Reclass

New York State Department of Environmental Conservation
Division of Hazardous Waste Remediation
Bureau of Hazardous Site Control

ADDITIONS/CHANGES TO REGISTRY: SUMMARY OF APPROVALS

SITE NAME: VANADIUM CORP. OF AMERICA DEC I.D. NUMBER 932001

Current Classification 3

Activity: ☐ Add as Class ___ ☑ Reclassify to 2 ☐ Delist Category ___ ☐ Modify ___

Approvals:

Regional Hazardous Waste Engineer	Yes	☑	No	☐	
NYSDOH	Yes	☑	No	☐	
DEE	Yes	☑	No	☐	
Construction Services	Yes	N/A	No	☐	
BHSC: a. Investigation Section	Yes	☑	No	☐	
b. Site Control Section	Robert Masiello		Date	1/17/95	
c. Director	[signature]		Date	1/17/95	
DHWR Assistant Director	Charles Goddard		Date	1/19/95	

Completion Checklist

		Completed By: Initials	Date
OWNER NOTIFICATION LETTER?	☑	___	3/15/95
ADJACENT PROPERTY OWNER NOTIFICATION LETTER?	☑	___	4/3/95
ENB/LEGAL NOTICE SENT? (For Deletion Only)	☐	___	___
COMMENTS SUMMARIZED/PLACE IN REPOSITORY	☐	___	___
FINAL NOTIFICATION SENT TO OWNER? (For Deletion Only)			

(For proposed Class 2a sites only) Planned investigative activities & dates: ___

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF HAZARDOUS WASTE REMEDIATION

11/18/92

SITE INVESTIGATION INFORMATION

1. SITE NAME	2. SITE NUMBER	3. TOWN/CITY/VILLAGE	4. COUNTY
Vanadium Corporation of America	932001	Niagara	Niagara

5. REGION	6. CLASSIFICATION
9	CURRENT 3 PROPOSED 2 MODIFY

7. LOCATION OF SITE (Attach U.S.G.S. Topographic Map showing site location)

a. Quadrangle - Niagara Falls, Lewiston

b. Site Latitude _42_° _07_' _22_" Site Longitude _79_° _02_' _56_"

c. Tax Map Numbers 130.15-4-10.1, 130.16-1-10

d. Site Street Address - Witmer Road, Niagara, New York 14305

8. BRIEFLY DESCRIBE THE SITE (Attach site plan showing disposal/sampling locations)

This site is located off Witmer Road in the Town of Niagara, New York. The site area is currently undefined and consists of properties owned by SKW Alloys, Airco Properties, Niagara Mohawk and PASNY. Both SKW and Airco Constructed landfills on their respective properties. The site is bordered on the north by an automobile parking area, on the south by a swampy area and property owned by Union Carbide, to the west by Witmer Road and several auto junk yards and to the east by interstate 190. Interagency task force records show that approximately 5000 tons per year of baghouse dust containing ferrochromium silicon dust was disposed of by Airco Alloys at the Vanadium site from 1971 to 1984. This hazardous waste was disposed of on the SKW and Airco properties and on portions of the Niagara Mohawk and PASNY properties.

a. Area __62 + __ acres b. EPA ID Number _D096311527_____

c. Completed ( )Phase I ( )Phase II (x) PSA ( )RI/FS (x)PA/SI ( )Other

9. Hazardous Waste Disposed (Include EPA Hazardous Waste Numbers)

There is documentation of hazardous waste disposal on site. Documented disposal of ferrochromium solicon dust, a K090 hazardous waste, by Airco Alloys, Inc. Measurements of PH in groundwater wells, and surface water exceed 12.5. As indicated by CFR 261.3 C2 and the Federal Registry, May 19, 1980, Vol. 45, Page 33096, the surface water and groundwater are considered a characteristic hazardous waste. In 1984, one sample of ferrochromium silicon dust failed EP Toxicity for chromium. The pH measurements in the surface water and groundwater indicate the presence of D002 corrosive characteristic hazardous waste.

10. ANALYTICAL DATA AVAILABLE

a. ( )Air (x)Groundwater (x)Surface Water ( )Sediment (x)Soil (x)Waste (x)Leachate (x)EPTox ( )TCLP

b. Contravention of Standards or Guidance Values

Contravention of standards were found in surface water samples containing concentrations of phenol at 12 ppb, iron at 951 ppb, and hexavalent chromium at 0.89 ppb greater than Class C surface water standards. Samples also exceeded the Class C pH range of 6.5 to 8.5. Exceedances for groundwater samples were in vinyl chloride at 7 ppb, trichloroethene at 21 ppb, phenol at 660 ppb, chromium at 1480 ppb, manganese at 505 ppb, hexavalent chromium at 1.56 ppb, cyanide at 540 ppb, magnesium at 90,200 ppb, sodium at 251,000 ppb, and zinc at 653ppb. These exceedances indicates a contravention of standard.

11. CONCLUSION

Based on the information developed during the Task 1 and Task 3 investigations, the presence of hazardous waste has been documented and significant threat has been determined. Documented disposal of ferrochromium silicon dust, a K090 hazardous waste, by Airco Alloys exists. Measurement of pH in groundwater wells and surface water exceed 12.5. This confirms the D002 characteristic hazardous waste. Surface water samples contained concetrations of phenol, iron, and hexavalent chromium greater than Class C surface water standards. Samples also exceed the Class C pH range of 6.5 to 8.5. Exceedences for groundwater standards were noted for vinyl chloride, trichloroethene, phenol, chromium, manganese, hexavalent chromium, cyanide, magnesium, sodium and zinc.

12. SITE IMPACT DATA

a. Nearest Surface Water: Distance __onsite__ft.	Direction West		Classification _C (flows to Bloody Run Creek)		
b. Nearest Groundwater: Depth __20___ft.	Flow Direction ____SW_____		( )Sole Source ( )Primary ( )Principal		
c. Nearest Water Supply: Distance _1200__ft.	Direction __North_____		Active (x)Yes ( )No		
d. Nearest Building: Distance __500__ft.	Direction onsite		Use _____industrial_____		
e. In State Economic Development Zone?	( )Y	(x)N	i. Controlled Site Access?	( )Y	(x)N
f. Crops or livestock on site?	( )Y	(x)N	j. Exposed hazardous waste?	(x)Y	( )N
g. Documented fish or wildlife mortality?	( )Y	(x)N	k. HRS Score __N/A_____		
h. Impact on special status fish or wildlife resource?	( )Y	(x)N	l. For Class 2: Priority Category ___3____		

13. SITE OWNER'S NAME	14. ADDRESS	15. TELEPHONE NUMBER
SKW Alloys, Inc. Airco Properties Niagara Mohawk	380 Highland Avenue, Niagara Falls, NY 14305 4861 Packard Road, Niagara Falls, NY 14303 535 Washington Street, Buffalo, NY 14212	

16. PREPARER	17. APPROVED
Signature _____ Date	Signature _____ Date 9/19/95
Sri Maddineni, Environmental Engineer II, BHSC, DHWR	HSS / D.E.
Name, Title, Organization	Name, Title, Organization

STATE OF NEW YORK
DEPARTMENT OF HEALTH

Center for Environmental Health 2 University Place Albany, New York 12203-3399

Mark R. Chassin, M.D., M.P.P., M.P.H.
Commissioner

Paula Wilson
Executive Deputy Commissioner

OFFICE OF PUBLIC HEALTH

Lloyd F. Novick, M.D., M.P.H.
Director

Diana Jones Ritter
Executive Deputy Director

William N. Stasiuk, P.E., Ph.D.
Center Director

March 28, 1994

Mr. Earl Barcomb, P.E., Director
Bureau of Hazardous Site Control
NYS Dept. of Environmental Conservation
50 Wolf Road, Room 218
Albany, New York 12233

RE: **Registry Site Classification Decision**
U.S. Vanadium Corporation, Site ID #932001
(Formerly SKW Alloys)
(T) Niagara, Niagara County

Dear Mr. Barcomb:

My staff have reviewed the Registry Site Classification Decision package for U.S. Vanadium Corporation, formerly SKW Alloys. Site data indicate the presence of hazardous waste. Surface water outside the site fence has been shown to be corrosive. With this information, I concur with the reclassification of this site from a Class 3 to Class 2.

If you have any questions, please contact me or Mr. Allison C. Wakeman at (518) 458-6310.

Sincerely,

G. Anders Carlson, Ph.D.
Director
Bureau of Environmental Exposure
Investigation

sms/tjl/94076PRO0274

Enclosure

cc: Dr. N. Kim
Mr. A. Wakeman/Ms. D. Hettrick
Dr. O. Smith-Blackwell, WRO
Mr. J. Devald, NCHD
Mr. S. Maddineni/Mr. J. Swartout, DEC

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF HAZARDOUS WASTE REMEDIATION

11/18/92

REGISTRY SITE CLASSIFICATION DECISION

1. SITE NAME	2. SITE NUMBER	3. TOWN/CITY/VILLAGE	4. COUNTY
U.S. Vanadium Corporation	932001	Niagara	Niagara

5. REGION	6. CLASSIFICATION		
9	CURRENT 3	PROPOSED 2	MODIFY

7. LOCATION OF SITE (Attach U.S.G.S. Topographic Map showing site location)

a. Quadrangle Niagara Falls, Lewiston

b. Site Latitude 42° 07' 22" Site Longitude 79° 02' 56"

c. Tax Map Numbers

d. Site Street Address Witmer Road Niagara, NY 14305

8. BRIEFLY DESCRIBE THE SITE (Attach site plan showing disposal/sampling locations)

The SKW site is located off Witmer Road in the Town of Niagara, New York. The site area is currently undefined and consists of properties owned by SKW Alloys, Airco Properties, Niagara Mohawk and PASNY. Both SKW and Airco constructed landfills on their respective properties. The site is bordered on the north by an automobile parking area, on the south by a swampy area and property owned by Union Carbide, to the west by Witmer Road and several auto junk yards and to the east by Interstate 190.

a. Area 62+ acres b. EPA ID Number D096311527

c. Completed ( )Phase I ( )Phase II (X) PSA ( )RI/FS (X)PA/SI ( )Other

9. Hazardous Waste Disposed (Include EPA Hazardous Waste Numbers)

There is documentation of hazardous waste disposal on site. Documented disposal of ferrochromium solicon dust, a K090 hazardous waste, by Airco properties exists. Measurements of pH in groundwater wells, and surface water exceed 12.5. As indicated by CFR 261.3 C2 and the Federal Registry, May 19, 1980, Vol. 45, Page 33096, the surface water and groundwater are considered a characteristic hazardous waste. IN 1984, one sample of ferrosilicon dust failed EP Toxicity for selenium and one sample of ferrochromium silicon dust failed EP Toxicity for chromium. The pH measurements in the surface water and groundwater indicate the presence of D002 corrosive characteristic hazardous waste.

10. ANALYTICAL DATA AVAILABLE

a. ( )Air (X)Groundwater (X)Surface Water ( )Sediment (X)Soil (X)Waste (X)Leachate (X)EPTox ( )TCLP

b. Contravention of Standards or Guidance Values

Contravention of standards were found in surface water samples ocntaining concentrations of phenol, iron, and hexavalent chromium greater than Class C surface water standards. Samples also exceeded the Class C pH range of 6.5 to 8.5. Exceedances for groundwater samples were in vinyl chloride, trichloroethene, phenol, chromium, manganese, hexavalent chromium, cyanide, magnesium, sodium, and zinc. These exceedances indicate a contravention of standard.

11. JUSTIFICATION FOR CLASSIFICATION DECISION

Based on the information developed during the Task 1 and Task 3 investigations, the presence of hazardous waste has been documented and significant threat has been determined.

12. SITE IMPACT DATA

a. Nearest Surface Water: Distance on site ft. Direction West Classification C (flows to Bloody Run Creek)

b. Nearest Groundwater: Depth 20 ft. Flow Direction SW ( )Sole Source ( )Primary ( )Principal

c. Nearest Water Supply: Distance 1200 ft. Direction North Active (X)Yes ( )No

d. Nearest Building: Distance 500 ft. Direction onsite Use Industrial

e. In State Economic Development Zone?	( )Y	(X)N	i. Controlled Site Access?	( )Y	(X)N
f. Crops or livestock on site?	( )Y	(X)N	j. Exposed hazardous waste?	(X)Y	( )N
g. Documented fish or wildlife mortality?	( )Y	(X)N	k. HRS Score N/A		
h. Impact on special status fish or wildlife resource?	( )Y	(X)N	l. For Class 2: Priority Category ~~N/A~~ I		

13. SITE OWNER'S NAME	14. ADDRESS	15. TELEPHONE NUMBER
SKW Alloys, Inc. Airco Properties Niagara Mohawk	380 Highland Avenue, Niagara Falls, NY 14305 4861 Packard Road, Niagara Falls, NY 14303 535 Washington Street, Buffalo, NY 14212	

16. PREPARER	17. APPROVED
Signature 11/13/94 Date	Signature 3/28/94 Date
Sri Maddineni, Environmental Engineer II, BHSC, DHWR	G A Carlson Director, BEEI
Name, Title, Organization	Name, Title, Organization

CLASSIFICATION WORKSHEET

Site: US Vanadium Corporation County: Niagara Region: 9

1. Hazardous waste disposed? [X] Y (to 2) [ ] N (Stop) [ ] U (Stop)

2. Consequential amount of hazardous waste? X Y (to 3) [ ] N (Stop) [ ] U (to 3)

3. Part 375-1.4(a)(1) applies? [ ] N (to 4) [ ] U (to 4)

[X] Y (as checked below; Class 2; to 5)

- [ ] a. endangered or threatened species
- [X] b. streams, wetlands or coastal zone
- [ ] c. bioaccumulation
- [ ] d. fish, shellfish, crustacea or wildlife
- [ ] e. fire, spill, explosion or toxic reaction
- [ ] f. proximity to people or water supplies

on site streams, pond and marsh area has a pH greater than 12.5 and the dissolved oxygen in the water is less than 1 ppm. No aquatic habitat observed in the water.

4. Part 375-1.4(a)(2) applies? [ ] N (Cl 3; Stop) [ ] U (Cl 2a; Stop)

[X] Y (Class 2; to 5) contravention of standards were found in surface water samples containing phenol, hexavalent chromium and pH. Exceedences for groundwater samples were in vinyl chloride, trichloroethene, phenol, chromium, hexavalent chromium, cyanide and shallow groundwater pH.

5. Factor(s) considered in making this determination: Documented disposal of ferrochromium silicon dust and slag, a K090 waste, by Airco Properties exists. Measurements of pH in groundwater wells and surface water exceed 12.5. This is a D002 corrosive hazardous waste. In 1984 one sample of ferrosilicon dust failed EP Toxicity for selenium and one sample of ferrochromium silicon dust failed EP Toxicity for chromium.

SUMMARY

Consequential Hazardous Waste	[X] Yes	[ ] No	[ ] Unknown
Significant Threat	[X] Yes	[ ] No	[ ] Unknown

Proposed Classification 2 Site Number 932001

12/30/93
Date

Sri Maddineni, Environmental Engineer II
Signature and Title

8/1/92

NEW YORK STATE DEPARTMENTS OF ENVIRONMENTAL CONSERVATION AND HEALTH
INACTIVE HAZARDOUS WASTE DISPOSAL, SITE PRIORITY RANKING WORKSHEET

SITE I.D. 932001 SITE NAME US Vanadium Corporation

° **Priority I** - Sites for which remediation should supersede all other Class 2 sites. Priority I can be assigned if any one of the following questions can be answered affirmatively.

a) Has a public or private water supply which is currently in use been contaminated or threatened?.... ☐

b) Has human exposure to contaminants been identified which represents a significant health risk as determined by DOH?..... ☐

c) Has bioaccumulation of site contaminants in flora or fauna resulted in a health advisory?..... ☐

d) Are site contaminants present at levels that are acutely toxic to fish or wildlife or that have caused documented fish or wildlife mortality?..... ☒

☒ (1)

[If 1 or more boxes are checked, check this box]

° **Priority II** - Important Sites. Priority II will be assigned if any of the following questions can be answered affirmatively.

a) Has a Class A or AA surface water body, primary or principal aquifer been contaminated without affecting an existing water supply?..... ☐

b) Has bioaccumulation of site contaminants in flora or fauna resulted in actionable levels (but not a health advisory)?..... ☐

c) Are contaminants at levels chronically toxic to fish/wildlife?..... ☐

d) Have endangered, threatened or rare species, significant habitats, designated coastal zone or regulated wetlands been impacted by releases from the site?..... ☐

☐ (2)

[If 1 or more boxes are checked, check this box]

° **Priority III** - will be assigned unless one or more of the site prioritization criteria, specified above, apply to a site. After remedial needs for Priority I and II sites have been accommodated, remediation of sites under this category can be considered. If Priority III, check box 3. ☒ (3)

Enter the number of the priority box checked 1, 2, or 3 here..... 3 (4)
This is the site's priority rank.

FACTORS

IJC Factor - If the sites has been identified by the International Joint Commission (IJC) as a component in a remedial action plan, subtract (1) from the value in box 4 and enter the result in box 5..... ☐ (5)

	Yes	No
EDZ Factor - Is the site within a New York State designated Economic Development Zone (EDZ) should this fact cause the site priority to be raised?.....	☐	☒
Community Support Factor - If the site has been targeted for local government-supported development by a developer willing to sign a consent order with DEC to finance investigation and remediation should this fact cause the site priority to be raised?.....	☐	☒

If either "yes" box is checked, subtract 1 from the value in box 4 and enter the result into box 6. If "no" is checked, the value in box 6 equals box 4 (or box 5 if applicable). If both IJC and EDZ/Community Support factors apply, only 1 (not 2) will be subtracted from the value in box 4. The resultant value in box 6 will never be less than 1..... ☐ (6)

	Yes	No
IRM NOTE: Should this site be considered a candidate for an Interim Remedial Measure (IRM) as defined by 6NYCRR Part 375-1.3n?	☒	☐

If "yes" please explain why: The leachate emanating from the site has a pH of greater than 12.5. The on-site surface water in the stream, pond and marsh areas is a D002 waste and ~~teh~~ the dissolved oxygen is less than 1 ppm.

Preparer Srikanth Maddineni Date 12/30/93

New York State Department of Environmental Conservation
270 Michigan Avenue, Buffalo, New York 14203-2999

APR 1 1994

MEMORANDUM

Langdon Marsh
Acting Commissioner

TO: Robert Marino
FROM: Peter Buechi
SUBJECT: Reclassification of Vanadium Corporation-Site #932001

DATE: March 30, 1994

My staff have reviewed the subject reclassification package. We concur with the proposed 2 classification. The site contains listed hazardous wastes which are uncontrollable and causing a significant threat to the environment by impacting both groundwater and surface water.

I have attached a copy of Michael Hinton's review memo which also contains a number of technical comments regarding the final draft PSA. Should you have any questions, please feel free to contact us.

ad

cc: Mr. Sri Maddineni
Mr. Joseph Sciascia/Mr. Michael Hinton

New York State Department of Environmental Conservation
270 Michigan Avenue, Buffalo, New York, 14203-2999

Thomas C. Jorling
Commissioner

MEMORANDUM

TO: E. Joseph Sciascia

FROM: Michael J. Hinton

SUBJECT: Vanadium Corporation Reclassification Site #932001

DATE: March 11, 1994

I have reviewed the reclassification package for the Vanadium Corporation Site #932001.

There are several inaccurate statements found on the decision form which should be modified as follows:

1. The site name is Vanadium Corporation of America.

2. The Tax Map Numbers for the site are 130.15-4-10.1 (SKW) and 130.16-1-20 (Airco Properties) plus the adjacent Niagara Mohawk and PASNY ROW's.

3. In Section 8 the reference to the site name as SKW should be revised to the Vanadium Site.

4. In Section 9 the KO90 waste was disposed of on site by Airco Alloys, Inc.

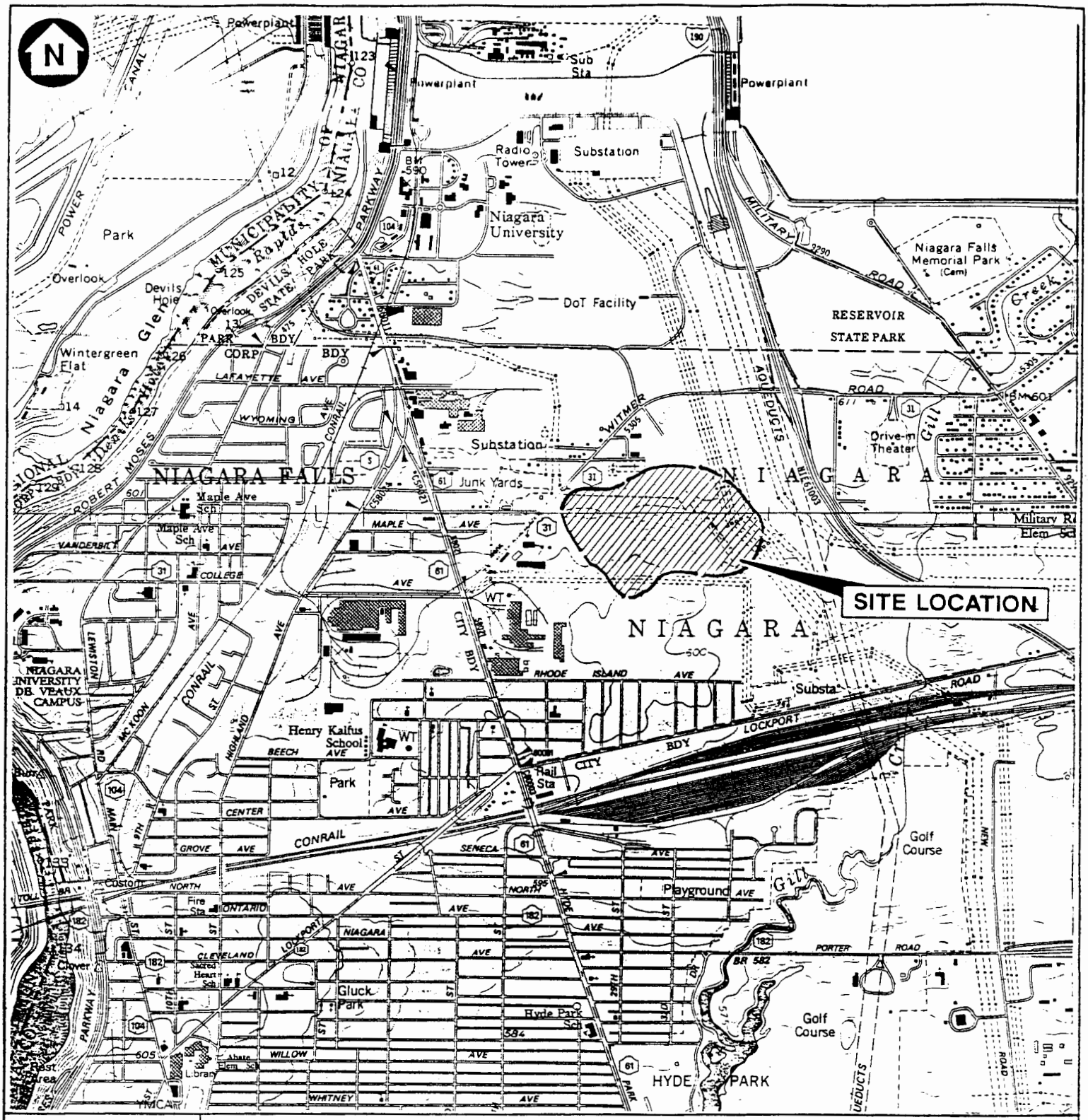
5. In Section 9 the reference to the EP Toxicity test failure for Selenium should be removed from the text. QA/QC discrepancies with the Selenium results have made the results suspect.

6. In the Classification Worksheet Section 5 the same comments found in Items 4 and 5 apply here as well.

Due to the close scrutiny of our documents by Airco Properties, Inc. it is extremely important that we be as accurate as possible regarding the data on the reclass package.

In general, it is my opinion that the proposed reclassification to a Class 2 is appropriate and supported by the data and documentation.

ad



SOURCE: N.Y.S. DEPARTMENT OF TRANSPORTATION, NIAGARA FALLS AND LEWISTON QUADRANGLE DATED 1989 AND 1976, RESPECTIVELY, 7.5 MINUTE SERIES

QUADRANGLE LOCATION

SITE NO: 932001
LOCATION: CITY OF NIAGARA FALLS
NIAGARA COUNTY

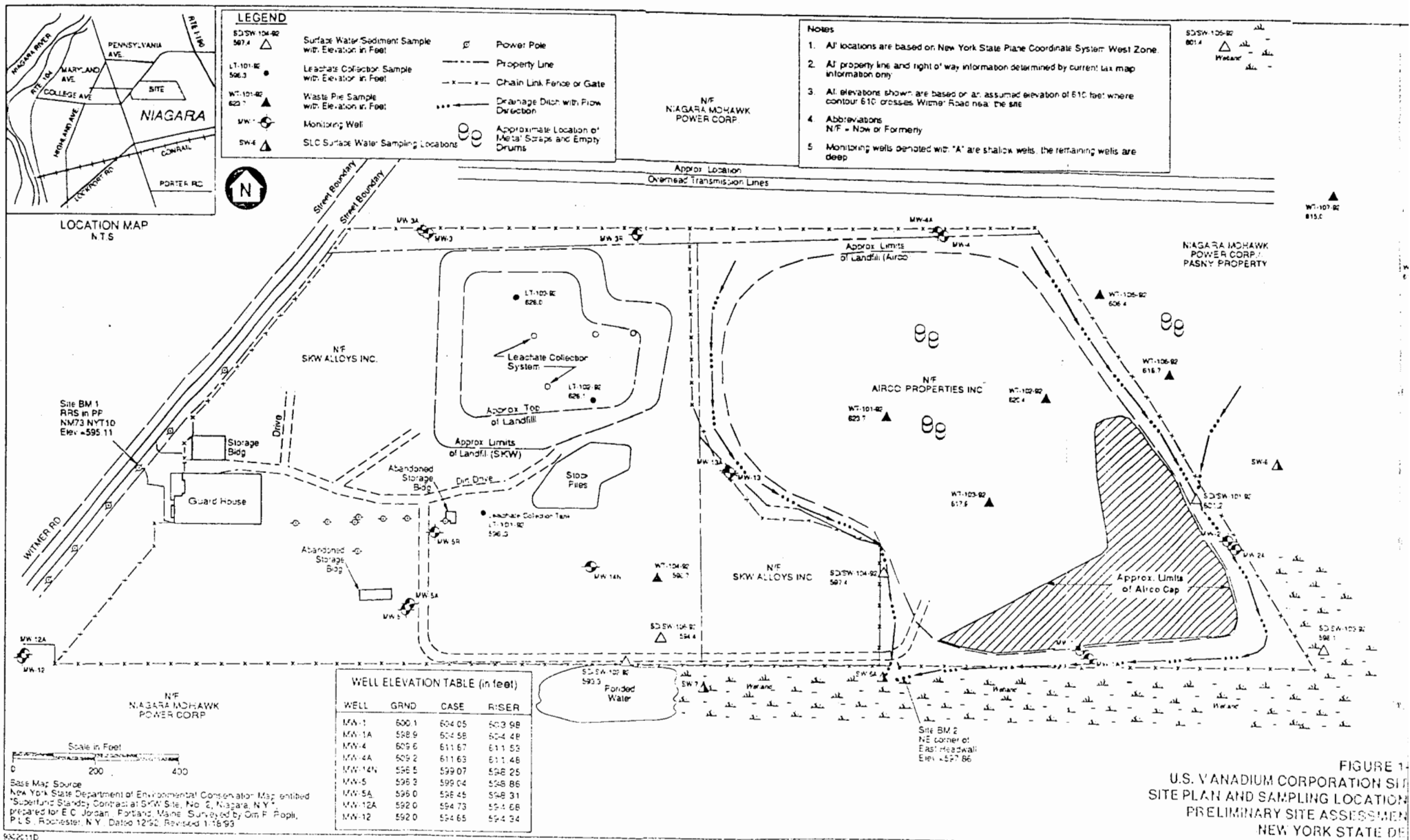
SCALE IN FEET

0 2000 4000

FIGURE 1-1
SITE LOCATION MAP
U.S. VANADIUM CORPORATION SITE
PRELIMINARY SITE ASSESSMENT
NEW YORK STATE DEC

ABB Environmental Services

7083-30



WELL ELEVATION TABLE (in feet)

WELL	GRND	CASE	RISER
MW-1	600.1	604.05	603.98
MW-1A	598.9	604.58	604.48
MW-4	609.6	611.67	611.55
MW-4A	609.2	611.63	611.48
MW-14N	596.5	599.07	598.25
MW-5	596.3	599.04	598.86
MW-5A	596.0	598.45	598.31
MW-12A	592.0	594.73	594.68
MW-12	592.0	594.65	594.34

9302011D

FIGURE 1-
U.S. VANADIUM CORPORATION SI
SITE PLAN AND SAMPLING LOCATION
PRELIMINARY SITE ASSESSMEN
NEW YORK STATE DE
ABB Environmental Servic

EXECUTIVE SUMMARY

The U.S. Vanadium Corporation (Vanadium) site (formerly the SKW Alloys, Inc. site) consists of a 25-acre parcel owned by Airco Properties, Inc. (Airco), a 37-acre parcel owned by SKW Alloys, Inc. (SKW), and right-of-ways owned by the Niagara Mohawk Power Corporation (Niagara Mohawk) and the Power Authority for the State of New York (PASNY). The Vanadium site is located on Witmer Road in the Town of Niagara, New York.

From 1920 to 1964, the site was owned by Vanadium. The extent of land owned by Vanadium is not known. Vanadium used portions of the property to dispose of wood, brick, ash, lime slag, ferrochromium silicon slag, and ferrochromium silicon dust. In 1964, Airco purchased 62 acres of the Vanadium property. The site was operated by Airco Carbon (now called Carbon/Graphite Group), a company affiliated with Airco, and wastes similar to those disposed by Vanadium were disposed at the site. In 1979, SKW purchased the western 37 acres of this 62-acre parcel from the Airco Alloys division of Airco. Airco has retained the eastern 25 acres, where it owns and operates a landfill. This Airco landfill was used to dispose of brick, coke, concrete, carbon fines, and graphite plant waste. The landfill is not covered, except for a portion of the south slope (approximately 4 acres) that has a cap consisting of low-permeability soil installed by Airco between 1981 and 1988. The landfill currently is not receiving any wastes. The remaining portion of the Airco property contains exposed waste piles.

SKW maintains two landfill cells on their 37-acre parcel. Both cells were closed before October 1992. Waste disposed of in SKW landfill Cell No. 2 included ferrosilicon and silicon metal baghouse dust. Ferrochromium silicon dusts and

ferrosilicon dust were disposed of in Cell No. 1. Under Title 6 of the New York Codes, Rules, and Regulations (6 NYCRR), Part 371, ferrochromium silicon baghouse dust is a K090 listed hazardous waste (NYSDEC, 1992a and 1993).

Much of the surface of the site contains 0 to 7 feet of fill consisting of fly ash, dust, slag, and cinder materials reportedly disposed of by Vanadium. The Niagara Mohawk/PASNY property and the northern portion of the Airco property contain exposed waste piles also reportedly containing ferromanganese slag, calcium hydroxide, and ferrochromium silicon dusts. Several rusted and crushed 55-gallon containers were observed on and around the waste piles located on both the Airco and Niagara Mohawk/PASNY property. The Vanadium site is currently a Class 3 site listed in the New York State Department of Environmental Conservation (NYSDEC) Registry of Inactive Hazardous Waste Sites (NYSDEC, 1992b).

Sampling performed by SLC Consultants/Constructors between 1979 and 1987 indicated that pH measurements in the shallow and deep water tables, and surface water runoff were recorded in excess of 12.5. These pH measurements classify the samples corrosive and indicate that the media would have to be managed in a manner similar to a D002 corrosive characteristic hazardous waste as defined by New York State hazardous waste regulations (6 NYCRR Part 371.3(c)(1)(i)) (Yeman, 1993). In addition, the groundwater contained levels of inorganics including chromium, hexavalent chromium, manganese, barium, zinc, and iron in excess of New York State Class GA standards. Organic compounds that exceeded the Class GA standards included vinyl chloride, phenol, and trichloroethene.

In 1984, the Radian Corporation conducted Extraction Procedure (EP) Toxicity tests on waste material generated from SKW's plant. A sample of ferrochromium

silicon dust failed EP Toxicity for chromium. Radian Corporation also reported in 1984 that the ferrosilicon dust wastes sampled at the SKW plant failed EP Toxicity for selenium with a leachate concentration of 2 milligrams per liter (mg/L). The regulatory limit is 1 mg/L. The results of this analysis are inconsistent with analysis of the sample for total selenium. If the total selenium result of 0.64 milligrams per kilogram (mg/kg) were correct, the EP Toxicity results could not exceed the maximum permissible concentration. However, an American Society of Testing and Materials leaching procedure was also performed on this sample, resulting in selenium concentrations of 5.3 mg/L. These conflicting results may be due to a nonhomogeneous sample matrix. Sometime after this testing was completed in 1984, the waste stream containing ferrochromium silicon was discontinued (NYSDEC, 1993).

In November 1987, Advanced Environmental Services, Inc., conducted an EP Toxicity analysis on dry dust from silicon metal and ferrosilicon operations at the SKW plant. The analytical results did not show the presence of leachable concentrations of metals (including chromium and selenium) or organic compounds at levels exceeding regulatory hazardous waste characteristic limits. Selenium was detected in the extract at 0.374 mg/L in the silicon metal dust sample and at 0.060 mg/L in the ferrosilicon dust sample. These samples, collected in 1987, most likely did not fail EP Toxicity for chromium and selenium because the waste stream containing ferrochromium silicon was discontinued in 1984. The 1984 Radian Corporation analytical results indicating the presence of chromium and selenium in the waste are considered valid because they were collected while this ferrochromium silicon dust was being generated as a part of the manufacturing process and these wastes were disposed of at the Vanadium site (NYSDEC, 1993).

Interagency Task Force records show that approximately 5,000 tons per year of baghouse dust containing ferrochromium silicon dust were disposed of by Airco Alloys at the Vanadium site from 1971 (when the baghouse was installed) to shortly after 1984. Over the 14 year period, it is estimated that approximately 70,000 tons of this waste was generated and disposed of on site. Under 6 NYCRR 371.4(c), emission control dust or sludge from ferrochromium silicon production is a K090 listed hazardous waste (NYSDEC, 1992a). This hazardous waste was disposed of on the SKW and Airco properties and potentially on portions of the Niagara Mohawk and PASNY properties (NYSDEC, 1993).

ABB Environmental Services, formerly E.C. Jordan Co., under contract to NYSDEC, conducted this Preliminary Site Assessment Task 3 investigation to confirm the presence of hazardous waste at the site and to assist NYSDEC in establishing whether the site poses a significant threat to public health or the environment.

The Task 3 investigation consisted of sampling several media. Eight exposed waste pile samples were collected from the site, including samples from Airco, SKW, and Niagara Mohawk/PASNY properties. Three leachate samples were collected from the SKW landfill leachate collection system. Six collocated surface water and sediment samples were collected from the surface water bodies and drainage ditches, and eight groundwater samples were collected from previously installed monitoring wells.

Task 3 field investigations, conducted in October 1992, indicated no exceedances above regulatory limits for EP Toxicity results from laboratory analyses. However, field pH measurements were in excess of 12.5 for shallow

groundwater/leachate and surface water, which indicates the presence of a D002 corrosive characteristic hazardous waste. The concentration of hexavalent chromium detected in the surface water samples collected upgradient of the disposal area was considerably lower than the concentrations detected in samples collected from or immediately downgradient of the areas of waste. Hexavalent chromium was not detected in surface water samples upgradient and cross-gradient of the site. Low levels of hexavalent chromium were detected where the surface water enters the Airco property. Higher levels were detected downstream on the SKW and Airco properties. These results indicate that the hexavalent chromium contamination seen in the surface water is attributable to the wastes disposed by SKW and Airco on their respective properties.

The pH measured in surface water follows a similar pattern to the concentration of hexavalent chromium detected in the surface water. Lower values of pH were measured in off-site samples as compared to on-site samples, indicating that the elevated pH is attributable to wastes disposed of on site. The comparison of measurements indicates that the waste materials on the site are impacting the pH of the surface water and a D002 corrosive characteristic hazardous waste is present on the SKW and Airco properties (NYSDEC, 1993 and Yeman, 1993).

For the purpose of the Task 3 investigation, significant threat was evaluated by comparing surface water and groundwater sample results to New York State Class C surface water standards as directed by NYSDEC Region 9, and Groundwater Quality Class GA Standards, respectively. Vinyl chloride, trichloroethene, phenol, hexavalent chromium, chromium, cyanide, magnesium, manganese, sodium, and zinc all exceeded their respective groundwater standards. Phenol, iron, and hexavalent chromium exceeded their respective surface water standards. In

addition, exceedances of pH values in the surface water and groundwater indicated a contravention of standards and a significant threat to public health and the environment.

Based on information developed during the Preliminary Site Assessment Task 1 and Task 3 investigations at the U.S. Vanadium Corporation site, it is recommended that the site be reclassified from a Class 3 to a Class 2 hazardous waste site. The presence of hazardous waste and significant threat have both been documented at this location.

The Task 3 activities are reported in two volumes. Volume I presents the project purpose, description of the Task 3 scope of work, results of Task 3 sampling and analysis, and the final recommendation for reclassifying the site. Also included in Volume I are Appendix A, revised Registry Site Classification Decision Form, and Appendix B, revised Site Inspection Form, USEPA Form 2070-13. Volume II, Supporting Documentation, contains the field data records, laboratory results, and Survey Control Report.

3.0 SITE ASSESSMENT

3.1 SITE HISTORY

The Vanadium site is located off Witmer Road in the Town of Niagara, Niagara County, New York (see Figures 1-1 and 1-2). From 1920 to 1964, the site was owned by U.S Vanadium Corporation. The extent of land owned by Vanadium is not known. Vanadium used portions of the property to dispose of approximately 594,000 tons of wood, brick, ash, lime slag (calcium hydroxide), ferromanganese slag, ferrochromium silicon slag, and ferrochromium silicon dust. In 1964, Airco purchased 62 acres of the Vanadium property. Although Airco owned the site, an affiliated company, Airco Carbon (now called Carbon/Graphite Group), operated the site and disposed of wastes similar to those disposed by Vanadium. In 1979, SKW bought the western 37 acres of Airco's 62-acre parcel while Airco retained ownership of the eastern 25 acres. Property owned by the Niagara Mohawk Power Corporation and PASNY to the east and north of these 62 acres also contains waste piles deposited by Vanadium. These waste piles reportedly contain calcium hydroxide, ferromanganese slag, ferrochromium slag, and ferrochromium dust (E.C. Jordan Co., 1991b). Rusted and crushed 55-gallon containers and scrap metal were also observed on and around waste piles on both the Airco and Niagara Mohawk/PASNY property (E.C. Jordan Co., 1992c).

Interagency Task Force records show that approximately 5,000 tons per year of baghouse dust containing ferrochromium silicon dust were disposed of by Airco Alloys at the Vanadium site from 1971; when the baghouse was installed; to shortly after 1984. Over the 14 year period, it is estimated that approximately 70,000 tons of this waste was generated and disposed of on site. This waste was

disposed of on the SKW and Airco properties and potentially on portions of the Niagara Mohawk and PASNY properties. Interagency Task Force records show that in 1984 SKW discontinued generating ferrochromium silicon wastes (Appendix C), (NYSDEC, 1993).

The areal extent of contamination at the Vanadium site has not been defined. Contamination investigations before this PSA investigation occurred only on the Airco and SKW properties. For the purposes of this PSA, the site is considered to encompass the 62 acres owned by Airco and SKW and the surrounding Niagara Mohawk/PASNY property.

Both SKW and Airco constructed landfills on their respective properties.

SKW Alloys Landfill. In 1980, SKW received a NYSDEC Part 360 permit to operate a solid waste disposal facility on its property. This facility consisted of two landfill cells and was designed for the disposal of ferrochromium silicon baghouse dust and ferrosilicon baghouse dust wastes. The landfill is no longer in use and was closed, graded, and seeded in accordance with NYSDEC regulations before October 1992.

The production of ferrochromium alloy materials at the SKW plant was discontinued in 1981 or 1982 due to economic factors. Reportedly, all ferrochromium dust materials produced at the SKW plant were disposed of in Cell No. 1, and no ferrochromium silicon dusts were disposed of in Cell No. 2. According to the consulting engineer for SKW, Cell No. 1 has a 5-foot clay liner and a leachate collection system. Cell No. 2 has a 2-foot clay liner and leachate collection system and has been used to dispose of ferrosilicon and silicon metal

3.2 SITE DESCRIPTION

The Vanadium site consists of a 25-acre parcel owned by Airco, a 37-acre parcel owned by SKW, and surrounding property to the north and east owned by the Niagara Mohawk Power Corporation and PASNY (see Figure 1-2). The actual limits of waste disposal have not been defined, thus, the property boundaries and associated acreage may not reflect actual site boundaries. The southwest corner of the SKW property is relatively flat. The remaining portions, consisting of the SKW and Airco landfills and the exposed waste piles on the Airco and Niagara Mohawk/PASNY properties, is fairly rough, irregular terrain.

Surface drainage generally flows south toward a wetland area. Surface water in the vicinity of the Airco Property is controlled by two drainage ditches. Most of the site, consisting of exposed waste piles, is devoid of vegetation.

The site is bordered on the north by a parking area, on the south by a wetland area and property owned by Union Carbide, and to the west by Witmer Road and several automobile junk yards. The Niagara Mohawk property, immediately east, south, and north of the SKW and Airco properties, is considered to be part of the site disposal area previously used by Vanadium. Property ownership east of the Airco parcel is unclear. A tax map provided by NYSDEC Region 9 indicates ownership by both Niagara Mohawk and PASNY. These properties are bordered to the east by Interstate 190. Single family homes are located two-tenths of a mile north of the site.

Most residents in the vicinity of the Vanadium site are served by a public water system that obtains drinking water from the Niagara River. Three private wells are located on Delaware Avenue, 1,200 feet northwest of the site.

3.3 PREVIOUS INVESTIGATIONS

Previous investigations of the Vanadium site include EP Toxicity tests by Radian Corporation in 1984 and Advanced Environmental Services, Inc. (AES) in 1987, and groundwater sampling by SLC from 1979 to 1987. A PSA Task 1 - Data Records Search and Assessment was performed by E.C. Jordan Co. in 1989. Previous investigations are summarized and described below.

In 1984, the Radian Corporation analyzed samples of ferrosilicon emission dust, ferrochromium silicon dust, and ferrochromium silicon slag from the SKW plant. Ferrochromium silicon dust is a K090 listed hazardous waste as defined by 6 NYCRR Part 371.4 (c). Radian Corporation reported that the ferrosilicon dust sample failed the EP Toxicity analysis for selenium; however, the results of this analysis are inconsistent with analysis for total selenium. Selenium was detected in the EP Toxicity leachate at 2 milligrams per liter (mg/L) whereas the total selenium in the waste material was detected at 0.64 milligrams per kilograms (mg/kg). If the total selenium result of 0.64 mg/kg were correct, the EP Toxicity results could not exceed the maximum permissible concentration. However, an American Society for Testing and Materials leaching procedure was also performed on the sample, resulting in high selenium concentrations (5.3 mg/L). These conflicting results may be due to a nonhomogeneous sample matrix. The regulatory limit for selenium is 1 mg/L. Radian Corporation also reported that a sample of ferrochromium silicon dust failed EP Toxicity for chromium.

Chromium was detected at a concentration of 14 mg/L, with total chromium detected at 1,800 mg/kg. The regulatory limit for chromium is 5 mg/L. A ferrochromium silicon slag sample collected by Radian did not fail the EP Toxicity test. The concentration of hexavalent chromium was below the method detection limit in all three analyses (Radian Corporation, 1984). Sometime after this testing was completed in 1984, SKW discontinued generating ferrochromium silicon wastes (NYSDEC, 1993).

In November 1987, AES conducted an EP Toxicity analysis for metals, in particular chromium and selenium, on dry dust from silicon metal and ferrosilicon operations at the SKW plant. Analytical results were negative for both chromium and selenium. Concentrations of EP Toxicity metals and organic compounds were below quantifiable limits or regulatory limits. In the EP Toxicity leachate analysis selenium was detected in the extract at 0.374 mg/L in the silicon metal dust sample and at 0.060 mg/L in the ferrosilicon dust sample. These levels are significantly lower than the 2 mg/L detected in the 1984 EP Toxicity test of ferrosilicon dust. These samples, collected in 1987, most likely did not fail EP Toxicity for chromium and selenium because the wastes containing ferrochromium silicon were not generated after 1984. The 1984 Radian Corporation analytical results indicating the presence of chromium and selenium in the waste are considered valid because they were collected while the ferrochromium silicon wastes were being generated from the manufacturing process and these wastes were disposed of at the Vanadium site (NYSDEC, 1993).

Interagency Task Force records show that approximately 5,000 tons per year of baghouse dust containing ferrochromium silicon dust were disposed of by Airco Alloys at the Vanadium site from 1971 (when the baghouse was installed) to

shortly after 1984. Over the 14 year period, it is estimated that approximately 70,000 tons of this waste was generated and disposed of on site. As defined by 6 NYCRR 371.4(c), emission control dust or sludge from ferrochromium silicon production is a K090 listed hazardous waste. This hazardous waste was disposed of on the SKW and Airco properties and on portions of the Niagara Mohawk and PASNY properties (Appendix C), (NYSDEC, 1993).

In December 1987, the NYSDEC Region 9 office sent SKW a notice of violation of Article 12 of the Navigation Law of New York; Article 17 of the Environmental Conservation Law, and 40 CFR Chapter 1, Part 761. These violations were for failure to report a 790-gallon polychlorinated biphenyl oil spill on the SKW landfill site. No fines were levied against the company because of the voluntary cleanup actions performed by SKW. An inspection of the site by NYSDEC confirmed that the cleanup was performed satisfactorily (Hinton, 1987).

Between 1979 and 1987, numerous monitoring wells were installed around the SKW and Airco landfills by Earth Dimensions, Inc. Fifteen wells, both deep and shallow ("A" denotes shallow wells), were sampled and analyzed by SLC. In addition, three surface water locations were sampled and analyzed (see Figure 1-2). The following discussion of the SLC results are separated into two categories: shallow wells and surface water, and deep wells. Monitoring well installation records indicate the wells were installed originally using carbon steel well screens and risers. The 1989 SKW Landfill Annual Report indicates that the carbon steel wells were replaced with polyvinyl chloride wells.

Shallow Wells and Surface Water. Field measurements of the pH of the surface water and groundwater/leachate collected from the shallow monitoring wells

Monitoring data for shallow wells also shows a contravention of New York State Class GA standards for iron, manganese, zinc, barium, chromium, and hexavalent chromium. There are no Class GA promulgated standards for pH. According to standards set forth in 6 NYCRR Parts 700-705, a pH less than 6.5 or more than 8.5 is considered a contravention of standards. The pH in the groundwater ranged from 7.32 to 13.29, which indicates a contravention of standards. Surface water analyses indicate wide variations in concentrations of total chromium, hexavalent chromium, iron, silicon, barium, and zinc. The pH in the surface water was compared to the New York State Surface Water Quality Standards Class C range of pH $\leq$ 6.5 or pH $\geq$ 8.5. The surface water pH ranged from 7.69 to 12.69, indicating a contravention of standards.

Inorganics detected in surface water in exceedance of the Class C standards include hexavalent chromium, iron, and zinc. Insufficient data were available to establish whether total chromium exceeded Class C standards.

Deep Wells. The monitoring program for the deep wells (i.e., wells installed into the glacial till overlying bedrock) indicated an exceedance of pH of 12.5, indicating the presence of a corrosive characteristic hazardous waste in one well. Measurement of pH in monitoring well MW-2 was 12.63. Deep monitoring wells show a contravention of New York State Groundwater Quality Class GA standards for iron, barium, manganese, chromium, hexavalent chromium, zinc, and pH.

The exceedances of Class GA standards found in the deep wells are summarized as follows:

exceeded 12.5. This indicates the presence of a D002 corrosive characteristic hazardous waste source. The results are summarized as follows:

Sample Location	Date	pH	Characteristic Hazardous Waste pH
MW-2A (shallow)	1/23/86 4/2/86 8/4/86 10/2/86 7/23/87 1/12/88 1/19/89 4/19/89 7/20/89 10/4/89 1/11/90 4/18/90	12.61 12.7 12.70 12.50 12.50 12.65 12.95 12.97 13.29 12.60 12.87 12.68	pH ≤ 2.0 or pH ≥ 12.5
MW-4A (shallow)	1/23/86 4/2/86 8/4/86 10/2/86 7/23/87 1/19/89 4/19/89 7/20/89 10/4/89 1/11/90 4/19/90	12.70 12.8 12.70 12.55 12.55 12.83 12.95 12.58 12.63 12.80 12.78	pH ≤ 2.0 or pH ≥ 12.5
SW-6 (surface water)	4/2/86	12.5	pH ≤ 2.0 or pH ≥ 12.5
SW-6A (surface water)	1/19/89 1/11/90	12.69 12.5	pH ≤ 2.0 or pH ≥ 12.5
SW-7 (surface water)	8/4/86	12.65	pH ≤ 2.0 or pH ≥ 12.5

Compound	Concentration (mg/L)	New York State Groundwater Class GA Standard (mg/L)
iron	0.02 - 48.5	0.3
barium	0.01 - 3.1	1.0
manganese	0.01 - 12.0	0.3
chromium	< 0.005 - 0.63	0.05
zinc	0.003 - 0.99	0.3
hexavalent chromium	< 0.005 - 0.084	0.05
pH	6.43 - 12.63	6.5 - 8.5[1]

[1] 6 NYCRR Part 700-705

Additional Investigations. A 1989 SKW Landfill Annual Report submitted to NYSDEC included data collected and analyzed from the deep wells MW-3R, MW-5R, MW-12, MW-14N, and from surface water sampling points SW-6A and SW-7. Results are discussed below. The wells are used to monitor parameters identified in the 6 NYCRR Part 360 permit for the SKW landfill. SW-6A is a sampling point for surface water entering the SKW property and SW-7 is a sampling point for surface water leaving the property (see Figure 1-2).

Hexavalent chromium was not detected in wells MW-3R, MW-5R, MW-12, or MW-14N in 1989; however, hexavalent chromium was detected in surface water samples in concentrations ranging from 0.20 to 0.88 mg/L with high concentrations occurring at the downstream sampling point (SW-7). Trichloroethene was detected in deep well MW-14N at 47.1 micrograms per liter (μg/L), in exceedance of the New York State Class GA water quality standard of 5 μg/L for this compound.

Exposed slag piles potentially containing ferrochrome dusts, calcium hydroxide, and ferromanganese material exist on right-of-ways owned by the Niagara Mohawk Power Corporation and PASNY, and on the Airco property. No sampling data exist for these waste piles. They are uncovered, unlined, and have no leachate collection systems. The Task 1 report (E.C. Jordan Co., 1991b) states that exposure to airborne dust generated from exposed waste piles is a public health concern since this dust may contain chromium.

3.4 CONTAMINATION ASSESSMENT

The following subsections present the results of the sampling and analysis conducted at the Vanadium site during the Task 3 investigation. Data evaluation is limited to the project purpose of establishing whether hazardous waste was disposed of on the site and whether waste material poses a potentially significant threat to public health or the environment. For the purposes of this investigation hazardous waste was evaluated based on results of characteristics testing of EP Toxicity for all samples, reactivity testing for the leachate samples, and corrosivity testing for the sediment, waste and leachate samples. To evaluate the potential significant threat, surface water results were compared to Class C surface water standards as directed by NYSDEC Region 9. Groundwater results were compared to New York State Class GA Groundwater Quality standards. Because no standards are promulgated for sediment, the only evaluation of data for this media is comparison of inorganic data with background soil concentration ranges for inorganics in soils of New York State and the eastern United States (Table 3-1).

3.4.1 Exposed Waste Pile Sampling Analytical Results

Eight waste samples (WT-101 to WT-108) and one duplicate (WT-108D) were collected and analyzed for TCL VOCs, TCL SVOCs, TCL inorganics, hexavalent chromium, hazardous waste characteristic corrosivity, and EP Toxicity for metals only. Results of these analyses are summarized in Table 3-2. No TCL VOCs and 25 TCL SVOCs were detected in the waste samples. WT-102 was the only sample that contained TCL SVOCs above the detection limit.

A total of 22 TCL inorganics were detected. Because there are no promulgated standards for inorganics, the data was compared to New York State and/or eastern United States background concentration ranges (see Table 3-1). The inorganics that exceeded these ranges are arsenic, calcium, chromium, copper, iron, lead, magnesium, manganese, mercury, nickel, selenium, vanadium, and zinc. Hexavalent chromium was detected in all waste pile samples. Concentrations of hexavalent chromium detected in WT-106, WT-106D, and WT-108 exceeded the background inorganic concentration range for total chromium in the New York region.

Samples were also analyzed for corrosivity and EP Toxicity (metals only). Values for corrosivity did not exceed the regulatory limits of pH ≤ 2 or ≥ 12.5. Although EP Toxicity extracts contained detectable levels of arsenic, barium, chromium, lead, and silver, the concentrations did not exceed regulatory limits for the definition of a characteristic hazardous waste.

3.4.2 SKW Landfill Leachate Sampling Analytical Results

Three landfill leachate samples (designated LT-101 through LT-103) were collected from the SKW landfill leachate collection system and analyzed for TCL VOCs, TCL SVOCs, TCL inorganics, hexavalent chromium, corrosivity, and reactivity. Results of these analyses are summarized in Table 3-3.

Six TCL VOCs and one TCL SVOC were detected in the leachate samples, all at estimated concentrations. Seventeen TCL inorganics were detected. Hexavalent chromium was detected in LT-101 and LT-103, and leachate samples did not exceed any regulatory limits for corrosivity and reactivity. No promulgated New York State standards exist for leachate samples. Results of leachate analyses were compared to groundwater data to establish whether a correlation between elevated levels of contaminants exists. Several contaminants detected in leachate samples also were detected at elevated levels in the groundwater results, such as calcium, magnesium, potassium, sodium, and hexavalent chromium.

3.4.3 Surface Water and Sediment Sampling Analytical Results

Surface Water. Six surface water samples (SW-101 to SW-106) and one duplicate (SW-102 D) were collected at the site and analyzed for TCL VOCs, TCL SVOCs, TCL inorganics, and hexavalent chromium. Results including field pH measurements are summarized in Table 3-4. No TCL VOCs were detected, and all TCL SVOCs were estimated below the Contract Required Quantitation Limit except for phenol (12 μg/L in SW-104). This detection of phenol exceeds the New York State Class C Water Quality Standard.

4.0 ASSESSMENT OF DATA ADEQUACY AND RECOMMENDATIONS

The following subsections further evaluate the findings presented in Section 3.0 against the purpose of the PSA investigation to establish whether hazardous waste was disposed of on site and evaluate whether the site poses a potential significant threat to public health or the environment.

4.1 HAZARDOUS WASTE DEPOSITION

Information obtained during the Task 1 Data Records Search and Assessment indicated that characteristic hazardous wastes were disposed of on site. A sample of ferrochrome silicon dust failed EP Toxicity for selenium and a sample of ferrochrome silicon dust failed EP Toxicity for chromium. Interagency Task Force records show that baghouse dust containing ferrochromium silicon dust were disposed of by Airco Alloys on site from 1971 to shortly after 1984. As defined by 6 NYCRR 371.4(c), emission control dust from ferrochromium silicon production is a K090 listed hazardous waste. This hazardous waste was disposed of on the SKW and Airco properties and potentially on portions of the Niagara Mohawk and PASNY properties (NYSDEC, 1993). In addition, there were high pH levels recorded in shallow monitoring wells (MW-2A and MW-4A), a deep well (MW-2), and in surface water (SW-6, SW-6A, and SW-7). The pH levels were consistently in excess of 12.5 (E.C. Jordan Co., 1991b). As set forth in New York State hazardous waste regulations (6 NYCRR Part 371.3(c)(1)(i)), the site surface water and groundwater/leachate itself are corrosive based on pH readings in excess of 12.5. This indicates that these media would have to be managed in a manner similar to a D002 corrosive hazardous waste.

Waste material sampled during the Task 3 field investigation found no exceedances above regulatory limits for EP Toxicity (metals only). These samples did detect leachable levels of arsenic, barium, chromium, lead, selenium, and silver, the concentrations were below regulatory limits.

4.2 SIGNIFICANT THREAT DETERMINATION

NYSDEC regulations pertaining to Inactive Hazardous Waste Sites, 6 NYCRR Part 375, set forth a number of definitions of significant threat. For purposes of the Task 3 investigation, significant threat is established by the contravention of environmental quality standards. Significant threat was evaluated by comparing surface water and groundwater sample results to New York State Class C Surface Water Standards and Groundwater Quality Class GA Standards, respectively.

During Task 3, phenol, iron, and hexavalent chromium were all detected in surface water samples at concentrations greater than Class C Surface Water Standards. The samples also exceeded the Class C surface water pH range of 6.5 to 8.5. These exceedances indicated a contravention of standards and a significant threat to public health and the environment.

The concentration of hexavalent chromium detected in surface water samples collected away from the area of waste disposal (i.e., SW-101, SW-103, and SW-105) was considerably lower than the concentrations detected in samples collected from, or immediately downgradient, of the areas of waste (i.e., SW-102, SW-104, and SW-106) (Figure 1-2). Hexavalent chromium was not detected in surface water samples SW-105, collected upgradient of the site and SW-103, collected cross-gradient of the site. Hexavalent chromium was detected at 0.02

mg/L at SW-101 where the surface water enters the Airco property. Hexavalent chromium was detected at higher concentrations in SW-104 and SW-106 (0.89 mg/L and 0.35 mg/L, respectively). SW-104 was collected near areas of waste on the Airco property and SW-106 was collected from the SKW property. Hexavalent chromium was also detected at 0.16 mg/L at SW-102 which was collected from the area of ponded water to the south of the SKW property. These results indicate that the hexavalent chromium contamination seen in the surface water is attributable to the wastes disposed by SKW and Airco on their respective properties (NYSDEC, 1993).

The pH measured in surface water follows a similar pattern to the concentration of hexavalent chromium detected in surface water. Lower values of pH were measured in off site samples as compared to on site samples, indicating that the impact of surface water alkalinity is attributable to wastes disposed of on site. Surface water pH of upgradient samples SW-105 and SW-101 was 7.2 and 10.01, respectively. The pH of cross-gradient sample SW-103 was 7.5. On site and downgradient samples all had pH measurements greater than 12. Samples SW-104 and SW-106 collected from the Airco and SKW properties had pH values of 12.81 and 12.4, respectively. Downgradient sample SW-102 had only a slightly lower pH measured at 12.2. This comparison of pH measurements would indicate that the waste materials on the site are impacting the pH of surface water (NYSDEC, 1993).

Groundwater samples were compared to New York State Groundwater Quality Class GA Standards. Vinyl chloride, trichloroethene, phenol, hexavalent chromium, chromium, cyanide, magnesium, manganese, sodium, and zinc concentrations exceeded their respective groundwater standards. Shallow

groundwater samples exceeded the Class GA pH range with levels from 7.4 to 13.2. The Class GA pH range was not exceeded in the deep wells. These exceedances indicated a contravention of standards.

4.3 RECOMMENDATIONS

Information reviewed by ABB-ES during the Task 1 investigation indicates the presence of characteristic hazardous waste at the Vanadium site as defined by 6 NYCRR Part 371 (NYSDEC, 1992a). Data from Task 1 and Task 3 showed numerous pH levels exceeding the characteristic hazardous waste range for pH. In addition, there were exceedances of both the New York State Groundwater Quality Class GA and the Class C Surface Water Standards which indicate a contravention of standards and a significant threat to public health and the environment. Interagency Task Force records indicate the disposal of a listed K090 hazardous waste containing ferrochromium silicon dust by Airco Alloys on site from 1971 to shortly after 1984. It is estimated that during this time period approximately 70,000 tons of this waste were generated and disposed of on site. As per 6 NYCRR 371.4(c), emission control dust or sludge from ferrochromium silicon production is a K090 listed hazardous waste (NYSDEC, 1993).

Based on these results, it is recommended that the Vanadium site be reclassified from a Class 3 to a Class 2 hazardous waste site. The presence of a characteristic hazardous waste, documentation of disposal of a listed hazardous waste, and significant threat have been documented at the Vanadium site. Therefore, PSA Tasks 4 through 6 will not be conducted.

TABLE 3-4
SURFACE WATER SAMPLING ANALYTICAL DATA
U.S. VANADIUM CORPORATION SITE
NIAGARA, NEW YORK

COMPOUND	CRQL/ CRDL	SW-101	SW-102	SW-102DUP	SW-103	SW-104	SW-105	SW-106
TCL Volatile Organic Compounds (µg/L)								
None detected at concentrations above detection limits								
TCL Semivolatile Organic Compounds (µg/L)								
1,2,4-Trichlorobenzene	10	–	–	–	–	1 JJ	–	–
2,4-Dinitrophenol	25	–	1 JJ	1 JJ	–	–	–	–
2-Methylnaphthalene	10	–	–	–	–	1 JJ	–	–
4-Methylphenol	10	–	–	–	–	1 JJ	–	1 JJ
4-Nitrophenol	25	–	–	–	–	1 JJ	–	1 JJ
Acenaphthene	10	–	–	–	–	1 JJ	–	–
bis(2-Ethylhexyl)phthalate	10	–	–	–	–	–	1 JJ	–
Diethylphthalate	10	–	–	–	1 JJ	–	–	–
Fluoranthene	10	–	–	–	–	1 JJ	–	–
Naphthalene	10	–	–	–	–	4 JJ	–	1 JJ
Phenanthrene	10	–	–	–	–	2 JJ	–	1 JJ
Phenol	10	–	1 JJ	–	–	12	–	8 JJ
TCL Inorganic Compounds (µg/L)								
Aluminum	200	82.0 []	179 []	–	51.0 []	128 []	188 []	130 []
Barium	200	45.4 []	90.8 []	–	35.6 []	346	49.4 []	239
Cadmium	5	–	–	3.0 []	–	–	–	–
Calcium	5000	38600 J	64600 J	717 [] J	69100	460000 J	33700	318000
Chromium	10	R	R	–	–	R	–	357 J
Copper	25	5.8 []	14.4 []	10.6 []	–	13.4 []	–	–
Iron	100	159	102	55.2 []	78.6 []	64.4 []	951	–
Lead	3	–	–	–	–	3.5 J	9.2 J	–
Magnesium	5000	7130	2180 []	–	17200	–	11000	–
Manganese	15	27.2 J	34.2 J	–	155	–	151	–
Potassium	5000	4850 [] J	29000 J	1080 [] J	6910	55300 J	5290	52200
Selenium	5	–	7.4	6.8	R	33.0	R	R
Sodium	5000	22400	39800 J	477 [] J	13400	65700	8540	62200
Thallium	10	–	–	–	R	–	R	R
Vanadium	50	–	–	5.8 []	–	–	–	–
Zinc	20	8.1 []	12.4 []	–	–	–	40.4	–
Hexavalent Chromium (mg/L)	0.01	0.02	0.16	0.16	–	0.89	–	0.35
pH'		10.01	12.2	NA	7.5	12.81	7.2	12.40

NOTES:

CRQL = Contract Required Quantitation Limit (organics)
CRDL = Contract Required Detection Limit (inorganics)
µg/L = micrograms per liter
mg/L = milligrams per liter
– = not detected
' = pH measurements were taken during Task 3 field investigations. The maximum pH reading is shown, for further results see Volume 2.

[ ] = less than sample specific CRDL
J = estimated
JJ = estimated below sample specific CRQL
R = rejected
DUP = duplicate
NA = not analyzed

A. Sylvester

New York State Department of Environmental Conservation
50 Wolf Road, Albany, New York 12233 - 7010

APR - 3 1995

This letter was sent to the people on the attached list.

Dear :

The Department of Environmental Conservation (DEC) maintains a Registry of sites where hazardous waste disposal has occurred. Property located at Witmer Road at Maryland Avenue in the Town of Niagara and County of Niagara and designated as Tax Map Numbers 130.15-4-10.1 and 130.16-1-10 was recently reclassified as a Class 2 in the Registry. The name and site I.D. number of this property as listed in the Registry is Vanadium Corporation of America, Site #932001.

The Classification Code 2 means that a significant threat to the public health or environment exists -- action required.

We are sending this letter to you and others who own property near the site listed above, as well as the county and town clerks. We are notifying you about these activities at this site because we believe it is important to keep you informed.

If you currently are renting or leasing your property to someone else, please share this information with them. If you no longer own the property to which this letter was sent, please provide this information to the new owner and provide this office with the name and address of the new owner so that we can correct our records.

The reason for this recent classification decision is as follows:

- Based on information developed during the Preliminary Site Assessment (PSA), the presence of hazardous waste has been documented and a significant threat to the environment has been determined. Documented disposal of ferrochromium silicon dust, a hazardous waste, by Airco Alloys exists. The measurement of pH in groundwater wells and surface water exceeded standards confirming characteristic hazardous waste. Surface water samples were found to contain concentrations of phenol, iron, and hexavalent chromium greater than Class C surface water standards. Surface water samples also exceeded Class C pH range of 6.5 to 8.5. Exceedences for groundwater standards were noted for several organic and inorganic substances.

If you would like additional information about this site or the inactive hazardous waste site remedial program, call:

DEC's Inactive Hazardous Waste Site Toll-Free Information Number **1-800-342-9296** or New York State Health Department's Health Liaison Program (HeLP) **1-800-458-1158, ext. 402.**

Sincerely,

Robert L. Marino
Chief
Site Control Section
Bureau of Hazardous Site Control
Division of Hazardous Waste Remediation

bcc: R. Marino
T. Reamon
M. Podd, R/9
A. Sylvester
A. Carlson
L. Ennist

AS/srh

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF HAZARDOUS WASTE REMEDIATION
INACTIVE HAZARDOUS WASTE DISPOSAL REPORT

CLASSIFICATION CODE: 2 REGION: 9 SITE CODE: 932001
EPA ID: NYD980654305

NAME OF SITE : Vanadium Corporation of America
STREET ADDRESS: Witmer Road at Maryland Avenue

TOWN/CITY:	COUNTY:	ZIP:
Niagara	Niagara	14305

SITE TYPE: Open Dump- Structure- Lagoon- Landfill-X Treatment Pond-
ESTIMATED SIZE: 100 + /- Acres

SITE OWNER/OPERATOR INFORMATION:
CURRENT OWNER NAME....: ** Multi - Owner Site **
CURRENT OWNER ADDRESS.: * * * * *
OWNER(S) DURING USE...: Multi-Owner Site
OPERATOR DURING USE...: ** Multi - Site Operators **
OPERATOR ADDRESS.....: * * * * *
PERIOD ASSOCIATED WITH HAZARDOUS WASTE: From To

SITE DESCRIPTION:
This 62 acre site was owned by the Vanadium Corp. of America from 1920 to 1964. In 1964, Pittsburgh Metallurgical (now Airco, Inc.) purchased the property. In 1979, SKW Alloys, Inc. bought the Airco Alloys Division of Airco, Inc., obtaining the western 37 acres of the property (Airco Carbon retained the eastern 25 acres of the original 62 acre site). The 62 acre site has been used by SKW Alloys, Airco Carbon, and former owners to dispose of ferrochromium silicon alloy dust, ferromanganese slag, ferrochromium silicon slag, ferrosilicon dust, calcium hydroxide and miscellaneous refuse including but not limited to old machinery and raw materials. In 1981, SKW Alloys, Inc. was issued a permit to operate a landfill on the western portion of the site. Currently, the SKW landfill is undergoing a Part 360 closure. The portion of the site owned by Airco Carbon contains an inactive landfill which has not had a Part 360 Closure Permit issued. A Phase I Investigation was completed in 1989.
Groundwater quality is monitored on a quarterly basis. Low levels of chlorinated organics have been found in groundwater.
A Preliminary Site Assessment (PSA) has been completed, and the final report was completed in 1993.
Based on the information developed during the PSA, the presence of hazardous waste has been documented and a significant threat has been determined. Documented disposal of ferrochromium silicon dust by Airco Alloys exists. Measurement of pH in groundwater wells and surface water exceed 12.5. This confirms the D002 characteristic hazardous waste. Surface water samples contained concentrations of phenol, iron, and hexavalent chromium greater than Class C surface water standards. Samples also exceed the Class C pH range of 6.5 to 8.5.

HAZARDOUS WASTE DISPOSED:

TYPE	QUANTITY (units)
Ferro chromium silicon Alloy Dust (K090 & D002) (K090 & D002 Waste)	50,000 Tons
Ferro chromium silicon Slag (K090 & D002 Waste)	21,000 Tons
Ferro silicon dust	25,000 Tons
Calcium hydroxide, refuse	Unknown
Ferro Manganese Slag	6,000 Tons

SITE CODE: 932001

ANALYTICAL DATA AVAILABLE:
Air- Surface Water-X Groundwater-X Soil-X Sediment-

CONTRAVENTION OF STANDARDS:
Groundwater-X Drinking Water- Surface Water-X Air-

LEGAL ACTION:

TYPE..: State- Federal-
STATUS: Negotiation in Progress- Order Signed-

REMEDIAL ACTION:

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

GEOTECHNICAL INFORMATION:
SOIL TYPE: Clayey - Silt above Sandy silt above glacial till
GROUNDWATER DEPTH: 20 ft.

ASSESSMENT OF ENVIRONMENTAL PROBLEMS:

The presence of hazardous waste has been documented and significant threat has been determined. pH values in groundwater wells and surface water exceed 12.5. Exceedences for groundwater standards were noted for vinyl chloride, trichloroethene, phenol, chromium, manganese, hexavalent chromium, cyanide, magnesium, sodium and zinc.

ASSESSMENT OF HEALTH PROBLEMS:

This site is situated in an industrial area with a few scattered residences nearby. All area residences are served by public water. The landfill areas are fenced, but the Niagara Mohawk right-of-way, adjacent to the site, is not. There is evidence of motorbike and ATV usage along the power lines. Surface water and groundwater pH measurements have shown levels above 12.5, defining it as hazardous waste. Direct contact with water at this level is considered a public health concern since it is considered corrosive. Tresspassers could come into contact with off-site surface water that have had pH levels up to 12.7. These off-site areas were not sampled during the Preliminary Site Assessment (PSA), but the pH of on-site surface water was up to 12.8.

A Sylvester

New York State Department of Environmental Conservation
50 Wolf Road, Albany, New York 12233 - 7010

MAR 15 1995

This letter was sent to the people on the attached list.

Dear :

As mandated by Section 27-1305 of the Environmental Conservation Law (ECL), the New York State Department of Environmental Conservation (NYSDEC) must maintain a registry of all inactive disposal sites suspected or known to contain hazardous waste. The ECL also mandates that this Department notify the owner of all or any part of each site or area included in the Registry of Inactive Hazardous Waste Disposal Sites as to changes in site classification.

Our records indicate that you are the owner or part owner of the site listed below. Therefore, this letter constitutes notification of change in the classification of such site in the Registry of Inactive Hazardous Waste Disposal Sites in New York State.

DEC Site No.: 932001
Site Name: Vanadium Corporation of America
Site Address: Witmer Road at Maryland Avenue, Niagara, New York 14305

Classification Change from 3 to 2

The reason for the change is as follows:

- Based on information developed during the Preliminary Site Assessment (PSA), the presence of hazardous waste has been documented and a significant threat to the environment has been determined. Documented disposal of ferrochromium silicon dust, a hazardous waste, by Airco Alloys exists. The measurement of pH in groundwater wells and surface water exceeded standards confirming characteristic hazardous waste. Surface water samples

were found to contain concentrations of phenol, iron, and hexavalent chromium greater than Class C surface water standards. Surface water samples also exceeded Class C pH range of 6.5 to 8.5. Exceedences for groundwater standards were noted for several organic and inorganic substances.

Enclosed is a copy of the New York State Department of Environmental Conservation, Division of Hazardous Waste Remediation, Inactive Hazardous Waste Disposal Site Report form as it appears in the Registry and Annual Report, and an explanation of the site classifications. The Law allows the owner and/or operator of a site listed in the Registry to petition the Commissioner of the New York State Department of Environmental Conservation for deletion of such site, modification of site classification, or modification of any information regarding such site, by submitting a written statement setting forth the grounds of the petition. Such petition may be addressed to:

Gary L. Spielmann
Acting Executive Deputy Commissioner
New York State Department of Environmental Conservation
50 Wolf Road
Albany, New York 12233-0001

For additional information, please contact me at (518) 457-0747.

Sincerely,

Robert L. Marino
Chief
Site Control Section
Bureau of Hazardous Site Control
Division of Hazardous Waste Remediation

Enclosures

bcc: w/o Enc.
E. Barcomb
R. Marino
T. Reamon
A. Sylvester

W/Enc. (copy of Site Report form only)
R. Dana
G. Anders Carlson, NYSDOH
L. Concra
A. Snyder, R/9
P. Buechi, R/9
E. Belmore

AS/srh