ENGINEERING INVESTIGATIONS AT INACTIVE HAZARDOUS WASTE SITES

PHASE I INVESTIGATION

Hanna Furnace — Site No. 915029

City of Buffalo — Erie County

Date: January 1986

Prepared for:

New York State Department of Environmental Conservation

50 Wolf Road, Albany, New York 12233

Henry G. Williams, *Commissioner*

Division of Solid and Hazardous Waste

Norman H. Nosenchuck, P.E., *Director*

By:

ENGINEERING-SCIENCE

In Association With

DAMES & MOORE

ENGINEERING INVESTIGATIONS AT INACTIVE HAZARDOUS WASTE SITES IN THE STATE OF NEW YORK PHASE I INVESTIGATIONS

HANNA FURNACE

NYS SITE NUMBER 915029

CITY OF BUFFALO

ERIE COUNTY

NEW YORK STATE

Prepared For

DIVISION OF SOLID AND HAZARDOUS WASTE
NEW YORK STATE DEPARTMENT OF
ENVIRONMENTAL CONSERVATION
50 WOLF ROAD
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DATE OF SUBMITTAL: JANUARY, 1986

HANNA FURNACE

TABLE OF CONTENTS

SECTION I

EXECUTIVE SUMMARY

HANNA FURNACE

This report, prepared for the New York State Department of Environmental Conservation (NYSDEC), presents the results of the Phase I investigation for the Hanna Furnace Site (NYS Site Number 915029, EPA Site Number D002103844), located in the City of Buffalo, Erie County, New York (see Figure I-1).

SITE BACKGROUND

The site was owned by Hanna Furnace Corporation, a subsidiary of National Steel Corporation, from 1902 to 1982. In July 1983, the site was purchased by Jordan Foster Company, who presently conducts salvage operations at the site. A site plan is presented in Figure I-2.

During the period 1930 to 1982, Hanna Furnace generated as waste approximately 7,200 tons/yr of dry flue ash, 10,800 tons/yr of flue ash filter cake, and 5,000 tons/yr of plant debris, including soil, brick and scrap metal. Most of the 214,000 tons/yr of plant-generated slag was transported off-site (NYSDEC, Hazardous Waste Survey, 1976). Based on facility discharge monitoring reports for 1980 to 1981, it is suspected that phenol and cyanide may be present in the flue ash. No groundwater samples have been collected at the site. Analysis of soil samples from borings adjacent to the landfill indicated low concentration of heavy metals which were not significantly above background concentrations (USGS Data, 1983). Furthermore, phenols and cyanides were detected in the effluent of treated filter cake filtrate discharged to the Union Ship Canal (NYSDEC, 1980-81). HNu meter readings taken during the ES/D&M site inspection did not detect volatile organics at levels above 1 ppm.

ASSESSMENT

In an attempt to quantify the risk associated with this site, the Hazard Ranking Scoring system (HRS) was applied as currently being used by the New York State DEC to evaluate abandoned hazardous waste sites in New York State. This system takes into account the types of wastes at the site, receptors, and transport routes to apply a numerical ranking of the site. As stated in 40 CFR Subpart H Section 300.81, the HRS scoring system was developed to be used in evaluating the relative potential of uncontrolled hazardous substance disposal facilities to cause health or safety problems or ecological or environmental damage. It is assumed by the EPA that a uniform application of the ranking system in each state will permit EPA to identify those releases of hazardous substances that pose the greatest hazard to humans or the environment.

Under the HRS, three numerical scores are computed for each site, to express the relative risk or danger from the site, taking into account the population at risk, the potential for contamination of drinking water supplies, for direct human contact, and for destruction of sensitive ecological systems and other appropriate factors. The three scores are:

- S_M reflects the potential for harm to humans or the environment from migration of a hazardous substance away from the facility by routes involving groundwater, surface water or air. It is a composite of separate scores for each of the three routes (S_{GW} = groundwater route score, S_{SW} = surface water route score, and S_A = air route score).

- S_{FE} reflects the potential for harm from substances that can explode or cause fires.

- S_{DC} reflects the potential for harm from direct contact with hazardous substances at the facility (i.e., no migration need be involved).

The preliminary HRS score was:

S_M	=	8.73	S_A	=	0
S_{GW}	=	4.08	S_{FE}	=	0
S_{SW}	=	14.55	S_{DC}	=	50.0

These scores reflect the permeable nature of the natural site soils, the proximity to Union Canal, and the potentially toxic and persistent character of the waste.

RECOMMENDATIONS

The following are recommendations for completion of Phase II:

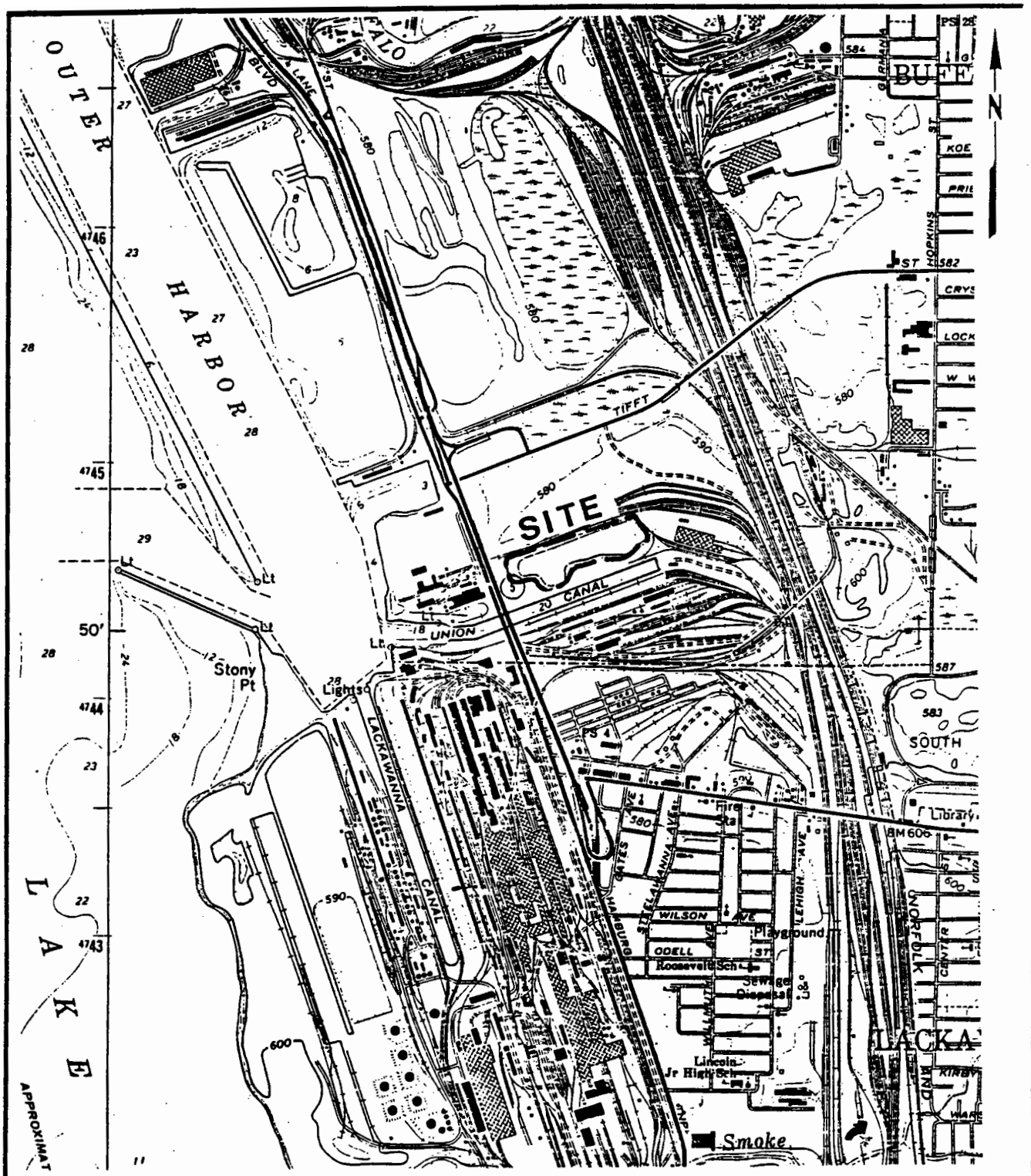
- Collection of waste samples including five samples from the landfill and ten samples from the waste piles. Analyses to include phenols, cyanide and heavy metals (ICPES).

- Groundwater monitoring system consisting of one upgradient and four downgradient wells in the vicinity of the flue ash landfill.

- Surface water and sediment analysis of the on-site pond and Union Ship Canal to determine phenols, cyanides, and heavy metal concentrations.

- Topographic survey to estimate volume of wastes on-site.

The estimated man-hour requirements to complete Phase II are 627, while the estimated cost is $45,573.



LATITUDE: 42°50'15"
LONGITUDE: 78°50'59"

REFERENCE: U.S.G.S. 7,5' Topographic Map
Buffalo SE, NY (1965) Quadrangle

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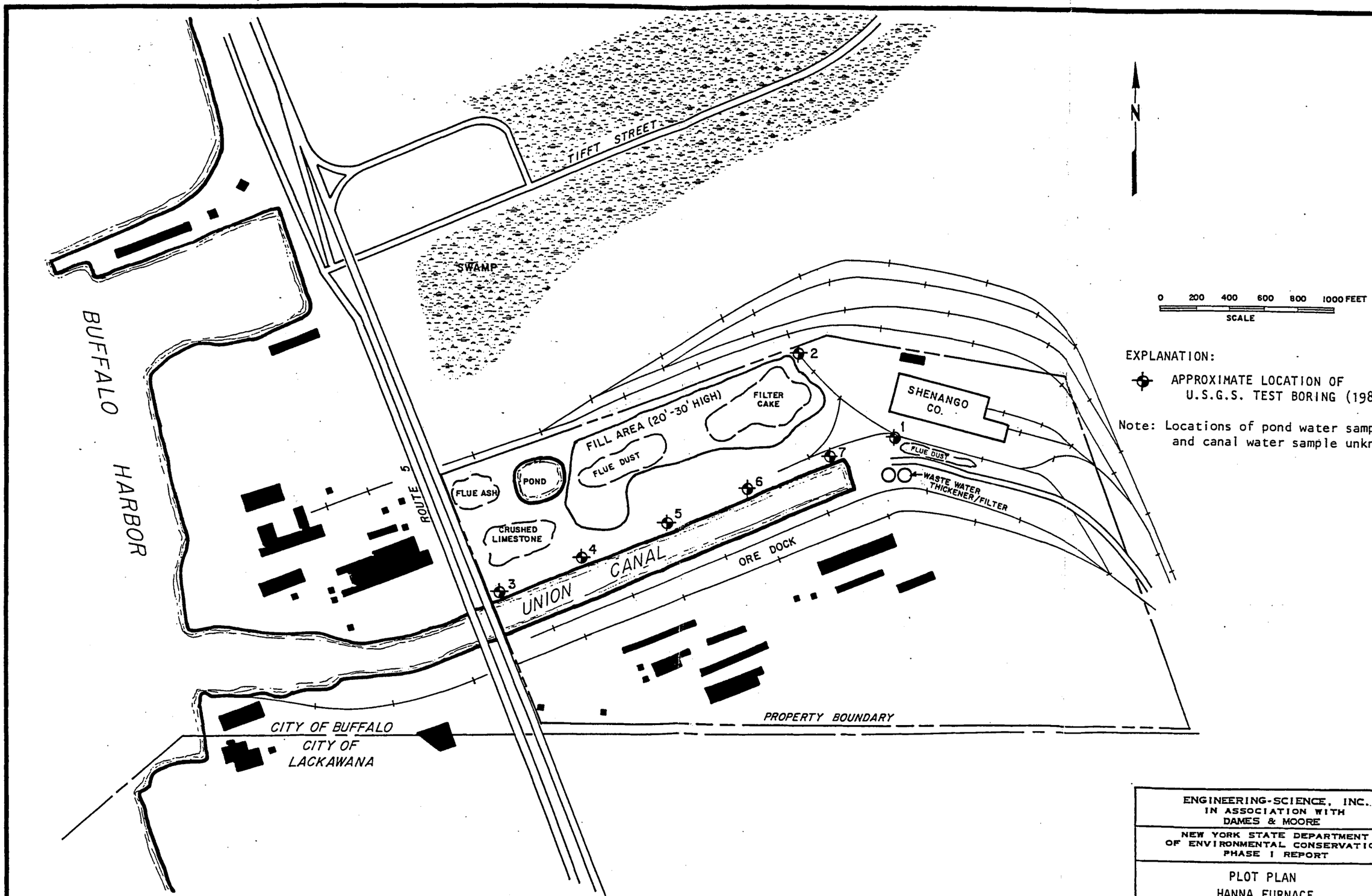
SITE LOCATION MAP
HANNA FURNACE

FIGURE I-1



REFERENCE: U.S.G.S. 7.5' Topographic Map, Buffalo SE. NY (1965) Quadrangle

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PLOT PLAN
HANNA FURNACE

FIGURE I-2

SECTION II
PURPOSE

The purpose of the Phase I investigation at the Hanna Furnace site was to assess the hazard to the environment caused by the present condition of the site. This assessment is based on the Hazard Ranking System, which involves the compilation and rating of numerous geological, toxicological, environmental, chemical, and demographic factors and the calculation of an HRS score. Details of HRS implementation are included in Section V. During the initial portion of the investigation, available data and records, combined with information collected from a site inspection, were reviewed and evaluated. The investigation at this site focused on the disposal of flue ash, flue ash filter cake, slag and general plant debris. Based on this initial evaluation of the Hanna Furnace site, a Phase II Work Plan has been prepared for collecting any additional data needed to complete the HRS score. In addition, a cost estimate for the recommended Phase II work is provided.

SECTION III
SCOPE OF WORK

The scope of work for the New York State Inactive Site Investigation Program (Phase I) was to collect and review all available information necessary for the documentation and preparation of a Hazard Ranking System score and a Phase II work plan and cost estimate if required. The work activities performed included data collection and review, a site inspection, and interviews with knowledgeable individuals of past and present disposal activities at the site.

The sources contacted during this Phase I investigation included government agencies (federal, state and local), present site owners and operators, and any other individuals that may have knowledge of the site, as identified during the performance of the investigation. These sources are listed in Appendix A. The intent of the list is to identify all persons, departments, and/or agencies contacted during the third round of the Phase I investigations even though useful information may not have been collected from each source contacted.

SECTION IV

SITE ASSESSMENT

SITE HISTORY

The Hanna Furnace Corporation, incorporated on 2 November 1900, began conducting blast furnace operations at 1818 Fuhrman Blvd., Buffalo, New York in approximately 1902. Beginning in 1930, waste by-products from the production of pig iron were stockpiled or landfilled on-site. The on-site landfill was used to dispose of 7,200 tons/yr dry flue ash and 10,800 tons/yr flue ash filter cake from the on-site furnaces, and the waste treatment facilities, respectively. The several stockpiles in the general vicinity of the landfill received various materials including dry flue dust and 5,000 tons/yr furnace debris consisting of soil, bricks, lumber and scrap metal (NYSDEC, Hazardous Waste Survey, 1976). During the 1930 to 1982 period, the slag and scrap metal materials were periodically transported off-site for recycling. These disposal practices continued until the Hanna Furnace Corporation shut down their production facilities in October, 1982 (Jolliffe, Frank, G., Hanna Furnace Corp., October 28, 1982).

The Jordan Foster Company purchased the Hanna Furnace Company site in 1983 and is the currrent owner. Jordan Foster presently operates a scrap yard on-site and generates no wastes requiring disposal. According to the Jordan Foster Company, waste piles including flue dust and iron ore are still located on-site (O'Brien, 1985).

SITE TOPOGRAPHY

The Hanna Furnace site is located in the southernmost part of the City of Buffalo, Erie County, New York State, immediately north of the Buffalo/Lackawanna Corporate boundary. The former Hanna Furnace property is divided roughly in half by the Union Canal. The disposal area under study occurs to the north of the Union Canal. Surface runoff drains into this canal or west, eventually into Buffalo Harbor (Lake Erie).

The disposal site was formerly a swampy pond, approximately 15 feet deep. Over several years of usage as a disposal site, most of this swampy pond area has been filled, except for a small pond in the western part of the site. Surface topography at the present time includes mounds of waste material which rise to a maximum of approximately 30 feet above grade.

The Hanna Furnace site is located in the low-lying industrial area of the City of Buffalo. Adjacent to the site to the north is a large rectangular area of Conrail property. To the east are numerous Conrail tracks and to the south, which is in the City of Lackawanna, is city-owned property.

Local Sensitive Environments

Lake Erie and the Niagara River are located along the migration pathways of three endangered species: peregrine falcon, bald eagle, and golden eagle. The Niagara River and its major tributaries may provide a wintering-over area for these birds; an adult eagle was observed on the upper Niagara River in late December, 1984. In addition, these rivers may provide potential breeding areas for these endangered birds, but this has never been observed.

Wetlands also provide habitats for waterfowl. The best wetland in the Upper Niagara area is on Buckhorn Island (north end of Grand Island). Approximately 5 miles west of the site, another important

wetland occurs along the shore of Lake Erie, at Times Beach. Nearby, the Tifft St. Nature Preserve is the largest cattail preserve in Erie County and provides a habitat for the osprey ("bird of interest" to NYSDEC).

The fish population within the Niagara River is part of the larger Lake Erie fish population. The threatened lake sturgeon occurs in Lake Erie and the Niagara River. It is a deep water benthic fish, which may occasionally ingest bottom sediment. It commonly occurs off Sturgeon Pt. (southeast shore of Lake Erie), and is caught occasionally in the Niagara River. Blue pike, a cool water fish, previously existed in Lake Erie, but since the 1970's, it has been classified as legally extinct. There is not a consensus of opinion regarding the reason for its extinction.

The effects of contamination on the fish and wildlife populations are largely unknown. An ongoing toxicological study of the common golden eye duck, which feeds on mollusks, is aimed at assessing the impact of known and suspected contaminants on the health of this population.

SITE HYDROLOGY

This summary of site hydrology is based on USGS Topographic Maps, NYS Museum and Science Service Bedrock Geology Map and Quaternary Map, LaSala (1968), USGS drilling information (1982), and Erie County DEP site profile (1982).

Regional Geology and Hydrology

The site is located in the Erie-Ontario lowlands physiographic province. The bedrock of this region is predominantly limestone, dolostone, and shale. Most of the deep aquifers have regional flow to the south.

In the recent past, most of New York State, including the site, has been repeatedly covered by a series of continental ice sheets. The activity of the glacier widened preexisting valleys and deposited widespread accumulations of till. The melting of ice, ending approximately 12,000 years ago, produced large volumes of meltwater; this water subsequently shaped channels and deposited thick accumulations of stratified, granular sediments.

As glacial ice retreated from the region, meltwater formed lakes in front of the ice margin. The Erie County region is covered by lake sediments; the most recent being from Lake Warren (a larger predecessor to Lake Ontario and Lake Erie). The sediments consist of blanket sands and beach ridges which are occasionally underlain by lacustrine silts and clays (indicating quiet, deeper water deposition).

Granular deposits in this region frequently act as shallow aquifers, whereas lacustrine clays, as well as tills, often inhibit groundwater movement. However, fine-grained, water-lain sediments, such as silts and clays, frequently contain horizontal laminations and sand seams. These internal features facilitate lateral groundwater movement through otherwise low permeability materials.

Site Hydrogeology

Bedrock beneath the site is expected to be the Stafford Creek limestone member of the Skaneateles Formation. The top of rock may occur at approximately 25 feet depth. There are no known wells drawing water from the unit, although the thin Stafford Creek member may contain limited amounts of groundwater in fractures.

Overlying the bedrock surface is a grey lacustrine clay of between 13 and 19 feet thick. This unit probably blankets the site and may be overlain, at 6' to 12' depth, by coarse sand and, occasionally, fine gravel. This sand, in turn, is overlain by debris and flue dust. The depth of filling exceeds 10 feet in some areas.

Groundwater occurs within the fill at a depth of 5 feet. Due to the proximity of Union Canal and the granular nature of the fill, this shallow groundwater is probably hydraulically connected to the canal water. Permeability of the sand and gravel unit has been assumed to be 10^{-3} cm/sec to 10^{-1} cm/sec for HRS scoring.

SITE CONTAMINATION

Waste by-products from the production of pig iron were landfilled on the Hanna Furnace Site from 1930 to 1982. The type and quantity of materials disposed of on-site included 7,200 tons/yr of dry flue ash and 10,800 tons/yr of flue ash filter cake. An estimated 5,000 tons/yr of furnace debris consisting of soil, bricks, lumber and scrap metal were also stockpiled on-site (NYSDEC, Hazardous Waste Survey, 1976). Therefore, for purposes of rating the site, the total quantity of waste potentially containing hazardous constituents is approximately 12,980,000 tons.

In 1979, samples of the flue ash filter cake were analyzed. With the exception of phosphorous pentoxide, all of the measured constituents were non-hazardous (see Table IV-1, Hanna Furnace Corp. Solid Waste Management Facility, Rupley, Bahler, and Blake, Consulting Engineers, 10/8/79). However, phenols and cyanides, were not analyzed for in these samples. Phenols and cyanides are suspected to be present in the flue ash and flue ash filter cake since SPDES permit documents for New York State (NYSDEC Division of Water Resources, DMR files, 1980 - 1981) indicate violations for phenol and cyanide in the effluent of flue ash cake filtrate treatment system (see Figure IV-1 for location of the inactive treatment facility).

Water samples were collected from the pond located between the dry flue ash storage dump area and the flue ash filter cake dump area, and the Union Ship Canal adjacent to these disposal sites. Analysis of these samples detected phenols and cyanides in concentrations exceeding the Water Quality Standard for GA Class waters in New York State (see Table IV-2) (Rupley, Bahler and Blake, 1979).

Soil samples were collected by the USGS on 2 August 1982 from test borings on-site. The sample collection locations are shown in Figure IV-1. The seven samples collected were analyzed for chromium, copper, iron and lead. With the exception of Sample No. 2, which had elevated copper concentrations, none of the soil samples exceeded background concentrations for the metals tested. Further, the results of Sample No. 1 indicated that the sample was not collected on the disposal site and is not indicative of contamination migration at the site (USGS, 1983). The results of sample analyses are presented in Table IV-3.

No groundwater samples have been collected in the landfill area, therefore the existence of groundwater contamination is unknown. The high water table level increases the potential for groundwater contamination.

It is suspected that sediments in the Union Ship Canal may contain concentrations of phenols and cyanides, since the effluent of treated filter cake filtrate discharged to the Canal contained significant phenol and cyanide concentrations (NYSDEC, DMR Files, 1980-81).

HNu meter readings were taken during a recent site inspection (ES and D&M, 3/19/85) and all measurements were less than 1 ppm.

TABLE IV-1

ANALYSIS OF FLUE ASH FILTER CAKE AT HANNA FURNACE SITE

Parameter	% of Dried Total Weight
Total Iron as FeO_3	43.57
Phosphorous Pentoxide	0.076
Manganous Oxide	0.34
Silica	9.96
Alumina	1.81
Calcium Oxide	3.45
Magnesium	2.05
Carbon	30.10
Loss on Ignition	34.17
pH (as received)	8.7
Moisture	8.17

SOURCE: Hanna Furnace Corporation Waste Management Facility, Rupley, Bahler, and Blake Consulting Engineers, 10/18/79

TABLE IV-2

ANALYSIS[a] OF WATER SAMPLES FROM HANNA FURNACE SITE

Parameter	Sample Collection Sites Pond (mg/l)	Union Ship Canal (mg/l)	Water Quality Standards[b]
Cyanides, Chlorine amenable	0.01	0.01	---
Cyanides, Total	0.01	0.02	0.40
Ammonia	0.41	0.13	---
Phenolics	0.004	0.004	0.002
Iron, Soluble	5.20	1.09	0.6

SOURCE: Hanna Furnace Corporation Solid Waste Management Facility, Rupley, Bahler, and Blake, Consulting Engineers, 10/8/79

[a] Samples analyzed by Andrew S. McGreath and Sons, Inc., Analytical and Consulting Chemists.

[b] Effluent standards for Class GA waters in New York State.

TABLE IV-3

ANALYSIS[a] OF SOIL SAMPLES COLLECTED FROM HANNA FURNACE

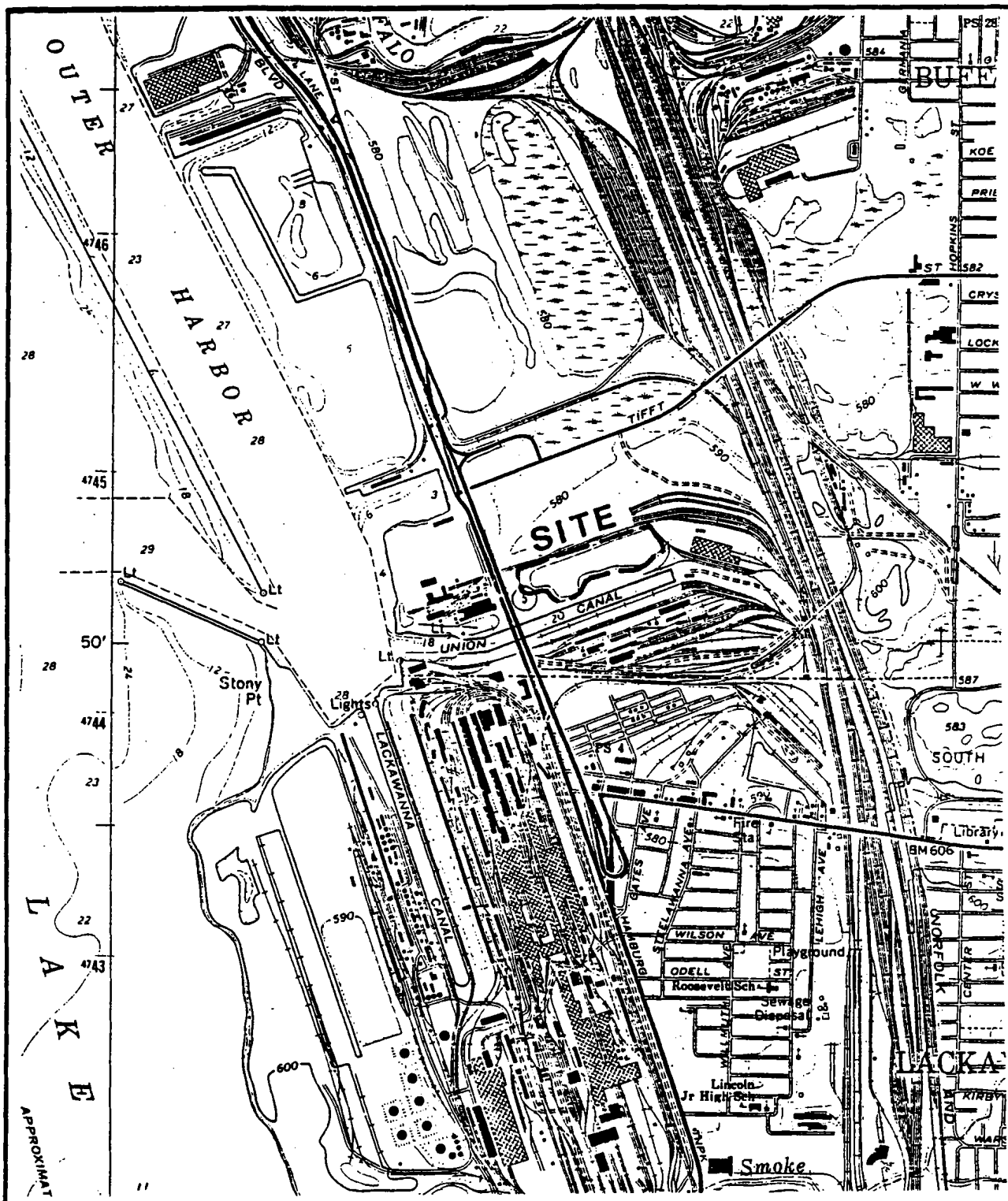
Sample Collection Sites	Parameter (ug/g)[c] Chromium	Copper	Iron	Lead
1	400	170[b]	83,000	40
1 - Duplicate	380	160[b]	71,000	70
2	7	92[b]	21,000	60
3	6	4	8,700	10
4	3	11	3,700	20
5	4	11	4,200	30
6	10	28	6,000	30
7	3	12	50,000	10

SOURCE: USGS, 1983.

[a] Samples analyzed by Andrew McGreath and Sons, Analytical and Consulting Chemists.

[b] Exceeds concentrations of samples collected from undisturbed soils in the Buffalo area.

[c] ug/g = ppb.



REFERENCE: U.S.G.S. 7,5' Topographic Map.
Buffalo SE, NY (1965) Quadrangle

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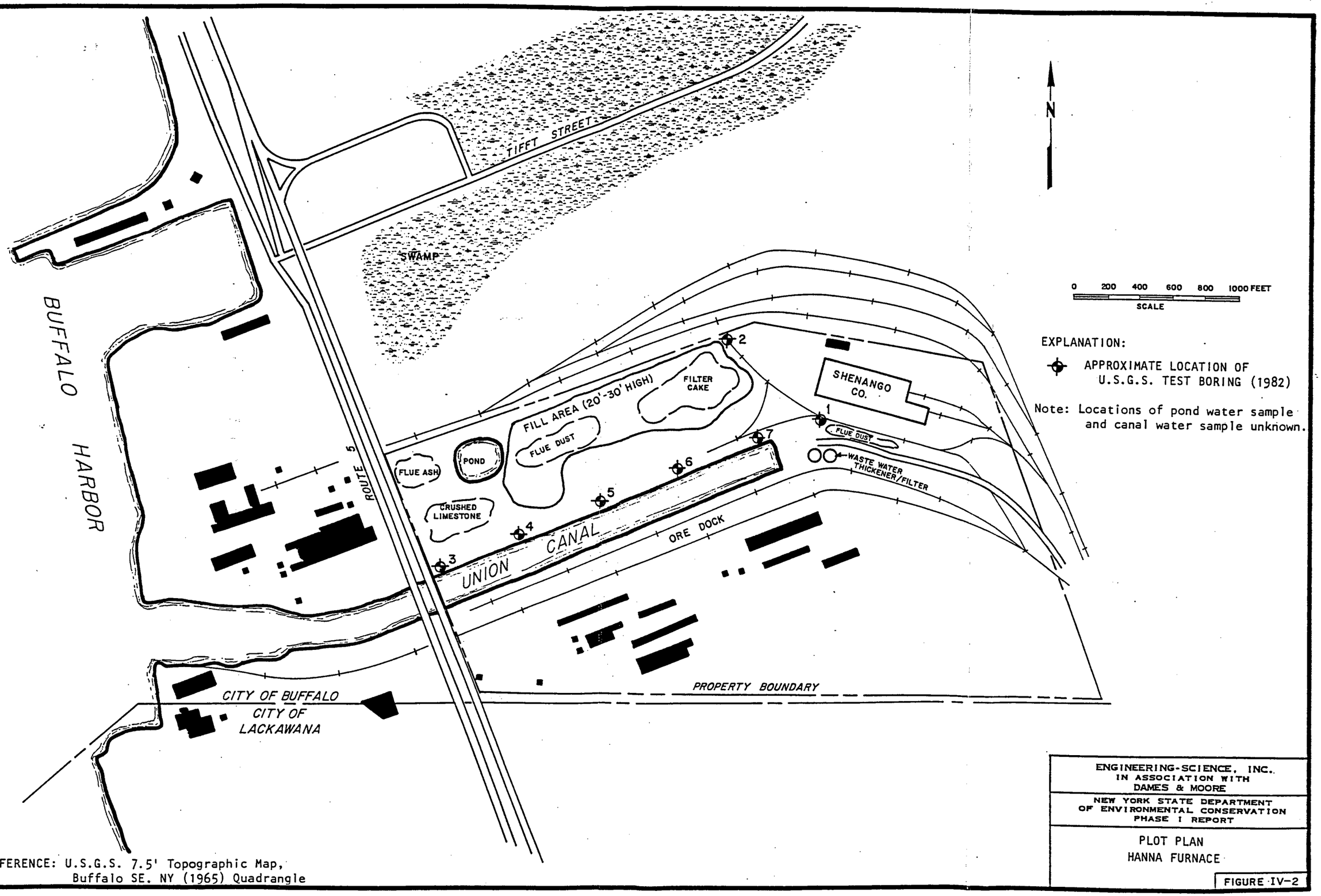
SITE LOCATION MAP
HANNA FURNACE

FIGURE IV-1



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PLOT PLAN
HANNA FURNACE

FIGURE IV-2

PRELIMINARY APPLICATION OF HAZARD RANKING SYSTEM

NARRATIVE SUMMARY

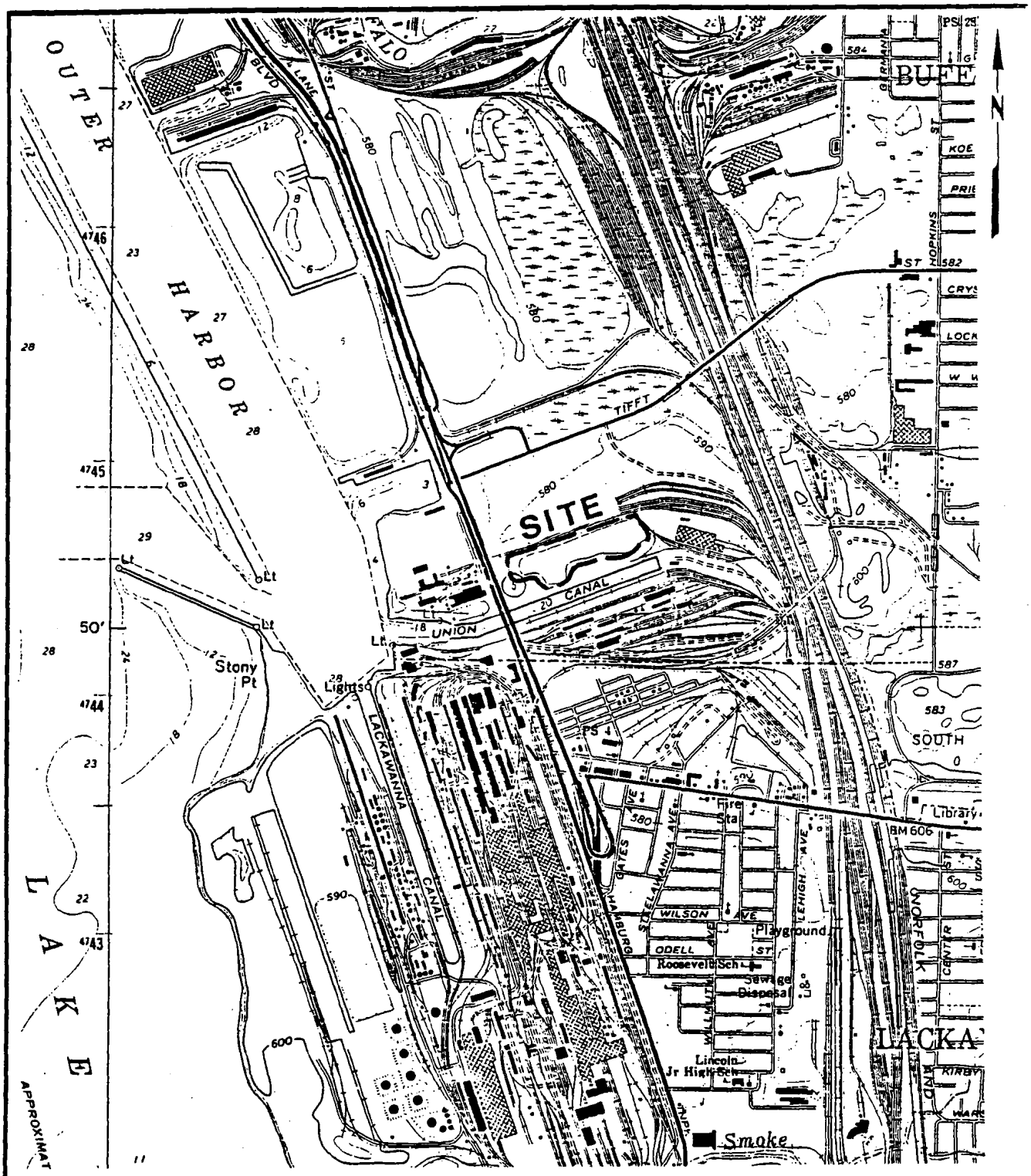
The thirty (30) acre Hanna Furnace Site is located north of the Union Ship Canal within the City of Buffalo, Erie County, New York. Hanna Furnace Corporation owned the site from 1902 to 1983. In July 1983, Jordan Foster Company purchased the site and is the present owner.

From 1930 to 1982, Hanna Furnace Corporation disposed approximately 7,200 tons/yr of dry flue ash, 10,800 tons/yr of flue ash filter cake and 5,000 tons/yr of plant debris including soil, brick and scrap metal on site (NYSDEC, Hazardous Waste Survey, 1976). In addition, some of the 214,300 tons/yr of slag generated by furnace operations was used to construct on-site roads.

In 1979 the constituents of the flue ash filter cake were analyzed. The measured constituents were non-hazardous with the exception of phosphorous pentoxide; however phenol and cyanide were not measured (Rupley, Bahler, and Blake Engineers, 1979). Analysis of water samples collected from a pond adjacent to flue ash fill detected concentrations of phenol and cyanide (Rupley, Bahler and Blake Engineers, 1979). There has been no groundwater monitoring in the landfill area, and therefore the potential for groundwater contamination is unknown.

Soil samples from well borings were analyzed on 2 August 1982 by the USGS. With the exception of one sample which may not have been collected on the disposal site, all of the soil samples had concentrations of chromium, copper, lead and iron which did not exceed background concentrations (USGS, 1983). Figure V-2 shows the sample locations.

HNu meter readings taken during the ES and D&M site inspection did not detect volatile organics in concentrations exceeding 1 ppm.



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SITE LOCATION MAP
HANNA FURNACE

FIGURE ii-1

REFERENCE: U.S.G.S. 7,5' Topographic Map
Buffalo SE, NY (1965) Quadrangle

Facility Name: Hanna Furnace

Location: 1818 Fuhrman Blvd., Buffalo, NY 14124

EPA Region: II

Person(s) in charge of the facility: Current Owner: Foster Jordan Company, Mike O'Brien, Manager

Previous Owner: Hanna Furnace

Bill Mura, Engineer

Name of Reviewer: S. R. Steele, II Date: 4/12/85

General Description of the facility:

From 1930 to 1982, approximately 7,200 tons/yr of dry flue ash, 10,800 tons/yr flue ash filter cake, and 5,000 tons/yr of plant debris including soil, brick, lumber, and scrap metal were disposed in several open dumps on the 30-acre site. In addition, the on-site furnaces generated 214,000 tons/yr of slag, the majority of which was transported off-site. The amount of slag remaining on-site is unknown. The flue ash and filter cake contain non-hazardous iron manganese, aluminum, silica, and calcium oxides and suspected concentrations of phenols and cyanides.

Scores: $S_M = 8.73$ ($S_{gw} = 4.08$ $S_{sw} = 14.55$ $S_a = 0$)

$S_{FE} = 0$

$S_{DC} = 50$

Facility Name: HANNA FURNACE Date: 4-12-85

Ground Water Route Work Sheet					
Rating Factor	Assigned Value (Circle One)	Multi-plier	Score	Max. Score	Ref. (Section)
[1] Observed Release	(0) 45	1	0	45	3.1
If observed release is given a score of 45, proceed to line [4]. If observed release is given a score of 0, proceed to line [2].					
[2] Route Characteristics					3.2
Depth to Aquifer of Concern	0 1 2 (3)	2	6	6	
Net Precipitation	0 1 (2) 3	1	2	3	
Permeability of the Unsaturated Zone	0 1 2 (3)	1	3	3	
Physical State	0 1 (2) 3	1	2	3	
Total Route Characteristics Score			13	15	
[3] Containment	0 1 2 (3)	1	3	3	3.3
[4] Waste Characteristics					3.4
Toxicity/Persistence	0 3 6 9 [12] 15 18	1	12	18	
Hazardous Waste Quantity	0 1 2 3 4 5 6 7 [8]	1	8	8	
Total Waste Characteristics Score			20	26	
[5] Targets					3.5
Ground Water Use	0 (1) 2 3	3	3	9	
Distance to Nearest Well/Population Served	(0) 4 6 8 10 12 16 18 20 24 30 32 35 40	1	0	40	
Total Targets Score			3	49	
[6] If line [1] is 45, multiply [1] x [4] x [5]. If line [1] is 0, multiply [2] x [3] x [4] x [5]			2,340	57,330	
[7] Divide line [6] by 57,330 and multiply by 100			S_{gw} = 4.08		

GROUND WATER ROUTE WORK SHEET

Facility Name: HANNA FURNACE Date: 4-12-85

Surface Water Route Work Sheet					
Rating Factor	Assigned Value (Circle One)	Multi-plier	Score	Max. Score	Ref. (Section)
1 Observed Release	(0) 45	1	0	45	4.1
If observed release is given a value of 45, proceed to line 4. If observed release is given a value of 0, proceed to line 2.					
2 Route Characteristics					4.2
Facility Slope and Intervening Terrain	0 1 2 (3)	1	3	3	
1-yr. 24-hr. Rainfall	0 1 (2) 3	1	2	3	
Distance to Nearest Surface Water	0 1 2 (3)	2	6	6	
Physical State	0 1 (2) 3	1	2	3	
Total Route Characteristics Score			13	15	
3 Containment	0 1 2 (3)	1	3	3	4.3
4 Waste Characteristics					4.4
Toxicity/Persistence	0 3 6 9 (12) 15 18	1	12	18	
Hazardous Waste Quantity	0 1 2 3 4 5 6 7 [8]	1	8	8	
Total Waste Characteristics Score			20	26	
5 Targets					4.5
Surface Water Use	0 1 (2) 3	3	6	9	
Distance to a Sensitive Environment	0 1 2 (3)	2	6	6	
Population Served/ Distance to Water Intake Downstream	(0) 4 6 8 10 12 16 18 20 24 30 32 35 40	1	0	40	
Total Targets Score			12	55	
6 If line 1 is 45, multiply 1 x 4 x 5 If line 1 is 0, multiply 2 x 3 x 4 x 5			9360	64,350	
7 Divide line 6 by 64,350 and multiply by 100			S_{sw} = 14.55		

SURFACE WATER ROUTE WORK SHEET

Facility Name: HANNA FURNACE Date: 4-12-85

Air Route Work Sheet					
Rating Factor	Assigned Value (Circle One)	Multiplier	Score	Max. Score	Ref. (Section)
[1] Observed Release	(0) 45	1	0	45	5.1
Date and Location: HANNA FURNACE / JORDAN FOSTER SITE, 3/19/85					
Sampling Protocol: HNU METER					
If line [1] is 0, the S_a = 0. Enter on line [5]. If line [1] is 45, then proceed to line [2].					
[2] Waste Characteristics					5.2
Reactivity and Incompatibility	0 1 2 3	1		3	
Toxicity	0 1 2 3	3		9	
Hazardous Waste	0 1 2 3 4 5 6 7 8	1		8	
Total Waste Characteristics Score				20	
[3] Targets					5.3
Population Within 4-Mile Radius	0 9 12 15 18 21 24 27 30	1		30	
Distance to Sensitive Environment	0 1 2 3	2		6	
Land Use	0 1 2 3	1		3	
Total Targets Score				39	
[4] Multiply [1] x [2] x [3]				35,100	
[5] Divide line [4] by 35,100 and multiply by 100			S_a = 0		

AIR ROUTE WORK SHEET

Facility Name: HANNA FURNACE Date: 4-12-85

Worksheet for Computing S_M

	S	S^2
Groundwater Route Score (S_{gw})	4.08	16.65
Surface Water Route Score (S_{sw})	14.55	211.70
Air Route Score (S_a)	0	0
$S_{gw}^2 + S_{sw}^2 + S_a^2$		228.35
$\sqrt{S_{gw}^2 + S_{sw}^2 + S_a^2}$		15.11
$\sqrt{S_{gw}^2 + S_{sw}^2 + S_a^2} / 1.73 = S_M =$		8.73

WORK SHEET FOR COMPUTING S_M

Facility Name: HANNA FURNACE Date: 4-12-85

Fire and Explosion Work Sheet					
Rating Factor	Assigned Value (Circle One)	Multi-plier	Score	Max. Score	Ref. (Section)
[1] Containment	1 3	1	0	3	7.1
[2] Waste Characteristics					7.2
Direct Evidence	0 3	1		3	
Ignitability	0 1 2 3	1		3	
Reactivity	0 1 2 3	1		3	
Incompatibility	0 1 2 3	1		3	
Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1		8	
Total Waste Characteristics Score			0	20	
[3] Targets					7.3
Distance to Nearest Population	0 1 2 3 4 5	1		5	
Distance to Nearest Building	0 1 2 3	1		3	
Distance to Sensitive Environment	0 1 2 3	1		3	
Land Use	0 1 2 3	1		3	
Population Within 2-Mile Radius	0 1 2 3 4 5	1		5	
Buildings Within 2-Mile Radius	0 1 2 3 4 5	1		5	
Total Targets Score				24	
[4] Multiply [1] x [2] x [3]			0	1,440	
[5] Divide line [4] by 1,440 and multiply by 100			S_{FE} = 0		

FIRE AND EXPLOSION WORK SHEET

Facility Name: HANNA FURNACE Date: 4-12-85

Direct Contact Work Sheet					
Rating Factor	Assigned Value (Circle One)	Multi-plier	Score	Max. Score	Ref. (Section)
1 Observed Incident	(0) 45	1	0	45	8.1
If line 1 is 45, proceed to line 4 If line 1 is 0, proceed to line 2					
2 Accessibility	0 1 2 (3)	1	3	3	8.2
3 Containment	0 (15)	1	15		8.3
4 Waste Characteristics Toxicity	0 1 2 (3)	5	15	15	8.4
5 Targets					8.5
Population Within 1-Mile Radius	0 1 2 3 (4) 5	4	16	20	
Distance to a Critical Habitat	(0) 1 2 3	4	0	12	
Total Targets Score			16	32	
6 If line 1 is 45, multiply 1 x 4 x 5 If line 1 is 0, multiply 2 x 3 x 4 x 5			10,800	21,600	
7 Divide line 6 by 21,600 and multiply by 100			S_{DC} = 50.0		

DIRECT CONTACT WORK SHEET

DOCUMENTATION RECORDS
FOR
HAZARD RANKING SYSTEM

FACILITY NAME: Hanna Furnace

LOCATION: 1818 Fuhrman Boulevard, Buffalo, NY 14024

GROUNDWATER ROUTE

1. OBSERVED RELEASE

Contaminants detected (5 maximum):

Groundwater not analyzed for contamination (NYSDEC Registry Sheet, 12/83).

Rationale for attributing the contaminants to the facility:

Not applicable.

* * *

2. ROUTE CHARACTERISTICS

Depth to Aquifer of Concern

(1979 Application for Approval to Operate a Solid Waste Management Facility by the Hanna Furnace Corporation; and ECDEP Site Profile Report, 4/82)

Name/description of aquifer(s) in concern:

Shallow perched aquifer.

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

Approximately 5 ft (ECDEP, 1982).

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

Approximately 15 feet, estimated from probable depth of former naturally occuring ponds (ES and D&M site visit, 3/19/85).

Net Precipitation

U.S. Dept. of Commerce, National Climatic Center, (Climatic Atlas of the United States, 1979).

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

Mean annual precipitation is 36".

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

Mean annual lake evaporation is 27".

Net precipitation (subtract the above figures):

9" (36" - 27" = 9").

Permeability of Unsaturated Zone

Soil type in unsaturated zone:

Coarse sands and fine gravels and fill material (USGS logs, Study Draft, 1983).

Permeability associated with soil type

10^{-3} to 10^{-1} cm/sec (Freeze, R.A., and J.A. Cherry, Ground Water, 1979).

Physical State

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

Solid, powder or fine material (i.e., slag and flue dust) (NYSDEC Registry Sheet, 12/83).

3. CONTAINMENT

Containment

Method(s) of waste or leachate containment evaluated:

Landfill and stockpile sites are underlain by a thick clay unit; however, water table levels are near or above the clay layer (USGS Survey, Draft Study, 1983).

Method with highest score:

Uncovered piles and no liner (USGS Survey, Draft Study, 1983).

4. WASTE CHARACTERISTICS

Toxicity and Persistence

Compound(s) evaluated:

Phenols and cyanides are suspected to be in flue ash, based on SPDES permit evaluations which note violations of discharge limits in flue ash filter cake filtrate treated effluent (NYSDEC, Division of Water DMR files 1980 to 1981). Iron was detected in high concentrations in 1983 USGS report.

Compound with highest score:

Suspected phenols (toxicity = 3, persistence = 1) - 12

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):

Slag - 214,000 tons/yr (most removed off-site)
Dry flue ash - 7,200 tons/year
Fly ash filter cake - 10,800 tons/year
General Plant Waste - 5,000 tons/yr

Basis of estimating and/or computing waste quantity:

18,000 tons/yr x 55 years = 990,000 tons - dry flue ash (7,200 tons/yr) and fly ash filter cake (10,800 tons/yr) suspected of containing phenol and cyanide (NYSDEC, Hazardous Waste Survey, 1976).

5. TARGETS

(ECDEP Site Profile Report, 4/82)

Ground Water Use

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

Not used, but usable (NYS Atlas of Community Water System Sources, 1982).

Distance to Nearest Well

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

None within 3 miles (NYS Atlas of Community Water System Sources, 1982).

Distance to above well or building:

Not applicable.

Population Served by Ground Water Wells Within a 3-Mile Radius

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

None within 3 miles (NYS Atlas of Community Water System Sources, 1982).

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):

0.0 (NYS Atlas of Community Water System Sources, 1982).

Total population served by ground water within a 3-mile radius:

0.0 (NYS Atlas of Community Water System Sources, 1982).

SURFACE WATER ROUTE

1. OBSERVED RELEASE

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

The following constituents were present in pond and canal samples in concentrations near the detection limit: iron (soluble), phenolics, ammonia, cyanides (chlorine amenable) (Hanna Corp. Waste Management Report, Rupley, Bahler, and Blake Engineers, 10/8/79).

Rationale for attributing the contaminants to the facility:

Samples collected from pond and nearby Union Canal.

2. ROUTE CHARACTERISTICS

(USGS Topographic Map: Buffalo, SE, NY, 1965, Quadrangle)

Facility Slope and Intervening Terrain

Average slope of facility in percent:

0.0%.

Name/description of nearest downslope surface water:

On-site pond.

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

Less than 1.0%.

Is the facility located either totally or partially in surface water?

Yes. Facility is a filled depression located in a marshy area. At one time, (1965 topo sheet) impounded water was present where landfill is now situated.

Is the facility completely surrounded by areas of higher elevation?

No.

1-Year 24-Hour Rainfall in Inches

2.1" (U.S. Department of Commerce Technical Paper No. 40).

Distance to Nearest Downslope Surface Water

0.0 feet to on-site pond, approximately 100 feet to Union Canal.

Physical State of Waste

Solid (NYSDEC Registry Sheet, 12/83).

3. CONTAINMENT

Containment

Method(s) of waste or leachate containment evaluated:

Flue ash and flue ash filter cake is landfilled in partially filled pond. Landfill not covered and no diversion system present (ES and D&M Site Inpsection, 3/19/85).

Method with highest score:

Uncovered landfill, no diversion system present (ES and D&M Site Inspection, 3/19/85)

4. WASTE CHARACTERISTICS

Toxicity and Persistence

Compound(s) evaluated

Phenol (suspected)
Cyanide (suspected)
Iron (known)

Compound with highest score:

Phenol (toxicity = 3, persistence = 1) - 12

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):

Slag:	214,000 tons/yr	(most removed off-site)
Dry Flue Ash	7,200 tons/yr	
Fly Ash Filter Cake	10,800 tons/yr	
General Plant Waste:	5,000 tons/yr	

Basis of estimating and/or computing waste quantity:

18,000 tons/yr x 55 years = 990,000 tons (18,000 tons/year of dry flue ash and fly ash filter cake, suspected of containing phenol and cyanide) (NYSDEC, Hazardous Waste Survey, 1976).

* * *

5. TARGETS

(USGS Topographic Map: Buffalo SE, NY, 1965 Quandrangle)

Surface Water Use

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

Commercial and industrial shipping, recreational use (ES and D&M Site Visit, 1985).

Is there tidal influence?

No.

Distance to a Sensitive Environment

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

None within 2 miles (western NYS not a coastal area).

Distance to 5-acre (minimum) fresh-water wetland, if 1 mile or less:

Approximately 0.2 mile (NYS Wetlands Maps).

Distance to critical habitat of an endangered species or national wildlife refuge, if 1 mile or less:

None within 1 mile (NYSDEC Region 9, Division of Fish & Wildlife Files).

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:

None within 1 mile (NYS Atlas of Community Water System Sources, 1982).

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

None within 1 mile.

Total population served:

None.

Name/description of nearest of above water bodies:

Not applicable.

Distance to above-cited intakes, measured in stream miles:

Not applicable.

AIR ROUTE

1. OBSERVED RELEASE

Contaminants detected:

No volatile organics detected.

Date and location of detection of contaminants:

Site inspection conducted by ES/D&M, 3/19/85.

Methods used to detect the contaminants:

HNU meter readings were taken and all readings were less than 1 ppm, indicating no air releases

Rationale for attributing the contaminants to the site:

Not applicable.

* * *

2. WASTE CHARACTERISTICS

Reactivity and Incompatibility

Most reactive compound:

No reactive compounds known to exist on-site.

Most incompatible pair of compounds:

No incompatible compounds known to exist on-site.

Toxicity

Most toxic compound:

The dry flue ash and fly ash filter cake disposed on-site potentially contain phenols and cyanide based on discharge monitoring reports from on-site operations. However, HNU meter readings taken during the ES and D&M Site Visit did not indicate the presence of volatile organics.

Hazardous Waste Quantity

Total quantity of hazardous waste:

The quantity of waste that contains hazardous constituents that could impact the air pathway is unknown.

Basis of estimating and/or computing waste quantity:

(See above comment).

* * *

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

67,595 (Complied from 1980 US Census Data).

Distance to a Sensitive Environment

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

None within 2 miles (western NYS not a coastal area).

Distance to 5-acre (minimum) fresh-water wetland, if 1 mile or less:

0.2 mile (NYS Wetlands Maps).

Distance to critical habitat of an endangered species, if 1 mile or less:

None within 1 mile (NYSDEC Region 9, Division of Fish & Wildlife Files).

Land Use

(USGS Topographic Map: Buffalo SE, NY, 1965 Quandrangle)

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

0.0 mile. Site is located in an industrial district.

Distance to national or state park, forest, or wildlife reserve, if 2 miles or less:

Tifft Farms Nature Preserve located 0.2 miles north of the site.

Distance to residential area, if 2 miles or less:

0.75 mile (ECDEP Site Report, 4/82).

Distance to agricultural land in production within past 5 years, if 1 mile or less:

None within 1 mile (Map: "Agricultural Districts" prepared by Erie County DEP, Division of Planning, 11/84).

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

None within 2 miles (Map: "Agricultural Districts" prepared by Erie County DEP, Division of Planning, 11/84).

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

No.

FIRE AND EXPLOSION

1. CONTAINMENT

Hazardous substances present:

No information was discovered during the Phase I study which indicates that a fire and explosion situation existed or presently exists at the site.

Type of containment, if applicable:

Not applicable, see above comment.

* * *

2. WASTE CHARACTERISTICS

Direct Evidence

Type of instrument and measurements:

No measurements to determine the fire and explosion potential were taken on-site.

Ignitability

Compound used:

No ignitable compounds are known to exist on-site.

Reactivity

Most reactive compound:

No reactive compounds are known to exist on-site.

Incompatibility

Most incompatible pair of compounds:

No incompatible compounds are known to exist on-site.

Hazardous Waste Quantity

Total quantity of hazardous substances at the facility:

990,000 tons (18,000 tons/year x 55 years) of dry flue ash and fly ash filter cake, suspected of containing phenol and cyanide were disposed on-site (NYSDEC, Hazardous Waste Survey, 1976).

Basis of estimating and/or computing waste quantity:

The quantity of hazardous waste with the potential for creating a fire and explosion hazard at the site is unknown.

* * *

3. TARGETS

Distance to Nearest Population

0.0 mile, site is located in an industrial area and 0.75 mile from a residential area (USGS Topographic Map: Buffalo SE, NY 1965 Quadrangle).

Distance to Nearest Building

0.0 mile. The Jordan Foster Company has a building located on-site.

Distance to Sensitive Environment

Distance to wetlands:

0.2 mile (NYS Wetlands Maps).

Distance to critical habitat:

None within 1 mile (NYSDEC, Region 9, Department of Fish and Wildlife, 1985).

Land Use

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

0.0 mile. Site is located in an industrial district (ES and D&M Site Inspection, 3/19/85).

Distance to national or state park, forest, or wildlife reserve, if 2 miles or less:

Tifft Farm Nature Preserve is located 0.2 mile north of the site (USGS Topographic Map: Buffalo SE, NY 1965 Quadrangle).

Distance to residential area, if 2 miles or less:

0.75 mile (ECDEP Site Profile Report, 4/82).

Distance to agricultural and in production within past 5 years, if 1 mile or less:

More than 1 mile (Map: "Agricultural Districts" prepared by Erie County DEP, Division of Planning, 11/84).

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

More than 2 miles (Map: "Agricultural Districts" prepared by Erie County DEP, Division of Planning, 11/84).

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

No.

Population with 2-Mile Radius

39,951 (U.S. Census Data, 1980).

Buildings Within 2-Mile Radius

10,513 buildings (USGS Topographic Map: Buffalo SE, NY 1965 Quadrangle).

DIRECT CONTACT

1. OBSERVED INCIDENT

Date, location, and pertinent details of incident:

There is no confirmed instance in which contact with hazardous substances at this site has caused injury, illness or death to humans or domestic or wild animals.

* * *

2. ACCESSIBILITY

Describe type of barrier(s):

Barriers do not completely surround the facility. Vehicle access is restricted by gates that remain locked (ES and D&M Site Inspection, 3/19/85).

* * *

3. CONTAINMENT

Type of containment, if applicable:

Waste stored on-site are accessible to direct contact (ES and D&M Site Inspection, 3/19/85).

* * *

4. WASTE CHARACTERISTICS

Toxicity

Compounds evaluated:

Phenols and Cyanide

Compound with highest score:

Phenols (toxicity = 3).

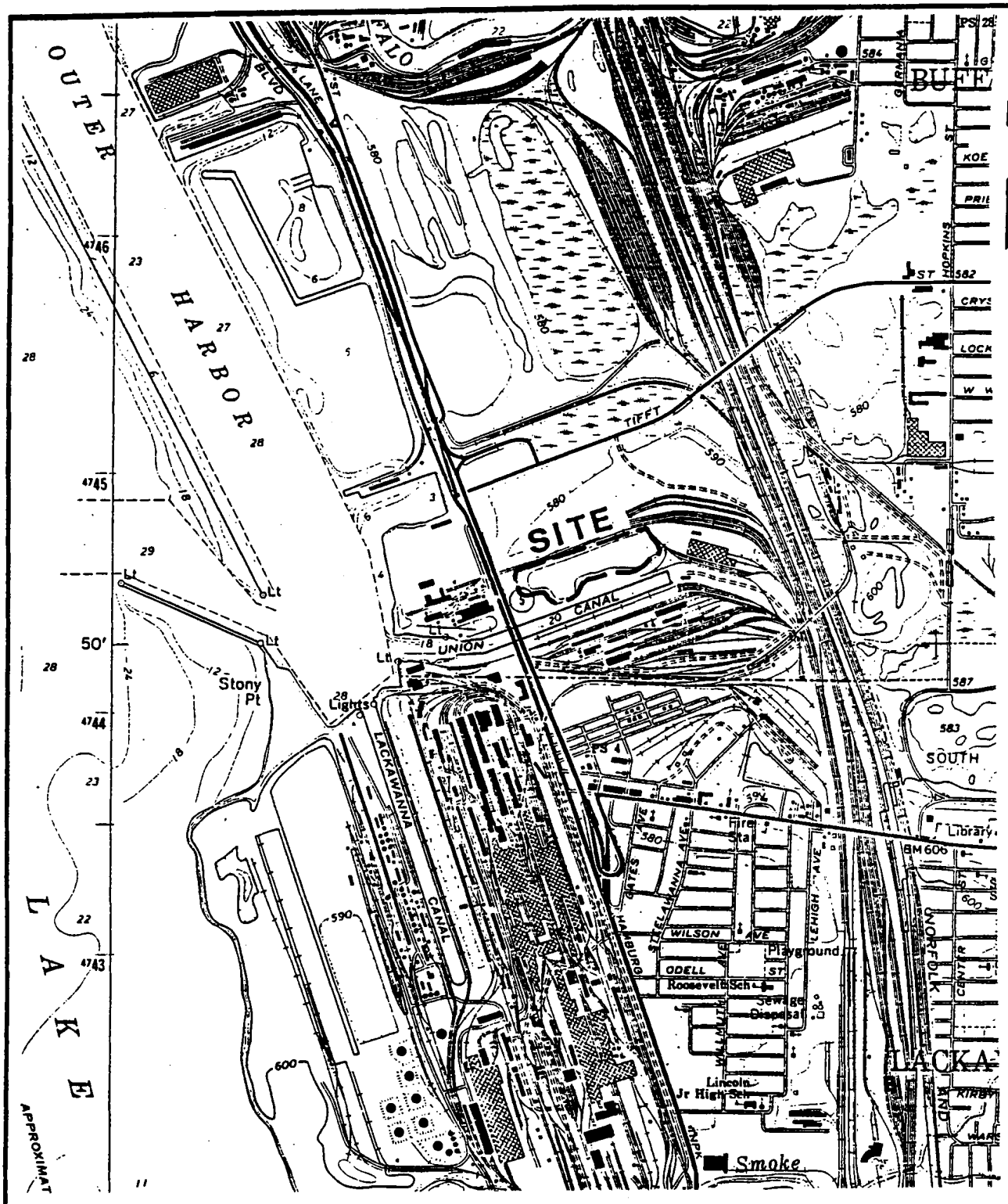
5. TARGETS

Population within one-mile radius

5,641 people (US Census Data, 1980).

Distance to critical habitat (of endangered species)

None within 1 mile (NYSDEC Region 9, Division of Fish and Wildlife, 1985).



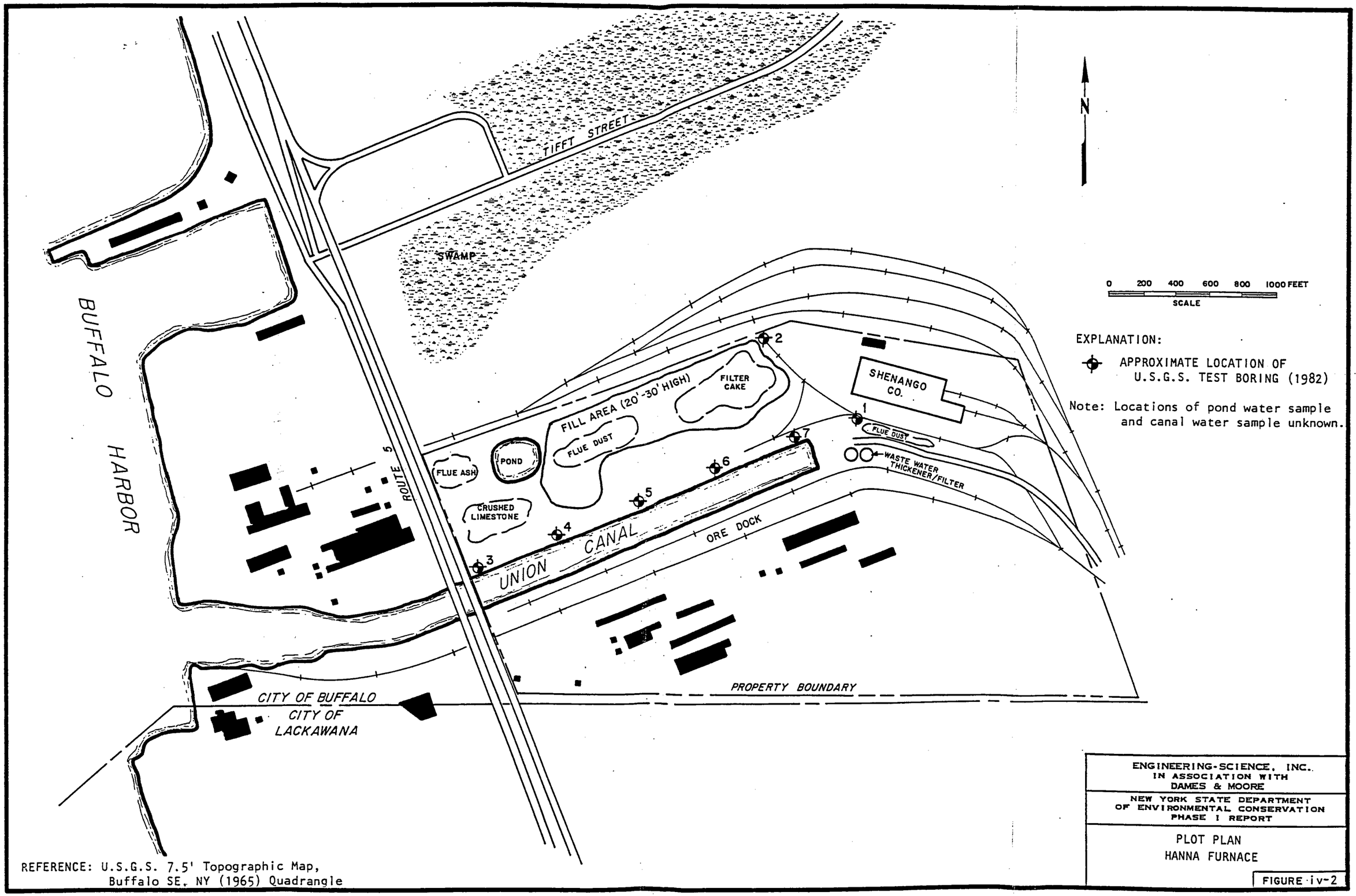
REFERENCE: U.S.G.S. 7,5' Topographic Map
Buffalo SE, NY (1965) Quadrangle

ENGINEERING-SCIENCE, INC.
IN ASSOCIATION WITH
DAMES & MOORE

NEW YORK STATE DEPARTMENT
OF ENVIRONMENTAL CONSERVATION
PHASE I REPORT

SITE LOCATION MAP
HANNA FURNACE

FIGURE iv-1



REFERENCE: U.S.G.S. 7.5' Topographic Map, Buffalo SE, NY (1965) Quadrangle

ENGINEERING-SCIENCE, INC.
IN ASSOCIATION WITH
DAMES & MOORE

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
PHASE I REPORT

PLOT PLAN
HANNA FURNACE

FIGURE iv-2

HRS REFERENCES

1. ES and D&M Site Visit, 3/19/85.

2. Freeze, R. A., and Cherry, J. A., Groundwater, 1985.

3. LaSala, Groundwater Resources of the Erie-Niagara Basin, New York, 1968.

4. NYS Wetlands Maps.

5. NYS Atlas of Community Water System Sources, NYS Department of Health, 1982.

6. NYS Museum and Science Service Bedrock Geology Map, Map and Chart Series, No. 15 (compiled by Rickard, L.V., and Fisher, D.W.).

7. NYSDEC Registry Sheet, 12/83.

8. NYSDEC, Division of Water Resources, DMR Files, 1980-81.

9. NYSDEC, Region 9, Division of Fish and Wildlife Files.

10. US Census Data, 1980.

11. US Department of Commerce. "Climatic Atlas of the United States". 1979.

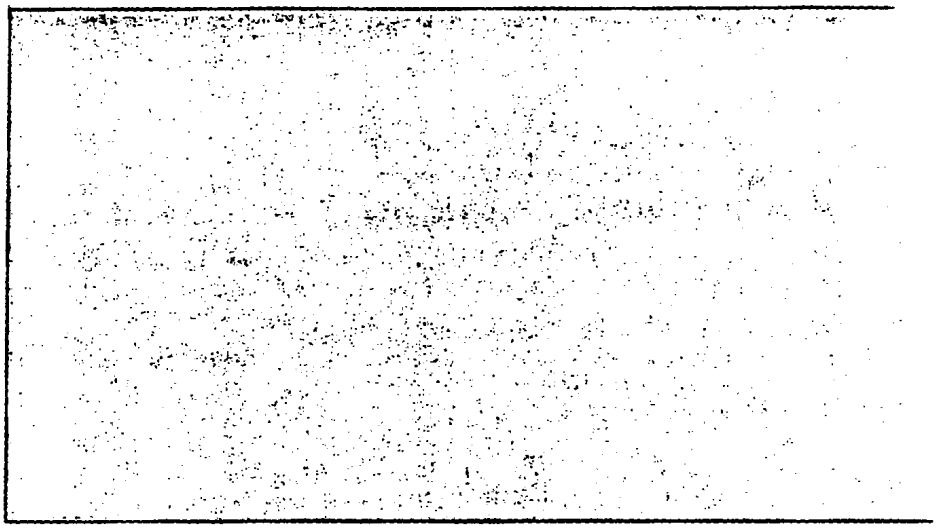
12. US Department of Commerce Paper No. 40. "Rainfall Frequency Atlas of the United States". 1963.

13. USGS Topographic Maps: Buffalo, SE, NY, 1965 Quadrangle.

14. USGS, Draft Report of Preliminary Evaluation of Chemical Migration to the Niagara River from Hazardous Waste Disposal Sites in Erie and Niagara Counties, 1983.

ES AND D&M SITE INSPECTION

Observations made during the ES and D&M Site Inspections are provided on US EPA Forms 2070-12 and 2070-13. Field notes were used to complete these EPA Forms, and are not included herein.



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John A. Cherr

Department of Earth Scien
University of Water
Waterloo, Onta

GROUNDWATER

Prentice-Hall, Inc
Englewood Cliffs, New Jersey 0763

Table 2.2 Range of Values of Hydraulic Conductivity and Permeability

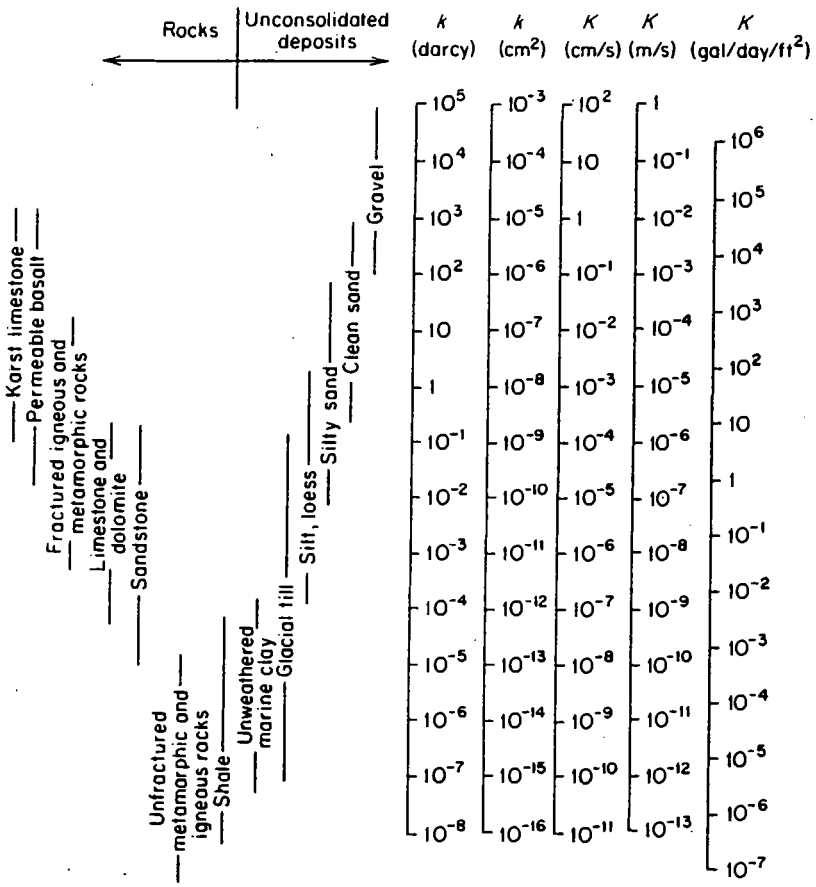


Table 2.3 Conversion Factors for Permeability and Hydraulic Conductivity Units

	Permeability, k*			Hydraulic conductivity, K		
	cm^2	ft^2	darcy	m/s	ft/s	U.S. gal/day/ft^2
cm^2	1	1.08×10^{-3}	1.01×10^{8}	9.80×10^{2}	3.22×10^{3}	1.85×10^{9}
ft^2	9.29×10^{2}	1	9.42×10^{10}	9.11×10^{5}	2.99×10^{6}	1.71×10^{12}
darcy	9.87×10^{-9}	1.06×10^{-11}	1	9.66×10^{-6}	3.17×10^{-5}	1.82×10^{1}
m/s	1.02×10^{-3}	1.10×10^{-6}	1.04×10^{5}	1	3.28	2.12×10^{6}
ft/s	3.11×10^{-4}	3.35×10^{-7}	3.15×10^{4}	3.05×10^{-1}	1	6.46×10^{5}
U.S. gal/day/ft^2	5.42×10^{-10}	5.83×10^{-13}	5.49×10^{-2}	4.72×10^{-7}	1.55×10^{-6}	1

*To obtain k in ft^2, multiply k in cm^2 by 1.08×10^{-3}.

REF 3

GROUND-WATER RESOURCES OF THE ERIE-NIAGARA BASIN, NEW YORK

Prepared for the
Erie-Niagara Basin Regional Water Resources
Planning Board

by

A. M. La Sala, Jr.

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

in cooperation with

THE NEW YORK STATE CONSERVATION DEPARTMENT
DIVISION OF WATER RESOURCES

STATE OF NEW YORK
CONSERVATION DEPARTMENT
WATER RESOURCES COMMISSION

Basin Planning Report ENB-3

1968

COVERTYPE MAP OF WETLAND (Use numerical designators under vegetative community section):

REF-4

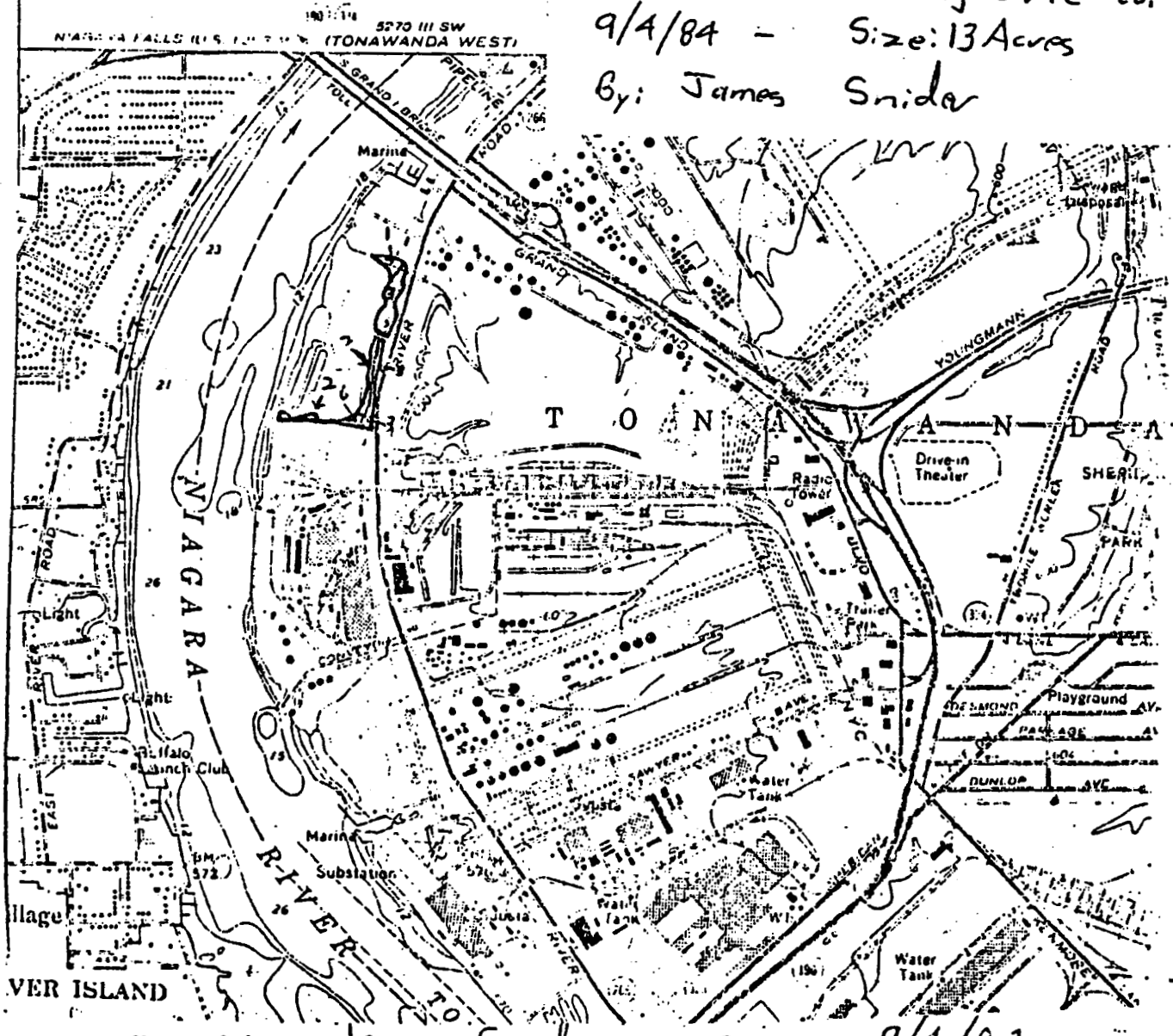
HANNA FURNACE

North

Quadrangle name: Buffalo Northwest

Scale: 1" = 2,000 feet

BW-8 Wetland
Town of Tonawanda, Erie Co.
9/4/84 - Size: 13 Acres
By: James Snider



Mapped by: James Snider Date: 9/4/84

New York State Atlas of Community Water System Sources 1982

NEW YORK STATE DEPARTMENT OF HEALTH

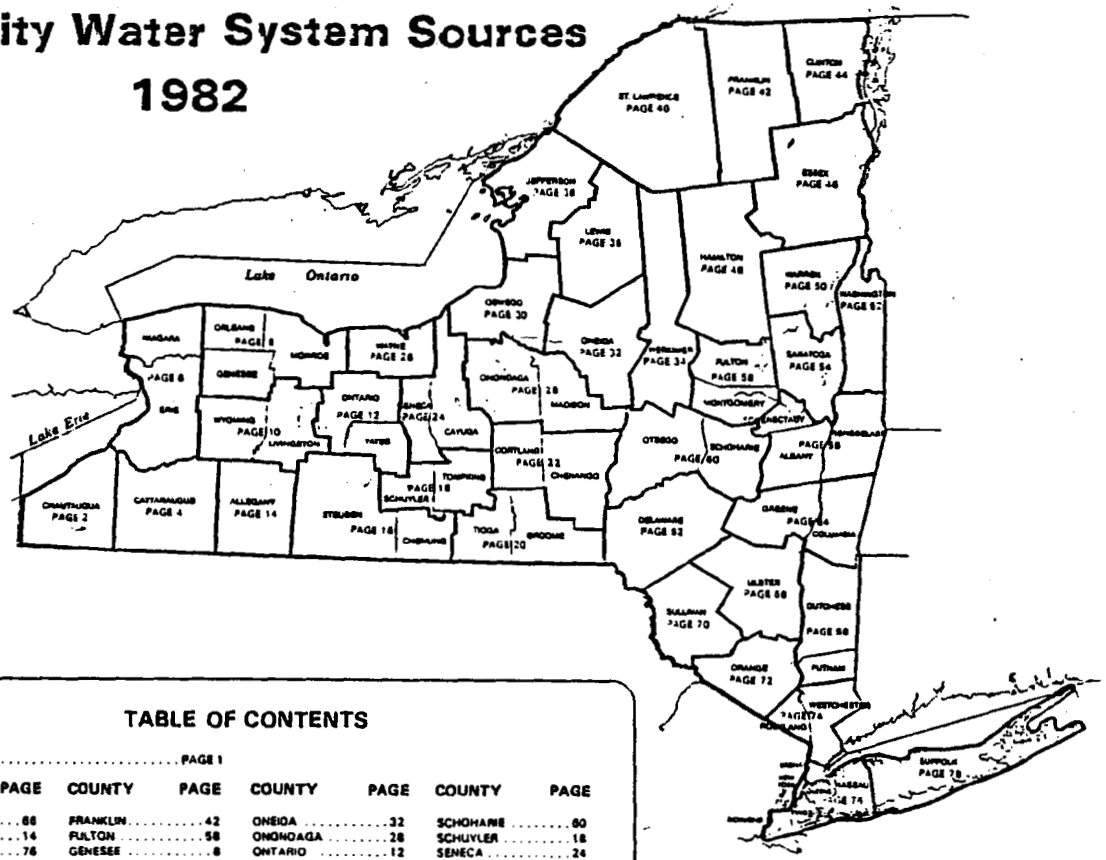


TABLE OF CONTENTS

LEGEND

BOUNDARIES AND PLACES

International
State
County
Town
Indian Reservation
City
Village
Unincorporated Place
Federal Reservation
Built-up Area (Over 25,000 population including any contiguous city or village)

CLASSIFICATION OF POPULATED PLACES

100,000 or more ..... YONKERS
50,000 to 100,000 ..... Levittown
12,500 to 50,000 ..... Poughkeepsie
2,500 to 12,500 ..... Hampton Bays
250 to 2,500 .....
250 or less .....

TRANSPORTATION

Highways
- Divided Highways
  - Full Control of Access
  - Partial or No Control of Access
- Undivided Highway
- Interchange
- Touring Route (State, U.S., Interstate) or State Parkway
- Touring Route Markers: State; U.S.; Interstate

Railroads
- Operating Line
- Service Discontinued
- Operator
- Owner (If Other than Operator)
- Company Having Trackage Rights

Airports (Open to the Public, Military)
- Runway under 4000'
- Runway over 4000'

Rest Areas
- Food, Gas, Rest Rooms
- Rest Rooms
- Gas, Rest Rooms
- Parking Only

RECREATION FACILITIES

State or National Recreation Area
State Campground
State Boat Launching Site
State Canal Park
State Fish Hatchery
Other State Recreation Site

LOCATION OF COMMUNITY WATER SYSTEM SOURCES-1982

ERIE and NIAGARA COUNTIES

GEOLOGIC MAP OF NEW YORK

1970

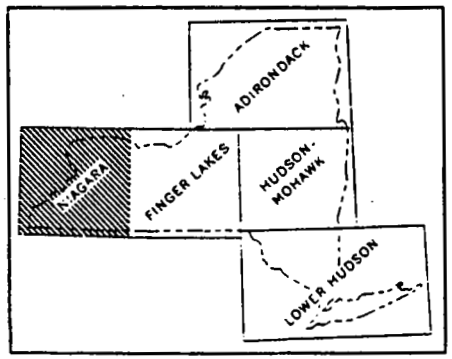
Niagara Sheet

Scale 1:250,000

5 0 5 10 15 Statute Miles 20

5 0 5 10 15 20 25 Kilometers 30

CONTOUR INTERVAL 100 FEET



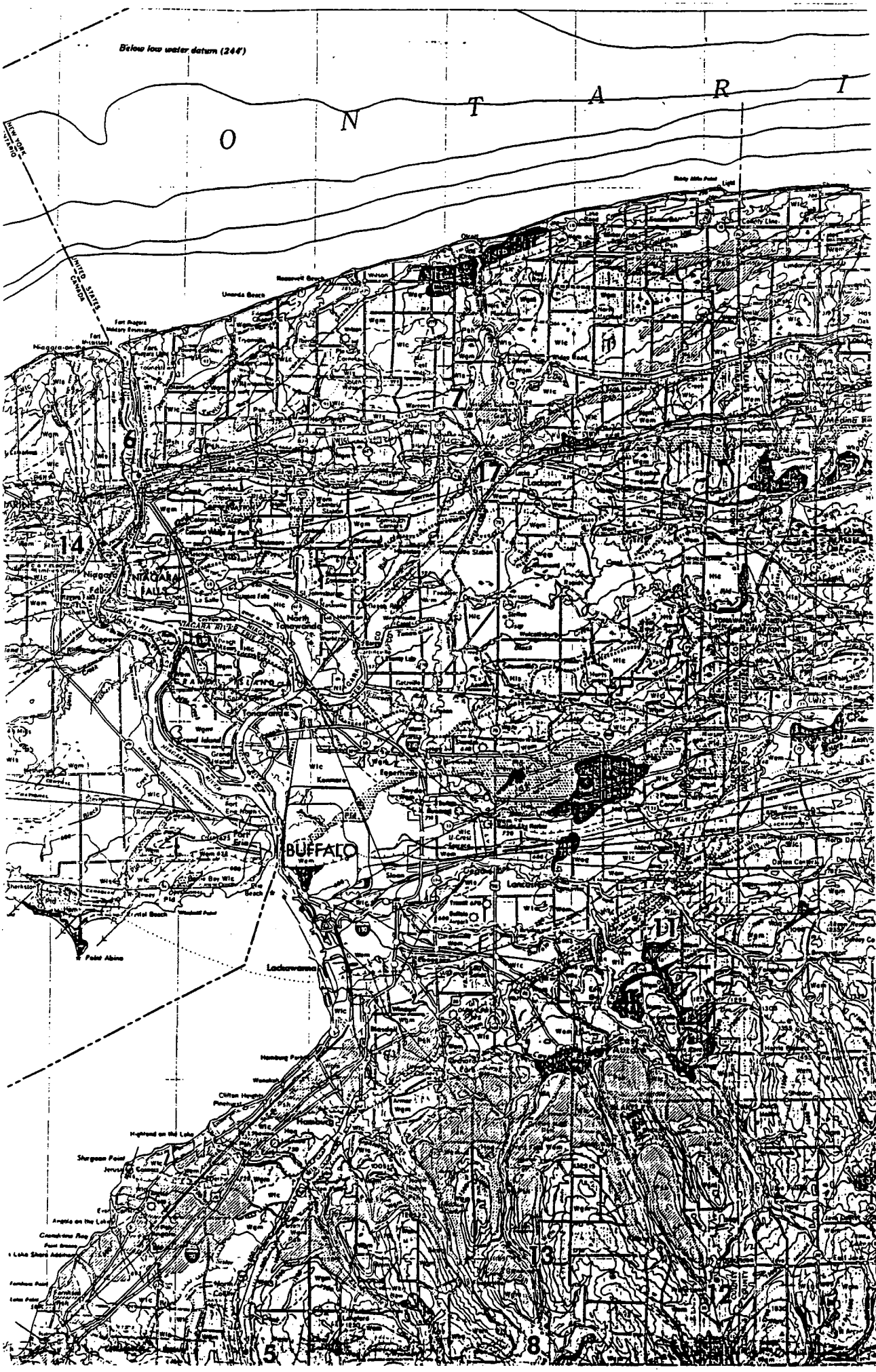
Topographic Base from AMS Quadrangles 1:250,000 scale.

NEW YORK STATE MUSEUM AND SCIENCE SERVICE
MAP AND CHART SERIES NO. 15

COMPILED AND EDITED BY
Lawrence V. Rickard
Donald W. Fisher

March, 1970

REF- 6


Below low water datum (244')
O N T A R I
NEW YORK
ONTARIO
UNITED STATES
CANADA
NIAGARA FALLS
BUFFALO
Lackawanna
Point Abino
6
7
14
17
11
13
12
5
8

EXPLANATION

PLEISTOCENE SERIES

HOLOCENE		Has Alluvial sand and silt Medium to coarse sand with subordinate intercalated silt and gravel; loosely packed and permeable; generally oxidized and non-calcareous; mellow, but commonly with high water table. Floodplain deposits of streams in mature reaches. Overbank deposition by streams flowing on low gradients and in open valleys.	Hag Alluvial gravel Pebble to cobble gravel with subordinate medium to coarse sand; loosely packed and permeable; generally oxidized and noncalcareous; locally bouldery. Alluvial fan and channel deposits of streams flowing on steep gradients or emanating from narrow valleys into rapidly aggrading reaches.	Hls Beach sand and gravel Coarse sand with subordinate medium sand and gravel lenses; cross-bedded; highly permeable generally well sorted, without significant silt or clay. Strand and nearshore deposits of large lakes in basins possessing closure independent of the former receding glacier margin, hence persisting after deglaciation. Notable are shore deposits of Lakes Erie and Ontario and former Lake Tonawanda.	Hlc Lake silt, sand and clay Silt, fine to medium sand and clay; thin-bedded to massive; in part very regularly bedded with cyclic alternation of clay and silt laminae; moderately permeable along along bedding surfaces. Offshore deposits of lakes in basins which did not require an impending ice margin for closure, hence persisted after deglaciation. Notable among filled basins is that of former Lake Tonawanda.	Hse Wind deposited sand Fine to medium sand; well sorted; oxidized and noncalcareous; cross-bedded; highly permeable. Closely associated with strand and nearshore deposits of postglacial lakes. Wind-reworked littoral and beach sand initially deposited in postglacial lake basins.	Hpm Peat, marl and muck Bog deposits, dominantly peat and muck with subordinate gyttje; marl is a major component except in the southern tier of counties. Silt and clay are intercalated at base of organic section. Deposition during late stages of in-filling of pond and lake basins, including numerous kettles and other shallow depressions on glacial drift; also parts of former Lake Tonawanda such as the Oak Orchard and Bergen Swamps.
WISCONSINAN	Woodfordian			Wls Beach sand and gravel of ice-dammed lakes Coarse sand with subordinate medium sand and gravel lenses; cross-bedded; well-sorted and without significant silt or clay; highly permeable. Strand and nearshore deposits in proglacial Lakes Whittlesey and Warren in the Erie Basin and Lake Iroquois in the Ontario Basin Includes suitable material for generally small scale sand and gravel production.	Wlc Lake silt, sand and clay Silt, fine to medium sand and clay; thin-bedded to massive; regularly bedded, in part with cyclic alternation of clay and silt laminae; moderate bedding plane permeability. Offshore deposits in basins which required ice marginal impondment for closure; includes primitive lakes in northward-draining troughs as well as ancestral Lakes Whittlesey and Warren in the Erie Basin and Lake Iroquois in the Ontario Basin.		
		Wem End moraine Includes both ablation and lodgment till; till generally rather stony with limited admixture of poorly sorted gravel; carbonate and crystalline clasts generally exceed 20%; thickness and permeability variable but generally greater than in associated ground moraine. Deposited by melting of ice at edge of ice sheet either at end of an advance or during stillstand at a stable ice-border position. See figure 2 for names of principal moraines and schematic representation of chronology of glacial advance and retreat.	Wgm Ground moraine Dominantly lodgment till; silty clay till and sandy till; sparsely to moderately stony; carbonate and crystalline clasts generally exceed 20%; compact and generally very impermeable. Variably comminuted rock material, transported by and lodged beneath actively flowing ice of the continental ice sheet.	Wkg Ice-contact stratified drift Coarse gravel and sand; sorting, poor and variable; ranges from sand to boulder gravel; in some areas with subordinate lenses of unsorted flow till; attitude of beds variable; moderately to highly permeable; carbonate and crystalline clasts comprise more than 20% and commonly dominate coarse fraction; locally indurated by secondary calcium carbonate. Deposition as ablation moraine, mudflow and by meltwater streams distributing drift on stagnant ice to be deposited finally as the buried ice melted. Steep slopes commonly mark former ice-contact surfaces. Comprises a major gravel source, but requires washing and crushing for many purposes.	Wog Outwash, terrace and delta gravel Pebble and cobble gravel with subordinate sand; well sorted; extremely permeable; carbonate and crystalline clasts generally exceed 30% of the coarse fraction; locally cemented by secondary calcium carbonate. Deposition by strongly aggrading streams flowing from former ice sheets. Coarse alluvium deposited in coalescent aprons near the ice sheet, or as valley trains where streams drained freely from the glacier margin. Commonly persist as stream terraces or terrace remnants. Includes minor lenses of very coarse torrent (hlog) deposits. Comprises a major source of relatively clean and uniform gravel.
	Altonian	Aem End moraine Includes both ablation and lodgment till; silty clay till to sandy till; moderately to abundantly stony with admixture of poorly sorted gravel; sandstone and siltstone channers generally comprise more than 60% of coarse fraction; permeability and thickness variable but generally greater than for associated ground moraine. Deposited by melting of ice at edge of ice sheet either at end of an advance or during stillstand at a stable ice-border position.	Agm Ground moraine Dominatly lodgment till but locally with a veneer of variably washed ablation drift; clay till, silty clay till and sandy till; moderately to abundantly stony; siltstone and sandstone channers comprise more than 80% of coarse fraction; deeply oxidized and essentially noncalcareous; compact and generally impermeable. Variably comminuted rock material, transported by and lodged beneath actively flowing ice of the continental ice sheet.	Akg Ice-contact stratified drift Coarse gravel and sand; sorting poor and variable; ranges from sand to boulder gravel, in some areas with subordinate lenses of unsorted flow till; attitude of beds variable; moderately to highly permeable; siltstone and sandstone generally more than 80% of coarse fraction; generally uncemented. Deposition as ablation moraine, mudflow and by meltwater streams distributing drift on stagnant ice to be deposited finally as the buried ice melted. Steep slopes commonly mark former ice-contact surfaces. Comprises a major gravel source but requires washing and crushing for many purposes.	Aog Outwash, terrace and delta gravel Pebble and cobble gravel with subordinate sand; well sorted; extremely permeable; carbonate and crystalline clasts generally less than 30% of the coarse fraction; generally uncemented. Deposition by strongly aggrading streams flowing from former ice sheets. Coarse alluvium deposited in coalescent aprons near the ice sheet, or as valley trains where streams drained freely from the glacier margin. Commonly persist as stream terraces or terrace remnants. Comprises a major source of relatively clean and uniform gravel.
ILLINOIAN		Iem End moraine Includes both ablation and lodgment till; silty clay till; moderately to abundantly stony with admixture of poorly sorted gravel; sandstone and siltstone channers dominate coarse fraction; permeability and thickness variable but generally greater than for associated ground moraine. Deposited by melting of ice at edge of ice sheet either at the end of an advance or during stillstand at a stable ice-border position.	Igm Ground moraine Dominantly lodgment till but with local veneer of variably washed ablation drift; clay till to silty clay till; moderately to abundantly stony; siltstone and sandstone channers dominate coarse fraction; deeply oxidized and essentially noncalcareous; compact and generally impermeable. Variably comminuted rock material, transported by and lodged beneath actively flowing ice of the continental ice sheet.	Ikg Ice-contact stratified drift Coarse gravel with subordinate pebbly sand; well stratified but laterally variable, ranging from sand to coarse gravel and subordinate lenses of unsorted flow till; attitude of beds variable; moderately to highly permeable; siltstone and sandstone dominate coarse fraction; oxidized and essentially noncalcareous; uncemented. Deposition as ablation moraine, mudflow and by meltwater streams distributing drift on stagnant ice to be deposited finally as the buried ice melted. Steep slopes commonly mark	Iog Outwash and terrace gravel Pebble and cobble gravel with subordinate sand; well-sorted; extremely permeable; carbonate and crystalline clasts generally less than 30% of the coarse fraction; generally uncemented; contains lower proportion of shale than in associated materials; oxidized and noncalcareous in general. Deposition by strongly aggrading streams flowing from ice sheets. Coarse alluvium deposited as valley trains and preserved as limited terrace remnants beyond the glaciated region

A small fraction of living matter is made up carbon) which disintegra 5570 ± 130 years. In foss ing Radiocarbon atoms to affords a basis for estir organism died.

SITE	NAME, TOWN
1	Otto, Otto
2	Clear Creek, Collins
3	Corry Bog, Corry
4	Nichols Bk., Sardinia

(47-15-11 (10/83)

REF-7

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF SOLID AND HAZARDOUS WASTE

INACTIVE HAZARDOUS WASTE DISPOSAL SITE REPORT

PRIORITY CODE: 2a SITE CODE: 915029

NAME OF SITE: Hanna Furnace, Div. National Steel Corp. REGION: 9

STREET ADDRESS: 1818 Fuhrman Blvd.

TOWN/CITY: Buffalo COUNTY: Erie

NAME OF CURRENT OWNER OF SITE: Jordan Foster Association

ADDRESS OF CURRENT OWNER OF SITE: P.O. Box 1207, Buffalo, NY 14024

TYPE OF SITE: OPEN DUMP ☐ STRUCTURE ☐ LAGOON ☐
LANDFILL [X] TREATMENT POND ☐

ESTIMATED SIZE: 5+ ___ ACRES

SITE DESCRIPTION:
Site located in southwest corner of City of Buffalo, on City of Lackawanna border. Disposal area on site is north of Union Canal. Site was used for disposal of furnace construction debris, consisting of brick, slag, scrap metal, concrete, rubble, and earth.

HAZARDOUS WASTE DISPOSED: CONFIRMED ☐ SUSPECTED [X]

TYPE AND QUANTITY OF HAZARDOUS WASTES DISPOSED:

TYPE	QUANTITY (POUNDS, TONS, DRUMS, GALLONS)
Slag	200,000 tons/yr
Wet & dry flue dust	17,000 tons/yr
General plant waste	5,000 tons/yr

TIME PERIOD SITE WAS USED FOR HAZARDOUS WASTE DISPOSAL:

Unknown, 19 ___ TO Unknown, 19 ___

OWNER(S) DURING PERIOD OF USE: Hanna Furnace, Jordan Foster Assn.

SITE OPERATOR DURING PERIOD OF USE: Hanna Furnace, Jordan Foster Assn.

ADDRESS OF SITE OPERATOR: P.O. Box 1207, Buffalo, NY 14240

ANALYTICAL DATA AVAILABLE: AIR ☐ SURFACE WATER [X] GROUNDWATER ☐
SOIL ☐ SEDIMENT ☐ NONE ☐

CONTRAVENTION OF STANDARDS: GROUNDWATER [X] DRINKING WATER ☐
SURFACE WATER [X] AIR ☐

SOIL TYPE: Silts & clays

DEPTH TO GROUNDWATER TABLE: 10'

LEGAL ACTION: TYPE: None STATE ☐ FEDERAL ☐
STATUS: IN PROGRESS ☐ COMPLETED ☐
REMEDIAL ACTION: PROPOSED ☐ UNDER DESIGN ☐
IN PROGRESS ☐ COMPLETED ☐

NATURE OF ACTION: _____

ASSESSMENT OF ENVIRONMENTAL PROBLEMS:

Erie Co. Department of Environment inspected site in April, 1982.
Evaluation of landfill indicates no adverse environmental problems.

ASSESSMENT OF HEALTH PROBLEMS:

INSUFFICIENT INFORMATION

PERSON(S) COMPLETING THIS FORM:

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

NAME John S. Tygert, PE
TITLE Sr. Sanitary Engr.
NAME Roberto A. Clazagasti
TITLE Solid Waste Management Spec.
DATE: 11/10/83

NEW YORK STATE DEPARTMENT OF HEALTH

NAME R. Tramontano
TITLE Bur. Tox. Subst. Assess.
NAME
TITLE
DATE: 12/83

91-15-4 (11/78)

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SPDES – DISCHARGE MONITORING REPORT

SEE REVERSE SIDE OF PART 4 FOR INSTRUCTIONS.

REGION	COUNTY	DATE PRODUCED	PAGE
9	19 ERIE	01-12-81	1 of 1

FACILITY I.D. NY0001287

REPORT PERIOD 01-01-01 THRU 01-11-01

PARAMETER AND UNITS	OUT FALL	MONITORING LOCATION		MINIMUM	AVERAGE	MAXIMUM	NO. EX.	SAMPLE CHARACTERISTICS TYPE	FREQUENCY
FLOW MGD	001	EFFLUENT VALUE 0 1 00000 0 0 1 01	LIMIT	0.11000	REQUIRED	0.11000		GRAB	WEEKLY
			REPORTED VALUE	.039					
TEMPERATURE DEG F	001	DOWNSTREAM 0 2 000 1 00 0 0 1 09	LIMIT						
			REPORTED VALUE						
pH SU	001	EFFLUENT VALUE 0 3 000 0 0 0 1 01	LIMIT	6.0000		9.0000		GRAB	WEEKLY
			REPORTED VALUE						
OIL AND GREASE MG/L	001	EFFLUENT VALUE 0 4 000 0 0 0 1 01	LIMIT			15.0000		GRAB	WEEKLY
			REPORTED VALUE						
AMMONIA LB/DAY	001	EFFLUENT VALUE 0 3 1 0 0 0 0 1 01	LIMIT		251.0000			30 HR COMP	WEEKLY
			REPORTED VALUE		133.0000				
SUSPENDED SOLIDS LB/DAY	001	EFFLUENT VALUE 0 5 0 1 0 0 0 1 01	LIMIT		1,7400			30 HR COMP	WEEKLY
			REPORTED VALUE		1830.0000				
PHENOLS LB/DAY	001	EFFLUENT VALUE 0 7 2 0 0 0 0 1 01	LIMIT		1.7400			30 HR COMP	WEEKLY
			REPORTED VALUE						
CYANIDE LB/DAY	001	EFFLUENT VALUE 0 8 2 0 0 0 0 1 01	LIMIT		50.0000			30 HR COMP	WEEKLY
			REPORTED VALUE		155.0000				
			LIMIT						
			REPORTED VALUE						
			LIMIT						
			REPORTED VALUE						

I hereby affirm under penalty of perjury that information provided on this form is true to the best of my knowledge and belief. False statements made herein are punishable as a Class A misdemeanor pursuant to Section 210.45 of the Penal Law.

TYPE/WRITTEN NAME AND TITLE: P. M. Fennell Vice President & General Manager

☒ 1 PERMITTEE ☐ 2 AGENT

SIGNATURE: P. Fennell DATE: 2-26-81

NATIONAL STEEL CORP
WANNA FURNACE CORP BUFFALO PLANT
P O BOX 1201 ATTN C KUZAK NY0001287
BUFFALO NY 14240 02 P
05 01 SUB 01

PART 1–INCON COI

10-25-79

REF-9

INTERVIEW FORM

INTERVIEWEE/CODE Jim Snyder Mike Wilkenson /
TITLE - POSITION NYSDEC, Div of Fish & Wildlife
ADDRESS Delaware Ave.
CITY Buffalo STATE NY ZIP
PHONE ( ) RESIDENCE PERIOD TO
LOCATION in DEC office INTERVIEWER Eileen Milligan
DATE/TIME 1/10/85 & 1/11/85 /
SUBJECT: Phase I site information

REMARKS: The above-named interviewees provided us with the following information regarding our Phase I site. (see attached list)

1) Wetlands in Niagara Co. & proximity to sites
2) Types of fish & wildlife in Erie/Niagara area
3) Use by fish & wildlife of Niagara River & tributaries
4) Sensitive environments & proposed wetlands in the Erie/Niagara area

There is no critical habitat of an endangered species or national wildlife refuge within 1 mile of the Hanna Furnace site

I AGREE WITH THE ABOVE SUMMARY OF THE INTERVIEW:

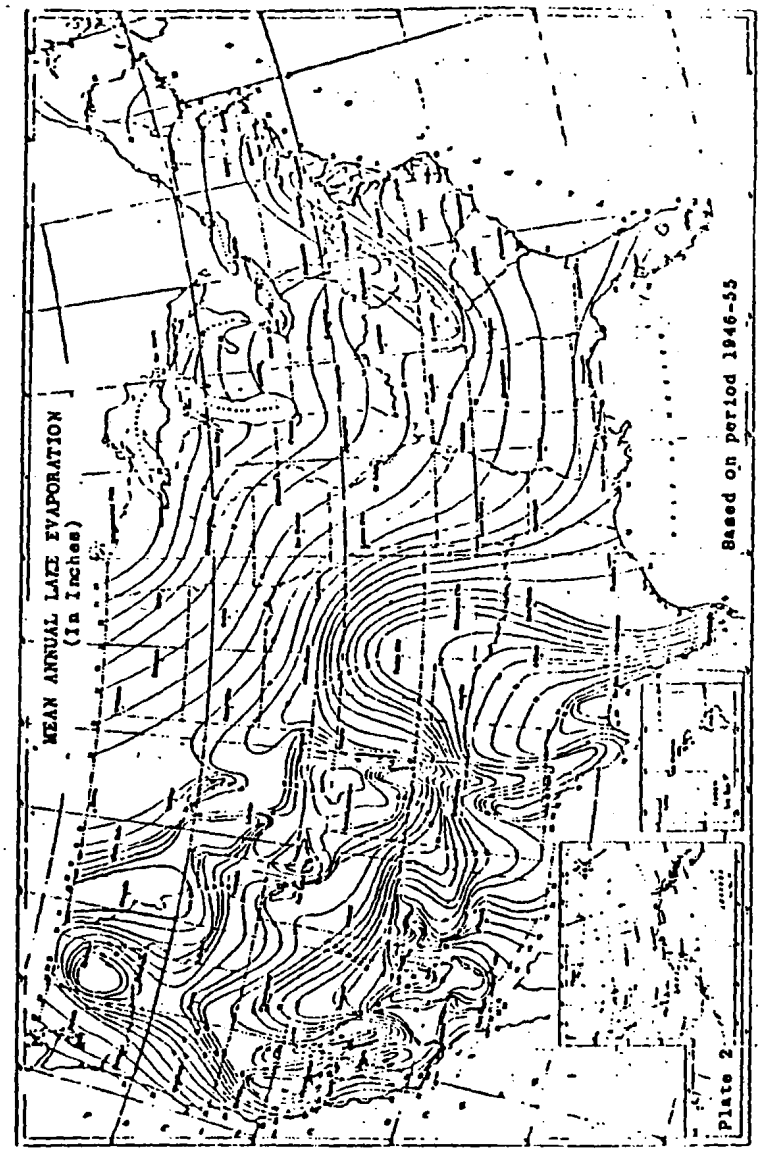
SIGNATURE: James R. Snyder - Sr. Wildlife Biologist
Michael A. Wilkinson - Conservation Biologist (Aquatic)

COMMENTS: No discussion of wetlands / wildlife regarding Niagara Landfill site - referred to Olean Office

US CENSUS DATA, 1980

US Census Data used in the HRS scoring was obtained from various County Planning Offices. This data was not obtained from a report. The raw census data combined with County Planning Maps was used to estimate the population within 1, 2, 3, and 4 miles of the Phase I site being investigated. Because of the voluminous amount of data used, the data is not provided in this Appendix.

REF-11



Source: Climatic Atlas of the United States, U.S. Department of Commerce, National Climatic Center, Ashville, N.C., 1979.

Figure 4

Mean Annual Lake Evaporation (In Inches)

USDOC, "Climatic Atlas of the United States", 1979.

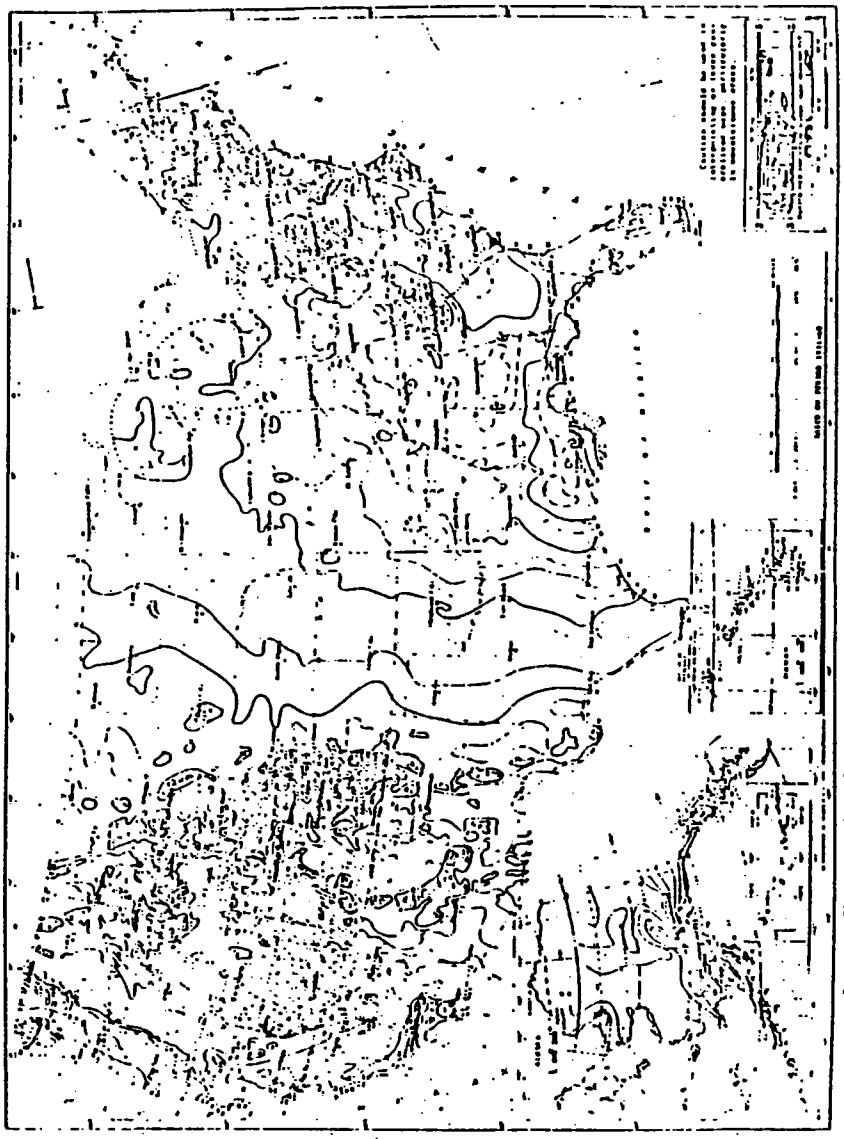
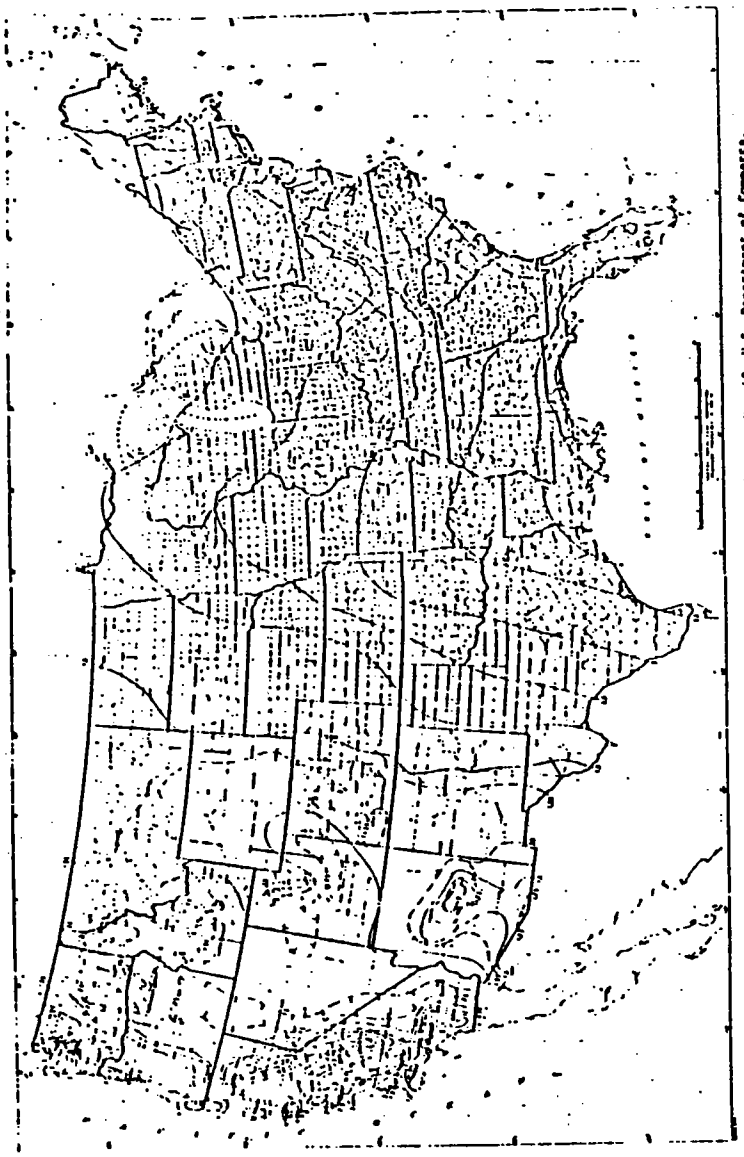


Figure 5
Normal Annual Total Precipitation (inches)

USDOC, "Climatic Atlas of the United States" 1979.

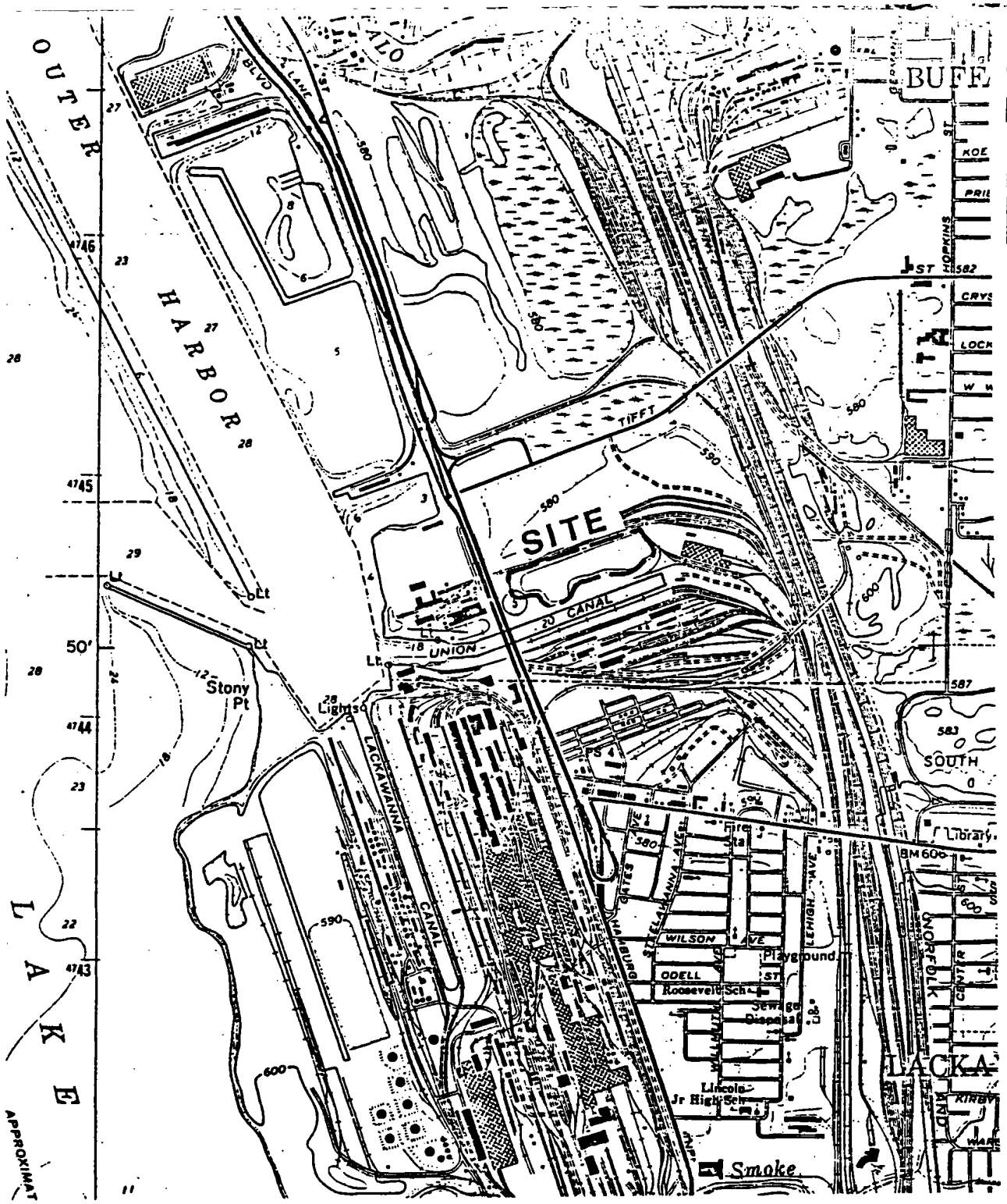
REF-12



Source: Rainfall Frequency Atlas of the United States, Technical Paper No. 40, U.S. Department of Commerce, U.S. Government Printing Office, Washington, D.C., 1963.

Figure 8

1-Year 24-Hour Rainfall (Inches)



ENGINEERING-SCIENCE, INC.
IN ASSOCIATION WITH
DAMES & MOORE

NEW YORK STATE DEPARTMENT
OF ENVIRONMENTAL CONSERVATION
PHASE I REPORT

SITE LOCATION MAP
HANNA FURNACE

FIGURE I-1

REFERENCE: U.S.G.S. 7.5' Topographic Map
Buffalo SE, NY (1965) Quadrangle

REF-14

General information and contaminant-migration potential

The Hanna Furnace Corporation site is located in the southern part of the city of Buffalo, as shown on plate 1.

The site is used for the disposal of brick, slag, scrap metal, concrete, earth, rubble, and "flue dust" consisting of iron, iron oxide, alumina, silica, carbon, and magnesium. A detailed map of the site showing sampling locations is given in figure ____.

The potential for vertical migration of contaminants is probably minimal because the site is underlain by a thick clay unit. The potential for laeral dispersion of contaminants could not be evaluated, but the chemical data does indicate a minor potential for horizontal migration of contaminants away from the site.

Figure (caption on next page) belongs near here.

Geologic information

The site consists of fill overlying units of sand and clay that are underlain by limestone bedrock approximately 25 ft below land surface. The U.S. Geological Survey drilled seven test borings in August 1982. The locations are shown in figure ___; the geologic logs are as follows:

Boring no.	Depth	Description
1	0 - 2.5	Topsoil and fill
	2.5 - 4.0	Fill material, black, organic smell
	4.0 - 15.0	Clay, light green, tight, dry
		SAMPLE: 2.5 ft
2	0 - 1.0	Topsoil and fill
	1.0 - 2.0	Rust-colored debris and gravel
	2.0 - 3.5	Gravel roadbed fill with coarse sand
	3.5 - 5.5	Sand, coarse, dark, wet
	5.5 - 6.5	Clay, greenish
		SAMPLE: 3.5 ft
3	0 - 2	Topsoil and "coal dust", dark brown to black
	2 - 12	Sand, black, coarse, wet 5 ft
	12 - 15	Clay, olive, tight, dry
		SAMPLE: 6.5 ft

4	0 - 1.0	Topsoil, red
	1.0 - 3.5	Sand, light gray, coarse
	3.5 - 4.0	Pea rock, light green-blue
	4.0 - 6.0	Sand, reddish, coarse, with clay, wet
		SAMPLE: 5.5 ft
5	0 - 3.0	Topsoil, dark brown to dark red
	3 - 4.0	Sand, reddish, coarse
	4.0 - 4.5	Sand, light-colored, coarse, damp
	4.5 - 6.0	Sand, reddish, coarse, "iron ore", damp
		SAMPLE: 6 ft
6	0 - 1.0	Topsoil, dark brown to red
	1.0 - 3.0	Black, fine material
	3.0 - 3.5	Same, but light gray
	3.5 - 5.5	Sand, red, coarse, damp, some clay
		SAMPLE: 5.5 ft
7	0 - 0.5	Topsoil
	0.5 - 1.5	Clay, red
	1.5 - 4.0	Sand, red, coarse, with gravel, damp
	4.0 - 6.0	Looks exactly like "Sakrete"
	6.0 - 6.5	Sand, black, coarse, wet
	6.5 - 10.5	Same, with slag
		SAMPLE: 10 ft

Hydrologic information

Ground water was encountered at a depth of approximately 5 ft. Land-surface altitude is estimated to be 580 ft above NGVD; thus the water-table altitude in 19___ was 575 ft above NGVD.

Chemical information

A soil sample was taken from each test boring and analyzed for chromium, copper, iron, and lead; results are given in table ___. The results indicate that the soil sample collected from borehole 1 may have been collected on the disposal site and is not indicative of contaminant migration. All other samples except for the elevated copper concentration in sample 2 do not exceed background concentration. Therefore, there appears to be minimal potential for contaminant migration from the site.

135. HANNA FURNACE CORPORATION (USGS field reconnaissance) NYSDEC 915029

General information and contaminant-migration potential.--The Hanna Furnace Corporation site, in the southern part of the city of Buffalo, is used for the disposal of brick, slag, scrap metal, concrete, earth, rubble, and "flue dust" consisting of iron, iron oxide, alumina, silica, carbon, and magnesium.

The potential for vertical migration of contaminants is probably limited because the site is underlain by a thick clay unit. The potential for lateral dispersion of contaminants could not be evaluated, but the chemical data indicate some potential for horizontal migration of contaminants away from the site. The actual potential is indeterminable.

Geologic information.--The site consists of fill overlying units of sand and clay that are underlain by limestone bedrock, which begins approximately 25 ft below land surface. The U.S. Geological Survey drilled seven test borings in August 1982. The locations are shown in figure A-5; the geologic logs are as shown on page 105.

Hydrologic information.--Ground water was encountered at a depth of approximately 5 ft. Land-surface altitude is estimated to be 580 ft above NGVD; thus the water-table altitude was 575 ft above NGVD.

Chemical information.--The U.S. Geological Survey collected a soil sample from each test boring for chromium, copper, iron, and lead analyses; results are given in table A-6. The results indicate that the sample from borehole 1 may have been collected on the disposal site and therefore is not indicative of contaminant migration. No other samples except sample 2, which had an elevated copper concentration, exceeded the concentrations in samples from undisturbed areas.

Boring no.	Depth	Description
1	0 - 2.5	Topsoil and fill.
	2.5 - 4.0	Fill material, black, organic smell.
	4.0 - 15.0	Clay, light green, tight, dry.
		SAMPLE: 2.5 ft.
2	0 - 1.0	Topsoil and fill.
	1.0 - 2.0	Rust-colored debris and gravel.
	2.0 - 3.5	Gravel roadbed fill with coarse sand.
	3.5 - 5.5	Sand, coarse, dark, wet.
	5.5 - 6.5	Clay, greenish.
		SAMPLE: 3.5 ft.
3	0 - 2	Topsoil and "coal dust", dark brown to black.
	2 - 12	Sand, black, coarse, wet 5 ft.
	12 - 15	Clay, olive, tight, dry.
		SAMPLE: 6.5 ft.
4	0 - 1.0	Topsoil, red.
	1.0 - 3.5	Sand, light gray, coarse.
	3.5 - 4.0	Pea rock, light green-blue.
	4.0 - 6.0	Sand, reddish, coarse, with clay, wet.
		SAMPLE: 5.5 ft.
5	0 - 3.0	Topsoil, dark brown to dark red.
	3 - 4.0	Sand, reddish, coarse.
	4.0 - 4.5	Sand, light-colored, coarse, damp.
	4.5 - 6.0	Sand, reddish, coarse, "iron ore", damp.
		SAMPLE: 6 ft.
6	0 - 1.0	Topsoil, dark brown to red.
	1.0 - 3.0	Black, fine material.
	3.0 - 3.5	Same, but light gray.
	3.5 - 5.5	Sand, red, coarse, damp, some clay.
		SAMPLE: 5.5 ft.
7	0 - 0.5	Topsoil.
	0.5 - 1.5	Clay, red.
	1.5 - 4.0	Sand, red, coarse, with gravel, damp.
	4.0 - 6.0	Looks exactly like "Sakrete."
	6.0 - 6.5	Sand, black, coarse, wet.
	6.5 - 10.5	Same, with slag.
		SAMPLE: 10 ft.

Table A-6.--Analyses of substrate samples from Hanna Furnace, site 135, Buffalo, N.Y., August 2, 1982.
[Locations shown in fig. A-5. Concentrations are in µg/kg.]

Constituents	Sample number and depth below land surface (ft)				
	1 (2.5)	(Split)	2 (3.5)	3 (6.5)	4 (5.5)
Chromium	400,000††	(380,000††)	7,000	6,000	3,000
Copper	170,000††	(160,000††)	92,000††	4,000	11,000
Iron	83,000,000	(71,000,000)	21,000,000	8,700,000	3,700,000
Lead	40,000	(70,000)	60,000	10,000	20,000

Constituents	Sample number and depth below land surface (ft)		
	5 (6)	6 (5.5)	7 (10)
Chromium	4,000	10,000	3,000
Copper	11,000	28,000	12,000
Iron	4,200,000	6,000,000	5,000,000
Lead	30,000	30,000	10,000

†† Exceeds concentrations in samples from undisturbed soils in the Buffalo area. Undisturbed soils were not analyzed for iron.

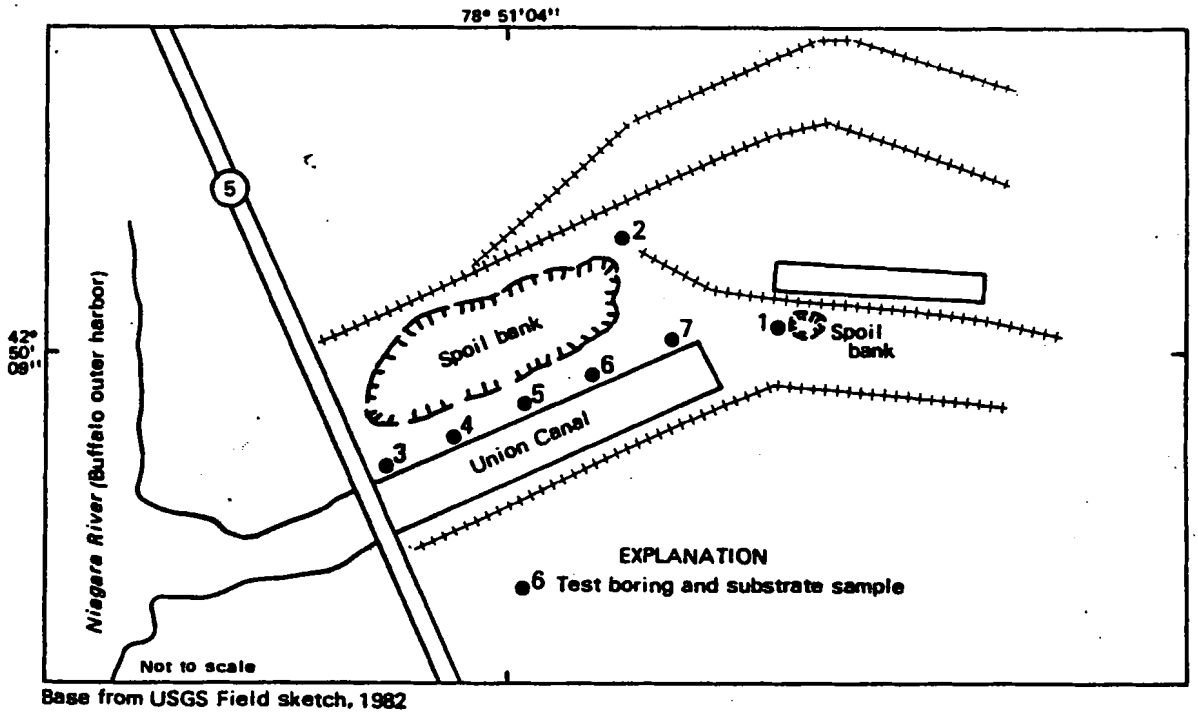


Figure A-5. Location of sampling holes at Hanna Furnace Corporation, site 135, Buffalo.

Table .--Analyses of substrate samples from Hanna Furnace, Buffalo, N.Y., August 2, 1982. (Locations shown in fig. . Concentrations are in mg/Kg.)

	Sample number and depth below land surface (ft)				
	1	(Duplicate)	2	3	4
	2.5		3.5	6.5	5.5
Inorganic constituents					
Chromium	400,000†	(380,000†)	7,000	6,000	3,000
Copper	170,000†	(160,000†)	92,000†	4,000	11,000
Iron	83,000,000	(71,000,000)	21,000,000	8,700,000	3,700,000
Lead	40,000	(70,000)	60,000	10,000	20,000

	Sample Number		
	5	6	7
Chromium	4,000	10,000	4,000
Copper	11,000	28,000	12,000
Iron	4,200,000	6,000,000	5,000,000
Lead	30,000	30,000	10,000

† Exceeds concentrations in samples taken from undisturbed soils in the Buffalo area.

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 1 - SITE INFORMATION AND ASSESSMENT

EPA

I. IDENTIFICATION
01 STATE: NY | 02 SITE NUMBER: 000210384 4

II. SITE NAME AND LOCATION

01 SITE NAME (Legal, common, or descriptive name of site)	02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER
HANNA FURNACE	1818 Fuhrman Blvd.

03 CITY	04 STATE	05 ZIP CODE	06 COUNTY	07 COUNTY CODE	08 CONG DIST
Buffalo	NY	14024	ERIE	029	37

09 COORDINATES LATITUDE	LONGITUDE
42° 52' 15"	78° 52' 59."

10 DIRECTIONS TO SITE (Starting from nearest public road)
Hanna Furnace is located off of Hamburg Turnpike at Union Canal approximately 1/4 mile from Lake Erie in Lackawanna

III. RESPONSIBLE PARTIES

01 OWNER (If known)	02 STREET (Business, mailing, residential)
NATIONAL STEEL CORP.	20 Stanwix Street

03 CITY	04 STATE	05 ZIP CODE	06 TELEPHONE NUMBER
Pittsburgh	PA	15222	( )

07 OPERATOR (If known and different from owner)	08 STREET (Business, mailing, residential)
HANNA FURNACE	1818 Fuhrman Blvd

09 CITY	10 STATE	11 ZIP CODE	12 TELEPHONE NUMBER
Buffalo	NY	14024	( )

13 TYPE OF OWNERSHIP (Check one)
☐ A. PRIVATE ☐ B. FEDERAL: _____ (Agency name) ☐ C. STATE ☐ D. COUNTY ☐ E. MUNICIPAL
☐ F. OTHER: _____ (Specify) ☐ G. UNKNOWN

14 OWNER/OPERATOR NOTIFICATION ON FILE (Check all that apply)
☐ A. RCRA 3001 DATE RECEIVED: ___/___/___ (MONTH DAY YEAR) ☐ B. UNCONTROLLED WASTE SITE (CERCLA 103 e) DATE RECEIVED: ___/___/___ (MONTH DAY YEAR) ☐ C. NONE

IV. CHARACTERIZATION OF POTENTIAL HAZARD

01 ON SITE INSPECTION
☒ YES ☐ NO DATE 3 / 19 / 85 (MONTH DAY YEAR)

BY (Check all that apply)
☐ A. EPA ☐ B. EPA CONTRACTOR ☐ C. STATE ☒ D. OTHER CONTRACTOR
☐ E. LOCAL HEALTH OFFICIAL ☐ F. OTHER: _____ (Specify)
CONTRACTOR NAME(S): Engineering Science / Dames + Moore

02 SITE STATUS (Check one)
☐ A. ACTIVE ☒ B. INACTIVE ☐ C. UNKNOWN

03 YEARS OF OPERATION
1930 (BEGINNING YEAR) | 1982 (ENDING YEAR) ☐ UNKNOWN

04 DESCRIPTION OF SUBSTANCES POSSIBLY PRESENT, KNOWN, OR ALLEGED
Furnace slag, dry flume dust and wet filter cake (WTP) were stored on-site in waste piles. These materials were recycled off-site. Furnace and general plant debris were disposed in the on-site landfill.

05 DESCRIPTION OF POTENTIAL HAZARD TO ENVIRONMENT AND/OR POPULATION
The materials listed above are non-hazardous, non-odorous and non-flamable

V. PRIORITY ASSESSMENT

01 PRIORITY FOR INSPECTION (Check one. If high or medium is checked, complete Part 2 - Waste Information and Part 3 - Description of Hazardous Conditions and Incidents)
☐ A. HIGH (Inspection required promptly) ☐ B. MEDIUM (Inspection required) ☒ C. LOW (Inspect on time available basis) ☐ D. NONE (No further action needed, complete current disposition form)

VI. INFORMATION AVAILABLE FROM

01 CONTACT	02 OF (Agency/Organization)	03 TELEPHONE NUMBER
J. Robert STEELE II	Engineering - Science (ES)	(703) 591-7575

04 PERSON RESPONSIBLE FOR ASSESSMENT	05 AGENCY	06 ORGANIZATION	07 TELEPHONE NUMBER	08 DATE
John A. Potts		ES	(703) 591-7575	4 / 10 / 85 (MONTH DAY YEAR)

EPA FORM 2070-12 (7-81)

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POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 2 - WASTE INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NY	0007103844

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 PHYSICAL STATES (Check all that apply)

- ☑ A. SOLID
- ☑ B. POWDER, FINES
- ☐ C. SLUDGE
- ☐ E. SLURRY
- ☐ F. LIQUID
- ☐ G. GAS
- ☑ D. OTHER (Specify) plant debris

02 WASTE QUANTITY AT SITE (Measures of waste quantities must be independent)

TONS 966,000

CUBIC YARDS

NO. OF DRUMS

03 WASTE CHARACTERISTICS (Check all that apply)

- ☑ A. TOXIC
- ☐ B. CORROSIVE
- ☐ C. RADIOACTIVE
- ☑ D. PERSISTENT
- ☐ E. SOLUBLE
- ☐ F. INFECTIOUS
- ☐ G. FLAMMABLE
- ☐ H. IGNITABLE
- ☐ I. HIGHLY VOLATILE
- ☐ J. EXPLOSIVE
- ☐ K. REACTIVE
- ☐ L. INCOMPATIBLE
- ☑ M. NOT APPLICABLE

III. WASTE TYPE

CATEGORY	SUBSTANCE NAME	01 GROSS AMOUNT	02 UNIT OF MEASURE	03 COMMENTS
SLU	SLUDGE	453,600	tons	Flue Ash filter cake
OLW	OILY WASTE			& lab = 302,400 tons Flue Ash
SOL	SOLVENTS			
PSD	PESTICIDES			= 210,000 tons Plant Debris
OCC	OTHER ORGANIC CHEMICALS			consisting of soil,
IOC	INORGANIC CHEMICALS			brick and scrap metal
ACD	ACIDS			
BAS	BASES			
MES	HEAVY METALS			

IV. HAZARDOUS SUBSTANCES (See Appendix for most frequently cited CAS Numbers)

01 CATEGORY	02 SUBSTANCE NAME	03 CAS NUMBER	04 STORAGE/DISPOSAL METHOD	05 CONCENTRATION	06 MEASURE OF CONCENTRATION
OCC	Phenols (suspected)	108-95-2	landfilled pond		
OCC	Cyanide (suspected)	57-12-5	landfilled pond		
	Asbestos	1332-21-4			

V. FEEDSTOCKS (See Appendix for CAS Numbers)

CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER	CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER
FDS			FDS		
FDS			FDS		
FDS			FDS		
FDS			FDS		

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

1. NYSDEC Hazardous Waste Questionnaire, 12/16/76
2. ES and DEM site inspection, 2/19/85
3. Hanna Furnace Corp., Solid Waste Management Facility Report prepared by Rupley, Babler, Blake Engineers, 11/8/79

EPA FORM 2070-12 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
NY	000 210 344

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 [X] A. GROUNDWATER CONTAMINATION — 02 ☐ OBSERVED (DATE: _____) — [X] POTENTIAL — ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION
Potential for groundwater contamination due to unlined disposal pits

01 ☐ B. SURFACE WATER CONTAMINATION — 02 ☐ OBSERVED (DATE: _____) — ☐ POTENTIAL — ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION

01 ☐ C. CONTAMINATION OF AIR — 02 ☐ OBSERVED (DATE: _____) — ☐ POTENTIAL — ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION
NO

01 ☐ D. FIRE/EXPLOSIVE CONDITIONS — 02 ☐ OBSERVED (DATE: _____) — ☐ POTENTIAL — ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION
NO

01 ☐ E. DIRECT CONTACT — 02 ☐ OBSERVED (DATE: _____) — ☐ POTENTIAL — ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION
NO

01 [X] F. CONTAMINATION OF SOIL — 02 ☐ OBSERVED (DATE: _____) — [X] POTENTIAL — ☐ ALLEGED
03 AREA POTENTIALLY AFFECTED: _____ (Acres) — 04 NARRATIVE DESCRIPTION
Due to migration of contaminants

01 ☐ G. DRINKING WATER CONTAMINATION — 02 ☐ OBSERVED (DATE: _____) — ☐ POTENTIAL — ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION
No

01 ☐ H. WORKER EXPOSURE/INJURY — 02 ☐ OBSERVED (DATE: _____) — ☐ POTENTIAL — ☐ ALLEGED
03 WORKERS POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION
No

01 ☐ I. POPULATION EXPOSURE/INJURY — 02 ☐ OBSERVED (DATE: _____) — ☐ POTENTIAL — ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ — 04 NARRATIVE DESCRIPTION
No

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NY	D002138 44

II. HAZARDOUS CONDITIONS AND INCIDENTS (Continued)

01 ☒ J. DAMAGE TO FLORA — 02 ☐ OBSERVED (DATE: _____) — ☒ POTENTIAL — ☐ ALLEGED
04 NARRATIVE DESCRIPTION

unknown

01 ☒ K. DAMAGE TO FAUNA — 02 ☐ OBSERVED (DATE: _____) — ☒ POTENTIAL — ☐ ALLEGED
04 NARRATIVE DESCRIPTION (Include names(s) of species)

minimum - ducks observed in remaining pond on-site

01 ☒ L. CONTAMINATION OF FOOD CHAIN — 02 ☐ OBSERVED (DATE: _____) — ☒ POTENTIAL — ☐ ALLEGED
04 NARRATIVE DESCRIPTION

unknown

01 ☐ M. UNSTABLE CONTAINMENT OF WASTES (Spills/Runoff/Standing liquids, Leaking drums) — 02 ☐ OBSERVED (DATE: _____) — ☐ POTENTIAL — ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

unlined disposal area

01 ☐ N. DAMAGE TO OFFSITE PROPERTY — 02 ☐ OBSERVED (DATE: _____) — ☐ POTENTIAL — ☐ ALLEGED
04 NARRATIVE DESCRIPTION

No

01 ☐ O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs — 02 ☐ OBSERVED (DATE: _____) — ☐ POTENTIAL — ☐ ALLEGED
04 NARRATIVE DESCRIPTION

No

01 ☐ P. ILLEGAL/UNAUTHORIZED DUMPING — 02 ☐ OBSERVED (DATE: _____) — ☐ POTENTIAL — ☐ ALLEGED
04 NARRATIVE DESCRIPTION

No

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL, OR ALLEGED HAZARDS

None

III. TOTAL POPULATION POTENTIALLY AFFECTED: unknown

IV. COMMENTS

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

ES and D&M site inspection, 3/19/85

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 1 - SITE LOCATION AND INSPECTION INFORMATION

EPA

I. IDENTIFICATION
01 STATE: NY | 02 SITE NUMBER: D002103844

II. SITE NAME AND LOCATION

01 SITE NAME (Legal, common, or descriptive name of site)	02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER
HANNA FURNACE	1818 Fuhrman Blvd

03 CITY	04 STATE	05 ZIP CODE	06 COUNTY	07 COUNTY CODE	08 CONG DIST
Buffalo	NY	14024	ERIE	029	37

09 COORDINATES: LATITUDE 42° 50' 15" | LONGITUDE 78° 50' 59"

10 TYPE OF OWNERSHIP (Check one)
☒ A. PRIVATE ☐ B. FEDERAL _____ ☐ C. STATE ☐ D. COUNTY ☐ E. MUNICIPAL
☐ F. OTHER _____ ☐ G. UNKNOWN

III. INSPECTION INFORMATION

01 DATE OF INSPECTION	02 SITE STATUS	03 YEARS OF OPERATION
3 / 19 / 85 (MONTH DAY YEAR)	☐ ACTIVE ☒ INACTIVE	1930 (BEGINNING YEAR) / 1982 (ENDING YEAR) ☐ UNKNOWN

04 AGENCY PERFORMING INSPECTION (Check all that apply)
☐ A. EPA ☐ B. EPA CONTRACTOR Engineering-Science (Name of firm) ☐ C. MUNICIPAL ☐ D. MUNICIPAL CONTRACTOR _____ (Name of firm)
☐ E. STATE ☒ F. STATE CONTRACTOR Dames & Moore (Name of firm) ☐ G. OTHER _____ (Specify)

05 CHIEF INSPECTOR	06 TITLE	07 ORGANIZATION	08 TELEPHONE NO.
S. Robert STEELE II	Environmental Scientist	ES	(703) 591-7575
09 OTHER INSPECTORS	10 TITLE	11 ORGANIZATION	12 TELEPHONE NO.
Eileen Gilligan	Geologist	OEM	(315) 638-2572
			( )
			( )
			( )
			( )

13 SITE REPRESENTATIVES INTERVIEWED	14 TITLE	15 ADDRESS	16 TELEPHONE NO
Mr. Mike O'Brien	Jordan Foster	1818 Fuhrman Blvd. Buffalo, NY 14024	(716) 827-9235
			( )
			( )
			( )
			( )
			( )

17 ACCESS GAINED BY (Check one)	18 TIME OF INSPECTION	19 WEATHER CONDITIONS
☒ PERMISSION ☐ WARRANT	10 30 AM	COLD, CLEAR SKIES, WINDY

IV. INFORMATION AVAILABLE FROM

01 CONTACT	02 OF (Agency/Organization)	03 TELEPHONE NO.
S. Robert STEELE, II	Engineering-Science (ES)	(703) 591-7575

04 PERSON RESPONSIBLE FOR SITE INSPECTION FORM	05 AGENCY	06 ORGANIZATION	07 TELEPHONE NO.	08 DATE
S. Robert STEELE, II	1	ES	(703) 591-7575	3 / 19 / 85 (MONTH DAY YEAR)

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 2 - WASTE INFORMATION

I. IDENTIFICATION
01 STATE: NY | 02 SITE NUMBER: 0002103844

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 PHYSICAL STATES (Check all that apply)
- [x] A. SOLID
- [x] B. POWDER, FINES
- [ ] C. SLUDGE
- [ ] D. OTHER (Specify) plant debris
- [ ] E. SLURRY
- [ ] F. LIQUID
- [ ] G. GAS

02 WASTE QUANTITY AT SITE (Measures of waste quantities must be independent)
- TONS: 966,000
- CUBIC YARDS:
- NO. OF DRUMS:

03 WASTE CHARACTERISTICS (Check all that apply)
- [x] A. TOXIC
- [ ] B. CORROSIVE
- [ ] C. RADIOACTIVE
- [x] D. PERSISTENT
- [ ] E. SOLUBLE
- [ ] F. INFECTIOUS
- [ ] G. FLAMMABLE
- [ ] H. IGNITABLE
- [ ] I. HIGHLY VOLATILE
- [ ] J. EXPLOSIVE
- [ ] K. REACTIVE
- [x] L. INCOMPATIBLE
- [ ] M. NOT APPLICABLE

III. WASTE TYPE

CATEGORY	SUBSTANCE NAME	01 GROSS AMOUNT	02 UNIT OF MEASURE	03 COMMENTS
SLU	SLUDGE	453,600	tons	Flue Ash filter cake
OLW	OILY WASTE			Slag - 302,400 tons Flue Ash
SOL	SOLVENTS			210,000 tons Plant Debris
PSD	PESTICIDES			consisting of soil,
OCC	OTHER ORGANIC CHEMICALS			brick and scrap metal
IOC	INORGANIC CHEMICALS			
ACD	ACIDS			
BAS	BASES			
MES	HEAVY METALS			

IV. HAZARDOUS SUBSTANCES (See Appendix for most frequently cited CAS Numbers)

01 CATEGORY	02 SUBSTANCE NAME	03 CAS NUMBER	04 STORAGE/DISPOSAL METHOD	05 CONCENTRATION	06 MEASURE OF CONCENTRATION
OCC	Phenols (Suspected)	108-95-2	landfilled pond		
OCC	Cyanide (Suspected)	57-12-5	landfilled pond		
	Asbestos	1332-21-4			

V. FEEDSTOCKS (See Appendix for CAS Numbers)

CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER	CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER
FDS			FDS		
FDS			FDS		
FDS			FDS		
FDS			FDS		

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

1. NYSDEC Hazardous Waste Questionnaire, 12/16/76
2. ES and DEM site inspection, 2/19/85
3. Hanna Furnace Corp., Solid Waste Management Facility Report prepared by Rupley, Bahler, Blake Engineers, 11/8/79

EPA FORM 2070-12 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION
PART 4 - PERMIT AND DESCRIPTIVE INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NY	10002103844

II. PERMIT INFORMATION

01 TYPE OF PERMIT ISSUED (Check all that apply)	02 PERMIT NUM	03 DATE ISSUED	04 EXPIRATION DATE	05 COMMENTS
☐ A. NPDES				
☐ B. UIC				
☐ C. AIR				
☐ D. RCRA				
☐ E. RCRA INTERIM STATUS				
☐ F. SPCC PLAN				
☐ G. STATE (Specify)				
☒ H. LOCAL (Specify) Erie County	unknown			application 10/23/79
☐ I. OTHER (Specify)				for onsite solid waste
☐ J. NONE				storage and disposal

III. SITE DESCRIPTION

01 STORAGE/DISPOSAL (Check all that apply)	02 AMOUNT	03 UNIT OF MEASURE
☐ A. SURFACE IMPOUNDMENT		
☐ B. PILES		
☐ C. DRUMS, ABOVE GROUND		
☐ D. TANK, ABOVE GROUND		
☐ E. TANK, BELOW GROUND		
☒ F. LANDFILL		
☐ G. LANDFARM		
☒ H. OPEN DUMP		
☐ I. OTHER (Specify)		

04 TREATMENT (Check all that apply)

- ☐ A. INCENERATION
- ☐ B. UNDERGROUND INJECTION
- ☐ C. CHEMICAL/PHYSICAL
- ☐ D. BIOLOGICAL
- ☐ E. WASTE OIL PROCESSING
- ☐ F. SOLVENT RECOVERY
- ☐ G. OTHER RECYCLING/RECOVERY
- ☐ H. OTHER (Specify)

05 OTHER

- ☒ A. BUILDINGS ON SITE

06 AREA OF SITE

9.3 (Acres)

07 COMMENTS

IV. CONTAINMENT

01 CONTAINMENT OF WASTES (Check one)

☐ A. ADEQUATE, SECURE ☐ B. MODERATE ☒ C. INADEQUATE, POOR ☐ D. INSECURE, UNSOUND, DANGEROUS

02 DESCRIPTION OF DRUMS, DIKING, LINERS, BARRIERS, ETC.

Furnace waste by-products including five dust, wet filter cake, slag and other plant debris including soil, brick, lumber, and iron were disposed in an onsite landfill.

V. ACCESSIBILITY

01 WASTE EASILY ACCESSIBLE: ☒ YES ☐ NO

02 COMMENTS

Waste materials are presently landfilled on-site without cover systems. Access to the site via plant roads is restricted by gates that remain locked

VI. SOURCES OF INFORMATION (Cite specific references, e.g. state files, sample analysis, reports)

1. Site inspection by ES and OBM, 3/19/85
2. Application for Solid Waste Management facility, Erie County Dept of Environment and Planning from Hanna Corp, 10/23/79

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION
01 STATE: NY | 02 SITE NUMBER: D002103844

II. DRINKING WATER SUPPLY

01 TYPE OF DRINKING SUPPLY	SURFACE	WELL	02 STATUS: ENDANGERED	AFFECTED	MONITORED	03 DISTANCE TO SITE
COMMUNITY	A. ☒	B. ☐	A. ☐	B. ☐	C. ☐	A. 4.5 (mi)
NON-COMMUNITY	C. ☐	D. ☐	D. ☐	E. ☐	F. ☐	B. _____ (mi)

III. GROUNDWATER

01 GROUNDWATER USE IN VICINITY
☐ A. ONLY SOURCE FOR DRINKING ☐ B. DRINKING (Other sources available) COMMERCIAL, INDUSTRIAL, IRRIGATION (No other water sources available) ☒ C. COMMERCIAL, INDUSTRIAL, IRRIGATION (Limited other sources available) ☐ D. NOT USED, UNUSEABLE

02 POPULATION SERVED BY GROUND WATER: 0
03 DISTANCE TO NEAREST DRINKING WATER WELL: N/A (mi)

04 DEPTH TO GROUNDWATER	05 DIRECTION OF GROUNDWATER FLOW	06 DEPTH TO AQUIFER OF CONCERN	07 POTENTIAL YIELD OF AQUIFER	08 SOLE SOURCE AQUIFER
5' (ft)	probably NW	unknown (ft)	unknown (gpd)	☐ YES ☐ NO unknown

09 DESCRIPTION OF WELLS (Including useage, depth, and location relative to population and buildings)
No wells are known to withdraw water from the aquifers in this area

10 RECHARGE AREA		11 DISCHARGE AREA	
☐ YES ☐ NO	COMMENTS: unknown	☐ YES ☐ NO	COMMENTS: unknown

IV. SURFACE WATER

01 SURFACE WATER USE
☒ A. RESERVOIR, RECREATION DRINKING WATER SOURCE ☐ B. IRRIGATION, ECONOMICALLY IMPORTANT RESOURCES ☐ C. COMMERCIAL, INDUSTRIAL ☐ D. NOT CURRENTLY USED

02 AFFECTED/POTENTIALLY AFFECTED BODIES OF WATER

NAME:	AFFECTED	DISTANCE TO SITE
Union Canal	☐	0.04 (mi)
Lake Erie	☐	0.5 (mi)
Niagara River	☐	5.7 (mi)

V. DEMOGRAPHIC AND PROPERTY INFORMATION

01 TOTAL POPULATION WITHIN

ONE (1) MILE OF SITE	TWO (2) MILES OF SITE	THREE (3) MILES OF SITE
A. 5,641 NO. OF PERSONS	B. 39,951 NO. OF PERSONS	C. 82,218 NO. OF PERSONS

02 DISTANCE TO NEAREST POPULATION: 0.75 (mi)

03 NUMBER OF BUILDINGS WITHIN TWO (2) MILES OF SITE	04 DISTANCE TO NEAREST OFF-SITE BUILDING
10,513	0.2 (mi)

05 POPULATION WITHIN VICINITY OF SITE (Provide narrative description of nature of population within vicinity of site, e.g., rural, village, densely populated urban area)
Site is located in industrial section of city. Nearest residential area is 0.75 miles SSE of site, and consists of tenement houses and older homes

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION
01 STATE: NY | 02 SITE NUMBER: D002138644

VI. ENVIRONMENTAL INFORMATION

01 PERMEABILITY OF UNSATURATED ZONE (Check one)

☐ A. 10^{-6} – 10^{-8} cm/sec ☒ B. 10^{-4} – 10^{-6} cm/sec ☐ C. 10^{-4} – 10^{-3} cm/sec ☐ D. GREATER THAN 10^{-3} cm/sec

02 PERMEABILITY OF BEDROCK (Check one)

☐ A. IMPERMEABLE (Less than 10^{-6} cm/sec) ☒ B. RELATIVELY IMPERMEABLE (10^{-4} – 10^{-6} cm/sec) ☐ C. RELATIVELY PERMEABLE (10^{-2} – 10^{-4} cm/sec) ☐ D. VERY PERMEABLE (Greater than 10^{-2} cm/sec)

03 DEPTH TO BEDROCK	04 DEPTH OF CONTAMINATED SOIL ZONE	05 SOIL pH	
~25 (ft)	unknown (ft)	Unknown	

06 NET PRECIPITATION	07 ONE YEAR 24 HOUR RAINFALL	08 SLOPE: SITE SLOPE	DIRECTION OF SITE SLOPE	TERRAIN AVERAGE SLOPE
9 (in)	2.1 (in)	0.0 %	N/A	<1.0 %

09 FLOOD POTENTIAL
SITE IS IN 100 YEAR FLOODPLAIN

10
☐ SITE IS ON BARRIER ISLAND, COASTAL HIGH HAZARD AREA, RIVERINE FLOODWAY

11 DISTANCE TO WETLANDS (5 acre minimum)

ESTUARINE	OTHER
A. >2 (mi)	B. 0.2 (mi)

12 DISTANCE TO CRITICAL HABITAT (of endangered species)
Migratory Birds >1 (mi)
ENDANGERED SPECIES: Aquila chrysaetos
Haliaeetus leucocryh
Falco peregrenes

13 LAND USE IN VICINITY

DISTANCE TO:

COMMERCIAL/INDUSTRIAL	RESIDENTIAL AREAS; NATIONAL/STATE PARKS, FORESTS, OR WILDLIFE RESERVES	AGRICULTURAL LANDS: PRIME AG LAND	AGRICULTURAL LANDS: AG LAND
A. 0.0 (mi)	B. 0.75 (mi)	C. >2 (mi)	D. >1 (mi)

14 DESCRIPTION OF SITE IN RELATION TO SURROUNDING TOPOGRAPHY

Site is approximately the same elevation as surrounding area. All of the Buffalo shoreline area was originally swamp and has now been filled

VII. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

EI and D site visit, 3/19/85
USGS topo maps, 1965
USGS topo maps, 1982
ECDEP site inspection, 1982

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 6 - SAMPLE AND FIELD INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NY	D002103844

II. SAMPLES TAKEN

SAMPLE TYPE	01 NUMBER OF SAMPLES TAKEN	02 SAMPLES SENT TO	03 ESTIMATED DATE RESULTS AVAILABLE
GROUNDWATER			
SURFACE WATER			
WASTE			
AIR			
RUNOFF			
SPILL			
SOIL			
VEGETATION			
OTHER			

III. FIELD MEASUREMENTS TAKEN

01 TYPE	02 COMMENTS
HNU Air	Water Reading were taken during the inspection in the vicinity of the Badell road holding pond. All readings were less than 1 ppm

IV. PHOTOGRAPHS AND MAPS

01 TYPE ☒ GROUND ☐ AERIAL

02 IN CUSTODY OF Engineering - Science
(Name of organization or individual)

03 MAPS
☐ YES
☐ NO

04 LOCATION OF MAPS

V. OTHER FIELD DATA COLLECTED (Provide narrative description)

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

Site Inspection by OEM and ES, 3/19/85

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 7 - OWNER INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
NY	D002103844

II. CURRENT OWNER(S)

01 NAME	02 D+B NUMBER	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	05 CITY	06 STATE	07 ZIP CODE
Jordan Foster Association		P.O Box 1207		Buffalo	NY	14024

PARENT COMPANY (If applicable) of Hanna Corp.

08 NAME	09 D+B NUMBER	10 STREET ADDRESS (P.O. Box, RFD #, etc.)	11 SIC CODE	12 CITY	13 STATE	14 ZIP CODE
National Steel Corp		National Steel Center 201 Stanwix		Pittsburg	PA	15222

III. PREVIOUS OWNER(S) (List most recent first)

01 NAME	02 D+B NUMBER	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	05 CITY	06 STATE	07 ZIP CODE
Hanna Furnance Corporation		1819 Fuhrmon Blvd		Buffalo	NY	14024

IV. REALTY OWNER(S) (If applicable; list most recent first)

01 NAME	02 D+B NUMBER	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	05 CITY	06 STATE	07 ZIP CODE

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

ES and DEM Site Inspection

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 8 - OPERATOR INFORMATION

I. IDENTIFICATION
01 STATE: NY | 02 SITE NUMBER: D002138 44

II. CURRENT OPERATOR (Provide if different from owner)

01 NAME	02 D+B NUMBER	04 SIC CODE
Jordan Foster		

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	05 CITY	06 STATE	07 ZIP CODE
P.O. Box 1207	Buffalo	NY	14024

08 YEARS OF OPERATION	09 NAME OF OWNER
1982 - present	(same)

OPERATOR'S PARENT COMPANY (If applicable)

10 NAME	11 D+B NUMBER	13 SIC CODE

12 STREET ADDRESS (P.O. Box, RFD #, etc.)	14 CITY	15 STATE	16 ZIP CODE

III. PREVIOUS OPERATOR(S) (List most recent first; provide only if different from owner)

01 NAME	02 D+B NUMBER	04 SIC CODE
Hanna Furnace Corporation		

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	05 CITY	06 STATE	07 ZIP CODE
1919 Fuhrman Blvd	Buffalo	NY	14024

08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD
1902 - 1982	(same)

PREVIOUS OPERATORS' PARENT COMPANIES (If applicable)

10 NAME	11 D+B NUMBER	13 SIC CODE

12 STREET ADDRESS (P.O. Box, RFD #, etc.)	14 CITY	15 STATE	16 ZIP CODE

01 NAME	02 D+B NUMBER	04 SIC CODE

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	05 CITY	06 STATE	07 ZIP CODE

08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD

10 NAME	11 D+B NUMBER	13 SIC CODE

12 STREET ADDRESS (P.O. Box, RFD #, etc.)	14 CITY	15 STATE	16 ZIP CODE

01 NAME	02 D+B NUMBER	04 SIC CODE

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	05 CITY	06 STATE	07 ZIP CODE

08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD

10 NAME	11 D+B NUMBER	13 SIC CODE

12 STREET ADDRESS (P.O. Box, RFD #, etc.)	14 CITY	15 STATE	16 ZIP CODE

IV. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

Interview with Mike O'Brien during site inspection conducted by E and A&M, 3/19/85

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 9 - GENERATOR/TRANSPORTER INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
NY	D002102244

II. ON-SITE GENERATOR

01 NAME	02 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	
05 CITY	06 STATE	07 ZIP CODE

III. OFF-SITE GENERATOR(S)

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE	05 CITY	06 STATE / 07 ZIP CODE
01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE	05 CITY	06 STATE / 07 ZIP CODE

IV. TRANSPORTER(S)

01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE	05 CITY	06 STATE / 07 ZIP CODE
01 NAME	02 D+B NUMBER	01 NAME	02 D+B NUMBER
03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE	03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
05 CITY	06 STATE / 07 ZIP CODE	05 CITY	06 STATE / 07 ZIP CODE

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NY	D002103244

II. PAST RESPONSE ACTIVITIES

01 ☐ A. WATER SUPPLY CLOSED 04 DESCRIPTION No	02 DATE	03 AGENCY
01 ☐ B. TEMPORARY WATER SUPPLY PROVIDED 04 DESCRIPTION No	02 DATE	03 AGENCY
01 ☐ C. PERMANENT WATER SUPPLY PROVIDED 04 DESCRIPTION No	02 DATE	03 AGENCY
01 ☐ D. SPILLED MATERIAL REMOVED 04 DESCRIPTION No	02 DATE	03 AGENCY
01 ☐ E. CONTAMINATED SOIL REMOVED 04 DESCRIPTION No	02 DATE	03 AGENCY
01 ☐ F. WASTE REPACKAGED 04 DESCRIPTION No	02 DATE	03 AGENCY
01 ☐ G. WASTE DISPOSED ELSEWHERE 04 DESCRIPTION No	02 DATE	03 AGENCY
01 ☐ H. ON SITE BURIAL 04 DESCRIPTION No	02 DATE	03 AGENCY
01 ☐ I. IN SITU CHEMICAL TREATMENT 04 DESCRIPTION No	02 DATE	03 AGENCY
01 ☐ J. IN SITU BIOLOGICAL TREATMENT 04 DESCRIPTION No	02 DATE	03 AGENCY
01 ☐ K. IN SITU PHYSICAL TREATMENT 04 DESCRIPTION No	02 DATE	03 AGENCY
01 ☐ L. ENCAPSULATION 04 DESCRIPTION No	02 DATE	03 AGENCY
01 ☐ M. EMERGENCY WASTE TREATMENT 04 DESCRIPTION No	02 DATE	03 AGENCY
01 ☐ N. CUTOFF WALLS 04 DESCRIPTION No	02 DATE	03 AGENCY
01 ☐ O. EMERGENCY DIKING/SURFACE WATER DIVERSION 04 DESCRIPTION No	02 DATE	03 AGENCY
01 ☐ P. CUTOFF TRENCHES/SUMP 04 DESCRIPTION No	02 DATE	03 AGENCY
01 ☐ Q. SUBSURFACE CUTOFF WALL 04 DESCRIPTION No	02 DATE	03 AGENCY

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION
01 STATE: NY | 02 SITE NUMBER: DOD 210384 44

II PAST RESPONSE ACTIVITIES (Continued)

01 ☐ R. BARRIER WALLS CONSTRUCTED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION: No

01 ☐ S. CAPPING/COVERING — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION: No

01 ☐ T. BULK TANKAGE REPAIRED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION: No

01 ☐ U. GROUT CURTAIN CONSTRUCTED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION: No

01 ☐ V. BOTTOM SEALED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION: No

01 ☐ W. GAS CONTROL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION: No

01 ☐ X. FIRE CONTROL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION: No

01 ☐ Y. LEACHATE TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION: No

01 ☐ Z. AREA EVACUATED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION: No

01 ☐ 1. ACCESS TO SITE RESTRICTED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION: No

01 ☐ 2. POPULATION RELOCATED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION: No

01 ☐ 3. OTHER REMEDIAL ACTIVITIES — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION: No

III. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

ES and D&M site inspection, 3/19/85

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 11 - ENFORCEMENT INFORMATION

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
NY	002103844

II. ENFORCEMENT INFORMATION

01 PAST REGULATORY/ENFORCEMENT ACTION ☐ YES ☑ NO

02 DESCRIPTION OF FEDERAL, STATE, LOCAL REGULATORY/ENFORCEMENT ACTION

III. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

NYSDEC Environmental Enforcement Division

NYS Attorney General's Office

SECTION VI

ASSESSMENT OF DATA ADEQUACY AND RECOMMENDATIONS

ASSESSMENT OF DATA ADEQUACY

A summary assessment of the adequacy of existing data for completion of the HRS score is presented in Table VI-1. Based on this assessment, the following Phase II work plan and cost estimate has been prepared.

PHASE II WORK PLAN

Objectives

The objectives of the Phase II activities are:

- To collect additional field data necessary to identify the occurrence and extent of contamination and to determine if any imminent health hazard exists.
- To perform a conceptual evaluation of remedial alternatives and estimate budgetary costs for the most likely alternative.
- To prepare a site investigation report including final HRS score.

The additional field data required to complete this investigation are described as follows:

Waste Sampling - A surface waste sampling program consisting of 10 samples randomly collected from the waste piles and 5 from the landfill area. Samples will be analyzed for phenol, cyanide and metals (ICPES).

Groundwater - A groundwater monitoring system consisting of 5 wells is recommended. Borings will be drilled to a maximum depth of 30 feet; soil samples will be taken every 5 feet or more frequently if a change in soil lithology is encountered. The wells will be placed in the aquifer of concern and constructed of 2" PVC pipe. The groundwater samples will be analyzed for phenol, cyanide and heavy metals (ICPES). In addition, sieve and hydrometer analyses will be performed on representative samples of the subsurface soils. Finally, an in-situ permeability test will be performed on each well.

Surface Water and Sediment - A surface water and sediment monitoring system consisting of 3 monitoring stations is recommended. One station will be the on-site pond. Two stations will be located in Union Canal. Station (S-2) will be located at the former effluent discharge point in Union Canal. Station S-3 will be located near the mouth of the Canal. The surface water and sediment samples will be analyzed for phenol, cyanide and metals (ICPES).

Air - An air monitoring survey with an HNu meter is recommended to test the air quality above the site during drilling activities.

TASK DESCRIPTION

The proposed Phase II tasks are described in Table VI-2 as required under the site specific health and safety plan and quality assurance plan which must be submitted prior to initiation of field activities. The proposed monitoring well and sampling location are presented in Figure IV-1.

COST ESTIMATE

The estimated man-hours required for the Phase II project are presented in Table VI-3 and the estimated project costs by tasks are presented in Table VI-4. The estimated total cost for this project is $45,573.

TABLE VI-1

ASSESSMENT OF DATA ADEQUACY

HRS Data Requirement	Comments on Data
Observed Release	
Groundwater	Insufficient data to score observed release
Surface Water	Insufficient data to score observed release; additional constituent analysis recommended
Air	Adequate data for HRS score
Route Characteristics	
Groundwater	Adequate data for HRS score, although high permeability of site soils necessitates confirmation of contaminant release
Surface Water	Adequate data for HRS score
Air	Adequate data for HRS score
Containment	Adequate data for HRS score
Waste Characteristics	Insufficient data for HRS score
Targets	Adequate data for HRS score
Observed Incident	Adequate data for HRS score
Accessibility	Adequate data for HRS score

TABLE VI-2

PHASE II WORK PLAN - TASK DESCRIPTION

Tasks		Description of Task
II-A	Update Work Plan	Review the information in the Phase I report, conduct a site visit, and revise the Phase II work plan.
II-B	Conduct Topographic Survey	A preliminary topographic survey will be conducted to assist in determination of waste volumes.
II-C	Conduct Boring/Install Monitoring Wells	Install 1 upgradient and 4 downgradient wells. The borings will be drilled to a depth of approximately 30 feet. Wells will be constructed of 2" PVC pipe.
II-D	Construct Test Pits/Auger Holes	No further construction of test pits/auger holes necessary.
II-E	Perform Sampling & Analysis	
	Soil samples from borings	Soil samples collected at 5 ft. intervals during drilling and at changes in subsurface lithologies. Perform one grain size analysis and permeability test per subsurface lithology change.
	Soil samples from surface soils	No further studies necessary.
	Soil samples from auger holes/test pits	No further studies necessary.
	Sediment samples from surface water	3 sediment samples are to be collected and analyzed for phenols, cyanide and heavy metals (ICPES).
	Groundwater samples	5 groundwater samples are to be collected and analyzed for phenols, cyanide and heavy metals (ICPES).
	Surface water samples	3 surface water samples are to be collected and analyzed for phenols, cyanide and heavy metals (ICPES).

TABLE VI-2 (Continued)

PHASE II WORK PLAN - TASK DESCRIPTION

Tasks		Description of Task
	Air samples	Monitor on-site Phase II activities for the presence of organics using the HNu.
	Waste samples	Ten surface waste samples will be collected from the waste piles and five surface waste samples will be collected from the landfill. The samples are to be analyzed for phenols, cyanide and heavy metals (ICPES).
II-F	Calculate Final HRS	Based on the field data collected in Tasks II-B - II-E, complete the HRS form.
II-G	Conduct Site Assessment	Prepare final report containing significant Phase I information, additional field data, final HRS and HRS documentation records, and site assessments. The site assessment will consist of a conceptual evaluation of alternatives and a preliminary cost estimate of the most probable alternative.
II-H	Project Management	Project coordination, administration and reporting.

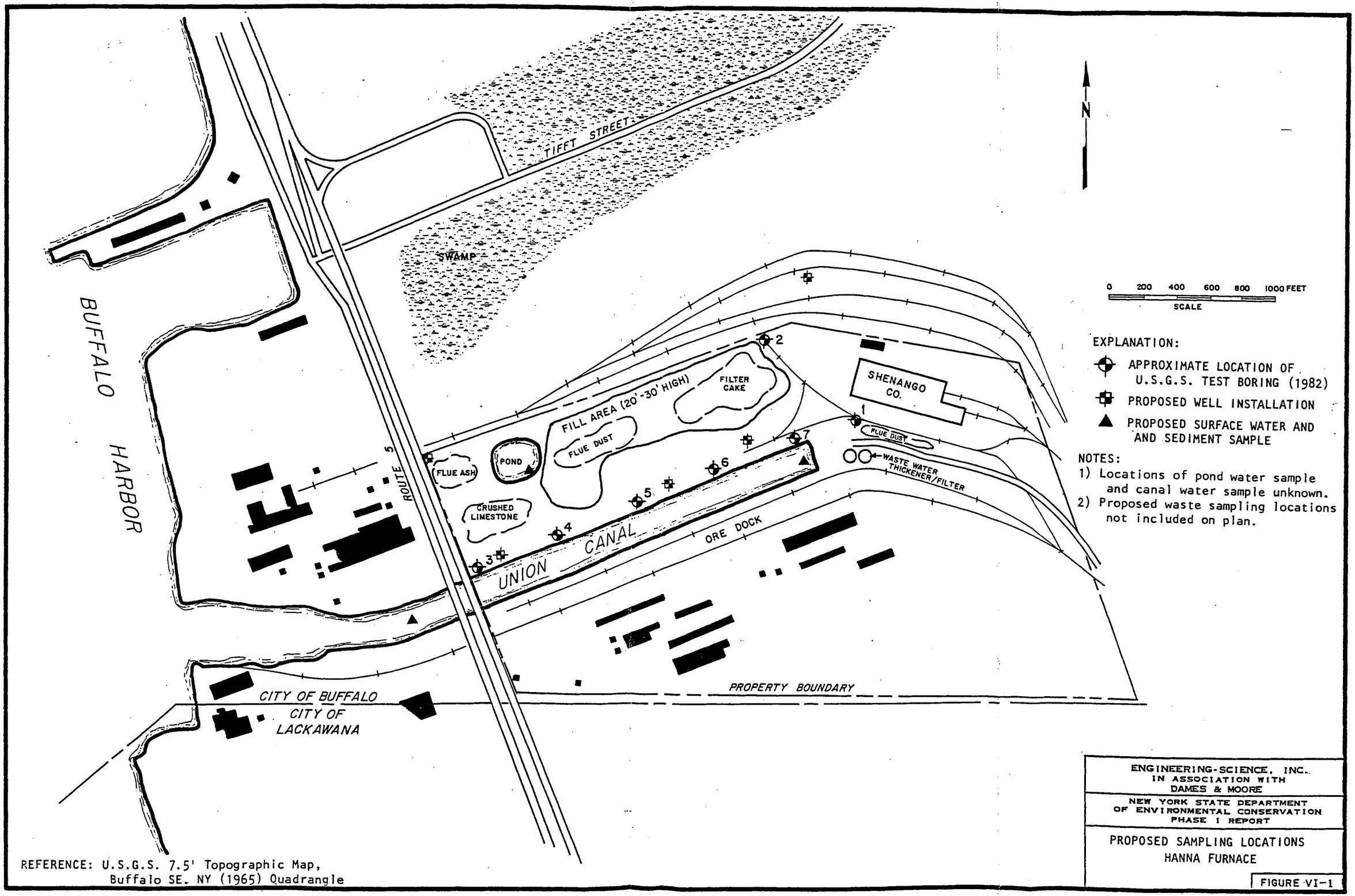
TABLE VI-3
PERSONNEL RESOURCES BY TASK
PHASE II HRS SITE INVESTIGATION (SITE: HANNA FURNACE)

TASK DESCRIPTION	TEAM MEMBERS, MAN-HOURS													
	PIC	TRO	PM	DPM	PCM	DAM	HSM	FTL	FT	RAPL	RAAT	SS	TOTAL HOURS	TOTAL $
II-A UPDATE WORK PLAN	1	1	8	4		4	4	16		8		28	74	1144.1
II-B CONDUCT GEOPHYSICAL STUDIES													0	0
II-C CONDUCT BORING/INSTALL MONITORING WELLS			4	8		1	4	24	80			40	161	1930.72
II-D CONSTRUCT TEST PITS/AUGER HOLES													0	0
II-E PERFORM SAMPLING AND ANALYSIS														
SOIL SAMPLES FROM BORINGS								4	16				20	230.88
SOIL SAMPLES FROM SURFACE SOILS													0	0
SOIL SAMPLES FROM TEST PITS AND AUGER HOLES													0	0
SEDIMENT SAMPLES FROM SURFACE WATER			4	4		2	2	4	8			8	32	488.74
GROUND-WATER SAMPLES			4	8		2	2	8	16			8	48	753.82
SURFACE WATER SAMPLES			4	4				4	8			8	28	428.84
AIR SAMPLES			1	1				1	4				7	110.97
WASTE SAMPLES			4	4		2	2	4	16			4	36	523.46
II-F CALCULATE FINAL HRS			4	2				4	4			2	16	288.42
II-G CONDUCT SITE ASSESSMENT	2	2	8	2				24	32	12	40	50	172	2217.82
II-H PROJECT MANAGEMENT	2		6	2	3	4	4					12	33	529.88
TOTALS	5	3	47	39	3	15	18	93	184	20	40	160	627	8640.85

TABLE VI-4
COST ESTIMATE BREAKDOWN BY TASK
PHASE II HRS SITE INVESTIGATION (SITE: HANNA FURNACE)

TASK DESCRIPTION	DIRECT LABOR HOURS	DIRECT LABOR COST	OTHER DIRECT COSTS (ODC), $ LAB ANALYSIS	TRAVEL AND SUBSISTANCE	SUPPLIES	EQUIP. CHARGES	SUBCONTRACTORS	MISC.	SUBTOTAL ODC	TOTAL ($)
II-A UPDATE WORK PLAN	74	$1,144.10		$200.00	$50.00	$50.00		$50.00	$350.00	$1,494.10
II-B CONDUCT GEOPHYSICAL STUDIES	0	$0.00		$85.00			$2,500.00	$25.00	$2,610.00	$2,610.00
II-C CONDUCT BORING/INSTALL MONITORING WELLS	161	$1,930.72		$750.00	$250.00	$750.00	$7,000.00	$250.00	$9,000.00	$10,930.72
II-D CONSTRUCT TEST PITS/AUGER HOLES	0	$0.00							$0.00	$0.00
II-E PERFORM SAMPLING AND ANALYSIS										
SOIL SAMPLES FROM BORINGS	20	$230.00			$100.00	$150.00		$50.00	$300.00	$530.00
SOIL SAMPLES FROM SURFACE SOILS	0	$0.00							$0.00	$0.00
SOIL SAMPLES FROM TEST PITS AND AUGER HOLES	0	$0.00							$0.00	$0.00
SEDIMENT SAMPLES FROM SURFACE WATER	32	$480.74	$1,000.00	$85.00	$20.00	$75.00		$50.00	$2,030.00	$2,510.74
GROUND-WATER SAMPLES	40	$753.82	$2,750.00	$250.00	$120.00	$200.00		$50.00	$3,370.00	$4,123.82
SURFACE WATER SAMPLES	28	$428.04	$1,650.00	$85.00	$20.00	$75.00		$50.00	$1,880.00	$2,308.04
AIR SAMPLES	7	$110.97							$0.00	$110.97
WASTE SAMPLES	35	$525.46							$0.00	$525.46
II-F CALCULATE FINAL HRS	16	$288.42			$150.00	$150.00		$20.00	$320.00	$608.42
II-G CONDUCT SITE ASSESSMENT	172	$2,217.82			$750.00	$300.00		$75.00	$1,125.00	$3,342.82
II-H PROJECT MANAGEMENT	33	$529.88	$465.00	$300.00	$150.00	$50.00		$50.00	$1,015.00	$1,544.88
TOTALS	627	$8,648.05	$6,665.00	$1,755.00	$1,610.00	$1,800.00	$9,500.00	$670.00	$22,000.00	$30,648.05

OVERHEAD=	$12,337.99
SUBTOTAL=	$42,978.04
FEE=	$2,595.70
TOTAL PROJECT COST=	$45,573.74



REFERENCE: U.S.G.S. 7.5' Topographic Map, Buffalo SE, NY (1965) Quadrangle

ENGINEERING-SCIENCE, INC.
IN ASSOCIATION WITH
DAMES & MOORE

NEW YORK STATE DEPARTMENT
OF ENVIRONMENTAL CONSERVATION
PHASE I REPORT

PROPOSED SAMPLING LOCATIONS
HANNA FURNACE

FIGURE VI-1

APPENDIX A

REFERENCES

Sources Contacted

Documentation

SOURCES CONTACTED FOR
HANNA FURNACE INVESTIGATION

CONTACT	DATE CONTACTED	PERSON CONTACTED	TELEPHONE NUMBER	LOCATION	INFORMATION COLLECTED
USEPA Headquarters, Superfund Office	4/2/85	Hamid Saebfed	(202) 382-4839	401 M Street, NW Washington, D.C. 20460	Reviewed list of sites to determine if additional information was available.
USEPA - Region II, OERR	3/22/85	Mel Hauptman	(212) 264-7681	Room 402 26 Federal Plaza NY, NY 10278	General information from site files.
NYSDEC - Division of Solid and Hazardous	12/19/84	Marsden Chen	(518) 457-0639	50 Wolf Road Albany, NY 12233	General information from site files.
NYSDEC - Division of Water	12/19/84	Sal Pagano	(518) 457-6675	50 Wolf Road Albany, NY 12233	Mr. Pagano set up meetings with three bureaus within Division of Water.
NYSDEC - Division of Water SPDES Files	12/20/84	Bob Hannaford	(518) 457-6716	50 Wolf Road Albany, NY 12233	Reviewed SPDES Files for permit numbers and conditions.
NYSDEC - Division of Water DMR Files	12/21/84	George Hansen	(518) 457-2010	50 Wolf Road Albany, NY 12233	Reviewed DMR files for discharge violations.
NYSDEC - Division of Air Toxics	12/21/84	Art Fossa	(518) 457-7454	50 Wolf Road Albany, NY 12233	Reviewed site list to identify sites with potential air emissions.
NYSDEC - Division of Monitoring and Assessment	12/21/84	Bill Berner Frank Estabrooks Fred Van Alstyne	(518) 457-7363 (518) 457-7363 (518) 457-7363	50 Wolf Road Albany, NY 12233	Reviewed geology and monitoring information for specific sites.

SOURCES CONTACTED FOR
HANNA FURNACE INVESTIGATION

CONTACT	DATE CONTACTED	PERSON CONTACTED	TELEPHONE NUMBER	LOCATION	INFORMATION COLLECTED
NYSDEC - Division of Environmental Enforcement	12/20/84	Kevin Walter	(518) 457-4346	50 Wolf Road Albany, NY 12233	Reviewed list of sites to determine if legal action has occurred in the past, is in progress, and/or is scheduled in the near future.
NYS - Attorney General's Office, Dept. of Law	1/7/85	Val Washington	(518) 473-3105	Empire State Plaza Justice Building Albany, NY 12233	Reviewed list of sites to determine if legal action has occurred in the past, is in progress, and/or is scheduled in the near future.
NYS - Attorney's Office	1/3/85	Albert Bronson	(716) 847-7196	Buffalo State Office Bldg. Buffalo, NY 14202	Reviewed list of sites to determine if legal action has occurred in the past, is in progress, and/or is scheduled in the near future.
NYSDEC - Division of Solid and Hazardous Waste	1/7/85	Ahmad Tayyebi Larry Clare Peter Buechi Jack Tygert	(716) 847-4615 (716) 847-4615 (716) 847-4590 (716) 847-4585	600 Delaware Ave. Buffalo, NY 14202	Collected information from site files.
NYSDEC - Region 9 Division of Air	1/8/85	Henry Sandonato Robert Armbrust	(716) 847-4565	600 Delaware Ave. Buffalo, NY 14202	Collected information concerning previous air emissions from inactive disposal sites.

SOURCES CONTACTED FOR
HANNA FURNACE INVESTIGATION

CONTACT	DATE CONTACTED	PERSON CONTACTED	TELEPHONE NUMBER	LOCATION	INFORMATION COLLECTED
NYSDEC - Regional Attorney	1/10/85	Peter J. Burke	847-4551	600 Delaware Ave. Buffalo, NY 14202	Reviewed list of sites to determine if legal action has occurred in the past, is in progress, and/or is scheduled in the near future.
NYS Dept. of Health, Buffalo Region, Public Health Engineering	1/8/85	Lou Violanti	(716) 847-4500	584 Delaware Ave. Buffalo, NY 14202	Collected information from site files.
NYSDEC - Region 9 Division of Fish and Wildlife	1/10/85 & 1/11/85	Mike Wilkinson Jim Sneider	(716) 847-4600	600 Delaware Ave. Buffalo, NY 14202	Collected information from site files
Erie County, Division of Environmental Control, Dept. of Environment & Planning	1/10/85	Don Campbell Ron Koczaja	(716) 846-6271 (716) 846-6370	95 Franklin Street Buffalo, NY 14202	Collected information from Erie County site files. Obtained additional information through interview.
Erie County, Division of Economic Development and Planning	4/2/85	Mike Alspaugh	(716) 846-6013	95 Franklin Street Buffalo, NY 14202	Obtained 1980 U.S. Census Data.
NYSDEC-Division of Water	4/12/85	Carol Raymond	(581) 457-2010	50 Wolf Road Albany, NY 12233	SPDES Permit information on the site.
National Steel Corp.	4/13/85	Bernie Oborski	(412) 394-4100	National Steel Center 20 Stannix Street Pittsburgh, PA 15222	Interview regarding disposa of wastes at the Hanna Furnace site.
Jordan Foster	3/8/85	Mike O'Brian	(715) 827-9355	1818 Fuhrman Blvd. Buffalo, NY 14203	Interview regarding past and present waste disposal practices.

REFERENCES

15. Erie County, DEP, Site Profile Report, 4/82.

16. Hanna Furnace Corporation, Application for Approval to Operate a Solid Waste Management Facility, 1979.

17. Jolliffe, Frank, G., Hanna Furnace Corporation, Letter to NYSDEC, October 28, 1982.

18. NYSDEC, Hazardous Waste Survey, Hanna Furnace Corp., 1976.

19. O'Brien, Mike, Interview of Jordan Foster Employee, 3/8/85.

20. Rupley, Bahler, Blake, Consulting Engineers, The Hanna Furnace Corp. Solid Waste Management Facility Engineering Report, 1979.

COUNTY OF ERIE
DEPARTMENT OF ENVIRONMENT & PLANNING
DIVISION OF ENVIRONMENTAL CONTROL

REF-15

MEMORANDUM

TO PETER BUECHI, NYSDEC DATE April 7, 1982

FROM DONALD CAMPBELL

SUBJECT HANNA FURNACE, SITE PROFILE # 915026.1

Attached is a copy of the above subject site profile.

DONALD CAMPBELL, P.E.
Sr. Env. Quality Engineer

DC:rb

Attachment

HANNA FURNACE

Inactive Site Profile

DEC Site # 915029

Fuhrmann Boulevard

City of Buffalo

BACKGROUND INFORMATION

This site is located in the southwest corner of the City of Buffalo, on the City of Buffalo / City of Lackawanna border. The disposal area is located north of the Union Canal and is on property owned by the Hanna Furnace Corporation. Use of the site is solely by the Hanna Furnace Corporation for waste products produced by the production facility. This site provides space for disposal of "furnace and construction debris" and storage of "flue dusts". "Furnace and Construction Debris" consists of furnace brick, slag, scrap metal, concrete, earth and rubble. The "Flue Dusts" composition has been reported as iron, iron oxide, alumina, silica, carbon and magnesia. The high iron content of the flue dust makes this material valuable for recycle, given the proper economic conditions. Recycling of the flue dust commonly occurs.

Disposal and storage occupies an area of approximately thirty (30) acres.

Historically, the site may have been part of a larger wetland. Most of the wetland has been filled on, reclaimed and developed.

Laboratory analyses of the flue dust, a pond on site, and the canal, which have been made available by the firm are attached (Table I).

AERIAL PHOTOGRAPHY

Aerial photographs for [redacted] reviewed. These photos showed use of the site during those years. Details were insufficient to identify the materials placed on the site. From the photos it appears all disposal/storage took place above ground level. There was nothing in the photos to raise the suspicion of drummed material disposal.

SURFACE WATERS, GROUNDWATER, BEDROCK AND SOILS

Various surface water bodies are located within a one mile radius of the site. Lake Erie is approximately 500 feet to the west of the site. The Union Canal is adjacent to and south of the disposal area. Tifft Farm Lake is located approximately 3/4 mile to the north and South Park Lake is located approximately 3/4 mile to the southeast. Both the Tifft Farm Lake and South Park Lake are included in designated recreational areas.

There are no public water supply surface water intakes within three (3) miles of the site.

The NYSDEC has designated wetland areas approximately 1,000 feet north of the site.

A 1979 Solid Waste Management Facility application gave groundwater depth and depth to bedrock information. Limestone bedrock was reported at a depth of twenty-five (25) feet and groundwater was reported at a depth of five (5) feet. There is no known use of the groundwater for drinking within three miles of the disposal site. Three (3) industrial water wells have been reported

within the three mile radius. Donner Hanna Coke Co., approximately two (2) miles to the northeast, has two (2) wells and the Spring Perch Company, approximately three (3) miles to the southeast, had one (1) well. It is believed that the Spring Perch Co. no longer exists.

Surface soils were reported as type OL, organic silts and clay, in the 1979 application report. Generally this soil type would be expected to exhibit low permeability characteristics.

LAND USAGE

To the north and southeast of the site are public recreation sites, the Tifft Farms Nature Preserve and South Park. South and east of the disposal area are industrial land uses. Lake Erie lies to the west. A portion of the residential section of the City of Lackawanna lies 3/4 miles southeast of the site.

FIRE AND EXPLOSION POTENTIAL

Based on the data provided regarding the material stored or disposed of at this site, there is no fire or explosion potential.

SITE SECURITY

No access control exists at the site. The nature of the adjacent properties minimizes the prospect of public contact.

ANALYTICAL DATA

Analyses of the flue dust shows that it is comprised primarily of iron oxide and carbon. Table I contains the analytical data supplied in

the application report. The composition of the flue dust and the description of the debris would indicate that the material on site is not toxic or hazardous.

CONCLUSIONS AND RECOMMENDATIONS

The site was originally listed in the 1970 Interagency Task Force's draft report as a priority "II" site. This indicated a suspicion that substantial quantities of hazardous materials were disposed of at this site. Vol. 3 of Hazardous Waste Disposal Sites in New York State listed the site with an "E" classification, indicating continued monitoring of the site is required.

Our evaluation of the site history and analytical data pertaining to the material placed there does not indicate a hazardous waste problem. We would recommend a "F" classification be assigned to the sites. This classification indicates that further action is not warranted and the site has little or no hazard potential. As this is an active disposal site monitoring for NYCRR Part 360 compliance should be continued.

TABLE I

Sampling Points Not Specified

FLUE DUST

FILTER CAKE TEST

Material	Percent of dried total
Total iron, as Ferric Oxide	43.57
Phosphorous Pentoxide	0.076
Manganous Oxide	0.34
Silica	9.96
Alumina	1.81
Calcium Oxide	3.45
Magnesia	2.05
Carbon	30.10
Loss on ignition	34.17
pH (as received)	8.7
Moisture	8.17

WATER SAMPLE TESTS

Parameter	Test Results mg/l	
	Pond	Canal
Cyanides; Chlorine Amenable	0.01	0.01
Cyanides, total	0.01	0.02
Ammonia	0.41	0.13
Phenolics	0.004	0.004
Iron, soluble	5.20	1.09

All tests performed by Andrew S. McCreath & Son, Inc., Analytical and Consulting Chemists - included with Oct. 8, 1979 Hanna Furnace Corporation Solid Waste Management Facility. Engineering Report prepared by Rupley, Bahler, Blake, Consulting Engineers.

KEF-1

APPLICATION FOR APPROVAL TO OPERATE A SOLID WASTE MANAGEMENT FACILITY

SEE APPLICATION INSTRUCTIONS ON REVERSE SIDE

DEPARTMENT ACTION [ ] Approved [ ] Disapproved

DATE

1. OWNER'S NAME: The Hanna Furnace Corporation	2. ADDRESS (Street, City, State, Zip Code): P.O. Box 1207, Buffalo, NY 14240	3. Telephone No.: 716/827-9111
4. OPERATOR'S NAME: The Hanna Furnace Corporation	5. ADDRESS (Street, City, State, Zip Code): P.O. Box 1207, Buffalo, NY 14240	6. Telephone No.: 716/827-9311
7. ENGINEER'S NAME: Ripley Dahler Blake	8. ADDRESS (Street, City, State, Zip Code): 391 Washington, St., Buffalo, NY 14203	9. Telephone No.: 716/856-4955
10. ON-SITE SUPERVISOR: Dock Superintendent	11. ADDRESS (Street, City, State, Zip Code): P.O. Box 1207, Buffalo, NY 14240	12. Telephone No.: 716/827-9311

13. HAS THE INDIVIDUAL NAMED IN ITEM 10 ATTENDED A DEPARTMENT SPONSORED OR APPROVED TRAINING COURSE?
[ ] Yes Date Course Title Location [X] No

14. PROJECT/FACILITY NAME	15. COUNTY IN WHICH FACILITY IS LOCATED	16. ENVIRONMENTAL CONSERVATION REGION
The Hanna Furnace Corporation	Erie	9

17. TYPE OF PROJECT FACILITIES: [ ] Composting [ ] Transfer [ ] Shredding [ ] Baling [ ] Sanitary Landfill [ ] Incineration [ ] Pyrolysis [ ] Resource Recovery-Energy [ ] Resource Recovery-Materials [X] Other Industrial Waste Storage and Disposal

18. HAS THIS DEPARTMENT EVER APPROVED PLANS AND SPECIFICATIONS AND/OR ENGINEERING REPORTS FOR THIS FACILITY? [ ] Yes Date [X] No

19. LIST WASTES NOT ACCEPTED

The facility is a private site for the sole use of the owner. No waste other than that generated by the owner is accepted.

20. BRIEFLY DESCRIBE OPERATION

The facility consists of a storage and disposal (landfill) site for non-hazardous industrial waste as outlined in the attached report.

21. IF FACILITY IS A SANITARY LANDFILL, PROVIDE THE FOLLOWING INFORMATION: NOT A SANITARY LANDFILL

a. Total useable area: (Acres)	b. Distance to nearest offsite, downgradient, water supply well	c. No. of groundwater monitoring wells
Initially N/A Currently 8.5	N/A Feet	Upgradient N/A Downgradient N/A

22. INDICATE WHICH ATTACHMENTS, IF ANY, ARE INCLUDED WITH THIS APPLICATION:
[X] Form 47-19-2 or SW-7 [X] Operations Plan & Report [ ] USGS Topographic Map [ ] Record Forms [X] Other Site plan, site survey, Vicinity Plan
[ ] Construction Certificate [ ] Boring Logs [ ] Water Sample Analysis [ ] None

23. CERTIFICATION:
I hereby affirm under penalty of perjury that information provided on this form and attached statements and exhibits is true to the best of my knowledge and belief. False statements made herein are punishable as a Class A misdemeanor pursuant to Section 210.45 of the Penal Law.

October 23, 1979 (Date)
Frank G. [illegible] Vice President The Hanna Furnace Corporation (Signature and Title)

47-19-4 (6/77)
Formerly SW-22

FIELD COPY

APPLICATION FOR APPROVAL TO CONSTRUCT A SOLID WASTE MANAGEMENT FACILITY

APPLICATION INSTRUCTIONS ON REVERSE SIDE

DEPARTMENT ACTION: [ ] Approved [ ] Disapproved | DATE

1. OWNER'S NAME: The Ulama Furnace Corporation
2. ADDRESS (Street, City, State, Zip Code): P.O. Box [illegible], Buffalo, NY 14240
3. Telephone No.: 716/822-9311
4. OPERATOR'S NAME: The Ulama Furnace Corporation
5. ADDRESS (Street, City, State, Zip Code): P.O. Box 1207, Buffalo, NY 14240
6. Telephone No.: 716/822-9311
7a. ENGINEER'S NAME: Ripley Bohler Blake
8. ADDRESS (Street, City, State, Zip Code): 391 Washington St., Buffalo, NY 14203
9. Telephone No.: 716/856-4955
7b. ENGINEER'S N.Y.S. LICENSE NO.: 36728
10. TYPE OF PROJECT FACILITIES: [ ] Composting [ ] Transfer [ ] Shredding [ ] Baling [ ] Sanitary Landfill [ ] Incinerating [ ] Pyrolysis [ ] Resource Recovery-Energy [ ] Resource Recovery-Materials [X] Other Ind. Waste Storage Disposal

11. Briefly describe the project including the basic process and major components:
Private site for industrial waste storage and disposal, as outlined in attached engineering report.

12. Describe location of facility. (Attach a USGS Topographic Map showing the exact location of the facility)
Facility is located at the south city line of Buffalo, New York, on Fuhrmann Blvd.

13. County in which facility is located: Erie
14. Environmental Conservation Region in which facility is located: 9

15.

Municipalities Served by Facility	County	No. of Municipalities
None	None	None

16. Describe briefly how the proposed facility relates to the Comprehensive Solid Waste Management Plan for the Municipality. Explain any deviation from that Plan.
Not applicable

17. If the facility is other than a sanitary landfill, describe the residues in terms of quantities and types. Also indicate the methods and locations of residue disposal or, if recyclable, indicate markets:
Residue consists of Blast Furnace Flue Dust, Blast Furnace Debris, and Construction Debris as outlined in attached engineering report.

18. If the facility is a sanitary landfill, provide the following information: Not a sanitary landfill

a. Total useable area – 8.3 Acres
b. Distance to nearest surface water – adjacent Feet
c. Depth to nearest ground water – 5 * Feet
d. Depth to nearest rock – 25 * Feet
e. Distance to nearest airport – 15 miles
f. Expected life of site – 30 years
g. Is site on a flood plain? [ ] Yes ____ Year Flood [X] No
h. Predominant type of soil on site: OL (Use Unified Soil Classification System)

19. Anticipated construction starting and completion dates: From Existing site To
20. Estimated Population Served: Current N/A Design N/A
21. Estimated Cost: Initial N/A Annual N/A
22. Estimated Daily Tonnages of Solid Waste: Current 90 Design N/A
23. Operating Hours per Day 8+
24. Are attached plans and specifications in substantial conformance with "Content Guidelines for Plans and Specifications"? [X] Yes [ ] No

25. CERTIFICATION:
I hereby affirm under penalty of perjury that information provided on this form and attached statements and exhibits is true to the best of my knowledge and belief. False statements made herein are punishable as a Class A misdemeanor pursuant to Section 210.45 of the Penal Law.

October 23, 1979 — Date
Frank C. Mallitz — Signature and Title: The Ulama Furnace Corporation

FIELD COPY

Hanna Furnace Corporation
Subsidiary of
National Steel Corporation

FRANK G. JOLLIFFE
President
Phone 412-263-4216

REF - 17

October 28, 1982

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Richard Persico, Esq.
General Counsel
New York State Department of
Environmental Conservation
50 Wolf Road
Albany, New York 12233

Re: USEPA-Region II Letter of September 30, 1982
The Hanna Furnace Corporation
1818 Fuhrmann Boulevard
Buffalo, New York 14240
SPDES Permit No. NY 0001597

Dear Mr. Persico:

On October 8, 1982, The Hanna Furnace Corporation received a copy of a September 30, 1982 letter to you from the United States Environmental Protection Agency-Region II requesting that you institute appropriate enforcement action regarding the subject SPDES Permit. Subsequently, Messrs. Ralph Purdy and Donald Simmons of National Steel Corporation telephoned your office on October 13, 1982 and discussed this matter with Mr. Larry Vernon. As agreed during that conversation, this letter is provided as a formal notification that the shutdown of facilities at The Hanna Furnace Corporation is permanent. The write-off of this facility was announced by National Steel Corporation on October 22, 1982. Also for your information, attached is a letter to Mr. William Garvey withdrawing the pending permit application for this facility.

If you have any further questions regarding this matter, please contact Mr. Purdy (412/263-4391) or Mr. Simmons (412/263-4395).

Sincerely,

Frank G. Jolliffe, President

FGJ:DWS/11
Attachment

cc: T. M. Frazell
R. W. Purdy
D. W. Simmons
F. J. Clements

Warren Llewellyn
Acting Director
Enforcement Division, USEPA Region II

Charles Hoffmann
Water Enforcement Branch
Enforcement Division, USEPA Region II

Dr. Richard Baker
Chief
Permits Administration Branch
Management Division, USEPA Region II

Laurens Vernon
Compliance Counsel, NYSDEC

Robert Cronin
Chief
Compliance Section, NYSDEC

Russell Mt. Pleasant
Assistant Director
Division of Water, NYSDEC

George Hansen
Chief
SPDES Permit Section
NYSDEC-Region 9

Robert Speed
Regional Engineer
NYSDEC-Region 9

Peter Burke
Regional Attorney
NYSDEC-Region 9

Region 9
600 Delaware Avenue
Buffalo, NY 14202-1073
(716) 847-4565

August 2, 1983

Mr. Richard Craig
United States Environmental
Protection Agency
Region II
26 Federal Plaza
New York, NY 10278

Dear Mr. Craig:

The attached newspaper article is the only thing we have in our file regarding the closing of Hanna Furnace.

Sincerely,

Robert A. Armbrust, P.E.
Associate Air Pollution
Control Engineer

RAA:ec
ATT.

Page C-13

Hanna Furnace Sets Shutdown

The last 10 remaining employees at Hanna Furnace Corp. were told today that the pig iron manufacturer will shut down permanently in January. Based at 1812 Furhmann Blvd., Hanna has had the bulk of its work force on layoff since January, when 350 employees were let go.

Citing rising imports and a decline in demand from foundaries and other pig iron customers, the company ceased manufacturing nearly nine months ago and since then has been gradually reducing its inventory.

Production at the 135-acre Hanna site has been limited since 1979 when one of the company's two blast furnaces was shut down. The early 1970s, however, saw a boom in demand, and Hanna's employment topped 600.

On Nov. 1, 23 of the salaried employees who were terminated in a rash of layoffs will receive a total of $155,000 in severance pay as mandated by the state Labor Department's Division of Standards.

According to one of the recipients, "we had eight days notice, and we were terminated without the benefits the company promised us." The money amounts to one week's pay for every year worked plus the value of the stock that Hanna assumed from the employees, a source said.

Officials at Hanna's parent, the National Steel Corp. based in Pittsburgh, say they will attempt to sell the plant site, which includes a series of buildings. "We're indefinite now as to any further plans," said National Steel spokesman.

The company claims it had little chance for survival as imported iron has captured 50 percent of the domestic market.

The Hanna Furnace Corporation
Subsidiary of
National Steel Corporation

November 14, 1978

Mr. David A. Dooley
Interagency Task Force on Hazardous Wastes
M.P.O. Box 561
Niagara Falls, New York 14302

Dear Mr. Dooley:

In connection with my letter of November 3, 1978, and following a phone conversation with Mr. Peter J. Millock on November 10, 1978, I am releasing the information requested in Question III of the Questionnaire.

I will appreciate being informed of any contacts you may have with the present or former employees of the Hanna Furnace Corporation listed on the attached sheets.

Yours very truly,

THE HANNA FURNACE CORPORATION

T. M. Frazell
Vice President and General Manager

am
attach.

P. O. Box 1207 Buffalo, N. Y. 14240, Phone 716-827-9311

(Site) Phone Visit 12/16/76 by BWK
Follow-up / / by
Form Completed 12/16/76 by BWK
Comments: INITIAL FORM LOST S.F. compl.

Address P.O. BOX 1207, FURHMAN BLVD
BUFFALO, N.Y. 14240
County ERIE Phone 827-9311
SIC Codes 1. 3312 3. 2. 4.

REF-18

New York State Hazardous Waste Survey
Department of Environmental Conservation
Division of Solid Waste Management
50 Wolf Road, Albany, N.Y. 12233 Telephone: (518) 457-6605

I. General Information

1. Company Name THE HANNA FURNACE CORP.

Mailing Address BOX 1207 (Street) BUFFALO (City) N.Y. (State) 14075 (Zip)

Plant Location [/] Same as above

1818 FUHRMAN BLVD. (Street) BUFFALO (City) N.Y. (State) 14203 (Zip)

2. If Subsidiary, Name of Parent Company NATIONAL STEEL CORP.

3. Individual Responsible for Plant Operations THEODORE M. FRAZELL (Name)

PLANT MANAGER (Title) (716) 827-9322 (Phone)

4. Individual Providing Information SAME (Name)

(Title) (Phone)

5. Department of Environmental Conservation Interviewer BWK

6. Standard Industrial Classification (SIC) Codes for Principal Products

Group Name	SIC Code (4 Digit)	Approximate % of [X] Production / [ ] Value Added
a. PRIMARY METAL IND.	3312	100
b.		
c.		
d.		

7. Processes Used at Plant
a. BLAST FURNACES
b.
c.
d.
e.

8. Products
a. PIG IRON
b.
c.
d.
e.

a. IRON ORE
b. LIMESTONE
c. COKE
d. FERROUS SCRAP
e.
f.
g.
h.
i.
j.

10. a. On Site Waste Water Treatment [X] Yes [ ] No

b. On Site Waste Water Treatment by July 1977 [ ] Yes [ ] No

c. On Site Waste Water Treatment by July 1983 [ ] Yes [ ] No

d. Industrial Sewer Discharge [X] Yes [ ] No Name of Sewage Treatment Plant LACKAWANNA SEWER TREATMENT PLANT

e. SPDES No. _____ NPDES No. _____

11. a. Air Pollution Control Devices [X] Yes [ ] No Types DRY AND WET COLLECTORS IN SERIES

b. To Be Built [ ] Yes [ ] No by / /

c. Air 100 Emission Point Registration Numbers _____

12. a. Number of manufacturing employees 470 b. Manufacturing Floor Space _____ sq.f

13. Attach a plat or sketch of the facility showing the location of on-site process waste storage (if available).

14. Attach flow diagrams of chemical processes including waste flow outputs (if available).

15. In-house waste treatment capabilities: REMOVAL OF SOLIDS FROM PROCESS WATER

16. Is there a currently used or abandoned landfill, dump or lagoon on plant property? [X] Yes [ ]

17. Industrial wastes produced or expected to be produced by plant.
1) SLAG
2) DRY FLUE DUST
3) WET FILTER CAKE
4)
5)
6)
7)
8)

18. Comments:

...e Characterization and Management Practice

(Use separate form for each waste stream)

1. Waste Stream No. 1 (from Form I, Number 17)

2. Description of process producing waste IRON ORE SMELTED IN BLAST FURNACE PRODUCING SLAG & OFF-GAS CONTAINING PARTICULATE MATTER; SOME OF LATTER IS REMOVED AS DUST & SOME IS PUT THROUGH WATER TREATMENT FACILITIES

3. Brief characterization of waste BLAST FURNACE SLAG

4. Time period for which data are representative 1/75 to 12/75

5. a. Annual waste production 214,306 ☒ tons/yr. ☐ gal./yr.

   b. Daily waste production 587 ☒ tons/day ☐ gal./day

   c. Frequency of waste production: ☐ seasonal ☐ occasional ☒ continual

   ☐ other (specify) _____

6. Waste Composition

   a. Average percent solids 100 % b. pH range __ to __

   c. Physical state: ☐ liquid, ☐ slurry, ☐ sludge, ☒ solid,

   ☐ other (specify) _____

d. Component	Average Concentration	☐ wet weight ☒ dry weight	
1. SILICA (SiO_2)	37.40	☒ wt.%	☐ ppm
2. ALUMINA (Al_2O_3)	10.25	☒ wt.%	☐ ppm
3. IRON	.35	☒ wt.%	☐ ppm
4. MANGANESE	.25	☒ wt.%	☐ ppm
5. CALCIUM (CaO)	38.00	☒ wt.%	☐ ppm
6. MAGNESIA (MgO)	12.68	☒ wt.%	☐ ppm
7. SULFUR	1.80	☒ wt.%	☐ ppm
8.		☐ wt.%	☐ ppm
9.		☐ wt.%	☐ ppm
10.		☐ wt.%	☐ ppm

e. Analysis of composition is [ ] theoretical [X] laboratory [ ] estimate
(attach copy of laboratory analysis if available)

f. Projected [ ] increase, [ ] decrease in volume from base year ____: ____% by July 1981
____% by July 1983.

g. Hazardous properties of waste: [ ] flammable [ ] toxic [ ] reactive [ ] explosive
[ ] corrosive [ ] other (specify) NONE

7. On Site Storage

a. Method: [ ] drum, [ ] roll-off container, [ ] tank, [ ] lagoon, [ ] other (specify) ____

b. Typical length of time waste stored ____ [ ] days, [ ] weeks, [ ] months

c. Typical volume of waste stored ____ [ ] tons, [ ] gallons

d. Is storage site diked? [ ] Yes [ ] No

e. Surface drainage collection [ ] Yes [ ] No

8. Transportation

a. Waste hauled off site by [ ] you [ ] others

b. Name of waste hauler BUFFALO SLAG COMPANY

Address 11 STEELAWANNA AVE. LACKAWANNA
Street City
N.Y. (716) 824-1410
State Zip Code Phone

9. Treatment and Disposal

a. Treatment or disposal: [ ] on site [X] off site

b. Waste is [X] reclaimed [ ] treated [ ] land disposed [ ] incinerated
[ ] other (specify) ____

c. Off site facility receiving waste

Name of Facility SAME

Facility Operator ____

Facility Location ____
Street City
( )
State Zip Code Phone

(use separate form for each waste stream)

1. Waste Stream No. 2 (from Form 1, Number 17)

2. Description of process producing waste (SAME AS 1)

3. Brief characterization of waste DRY FLUE DUST

4. Time period for which data are representative _____ to _____

5. a. Annual waste production 10,800 [X] tons/yr. [ ] gal./yr.

   b. Daily waste production 30 [X] tons/day [ ] gal./yr.

   c. Frequency of waste production: [ ] seasonal [ ] occasional [X] continual

   [ ] other (specify) _____

6. Waste Composition

   a. Average percent solids 100 % b. pH range __ to __

   c. Physical state: [ ] liquid, [ ] slurry, [ ] sludge, [X] solid,

   [ ] other (specify) _____

Flue dust from dryer

d. Component	Average Concentration	[ ] wet weight [X] dry weight	
1. IRON	46.40	[X] wt.%	[ ] ppm
2. IRON OXIDE	28.64	[X] wt.%	[ ] ppm
3. FERRIC OXIDE	43.47	[X] wt.%	[ ] ppm
4. SILICA	9.01	[X] wt.%	[ ] ppm
5. ALUMINA	2.73	[X] wt.%	[ ] ppm
6. MAGNESIA	1.42	[X] wt.%	[ ] ppm
7. TOTAL CARBON	37.80	[X] wt.%	[ ] ppm
8.		[ ] wt.%	[ ] ppm
9.		[ ] wt.%	[ ] ppm
10.		[ ] wt.%	[ ] ppm

Company Name

II. Waste Characterization and Management Practice
(Use separate form for each waste stream)

1. Waste Stream No. 3 (from Form I, Number 17)

2. Description of process producing waste

3. Brief characterization of waste WET FILTER CAKE

4. Time period for which data are representative 1/1/75 to 12/31/75

5. a. Annual waste production 7,200 ☒ tons/yr. ☐ gal./yr.

b. Daily waste production 20 ☒ tons/day ☐ gal./yr.

c. Frequency of waste production: ☐ seasonal ☐ occasional ☒ continual
☐ other (specify)

6. Waste Composition

a. Average percent solids 80 % b. pH range to

c. Physical state: ☐ liquid, ☐ slurry, ☒ sludge, ☐ solid,
☐ other (specify) ~20% WATER

d. Component	Average Concentration	☒ wet weight / ☐ dry weight	
1. Fe	38.56	☒ wt.%	☐ ppm
2. FeO	10.11	☒ wt.%	☐ ppm
3. Fe_2O_3	43.93	☒ wt.%	☐ ppm
4. Alumina	2.55	☒ wt.%	☐ ppm
5. CaO	4.40	☒ wt.%	☐ ppm
6. Magnesia	1.64	☒ wt.%	☐ ppm
7. T.C.	28.88	☒ wt.%	☐ ppm
8. H_2O	19.99	☒ wt.%	☐ ppm
9.		☐ wt.%	☐ ppm
10.		☐ wt.%	☐ ppm

Site

III. Land Disposal Questionnaire. (for currently used [redacted] landfills, dumps or lagoons)

1. a. Are there detailed design and operational plans for the site? ☐ Yes ☒ No

b. Attach sketch of land disposal area showing location and distance to surface water, soil classification, direction of groundwater flow, location of monitoring wells, and other pertinent information.

2. a. Does disposal site have a liner? ☐ Yes ☒ No

b. Type of liner _____

c. Thickness _____

3. a. Leachate collection? ☐ Yes ☒ No

b. Leachate treatment? ☐ Yes ☒ No

c. Type of treatment _____

4. a. Shortest depth to groundwater _____ ft.

b. Classes of soils underlying site (correlate with sketch) _____

5. a. Groundwater monitoring wells? ☐ Yes ☒ No

b. Number of wells _____ c. Well down gradient? ☐ Yes ☐ No

6. Non-industrial wastes disposed of at site? ☒ Yes ☐ No

7. Are different waste(s) disposed in specially segregated areas of the site? ☐ Yes ☒ No

8. Is there security at disposal area (i.e. fences, signs)? ☐ Yes ☒ No

9. Are there contingency plans and equipment to handle possible emergency situations at the facility? ☐ Yes ☒ No Attach if available.

10. Industrial wastes disposed of at site:

Waste Stream Number	Waste	Volume/Year (please specify ton gallons, cubic yards)
2	DRY FLUE DUST	10,800
3	FILTER CAKE	7,200

REF- 19

INTERVIEW FORM

INTERVIEWEE/CODE Mike O'Brien /

TITLE - POSITION Jordan Foster

ADDRESS

CITY STATE ZIP

PHONE (716) 827-9355 RESIDENCE PERIOD TO

LOCATION INTERVIEWER S. R STEELE

DATE/TIME 3/19/85 / 10^30 AM

SUBJECT: Phase I study of Hanna Furnace

REMARKS: Jordan Foster purchased the Hanna Furnace Site on in July of 1983. The site has been used as a metal junk yard and nothing has been done with regard to the waste piles left on site by Hanna Furnace.

I AGREE WITH THE ABOVE SUMMARY OF THE INTERVIEW:

SIGNATURE:

COMMENTS:

REF-20

The Hanna Furnace Corporation Solid Waste Management Facility Engineering Report

October 8, 1979

Prepared by:

Rupley Bahler Blake

391 Washington Street

Buffalo, New York 14203

3. Testing Performed

3.1 In accordance with the agreement between The Hanna Furnace Corporation and the New York State D.E.C., water samples have been taken from the pond located between the Flue Dust Storage Area B and the Furnace and Construction Debris Storage Area D. Samples from the pond and the Union Ship Canal have been analyzed by McPhee, Smith, Rosenstein Engineers, P.C. as given in the attached report. The test results are also listed below.

3.2 In addition to the water sample tests, the flue dust filter cake has been tested by Andrew S. McCreath & Son, Inc., Analytical and Consulting Chemists, as given in the attached report. The test results are also given below. The percentages given below and in the report are percent of dry material after the moisture has been driven off.

3.3 The test results are as listed below:

FILTER CAKE TEST	
Material	Percent of dried total
Total Iron, as Ferric Oxide	43.57
Phosphorous Pentoxide	0.076
Manganous Oxide	0.34
Silica	9.96
Alumina	1.81
Calcium Oxide	3.45
Magnesia	2.05
Carbon	30.10
Loss on ignition	34.17
PH (as received)	8.7
Moisture	8.17%

WATER SAMPLE TESTS		
Parameter	Test Results mg/l	
	Pond	Canal
Cyanides; Chlorine Amenable	<0.01	<0.01
Cyanides, total	<0.01	0.02
Ammonia	0.41	0.13
Phenolics	0.004	0.004
Iron, soluble	5.20	1.09

4. Contingency Planning

4.1 Equipment breakdowns will be handled by the rental of similar type equipment. Refer to item 2.9 above for type of equipment used.

4.2 Due to the nature of the material handled, water and air contamination are not a realistic problem.

4.3 Due to the non-flammable nature of the material, fire is not considered to be a hazard.

4.4 The materials handled at the Facility are non-hazardous and non-toxic.

Ripley Dahler Blake Consulting Engineers

301 Washington St
Buffalo, N Y 14203
716/856 4056

Sibley Tower Bldg.
Rochester, N.Y. 14604
716/454 3520

The Hanna Furnace Corp.
Solid Waste Management Facility

Determination of Estimated Life for Landfilling Operation

1. Yearly Tonnage to Landfill:

Furnace Debris	9500 Ton/yr
Construction Debris	500 Ton/yr
	10000 Ton/yr

2. Estimated Density of Material Handled:

110 lb/cu.ft. x 0.0005 Ton/lb = 0.055 Ton/cu.ft.

3. Available volume:

a) The pond has an approx. average depth of 12 ft.

b) Fill to an average level of approx. 14 ft. above pond surface

c) Fill remainder of landfill area (to an average level of approx. 14 ft. above existing graded (approx. 9 ft. above existing average fill height of approx 5. ft above grade.)

d) Available Volume:

Pond (12.ft + 14.ft) x 300 ft. x 400 ft. = 3,120,000 cu.ft.

Remaining Area 9ft x 300 ft. x 850 ft. = 2,295,000 cu. ft.

Total 5,415,000 cu. ft.

4. Estimated Life:

5,415,000 cu. ft. ÷ (10,000 Ton/yr ÷ 0.055 Ton/cu.ft.) = 30 yrs.

APPENDIX B

PROPOSED UPDATED NYS REGISTRY SHEET

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF SOLID AND HAZARDOUS WASTE
INACTIVE HAZARDOUS WASTE DISPOSAL SITE REPORT

CLASSIFICATION CODE: 2a REGION: 9 SITE CODE: 915029

NAME OF SITE : Hanna Furnace, Div. National Steel Corp.
STREET ADDRESS: 1818 Fuhrman Blvd.

TOWN/CITY:	COUNTY:	ZIP:
Buffalo	Erie	

SITE TYPE: Open Dump- Structure- Lagoon- Landfill-X Treatment Pond-
ESTIMATED SIZE: 8 Acres

SITE OWNER/OPERATOR INFORMATION:
CURRENT OWNER NAME....: Jordan Foster Assocation
CURRENT OWNER ADDRESS.: P.O. Box 1207, Buffalo
OWNER(S) DURING USE...: Hanna Furnace, Jordan Foster Assn.
OPERATOR DURING USE...: Hanna Furnace, Jordan Foster Assn.
OPERATOR ADDRESS.....: P.O. Box 1207, Buffalo, NY 14240
PERIOD ASSOCIATED WITH HAZARDOUS WASTE: From 1930 To Present

SITE DESCRIPTION:
Site located in southwest corner of City of Buffalo, north of the City of Lackawanna border. Disposal area on site is north of Union Canal. Site was used for disposal of furnace construction debris, consisting of brick, slag, scrap metal, concrete, rubble, and earth, flue ash, and flue dust.

HAZARDOUS WASTE DISPOSED: Confirmed- Suspected -X

TYPE	QUANTITY (units)
Slag	200,000 tons/yr
Wet & dry flue dust	17,000 tons/yr
General plant waste	5,000 tons/yr

SITE CODE: 915029

ANALYTICAL DATA AVAILABLE:

Air- Surface Water-X Groundwater- Soil-x Sediment- None-

CONTRAVENTION OF STANDARDS:

Groundwater- Drinking Water- Surface Water-X Air-

LEGAL ACTION:

TYPE..: None X State- Federal-
STATUS: In Progress- Completed-

REMEDIAL ACTION:

Proposed- Under Design- In Progress- Completed-
NATURE OF ACTION:

GEOTECHNICAL INFORMATION:
SOIL TYPE: silts & clays
GROUNDWATER DEPTH: Approximately 5 feet.

ASSESSMENT OF ENVIRONMENTAL PROBLEMS:

Erie Co. Department of Envrionment inspected site in April, 1982. Evaluation of landfill indicates no adverse environmental problems.

As part of NYSDEC Phase I Superfund investigation, Engineering Science/Dames & Moore visited the site. Insufficient information to assess impact of site contamination on environment.

ASSESSMENT OF HEALTH PROBLEMS:

Insufficient information

PERSON(S) COMPLETING THIS FORM:

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

NAME.: John S. Tygert, P.E.
TITLE: Sr. Sanitary Engr

NAME.: Robert Jlazagasti
TITLE: Solid Waste Management Spec.

DATE.: 01/24/85

NEW YORK STATE DEPARTMENT OF HEALTH

NAME.: R. Tramontano
TITLE: Bur. Tox. Subst. Assess.

NAME.:
TITLE:

5/13/85

DATE.:

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

AUG 21 1998

OFFICE OF
SOLID WASTE AND EMERGENCY
RESPONSE

William R. Weissman
Piper & Marbury L.L.P.
1200 Nineteenth Street, N.W.
Washington, D.C. 20036-2430

Dear Mr. Weissman:

Thank you for your letter of May 11, 1998 and for meeting with us to discuss the Utility Solid Waste Activities Group's (USWAG's), Edison Electric Institute's (EEI's) and the American Gas Association's (AGA's) concerns regarding the effects the land disposal restrictions (LDR) treatment standards published on May 26, 1998 may have on cleanup of manufactured gas plant sites. Like you, we are interested in encouraging and facilitating cleanup of manufactured gas plant sites in a way that is both efficient, economical and protective of human health and the environment. Before addressing the specific concerns raised in your letter, we will review some of the general principles that govern application of RCRA to contaminated soil.

As you know, contaminated soil, of itself, is not hazardous waste and, generally, is not subject to regulation under RCRA. Contaminated soil can become subject to regulation under RCRA if the soil "contains" hazardous waste. EPA generally considers contaminated soil to contain hazardous waste: (1) when soil exhibits a characteristic of hazardous waste; and, (2) when soil is contaminated with hazardous constituents from listed hazardous waste above certain concentrations. 63 FR at 28617 (May 26, 1998).

If contaminated soil contains hazardous waste, then it is subject to all applicable RCRA requirements until the soil no longer contains hazardous waste (i.e., until the soil is decharacterized or, in the case of soil containing listed hazardous waste, until EPA or an authorized state determines that the soil no longer contains listed hazardous waste). In some circumstances, soil that no longer contains hazardous waste, while generally not subject to RCRA requirements, will remain subject to the land disposal restrictions. See 63 FR at 28618 (May 26, 1998) and other sources cited therein. This may be the case if contaminated soil from manufactured gas plants exhibits a hazardous characteristic when first generated (i.e., when first removed from the land) and is subsequently decharacterized. Note that if contaminated soil from manufactured gas plant sites does not exhibit a characteristic of hazardous waste or contain listed hazardous waste when first generated (i.e., when first removed from the land), then the soil is not subject to any RCRA requirements, including the land disposal restrictions. 63 FR 28618 (May

26, 1998).[1]

We understand that at some manufactured gas plant cleanup sites, soil is consolidated within an area of contamination prior to being removed from the land (i.e., generated). This practice, and the area of contamination policy generally, is not affected by the May 26, 1998 rulemaking. Contaminated soil may be consolidated within an area of contamination before it is removed from the land (i.e., generated); the determination as to whether the soil exhibits a characteristic of hazardous waste or contains listed hazardous waste may be made after such consolidation. The Agency's most recent guidance on the area of contamination policy is enclosed for your information.

We understand from our discussions that your concerns center around management of contaminated soil that exhibited a characteristic of hazardous waste when first generated but has subsequently been decharacterized. We will address two questions in this letter: (1) what are the Agency's rules and policies concerning land disposal of decharacterized wastes, including decharacterized contaminated soil and (2) when decharacterized contaminated soil remains subject to the land disposal restrictions, what requirements apply prior to land disposal.

1. What are the Agency's rules and policies concerning land disposal of decharacterized wastes, including decharacterized contaminated soil?

Decharacterized waste (and decharacterized contaminated soil) is not hazardous waste, and is generally not subject to the Subtitle C regulations. Nonetheless, as you are aware, under certain circumstances decharacterized wastes (and decharacterized contaminated soils) remain subject to LDR treatment requirements. See generally, Chemical Waste Management v. EPA, 976 F. 2d 2, 13-14 (D.C. Cir. 1992).

When decharacterized wastes (and decharacterized contaminated soils) remain subject to LDR treatment requirements (i.e., as explained above, when the soils exhibit a hazardous waste characteristic when removed from the land) they must meet applicable LDR treatment standards prior to land disposal, before they can be land disposed, (i.e., before they can be placed in a land disposal unit). RCRA 3004(k) defines land disposal to include, but not be limited to, any placement in a landfill, surface impoundment, waste pile, injection well, land treatment facility, salt dome formation, salt bed formation, or underground mine or cave. Furthermore, EPA has found, in other contexts, that open pits, flat or low walled concrete pads that do not effectively

[1] The exception to this general rule is soil contaminated by listed hazardous waste when the listed hazardous waste is land disposed after the effective date of applicable LDR treatment requirements without meeting such applicable requirements. In this case, the contaminated soil would be subject to land disposal restriction treatment requirements regardless of whether it "contained" hazardous waste when first removed from the land unless there is a finding that hazardous constituent levels are sufficiently low so that threats to human health and the environment posed by land disposal of the soil are minimized. See 63 FR at 28618 (May 26, 1998). As we understand the conditions at most manufactured gas plant cleanup sites, we believe this case will seldom be presented during manufactured gas plant cleanups because soil at manufactured gas plant sites is not typically contaminated by listed hazardous waste.

contain hazardous wastes and hazardous constituents may constitute land disposal. See the enclosed letter from Sylvia Lowrance, U.S. EPA to Richard Wasserstrom dated October 29, 1992. However, EPA's longstanding view is that placement in tanks, containers, and containment buildings is not land disposal. See, e.g., 57 FR 37211 (August 18, 1992) (establishing standards for containment buildings). EPA has established design and operating requirements for tanks, containers and containment buildings used to treat and store hazardous waste. Clearly, units used for treatment or storage of decharacterized contaminated soil which meet these requirements would not be considered land disposal units and may be used to treat or store decharacterized contaminated soil without the approval of EPA or an authorized state. However, since decharacterized contaminated soil is no longer subject to regulation as hazardous waste (except, potentially, for land disposal treatment requirements), treatment and storage units used to manage decharacterized contaminated soil are not hazardous waste management units and do not have to be designed or operated in accordance with RCRA Subtitle C hazardous waste regulations or receive hazardous waste permits. If decharacterized contaminated soil will be treated or stored in a unit which is not a tank, container, or containment building, EPA or an authorized state should make a site-specific determination as to whether or not placement of decharacterized contaminated soil in the unit constitutes land disposal. In making such determinations, in addition to the mandatory consideration of the definition of land disposal in section 3004(k), EPA will consider (and recommends that authorized states similarly consider) the relevant requirements established by the Agency for tanks, containers, and containment buildings and, if these requirements are modified, whether the treatment or storage unit will prevent or control unacceptable releases of decharacterized contaminated soil and hazardous constituents to the environment. These determinations should be made in the context of your on-going MGP site cleanups and should be included in the public notices which are typically part of cleanup processes. We recognize that determinations about containment units will likely be made predominantly by authorized states and that due to site- and waste-specific variability containment units will have to accommodate the variety of conditions that may be presented during cleanup of MGP sites.

2. When decharacterized contaminated soil remains subject to the land disposal restrictions, what requirements apply prior to land disposal ?

When decharacterized contaminated soil remains subject to the land disposal restrictions, three types of requirements apply. First, the soil must be treated to meet applicable land disposal treatment standards prior to land disposal. Second, as discussed above, prior to land disposal the soil must be treated or stored in an appropriate type of unit (i.e., a unit that is not a land disposal unit). Third, to ensure that applicable land disposal treatment standards are met, certain tracking, paperwork and other requirements must be met.

(a) **Treatment to meet applicable land disposal treatment standards.** As just noted above, like any other material subject to the land disposal restrictions, decharacterized soils from MGP cleanup sites must be treated to meet applicable land disposal restriction treatment standards prior to land disposal. In the case of contaminated soils subject to the land disposal

restrictions, generators may choose between meeting the universal treatment standard for the contaminating hazardous waste or meeting the alternative soil treatment standards. For decharacterized contaminated soils, meeting the universal treatment standard for the contaminating hazardous waste would require treatment of the formerly characteristic constituent and all underlying hazardous constituents to the universal treatment standards. Meeting the alternative soil treatment standards would require treatment of the formerly characteristic constituent and all underlying hazardous constituents to reduce constituent concentrations by 90 percent or to achieve ten times the universal treatment standard. Note that, as with any other material subject to the land disposal restrictions, contaminated soil may qualify for treatment variances under certain circumstances, see 40 CFR 268.44.

(b) Storage and treatment prior to land disposal. As discussed above, although decharacterized contaminated soil is not hazardous waste and, generally, is therefore not subject to RCRA Subtitle C requirements, because it remains subject to the land disposal restrictions, it must be stored and treated in appropriate units (i.e., units that are not land disposal units) until treatment standards are met.

(c)Tracking, paperwork and other requirements. If decharacterized contaminated soil is stored, the storage prohibition of RCRA 3004(j) generally applies. This means that the decharacterized contaminated soil can only be stored for the purpose of accumulating necessary quantities of hazardous wastes to facilitate proper recovery, treatment, or disposal. See 40 CFR 268.50.

For decharacterized contaminated soil, the reporting and record keeping requirements of 40 CFR 268.9 apply. For example, if characteristic soil from an MGP cleanup is decharacterized at the site where it was generated, then sent off-site for further treatment to achieve LDR standards in a thermal desorption unit, the generator of the contaminated soil must complete a one-time notification and certification. The one-time notification and certification provides a description of the soil as initially generated, including applicable hazardous waste codes, treatability groups, and underlying hazardous constituents. It also provides information about the facility which will receive, and treat, the decharacterized soil. Thus, in this example the generator of the contaminated soil would identify the facility operating the thermal desorption unit. A copy of the one time notification and certification must be placed in the generator's files and sent to the appropriate EPA region or authorized state. These requirements create a tracking system so EPA and authorized states can determine that materials subject to the land disposal restrictions arrive at the right place and are appropriately treated prior to land disposal.

Furthermore, the dilution prohibition of 40 CFR 268.3 applies to the decharacterized contaminated soil until applicable LDR treatment standards are achieved. As you are aware, dilution is normally prohibited as a means of achieving the LDR treatment standards, including for characteristic (and decharacterized) wastes. See Chemical Waste Management v. EPA, 976 F. 2d 2, 15-19 (D.C. Cir. 1992).

We understand that often decharacterized contaminated soils from MGP cleanup sites are returned to the utility's power plant and mixed with coal or other combustibles prior to burning in a utility boiler. The Agency does not consider this process a form of impermissible dilution. Mixing MGP waste with coal or other combustibles results in a physical change to the waste stream that makes the waste more amenable to combustion (which, in addition to being a type of energy recovery, is a form of treatment that destroys or removes the hazardous constituents), and thus facilitates proper treatment.

In addition to mixing with coal or other combustibles, other types of mixing or treatment of decharacterized contaminated soil may be permissible prior to final treatment, provided that these processes produce chemical or physical changes and do not merely (1) dilute the hazardous constituents into a larger volume of waste so as to lower the constituent concentration or (2) release excessive amounts of hazardous constituents to the air. If mixing or other pre-treatment is necessary to facilitate proper treatment (e.g., destruction or removal, such as burning in a boiler) in meeting the treatment standards then dilution is permissible. See 51 FR 40592 (November 7, 1986) and 53 FR 30911 (August 16, 1988).

Note that, in some instances, burning decharacterized contaminated soil mixed with coal in a utility boiler may implicate the Bevill amendment. As you are aware, EPA's position is that wastes which are covered by the Bevill amendment are not subject to LDR requirements. 40 CFR 268.1(b); see also Horsehead Resource Development Co. v. Browner, 16 F. 3d 1246, 1260-61 (D.C. Cir. 1994) (upholding EPA's position). Consequently, if decharacterized contaminated soil is burned in utility boilers along with coal and the resulting combustion ash is within the scope of the Bevill amendment, LDR standards do not have to be met for that ash, nor would the decharacterized contaminated soils be considered to be a prohibited waste. In this case, the only reporting and recordkeeping requirement required is a one-time notice kept in the facility's records. See 40 CFR 268.7 (a)(7).

We appreciate your patience with the Agency in responding to your concerns. If you need further assistance, please contact Rita Chow of my staff at (703) 308-6158.

Sincerely,

Elizabeth A. Cotsworth
Acting Director
Office of Solid Waste

Enclosure (2)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

MAR 13 1995

OFFICE OF
SOLID WASTE AND EMERGENCY
RESPONSE

MEMORANDUM

SUBJECT: Use of the Area of Contamination (AOC) Concept During RCRA Cleanups

FROM: Michael Shapiro, Director
Office of Solid Waste

Stephen D. Luftig, Director
Office of Emergency and Remedial Response

Jerry Clifford, Director
Office of Site Remediation Enforcement

TO: RCRA Branch Chiefs
CERCLA Regional Managers

This memorandum confirms that, under current regulations, certain broad areas of contamination (AOCs) may be considered RCRA landfills. Under certain conditions, hazardous wastes may be moved within such areas without triggering RCRA land disposal restrictions or minimum technology requirements. This memorandum also describes the distinctions between the final Corrective Action Management Unit (CAMU) regulations and the Area of Contamination (AOC) approach; and encourages appropriate use of both options to expedite remedial actions.

Area of Contamination Approach

The area of contamination concept was discussed in detail in the preamble to the National Contingency Plan (55 FR 8758-8760, March 8, 1990). In this discussion, EPA clarified that certain discrete areas of generally dispersed contamination (called "areas of contamination" or "AOCs") could be equated to a RCRA landfill and that movement of hazardous wastes within those areas would not be considered land disposal and would not trigger the RCRA land disposal restrictions. The NCP also discusses using the concept of "placement" to determine which requirements might apply within an AOC. The concept of "placement" is important because placement of hazardous waste into a landfill or other land based unit is considered land disposal,

which triggers the land disposal restrictions, and may trigger other RCRA requirements including permitting (at a non-CERCLA site), closure and post-closure. In the NCP, EPA stated, "placement does not occur when waste is consolidated within an AOC, when it is treated in situ, or when it is left in place." Placement does occur, and additional RCRA requirements may be triggered, when wastes are moved from one AOC to another (e.g., for consolidation) or when waste is actively managed (e.g., treated *ex situ*) within or outside the AOC and returned to the land. Additional information on when placement does and does not occur is provided in the attached guidance document, *Determining When Land Disposal Restrictions (LDRs) Are Applicable to CERCLA Response Actions*, OSWER Directive 9347.3-05FS, July 1989.

Although the AOC concept was initially discussed in the context of the CERCLA program, it applies equally to RCRA corrective action sites, cleanups under state law, and voluntary cleanups[1]. For additional information on the AOC concept, see, for example, the October 9, 1990 memorandum from Sylvia Lowrance to David Ullrich, "Replacement of Contaminated Soil and Debris Treated under a Treatability Variance," the January 7, 1991 letter from Don Clay to Richard Stoll, and the June 11, 1992 letter from Sylvia Lowrance to Douglas Green (attached).

The interpretations of landfill, placement and the area of contamination concept discussed in the NCP preamble were reiterated by EPA in the 1990 subpart S proposal (55 FR 30798, July 27, 1990). In the 1990 proposal, EPA termed AOCs at RCRA facilities "Corrective Action Management Units" or "CAMUs." Although the name was changed, from AOC to CAMU, the CAMU concept discussed in the 1990 proposal was equivalent to the AOC concept (although, as discussed below, the CAMU concept was broadened when the final CAMU rule was issued). In response to great interest in the CAMU/AOC concept as discussed in the 1990 proposal, EPA issued a fact sheet titled *Use of the Corrective Action Management Unit Concept* in August 1992 (attached). In the August, 1992 fact sheet, EPA further reiterated the AOC concept by explaining that broad areas of contamination, including specific subunits[2], could be considered landfills under the RCRA regulations and discussed activities which would or would not trigger additional RCRA requirements when conducted in such areas.

The discussions of the AOC approach in the NCP preamble, 1990 subpart S proposal, and the August, 1992 fact sheet continue to reflect EPA's interpretation of current statutory and regulatory provisions. They remain useful guidance documents when the AOC approach is

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[1] Although advance approval at the Federal level is not required for private parties to take advantage of the AOC concept, we encourage them to consult with the appropriate agency to ensure they implement the AOC concept appropriately. It should be noted that the agency responsible for determining that the AOC concept is being properly applied might not be the same as the agency overseeing cleanup at a site. Additionally, states may have more stringent standards which require consultation and/or prior approval of an AOC.

[2] Note, if the subunit were a RCRA regulated unit, inclusion of the unit within an AOC could necessitate a RCRA permit modification or a change under RCRA interim status.

under consideration at RCRA corrective action sites, Superfund sites and during other cleanup actions involving the movement or consolidation of hazardous waste, or media and debris contaminated with hazardous waste.

Relationship of the AOC Concept to the Final CAMU Rules

On February 16, 1993, EPA published final Corrective Action Management Unit regulations (58 FR 8658, February 16, 1993). The final CAMU rule differs from the AOC approach in important respects. First, the CAMU regulations create a new type of RCRA unit - a "Corrective Action Management Unit" or "CAMU." CAMUs are distinct from the type of units listed in RCRA Section 3004(k)[3]. Second, only EPA and authorized states may choose to designate CAMUs for management of remediation waste during RCRA corrective action and other cleanups. Third, the CAMU regulations expanded the flexibility available for management of remediation wastes beyond that offered by the AOC approach. Under the CAMU regulations, certain activities which would normally be considered placement are allowed when carried out in an agency-approved CAMU, including: remediation waste[4] may be removed from a CAMU and replaced (before or after treatment) in the same or a different CAMU; remediation waste may be consolidated into a CAMU before or after treatment; and, remediation waste may be moved (again, before or after treatment) between two or more CAMUs at the same facility.

While the CAMU concept contained in the final CAMU rule was historically an outgrowth of the AOC concept, it has a separate statutory and regulatory basis; therefore, it supplements rather than supersedes the AOC concept. The AOC concept was not altered when the final CAMU rules were promulgated and it does not depend on the existence of the CAMU rule.

As you may be aware, several parties challenged the CAMU rule. The lawsuit has been stayed pending promulgation of the final Hazardous Waste Identification Rule for contaminated media ("HWIR-Media"). At the time the stay was issued, EPA stated that the HWIR-Media rule was expected to replace a substantial portion of the CAMU rule; however, as long as the CAMU rule remains in effect, CAMUs may be used to facilitate protective remedies under RCRA, CERCLA, and state cleanup authorities. If a CAMU is under consideration, we recommend you take the following steps, in addition to the CAMU approval steps required at 40 CFR § 264.552:

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[3] RCRA Section 3004(k) defines the term land disposal, when used with respect to a specified hazardous waste, to include placement of such hazardous waste in a landfill, surface impoundment, waste pile, injection well, land treatment facility, salt dome formation, salt bed formation, or underground mine or cave.

[4] Remediation waste is defined as, "all solid and hazardous wastes, and all media (including groundwater, surface water, soils, and sediments) and debris, which contain listed hazardous wastes or which themselves exhibit a hazardous waste characteristic, that are managed for the purpose of implementing corrective action requirements under 40 CFR § 264.101 and RCRA section 3008(h). For a given facility, remediation wastes may originate only from within the facility boundary, but may include waste managed in implementing RCRA sections 3004(v) or 3008(h) for releases beyond the facility boundary.

1) explain the potential risks associated with CAMUs to facility owner/operators by informing them that the CAMU rule has been challenged and that EPA may issue a proposal to withdraw it; 2) where possible, mitigate potential risks associated with CAMUs by, for example, implementing a CAMU remedy within the shortest possible time frame; and 3) document all CAMU decisions completely, emphasizing how the CAMU provides support for the best site-specific remedy.

Continued Use of the AOC Concept

Both AOCs and CAMUs can be used to expedite effective and protective remedial actions; however, EPA encourages the use of the AOC concept in cases where the additional flexibility provided in the final CAMU regulations is not needed. For example, the AOC concept is particularly useful for consolidation of contiguous units or areas of contaminated soil. Using the AOC concept, a RCRA facility owner/operator with a large contiguous area of soil contamination could consolidate such soils into a single area or engineered unit within an AOC without triggering the RCRA land disposal restrictions or minimum technology requirements. Use of the AOC concept would not be affected by the pending litigation over CAMU or any changes in the CAMU rule. In addition, please note, the AOC and CAMU concepts only address management of materials which would otherwise be subject to RCRA (i.e., hazardous wastes, or media and debris contaminated with hazardous waste). RCRA regulated materials are a subset of the materials managed during site cleanups.

We know you will continue to use the AOC and CAMU concepts to support appropriate remedies and to expedite cleanup processes. If you have any questions regarding the AOC or CAMU concepts, please contact Elizabeth McManus, Hugh Davis or Robin Anderson at (703) 308-8657, (703) 308-8633, and (703) 603-8747, respectively.

attachments

cc: Susan Bromm, OECA
Elizabeth Cotsworth, OSW
Larry Reed, OERR
Jim Woolford, FFRRO
Barbara Pace, OGC
George Wyeth, OGC
Earl Salo, OGC
RCRA Regional Division Directors
Superfund Regional Division Directors

United States Environmental Protection Agency | Office of Solid Waste and Emergency Response | Directive: 9347.3-05FS July 1989

EPA

Superfund LDR Guide #5

Determining When Land Disposal Restrictions (LDRs) Are Applicable to CERCLA Response Actions

CERCLA Section 121(d)(2) specifies that on-site Superfund remedial actions shall attain "other Federal standards, requirements, criteria, limitations, or more stringent State requirements that are determined to be legally applicable or relevant and appropriate (ARAR) to the specified circumstances at the site." In addition, the National Contingency Plan (NCP) requires that on-site removal actions attain ARARs to the extent practicable. Off-site removal and remedial actions must comply with legally applicable requirements. This guide outlines the process used to determine whether the Resource Conservation and Recovery Act (RCRA) land disposal restrictions (LDRs) established under the Hazardous and Solid Waste Amendments (HSWA) are "applicable" to a CERCLA response action. More detailed guidance on Superfund compliance with the LDRs is being prepared by the Office of Solid Waste and Emergency Response (OSWER).

For the LDRs to be applicable to a CERCLA response, the action must constitute placement of a restricted RCRA hazardous waste. Therefore, site managers (OSCs, RPMs) must answer three separate questions to determine if the LDRs are applicable:

(1) Does the response action constitute placement?

(2) Is the CERCLA substance being placed also a RCRA hazardous waste? and if so

(3) Is the RCRA waste restricted under the LDRs?

Site managers also must determine if the CERCLA substances are California list wastes, which are a distinct category of RCRA hazardous wastes restricted under the LDRs (see Superfund LDR Guide #2).

(1) DOES THE RESPONSE CONSTITUTE PLACEMENT?

The LDRs place specific restrictions (e.g., treatment of waste to concentration levels) on RCRA hazardous wastes prior to their placement in land disposal units. Therefore, a key determination is whether the response action will constitute placement of wastes into a land disposal unit. As defined by RCRA, land disposal units include landfills, surface impoundments, waste piles, injection wells, land treatment facilities, salt dome formations, underground mines or caves, and concrete bunkers or vaults. If a CERCLA response includes disposal of wastes in any of these types of off-site land disposal units, placement will occur. However, uncontrolled hazardous waste sites often have widespread and dispersed contamination, making the concept of a RCRA unit less useful for actions involving on-site disposal of wastes. Therefore, to assist in defining when "placement" does and does not occur for CERCLA actions involving on-site disposal of wastes, EPA uses the concept of "areas of contamination" (AOCs), which may be viewed as equivalent to RCRA units for the purposes of LDR applicability determinations.

An AOC is delineated by the areal extent (or boundary) of contiguous contamination. Such contamination must be continuous, but may contain varying types and concentrations of hazardous substances. Depending on site characteristics, one or more AOCs may be delineated. Highlight 1 provides some examples of AOCs.

Highlight 1: EXAMPLES OF AREAS OF CONTAMINATION (AOCs)

- A waste source (e.g., waste pit, landfill, waste pile) and the surrounding contaminated soil.
- A waste source, and the sediments in a stream contaminated by the source, where the contamination is continuous from the source to the sediments.*
- Several lagoons separated only by dikes, where the dikes are contaminated and the lagoons share a common liner.

* The AOC does not include any contaminated surface or ground water that may be associated with this land-based waste source.

For on-site disposal, placement occurs when wastes are moved from one AOC (or unit) into another AOC (or unit). Placement does not occur when wastes are left in place, or moved within a single AOC. Highlight 2 provides scenarios of when placement does and does not occur, as defined in the proposed NCP. The Agency is current reevaluating the definition of placement prior to the promulgation of the final NCP, and therefore, these scenarios are subject to change.

Highlight 2: PLACEMENT

Placement does occur when wastes are:

- Consolidated from different AOCs into a single AOC;
- Moved outside of an AOC (for treatment or storage, for example) and returned to the same or a different AOC; or
- Excavated from an AOC, placed in a separate unit, such as an incinerator or tank that is within the AOC, and redeposited into the same AOC.

Placement does not occur when wastes are:

- Treated in situ;
- Capped in place;
- Consolidated within the AOC; or
- Processed within the AOC (but not in a separate unit, such as a tank) to improve its structural stability (e.g., for capping or to support heavy machinery).

In summary, if placement on-site or off-site does not occur, the LDRs are not applicable to the Superfund action.

(2) IS THE CERCLA SUBSTANCE A RCRA HAZARDOUS WASTE?

Because a CERCLA response must constitute placement of a restricted RCRA hazardous waste for the LDRs to be applicable, site managers must evaluate whether the contaminants at the CERCLA site are RCRA hazardous wastes. Highlight 3 briefly describes the two types of RCRA hazardous wastes -- listed and characteristic wastes.

Highlight 3: RCRA HAZARDOUS WASTES

A RCRA solid waste* is hazardous if it is listed or exhibits a hazardous characteristic.

Listed RCRA Hazardous Wastes

Any waste listed in Subpart D of 40 CFR 261, including:

- F waste codes (Part 261.31)
- K waste codes (Part 261.32)
- P waste codes (Part 261.33(e))
- U waste codes (Part 261.33(f))

Characteristic RCRA Hazardous Wastes

Any waste exhibiting one of the following characteristics, as defined in 40 CFR 261:

- Ignitability
- Corrosivity
- Reactivity
- Extraction Procedure (EP) Toxicity

* A solid waste is any material that is discarded or disposed of (i.e., abandoned, recycled in certain ways, or considered inherently waste-like). The waste may be solid, semi-solid, liquid, or a contained gaseous material. Exclusions from the definition (e.g., domestic sewage sludge) appear in 40 CFR 261.4(a). Exemptions (e.g., household wastes) are found in 40 CFR 261.4(b).

Site managers are not required to presume that a CERCLA hazardous substance is a RCRA hazardous waste unless there is affirmative evidence to support such a finding. Site managers, therefore, should use "reasonable efforts" to determine whether a substance is a RCRA listed or characteristic waste. (Current data collection efforts during CERCLA removal and

remedial site investigations should be sufficient for this purpose.) For listed hazardous wastes, if manifests or labels are not available, this evaluation likely will require fairly specific information about the waste (e.g., source, prior use, process type) that is "reasonably ascertainable" within the scope of a Superfund investigation. Such information may be obtained from facility business records or from an examination of the processes used at the facility. For characteristic wastes, site managers may rely on the results of the tests described in 40 CFR 261.21 - 261.24 for each characteristic or on knowledge of the properties of the substance. Site managers should work with Regional RCRA staff, Regional Counsel, State RCRA staff, and Superfund enforcement personnel, as appropriate, in making these determinations.

In addition to understanding the two categories of RCRA hazardous wastes, site managers will also need to understand the derived-from rule, the mixture rule, and the contained-in interpretation to identify correctly whether a CERCLA substance is a RCRA hazardous waste. These three principles, as well as an introduction to the RCRA delisting process, are described below.

Derived-from Rule (40 CFR 261.3(c)(2))

The derived-from rule states that any solid waste derived from the treatment, storage, or disposal of a listed RCRA hazardous waste is itself a listed hazardous waste (regardless of the concentration of hazardous constituents). For example, ash and scrubber water from the incineration of a listed waste are hazardous wastes on the basis of the derived-from rule. Solid wastes derived from a characteristic hazardous waste are hazardous wastes only if they exhibit a characteristic.

Mixture Rule (40 CFR 261.3(a)(2)).

Under the mixture rule, when any solid waste and a listed hazardous waste are mixed, the entire mixture is a listed hazardous waste. For example, if a generator mixes a drum of listed F006 electroplating waste with a non-hazardous wastewater (wastewaters are solid wastes - see Highlight 3), the entire mixture of the F006 and wastewater is a listed hazardous waste. Mixtures of solid wastes and characteristic hazardous wastes are hazardous only if the mixture exhibits a characteristic.

Contained-in Interpretation (OSW Memorandum dated November 13, 1986)

The contained-in interpretation states that any mixture of a non-solid waste and a RCRA listed hazardous waste must be managed as a hazardous waste as long as the material contains (i.e., is above health-based levels) the listed hazardous waste. For example, if soil or ground water (i.e., both non-solid wastes) contain an F001 spent solvent, that soil or ground water must be managed as a RCRA hazardous waste, as long as it "contains" the F001 spent solvent.

Delisting (40 CFR 260.20 and .22)

To be exempted from the RCRA hazardous waste "system," a listed hazardous waste, a mixture of a listed and solid waste, or a derived-from waste must be delisted (according to 40 CFR 260.20 and .22). Characteristic hazardous wastes never need to be delisted, but can be treated to no longer exhibit the characteristic. A contained-in waste also does not have to be delisted; it only has to "no longer contain" the hazardous waste.

If site managers determine that the hazardous substance(s) at the site is a RCRA hazardous waste(s), they should also determine whether that RCRA waste is a California list waste. California list wastes are a distinct category of RCRA wastes restricted under the LDRs (see Superfund LDR Guide #2).

(3) IS THE RCRA WASTE RESTRICTED UNDER THE LDRs?

If a site manager determines that a CERCLA waste is a RCRA hazardous waste, this waste also must be restricted for the LDRs to be an applicable requirement. A RCRA hazardous waste becomes a restricted waste on its HSWA statutory deadline or sooner if the Agency promulgates a standard before the deadline. Because the LDRs are being phased in over a period of time (see Highlight 4), site managers may need to determine what type of restriction is in

Highlight 4: LDR STATUTORY DEADLINES

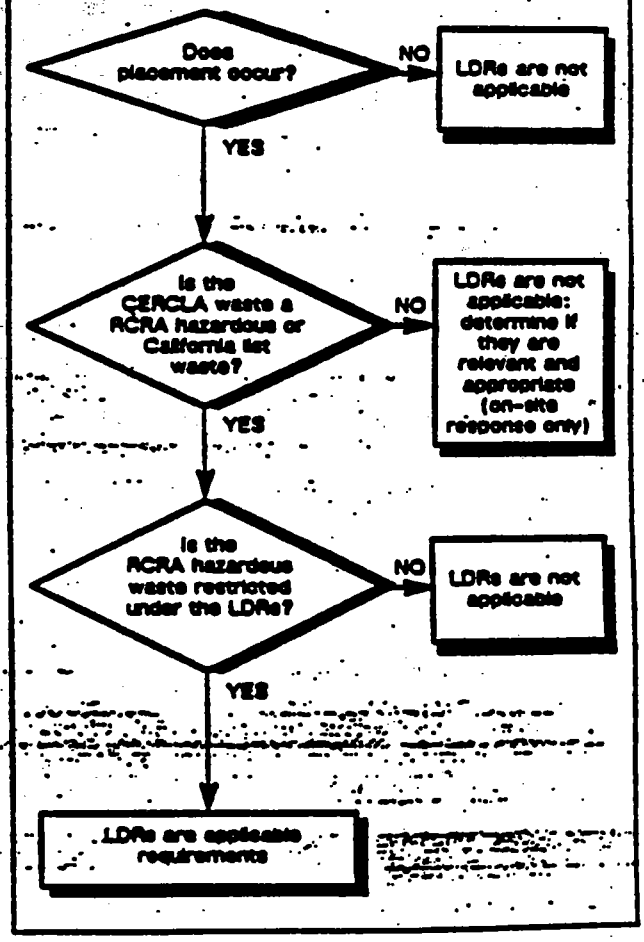
Waste	Statutory Deadline
Spent Solvent and Dioxin-Containing Wastes	November 8, 1986
California List Wastes	July 8, 1987
First Third Wastes	August 8, 1988
Spent Solvent, Dioxin-Containing, and California List Soil and Debris From CERCLA/RCRA Corrective Actions	November 8, 1988
Second Third Wastes	June 8, 1989
Third Third Wastes	May 8, 1990
Newly Identified Wastes	Within 6 months of identification as a hazardous waste

effect at the time placement is to occur. For example, if the RCRA hazardous wastes at a site are currently under a national capacity extension when the CERCLA decision document is signed, site managers should evaluate whether the response action will be completed before the extension expires. If these wastes are disposed of in surface impoundments or landfills prior to the expiration of the extension, the receiving unit would have to meet minimum technology requirements, but the wastes would not have to be treated to meet the LDR treatment standards.

APPLICABILITY DETERMINATIONS

If the site manager determines that the LDRs are applicable to the CERCLA response based on the previous three questions, the site manager must: (1) comply with the LDR restriction in effect, (2) comply with the LDRs by choosing one of the LDR compliance options (e.g., Treatability Variance, No Migration Petition), or (3) invoke an ARAR waiver (available only for on-site actions). If the LDRs are determined not to be applicable, then, for on-site actions only, the site manager should determine if the LDRs are relevant and appropriate. The process for determining whether the LDRs are applicable to a CERCLA action is summarized in Highlight 5.

Highlight 5 - DETERMINING WHEN LDRS ARE APPLICABLE REQUIREMENTS



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

AUG 31 1992

OFFICE OF
SOLID WASTE AND EMERGENCY RESPONSE

MEMORANDUM

SUBJECT: Use of the Corrective Action Management Unit (CAMU) Concept

TO: Waste Management Division Directors, Regions I - X
RCRA Branch Chiefs, Regions I - X
RCRA Regional Counsel, Regions I - X

FROM: Sylvia Lowrance, Director
Office of Solid Waste

Bruce Diamond, Director
Office of Waste Programs Enforcement

At the February 1992 Stabilization Conference in Colorado Springs we discussed the possibility of implementing the corrective action management unit (CAMU) concept before final promulgation of the Subpart S regulations. At that time OSWER made a commitment to provide further guidance to the Regions on how to use existing RCRA regulations to achieve some of the remedial benefits of the CAMU. The attached document, "Use of the Corrective Action Management Unit Concept," provides that guidance.

The CAMU portion of Subpart S is on a current schedule to be finalized by December 1992. The attached guidance, which was developed jointly by OSWER and OGC, clarifies the Agency's legal authority for utilizing a CAMU-like approach before the CAMU rule is finalized, and provides guidance on when and how to use the concept. The concept can be applied during final remedies, and in the implementation of stabilization actions to reduce imminent threats and contain releases. We encourage the use of this concept whenever the success of the remedial option at a particular facility will be enhanced.

If you have any questions regarding the content of this guidance, please call Dave Fagan at (202) 260-4497.

cc: Lisa Friedman, OGC
Henry Longest, OERR
Kathie Stein, OE

United States Environmental Protection Agency | Office of Solid Waste and Emergency Response Washington, D.C. 20460 | August 1992

EPA

Use of the Corrective Action Management Unit Concept

Office of Solid Waste

BACKGROUND

Beginning in 1992, EPA began implementing a new strategy to increase the pace of cleanup and to achieve positive environmental results at RCRA treatment, storage and disposal facilities (TSDFs) requiring corrective action. While comprehensive facility cleanup is still the long-term goal for the RCRA Corrective Action Program, this new initiative emphasizes the importance of stabilizing sites by controlling releases and preventing the further spread of contaminants.

At most RCRA facilities, stabilization or final remedial actions will involve excavation and on-site management of contaminated soils, sludges and other wastes that are subject to the RCRA Subtitle C hazardous waste regulations. In these situations, a number of issues can arise regarding the applicability of certain RCRA requirements, and how these requirements may affect the remedial activities. Specifically, experience in the RCRA and CERCLA remedial programs has shown that the RCRA land disposal restrictions (LDRs) and minimum technology requirements (MTRs) may limit the types of remedial options available at sites, as well as affect the types of specific technologies that may be used, the volumes of materials that are managed, and other features of remedies under consideration.

Recognizing that strict application of these RCRA requirements may limit or constrain desirable remedies, including stabilization programs, EPA is developing an important regulatory concept, known as the Corrective Action Management Unit (CAMU), to facilitate effective and protective remedial actions. This concept, first discussed in the proposed Subpart S corrective action regulations (55 FR 30798, July 27, 1990), is similar to the Superfund concept of the "area of contamination," in which broad areas of contamination, often including specific subunits, are considered to be a single land disposal unit for remedial purposes.

CAMUs may be particularly useful for specific remedial activities such as consolidation of units or contaminated surficial soils. For example, a group of unlined inactive lagoons that are continuing sources of releases to groundwater may be best remediated by removing and treating the concentrated wastes in another unit, and excavating the remaining low-concentration contaminated soils from underneath the lagoons. These soils could then be consolidated and placed into a protective and cost-effective single-capped unit, thereby controlling further releases to groundwater. In other situations site remediations will require excavation of large quantities of relatively low-level contaminated surficial soils. In these cases a protective and cost-effective remedy might be to excavate the soils and consolidate them into a single area or engineered unit within the area of contamination. For both of these examples, application of LDRs and possibly MTR requirements would result in a more costly and complex remedy, that may delay remediation and result in little additional environmental protection for the site.

As proposed in the Subpart S rule, there may be certain types of situations in which application of the CAMU concept (55 FR 30842) would be inappropriate. In addition, several

factors (55 FR 30883) may be considered by decision-makers in determining how CAMUs would actually be designated at sites. Although owner/operators may propose a specific area as a CAMU, it is the responsibility of EPA or the authorized State to determine whether a CAMU is necessary and appropriate, and, if so, to determine the boundaries of the unit.

The Subpart S regulations have not yet been finalized. However, although the CAMU concept has been presented only in proposed regulations, existing regulatory authority may be used to implement this type of approach in site remediations and stabilization actions. The Agency's experience with the RCRA and CERCLA remedial programs indicates that the CAMU concept could be applied immediately to great advantage at a significant number of RCRA cleanup sites. This guidance is presented to clarify the use of the CAMU concept prior to final regulations.

USE OF LANDFILL DESIGNATION FOR REMEDIAL PURPOSES

Specifically, certain contaminated areas at sites that require remediation, including groups of units in such areas, may be designated as a "landfill" under the current RCRA landfill definition (40 CFR § 260.10). Designating such an area of a facility as a landfill within the existing regulatory framework can achieve remedial benefits similar to those that would be obtained by using CAMUs under the Subpart S proposal. Prior to the promulgation of final CAMU rules, EPA encourages the use of this approach at contaminated sites, where it can promote effective and expeditious remedial solutions. EPA recommends that decisions on designating certain contaminated areas or groups of units as a landfill be made in accordance with applicable regulations and generally in accordance with the CAMU provisions in the Subpart S proposal.

Owner/operators proposing to address certain areas at a facility as a single landfill for remedial purposes should request approval from EPA or the authorized State agency. The Regional Administrator or the authorized State Director will be the ultimate decision-maker as to whether such a landfill unit will help achieve the remedial objectives at the facility. EPA recommends decisions to use existing authorities, waivers, or variances to achieve many of the same objectives as the proposed Subpart S rule CAMU provisions should generally follow the proposed regulatory provisions (55 FR 30883) and preamble discussion (55 FR 30842) in defining the boundaries of the remedial unit. The Region or authorized State may also look to Superfund guidance in the designation of AOCs (55 FR 8758-8760).

Designating an area of contamination as a "landfill" will require that the unit comply with certain RCRA requirements that are applicable to landfills. The specific requirements that apply will differ, depending on whether the landfill is considered to be: (1) an existing non-regulated landfill, or (2) a regulated hazardous waste landfill. This distinction is determined by the regulatory status of the units or areas that are included as part of the landfill. The following discussion explains further the requirements associated with these two types of landfills.

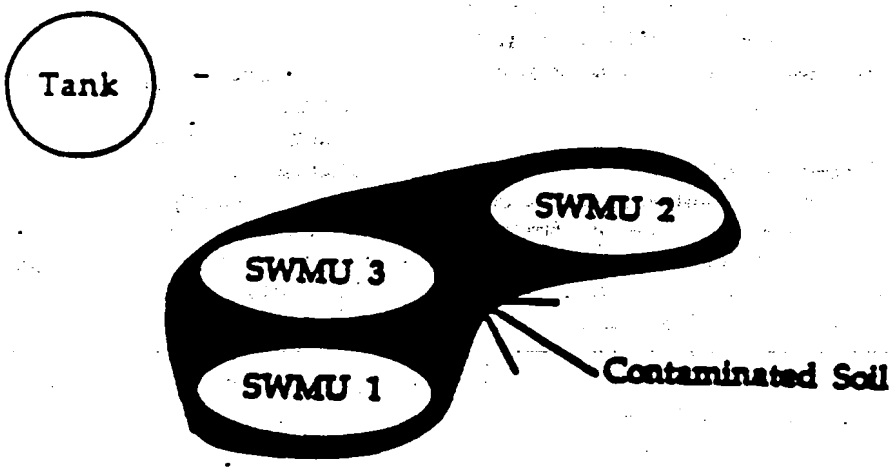
Existing Non-Regulated Landfills

Figure 1 shows an area of contamination at a facility that includes several land-based solid waste management units (SWMUs) that are not regulated as hazardous waste units under RCRA (e.g., because all of the disposal occurred before the RCRA hazardous waste regulations went into effect). By designating this area as a single landfill, EPA can approve movement and consolidation of hazardous wastes and soils contaminated with hazardous waste within the unit boundary, without triggering the LDRs or MTRs. For example, contaminated soils in and around SWMUs 1 and 2 could be consolidated into SWMU 3 and capped without triggering LDR requirements.

This landfill would not be subject to the RCRA Part 264 or Part 265 design and operating requirements for hazardous waste landfills. This is because the landfill would not have received hazardous waste after November 19, 1980. (See 40 CFR § 270.1(c)). In the absence of specific Part 264 or 265 requirements for such units, appropriate ground water monitoring and closure requirements for the landfill can be determined by EPA or the State as part of the corrective action remedial decision-making process. These requirements would be based on an assessment of site specific factors, such as waste characteristics, site hydrogeology, exposure potential, and other factors. This allows the regulator further flexibility in designing remedial solutions which are effective and protective based on actual site conditions.

These non-regulated landfills would remain exempt from regulation under Parts 264 and 265, under the following circumstances:

FIGURE 1
EXISTING NON-REGULATED LANDFILL



- The landfill cannot receive hazardous waste from other units, either on-site or off-site. The landfill could, however, receive non-hazardous wastes as part of the cleanup actions. If it were to receive hazardous waste, the landfill would become a regulated unit (40 CFR § 270.1(c)) subject to the requirements of Subparts F (40 CFR § 264.90) and G (40 CFR § 264.110). The facility permit would have to be modified accordingly (for interim status facilities, a change would have to be approved under 40 CFR § 270.72), and the wastes would have to be treated to comply with applicable LDR standards prior to placement in the landfill.

- If hazardous waste treatment (including in-situ treatment) takes place within the landfill, the owner/operator must comply with all Part 264 or 265 requirements applicable to the treatment unit, and must modify the permit or Part A to include the new treatment unit.

- Similarly, residuals from treatment of hazardous wastes that have been removed from the landfill and treated in a non-land-based unit cannot be redeposited into the landfill unless the residuals meet the LDRs. If the residuals were still hazardous by characteristic or still contained hazardous wastes, disposal of the residuals into the landfill would require the landfill to be designated a "regulated unit," as the unit would have received hazardous waste after July 26, 1982.

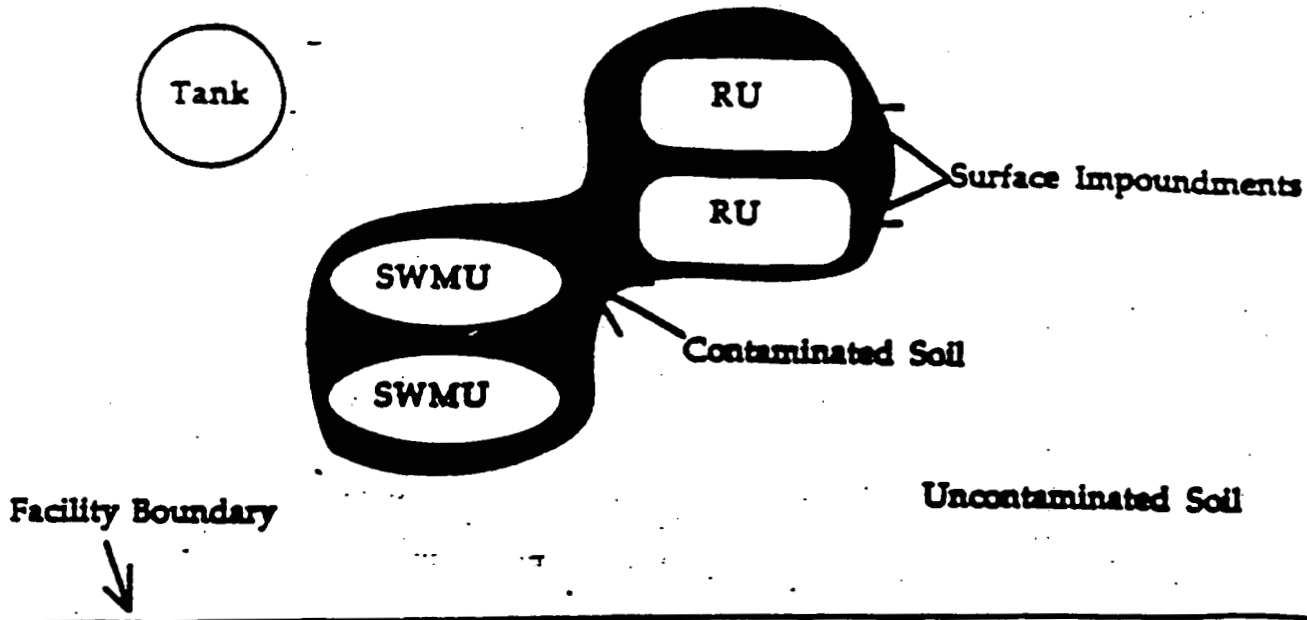
- Hazardous wastes transferred from the non-regulated landfill to another land-based unit would also have to meet LDR standards.

Regulated Landfills

Figure 2 shows an area of contamination that could be designated as a landfill, which contains two regulated units (as defined in 40 CFR § 264.90). As with the previous example in Figure 1, designating this area as a landfill would allow wastes to be moved and consolidated within the area without triggering the LDRs. However, because this landfill contains regulated units, the entire area must be considered a regulated unit. Accordingly, the following requirements would apply:

FIGURE 2

REGULATED LANDFILL



- The unit boundaries of the original regulated units that were specified on the Part A or Part B application would have to be redesignated to encompass the entire new landfill unit, according to the applicable procedures in 40 CFR §§ 270.72, 270.41 or 270.42.

- The landfill would have to comply with applicable Part 264 or 265 requirements for landfills, including the Subpart F ground water monitoring requirements and Subpart G closure and post-closure requirements. Subpart F requirements would generally involve installation of additional ground water monitoring wells. Compliance with Subpart G would likely also require modifications to the closure and post-closure plans for the unit.

MTRs would not necessarily apply to these newly designated regulated landfills. If the original regulated unit located within the landfill was not subject to the MTRs (i.e., the landfill was not new or expanding after 1984), the landfill could be considered by the Agency or authorized State to be a redesignation of that existing unit, rather than a lateral expansion. As such, the landfill would not be subject to the MTRs. However, if the regulated unit encompassed by the landfill was originally subject to MTRs, the entire area of the landfill would be subject to MTRs.

SUMMARY

Existing regulatory standards (e.g., replacement of treatment residuals into the CAMU triggers the LDRs) cannot be waived to implement the CAMU concept prior to a final CAMU rulemaking. EPA is considering removing some of these limitations in the final rule. Nonetheless, despite these current limitations, there may be a number of situations where the use of landfills can yield substantial benefits in remediating sites. EPA recommends that the guidance provided in this fact sheet be used in evaluating the use of landfills to implement timely and protective corrective actions at RCRA facilities.

FOR FURTHER INFORMATION

Inquiries concerning the guidance contained in this fact sheet should be directed to Dave Fagan (202) 260-4497, or Anne Price (202) 260-6725.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OCT 29 1992

OFFICE OF
SOLID WASTE AND EMERGENCY RESPONSE

Mr. Richard S. Wasserstrom
Miles and Stockbridge
Metropolitan Square
1450 G Street, NW, Suite 445
Washington, DC 20005

Dear Mr. Wasserstrom:

This is in response to your letter of September 10, 1992, in which you wanted a clarification of the "no land disposal" condition as it applies to the recycling of coke by-product residues (40 CFR 261.4(a)(10)). Specifically, you want to know in what kinds of units recycling operations can be performed (prior to the residuals being reinserted into a coke oven or mixed with coal tar) and still qualify for this no land disposal condition.

The Agency agrees with your concern that some members of the regulated community may not be complying properly with the no land disposal provision in the coke by-products recycling exclusion. Briefly, the Agency intends for facilities in the coke by-products industry to be able to recycle hazardous wastes to coke ovens, the tar recovery process, or coal tar. During the development of the final coke rules (57 FR 27880, June 22, 1992, and 57 FR 37284, August 18, 1992), the Agency researched recycling of these residuals and determined that the technology existed to recycle several residuals in this industry without the residuals becoming part of the "waste disposal problem" (57 FR 27880), and thus promulgated the recycling exclusion for coke by-products wastes.

Using the wrong kind of unit for recycling can lead to waste becoming a disposal problem. In particular, open pits or flat or low-walled concrete pads that do not contain the recycled materials effectively are not units that qualify for the recycling exclusion. Where the waste is managed on the ground, or the construction of the unit causes the waste(s) to spill or otherwise be disposed onto the ground, the Agency feels that those units or facilities are inadequate to perform the recycling task without the wastes being land disposed. However, tanks, containers, and (as you pointed out) containment buildings, when they are designed properly to keep the recycled materials from being emitted beyond the zone of engineering controls, are units that qualify for the recycling exclusion.

The Agency feels that, for the recycling of wastes in this industry, certain criteria must be met. The units used in the recycling operations must be able to keep the recycled materials contained by being properly sealed (in the case of concrete units) or welded (in the case of metal units). The operators must perform the operations in such a way as to prevent releases of recycled materials. Operators of the recycling units must comply with all other applicable requirements, as well (e.g., air emissions, run-on/run-off, etc.)

You should be aware of some factors that may affect the implementation of the rule in specific areas. Some States might not adopt the recycling provisions of the coke rule as promulgated on August 18, 1992, so regulation of the wastes from this industry may be more strictly controlled. In addition, the determination as to whether a specific tank, container, containment building, or other unit meets State design criteria for "no land disposal" is site-specific, and may vary from place to place. While the Agency clearly intends for the units to contain the wastes adequately, the Agency leaves the creation of such site-specific criteria to local authorities. Clearly, the Agency does not want to limit the possibility for future process changes that may lead to the recycling of coke by-products wastes in a more efficient manner by setting inflexible guidelines.

Thank you for your inquiry. If you need any further assistance on this topic, please contact Ron Josephson of my staff at (202)260-4770 or the EPA Regional Office or State agency responsible for implementing the regulations on recyclables.

Sincerely,

Sylvia K. Lowrance
Director
Office of Solid Waste

bcc: Steve Silverman, OGC (LE-132S)
Ken Gigliello, OWPE (OS-520)
Waste Management Division Directors, Regions II-VI, VIII

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September 10, 1992

Ms. Sylvia K. Lowrance
Director
Office of Solid Waste (OS-300)
Environmental Protection Agency
401 M Street, SW
Washington, DC 20460

Re: Request for interpretation of the "no land disposal" condition of the coke by-product recycling exclusion.

Dear Ms. Lowrance:

We have been asked by a client to obtain the Agency's written confirmation that the "no land disposal" condition of the 40 C.F.R. § 261.4(a)(10) exclusion of certain recycled coke by-products from the definition of solid waste precludes excluded status for wastes managed on concrete pads, because such management constitutes a waste pile -- a form of land disposal.

As we understand the "no land disposal" condition, it requires that the by-products must be managed in tanks, containers, or containment buildings (the latter effective on November 16, 1992) from the point of generation until the recycled material is mixed with coal for recharging to the coke oven or mixed with coal tar.

EPA recently issued a rule, which excludes from the definition of solid waste certain coke by-products

> when, subsequent to generation, these materials are recycled to coke ovens, to the tar recovery process as a feedstock to produce coal tar, or mixed with coal tar prior to the tar's sale or refining. This <u>exclusion is conditioned on there being no land disposal of the wastes from the point they are generated to the point they are recycled to coke ovens or tar recovery or refining processes, or mixed with coal tar.</u>

57 Fed. Reg. 37284, 37305 (Aug. 18, 1992) (to be codified at 40 C.F.R. § 261.4(a)(10)) (emphasis added). EPA adopted an earlier version of this exclusion at 57 Fed. Reg. 27880, 27888 (June 22, 1992).

We believe that the "no land disposal" condition is crystal clear; only tanks, containers or containment buildings as those terms are defined at 40 C.F.R. § 260.10, as amended, may be used to manage excluded coke by-product wastes. However, there appears to be some confusion in the regulated community about the "no land disposal" criterion; in particular, some believe that the "no land disposal" condition is satisfied if the wastes are managed on concrete pads. These pads are generally slabs of concrete, which are located outdoors. Some are open-sided (i.e., have no containment); others may have shallow berms or low walls, which range from a few inches to four feet high, on one or more -- but not all -- sides. Recycling is practiced on these pads by placing hazardous waste coke by-products and coal onto the pads and mixing them by mechanical means, such as backhoes, front end loaders, or bulldozers, which enter and exit the pad area via the open side. The mixed material is then conveyed to coke ovens.

As we understand EPA's hazardous waste rules, these concrete pads are waste piles, a form of land disposal. 40 C.F.R. § 268.2(c). See also 40 C.F.R. § 265.253 (requiring that certain waste piles "must be placed on an impermeable base"). Our understanding is confirmed by the Land Disposal Restrictions for Newly Listed Wastes and Hazardous Debris rule published August 18, 1992 at 57 Fed. Reg. 37194. In this rule, EPA established "containment buildings" as a new waste management unit, which would allow storage or treatment of hazardous wastes without land disposal. Id. at 37211. Such units were necessary, EPA explained, because hazardous wastes generated in large volumes

> may not be amenable to management in RCRA tanks or containers [and] are sometimes stored or treated on concrete pads or similar floors inside buildings. EPA currently classifies this type of management unit as an indoor waste pile, which EPA considers to be a land disposal unit based on the statutory definition of land disposal in section 3004(k).

Id. (emphasis added).

The August 1, 1992 Background Document for these rules also confirms that management of coke by-product wastes on concrete pads is land disposal. It states that "[m]aterials that are stored in piles on the land are thus considered to be solid wastes and are not excluded from regulation." Background

Document at 70. Moreover, the Background Document states that placement of hazardous coke by-products on low-walled concrete pads does not comply with the land disposal restrictions:

> To comply with the Land Disposal Restrictions (LDR, 40 CFR Part 268), many facilities have had to discontinue placing K087 wastes on the ground, in a pit, or on a low-walled concrete pad to mix these wastes with coal. Instead, these wastes must be managed in a unit such as a tank to accommodate K087 (and other) wastes. For facilities without such units, the Agency believes that recycling the wastes without land placement will cause minimal extra requirements over and above what already exists.

Id. at 77-78 (emphasis added). Notwithstanding such agency guidance, some in the regulated community are apparently not aware that management of hazardous coke by-products on concrete pads is land disposal and is, therefore, not eligible for exempt status under § 261.4(a)(10).

Accordingly, we request that the Agency issue a letter confirming that § 261.4(a)(10) as recently amended excludes from the definition of solid waste only those coke by-products that are recycled in tanks, containers, or containment buildings, and that placement of such by-product material on concrete pads disqualifies the recycled material from the exclusion.

Sincerely,

Richard S. Wasserstrom

RSW:jo

cc: Steven E. Silverman, Esq.
Ron Josephson

RSW2/Lowrance.LDR