance to a Critical Habitat	0 1 2 3 4 5	•	16	20	8.5
	Total Targets Score		1080		1
6 If line 1 is 45, multip	NV ITI X IAI X [2]				

DIRECT CONTACT WORK SHEET

# SECTION 4 BIBLIOGRAPHY OF INFORMATION SOURCES

### BIBLIOGRAPHY OF INFORMATION SOURCES

	SOURCE	LOCATION
1.	Field Notebook No. 0024, Hudson River Psychiatric Center, TDD No. 02-8611-63, Site Inspection, NUS Corp. Region 2 FIT, Edison, New Jersey, February 26, 1987.	NUS Corp. Edison, NJ
2.	Uncontrolled hazardous waste site ranking system, A user's manual, 40 CFR, Part 300, Appendix A, 1986.	NUS Corp. Edison, NJ
3.	Hudson River Pyschiatric Center, Dutchess County, New York, EA Science and Technology, January 15, 1985. Site Investigation and Hazard Ranking Reports.	NUS Corp. Edison, NJ
4.	Simmons, E.T., I.G. Grossman, and R.C. Heath. Ground-Water Resources of Dutchess County, New York. NYSDEC Water Resources Commission, Bulletin GW-43. Albany, New York, 1961.	NUS Corp. Edison, NJ
5.	Telecon Note: Conversation between K. Hattala, NYSDEC, and A. Culmone, NUS Corp., October 3, 1988.	NUS Corp. Edison, NJ
6.	New York State Atlas of Community Water System Sources, New York State Department of Health, 1982.	NUS Corp. Edison, NJ
7.	Three-Mile Vicinity Map based on U.S. Geological Survey Maps, 15-minute series, "Poughkeepsie Quadrangle," 1957, revised 1982; "Hyde Park Quadrangle," 1963, revised 1980; "Pleasant Valley Quadrangle," 1957, revised 1981; and "Salt Point Quadrangle," 1963.	NUS Corp. Edison, NJ NUS Corp. Edison, NJ
8.	Telecon Note: Conversation between F. Andros, Town of Poughkeepsie Water Dept., and P. Morton, NUS Corp., January 26, 1987.	NUS Corp. Edison, NJ
9.	U.S. Fish and Wildlife Service List of Endangered and Threatened Wildlife and Plants, January 9, 1985.	NUS Corp. Edison, NJ
10.	General Sciences Corporation, Graphical Exposure Modeling Systems (GEMS). Landover, Maryland, 1986.	NUS Corp. Edison, NJ
11.	Telecon Note: Conversation between B. Dibble, Dutchess County Soil Conservation Service, and A. Culmone, NUS Corp., October 21, 1988.	NUS Corp. Edison, NJ

## BIBLIOGRAPHY OF INFORMATION SOURCES HRS MODEL

	SOURCE	LOCATION
12.	NYSDEC, Division of Solid and Hazardous Waste, Inactive Hazardous Waste Disposal Site Report, October 1983.	NUS Corp. Edison, NJ
13.	U.S. EPA Contract Laboratory Program, Versar, Inc., Organics Analyses, and Century Labs, Inc., Inorganics Analyses, Case No. 6889, Laboratory Analysis from NUS Region 2 FIT Site Inspection conducted on February 26, 1987.	NUS Corp. Edison, NJ
14.	Telecon Note: Conversation between R. Coffey, Hudson River Psychiatric Center, and J. Mayo, NUS Corp., November 6, 1986.	NUS Corp. Edison, NJ
15.	Telecon Note: Conversation between R. Coffey, Hudson River Psychiatric Center, and P. Morton, NUS Corp., March 17, 1987.	NUS Corp. Edison, NJ
16.	Flood Insurance Rate Map for the Town of Poughkeepsie, New York, Panel No. 361142-0005-A, November 15, 1978.	NUS Corp. Edison, NJ
17.	Telecon Note: Conversation between J. Jankiewitz, Town of Lloyd Water Dept., and A. Culmone, NUS Corp., August 17, 1988.	NUS Corp. Edison, NJ
18.	Sax, N.I. and R.J. Lewis, Sr. Hazardous chemicals desk reference. New York: Van Nostrand Reinhold Company Inc., 1987.	NUS Corp. Edison, NJ
19.	Telecon Note: Conversation between F. Andros, Poughkeepsie Water Dept., and A. Culmone, NUS Corp., August 18, 1988.	NUS Corp. Edison, NJ
20.	Telecon Note: Conversation between B. O'Neil, Hyde Park Water Co., and A. Culmone, NUS Corp., August 18, 1988.	NUS Corp. Edison, NJ