FINAL

ENGINEERING INVESTIGATIONS AT INACTIVE HAZARDOUS WASTE SITES

PHASE I INVESTIGATION

U.S. Chrome Corporation
City of Batavia

Site No. 819006
Genesee County

Date: July 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

U.S. CHROME CORPORATION

NYS SITE NUMBER 819006

CITY OF BATAVIA

GENESEE COUNTY

NEW YORK STATE

Prepared For

DIVISION OF SOLID AND HAZARDOUS WASTE

NEW YORK STATE

DEPARTMENT OF ENVIRONMENTAL CONSERVATION

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DATE OF SUBMITTAL: JULY, 1986

U.S. CHROME CORPORATION

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SECTION I

EXECUTIVE SUMMARY

This report, prepared for the New York State Department of Environmental Conservation (NYSDEC), presents the results of the Phase I investigation for the U.S. Chrome Corporation site (NYS Site Number 819006, EPA Site Number NYD990774200), located in the City of Batavia, Genesee County, New York (see Figure I-1).

SITE BACKGROUND

The U.S. Chrome Corporation is a chrome plating facility that has been in operation since 1959 (Pendergast, 1986). Prior to 1979, the facility was owned and operated by Tibon Hard Chrome, Inc. (Pendergast, 1986).

In 1982, U.S. Chrome Corporation discovered that chromic acid solution had leaked onto the ground beneath a chrome plating bath at the facility. Groundwater samples from a well installed near the contaminated area indicated hexavalent chromium concentrations ranging from 1,200 to 2,000 ppm (Pendergast, 1986).

U.S. Chrome initiated a groundwater remediation plan in 1982 consisting of groundwater pumping followed by physical/chemical treatment for chromium removal (Pendergast, 1986). Presently, hexavalent chromium concentrations in the groundwater at the site are approximately 300 ppm (Pendergast, 1986). Remedial action at the site is ongoing (ES Site Visit, 1986).

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 NYSDEC 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 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.

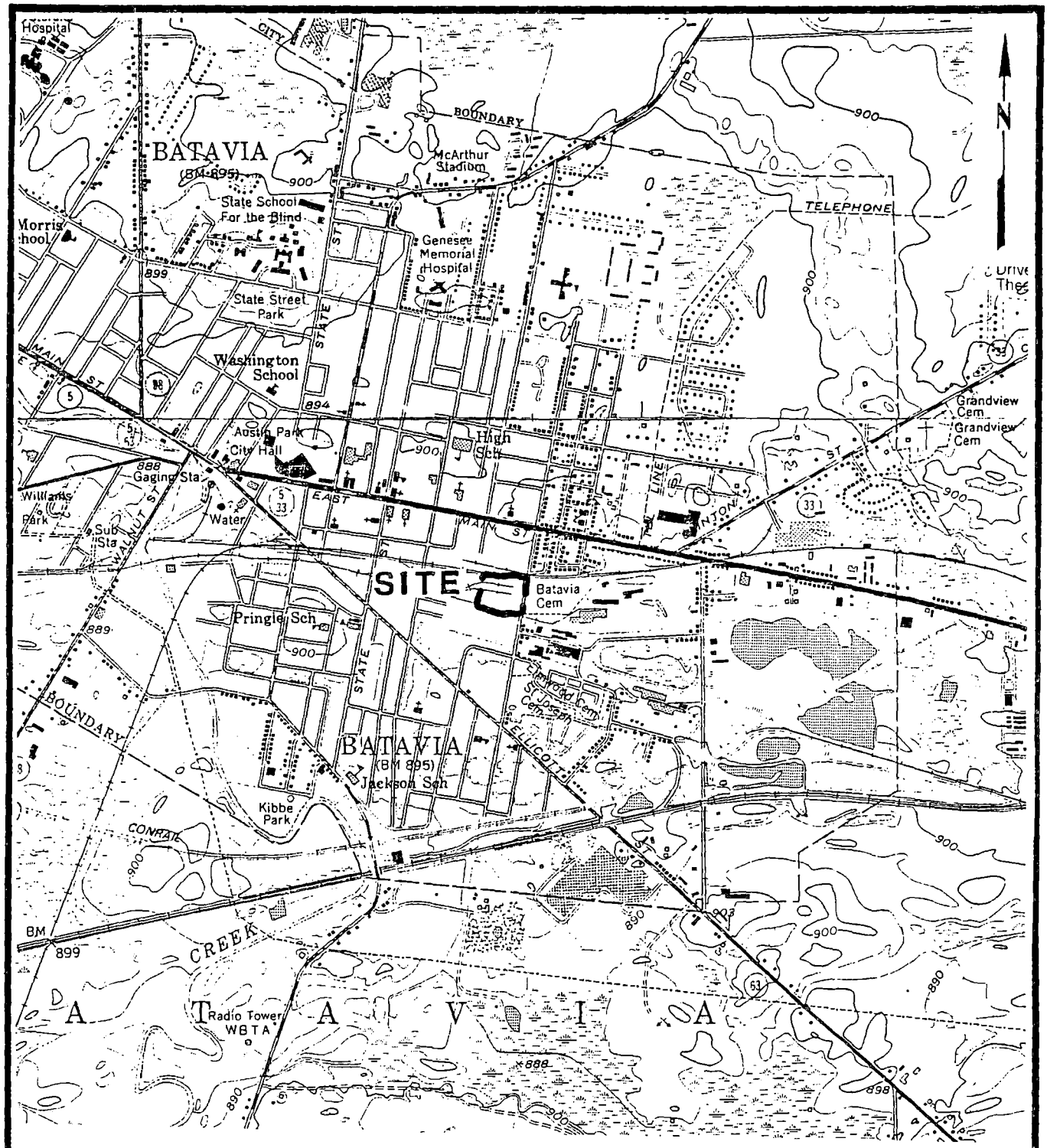
- S_{DC} reflects the potential for harm from direct contact with hazardous substances at the facility (i.e., no migration need be involved).

The preliminary HRS score was:

S_M	= 40.03	S_{GW}	= 69.07
S_{FE}	= 0.00	S_{SW}	= 5.04
S_{DC}	= 0.00	S_A	= 0.00

RECOMMENDATIONS

At this time, a Phase II investigation is not recommended for this site. Previous studies have defined the level and extent of groundwater contamination at the U.S. Chrome facility. However, due to high concentrations of chromium in the groundwater, continued monitoring of all of the Parratt-Wolff wells is recommended. Samples will be analyzed for total and hexavalent chromium by HSL metals methods. In the event that the area of contamination appears to be growing or moving toward the City of Batavia wellfield, additional monitoring wells are recommended.



LATITUDE: 42°06'18" N.
LONGITUDE: 78°02'55" W

SCALE

0 1000 2000 3000 4000 FEET

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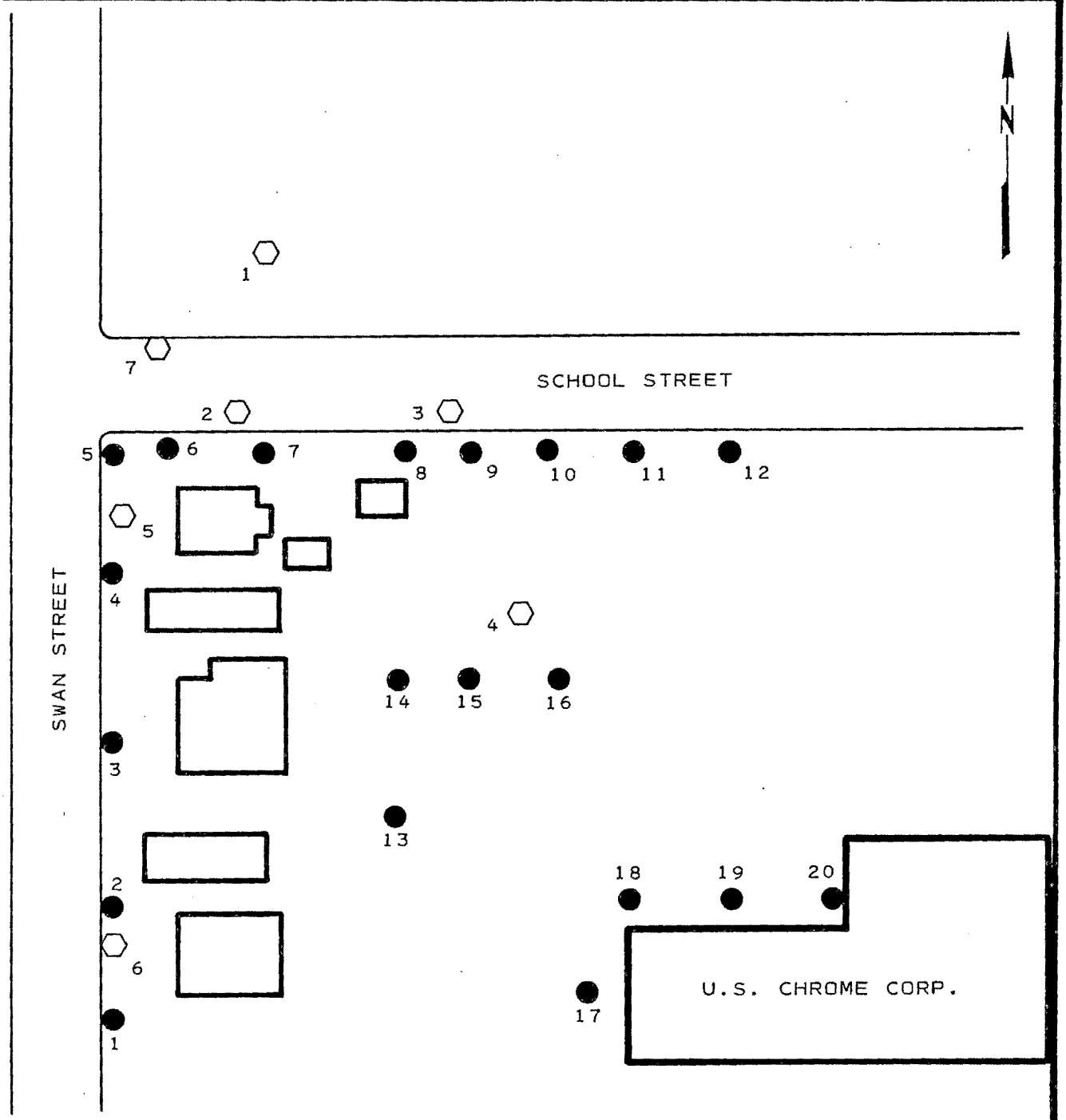
SITE LOCATION MAP
U.S. CHROME CORP.

FIGURE I-1

REFERENCE: U.S.G.S. 7.5' Topographic Map Batavia North, NY (1978) and Batavia South, NY (1978) Quadrangle



NOT TO SCALE

EXPLANATION:

- ● RECOVERY WELL
- ⬡ OBSERVATION WELL

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PLOT PLAN

U.S. CHROME CORP.

FIGURE I-2

SECTION II

PURPOSE

The purpose of the Phase I investigation at the U.S. Chrome 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 chromium contaminated groundwater. Based on this initial evaluation of the U.S. Chrome 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 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 fourth 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

U.S. Chrome has operated a chrome plating facility in Batavia, NY from 1979 until the present (Pendergast, 1986). From 1959 to 1979 the facility was owned and operated by Tibon Hard Chrome, Inc. (Pendergast, 1986).

Groundwater contamination caused by a leaking chromic acid bath in the facility was discovered by US Chrome in 1982 (Pendergast, 1986). At that time, a groundwater remediation plan was initiated by U.S. Chrome to recover and treat hexavalent chromium contaminated groundwater (Pendergast, 1986). In 1984, Parratt Wolff and the Travelers Insurance Company installed additional monitoring and recovery wells near the site to further define the extent of the groundwater contamination and aid in its remediation (Pendergast, 1986).

Presently, the U.S. Chrome Corporation is pumping and treating approximately 28,000 gpd of hexavalent chromium contaminated groundwater at its facility (Pendergast, 1986). The water is treated by a chemical precipitation process (ES Site Visit, 1986). The recovered chrome sludge is sent to a landfill and the treated effluent is discharged to the city sewer system (Pendergast, 1986).

SITE TOPOGRAPHY

The U.S. Chrome site is located on the east side of Swan Street in the southeastern portion of the City of Batavia, Genesee County, New York (see Figure IV-1). The land surface at the plant site is relatively flat to gently sloping toward the west.

The U.S. Chrome facility is situated within an industrial and residential area of Batavia. The plant site is bordered on the north by School Street and to the west by Swan Street. A railroad switch yard is located to the south of the plant and Harvester Avenue forms the eastern plant boundary.

Local Sensitive Environments

There is a NYS designated freshwater wetland area located approximately 4,000 feet east of the U.S. Chrome facility (NYS Wetlands Map). There are no critical habitats of endangered species within one mile of the site (Ozard, 1985).

Regional Geology and Hydrology

The U.S. Chrome site is located within the Erie-Ontario Lowlands physiographic province. This is an undulating plain 600 feet in elevation along the northern part of Genesee County which rises to an elevation of approximately 1,000 feet in the southern part of the county forming a boundary with the Appalachian Plateau (USDA, 1969). The bedrock of the region consists of nearly horizontal layers of limestone, sandstone, shale, and dolostone deposited in ancient seas during the Silurian and Devonian Period (NYS Museum & Science Service, 1970).

In the recent past, most of New York State, including the site, has been repeatedly covered by a series of continental ice sheets. The work of the glacier in Genesee County widened pre-existing valleys, transported loose rock and soil material and deposited widespread accumulations of till, stratified ice-contact sediments, and outwash through the region. The melting ice, ending approximately 12,000 years ago, produced large volumes of meltwater. The meltwater subsequently shaped channels and deposited large accumulations of stratified, granular sediments.

As glacial ice retreated from the region, meltwater formed lakes in front of the ice margin. The Genesee County region is covered by these

lacustrine deposits. The proglacial lacustrine deposits consist principally of blanket sands and beach ridges which are occasionally underlain by proglacial silts and clays (NYS Museum and Science Service, 1975), indicative of calm or deep water deposition.

Granular deposits in this region frequently act as shallow aquifers since the proglacial lacustrine silts and clays along with the tills often inhibit groundwater movement. However, fine-grained, water-lain sediments such as silts and clays, frequently exhibit horizontal laminations and sand seams. These internal features create secondary porosity which facilitate lateral groundwater movement through otherwise low permeability materials.

SITE HYDROLOGY

Bedrock at the U.S. Chrome site is expected to be the Marcellus Shale member of the Hamilton Group (NYS Museum and Science Service, 1970). Shale fragments were encountered at one boring location during the installation of a groundwater recovery system at the plant site (Parratt Wolff, 1984). This shale unit is described as a fissle, black to olive or dark slate colored shale (Sutton, 1951). The Marcellus Shale is anticipated at varying depths from ground surface to over 70 feet below ground. Fractures along bedding plains and joints within the Marcellus Shale may create an aquifer system capable of yielding acceptable quality water high in dissolved solids to wells at rates less than 100 gpm (Great Lakes Basin Commission, 1975). Groundwater flow direction of the bedrock aquifer may be to the south (regional trend), but will vary locally.

The shallow aquifer system is considered to be the aquifer of concern at the U.S. Chrome site. The City of Batavia well field is located less than one mile southwest of the U.S. Chrome facility. The City withdraws approximately 3 MGD of potable water from the shallow aquifer (Mogg, 1962). Aquifer pump tests performed at the City well field reported transmissibilities of one million gallons per day per foot in the shallow aquifer (Mogg, 1962).

The subsurface conditions which exist in the immediate vicinity of the U.S. Chrome plant site suggest a perched water bearing zone is present (Parratt Wolff, 1984). Monitoring well logs for wells installed at the plant site report moderately permeable soils 10 to 25 feet thick overlying a dense till layer (Parratt Wolff, 1984). The till layer beneath the site may be acting locally as the lower confining layer preventing contaminated waters from reaching the more permeable zones above the shale bedrock. Groundwater was encountered during installation of the monitoring wells at a depth of 6 to 8 feet below ground surface (Parratt Wolff, 1984). The groundwater flow direction within this zone was determined to be to the west-northwest toward Tonawanda Creek (Parratt Wolff, 1984), and away from the City of Batavia wellfield.

SITE CONTAMINATION

In 1982, U.S. Chrome Corporation discovered that chromic acid from a plating bath in its chrome plating facility had dissolved a cinder block platform that supported the bath (Pendergast, 1986). As a result, spilled or leaking chromic acid solution from the plating bath entered directly into the sandy soil beneath the U.S. Chrome facility (Pendergast, 1986). In 1982, initial groundwater samples drawn from a well near the area of the contamination indicated hexavalent chromium concentrations ranging between 1,200 and 2,000 ppm (Pendergast, 1986).

U.S. Chrome pumped and treated groundwater from wells installed directly beneath the leaking plating bath from 1982 until 1984 (Pendergast, 1986). Treatment was accomplished by sulfide reduction of Chrome (VI) to Chrome (III) followed by precipitation with hydroxide (Pendergast, 1986).

A 1982 study by Ecology and Environment, Inc., for the City of Batavia found groundwater hexavalent chromium concentrations ranging from 46 to 800 ppm in the vicinity of the U.S. Chrome facility (Ecology and Environment, 1982). In 1984, Parratt Wolff in conjunction with the Travelers Insurance Company conducted a hydrogeologic investigation of

the facility (Parratt Wolff, 1984). The study defined an approximate seven acre area of subsurface contamination extending west and northwest of the site (Parratt Wolff, 1984). In addition to defining the extent and direction of movement of the contaminant plume, additional groundwater recovery wells were installed on the north and west sides of the U.S. Chrome facility (Pendergast, 1986; Parratt Wolff, 1984). Water level measurements at the observations wells were apparently recorded during a period when the City of Batavia wellfield was operating. This would ensure any effects of the cone of depression caused by the city wells, located approximately 4,000 feet east-southeast of the U.S. Chrome site would be reflected in the water level readings at the observation wells. The City of Batavia wellfield consists of two wells each capable of delivery of 1.5 MGD. Records indicated that the wells were pumped at a rate of at least 1.8 MGD during the time when the Parratt Wolff study was conducted (Sipolla, 1986). Hence, the effects of pumping at the City of Batavia wellfield were most likely reflected in the results of the Parratt Wolff study. Groundwater analysis during the investigation indicated total chromium concentrations ranging between 45 and 1,220 ppm, and hexavalent chromium concentrations ranging from 250 to 750 ppm (Parratt Wolff, 1984). It was also discovered that contaminated groundwater had infiltrated the City sewer system at locations west and northwest of the facility (Parratt Wolff, 1984). Complete analytical data for both investigations are presented in Table IV-1.

Presently, U.S. Chrome is pumping and treating approximately 28,000 gpd of groundwater with an average influent hexavalent chromium concentration of 300 ppm (Pendergast, 1986). Effluent from the treatment process discharges to the sanitary sewer system while chrome sludge is dewatered and transported to the Chafee Landfill (Pendergast, 1986). Effluent concentrations from the physical/chemical treatment process are reported to contain less than 0.01 ppm of hexavalent chromium (Pendergast, 1986).

TABLE IV-1

U.C. CHROME CORPORATION - ANALYTICAL RESULTS OF GROUNDWATER SAMPLES

Well	Total Chromium	Hexavalent Chromium	Date
2	300	300	5/13/82(1)
A	800	800	5/13/82(1)
3	62	46	5/13/82(1)
PW-6	NR (4)	450, 750	2/22/84(2)
PW-7	NR	250, 350	2/22/84(2)
PW-6	1,220	NR	2/29/84(3)
PW-7	44.9	NR	2/29/84(3)

(1) From Ecology and Environment, Inc. (lower detectable limit - 1 ppm chromium).

(2) From Travelers Insurance Company and Parratt Wolff, Inc.; first value from upper groundwater, second value from lower groundwater. Report values are order of magnitude concentrations. Hach Test Kit used.

(3) From Travelers Insurance Company and Parratt Wolff, Inc. (lower detectable limit - 0.01 ppm total chromium). ICPE analysis.

(4) Not recorded.

NOTE: All values are in ppm.

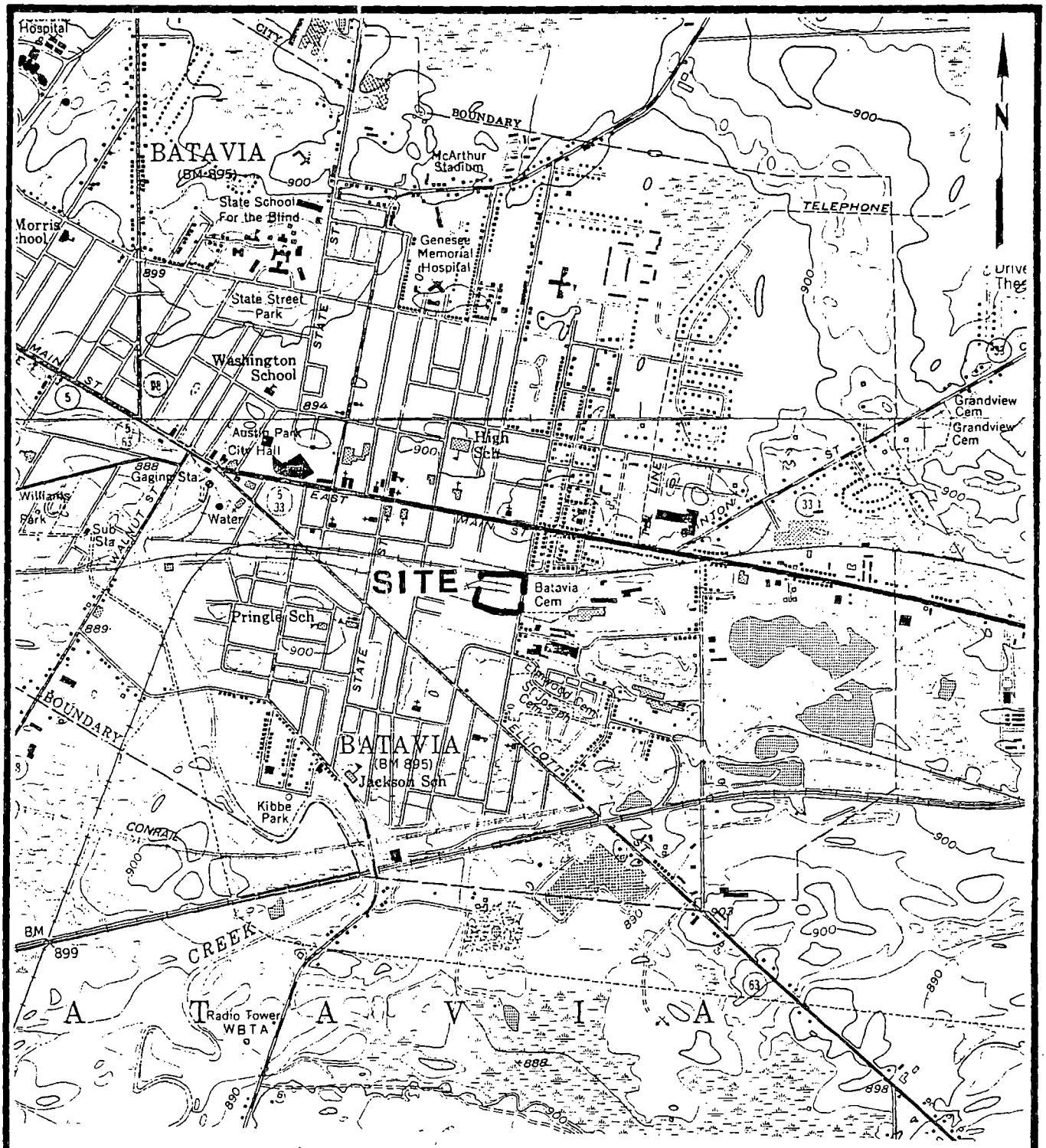
NARRATIVE

NARRATIVE SUMMARY

The U. S. Chrome site covers approximately 4-acres in the City of Batavia, Genesee County, New York (Office of City Engineer, 1959). Tibon Hard Chrome, Inc. conducted chrome plating operations on the site from 1959 until 1979, when the facility was purchased by the U.S. Chrome Corporation (Pendergast, 1986). The U.S. Chrome Corporation presently operates a chrome plating facility at the site (ES Site Visit, 1986).

An unknown quantity of chromic acid bath solution was spilled onto the soil as a result of plating operations between 1959 and 1982 (Pendergast, 1986). According to tests conducted by Parratt Wolff, Inc., a subsurface contaminant plume containing hexavalent chromium concentrations ranging from 46 to 750 ppm covers an estimated area of 7-acres near the facility (Parratt Wolff, 1984). Chrome contaminated water has infiltrated into the city sewer system in at least two sections of city sewer line located west and northwest of the site (Parratt Wolff, 1984).

In 1982, the U.S. Chrome Corporation initiated a groundwater remedial action plan consisting of groundwater pumping followed by physical/chemical treatment (Pendergast, 1986). Hexavalent Chromium contaminated groundwater is presently treated on site by sulfide reduction followed by hydroxide precipitation (ES Site Visit, 1986).



LATITUDE: 42°06'18" N
LONGITUDE: 78°02'55" W

SCALE

0 1000 2000 3000 4000 FEET

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OF ENVIRONMENTAL CONSERVATION
PHASE I REPORT

SITE LOCATION MAP
U.S. CHROME CORP.

FIGURE V-1

REFERENCE: U.S.G.S. 7.5' Topographic Map
Batavia North, NY (1978) and Batavia
South, NY (1978) Quadrangle

Ground Water Route Work Sheet

Rating Factor	Assigned Value (Circle One)	Multi-plier	Score	Max. Score	Ref. (Section)
1 Observed Release	0 45	1	45	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	3	3	
	Total Route Characteristics Score		14	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	18	18	
Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	2	8	
	Total Waste Characteristics Score		20	26	
5 Targets					3.5
Ground Water Use	0 1 2 3	3	9	9	
Distance to Nearest Well/Population Served	0 4 6 8 10 / 12 16 18 20 / 24 30 32 35 40	1	35	40	
	Total Targets Score		44	49	
6 If line 1 is 45, multiply 1 x 4 x 5			39,600		
If line 1 is 0, multiply 2 x 3 x 4 x 5				57,330	
7 Divide line 6 by 57,330 and multiply by 100		S_{gw} =		69.07	

Surface Water Route Work Sheet

Rating Factor	Assigned Value (Circle One)	Multi-plier	Score	Max. Score	Ref. (Sectio
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	0	3	
1-yr. 24-hr. Rainfall	0 1 2 3	1	2	3	
Distance to Nearest Surface Water	0 1 2 3	2	4	6	
Physical State	0 1 2 3	1	3	3	
	Total Route Characteristics Score		9	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	18	18	
Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1	2	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	0	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		6	55	
6 If line 1 is 45, multiply 1 x 4 x 5			3240		
If line 1 is 0, multiply 2 x 3 x 4 x 5				64,350	
7 Divide line 6 by 64,350 and multiply by 100		S_{sw} =		5.04	

Air Route Work Sheet

Rating Factor	Assigned Value (Circle One)	Multiplier	Score	Max. Score	Ref. (Section)
Observed Release	(0) 45	1	0	45	5.1

Date and Location: 3/86 HNU METER READINGS TAKEN UPWIND AND DOWNWIND OF FACILITY.

Sampling Protocol: HNU METER READINGS

If line [1] is 0, the S_a = 0. Enter on line [5].
If line [1] is 45, then proceed to line [2].

Waste Characteristics					5.2
Reactivity and Incompatibility	0 (1) 2 3	1	1	3	
Toxicity	0 1 2 (3)	3	9	9	
Hazardous Waste Quantity	0 1 2 3 4 5 6 7 (8)	1	8	8	
	Total Waste Characteristics Score		19	20	

[3] Targets					5.3
Population Within 4-Mile Radius	0 9 12 15 18 (21) 24 27 30	1	21	30	
Distance to Sensitive Environment	0 (1) 2 3	2	2	6	
Land Use	0 1 2 (3)	1	3	3	
	Total Targets Score		26	39	

[4] Multiply [1] x [2] x [3]		0	35,100
[5] Divide line [4] by 35,100 and multiply by 100	S_a =	0	

WORKSHEET FOR COMPUTING S_M

	S	S^2
Groundwater Route Score (S_{gw})	69.07	4770.66
Surface Water Route Score (S_{sw})	5.04	25.40
Air Route Score (S_a)	0	0
$S_{gw}^2 + S_{sw}^2 + S_a^2$		4796.06
$\sqrt{S_{gw}^2 + S_{sw}^2 + S_a^2}$		69.25
$\sqrt{S_{gw}^2 + S_{sw}^2 + S_a^2} / 1.73 = S_M =$		40.03

Fire and Explosion Work Sheet

Rating Factor	Assigned Value (Circle One)	Multi-plier	Score	Max. Score	Ref. (Sectic
1 Containment	1 3	1		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			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				1,440	
5 Divide line 4 by 1,440 and multiply by 100		S_{FE} = 0			

DIRECT CONTACT WORK SHEET

Direct Contact Work Sheet

	Rating Factor	Assigned Value (Circle One)	Multi-plier	Score	Max. Score	Ref. (Sectio
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.	0	3	8.2
3	Containment	0 (15)	1	15	15	8.3
4	Waste Characteristics Toxicity	0 1 2 (3)	5	15	15	8.4
5	Targets					8.5
	Population Within a 1-Mile Radius	0 1 2 3 4 5	4		20	
	Distance to a Critical Habitat	(0) 1 2 3	4	0	12	
	Total Targets Score			0	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			0	21,600	
7	Divide line 6 by 21,600 and multiply by 100		S_{DC} = 0			

HRS COVER SHEET

Facility Name: U.S. Chrome Corporation

Location: Swan Street, Batavia, Genesee County, New York

EPA Region: II

Person(s) in charge of the facility: James Pendergast

Name of Reviewer: L. Cordone/J. Baker Date: 2/26/86

General Description of the facility:

The U.S. Chrome Corporation operates a chrome plating facility in Batavia, NY. In 1982, it was discovered that chromic acid from a plating bath had contaminated the soil beneath the plating facility. Samples drawn from a well installed near the contaminated area indicated hexavalent chromium concentrations in the groundwater of up to 1,220 ppm. In 1982, U.S. Chrome initiated a groundwater remediation program consisting of pumping followed by physical/chemical treatment of the chromium contaminated water. Presently, groundwater chromium concentrations are approximately 300 ppm.

Scores: $S_M = 40.03$ ($S_{gw} = 69.07$ $S_{sw} = 5.04$ $S_a = 0.00$)

$S_{FE} = 0.00$

$S_{DC} = 0.00$

DOCUMENTATION RECORDS
FOR
HAZARD RANKING SYSTEM

FACILITY NAME: U.S. Chrome Corporation

LOCATION: Swan Street, Batavia, Genesee County, New York

56510-6R-31

GROUND WATER ROUTE

1. OBSERVED RELEASE

Contaminants detected (5 maximum):

Hexavalent chromium concentrations at levels much greater than background were detected in groundwater near the facility (Parratt Wolff, 1984).

Rationale for attributing the contaminants to the facility:

Groundwater wells upgradient of the site contained hexavalent chromium concentrations below the detectable limit while downgradient groundwater samples contained hexavalent chromium concentrations ranging from 46 to 750 mg/l (Parratt Wolff, 1984; Travelers Insurance Company, 1984; Ecology and Environment, Inc. 1982).

* * *

2. ROUTE CHARACTERISTICS

Depth to Aquifer of Concern

Name/description of aquifer(s) in concern:

Shallow aquifer in sandy soil (Parratt Wolff, 1984).

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

Approximately 8 feet (Parratt Wolff, 1984).

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

0 feet (ES Site Visit, 1986; Pendergast, 1986).

Net Precipitation

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

Mean annual precipitation is 36" (USDOC, 1979).

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

Mean annual lake evaporation is 27" (USDOC, 1979).

Net precipitation (subtract the above figures):

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

Permeability of Unsaturated Zone

Soil type in unsaturated zone:

Palmyra gravelly loam (USDA, 1969).

Permeability associated with soil type

1.4×10^{-3} to 4.4×10^{-3} (USDA, 1969).

Physical State

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

Liquid leaked from plating baths (Pendergast, 1986).

3. CONTAINMENT

Containment

Method(s) of waste or leachate containment evaluated:

Liquid spilled onto unlined surface (Pendergast, 1986).

Method with highest score:

Liquid spilled onto unlined surface (Pendergast, 1986).

4. WASTE CHARACTERISTICS

Toxicity and Persistence

Compound(s) evaluated:

Hexavalent chromium (Pendergast, 1986; Parratt Wolff, 1984).

Compound with highest score:

Hexavalent chromium - persistence/toxicity = 18 (HRS Users Manual, 1982).

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):

A 1984 hydrogeologic study estimated a groundwater contaminated area of approximately 7 acres (Parratt Wolff, 1984).

Basis of estimating and/or computing waste quantity:

Assuming porosity of 0.4, and average Cr concentration (total) in H_2O of 500 ppm, total Cr is: 135,520 yd^3 x 0.4 x 500/1,000,000 = 27.104 yd^3.

5. TARGETS

Ground Water Use

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

Aquifer is used as a drinking water source by some residents in the Town of Batavia (Markellis, 1986).

Distance to Nearest Well

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

Approximately 3/4 mile to City PWS Well to the southwest (USGS, 1978; NYS Atlas of Community Water System Sources, 1982).

Distance to above well or building:

Approximately 3/4 mile (USGS, 1978).

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:

City of Batavia PWS Wells - 16,703
Oaks Subdivision Wells - 70
Other - Unknown
(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):

Irrigation not practiced in the area (Squires, 1985).

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

More than 16,773 (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):

There is no analytical data available for surface water monitoring at this facility (NYSDEC, 1985).

Rationale for attributing the contaminants to the facility:

Not applicable.

2. ROUTE CHARACTERISTICS

Facility Slope and Intervening Terrain

Average slope of facility in percent:

0 to 3% (ES Site Visit, 1986).

Name/description of nearest downslope surface water:

Tonawanda Creek. This stream/river flows from the southern to the western sides of the City of Batavia. It continues flowing west until it eventually enters the Niagara River (USGS, 1978).

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

0 to 3% (USGS, 1978; ES Site Visit, 1986).

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

No (ES Site Visit, 1986).

Is the facility completely surrounded by areas of higher elevation?

No (ES Site Visit, 1986; USGS, 1978).

1-Year 24-Hour Rainfall in Inches

2.4" (USDOC, 1963).

Distance to Nearest Downslope Surface Water

4,000 feet to Tonawanda Creek (USGS, 1978).

Physical State of Waste

Liquid leaked on ground surface, no liner (Pendergast, 1986; ES Site Visit, 1986).

3. CONTAINMENT

Containment

Method(s) of waste or leachate containment evaluated:

Liquid waste on ground surface - no liner (Pendergast, 1986; ES Site Visit, 1986).

Method with highest score:

Liquid waste spilled on ground - no liner (Pendergast, 1986; ES Site Visit, 1986).

4. WASTE CHARACTERISTICS

Toxicity and Persistence

Compound(s) evaluated:

Hexavalent chromium (Pendergast, 1986; Parratt Wolff, 1984).

Compound with highest score:

Hexavalent chromium - persistence/toxicity = 18 (HRS Users Manual, 1982).

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):

27.104 yd^3.

Basis of estimating and/or computing waste quantity:

Assuming porosity of 0.4, and an average Cr concentration (total) in water of 500 ppm, total Cr is: (135,520yd^3)(0.4)(500ppm/1,000,000 ppm) = 27.104 yd^3.

5. TARGETS

Surface Water Use

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

Tonawanda Creek used recreationally for fishing, and used for PWS for 16,703, population of City of Batavia (NYS Atlas of Community Water System Sources, 1982).

Is there tidal influence?

Not a coastal area.

Distance to a Sensitive Environment

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

Not a coastal area.

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

None in flow path within 1 mile (NYS Wetlands Map).

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

None within 1 mile (Ozard, 1985).

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:

Surface Water

~~Southwest~~ intake for City of Batavia (NYS Atlas of Community Water System Sources, 1982). Population = 16,703.

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

Irrigation not practiced in the Batavia area (Squires, 1985).

Total population served:

16,703 (NYS Atlas of Community Water System Sources, 1982).

Name/description of nearest of above water bodies:

Tonawanda Creek, westerly flowing to Niagara River (USGS, 1978).

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

Not applicable.

AIR ROUTE

1. OBSERVED RELEASE

Contaminants detected:

HNU meter readings taken upwind and downwind of the facility; no organic vapor concentrations were recorded above background (ES Site Visit, 3/86).

Date and location of detection of contaminants:

Not applicable.

Methods used to detect the contaminants:

Not applicable.

Rationale for attributing the contaminants to the site:

Not applicable.

* * *

2. WASTE CHARACTERISTICS

Reactivity and Incompatibility

Most reactive compound:

Chromic acid solution (Pendergast, 1986; ES Site Visit, 1986). Upon heating will emit smoke and irritable fumes (Sax, 1984). NFPA = 1.

Most incompatible pair of compounds:

Not applicable.

Toxicity

Most toxic compound:

Hexavalent chromium - persistence/toxicity = 18 (HRS Users Manual, 1982).

Hazardous Waste Quantity

Estimated contaminated groundwater/soil = 135,520 cubic yards.

Basis of estimating and/or computing waste quantity:

Assuming porosity of 0.4, and an average Cr concentration (total) in water of 500 ppm, total Cr is: (135,000 yd^3)(0.4)(500 ppm/1,000,000 ppm) = 27.104 yd^3.

* * *

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

Estimated at 16,703 (Rand McNally, 1985).

Distance to a Sensitive Environment

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

Not a coastal area.

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

Approximately 4,000 feet (NYS Wetlands Maps).

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

None within 1 mile (Ozard, 1985).

Land Use

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

Site is an industrial area (ES Site Visit, 1986).

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

None within 2 miles (ES Site Visit, 1986).

Distance to residential area, if 2 miles or less:

200 feet (USGS, 1978; ES Site Visit, 1986).

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

Approximately 5,000 feet (Squires, 1985).

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

Approximately 5,000 feet (Squires, 1985).

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

No (ES Site Visit, 1986).

FIRE AND EXPLOSION

1. CONTAINMENT

Hazardous substances present:

No information was found during the conduct of the Phase I investigation which indicated that a fire or explosion hazard presently or previously exists at the site.

Type of containment, if applicable:

Not applicable.

* * *

2. WASTE CHARACTERISTICS

Direct Evidence

Type of instrument and measurements:

Ignitability

Compound used:

Reactivity

Most reactive compound:

Incompatibility

Most incompatible pair of compounds:

Hazardous Waste Quantity

Total quantity of hazardous substances at the facility:

Basis of estimating and/or computing waste quantity:

* * *

3. TARGETS

Distance to Nearest Population

Distance to Nearest Building

Distance to Sensitive Environment

Distance to wetlands:

Distance to critical habitat:

Land Use

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

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

Distance to residential area, if 2 miles or less:

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

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

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

Population with 2-Mile Radius

Buildings Within 2-Mile Radius

DIRECT CONTACT

1. OBSERVED INCIDENT

Date, location, and pertinent details of incident:

There are no records of any incidents of direct contact at this facility (NYSDEC, 1985).

* * *

2. ACCESSIBILITY

Describe type of barrier(s):

Site is located inside a factory. Site is inaccessble to area residents other than employees of the U.S. Chrome Corporation (ES Site Visit, 1986).

* * *

3. CONTAINMENT

Type of containment, if applicable:

Waste liquid spilled on ground, no liner (Pendergast, 1986; ES Site Visit, 1986).

* * *

4. WASTE CHARACTERISTICS

<u>Toxicity</u>

Compounds evaluated:

Hexavalent chromium (Parratt Wolff, 1984).

Compound with highest score:

Hexavalent chromium (HRS Users Manual, 1982) - Toxicity = 3.

5. TARGETS

Population within one-mile radius

Distance to critical habitat (of endangered species)

None within one mile (Ozard, 1985).

HRS REFERENCES

U.S. CHROME

1. Ecology and Environment (1982). Letter to the City of Batavia, 5/24/82.

2. Markellis, C. (1986), Genesee County DOH. Personal Communication, 2/26/86.

3. NYSDEC Wetlands Map.

4. NYSDEC (1985). "Inactive Hazardous Waste Disposal Site Report".

5. NYSDEC (1979). State Pollutant Discharge Elimination System (SPDES) Permit.

6. NYSDOH (1982). Division of Environmental Protection. "NYS Atlas of Community Water System Sources".

7. Ozard, J. (1985), NYSDEC Wildlife Resources Center. Personal Communication, 12/16/85.

8. Parratt Wolff, Inc. (1984). "Groundwater Monitoring U.S. Chrome Corporation, Batavia, New York".

9. Pendergast, J. (1986), U.S. Chrome Plant Manager. Personal Communication, 1/23/86

10. Rand McNally, (1985). Road Atlas, 1980 Census Data.

11. Squires, G. (1985), Genesee County Soil and Water Conservation District. Personal Communication, 12/19/85.

12. Travelers Insurance Company (1984), Engineering Division. Laboratory Analysis Report.

13. USDOC (1979). "Climatic Atlas of the United States".

14. USDOC (1963). "Rainfall Frequency Atlas of the United States", Technical Paper No. 40.

15. USDA (1969). Soil Survey of Genesee County, New York.

16. USGS (1978). Topographic Map: Batavia North and South Quadrangles.

ecology and environment, inc.

195 SUGG ROAD, P.O. BOX D, BUFFALO, NEW YORK 14225, TEL. 716-632-4491, TELEX 91-9183

International Specialists in the Environmental Sciences

24 May 1982

DRAFT

Mr. Dennis Larson
City Engineer
City of Batavia
10 W. Main Street
Batavia, New York 14020

Dear Mr. Larson:

Per your request at our meeting of May 12, 1982, Ecology and Environment, Inc. collected water samples from five ground water monitoring wells in Batavia. These wells were installed by your personnel on or around May 13, 1982. Analyses were performed at our Analytical Services Center for total and hexavalent chromium as you specified. The results are compiled in the table below:

Well*	ph	Total Chromium (ppm)	Hexavalent Chromium (ppm)
1	7.5	<1	<1
2	7.0	300	300
A	6.8	800	800
3	7.3	62	46
4	7.5	<1	<1

(Detectable Limits - 1 ppm Chromium)

In addition, the depth of the ground water was measured at each well to determine the approximate ground water directional flow. The flow direction is approximately north as shown in the attached figure.

The aforementioned data confirms the existence of hazardous wastes or high concentrations of hexavalent chromium in the ground water. The extent of the chromium contamination can only be roughly estimated from this data.

*Wells B and 5 were dry.

recycled paper

INTERVIEW FORM

INTERVIEWEE/CODE Mr. Constantine Markellis /

TITLE - POSITION Genesee County DOH *

ADDRESS 3837 West Main Rd.

CITY Batavia STATE N.Y. ZIP 14020

PHONE (716) 344-2580 RESIDENCE PERIOD TO

LOCATION phone Interview INTERVIEWER Leslie Cordone

DATE/TIME 2/26/86 / 1115 hrs

SUBJECT: Water Supply For the Batavia Area

REMARKS: The city of Batavia utilizes a community water supply system that draws water both from Tonawanda Creek and a wellfield located on the south-east side of the city.

Community Water Lines From the City of Batavia extend into the Town of Batavia as stated below (information is approximate):

- Southeast along Rt. 63 to Shepard Road intersection.
- Southwest along Rt 98 to Pike Road intersection.
- West along Rt. 33 to Wortendyke Road intersection.
- West along Rt. 5 at least a distance of 1.5 miles beyond the western city limit.
- Northwest along Rt. 63 to Galloway Road intersection
- North along Rt 98 to a point just beyond the NYS Thruway.
- Northeast along Rt 13, at least 2 miles from the northern city limit
- East along Clinton St. to Town Line Road intersection.
- East along Rt. 5 to Town Line Road intersection.

- Other areas not mentioned above located in the Town of Batavia and outside the City Limits of Batavia are probably using private groundwater for water supply.

I agree with the above interview summary:

Signature/Title:

Comments:

GENESEE COUNTY
SOIL & WATER CONSERVATION
DISTRICT

166 Washington Ave.
U.S.D.A. Center

716-343-2362
Batavia, New York 14020

December 20, 1985

Les,

Enclosed is the information you requested as per our telephone conversation of 12/19/85. I trust this information will meet your needs. Should you require further information or assistance, feel free to contact us at any time.

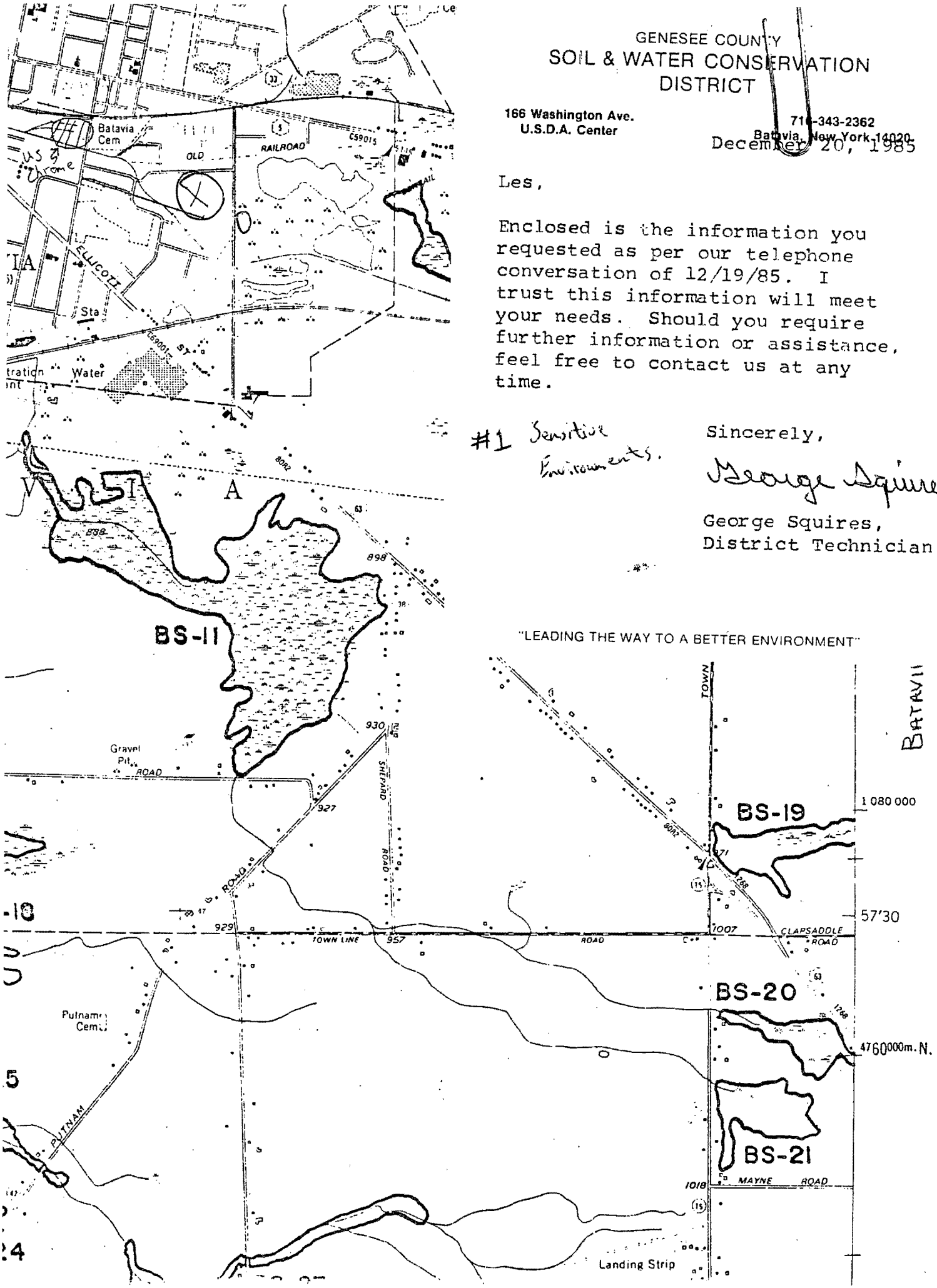
#1 Sensitive Environments.

Sincerely,

George Squires

George Squires,
District Technician

"LEADING THE WAY TO A BETTER ENVIRONMENT"



SITE CODE: 819006

NALYTICAL DATA AVAILABLE:

ir- Surface Water- Groundwater-X Soil- Sediment- None-

ONTRAVENTION OF STANDARDS:

roundwater-X Drinking Water- Surface Water- Air-

EGAL ACTION:

YPE..: none State- Federal-
TATUS: In Progress- Completed-

EMEDIAL ACTION:

roposed- Under Design- In Progress- Completed-
ATURE OF ACTION:

EOTECHNICAL INFORMATION:
OIL TYPE: PaA-Palmyra Gravelly Loam 0-3%
ROUNDWATER DEPTH: 10- to 15 feet

SSESSMENT OF ENVIRONMENTAL PROBLEMS:

roundwater contamination

- This is an old site report.
- Site report from DEC 1985 registry should be used here.

SSESSMENT OF HEALTH PROBLEMS:

nsufficient information

ERSON(S) COMPLETING THIS FORM:

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

AME.: Deborah Jackson
ITLE: Sr. Eng. Tech.

AME.: R. A. Olazagasti
ITLE: SWMS

ATE.: 01/23/85

NEW YORK STATE DEPARTMENT OF HEALTH

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

NAME.:
TITLE:

DATE.: 01/23/85

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

CLASSIFICATION CODE: ~~2a~~ 2 REGION: 8 SITE CODE: 819006

NAME OF SITE : U.S. Chrome Corporation
STREET ADDRESS: 31 Swan Street
TOWN/CITY: Batavia COUNTY: Genesee ZIP:

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

SITE OWNER/OPERATOR INFORMATION:
CURRENT OWNER NAME....: U.S. Chrome Corporation
CURRENT OWNER ADDRESS.: same as above
OWNER(S) DURING USE...:
OPERATOR DURING USE...: U.S. Chrome Corp.
OPERATOR ADDRESS.....: 31 Swan St. Batavia, NY
PERIOD ASSOCIATED WITH HAZARDOUS WASTE: From To

SITE DESCRIPTION:
U.S. Chrome operates a plating facility at this location for several yea rs (unknown duration) Plating bath liquid leaked from one of the plating tanks into the sandy soil and eventually to groundwater. Groundwater in the vicinity of the plant is contaminated with Cr+6 Groundwater depth is 10 to 15 feet. Company is pumping some groundwater via a single well-point 25 feet. deep, treating the water at discharge to sanitary sewer. Groundwater at well point contains 2000 mg/l of Cr+6 Plant located in industrial section of the city and is served by municipal water system.

HAZARDOUS WASTE DISPOSED: Confirmed-X Suspected -

TYPE	QUANTITY (units)
Plating bath containing Cr+6	

(47-15-11 (10/83)

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

DIVISION OF SOLID AND HAZARDOUS WASTE

INACTIVE HAZARDOUS WASTE DISPOSAL SITE REPORT

PRIORITY CODE: 2a SITE CODE: 819006

NAME OF SITE: U.S. Chrome Corporation REGION: 8

STREET ADDRESS: 31 Swan Street

TOWN/CITY: Batavia COUNTY: Genesee

NAME OF CURRENT OWNER OF SITE: U.S. Chrome Corporation

ADDRESS OF CURRENT OWNER OF SITE: Same as above

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

ESTIMATED SIZE: _____ ACRES

SITE DESCRIPTION:

Chrome plating operations have taken place at the facility from 1959 to present. In 1982 it was discovered that plating bath liquid had leaked from one of the plating tanks into the sandy soil and eventually to groundwater. Chrome and hexavalent chromium contaminated groundwater extends west-northwest of the facility, over an approximate area of 7 acres. Hexavalent chromium concentrations range from 250 to 800 ppm in the contaminant plume. Presently, the U.S. Chrome Corporation is pumping and treating approximately 28,000 gpd from four recovery wells. Treatment is by sulfide reduction of chrome (VI) to chrome (III) followed by hydroxide precipitation. Treated effluent goes directly to the City of Batavia sewer system.

HAZARDOUS WASTE DISPOSED: CONFIRMED [x] SUSPECTED [ ]

TYPE AND QUANTITY OF HAZARDOUS WASTES DISPOSED:

TYPE	QUANTITY (POUNDS, TONS, DRUMS, GALLONS)
Plating bath containing Cr+6	Unknown

ME PERIOD SITE WAS USED FOR HAZARDOUS WASTE DISPOSAL:

_____, 19 59 TO present, 19 ____

NER(S) DURING PERIOD OF USE: U.S. Chrome Corp.

TE OPERATOR DURING PERIOD OF USE: U.S. Chrome Corp.

DRESS OF SITE OPERATOR: 31 Swan Street, Batavia, NY

ALYTICAL DATA AVAILABLE: AIR [ ] SURFACE WATER [ ] GROUNDWATER [x]
SOIL [ ] SEDIMENT [ ] NONE [ ]

CONTRAVENTION OF STANDARDS: GROUNDWATER [x] DRINKING WATER [ ]
SURFACE WATER [ ] AIR [ ]

OIL TYPE: Palymra Gravelly loam 0 to 3%

EPTH TO GROUNDWATER TABLE: 10 to 15 feet

EGAL ACTION: TYPE: None _____ STATE [ ] FEDERAL [ ]
STATUS: IN PROGRESS [x] COMPLETED [ ]

EMEDIAL ACTION: PROPOSED [ ] UNDER DESIGN [ ]
IN PROGRESS [x] COMPLETED [ ]

NATURE OF ACTION: Groundwater pumping followed by physical-chemical treatment

ASSESSMENT OF ENVIRONMENTAL PROBLEMS:

Groundwater contamination

ASSESSMENT OF HEALTH PROBLEMS:

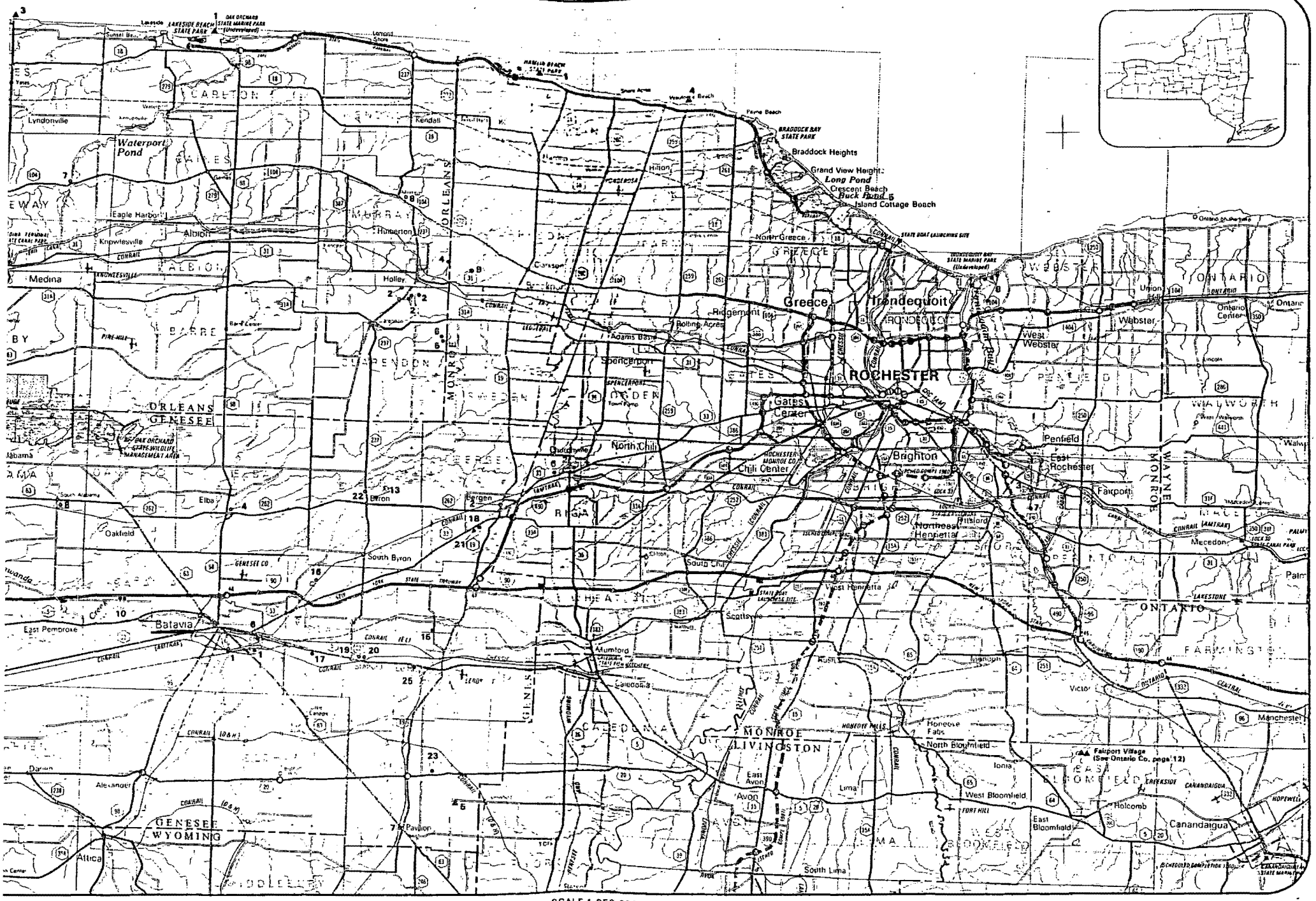
Insufficient information

PERSON(S) COMPLETING THIS FORM:

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION	NEW YORK STATE DEPARTMENT OF HEALTH
NAME Leslie Cordone - ES	NAME
TITLE Environmental Engineer	TITLE
NAME James Baker - ES	NAME
TITLE Geologist	TITLE
DATE: 3/31/86	DATE:

New York State Atlas of Community Water System Sources 1982

NEW YORK STATE DEPARTMENT OF HEALTH
DIVISION OF ENVIRONMENTAL PROTECTION
BUREAU OF PUBLIC WATER SUPPLY PROTECTION



© SHEET, 1 250 000 SCALE NEW YORK STATE MAP © 1980 BY THE NEW YORK STATE DEPARTMENT OF TRANSPORTATION

GENESEE COUNTY

ID NO	COMMUNITY WATER SYSTEM	POPULATION	SOURCE
	Municipal Community		
1	Batavia City	16703	Tonawanda Creek, Wells *
2	Bergen Village	1040	Wells
3	Corfu Village	760	Wells
4	Elba Village	805	Wells
5	Leroy Village (See also No 7 Wyoming Co, Page 10)	100	Lake Leroy
6	Oaks Subdivision	70	Wells ——— *
7	Pavilion Water District #1	560	Wells
8	South Alabama	50	Wells
	Non-Municipal Community		
9	Antones Trailer Park	56	Wells
10	Apple Grove Trailer Park	98	Wells
11	Boulder Trailer Park	24	Wells
12	Broadway Acres	40	Wells
13	Chapells Trailer Park	60	Wells
14	Del-Mar Trailer Park	NA	Wells
15	Elmwood Trailer Park	21	Wells
16	Godfreys Pond	40	Wells
17	Golden Mobile Home Park	54	Wells
18	Happy Hollow Trailer Court	15	Wells
19	Harris Apartments	30	Wells
20	Hel-Ken Apartments	NA	Wells
21	Huskey's Trailer Court	20	Wells
22	Schoolhouse Apartments	18	Wells
23	Valley View Trailer Park	52	Wells
24	Weaver Trailer Park	NA	Wells
25	Willard Apartments	30	Wells

MONROE COUNTY

ID NO	COMMUNITY WATER SYSTEM	POPULATION	SOURCE
	Municipal Community		
1	Brockport Village	10000	Lake Ontario
2	Churchville Village	1500	Wells
3	East Rochester Village	8000	Wells
	Fairport Village (See No 4 Ontario Co, Page 12)	8800	
4	Hilton Village	5000	Lake Ontario
5	Monroe County Water Authority	150000	Lake Ontario
6	Park Road Extension	10	Wells
7	Pittsford Village	3500	Wells
	Rochester City (See No 11 Livingston Co, Page 10 and No 13 Ontario Co, Page 12)	225000	
8	Webster Village	35000	Wells
	Non-Municipal Community		
9	John B. Martin & Sons Trailer Park	250	Wells

ORLEANS COUNTY

ID NO	COMMUNITY WATER SYSTEM	POPULATION	SOURCE
	Municipal Community		
1	Albion Village	5800	Lake Ontario
2	Holley Village	2100	Wells
3	Lyndonville Village	1100	Lake Ontario
	Non-Municipal Community		
4	County Line Mobile Home Park	NA	Wells
5	Hovey's Trailer Court	30	Wells
6	Maples Trailer Park	20	Wells
7	Oak Orchard Mobile Homes	35	Wells
8	Ridge Mobile Estates, Inc.	120	Wells

INTERVIEW FORM

INTERVIEWEE/CODE John Ozard /

TITLE - POSITION

ADDRESS NYSDEC Wildlife Resources Center

CITY Delmar, N.Y. STATE ZIP 12054

PHONE (518) 439 7426 RESIDENCE PERIOD TO

LOCATION: Phone Interview INTERVIEWER

DATE/TIME 12/16/85 /

SUBJECT: Critical Habitats near Phase I - 4th round sites.

REMARKS: John informed me that there are no critical habitats for endangered species in the vicinities of any of the following Phase I sites: Lindley Landfill, Cedar St. Dump, Horan Road Landfill, Livonia Landfill, Haight Farm, Route 19 Drum Disposal, U.S. Chrome, Sampson State Park, William Benson Landfill, Penn Yann Boats, Conrail Site.

I agree with the above interview summary:

Signature/Title:

Comments:

Groundwater investigations at [illegible] Chrome.

parratt wolff inc

Received 8/1/84 –

Note: Solid + Haz. Waste received this report from Robb Scott. Reg. Engineers.

parratt wolff inc
FISHER RD., EAST SYRACUSE, N.Y. 13057
TELEPHONE AREA CODE 315/437-1429

March 30, 1984

The Travelers Insurance Company
One Tower Square
Hartford, Connecticut 06115

Attention: Mr. Ronald E. McCullen
Assistant Director
Chemical and Environmental Laboratory

Re: K-8402
Groundwater Monitoring
U.S. Chrome Corporation
Batavia, New York

Gentlemen:

Enclosed are three copies of our report summarizing Phase I of the subsurface investigation at the U.S. Chrome Company site in Batavia, New York.

Thank you for the opportunity to be of service to Travelers and we look forward to working with you on Phase II of this project.

Very truly yours,

PARRATT - WOLFF, INC.

Joel D. Plumley

Joel D. Plumley
Project Engineer
JDP/lnc
encs:
cc: w/encls.: (1) Mr. Frank Hale
O'Brien and Gere Engineers, Inc.
1304 Buckley Road
Syracuse, New York 13221

(1) Mr. Royden S. Parratt
Renshaw Bay Corporation
P.O. Box 56
East Syracuse, New York 13057

K-8402
GROUNDWATER MONITORING
U.S. CHROME CORPORATION
BATAVIA, NEW YORK

I. INTRODUCTION

This report presents the results of Phase I of the investigation of the subsurface contamination of groundwater in the vicinity of the U.S. Chrome plant in Batavia, New York. The study was verbally authorized in accordance with our proposal dated January 18, 1984.

II. PURPOSE

The purpose of the first phase of work was to better define the subsurface contaminant plume and other underground conditions such as soil types, confining layers and interfering boundaries that might affect the migration and subsequent mitigation of the chemical contaminant plume.

III. SCOPE OF WORK

The scope of work included the following:

1. The installation of two inch diameter monitoring wells in locations selected by the field geotechnical engineer such that the contaminant plume could be better defined.
2. Continuous logging of test holes to provide a soil profile of the site.
3. Field measurements of hexavalent chrome in groundwater samples obtained during the monitoring well installations.[1]
4. Surveying location and elevations of the completed wells.
5. The determination of groundwater elevations and flow directions, and the approximate shape and extent of the subsurface contaminent plume.
6. The sampling of the recently installed wells for total chrome determination by Travelers analytical laboratory.

IV. DISCUSSION OF RESULTS

1. Soil Description

At each well location, the soil was continuously samples and a log maintained. Also, soil boring logs from two preciously completed wells were reviewed. Copies of these logs are in the attached Appendix.

In general, the site soils are loose to medium dense fine sand overlying very dense glacial till which is encountered at depths between ten and twenty-five feet. (Elevations of the top of the till strata are shown on plate 4.) Groundwater was observed at an approximate depth of eight feet, continuing to the top of the till, which is apparently acting as a lower confining layer. In some borings, a thin sand and gravel layer was penetrated just above the till. This layer does not appear to be continuous over the site. A subsurface cross-section in the general direction of groundwater flow is shown on plate 5. Although the soil may be moderately permeable, the lack of signifi-

[1]Note: Direct field measurements of Cr^{+6} were made in lieu of the originally proposed indicator parameters (Conductivity, pH and temperature).

1. Soil Description (Continued)

cant groundwater gradient would results in very slow groundwater movement.

2. Local Groundwater

The topography of the Batavia region is mostly flat, with the area near U.S. Chrome sloping gently towards Tonawanda Creek, less than a mile to the west.

The location of the monitoring wells are shown on plate 1 while groundwater elevations in these wells are compiled on plate 2. It can be seen from this drawing that the water table is nearly flat, but has some slight downward gradient to the west-northwest.[2]

As stated earlier, the low gradient across the area would produce a slow rate of groundwater movement, even though moderate permeability exists in the site soils above the till. Plate 3 shows the approximate extent of the chrome contamination plume based on field tests of monitoring well water for Cr^{+6} by Parratt - Wolff, Inc. as well as data submitted from previous tests on existing well points (data tabulated in Appendix). Although the contamination has traveled "off site", it is still in a relatively concentrated area near and downgradient of the plant. This is encouraging in that the impact to human health and the environment has been minimal and remedial work would remain localized.

3. Chrome in the Groundwater

During the drilling and well installation phase, groundwater samples were obtained (1) at the water table and (2) at the bottom of the water column, just above the till. These samples were tested by the field engineer using Hach® test kits with a combined range of 0 to 1000 mg/l hexavalent chrome. (The practical detection limit of the low range kit is 0.5 mg/l.) If Cr^{+6} was detected in the water sample, a sample of soil was obtained from the top 12" of the glacial till in the same hole. This soil sample was then mixed with distilled water and the water tested. Results of these tests are in the Appendix. Although the water samples were not obtained at descrete levels, two things are apparent from the field test data. First, hexavalent chrome concentrations increase with depth and second, there is very little, if any, penetration of contaminent into the till.

About a week after the Parratt - Wolff, Inc. wells were installed and developed, they were bailed and sampled. The samples were sent to Travelers Insurance Company for testing. Those test results are included in the Appendix and they correlate well with the field tests.

4. The Sewer

Since the problem of the most immediate concern is the infiltration of contaminated groundwater into the city sewer system, some observations on the subject will be made:

[2] Note: It should be noted that wells PW-1 and PW-2 were located to intercept the bottom of the sewer trench on School Street. These wells may not accurately represent the overall groundwater level in that area, since they may be influenced by sewer infiltration.

IV. DISCUSSION OF RESULTS (Continued)

4. The Sewer (Continued)

Two sections of sewer are known to have infiltrated chrome contaminated water; the 22" diameter pipe on School Street between Hewitt and Swan Streets, and the 8" line that runs north on Swan Street to the manhole on School Street. It is our understanding that the 22" pipe has been grouted and tested water-tight between Hewitt and Swan Streets. Since we were concerned with contaminated groundwater following this sewer trench further downgradient, (down School Street to the West of Swan Street) two monitoring wells (PW-1 and PW-2) were installed vertically to intercept the trench in this area. Water from these wells was tested both in the field and at Travelers Laboratory and indicated uncontaminated groundwater in the sewer trench at these points. By eliminating the 22" pipe as a source of infiltration, the three possible infiltration areas are the manhole at Hewitt and School Streets, the manhole at School and Swan Streets, and the 8" sewer pipe (between the railroad tracks and School Street) on Swan Street.

V. SUMMARY

The problem at U.S. Chrome Company has been reasonably defined and we believe conditions at the site are known well enough to proceed with a second phase, which would progress towards mitigating the problem. If the problem were confined to the sewer, the solution would be simple: repair or replace thos sections (pipe and manholes) that continue to infiltrate chrome) and install an impermeable barrier in the trench of the 22" pipe so that further migration of contaminant to leakey sewer pipe would be halted. Although sewer repair would solve the immediate problem of toxics in the treatment plant sludge, the contaminated groundwater would continue to migrate off site indefinately.

At this time, we envision a remedial program that would concurrently stem the sewer infiltration and set into motion the withdrawal and treatment of the contaminated groundwater as a solution to the long range problem. We are very interested in Travelers thoughts on the subject and would like to meet with Travelers personnel to go over all option.

Very truly yours,

PARRATT - WOLFF, INC.

Joel D. Plumley

Joel D. Plumley
Project Engineer
JDP/lnc

WOITTINC

PROJECT	Travelers Insurance	HOLE NO.	PW-1
LOCATION	U.S. Chrome Batavia, New York	SURF. EL.	890.9'
DATE STARTED	2/14/84 DATE COMPLETED 2/14/84	JOB NO.	8423
		GROUND WATER DEPTH WHILE DRILLING	7.0'
		BEFORE CASING REMOVED	17.5'
		AFTER CASING REMOVED	17.0'

N — NO. OF BLOWS TO DRIVE SAMPLER 12" W/140# HAMMER FALLING 30" — ASTM D-1586, STANDARD PENETRATION TEST

C — NO. OF BLOWS TO DRIVE CASING 12" W/ # HAMMER FALLING
"/OR — % CORE RECOVERY

CASING TYPE - HOLLOW STEM AUGER

SHEET 1 OF 1

DEPTH	SAMPLE DEPTH	SAMPLE NUMBER	C	SAMPLE DRIVE RECORD PER 6"	N	DESCRIPTION OF MATERIAL	STRATA CHANGE DEPTH
						ASPHALT	0.5'
						Gray-brown fine to medium GRAVEL, little fine to coarse sand, trace silt	3.5'
5.0	4.0'-6.0'	1		2/3 3/2	6	Gray moist medium stiff SILT, little fine sand, trace clay	
WL ▼	6.0'-	2		3/4			7.0'
	8.0'			2/2	6	Gray wet loose fine to coarse SAND, little silt, little fine gravel	
	8.0'-	3		2/2			
10.0	10.0'			5/5	7		
	10.0'-	4		3/3			
	12.0'			3/4	6		
	12.0'-	5		9/13			13.0'
	14.0'			6/6	19	Gray dry medium dense medium to coarse GRAVEL, little fine to coarse sand, trace silt	
15.0	14.0'-	6		4/6			14.0'
	16.0'			9/9	15	Gray wet fine to coarse SAND, little fine gravel, little silt	
	16.0'-	7		20/47			
	18.0'			40/43	87		15.0'
	18.0'-	8		46/50-		Gray moist medium dense fine GRAVEL, some silt, trace fine gravel	
20.0	18.8'			.3'			16.0'
						Gray dry very dense fine to coarse SAND, some silt, trace fine gravel, trace clay	
						Bottom of Boring	20.0'
						Note: Installed observation well to 19.6' on completion of boring.	

PROJECT	Travelers Insurance	HOLE NO.	PW-2
LOCATION	U.S. Chrome Batavia, New York	SURF. EL.	891.0'
DATE STARTED	2/15/94 DATE COMPLETED 2/15/84	JOB NO.	8423
		GROUND WATER DEPTH WHILE DRILLING	8.0'
		BEFORE CASING REMOVED	19.4'
		AFTER CASING REMOVED	8.0'

N — NO. OF BLOWS TO DRIVE SAMPLER 12" W/140# HAMMER FALLING 30" — ASTM D-1586, STANDARD PENETRATION TEST

C — NO. OF BLOWS TO DRIVE CASING 12" W/ # HAMMER FALLING "/OR — % CORE RECOVERY

CASING TYPE - HOLLOW STEM AUGER

SHEET 1 OF 1

DEPTH	SAMPLE DEPTH	SAMPLE NUMBER	C	SAMPLE DRIVE RECORD PER 6"	N	DESCRIPTION OF MATERIAL	STRATA CHANGE DEPTH
						ASPHALT	0.3'
						Brown wet fine to coarse SAND, some fine to medium gravel, little silt	4.0'
5.0	4.0'-	1		3/5		Brown wet loose fine to coarse SAND, some silt, trace fine gravel	6.0'
	6.0'			5/4	10		
	6.0'-	2		3/3		Brown wet loose fine to coarse SAND, little silt, trace fine gravel	8.0'
WL ▼	8.0'			3/3	6		
	8.0'-	3		5/8		Brown wet medium dense fine to coarse SAND, little silt, little fine gravel	10.5'
10.0	10.0'			6/6	14		
	10.0'-	4.		8/13		Brown-gray moist medium dense to dense fine to coarse SAND, some silt, little fine gravel, trace shale fragments	14.0'
	12.0'			14/17	27		
	12.0'-	5		17/24			
	14.0'			26/22	50		
15.0	14.0'-	6		4/4		Brown wet loose to medium dense fine to coarse SAND, little fine gravel, trace silt	16.8'
	16.0'			6/9	10		
	16.0'-	7		14/26			
	18.0'			34/50	60	Brown-gray dry dense to very dense fine to coarse SAND, some silt, little fine gravel, trace shale fragments	
20.0							
						Bottom of Boring	20.0'
						Note: Installed observation well to 19.8' on completion of boring.	

WOITINC

TEST BORING LOG

EAST SYRACUSE, N.Y. 13057

PROJECT: Travelers Insurance
LOCATION: U.S. Chrome, Batavia, New York
DATE STARTED: 2/15/84 DATE COMPLETED: 2/15/84

HOLE NO. PW-3
SURF. EL. 891.5'
JOB NO. 8423
GROUND WATER DEPTH WHILE DRILLING 8.0'
BEFORE CASING REMOVED At Surface
AFTER CASING REMOVED 8.4'

N — NO. OF BLOWS TO DRIVE SAMPLER 12" W/140# HAMMER FALLING 30" — ASTM D-1586, STANDARD PENETRATION TEST

C — NO. OF BLOWS TO DRIVE CASING 12" W/ # HAMMER FALLING "/OR — % CORE RECOVERY

CASING TYPE - HOLLOW STEM AUGER

SHEET 1 OF 1

DEPTH	SAMPLE DEPTH	SAMPLE NUMBER	C	SAMPLE DRIVE RECORD PER 6"	N	DESCRIPTION OF MATERIAL	STRATA CHANGE DEPTH
						ASPHALT	0.3'
	2.0'-	1		24/29		Brown frozen fine to coarse GRAVEL, some fine to coarse sand	2.0'
	4.0'			28/10	57	Brown frozen very dense fine to medium SAND, some silt, trace clay, miscellaneous fill	
5.0	4.0'-	2		2/2			
	6.0'			2/2	4		4.0'
	6.0'-	3		2/2		Brown wet loose fine to coarse SAND, little silt, trace clay	
WL ▼	8.0'			4/4	6		8.0'
	8.0'-	4		3/5		Brown wet loose to medium dense fine SAND, trace silt	
10.0	10.0'			7/7	12		
	10.0'-	5		3/5			
	12.0'			13/9	18		
	12.0'-	6		5/8			13.0'
	14.0'			13/9	21	Brown wet medium dense fine to coarse SAND, little silt	
15.0	14.0'-	7		8/9			14.0'
	16.0'			10/10	19	Brown wet medium dense fine to coarse SAND, little fine gravel, trace silt	
	16.0'-	8		14/15			17.0'
	18.0'			20/25	35	Gray dry hard SILT, little weathered shale, trace fine to medium sand, trace fine gravel	
20.0							
						Bottom of Boring	20.0'
						Note: Installed observation well to 19.6' on completion of boring.	

TRAVELERS INSURANCE COMPANY

U.S. CHROME PROJECT

BATAVIA, NEW YORK

PARRATT - WOLFF, INC. JOB #8404

FIELD CHEMICAL DATA

BORING #	SAMPLE HEXAVALENT[1]	CHROMIUM CONCENTRATION[2]
PW-1	Upper Groundwater	< 0.5 mg/l
	Lower Groundwater	< 0.5 mg/l
PW-2	Upper Groundwater	< 0.5 mg/l
	Lower Groundwater	< 0.5 mg/l
PW-3	Upper Groundwater	< 0.5 mg/l
	Lower Groundwater	< 0.5 mg/l
PW-4	Upper Groundwater	< 0.5 mg/l
	Lower Groundwater	< 0.5 mg/l
PW-5	Upper Groundwater	< 0.5 mg/l
	Lower Groundwater	< 0.5 mg/l
PW-6	Upper Groundwater	450.0 mg/l
	Lower Groundwater	750.o mg/l
	Till Soil	< 0.5 mg/l
PW-7	Upper Groundwater	250.0 mg/l
	Lower Groundwater	350.0 mg/l
	Till Soil	< 0.5 mg/l
PW-8	Upper Groundwater	< 0.5 mg/l
	Lower Groundwater	< 0.5 mg/l

[1]Field samples of groundwater and soil were obtained from boreholes drilled during the weeks of February 13 and 20, 1984. A sample of groundwater was taken at the water table shown as the "upper groundwater" above. A second water sample was obtained when the drilling reached the top of the glacial till strata (see boring logs). This sample is called the "lower groundwater" on the table. If Cr^{+6} was detected in the groundwater, a glacial till soil sample from the top 12" of the strata, and weighing about 50g was placed in a 200 ml jar which was filled with distilled water. This was mixed thoroughly and then the water was tested for Cr^{+6}, the results of which are shown on the table as "till soil".

[2]Soil and groundwater testing for hexavalent chrome was performed with a Hach test kit with a detection limit of 0.5 mg/l. The concentrations reported are not exact numbers but should be considered an order of magnitude.

THE TRAVELERS INSURANCE COMPANIES
Engineering Division
HARTFORD, CONNECTICUT

PARRATT WOLFF INC.

YSIS NO.	CUSTOMER		ADDRESS
0264 (7-7)	U.S. Chrome City of Batavia		Batavia, N.Y.
LE SENT BY	DATE RECEIVED	DATE REPORTED	ANALYST
D. Plumley	3-7-84	3-9-84	FJE

RIAL ANALYZED

k Liquid Samples

SAMPLE NUMBER	LOCATION	TEST RESULTS
	Feb. 29, 1984	Total Chrome
PW-1		NDLT* 0.01 mg/L
PW-2		NDLT* 0.01 mg/L
PW-3		NDLT* 0.01 mg/L
PW-4		NDLT* 0.01 mg/L
PW-5		NDLT* 0.01 mg/L
PW-6		1,220 mg/L
PW-7		44.9 mg/L

ALYTICAL METHOD

nductively Coupled Plasma Atomic Emission Spectroscopy

None detected at less than values

The analytical results are based on samples supplied by the Customer. Analysis was performed under provisions in the contract.

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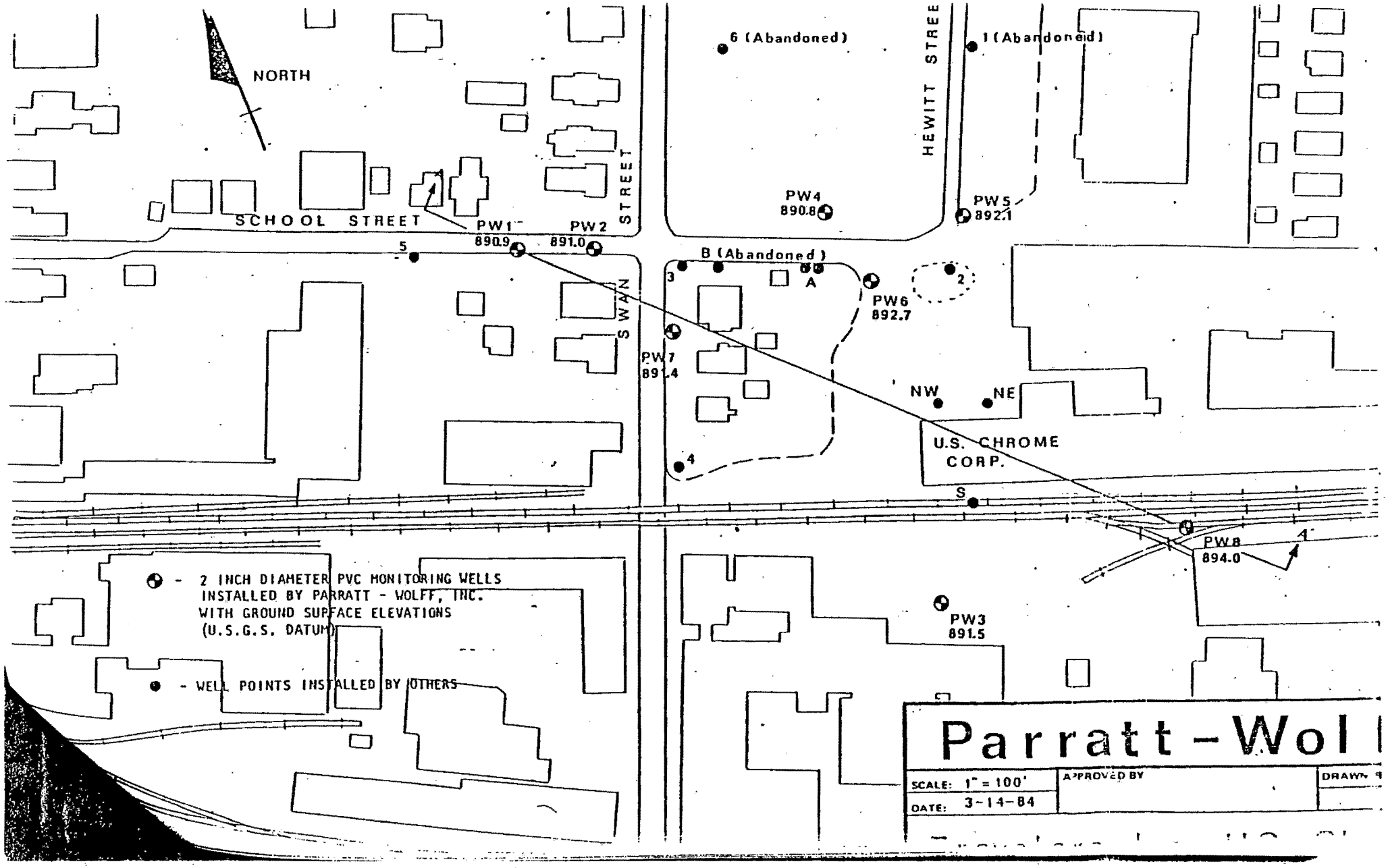
NORTH
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SWAN STREET
HEWITT STREE
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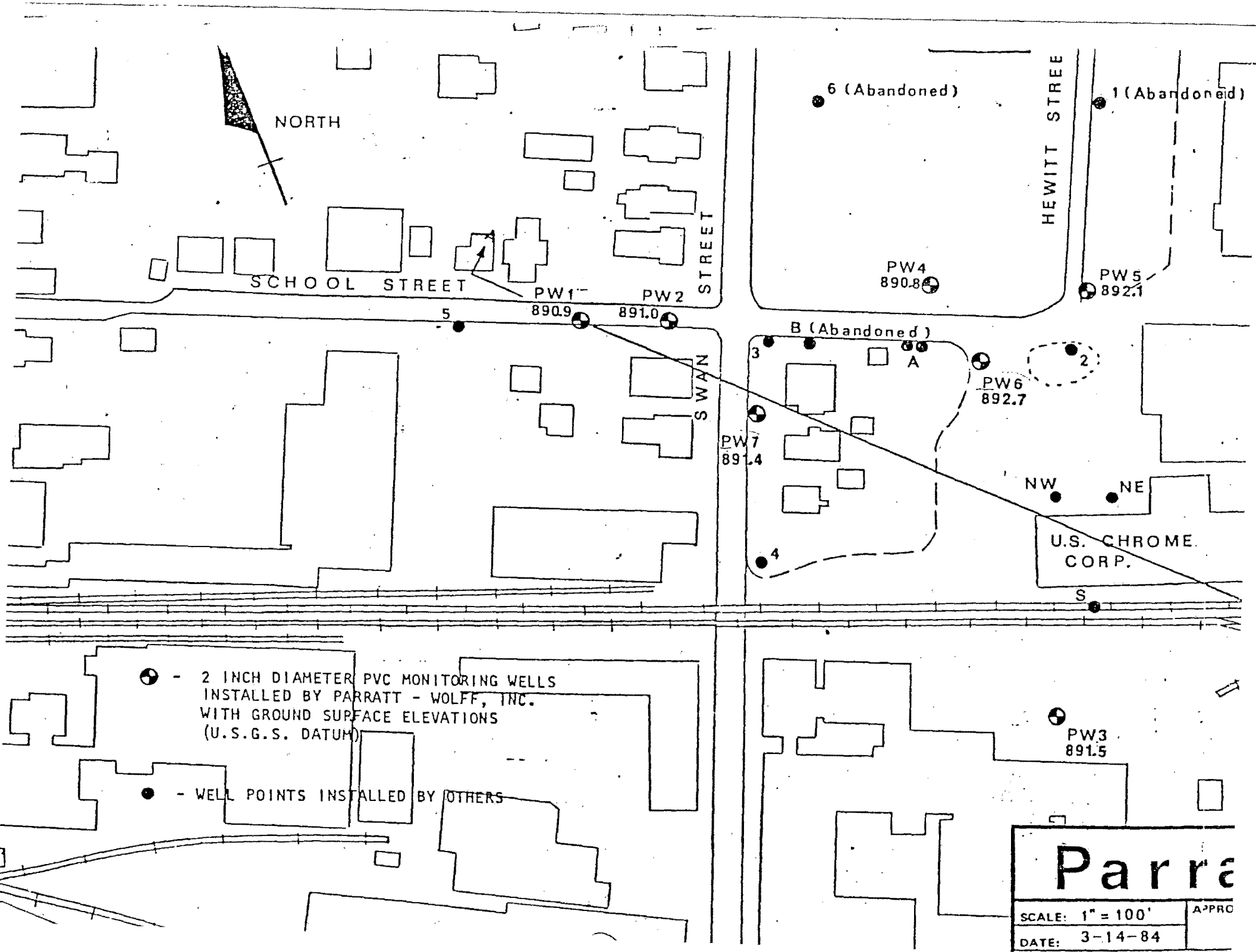
S
- 2 INCH DIAMETER PVC MONITORING WELLS INSTALLED BY PARRATT - WOLFF, INC. WITH GROUND SURFACE ELEVATIONS (U.S.G.S. DATUM)
- WELL POINTS INSTALLED BY OTHERS
Parratt-Wol
SCALE: 1" = 100'
DATE: 3-14-84
APPROVED BY
DRAWN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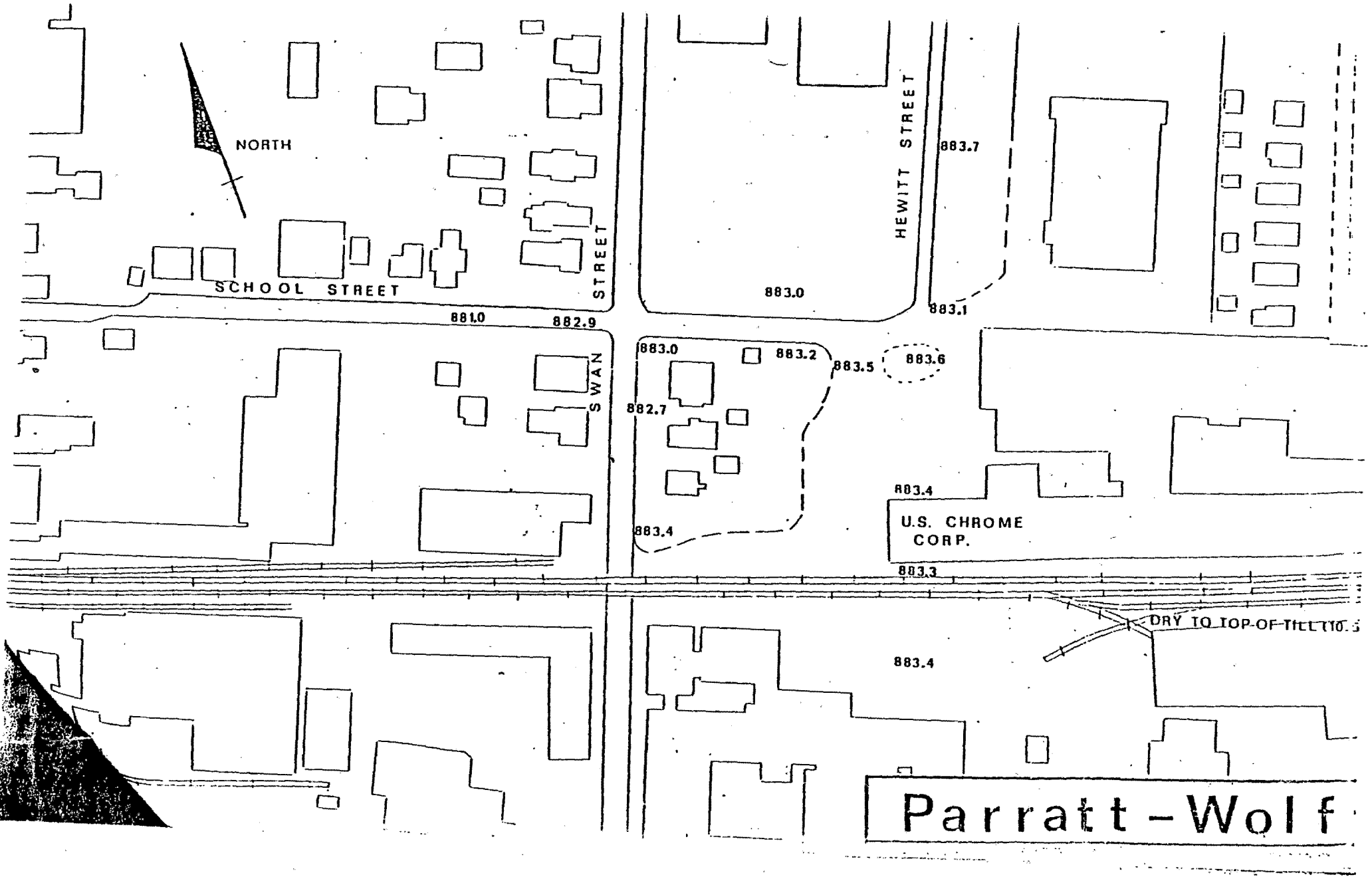
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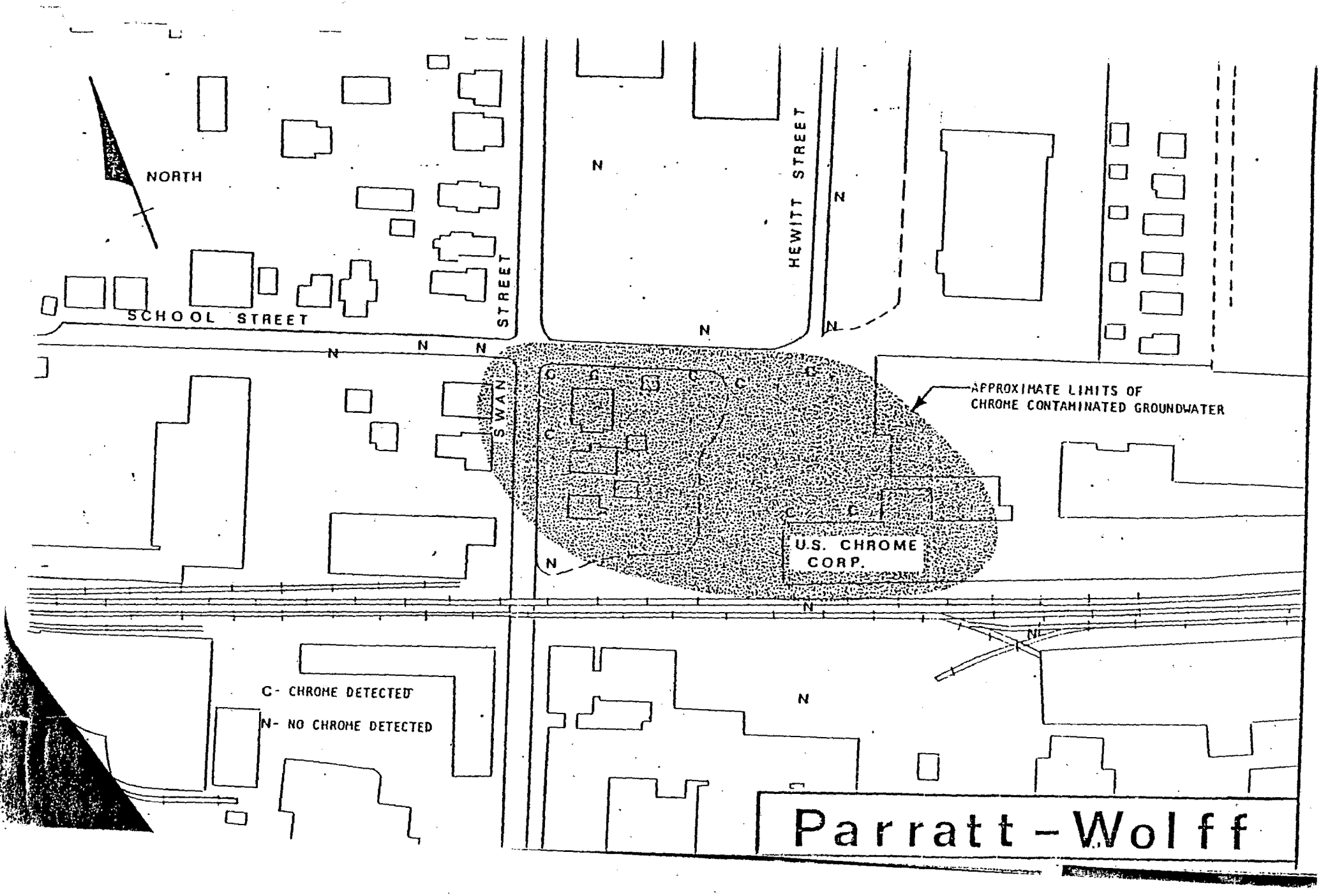
DRY TO TOP-OF-TILL
883.4
Parratt-Wolf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APPROXIMATE LIMITS OF
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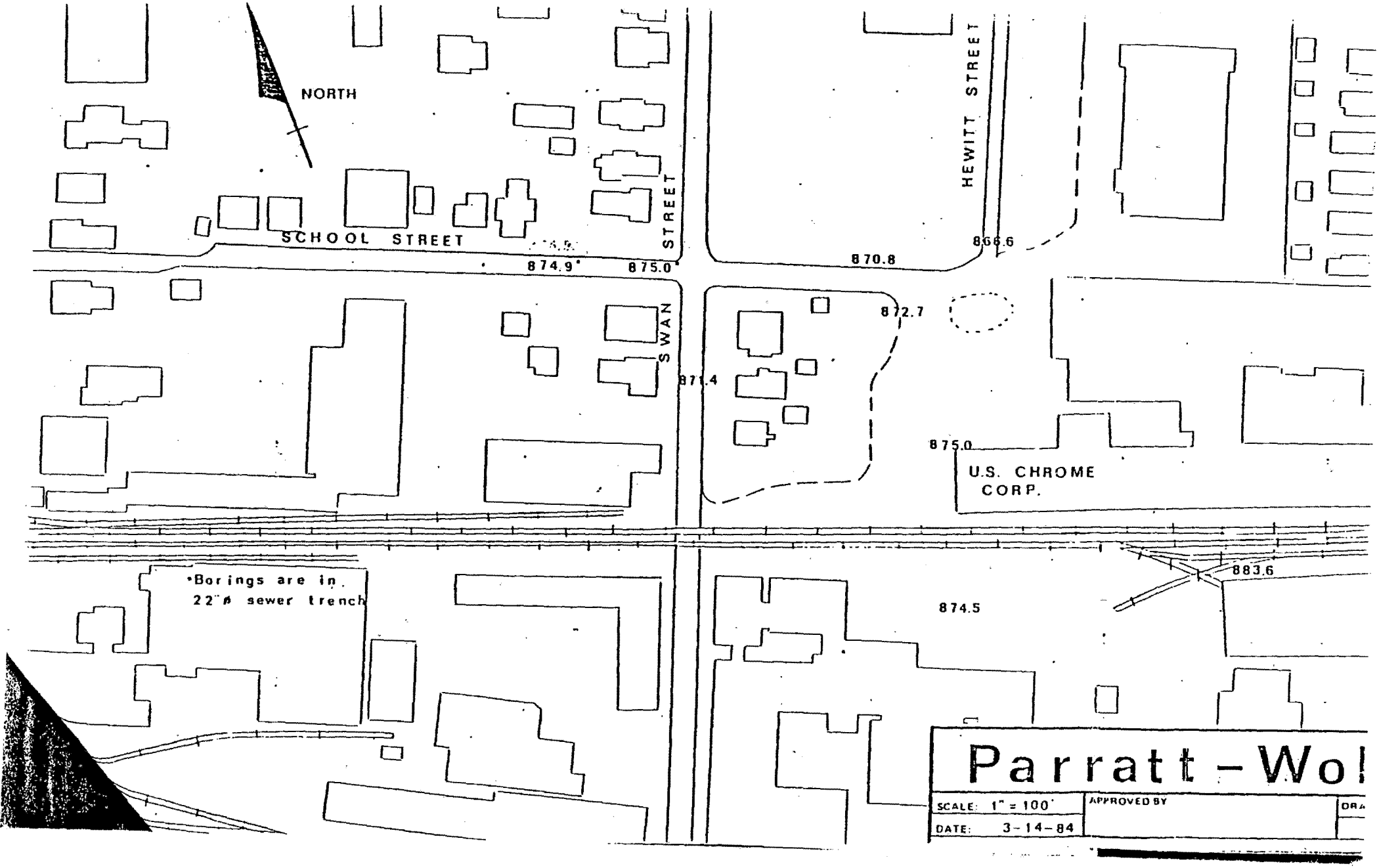
U.S. CHROME
CORP.
C- CHROME DETECTED
N- NO CHROME DETECTED
Parratt-Wolff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*Borings are in 22" ø sewer trench
Parratt-Wol
SCALE: 1" = 100'
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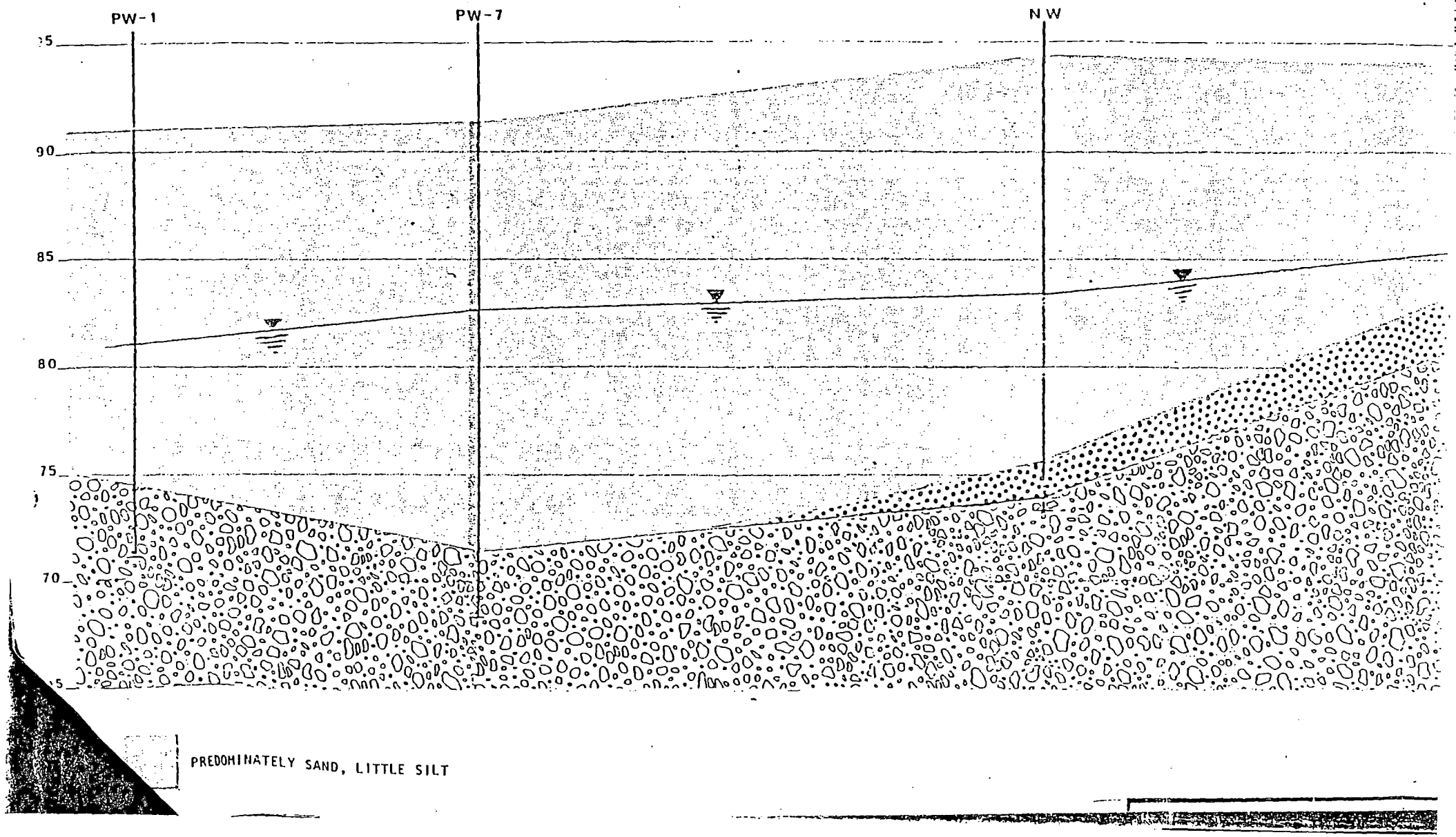

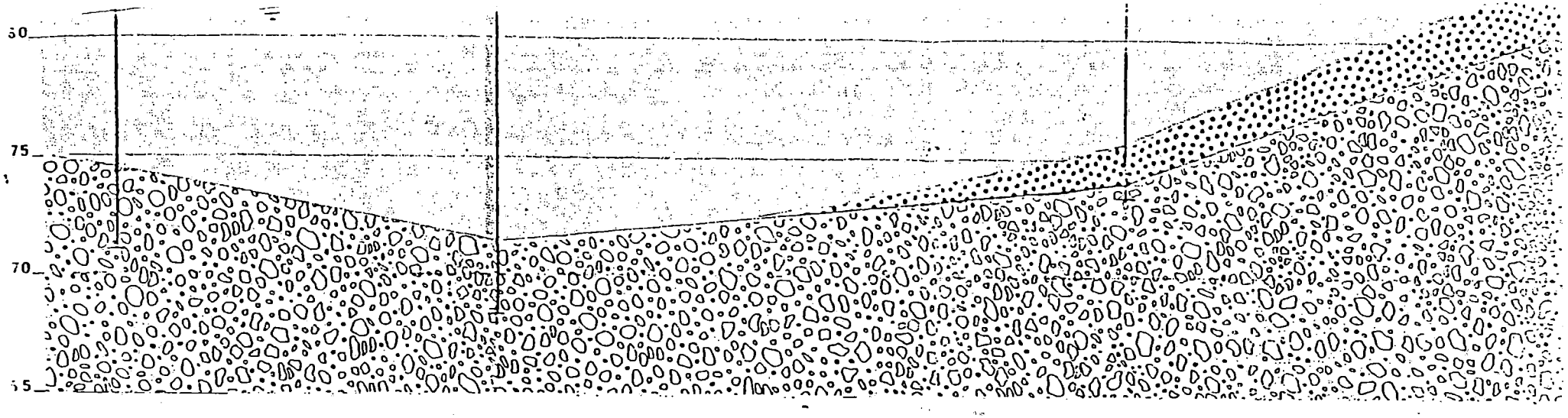

PREDOMINATELY SAND, LITTLE SILT

COARSE SAND AND GRAVEL

WATER TABLE

DENSE LOW PERMEABILITY GLACIAL TILL

SCALE

HORIZ. 1" = 50'

VERT. 1" = 5'

Parratt

SCALE: As Noted

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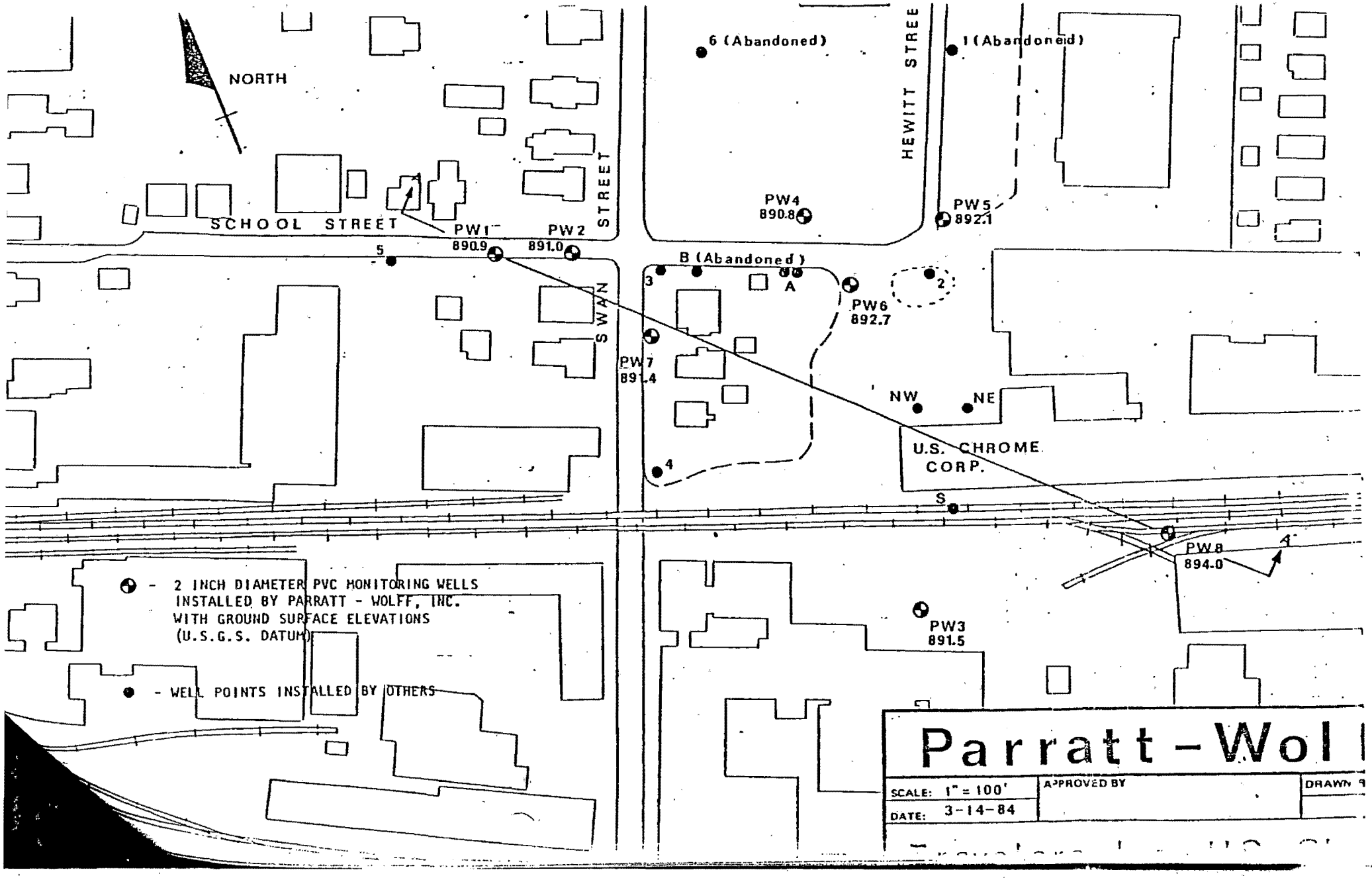
DATE: 3-14-84

Travelers Ins.

Cross Section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- WELL POINTS INSTALLED BY OTHERS
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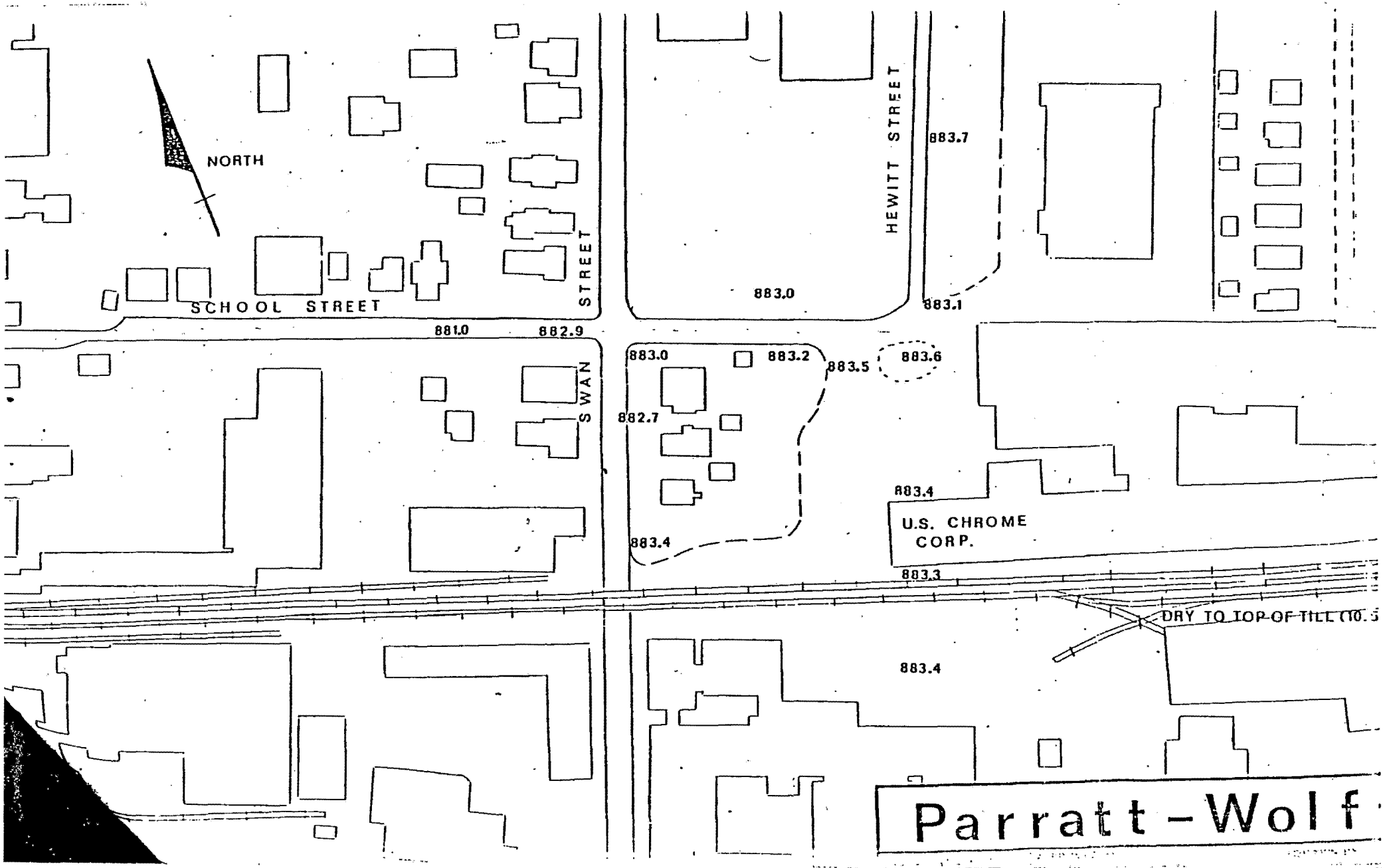
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DRY TO TOP OF TILL (10.5
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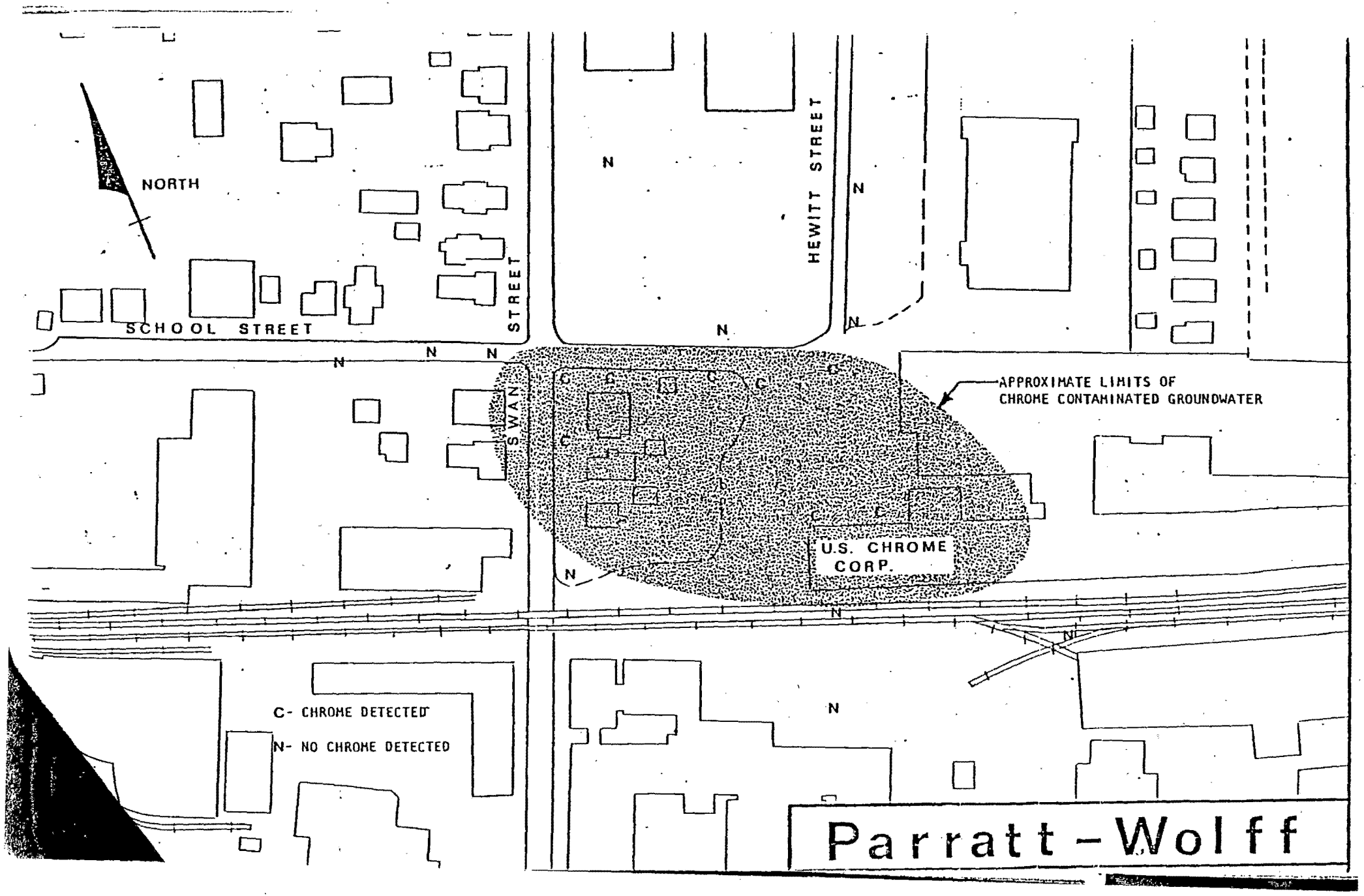
Parratt-Wolf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C- CHROME DETECTED
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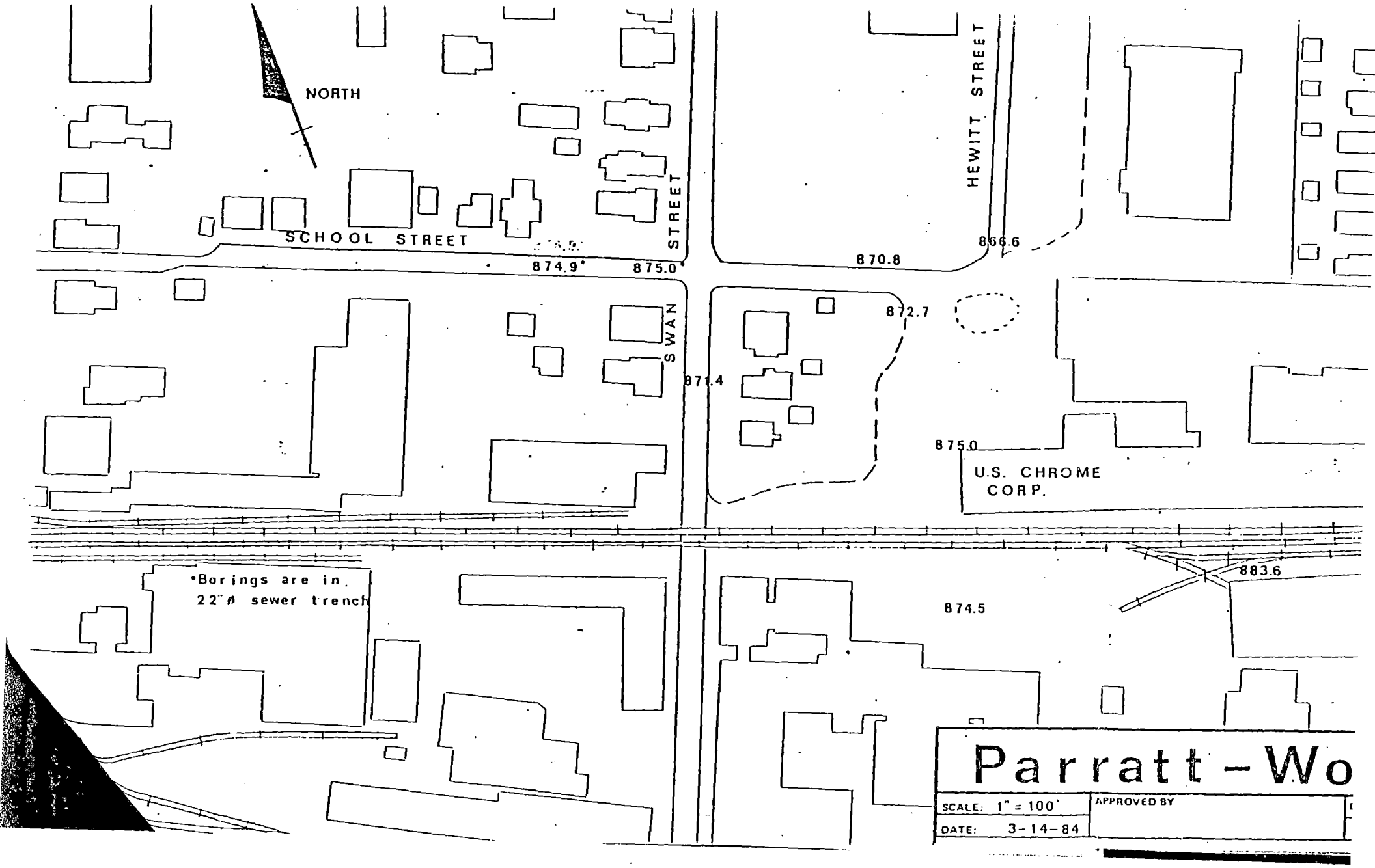
Parratt-Wolff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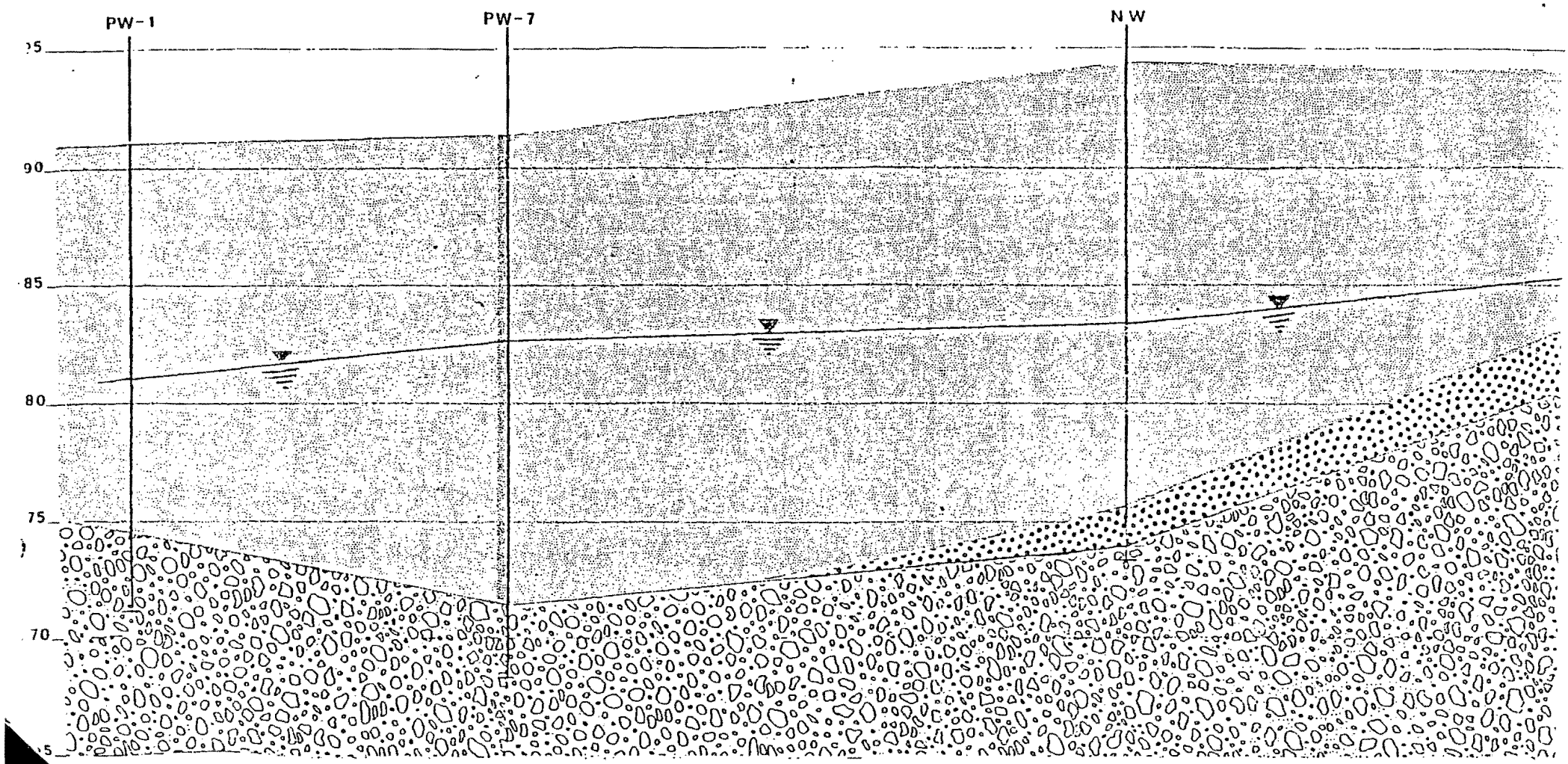
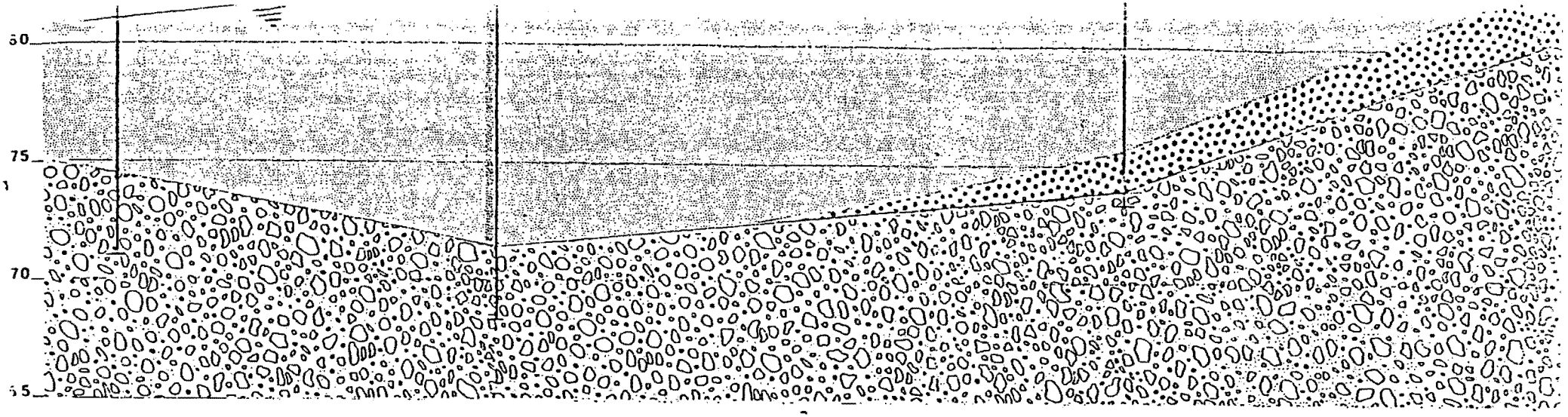


PREDOMINATELY SAND, LITTLE SILT



PREDOMINATELY SAND, LITTLE SILT

COARSE SAND AND GRAVEL

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DENSE LOW PERMEABILITY GLACIAL TILL

SCALE

HORIZ. 1" = 50'

VERT. 1" = 5'

Parratt

SCALE: As Noted

APPROVED BY

DATE: 3-14-84

Travelers Ins.

Cross Section

INTERVIEW FORM

INTERVIEWEE/CODE JIM PENDERGAST /

TITLE - POSITION MGR.

ADDRESS 31 SWAN ST.

CITY BATAVIA STATE N.Y. ZIP 14020

PHONE 716 (343) 7077 RESIDENCE PERIOD _____ TO _____

LOCATION U.S. CHROME PLANT INTERVIEWER J.N. BAKER

DATE/TIME 1-23-86 10900 HRS.

SUBJECT: U.S. CHROME - CHROMIC ACID TANK LEAK

REMARKS: 1959 to Present. (Tyvon Hard Chrome 1959 to 1979)

Groundwater contamination, ~~resulted~~ resulting from leakage of Chromic Acid Tanks was discovered in spring 1982. At that time, a groundwater investigation was initiated by U.S. Chrome to recover and treat the groundwater. In 1984 Paratt Wolff and Travellers Insurance began installation of additional recovery wells and a physical/chemical treatment process for removal of chrome. Presently the primary treatment system treats approximately 28,000 gpd of groundwater from the shallow aquifer. Initially, concentrations of Chrome in the groundwater ranged from 1200 ppm to 2000 ppm (1982). At the present time the chrome concentrations in the groundwater are approximately 300 ppm prior to treatment. The treated effluent is discharged to the city sewer system.

I agree with the above interview summary:

Signature/Title: James H. Pendergast, Mgr.

Comments:

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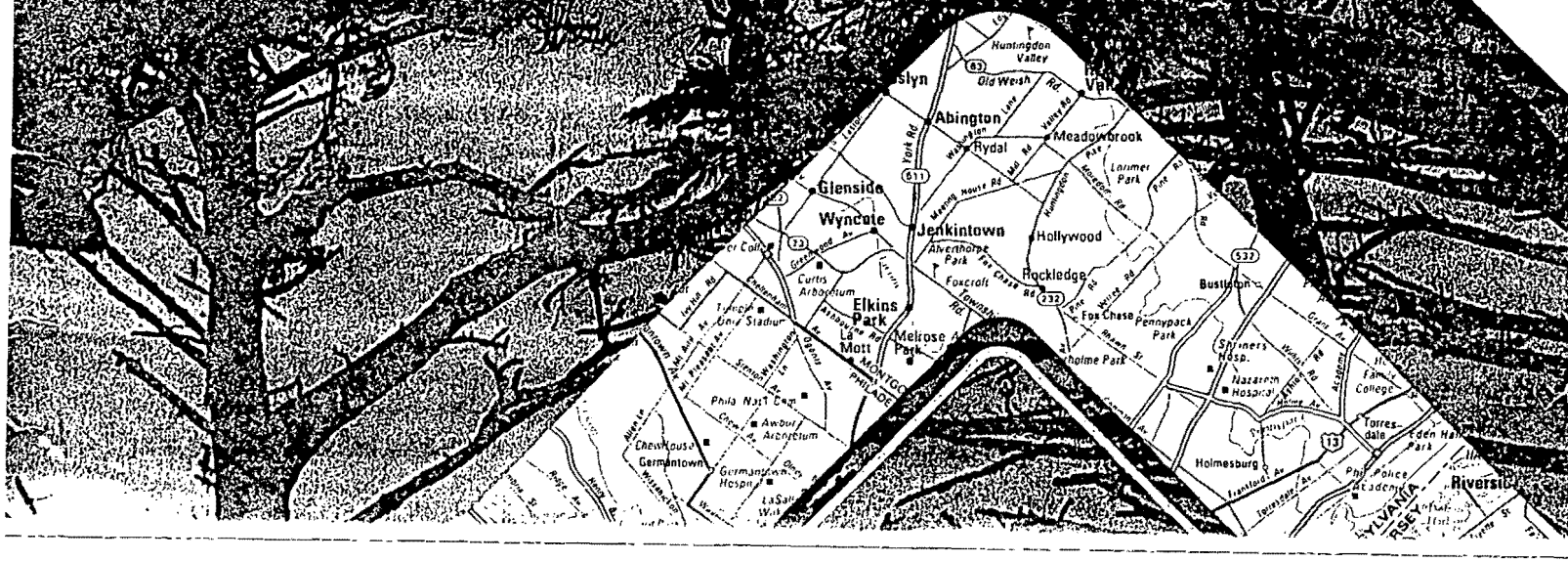

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McRae, 641 . . . F-7
Madison, 1227 . . . F-10
Madison, 11373 . . . D-3
Magazine, 799 . . . F-2
Magnolia, 11909 . . . K-4
Malvern, 10163 . . . H-5
Mammoth Spr., 1158 . . . B-8
Manila, 2553 . . . D-11
Mansfield, 1000 . . . F-1
Marianna, 6220 . . . G-10
Marion, 2996 . . . F-11
Marion, 11334 . . . C-5
Marked Tree, 3201 . . . E-11
Marmaduke, 1168 . . . C-11
Marshall, 1595 . . . D-5
Marvell, 1724 . . . H-9
Mayflower, 1381 . . . F-6
Melbourne, 1619 . . . C-7
Mena, 5154 . . . G-1
Miller, 37766 . . . K-2
Mineral Sprs., 938 . . . J-2
Mississippi, 59517 . . . D-11
Monette, 1165 . . . D-11
Monroe, 14052 . . . G-9
Montgomery, 7771 . . . H-2
Monticello, 8259 . . . J-7
Montrose, 641 . . . K-8
Moro, 327 . . . G-9
Morrilton, 7355 . . . F-5
Mountainburg, 595 . . . D-2
Mtn. Home, 7447 . . . B-6
Mtn. Pine, 1068 . . . H-4
Mtn. View, 2147 . . . D-7
Mt. Ida, 1023 . . . H-3
Mt. Pleasant, 438 . . . D-7
Mulberry, 1444 . . . E-2
Murfreesboro, 1883 . . . I-3
Nashville, 4554 . . . I-2
Nevada, 11097 . . . J-4
Newark, 1109 . . . D-8
New Edinburg, 350 . . . J-6
Newport, 8339 . . . E-9
Newton, 7756 . . . D-4
Norman, 539 . . . H-3
Norphlet, 756 . . . K-5
N. Crossett, 2891 . . . L-7
N. Little Rock, 64419 . . . G-6
Oil Trough, 280 . . . E-8
Ola, 1121 . . . F-4
Osceola, 8881 . . . D-12
Ouachita, 30541 . . . J-5
Ozark, 3597 . . . E-2
Palestine, 976 . . . F-9
Pangburn, 673 . . . E-7
Paragould, 15214 . . . C-10
Paris, 3991 . . . E-3
Parkdale, 471 . . . L-8
Parkin, 2035 . . . F-10
Patterson, 567 . . . F-9
Pea Ridge, 1488 . . . B-2
Perry, 7266 . . . G-4
Perryville, 1058 . . . F-5
Phillips, 34772 . . . H-10
Piggott, 3762 . . . B-11
Pike, 10373 . . . I-3
Pine Bluff, 56576 . . . I-7
Plainview, 752 . . . F-4
Plumerville, 785 . . . F-5
Pocahontas, 5995 . . . C-9
Poinsett, 27032 . . . E-9
Polk, 17007 . . . H-1
Pope, 39003 . . . E-4
Portland, 701 . . . L-8
Prairie, 10140 . . . G-8
Prairie Gr., 1708 . . . C-1
Prescott, 4103 . . . J-3
Pulaski, 340613 . . . H-6
Quitman, 556 . . . E-6
Randolph, 16834 . . . B-9
Rector, 2336 . . . C-11
Reed, 395 . . . J-8
Rison, 1325 . . . I-8
Rogers, 17429 . . . B-2
Rondo, 330 . . . G-10
Russellville, 14000 . . . E-4
St. Francis, 30858 . . . F-9
Salado, 400 . . . D-8
Salem, 1424 . . . B-7
Saline, 52881 . . . G-5
Scott, 9685 . . . G-2
Searcy, 13612 . . . F-7
Searcy, 8847 . . . D-5
Sebastian, 94930 . . . F-1
Sevier, 14060 . . . I-1
Shannon Hills, 1656 . . . G-6
Sharp, 14607 . . . C-8
Sheridan, 3042 . . . H-6
Sherwood, 10586 . . . N-8
Siloam Sprs., 7940 . . . C-1
Smackover, 2453 . . . K-5
Sparkman, 622 . . . I-5
Springdale, 23458 . . . C-2
Stamps, 2859 . . . K-3
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Stephens, 1366 . . . K-4
Stone, 9022 . . . D-6
Strong, 785 . . . L-6
Stuttgart, 10941 . . . H-8
Sulphur Sprs., 496 . . . B-1
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Sweet Home, 950 . . . Q-7
Swifton, 859 . . . D-9
Taylor, 651 . . . L-3
Texarkana, 21459 . . . K-2
Thornton, 711 . . . J-6
Arroyo Grande, 11290 . . . SH-7
Artesia, 14301 . . . *I-11
Arvin, 6863 . . . SH-12
Ashland, 14810 . . . NE-24
Atascadero, 15930 . . . SG-7
Atherton, 7797 . . . NJ-23
Atwater, 17530 . . . NQ-12
Auburn, 7540 . . . NL-10
Avenal, 4137 . . . SE-8
Azusa, 29380 . . . *E-14
Bakersfield, 105611 . . . SG-11
Baldwin Park, 50554 . . . *E-13
Banning, 14020 . . . SL-17
Barstow, 17690 . . . SI-17
Bayview, 1300 . . . NE-2
Baywood Park, 1100 . . . SH-6
Beaumont, 6818 . . . SL-17
Bell, 25450 . . . *H-10
Bellflower, 53441 . . . *I-11
Bell Gardens, 34117 . . . *H-10
Belmont, 24505 . . . NI-22
Belvedere, 2401 . . . NB-19
Benicia, 15376 . . . NO-7
Ben Lomond, 2793 . . . SA-3
Berkeley, 103328 . . . NO-7
Bertsch Ter., 900 . . . NB-3
Bethel Island, 1398 . . . NO-9
Beverly Hills, 32367 . . . SL-13
Big Bear City, 950 . . . SK-18
Big Bear Lake, 2800 . . . SK-17
Biggs, 1413 . . . NJ-9
Big Pine, 950 . . . SA-13
Big Sur, 150 . . . SD-3
Biola, 800 . . . SC-8
Bishop, 3333 . . . NQ-18
Bloomington, 12300 . . . *F-22
Blue Lake, 1201 . . . NE-3
Blythe, 6805 . . . SM-24
Bonita, 2300 . . . *O-25
Bonnyview, 4882 . . . NF-7
Bonsall, 750 . . . SN-17
Boonville, 750 . . . NK-4
Boron, 2500 . . . SI-15
Borrego Sprs., 900 . . . SO-19
Boulder Cr., 4000 . . . SA-3
Boyes Hot Sprs., 3558 . . . NN-7
Bradbury, 846 . . . *D-13
Brawley, 14946 . . . SO-21
Brea, 27913 . . . *I-14
Brentwood, 4434 . . . NO-9
Bridgeport, 500 . . . NN-15
Brisbane, 2969 . . . NF-20
Broadmoor, 4900 . . . NF-19
Broderick, 9900 . . . NM-9
Bryte, 2900 . . . NM-23
Buellton, 1402 . . . SJ-8
Buena Park, 64165 . . . *J-13
Burbank, 84625 . . . SK-13
Burlingame, 26173 . . . NH-21
Burney, 2190 . . . NE-9
Butte, 143851 . . . NI-8
Buttonwillow, 1193 . . . SG-10
Byron, 685 . . . NO-9
Calaveras, 20710 . . . NN-12
Calexico, 14412 . . . SP-22
California City, 2743 . . . SH-14
Calimesa, 2400 . . . SL-17
Calipatria, 2636 . . . SO-22
Calistoga, 3879 . . . NM-6
Calpella, 700 . . . NK-5
Calwa, 5191 . . . SC-9
Camarillo, 37732 . . . SK-11
Cambria, 1716 . . . SG-5
Cambrian Park, 5316 . . . NQ-2
Cameo Acres, 2000 . . . NC-26
Camino, 900 . . . NL-11
Campbell, 27062 . . . SA-3
Capistrano Beach, 4149 . . . *Q-18
Cardiff By The Sea, 6800 . . . SO-16
Carlsbad, 35490 . . . SO-16
Carmel, 4707 . . . SC-3
Carmel Highlands, 900 . . . SO-3
Carmel Valley, 3025 . . . SD-4
Carmichael, 43800 . . . NM-10
Carpinteria, 10835 . . . SK-10
Carson, 81221 . . . *J-9
Caruthers, 940 . . . SC-9
Casitas Sprs., 1113 . . . SK-10
Castaic, 900 . . . SJ-12
Castro Valley, 42000 . . . NP-8
Castroville, 3235 . . . SC-4
Cathedral City, 3640 . . . SM-19
Cayucos, 1772 . . . SG-6
Cedarville, 800 . . . NC-13
Central Valley, 2361 . . . NF-7
Ceres, 13281 . . . NP-11
Cerritos, 52756 . . . *J-12
Cherryland, 9969 . . . NF-24
Cherry Valley, 3165 . . . SL-17
Chester, 1531 . . . NG-10
Chico, 26601 . . . NI-8
Chino, 40165 . . . *G-17
Chowchilla, 5122 . . . SA-8
El Centro, 23996 . . . SP-21
El Cerrito, 22731 . . . NO-7
El Cerrito, 1000 . . . *J-20
El Dorado, 85812 . . . NM-12
El Dorado Hills, 900 . . . NM-10
El Granada, 1473 . . . NI-19
Elk Gr., 3721 . . . NM-10
El Monte, 79494 . . . *F-12
El Porto Beach, 1200 . . . *I-6
El Rio, 6173 . . . SK-11
El Segundo, 13752 . . . *I-6
El Toro, 8654 . . . SM-15
Elverta, 825 . . . NL-9
Emerald Bay, 1000 . . . *O-16
Emeryville, 3763 . . . NC-22
Empire, 2016 . . . NP-11
Encinitas, 6300 . . . SO-16
Enterprise, 11486 . . . NF-7
Escalon, 3127 . . . NP-11
Escondido, 62480 . . . SO-17
Esparto, 1088 . . . NM-8
Etna, 754 . . . NC-6
Eureka, 24153 . . . NE-2
Exeter, 5619 . . . SO-11
Fairfax, 7391 . . . NO-6
Fairfield, 58099 . . . NN-8
Fair Oaks, 15500 . . . NM-10
Fallbrook, 9000 . . . SN-16
Farmersville, 5544 . . . SD-11
Felton, 2062 . . . SB-3
Ferndale, 1367 . . . NF-2
Fillmore, 9602 . . . SK-12
Firebaugh, 3740 . . . SB-7
Florence, 24600 . . . *H-9
Florin, 9646 . . . ND-26
Folsom, 11003 . . . NM-10
Fontana, 37109 . . . *E-21
Ford City, 3503 . . . SH-10
Foresthill, 900 . . . NK-11
Forestville, 950 . . . NM-5
Ft. Bragg, 5019 . . . NJ-3
Fortuna, 7591 . . . NF-2
Foster City, 23287 . . . NH-22
Fountain Valley, 55080 . . . *L-13
Fowler, 2496 . . . SC-9
Fremont, 131945 . . . NP-8
Fresno, 218202 . . . SC-9
Fresno, 515013 . . . SD-7
Fullerton, 102034 . . . SM-14
Galt, 5514 . . . NN-10
Garberville, 900 . . . NH-3
Gardena, 45165 . . . *I-8
Garden Gr., 123351 . . . SM-14
Georgetown, 900 . . . NL-11
Gerber, 775 . . . NH-8
Geyserville, 750 . . . NL-6
Gilroy, 21641 . . . SB-4
Glen Avon Hts., 5759 . . . *G-20
Glendale, 139060 . . . SL-13
Glendora, 38654 . . . *D-15
Glen Ellen, 1500 . . . NN-7
Glenn, 21350 . . . NI-7
Goleta, 25600 . . . SK-9
Gonzales, 2891 . . . SD-4
Goshen, 1324 . . . SD-10
Grand Ter., 8498 . . . *F-23
Grass Valley, 6697 . . . NK-10
Graton, 900 . . . NM-6
Greenacres, 2116 . . . SG-11
Greenbrae, 3500 . . . NA-18
Greenfield, 4181 . . . SD-5
Greenville, 1073 . . . NG-11
Gridley, 3982 . . . NJ-9
Grover City, 8827 . . . SH-7
Guadalupe, 3629 . . . SI-7
Guerneville, 900 . . . NM-5
Gustine, 3142 . . . SA-6
Hacienda Hts., 43000 . . . *G-13
Half Moon Bay, 7282 . . . NQ-7
Hamilton City, 800 . . . NI-8
Hanford, 20958 . . . SD-10
Happy Camp, 800 . . . NB-5
Hawaiian Gardens, 10548 . . . *J-12
Hawthorne, 56447 . . . *I-8
Hayfork, 950 . . . NF-5
Hayward, 94167 . . . NP-8
Healdsburg, 7217 . . . NM-6
Heber, 950 . . . SP-22
Hemet, 23211 . . . SM-17
Hermosa Beach, 18070 . . . *J-7
Hesperia, 5700 . . . SK-16
Hidden Hills, 1760 . . . *D-3
Highgrove, 2900 . . . *G-23
Highland, 12300 . . . SL-16
Highway City, 1100 . . . SC-9
Hillcrest Cen., 32500 . . . SG-11
Hillsborough, 10451 . . . NH-21
Hilmar, 900 . . . NQ-11
Hinkley, 680 . . . SI-16
Hollister, 11488 . . . SB-5
Holtville, 4399 . . . SP-22
Home Gardens, 5116 . . . SM-16
Homestead Valley, 3200 . . . NB-18
Hopland, 900 . . . NK-5
Hughson, 2943 . . . NP-11
Humboldt, 108024 . . . NF-3
Huntington Beach, 170505 . . . SM-14
Huntington Park, 46223 . . . *G-9
Huron, 2768 . . . SE-8
Hydesville, 700 . . . NF-3
Imperial, 3451 . . . SP-21
Imperial, 92110 . . . SN-23
Lone Pine, 1800 . . . SC-14
Long Beach, 361334 . . . SM-14
Loomis, 1108 . . . NL-10
Los Alamitos, 11529 . . . *K-12
Los Altos, 25769 . . . NQ-7
Los Angeles, 2966763 . . . SL-14
Los Angeles, 7477657 . . . SJ-13
Los Banos, 10341 . . . SB-6
Los Gatos, 26593 . . . SA-3
Los Molinos, 900 . . . NH-8
Los Nietos, 7100 . . . *H-12
Los Osos, 2400 . . . SH-6
Los Serranos, 3900 . . . SL-15
Lower Lake, 850 . . . NL-6
Loyalton, 1030 . . . NI-13
Lucerne, 1300 . . . NK-6
Lucerne Valley, 1000 . . . SJ-17
Lynwood, 48548 . . . *I-9
McCloud, 1643 . . . ND-8
McFarland, 5151 . . . SF-11
McKinleyville, 2000 . . . NE-3
Madera, 21732 . . . SB-8
Madera, 63116 . . . SB-7
Malibu, 7000 . . . SL-12
Mammoth Lakes, 900 . . . NP-16
Manhattan Beach, 31542 . . . SL-13
Manteca, 24925 . . . NP-10
Maricopa, 946 . . . SI-10
Marin, 222952 . . . NN-6
Marina, 20647 . . . SC-4
Marin City, 1600 . . . NB-18
Mariposa, 950 . . . NQ-13
Mariposa, 11108 . . . NP-14
Martinez, 22582 . . . NO-8
Marysville, 9898 . . . NK-9
Maxwell, 700 . . . NK-7
Maywood, 21810 . . . *G-10
Meadow Vista, 900 . . . NK-11
Meiners Oaks, 5600 . . . SK-11
Mendocino, 950 . . . NJ-3
Mendocino, 66738 . . . NJ-4
Mendota, 5038 . . . SC-7
Menlo Park, 25673 . . . NQ-7
Mentone, 2400 . . . *E-26
Merced, 36499 . . . SA-7
Merced, 134560 . . . SB-6
Middletown, 900 . . . NL-6
Midway City, 2300 . . . *L-13
Millbrae, 20058 . . . NG-20
Mill Valley, 12967 . . . NO-6
Milpitas, 37820 . . . NQ-8
Mint Canyon, 1600 . . . SK-13
Mira Loma, 8482 . . . SL-16
Mira Monte, 700 . . . SK-11
Mission Viejo, 45000 . . . SN-15
Modesto, 106105 . . . NP-11
Modoc, 8610 . . . NC-11
Mojave, 2573 . . . SI-14
Mono, 8577 . . . NN-16
Monrovia, 30531 . . . *D-13
Montague, 1285 . . . NB-7
Montara, 1459 . . . NH-18
Montclair, 22628 . . . *F-17
Montebello, 52929 . . . *G-11
Montecito, 7500 . . . SK-10
Monterey, 27558 . . . SC-3
Monterey, 290444 . . . SE-6
Monterey Park, 54338 . . . *F-11
Monte Rio, 900 . . . NM-5
Monte Sereno, 3434 . . . SQ-1
Moonridge, 1500 . . . SK-17
Moorpark, 3380 . . . SK-12
Moraga, 15014 . . . NC-24
Morgan Hill, 17060 . . . SA-4
Morongo Valley, 2000 . . . SL-18
Morro Bay, 9064 . . . SG-6
Moss Beach, 800 . . . NI-18
Mtn. View, 58655 . . . NK-25
Mt. Shasta, 2837 . . . NC-7
Murphys, 950 . . . NN-12
Muscoy, 7200 . . . *O-23
Napa, 50879 . . . NN-7
Napa, 99199 . . . NM-7
National City, 48772 . . . SQ-17
Needles 4120 . . . SI-24
Nevada, 51645 . . . NJ-12
Nevada City, 2431 . . . NK-11
Newark, 32126 . . . NP-8
Newberry Sprs., 650 . . . SI-18
Newcastle, 900 . . . NJ-10
Newhall, 9651 . . . SK-13
Newman, 2785 . . . NQ-11
Newport Beach, 63475 . . . SM-14
Nice, 700 . . . NK-6
Niland, 950 . . . SN-21
Nipomo, 3642 . . . SI-7
Norco, 21126 . . . SL-16
Northcrest, 900 . . . NB-2
N. Edwards, 700 . . . SI-15
N. Fair Oaks, 9740 . . . NJ-23
N. Fork, 800 . . . SA-10
N. Highlands, 36800 . . . NM-10
N. Oaks, 5800 . . . SK-13
N. Richmond, 3200 . . . NA-20
Norwalk, 85232 . . . SL-14
Novato, 43916 . . . NN-6

Virginia City, 600 . . . G-2
Wadsworth, 350 . . . G-3
Washoe, 193623 . . . D-2
Weed Hts., 652 . . . H-3
Wells, 1218 . . . C-10
White Pine, 8167 . . . G-9
Winchester, 20000 . . . N-10
Winnemucca, 4140 . . . D-5
Yerington, 2021 . . . H-3
Zephyr Cove, 2000 . . . H-1

NEW HAMPSHIRE

See map p. 61.
County names appear in bold face type.

Cities & Counties

Alstead, 500 . . . N-6
Alton, 900 . . . M-10
Alton Bay, 900 . . . M-10
Amherst, 750 . . . P-9
Antrim, 950 . . . O-7
Ashland, 1450 . . . K-9
Atkinson, 900 . . . P-11
Bartlett, 700 . . . I-10
Bedford, 1300 . . . O-9
Belknap, 42884 . . . L-10
Belmont, 900 . . . M-9
Bennington, 500 . . . O-7
Berlin, 13084 . . . G-10
Bethlehem, 700 . . . H-8
Bow, 500 . . . N-9
Bradford, 450 . . . N-7
Bristol, 1080 . . . L-8
Campton, 600 . . . J-8
Canaan, 600 . . . L-7
Canobie Lake, 800 . . . P-10
Carroll, 27931 . . . H-10
Center Hbr., 500 . . . K-9
Cen. Ossipee, 500 . . . K-10
Charlestown, 1700 . . . N-5
Cheshire, 62116 . . . O-6
Chester, 500 . . . O-10
Claremont, 14557 . . . M-6
Colebrook, 1070 . . . D-9
Concord, 30400 . . . N-9
Contoocook, 1200 . . . N-8
Conway, 1600 . . . J-11
Coos, 35147 . . . E-9
Danville, 500 . . . P-11
Derry, 7000 . . . P-10
Dover, 22377 . . . N-12
Dublin, 600 . . . P-7
Durham, 7500 . . . N-11
E. Derry, 600 . . . P-10
E. Hampstead, 900 . . . P-11
Enfield, 1500 . . . L-6
Epping, 1300 . . . O-11
Exeter, 6600 . . . O-11
Farmington, 2884 . . . M-11
Fitzwilliam, 600 . . . P-6
Franconia, 600 . . . H-8
Franklin, 7901 . . . M-8
Fremont, 450 . . . O-11
Gilmanton, 600 . . . M-9
Gilsum, 500 . . . O-6
Goffstown, 2500 . . . O-9
Gorham, 2020 . . . G-10
Grafton, 65806 . . . J-8
Greenfield, 500 . . . O-8
Greenland, 600 . . . O-12
Greenville, 1450 . . . P-8
Groveton, 1597 . . . F-9
Guild, 350 . . . M-6
Hampstead, 500 . . . P-10
Hampton, 6000 . . . O-12
Hampton Beach, 900 . . . P-12
Hampton Falls, 500 . . . P-12
Hanover, 6300 . . . K-6
Henniker, 1400 . . . N-8
Hillsboro, 2000 . . . O-7
Hillsborough, 276608 . . . P-8
Hinsdale, 1300 . . . P-5
Holderness, 300 . . . K-9
Hooksett, 1303 . . . O-9
Hudson, 7500 . . . P-9
Jackson, 300 . . . I-10
Jaffrey, 2000 . . . P-7
Keene, 21449 . . . P-6
Kingston, 900 . . . P-11
Laconia, 15575 . . . L-9
Lancaster, 2350 . . . G-9
Lebanon, 11134 . . . L-6
Lincoln, 950 . . . I-8
Lisbon, 1300 . . . H-7
Little Boars Head, 500 . . . O-12
Littleton, 4500 . . . H-8
Londonderry, 950 . . . P-10
Manchester, 90936 . . . O-9
Marlborough, 1231 . . . P-6
Meredith, 1100 . . . K-9
Merrimack, 1200 . . . P-9
Merrimack, 98302 . . . N-8
Milford, 6000 . . . P-9
Milton, 1000 . . . M-11
Nashua, 67865 . . . P-9
New Castle, 975 . . . O-12
Newfields, 700 . . . O-11
New Ipswich, 500 . . . Q-8
New London, 1500 . . . M-7
Newmarket, 2800 . . . O-11
Newport, 3500 . . . M-6
Newton, 450 . . . P-11
N. Branch, 800 . . . O-7
N. Conway, 2000 . . . I-11
Northfield, 1500 . . . M-9
N. Hampton, 1000 . . . O-12
N. Salem, 600 . . . P-10
N. Stratford, 650 . . . E-9
N. Walpole, 950 . . . N-5
N. Woodstock, 600 . . . I-8
Peterborough, 2000 . . . P-7
Pinardville, 4500 . . . B-6
Pittsfield, 1800 . . . M-10
Plaistow, 1800 . . . P-11
Plymouth, 3200 . . . K-8
Portsmouth, 26254 . . . O-12
Raymond, 1200 . . . D-10
Rochester, 21560 . . . M-11
Rockingham, 190345 . . . D-10
Rollinsford, 1200 . . . N-12
Rye, 800 . . . O-12
Rye Beach, 600 . . . O-12
Salem, 11500 . . . P-10
Sanbornville, 800 . . . L-11
Seabrook, 700 . . . P-12
Somersworth, 10350 . . . N-12
S. Hooksett, 1200 . . . O-9
Strafford, 85408 . . . M-11
Stratham, 500 . . . O-12
Sullivan, 36063 . . . N-6
Sunapee, 900 . . . M-7
Suncook, 4700 . . . N-9

Blenheim, 1100 . . . ‡L-9
Bloomfield, 47792 . . . G-13
Bloomingdale, 7867 . . . E-12
Bogota, 8344 . . . *J-9
Boonton, 8620 . . . F-11
Bordentown, 4441 . . . M-9
Bound Brook, 9710 . . . I-10
Bradley Beach, 4772 . . . M-14
Brick Town, 3200 . . . N-13
Bridgeton, 18795 . . . U-4
Brielle, 4068 . . . N-14
Brigantine, 8318 . . . U-11
Brooklawn, 2133 . . . ‡I-8
Brookwood, 4000 . . . M-12
Browns Mills, 7144 . . . O-10
Browntown, 4200 . . . K-12
Budd Lake, 3168 . . . F-8
Buena, 3642 . . . T-7
Burlington, 10246 . . . N-7
Burlington, 362542 . . . P-9
Butler, 7616 . . . E-11
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E. Islip, 13700 . . . WO-16
E. Marion, 900 . . . WL-22
E. Meadow, 47300 . . . WO-14
E. Moriches, 1800 . . . WO-19
E. Northport, 22200 . . . WN-15
E. Norwich, 3650 . . . WN-14
E. Patchogue, 8300 . . . WO-18
Eastport, 1308 . . . WO-19
E. Quogue, 1200 . . . WN-21
E. Rochester, 7596 . . . WD-18
E. Syracuse, 3412 . . . WK-7
Eden, 3000 . . . WF-12
Elbridge, 1099 . . . EL-3
Ellenville, 4405 . . . ET-12
Ellicottville, 713 . . . WI-13
Elma, 2800 . . . WE-13
Elmira, 35327 . . . WJ-21
Elmira Hts., 4279 . . . WI-21
Elmont, 30000 . . . WP-13
Elmsford, 3361 . . . *D-14
Elsmere, 5500 . . . EN-14

Gowanda, 2713 . . . WH-12
Grand Island, 900 . . . WE-12
Grandyle Village, 1500 . . . WD-4
Granville, 2696 . . . EJ-16
Great Neck, 9168 . . . WO-12
Great Neck Estates, 2936 . . . *M-16
Great River, 1800 . . . WO-16
Greece, 63700 . . . WC-17
Greene, 1747 . . . EP-6
Greene, 40861 . . . EQ-13
Green Island, 2696 . . . EN-15
Greenlawn, 8600 . . . WN-15
Greenport, 2273 . . . WL-22
Greenville, 5500 . . . *F-14
Greenwich, 1955 . . . EL-16
Greenwood Lake, 2809 . . . EV-13
Groton, 2313 . . . EO-4
Guilderland, 1700 . . . EX-3
Hagaman, 1331 . . . EM-13
Halesite, 4100 . . . WN-15
Hamburg, 10582 . . . WF-13
Hamilton, 3725 . . . EN-7
Hamilton, 5034 . . . EH-11
Hammondsport, 1065 . . . WH-19
Hampton Bays, 3550 . . . WN-21
Hancock, 1526 . . . ER-8
Hbr. Hills, 1500 . . . *M-16
Harriman, 796 . . . EV-13
Harris Hill, 4800 . . . WE-13
Harrison, 23046 . . . EX-15
Harrisville, 937 . . . EF-8
Hartsdale, 12226 . . . *E-14
Harts Hill, 4000 . . . EB-1
Hastings-on-Hudson, 8573 . . . EX-14
Hauppauge, 14200 . . . WO-16
Haverstraw, 8800 . . . EV-14
Hawthorne, 4900 . . . *B-14
Hempstead, 40404 . . . WP-13
Henrietta, 1200 . . . WD-18
Herkimer, 8383 . . . EL-10
Herkimer, 66714 . . . EJ-10
Herthum Hts., 900 . . . EB-1
Hewlett, 6880 . . . *R-17
Hicksville, 50000 . . . WO-14
High Falls, 950 . . . ES-13
Highland, 2184 . . . ET-14
Highland Falls, 4187 . . . EV-14
Highland Mills, 1100 . . . EV-13
Highland-on-the-Lake, 1500 . . . WF-12
Hillburn, 926 . . . *B-5
Hillcrest, 5357 . . . EW-14
Hilton, 4151 . . . WC-17
Holbrook, 12800 . . . WO-17
Holland, 1000 . . . WG-14
Holley, 1882 . . . WC-16
Holtsville, 4200 . . . WO-17
Homer, 3635 . . . EO-5
Honeoye Falls, 2410 . . . WE-18
Hoosick Falls, 3609 . . . EM-16
Hopewell Jct., 2055 . . . ET-15
Hornell, 10234 . . . WH-17
Horseheads, 7348 . . . WI-21
Houghton, 1620 . . . WH-15
Howes Cave, 120 . . . EN-12
Hudson, 7986 . . . EQ-15
Hudson Falls, 7419 . . . EX-15
Huntington, 12601 . . . WN-15
Huntington Sta., 30300 . . . WN-15
Hurley, 4081 . . . ER-14
Hyde Park, 2805 . . . ES-14
Ilion, 9190 . . . EL-9
Indian Vil., 950 . . . EM-5
Inwood, 8200 . . . *S-16
Irondequoit, 57648 . . . WC-18
Irvington, 5774 . . . *E-13
Islip, 12100 . . . WO-16
Islip Ter., 5200 . . . WO-16
Ithaca, 28732 . . . EP-3
Jamesport, 900 . . . WM-21
Jamestown, 35775 . . . WJ-11
Jamesville, 1300 . . . EM-5
Jefferson, 88151 . . . EF-6
Jefferson Valley, 3600 . . . EV-15
Jericho, 14200 . . . WO-14
Johnson City, 17126 . . . ER-6
Johnstown, 9360 . . . EL-12
Jordan, 1371 . . . EL-3
Katonah, 3600 . . . EV-15
Kattelville, 950 . . . EQ-6
Keeseville, 2025 . . . ED-15
Kenmore, 18474 . . . WE-12
Kensington, 1132 . . . *M-16
Kerhonkson, 1243 . . . ES-13
Keuka Park, 850 . . . WG-20
Kinderhook, 1377 . . . EP-15
Kings (Brooklyn), 2230936 . . . EY-14
Kings Park, 4000 . . . WN-16
Kings Pt., 5234 . . . WO-12
Kingston, 24481 . . . ER-14
Kirkwood, 850 . . . WJ-25
Lackawanna, 22701 . . . WE-13
Lake Carmel, 4796 . . . EU-15
Lake Erie Beach, 3500 . . . WG-12
Lake George, 1047 . . . EJ-15
Lake Gr., 9692 . . . WN-17
Lake Katrine, 1092 . . . ER-14
Lakeland, 2200 . . . WK-5
Lake Luzerne, 1000 . . . EK-14
Lake Peekskill, 1200 . . . EV-14
Lake Placid, 2490 . . . EE-13
Lake Ronkonkoma, 9600 . . . WO-17
Lake Success, 2396 . . . *N-17
Lake View, 4600 . . . WF-12
Lakeville, 950 . . . WE-17
Lakewood, 3941 . . . WJ-10
Lancaster, 13056 . . . WE-13
Larchmont, 6308 . . . EX-15
Latham, 8000 . . . EN-15

Medina, 6392 . . . WC-14
Melville, 8550 . . . WO-15
Menands, 4012 . . . EN-15
Merrick, 26400 . . . WP-14
Mexico, 1621 . . . EJ-4
Middleburg, 1358 . . . EO-12
Middle Hope, 2327 . . . ET-14
Middle Island, 1000 . . . WN-18
Middleport, 1995 . . . WC-14
Middletown, 21454 . . . EU-12
Middleville, 2300 . . . WN-16
Millbrook, 1343 . . . ES-15
Miller Place, 3100 . . . WM-18
Millerton, 1013 . . . ER-16
Millwood, 900 . . . EV-15
Mineola, 20757 . . . WO-13
Minetto, 900 . . . EJ-3
Mineville, 1000 . . . EF-15
Minoa, 3640 . . . EL-5
Mohawk, 2956 . . . EL-9
Mohegan Lake, 2200 . . . EV-14
Monroe, 5996 . . . EV-13
Monroe, 702238 . . . WD-16
Monsey, 7400 . . . EW-14
Montauk, 1300 . . . WM-25
Montgomery, 2316 . . . EU-13
Montgomery, 53439 . . . EM-11
Monticello, 6306 . . . ET-11
Montour Falls, 1791 . . . WH-21
Montrose, 2600 . . . EV-14
Moravia, 1582 . . . EN-4
Morrisonville, 1500 . . . EC-15
Morrisville, 2707 . . . EM-7
Mtn. Dale, 1200 . . . ET-12
Mt. Kisco, 8025 . . . EV-15
Mt. Morris, 3039 . . . WF-16
Mt. Sinai, 1100 . . . WM-17
Mt. Vernon, 3400 . . . WF-12
Mt. Vernon, 66713 . . . EX-15
Munsey Park, 2806 . . . *M-17
Muttontown, 2725 . . . WN-14
Nanuet, 8300 . . . EW-14
Naples, 1225 . . . WG-18
Nassau, 1285 . . . EO-15
Nassau, 1321582 . . . EY-16
Nedrow, 3000 . . . EM-5
Nesconset, 8300 . . . WN-17
Newark, 10017 . . . WD-20
Newark Valley, 1190 . . . EQ-5
New Berlin, 1392 . . . EO-8
Newburgh, 23438 . . . EU-14
New City, 30800 . . . EW-14
Newfane, 2700 . . . WC-13
New Hamburg, 1064 . . . ET-14
New Hartford, 2313 . . . EC-2
New Hempstead, 1900 . . . *A-8
New Hyde Park, 9801 . . . WO-13
New Paltz, 4941 . . . ES-13
Newport, 746 . . . EK-9
New Rochelle, 70794 . . . EX-15
New Square, 1750 . . . *A-8
New Suffolk, 900 . . . WM-21
Newtonville, 2000 . . . EX-6
New Windsor, 8803 . . . EU-14
New York, 7071030 . . . EY-14
New York (Manhattan), 1427533 . . . EY-14
New York Mills, 3549 . . . EL-8
Niagara, 227101 . . . WC-13
Niagara Falls, 71384 . . . WO-12
Nimmonsburg, 1000 . . . EQ-6
Niskayuna, 17471 . . . EN-14
Nissequogue, 1462 . . . WN-16
Niverville, 850 . . . EO-15
Norfolk, 1379 . . . EB-9
N. Bellmore, 23600 . . . WP-14
N. Bellport, 3800 . . . WO-18
N. Boston, 1700 . . . WF-13
N. Chili, 3163 . . . WD-17
N. Collins, 1496 . . . WG-12
N. Creek, 950 . . . EH-13
N. Hornell, 813 . . . WH-17
N. New Hyde Park, 16100 . . . WO-13
Northport, 7651 . . . WN-15
N. Syracuse, 7970 . . . EL-5
N. Tarrytown, 7994 . . . EW-14
N. Tonawanda, 35760 . . . WO-12
N. Valley Stream, 14881 . . . *P-17
Northville, 1304 . . . EK-13
Norwich, 8082 . . . EO-7
Norwood, 1902 . . . EC-9
Nunda, 1169 . . . WG-16
Nyack, 6428 . . . EW-14
Oakdale, 7800 . . . WO-17
Oakfield, 1791 . . . WD-15
Oceanside, 36400 . . . WP-13
Ogdensburg, 12375 . . . EC-7
Olcott, 1650 . . . WC-13
Old Forge, 950 . . . EI-9
Olean, 18207 . . . WJ-14
Oneida, 10810 . . . EL-7
Oneida, 253466 . . . EK-7
Oneonta, 14933 . . . EP-9
Onondaga, 1700 . . . EM-5
Onondaga, 463324 . . . EM-5
Ontario, 88909 . . . WF-18
Orange, 259603 . . . EV-12
Orangeburg, 3500 . . . *O-11
Orange Lake, 4348 . . . EU-13
Orchard Park, 3671 . . . WF-13
Oriskany, 1680 . . . EL-8
Oriskany Falls, 802 . . . EM-8
Orleans, 38496 . . . WO-16
Ossining, 20196 . . . EW-14
Oswego, 19793 . . . EJ-3

Queens, [illegible]
Quogue, 966 . . . WO-21
Randolph, 1398 . . . WI-12
Ransomville, 1500 . . . WC-12
Ravena, 3091 . . . EO-14
Red Hook, 1692 . . . ER-14
Red Oaks Mill, 2609 . . . ET-14
Rensselaer, 9047 . . . EN-15
Rensselaer, 151956 . . . EN-16
Rhinebeck, 2542 . . . ER-14
Richfield Sprs., 1561 . . . EM-9
Richland, 600 . . . EI-5
Richmond (Staten Island), 352121 . . . EZ-13
Richmondville, 792 . . . EN-11
Ridge, 1250 . . . WN-18
Ridgewood, 1400 . . . *P-12
Rifton, 600 . . . ES-14
Ripley, 1000 . . . WI-9
Riverhead, 7400 . . . WN-20
Riverside, 684 . . . WI-20
Rochdale, 1849 . . . ET-14
Rochester, 241741 . . . WD-18
Rock Hill, 900 . . . ET-11
Rockland, 259530 . . . EW-13
Rockville Ctr., 25405 . . . WP-13
Rocky Pt., 3700 . . . WM-18
Roessleville, 5476 . . . EO-13
Rome, 43826 . . . EK-8
Ronkonkoma, 20200 . . . WO-17
Rosendale, 1220 . . . ES-13
Ross Corners, 1100 . . . ER-5
Rotterdam, 24800 . . . EN-14
Rotterdam Jct., 950 . . . EM-13
Round Lake, 791 . . . EM-14
Rouses Pt., 2266 . . . EA-16
Russell Gardens, 1263 . . . *M-16
Rye, 15083 . . . EX-15
Sackets Hbr., 1017 . . . EG-5
Saddle Rock, 921 . . . *M-16
Sag Hbr., 2581 . . . WM-23
St. James, 11000 . . . WN-17
St. Johnsville, 2019 . . . EL-11
St. Lawrence, 114254 . . . EE-9
St. Regis Falls, 950 . . . EC-11
Salamanca, 6890 . . . WI-13
Salem, 959 . . . EK-16
Sanborn, 900 . . . WD-12
Sand Lake, 800 . . . EN-16
Sands Pt., 2742 . . . WN-12
Sandy Beach, 1691 . . . WO-12
San Remo, 8700 . . . WN-16
Saranac Lake, 5578 . . . EE-13
Saratoga, 153759 . . . EK-14
Saratoga Sprs., 23906 . . . EL-14
Saugerties, 3882 . . . EQ-14
Sauquoit, 900 . . . EM-8
Savona, 932 . . . WI-19
Sayville, 15300 . . . WO-17
Scarsdale, 17650 . . . EX-15
Schaghticoke, 677 . . . EM-15
Schenectady, 67972 . . . EM-14
Schenectady, 149946 . . . EN-13
Schoharie, 1016 . . . EN-12
Schoharie, 29710 . . . EO-12
Schroon Lake, 1000 . . . EH-14
Schuyler, 17686 . . . WH-20
Schuylerville, 1256 . . . EL-15
Scotia, 7280 . . . EM-14
Scottsville, 1789 . . . WD-17
Sea Cliff, 5364 . . . WN-13
Selden, 24100 . . . WN-17
Seneca, 33733 . . . WE-21
Seneca Falls, 7466 . . . WE-21
Shelter Island, 1000 . . . WL-22
Sherburne, 1561 . . . EN-7
Sherrill, 2830 . . . EL-7
Shirley, 8200 . . . WO-19
Shortsville, 1669 . . . WE-19
Shrub Oak, 1700 . . . EV-15
Sidney, 4861 . . . EP-8
Silver Cr., 3088 . . . WG-11
Silver Sprs., 801 . . . WF-16
Skaneateles, 2789 . . . EM-4
Slingerlands, 2700 . . . EZ-4
Sloan, 4529 . . . WF-6
Sloatsburg, 3154 . . . EW-13
Smithtown, 23000 . . . WN-16
Sodus, 1790 . . . WC-20
Sodus Pt., 1334 . . . WC-20
Solvay, 7140 . . . WO-23
Sound Beach, 5400 . . . WM-18
Southampton, 35980 . . . WN-22
S. Corning, 1195 . . . WI-20
S. Fallsburg, 1590 . . . ET-11
S. Glens Falls, 3714 . . . EK-15
S. Lockport, 2000 . . . WD-13
S. Nyack, 3602 . . . *C-11
Southold, 2030 . . . WL-22
Southport, 8700 . . . WJ-21
S. Salem, 950 . . . EV-16
S. Valley Stream, 6600 . . . *Q-16
Sparkill, 1300 . . . *E-11
Sparrow Bush, 900 . . . EU-11
Speigletown, 1300 . . . EM-15
Spencer, 863 . . . EQ-3
Spencerport, 3424 . . . WC-17
Spr. Valley, 20537 . . . *B-8
Springville, 4285 . . . WG-13
Staatsburg, 950 . . . ES-14
Stamford, 1240 . . . EP-11
Stanford Hts., 1050 . . . EN-14
Steuben, 99135 . . . WI-18
Stillwater, 1572 . . . EM-15

Wanakah, 1700 . . . WF-
Wantagh, 22200 . . . WP-
Wappingers Falls, 5110 . . . ET-
Warren, 54854 . . . EI-
Warrensburg, 2743 . . . EJ-
Warsaw, 3619 . . . WF
Warwick, 4320 . . . EV
Washington, 54795 . . . EJ-
Washington Mills, 1500 . . . EL
Washingtonville, 2380 . . . EU
Waterford, 2405 . . . E
Waterloo, 5303 . . . WE
Water Mill, 900 . . . WN
Watertown, 27861 . . . E
Waterville, 1672 . . . EN
Watervliet, 11354 . . . EN
Watkins Glen, 2440 . . . WH-
Waverly, 4738 . . . E
Wawarsing, 850 . . . ES
Wayland, 1846 . . . WG
Wayne, 85230 . . . WD
Webster, 5499 . . . WC
Weedsport, 1952 . . . E
Wells, 570 . . . EJ
Wellsville, 5769 . . . WI
W. Babylon, 32500 . . . WP
Westbury, 13871 . . . WO
W. Carthage, 1824 . . . E
Westchester, 866599 . . . EW
W. Corners, 1900 . . . E
W. Elmira, 5901 . . . WJ
Westfield, 3446 . . . W
W. Glens Falls, 3363 . . . EK
Westhampton, 1156 . . . WO
Westhampton Beach, 1629 . . . WO
W. Hurley, 950 . . . EF
Westmere, 5500 . . . EN
W. Nyack, 4900 . . . *C
W. Point, 8000 . . . EU
W. Sand Lake, 1875 . . . EN
W. Sayville, 5000 . . . WO
W. Seneca, 51210 . . . WE
Westvale, 7300 . . . E
W. Webster, 10600 . . . WC
W. Windsor, 850 . . . E
W. Winfield, 979 . . . E
Whitehall, 3241 . . . EI
White Plains, 46999 . . . EW
Whitesboro, 4460 . . . E
White Sulphur Sprs., 900 . . . ES
Whitney Pt., 1093 . . . E
Williamson, 1991 . . . WC
Williamsville, 6017 . . . W
Williston Park, 8216 . . . WO
Willow Pt., 2000 . . . W
Willsboro, 950 . . . EE
Wilmington, 500 . . . EE
Wilson, 1259 . . . WC
Windom, 1100 . . . W
Windsor, 1155 . . . E
Witherbee, 1000 . . . EF
Wolcott, 1496 . . . WC
Woodbourne, 1155 . . . ES
Woodbury, 2800 . . . WN
Woodmere, 19700 . . . WF
Woodridge, 809 . . . ET
Woodsburgh, 847 . . . *F
Woodstock, 1073 . . . EF
Worcester, 950 . . . EC
Wyandanch, 17900 . . . WC
Wynantskill, 2500 . . . E
Wyoming, 39895 . . . WF
Yaphank, 2100 . . . WN
Yates, 21459 . . . WC
Yonkers, 195351 . . . EX
Yorkshire, 850 . . . WC
Yorktown Hts., 5900 . . . EV
Yorkville, 3115 . . . E
Youngstown, 2191 . . . WC
Youngsville, 900 . . . ES

NORTH CAROLIN

See map pp. 72-73.
County names appea[r in] bold face type.

Cities & Counties

Aberdeen, 1945 . . . *
Ahoskie, 4887
Alamance, 99136
Albemarle, 15110
Alexander, 24999
Alexander Mills, 643
Alleghany, 9587
Altamahaw, 350
Andrews, 1621
Angier, 1709
Anson, 25562
Ansonville, 794
Apex, 2847
Archdale, 5305
Arlington, 872
Ashe, 22325
Asheboro, 15252
Asheville, 53281
Atlantic, 900
Aulander, 1214
Aurora, 698
Avery, 14409
Ayden, 184
Badin, 1800
Banner Elk, 1087
Bannertown, 1250
Battleboro, 632
Bayboro, 759
Beaufort, 3826
Beaufort, 40266
Belhaven, 2430
Belmont, 4607
Benson, 2792
Bertie, 21024
Bessamer City, 4787

* See explanation under state title in thi

INTERVIEW FORM

INTERVIEWEE/CODE George Sawires /

TITLE - POSITION

ADDRESS 166 Washington Ave.

CITY Batavia, N.Y. STATE ZIP 14020

PHONE (716) 343 - 2362 RESIDENCE PERIOD TO

LOCATION phone interview INTERVIEWER Cordone

DATE/TIME 12/19/85 /

SUBJECT: Cedar St Dump Site / US Chrome Site / Route 19 Drum Disposal Site

REMARKS: Cedar St Dump + US Chrome: Irrigation not practiced in the area. Closest agricultural land to Cedar St. Dump Site is 2800'. This land is also prime agricultural land. George will send NYS Wetland Maps.

Route 19 Drum Disposal: Irrigation not practiced in the area. Agricultural land found adjacent to the site. This is also prime land. George will send wetland maps.

I agree with the above interview summary:

Signature/Title:

Comments:

Dangerous Properties of Industrial Materials

Sixth Edition

N. Irving Sax

CHROMIC ACID (MIXTURE)

NIOSH #: GB 2650000

mf: CrO_3; mw: 100.01

mp: 196°; d: 2.70; dark red cryst; decomp @ 250° to $Cr_2O_3 + O_2$; a powerful oxidizer. Water sol.

SYNS:
CHROMIUM TRIOXIDE
CHROMIC ANHYDRIDE

TOXICITY DATA: CODEN:
DOT: Oxidizer, Label: Oxidizer FEREAC 41,57018,76. Occupational Exposure to Cr(VI) recm std: Air: TWA 25 ug(Cr(VI))/m3;CL 50 ug/m3/15M NTIS**.

THR: A poison. See also chromium compounds and chromates. A powerful irr of skn, eyes and mu mem; can cause a dermatitis, bronchoasthma, "chrome holes," damage to the eyes.

Disaster Hazard: May explode in a fire.

Incomp: Acetic acid; acetic anhydride; tetrahydronaphthalene; acetone; alcohols; alkali metals; ammonia; arsenic; bromine penta fluoride; butyric acid; n,n-dimethylformamide; hydrogen sulfide; peroxyformic acid; phosphorus; potassium hexacyanoferrate; pyridine; selenium; sodium; sulfur.

CHROMIC ACID (SOLUTION)

NIOSH #: GB 2670000

SYN: CHROMIC ACID SOLUTION (DOT)

TOXICITY DATA: 3 CODEN:
DOT: Corrosive Material, Label: Corrosive FEREAC 41,57018,76. Occupational Exposure to Cr(VI) recm std: Air: TWA 25 ug(Cr(VI))/m3;CL 50 ug/m3/15M NTIS**.

THR: See chromic acid, dry. See also chromium compounds.

CHROMIC CHLORIDE STEARATE

CAS RN: 15242963 NIOSH #: GB 7280000
mf: $C_{18}H_{36}Cl_4Cr_2O_3$; mw: 546.34

SYNS:
TETRACHLORO-MU-HYDROXY-(MU-OCTADECANOATO-O:O') DI-CHROMIUM
TETRACHLORO-MU-HYDROXY-(MU-STEARATO)DI-CHROMIUM
NCI-C60800
STEARATO-CHROMIC CHLORIDE COMPLEX

TOXICITY DATA: 3 CODEN:
ivn-mus LD50:180 mg/kg CSLNX* NX#03305

Reported in EPA TSCA Inventory, 1980.

THR: HIGH ivn. See also chromium compounds.

Disaster Hazard: When heated to decomp it emits tox fumes of Cl^-.

CHROMIC CHROMATE

CAS RN: 24613896 NIOSH #: GB 2850000
mf: $Cr_3O_{12}\cdot 2Cr$; mw: 452.00

SYNS:
CHROMIC ACID, CHROMIUM (3+) SALT (3:2)
CHROMIUM CHROMATE

TOXICITY DATA: 3 CODEN:
imp-rat TDLo:112 mg/kg:NEO AIHAAP 20,274,59

Carcinogenic Determination: Animal Positive IARC** 2,100,73. Occupational Exposure to Chromium(VI) recm std: Air: CL 1 ug(Cr(VI))/m3 NTIS**. Reported in EPA TSCA Inventory, 1980.

THR: An exper NEO, CARC. See also chromium compounds. Very powerful oxidizer.

CHROMITE (MINERAL)

CAS RN: 1308312 NIOSH #: GB 4000000
mf: Cr_2FeO_4; mw: 223.85

SYNS:
CHROME ORE
CHROMITE ORE
IRON CHROMITE

TOXICITY DATA: 3 CODEN:
Carcinogenic Determination: Indefinite IARC** 23,205,80.

THR: See also chromium compounds and iron. An exper ± CARC.

CHROMIUM

CAS RN: 7440473 NIOSH #: GB 4200000
Af: Cr; Aw: 52.0

SYN: CHROME

TOXICITY DATA: CODEN:
ivn-rat TDLo:2160 ug/kg/6W-I TFX:ETA JNCIAM 16,447,55
imp-rat TDLo:1200 ug/kg/6W-I TFX:ETA JNCIAM 16,447,55
imp-rbt TDLo:75 mg/kg:ETA ZEKBAI 52,425,42

Carcinogenic Determination: Animal Suspected IARC** 2,100,73; Animal Indefinite IARC** 23,205,80. TLV-TWA 500 ug/m3 DTLVS* 4,98,80. *Toxicology Review* 85CVA2 5,63,70; KOTTAM 11(11),1300,75; FOREAE 7,313,42; MIBUBI 9(4),321,75; FCTXAV 9,105,71; PEXTAR 12,102,69; 85DHAX Cr,22,74 BNYMAM 54,413,78; NTIS** Conf-691001. OSHA Standard: Air: TWA 1 mg/m3 (SCP-0) FEREAC 39,23540,74. "NIOSH Manual of Analytical Methods" VOL 1 152,182, VOL 3; S323,352, VOL 5 173=. NIOSH Current Intelligence Bulletin 4, 1975. Reported in EPA TSCA Inventory, 1980. Proposed OSHA Medical Records Rules FEREAC 47,30420,82.

THR: An exper ETA, CARC.

Disaster Hazard: Powder will explode spont in air.

Incomp: Oxidants.

For further information see Vol. 3, No. 3 of *DPIM Report*.

CHROMIUM ACETATE HYDRATE

CAS RN: 628524 NIOSH #: AG 3000000
mf: $C_4H_6CrO_4\cdot H_2O$; mw: 188.12

Red crystals.

Reported in EPA TSCA Inventory, 1980. EPA TSCA Inv. Preliminary Assessment Information Proposed Rule FERREAC 45,13646,80.
TER: HIGH ipr, ivn; MOD orl, scu.
Disaster Hazard: When heated to decomp it emits very tox fumes of Cl^-, NO_x.
For further information see Vol. 3, No. 5 of *DPIM Report.*

CHOLINE SALICYLATE

CAS RN: 2016366 NIOSH #: GA 6475000
mf: $C_{12}H_{17}NO_4$; mw: 241.32

SYNS:
CHOLINE SALICYLATE B (2-HYDROXYETHYL)TRIMETHYLAMMONIUM SALICYLATE

TOXICITY DATA: 2 CODEN:
mouse LD50 1530 mg/kg 12VXA5 8,255,68

Reported in EPA TSCA Inventory, 1980.
TER: MOD orl.
Disaster Hazard: When heated to decomp it emits tox fumes of NO_x.

CHOLINE SUCCINATE (2:1) (ESTER)

CAS RN: 306401 NIOSH #: GA 7000000
mf: $C_{10}H_{20}N_2O_4$; mw: 290.46

SYNS:
CHOLINE SUCCINATE (ESTER) SUCCINOYLCHOLINE
DIMETHYLCHOLINE SUCCINYLBISCHOLINE
SUCCINIC ACID DIESTER WITH CHOLINE SUCCINYLDICHOLINE

TOXICITY DATA: 3 CODEN:
mouse LD50:125 mg/kg 27ZIAQ -,-,65
rat LD50:2140 ug/kg AIPTAK 152,277,64
mouse LD50:7500 ug/kg ARZNAD 15,126,65
rat LD50:480 ug/kg ARZNAD 19,1598,69
human LDLo:300 ug/kg AIPTAK 88,1,51
rat LD50:800 ug/kg AIPTAK 88,1,51

TER: HIGH orl, ipr, scu, ivn.
Disaster Hazard: When heated to decomp it emits tox fumes of NO_x.

CHONDROITINSULFURIC ACID

CAS RN: 9007287 NIOSH #: GA 8430000

SYNS:
CHONDROITIN, HYDROGEN SULFATE CHONDROITIN POLYSULFATE
CHONDROITIN SULFATE

TOXICITY DATA: 3 CODEN:
mouse TDLo:800 mg/kg/(9-11D) 85DGAU 2,37,76
TER

Reported in EPA TSCA Inventory, 1980.
TER: Ani exper TER.
Disaster Hazard: When heated to decomp it emits tox fumes of SO_x.

CHROMACID FAST RED 3B

CAS RN: 1836222
mf: $C_{20}H_{12}N_2O_9S_2 \cdot 3Na$; mw: 521.40 NIOSH #: QJ 6402600

SYNS:
C.I. 16105 EXT. D AND C RED NO. 2
ERIO CHROME RED PE

TOXICITY DATA: 2 CODEN:
mmo-sat 500 ug/plate MUREAV 56,249,78

Reported in EPA TSCA Inventory, 1980.
THR: MUT data.
Disaster Hazard: When heated to decomp it emits very tox fumes of NO_x and SO_x.

CHROMIC ACETATE

CAS RN: 1066304 NIOSH #: AG 2975000
mf: $C_6H_9O_6 \cdot Cr$; mw: 229.15

Gray, green powd or bluish green pasty mass.

SYNS:
CHROMIUM(III) ACETATE CHROMIUM TRIACETATE

TOXICITY DATA: 3 CODEN:
mmo-esc 16 mmol/L MUREAV 58,175,78
mrc-bcs 160 mmol/L MUREAV 58,175,78
cyt-hmn:leu 16 umol/L MUREAV 58,175,78
imp-rat TDLo:1000 mg/kg/56W-I:ETA AEHLAU 5,445,62
ivn-mus LDLo:2290 mg/kg EQSSDX 1,1,75
ivn-rbt LDLo:1604 mg/kg EQSSDX 1,1,75

Carcinogenic Determination: Indefinite IARC** 2, 100,73; IARC** 23,205,80. *Toxicology Review:* 85DHAX Cr,22,74. Reported in EPA TSCA Inventory, 1980.
THR: MUT data. An exper ETA, ± CARC. MOD ivn. See also chromium compounds.
Disaster Hazard: When heated to decomp it emits acrid smoke and irr fumes.

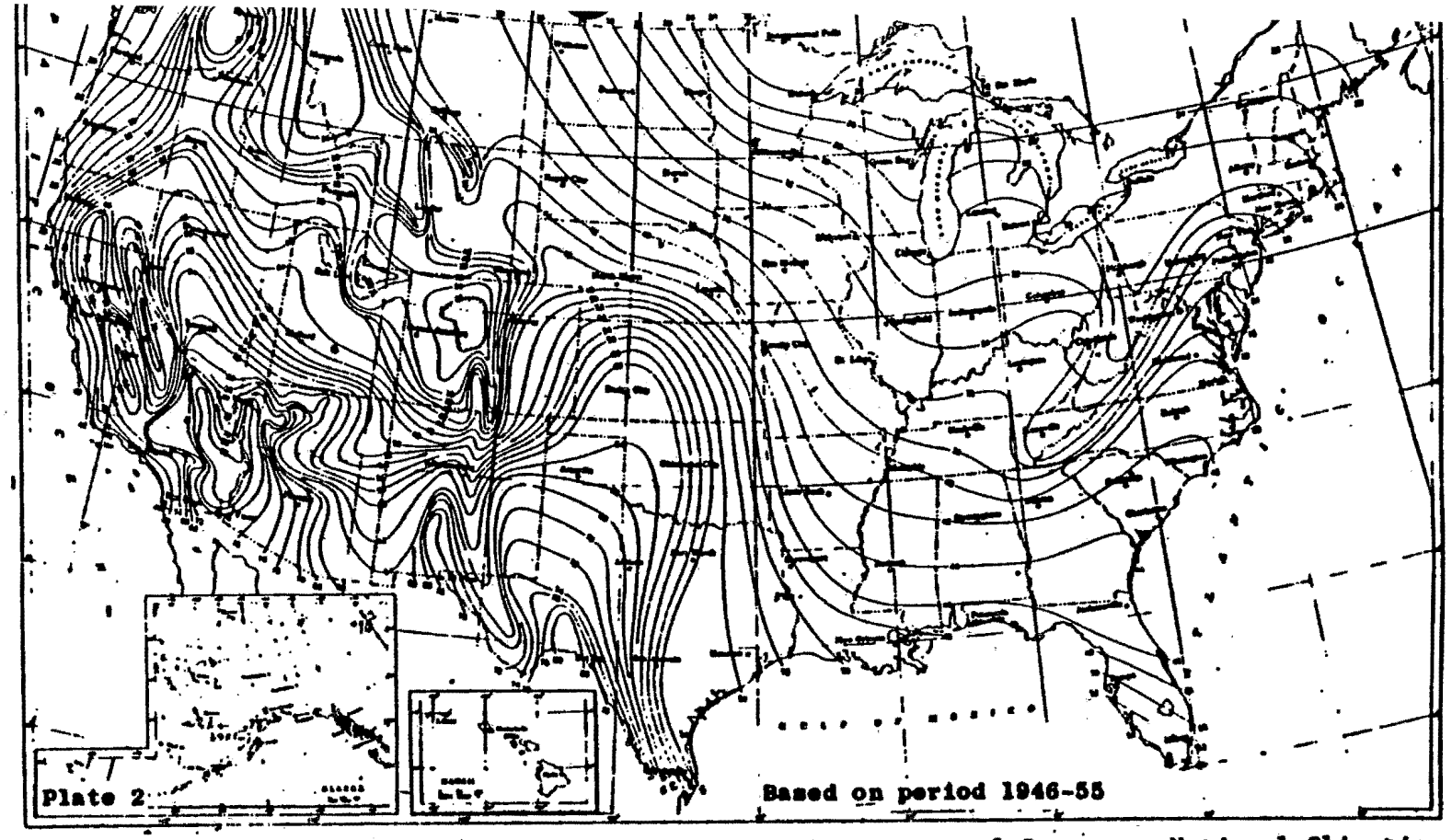
CHROMIC ACID

CAS RN: 7738945 NIOSH #: GB 2450000
mf: CrH_2O_4; mw: 118.02

SYNS:
ACIDE CHROMIQUE (FRENCH) CHROMIC (VI) ACID

TOXICITY DATA: CODEN:
mmo-sat 80 ug/plate MUREAV 54,139,78

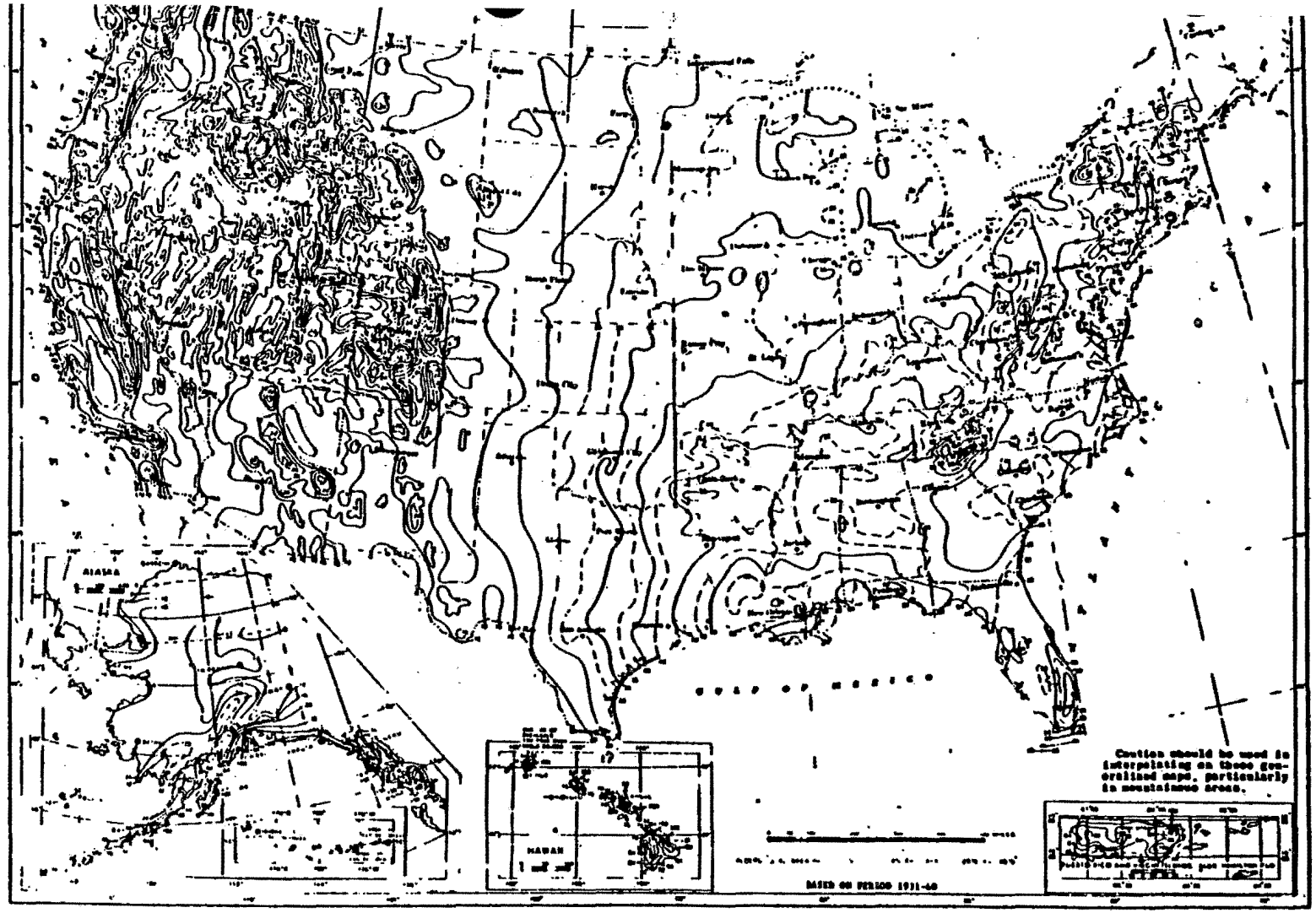
Aquatic Toxicity Rating: TLm96:000-under 1 ppm WQCHM* 2,-,74. Criteria Document: Occupational Exposure to Cr(VI) rec std: Air: TWA 25 ug (Cr (VI))/m3; CL 50 ug/m3/15M NTIS**.
Standards and Regulations: OSHA Standard Air: CL 100 ug(CrO_3/m3 (SCP-0) FEREAC 39,23540,74. NIOSH Manual of Analytical Methods VOL. 1 152,169, VOL. 3 S317. Reported in EPA TSCA Inventory, 1980.
THR: MUT data. See also chromium compounds. A poison.
Disaster Hazard: When heated to decomp it emits smoke and irr fumes.
Incomp: Acetone.
For further information see Vol. 2, No. 2 and Vol. 3, No. 3 of *DPIM Report.*



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)



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

Figure 5

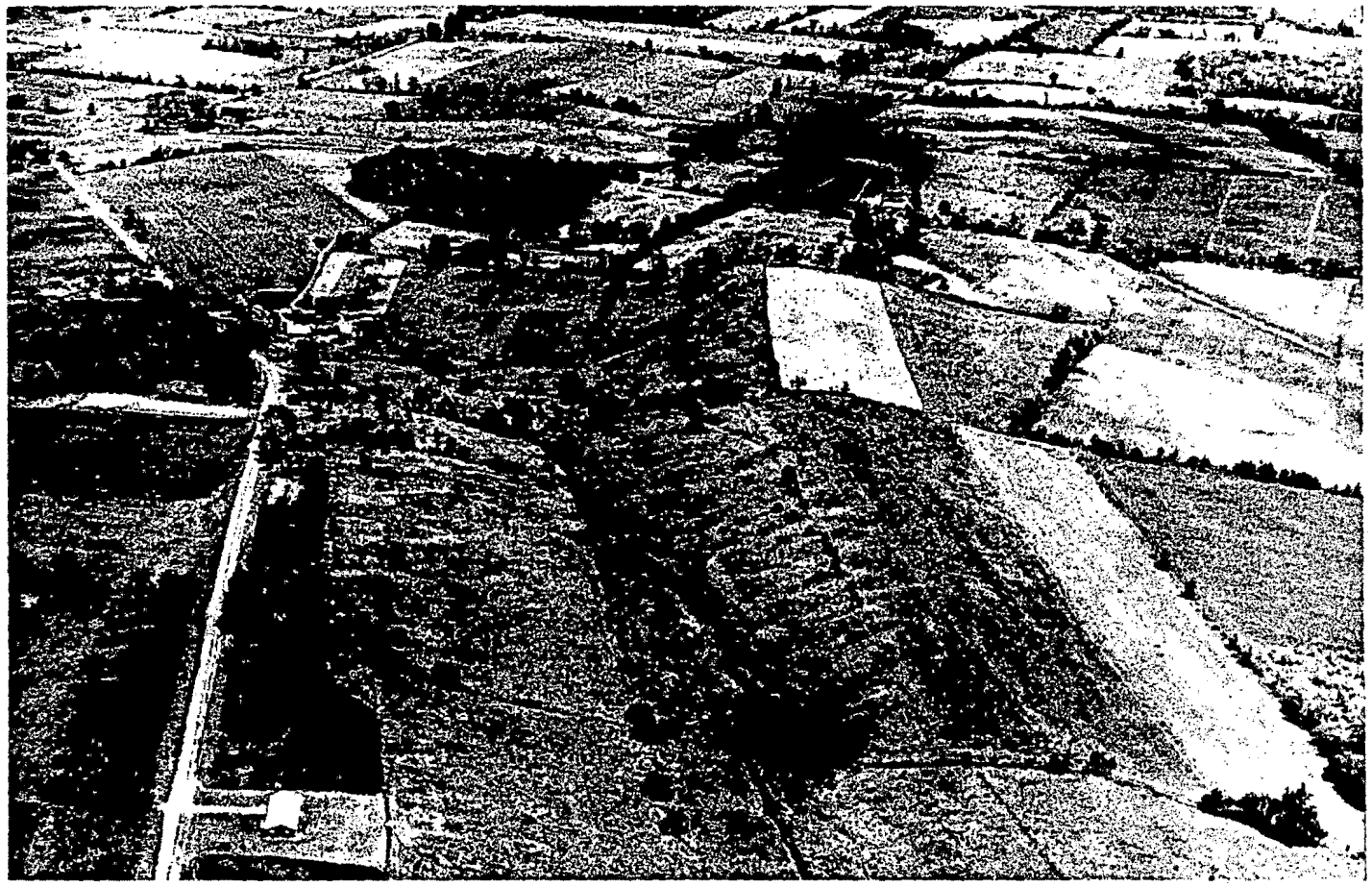
Normal Annual Total Precipitation (inches)

BILLING CODE 6560-50-C

Issued March 1969

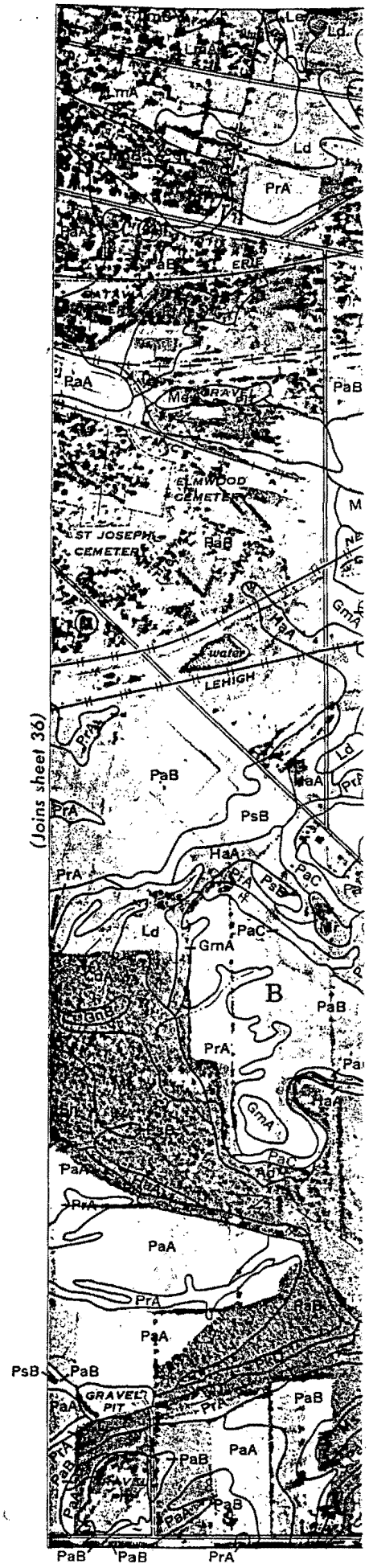
SOIL SURVEY

Genesee County, New York



UNITED STATES DEPARTMENT OF AGRICULTURE
Soil Conservation Service
In cooperation with
CORNELL UNIVERSITY AGRICULTURAL EXPERIMENT STATION

Dump
US Chrome
Canaviid
County seat
Jackson
CENTRAL
NEW YORK
GRAVEL PIT
(Joins sheet 37)
5000 Feet


ELMWOOD CEMETERY
ST JOSEPH CEMETERY
water
LEHIGH
GRAVEL PIT
(Joins sheet 36)

SOIL LEGEND

The first capital letter is the initial one of the soil name. A second capital letter, A, B, C, D, E, or F, is a general guide to the slope class. Symbols without a slope letter are for those miscellaneous land types or soils where slope is not significant to use and management. A final number, 3 or 4, in the symbol shows that the soil is eroded or severely eroded.

IL	NAME
	Alden mucky silt loam
	Allis silty clay loam, deep, 0 to 4 percent slopes
	Alluvial land
	Angola silt loam, 0 to 3 percent slopes
	Angola silt loam, 3 to 8 percent slopes
	Appleton silt loam, 3 to 8 percent slopes
	Arkport very fine sandy loam, 1 to 6 percent slopes
	Arkport very fine sandy loam, 6 to 12 percent slopes
	Arkport and Dunkirk soils, 12 to 20 percent slopes
	Arkport and Dunkirk soils, 20 to 40 percent slopes
	Benson soils, 0 to 8 percent slopes
	Benson soils, 8 to 25 percent slopes
	Benson soils, 25 to 40 percent slopes
	Burdett silt loam, 0 to 3 percent slopes
	Burdett silt loam, 3 to 8 percent slopes
	Canandaigua silt loam, 0 to 2 percent slopes
	Canandaigua mucky silt loam, 0 to 2 percent slopes
	Cazenovia silt loam, 0 to 3 percent slopes
	Cazenovia silt loam, 3 to 8 percent slopes
	Cazenovia silt loam, 8 to 15 percent slopes
3	Cazenovia silty clay loam, 8 to 15 percent slopes, eroded
3	Cazenovia silty clay loam, 15 to 25 percent slopes, eroded
	Chenango shaly silt loam, 0 to 3 percent slopes
	Chenango shaly silt loam, 3 to 8 percent slopes
	Chenango shaly silt loam, 8 to 15 percent slopes
	Collamer silt loam, 2 to 6 percent slopes
	Colonie loamy fine sand, 2 to 6 percent slopes
	Colonie loamy fine sand, 6 to 12 percent slopes
	Conesus silt loam, 0 to 3 percent slopes
	Conesus silt loam, 3 to 8 percent slopes
	Conesus silt loam, 8 to 15 percent slopes
	Darien silt loam, 0 to 3 percent slopes
	Darien silt loam, 3 to 8 percent slopes
	Darien silt loam, 8 to 15 percent slopes
	Darien silt loam, 15 to 25 percent slopes
	Dunkirk silt loam, 2 to 6 percent slopes
	Dunkirk silt loam, 6 to 12 percent slopes
	Edwards muck
	Eel silt loam
	Elnora loamy fine sand, 2 to 6 percent slopes
	Fonda mucky silt loam
	Fremont silt loam, 0 to 3 percent slopes
	Fremont silt loam, 3 to 8 percent slopes
	Fremont silt loam, 8 to 15 percent slopes
	Fresh water marsh
A	Galen and Minoa very fine sandy loams, 0 to 2 percent slopes
3	Galen very fine sandy loam, 2 to 6 percent slopes
	Genesee silt loam

SYMBOL	NAME
HoA	Halsey silt loam, 0 to 4 percent slopes
HlA	Hilton loam, 0 to 3 percent slopes
HlB	Hilton loam, 3 to 8 percent slopes
Hm	Holly silt loam
HnB	Honeoye silt loam, moderately deep variant, 2 to 8 percent slopes
HoB3	Hornell silty clay loam, 3 to 8 percent slopes, eroded
HoC3	Hornell silty clay loam, 8 to 15 percent slopes, eroded
HsD3	Hornell and Fremont soils, 15 to 25 percent slopes, eroded
IoA	Ilion silt loam, 0 to 3 percent slopes
IoB	Ilion silt loam, 3 to 8 percent slopes
KeA	Kendaia silt loam, moderately deep variant, 0 to 4 percent slopes
Lo	Lakemont silty clay loam
Ld	Lamson very fine sandy loam
Le	Lamson mucky very fine sandy loam
LgB	Lansing silt loam, 3 to 8 percent slopes
LgC	Lansing silt loam, 8 to 15 percent slopes
LgD	Lansing silt loam, 15 to 25 percent slopes
LmA	Lima silt loam, 0 to 3 percent slopes
LmB	Lima silt loam, 3 to 8 percent slopes
LnA	Lima silt loam, moderately deep variant, 0 to 3 percent slopes
LnB	Lima silt loam, moderately deep variant, 3 to 8 percent slopes
LoA	Lyons and Appleton silt looms, 0 to 3 percent slopes
LpA	Lyons and Kendaia silt loams, 0 to 3 percent slopes
Ma	Madalin silty clay loam
Md	Made land, tillable
Me	Made land and Dumps
MhA	Manheim silt loam, 0 to 3 percent slopes
MhB	Manheim silt loam, 3 to 8 percent slopes
MlB	Manlius very shaly silt loam, 3 to 8 percent slopes
MlC	Manlius very shaly silt loam, 8 to 15 percent slopes
MlD	Manlius very shaly silt loam, 15 to 25 percent slopes
MlE	Manlius very shaly silt loam, 25 to 40 percent slopes
MmA	Marilla shaly silt loam, 0 to 3 percent slopes
MmB	Marilla shaly silt loam, 3 to 8 percent slopes
MmC	Marilla shaly silt loam, 8 to 15 percent slopes
Mn	Middlebury silt loam
MoB	Mohawk silt loam, 2 to 8 percent slopes
MoC	Mohawk silt loam, 8 to 15 percent slopes
MoD	Mohawk silt loam, 15 to 25 percent slopes
MpB	Mohawk shaly silt loam, moderately deep variant, 2 to 8 percent slopes
MpC	Mohawk shaly silt loam, moderately deep variant, 8 to 15 percent slopes
MpD	Mohawk shaly silt loam, moderately deep variant, 15 to 25 percent slopes
Mr	Muck, deep
Ms	Muck, shallow

ıame. A second capital letter,
class. Symbols without a slope
ı where slope is not significant
ıe symbol shows that the soil

slopes
s
s

ıep variant, 2 to 8

ırcent slopes,

ıercent slopes,

25 percent slopes,

ɔpes
ɔpes

ıep variant, 0 to 4

oam
t slopes
ent slopes
ent slopes
lopes
lopes
ı variant, 0 to 3

ı variant, 3 to 8

0 to 3 percent slopes
0 to 3 percent slopes

nt slopes
nt slopes
to 8 percent slopes
to 15 percent slopes
5 to 25 percent slopes
5 to 40 percent slopes
percent slopes
percent slopes
percent slopes

slopes
ent slopes
cent slopes
arely deep variant,

arely deep variant,

arely deep variant,

SYMBOL	NAME
NaA	Niagara and Collamer silt loams, 0 to 2 percent slopes
NuB	Nunda silt loam, 3 to 8 percent slopes
NuC	Nunda silt loam, 8 to 15 percent slopes
NuD	Nunda silt loam, 15 to 25 percent slopes
OdA	Odessa silt loam, 0 to 2 percent slopes
OdB	Odessa silt loam, 2 to 6 percent slopes
OnA	Ontario loam, 0 to 3 percent slopes
OnB	Ontario loam, 3 to 8 percent slopes
OnC	Ontario loam, 8 to 15 percent slopes
OnD	Ontario loam, 15 to 25 percent slopes
OrE	Ontario and Lansing soils, 25 to 40 percent slopes
OsB	Ontario stony loam, 2 to 8 percent slopes
OsC	Ontario stony loam, 8 to 15 percent slopes
OvA	Ovid silt loam, 0 to 3 percent slopes
OvB	Ovid silt loam, 3 to 8 percent slopes
PaA	Palmyra gravelly loam, 0 to 3 percent slopes
PaB	Palmyra gravelly loam, 3 to 8 percent slopes
PaC	Palmyra gravelly loam, 8 to 15 percent slopes
PkD	Palmyra and Arkport soils, 15 to 25 percent slopes
PkE	Palmyra and Arkport soils, 25 to 40 percent slopes
PlA	Palmyra shaly silt loam, 0 to 3 percent slopes
PlB	Palmyra shaly silt loam, 3 to 8 percent slopes
PlC	Palmyra shaly silt loam, 8 to 15 percent slopes
PrA	Phelps and Fredon gravelly loams, 0 to 3 percent slopes
PsB	Phelps gravelly loam, 3 to 8 percent slopes
ReA	Remsen silt loam, 0 to 3 percent slopes
ReB	Remsen silt loam, 3 to 8 percent slopes
ReC	Remsen silt loam, 8 to 15 percent slopes
RmB3	Remsen silty clay loam, 3 to 8 percent slopes, eroded
RmC3	Remsen silty clay loam, 8 to 15 percent slopes, eroded
RmC4	Remsen silty clay loam, 8 to 25 percent slopes, severely eroded
RmD3	Remsen silty clay loam, 15 to 25 percent slopes, eroded
RnE	Remsen soils, 25 to 40 percent slopes
RnE4	Remsen soils, 25 to 40 percent slopes, severely eroded
Ro	Rhinebeck silt loam
Rr	Rockland, limestone
Rs	Romulus silt loam
SeB	Schoharie silt loam, 1 to 6 percent slopes
ShC3	Schoharie silty clay loam, 6 to 12 percent slopes, eroded
ShD3	Schoharie silty clay loam, 12 to 20 percent slopes, eroded
SlE3	Schoharie soils, 20 to 40 percent slopes, eroded
SmB	Scio silt loam, 2 to 8 percent slopes
Sn	Sloan silt loam
StA	Stafford loamy fine sand, 0 to 2 percent slopes
Wa	Wayland silt loam
Wr	Warners loam

Soil map constructed 1967 by Cartographic Division, Soil Conservation Service, USDA, from 1963 aerial photographs. Controlled mosaic based on New York plane coordinate system, west zone, transverse Mercator projection, 1927 North American datum.

GENESEE COUNTY, NEW YORK, PRIME FARMLAND MAPPING UNITS: 5/84

AnA	Angola silt loam, 0 to 3 percent slopes - where drained
ApB	Appleton silt loam, 3 to 8 percent slopes - where drained
ArB	Arkport very fine sandy loam, 1 to 6 percent slopes
BuA	Burdett silt loam, 0 to 3 percent slopes - where drained
CeA	Cazenovia silt loam, 0 to 3 percent slopes
ChA	Chenango shaly silt loam, 0 to 3 percent slopes
ChB	Chenango shaly silt loam, 3 to 8 percent slopes.
ClB	Collamer silt loam, 2 to 6 percent slopes
CmB	Colonie loamy fine sand, 2 to 6 percent slopes
CoA	Conesus silt loam, 0 to 3 percent slopes
DaA	Darien silt loam, 0 to 3 percent slopes - where drained
Ee	Eel silt loam
ElB	Elnora loamy fine sand, 2 to 6 percent slopes
FrA	Fremont silt loam, 0 to 3 percent slopes - where drained
GmA	Galen and Minoa very fine sandy loams, 0 to 2 percent
GnB	Galen very fine sandy loam, 2 to 6 percent slopes
Gs	Genesee silt loam
HlA	Hilton loam, 0 to 3 percent slopes
HlB	Hilton loam, 3 to 8 percent slopes
HnB	Honeoye silt loam, moderately deep variant, 2 to 8 percent slopes
KeA	Kendaia silt loam, moderately deep variant, 0 to 4 percent - where drained
LgB	Lansing silt loam, 3 to 8 percent slopes
LmA	Lima silt loam, 0 to 3 percent slopes
LmB	Lima silt loam, 3 to 8 percent slopes

GENESEE COUNTY, NEW YORK, PRIME FARMLAND MAPPING UNITS:

LnA	Lima silt loam, moderately deep variant, 0 to 3 percent slopes
LnB	Lima silt loam, moderately deep variant, 3 to 8 percent slopes
MhA	Manheim silt loam, 0 to 3 percent slopes - where drained
Mn	Middlebury silt loam
MoB	Mohawk silt loam, 2 to 8 percent slopes
MpB	Mohawk shaly silt loam, moderately deep variant, 2 to 8 percent slopes
NoA	Niagara and Collamer silt loams, 0 to 2 percent slopes - where drained
OnA	Ontario loam, 0 to 3 percent slopes
OnB	Ontario loam, 3 to 8 percent slopes
OsB	Ontario stony loam, 2 to 8 percent slopes
OvA	Ovid silt loam, 0 to 3 percent slopes - where drained
PaA	Palmyra gravelly loam, 0 to 3 percent slopes
PaB	Palmyra gravelly loam, 3 to 8 percent slopes
PlA	Palmyra shaly silt loam, 0 to 3 percent slopes
PlB	Palmyra shaly silt loam, 3 to 8 percent slopes
PrA	Phelps and Fredon gravelly loams, 0 to 3 percent slopes - where drained
PsB	Phelps gravelly loam, 3 to 8 percent slopes
SmB	Scio silt loam, 2 to 8 percent slopes

of the soils—Continued

Classification—Continued		Percentage passing sieve—			Permeability	Reaction	Available moisture capacity
Unified	AASHO	No. 4 (4.7 mm.)	No. 10 (2.0 mm.)	No. 200 (0.074 mm.)			
					Inches per hour	*pH*	*Inches per inch of soil*
ML, SM, or SC	A-4	75-95	75-85	40-55	0. 63-2. 0	5. 5-6. 5	0. 16-0. 20
ML or CL	A-4	90-95	85-90	50-60	0. 20-2. 0	5. 5-7. 5	0. 14-0. 16
SM or SC	A-4	75-85	70-85	40-50	<0. 63	(6)	----------
ML	A-4 or A-6	90-100	80-95	60-75	0. 63-2. 0	6. 0-7. 2	0. 12-0. 15
CL	A-6 or A-7	90-100	80-95	65-90	0. 2-0. 63	6. 5-7. 5	0. 16-0. 20
CL	A-4 or A-6	80-90	75-85	55-70	0. 2-0. 63	(5)	----------
ML	A-4	80-85	70-80	50-60	2. 0-6. 3	5. 0-7. 2	0. 12-0. 15
GM, GC	A-2, A-4	40-50	35-40	10-40	2. 0-6. 3	5. 5-7. 5	0. 15-0. 18
GM, GP, GC	A-2	40-50	35-40	5-30	>6. 3	(5)	----------
GM	A-4	65-75	55-65	35-45	2. 0-6. 3	6. 0-6. 2	0. 15-0. 17
ML, CL, or GC	A-4	65-75	50-60	45-55	0. 63-2. 0	6. 2-6. 6	0. 16-0. 20
GM-GC, GM	A-2	50-60	40-50	25-35	>6. 3	6. 5-7. 0	----------
MH or OH	A-7	----------	100	90-95	0. 63-2. 0	5. 0-6. 0	0. 12-0. 16
CL	A-6, A-7	----------	100	100	<0. 2	(5)	0. 10-0. 14
ML, CL	A-6	90-100	90-100	85-95	0. 2-0. 63	6. 0-7. 2	0. 17-0. 20
CL	A-6	85-100	80-95	75-95	<0. 2	6. 5-7. 5	0. 16-0. 18
CL	A-6	90-100	90-100	85-95	<0. 2	(5)	0. 16-0. 18
----------	----------	----------	----------	----------	----------	----------	----------
CL	A-7	90-100	90-100	80-90	0. 63-2. 0	6. 5-7. 2	0. 17-0. 20
CL	A-7	85-100	85-95	80-90	0. 2-0. 63	6. 5-7. 5	0. 15-0. 18
CL	A-7	80-90	75-85	50-70	<0. 2	(5)	----------
CL	A-6 or A-7	100	95-100	90-95	0. 63-2. 0	5. 5-7. 0	0. 17-0. 20
CL, CH	A-6 or A-7	100	95-100	95-100	0. 63	6. 0-7. 5	0. 16-0. 18
CL, CH	A-6	100	95-100	95-100	<0. 2	(6)	0. 16-0. 18
ML	A-4	100	90-100	60-80	0. 63-2. 0	5. 0-5. 9	0. 16-0. 21
ML	A-4	100	75-90	55-65	0. 63-6. 3	6. 0-6. 5	0. 14-0. 16
ML	A-6	100	100	65-80	0. 63-2. 0	6. 5-7. 5	0. 15-0. 19
CL	A-6	70-90	65-80	70-80	0. 2-0. 63	6. 9-7. 4	0. 17-0. 20
SM	A-2	100	90-100	15-35	>6. 3	5. 0-6. 0	0. 08-0. 10
SP-SM or SM	A-2	100	95-100	12-20	>6. 3	5. 0-6. 0	0. 10-0. 12
Pt	(2)	(2)	(2)	(2)	2. 0-6. 3	6. 5-7. 5	(2)
OL	(2)	(2)	(2)	(2)	(2)	(5)	----------
ML-CL	A-4	100	80-100	70-80	0. 63-2. 0	6. 5-6. 8	0. 16-0. 19
ML	A-4	100	80-100	55-65	0. 63-2. 0	7. 0-7. 5	0. 11-0. 14

[6] pH 7.0 to calcareous.
[7] pH 6.5 to calcareous.
[8] pH 4.5 to calcareous.
[9] Similar to Palmyra gravelly loam, but surface layer is shaly silt loam and underlying layers contain shale fragments instead of gravel.

TABLE 6.—*Estimated properties*

Soil and map symbol	Depth to bedrock	Depth to seasonally high water table	Depth from surface	Classification: USDA texture
	Feet	*Feet*	*Inches*	
Ontario loam (OnA, OnB, OnC, OnD).	4–50	3+	0–16	Loam or very fine sandy loam
Ontario stony loam (OsB, OsC).			16–35	Loam to clay loam
Ontario and Lansing soils (OrE).			35–48	Gravelly loam till
(For estimated properties of the Lansing soils, see the Lansing series.)				
Ovid silt loam (OvA, OvB).	6–40	½–1½	0–12	Silt loam
			12–29	Silty clay
			29–36	Gravelly silty clay loam till
Palmyra gravelly loam (PaA, PaB, PaC).	10–100	4+	0–17	Gravelly loam
Palmyra shaly silt loam (PlA, PlB, PlC).[9]			17–29	Gravelly sandy loam to gravelly clay loam.
Palmyra and Arkport soils (PkD, PkE).			29–45	Very gravelly sandy loam to stratified sand and gravel.
(For estimated properties of the Arkport soil, see the Arkport series.)				
Phelps gravelly loam (PsB).	8–30	1–2	0–10	Gravelly loam
Phelps and Fredon gravelly loams (PrA).			10–30	Gravelly clay loam to loam
(Estimated properties are for the Phelps soils only. For properties of the Fredon soil, see the Fredon series.)			30–45	Stratified sand and gravel
Remsen silt loam (ReA, ReB, ReC).	3–15	½–1½	0–9	Silt loam
Remsen silty clay loam (RmB3, RmC3, RmD3).			9–45	Clay
Remsen silty clay loam (RmC4).				
Remsen soils (RnE, RnE4).				
Rhinebeck silt loam (Ro).	10–40	0–1½	0–12	Silt loam
			12–42	Silty clay loam to silty clay
			42–50	Stratified clay, silt, and very fine sand
Rockland, limestone (Rr).	----------	----------	----------	----------
Romulus silt loam (Rs).	7–20	0–1	0–12	Silty loam
			12–26	Silty clay loam
			26–36	Gravelly silty clay loam till
Schoharie silt loam (SeB).	10–60	1½–3	0–11	Silt loam
Schoharie silty clay loam (ShC3, ShD3).			11–33	Silty clay to clay
Schoharie soils (SlE3).			33–57	Stratified clay and silt
Scio silt loam (SmB).	10–30	1½–2	0–32	Silt loam
			32–40	Silt and a few pebbles
Sloan silt loam (Sn).	10–40	[1] 0–1	0–25	Silt loam
			25–40	Silty clay loam
Stafford loamy fine sand (StA).	4–30	½–1½	0–30	Loamy fine sand
			30–36	Fine sand
Warners loam (Wr).	10–40	0	0–6	Mucky loam
			6–42	Marl
Wayland silt loam (Wa).	6–40	[1] 0	0–25	Silt loam
			25–40	Stratified silt and sandy loam

[1] Subject to flooding.
[2] Variable.
[3] Alkaline to calcareous.
[4] Seasonally high above bedrock.
[5] Calcareous.

EPA

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

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NY	NYD980774200

II. SITE NAME AND LOCATION

01 SITE NAME (Legal, common, or descriptive name of site)	02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER
U. S. Chrome Corporation	31 Swan St.

03 CITY	04 STATE	05 ZIP CODE	06 COUNTY	07 COUNTY CODE	08 CONG DIST
Batavia	N.Y.	14020	Genesee		30

09 COORDINATES LATITUDE	LONGITUDE
42 59 41.—	077 10 27.—

10 DIRECTIONS TO SITE (Starting from nearest public road)
South on Swan St. from East Main St. in the City of Batavia. Site is on the east side of Swan St. after crossing a RR. track.

III. RESPONSIBLE PARTIES

01 OWNER (if known)	02 STREET (Business, mailing, residential)
U. S. Chrome Corporation	31 Swan St.

03 CITY	04 STATE	05 ZIP CODE	06 TELEPHONE NUMBER
Batavia	N.Y.	14020	(716) 343-7077

07 OPERATOR (if known and different from owner)	08 STREET (Business, mailing, residential)
(as above)	

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

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 c) DATE RECEIVED: ___/___/___ (MONTH DAY YEAR) ☐ C. NONE

IV. CHARACTERIZATION OF POTENTIAL HAZARD

01 ON SITE INSPECTION
☒ YES DATE 1/23/86 (MONTH DAY YEAR)
☐ NO

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, Inc

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

03 YEARS OF OPERATION
1959 (BEGINNING YEAR) / present (ENDING YEAR) ☐ UNKNOWN

04 DESCRIPTION OF SUBSTANCES POSSIBLY PRESENT, KNOWN, OR ALLEGED
Groundwater is contaminated with hexavalent chromium.

05 DESCRIPTION OF POTENTIAL HAZARD TO ENVIRONMENT AND/OR POPULATION
Groundwater has infiltrated the city sewer system in two places.

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
James N. Baker	Engineering-Science, Inc. (E-S, Inc.)	(315) 451-9560

04 PERSON RESPONSIBLE FOR ASSESSMENT	05 AGENCY	06 ORGANIZATION	07 TELEPHONE NUMBER	08 DATE
Leslie Cordone	—	E-S, Inc.	(315) 457-9560	2/28/86 (MONTH DAY YEAR)

EPA FORM 2070-12 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 2 - WASTE INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NY	NYD 990774200

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 PHYSICAL STATES *(Check all that apply)*

- ☐ A. SOLID
- ☐ B. POWDER, FINES
- ☐ C. SLUDGE
- ☐ D. OTHER _____ *(Specify)*
- ☐ E. SLURRY
- ☒ F. LIQUID
- ☐ G. GAS

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

TONS _____
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			
OLW	OILY WASTE			
SOL	SOLVENTS			
PSD	PESTICIDES			
OCC	OTHER ORGANIC CHEMICALS			
IOC	INORGANIC CHEMICALS			
ACD	ACIDS			
BAS	BASES			
MES	HEAVY METALS	Unknown		Chromic Acid entered the ground

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
MES	Hexavalent Chromium (Chromic Acid)	7738-94-5	TK	45- 750	MG/L

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)*

Parratt Wolff, 1984; ES Site Visit, 1/86; Pendergast, 1/86

EPA

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT
PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
NY	NYD 990774200

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 ☒ A. GROUNDWATER CONTAMINATION — 02 ☒ OBSERVED (DATE: 1982) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: ≈ 418 — 04 NARRATIVE DESCRIPTION
Contamination of groundwater was observed initially in 1982. Cr^{+6} concentrations of 800 mg/L were measured.

01 ☐ B. SURFACE WATER CONTAMINATION — 02 ☐ OBSERVED (DATE:) ☒ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: — 04 NARRATIVE DESCRIPTION
Contaminated aquifer could be hydraulically connected with Tonawanda Creek.

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

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

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

01 ☒ F. CONTAMINATION OF SOIL — 02 ☒ OBSERVED (DATE: 1984) ☐ POTENTIAL ☐ ALLEGED
03 AREA POTENTIALLY AFFECTED: ≈ 7 (Acres) — 04 NARRATIVE DESCRIPTION
A hydrogeologic investigation of the site indicated a contaminant plume approximately 7 acres in area.

01 ☐ G. DRINKING WATER CONTAMINATION — 02 ☐ OBSERVED (DATE:) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: — 04 NARRATIVE DESCRIPTION
No potential. Local groundwater flow is away from an existing community water well and surface water intake.

01 ☒ H. WORKER EXPOSURE/INJURY — 02 ☐ OBSERVED (DATE:) ☒ POTENTIAL ☐ ALLEGED
03 WORKERS POTENTIALLY AFFECTED: — 04 NARRATIVE DESCRIPTION
Exposed chromic acid baths in a plating facility.

01 ☒ I. POPULATION EXPOSURE/INJURY — 02 ☐ OBSERVED (DATE:) ☒ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: — 04 NARRATIVE DESCRIPTION
~~Gro~~ Contaminated groundwater was found to be infiltrating the city sewer line.

EPA

POTENTIAL HAZARDOUS WASTE SITE PRELIMINARY ASSESSMENT

PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 STATE: NY | 02 SITE NUMBER: NYD 990774200

II. HAZARDOUS CONDITIONS AND INCIDENTS *(Continued)*

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

Site is in an urban area.

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

Site is in an urban area.

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

Site is in an urban area.

01 ☒ M. UNSTABLE CONTAINMENT OF WASTES *(Spills/runoff/standing liquids/leaking drums)* — 02 ☐ OBSERVED (DATE: 1982) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

Chromic acid from a plating bath leaked onto ground surface and entered the groundwater.

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

no potential.

01 ☒ O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs — 02 ☐ OBSERVED (DATE: 1984) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

Contaminated groundwater is known to have infiltrated storm sewers west and northwest of the site.

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

no potential.

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

III. TOTAL POPULATION POTENTIALLY AFFECTED: _____

IV. COMMENTS

Spills occurred inside an industrial building. Chromic acid from a plating bath dissolved underlying cinder blocks and entered the ground.

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

Pendergast, 1/86; E-S site visit, 1/86; Parratt Wolff, 1984; Ecology and Environment, Inc., 1982.

EPA

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

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NY	NYD 990774200

II. SITE NAME AND LOCATION

01 SITE NAME (Legal, common, or descriptive name of site)	02 STREET, ROUTE NO., OR SPECIFIC LOCATION IDENTIFIER
U.S. Chrome Corporation	31 Swan St.

03 CITY	04 STATE	05 ZIP CODE	06 COUNTY	07 COUNTY CODE	08 CONG DIST
Batavia	N.Y	14020	Genesee		30

09 COORDINATES LATITUDE	LONGITUDE	10 TYPE OF OWNERSHIP (Check one)
42 59 41.__	07 10 37.__	☒ A. PRIVATE ☐ B. FEDERAL ____ ☐ C. STATE ☐ D. COUNTY ☐ E. MUNICIPAL ☐ F. OTHER ____ ☐ G. UNKNOWN

III. INSPECTION INFORMATION

01 DATE OF INSPECTION (MONTH DAY YEAR)	02 SITE STATUS	03 YEARS OF OPERATION (BEGINNING YEAR / ENDING YEAR)
1 23 86	☒ ACTIVE ☐ INACTIVE	1959 / present ___ UNKNOWN

04 AGENCY PERFORMING INSPECTION (Check all that apply)

☐ A. EPA ☐ B. EPA CONTRACTOR ____ (Name of firm) ☐ C. MUNICIPAL ☐ D. MUNICIPAL CONTRACTOR ____ (Name of firm)
☐ E. STATE ☒ F. STATE CONTRACTOR Engineering-Science (Name of firm) ☐ G. OTHER ____ (Specify)

05 CHIEF INSPECTOR	06 TITLE	07 ORGANIZATION	08 TELEPHONE NO.
James Baker	Hydrogeologist	Engineering-Science	(315)451-9560

09 OTHER INSPECTORS	10 TITLE	11 ORGANIZATION	12 TELEPHONE NO.
Leslie Cordone	Environmental Engineer	Engineering-Science	(315)451-9560
			( )
			( )
			( )
			( )

13 SITE REPRESENTATIVES INTERVIEWED	14 TITLE	15 ADDRESS	16 TELEPHONE NO
James Pendergast	Plant Manager	31 Swann St.	(716)343-7077
			( )
			( )
			( )
			( )
			( )

17 ACCESS GAINED BY (Check one)	18 TIME OF INSPECTION	19 WEATHER CONDITIONS
☒ PERMISSION ☐ WARRANT	0830	site is indoors.

IV. INFORMATION AVAILABLE FROM

01 CONTACT	02 OF (Agency/Organization)	03 TELEPHONE NO.
James N. Baker	Engineering-Science, Inc. (E-S, Inc.)	(315)451-9560

04 PERSON RESPONSIBLE FOR SITE INSPECTION FORM	05 AGENCY	06 ORGANIZATION	07 TELEPHONE NO.	08 DATE (MONTH DAY YEAR)
Leslie Cordone	—	E-S, Inc.	(315) 451-9560	2 28 86

EPA FORM 2070-13 (7-81)

EPA

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 2 - WASTE INFORMATION

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NY	NYD 990774200

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 PHYSICAL STATES *(Check all that apply)*

- ☐ A. SOLID
- ☐ B. POWDER, FINES
- ☐ C. SLUDGE
- ☐ D. OTHER _____ *(Specify)*
- ☐ E. SLURRY
- ☒ F. LIQUID
- ☐ G. GAS

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

TONS _____

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			
OLW	OILY WASTE			
SOL	SOLVENTS			
PSD	PESTICIDES			
OCC	OTHER ORGANIC CHEMICALS			
IOC	INORGANIC CHEMICALS			
ACD	ACIDS			
BAS	BASES			
MES	HEAVY METALS	Unknown		Spilled Chromic Acid entered ground.

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
MES	Chromic Acid	7738-94-5	TK	45-750	MG/L

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)*

ES site visit, 1/86; Pendergast, 1/86; Paratt Wolff, 1984

EPA FORM 2070-13 (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	NYD 990774208

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 ☒ A. GROUNDWATER CONTAMINATION — 02 ☐ OBSERVED (DATE: 1982) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION
Contamination of groundwater was observed in 1982. Cr^{+6} concentrations of 800 mg/L were detected.

01 ☐ B. SURFACE WATER CONTAMINATION — 02 ☐ OBSERVED (DATE: _____) ☒ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION
Groundwater aquifer could be hydraulically connected to Tonawanda Creek.

01 ☐ C. CONTAMINATION OF AIR — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION
no potential. Site is in an enclosed, industrial building. Contaminated area is below the surface only.

01 ☐ D. FIRE/EXPLOSIVE CONDITIONS — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION
Contaminated area is below the ground only.

01 ☐ E. DIRECT CONTACT — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION
Site is in an industrial building. Direct contact by local residents is impossible.

01 ☒ F. CONTAMINATION OF SOIL — 02 ☒ OBSERVED (DATE: 1982) ☐ POTENTIAL ☐ ALLEGED
03 AREA POTENTIALLY AFFECTED: _____ (Acres) 04 NARRATIVE DESCRIPTION
Chromic Acid from a plating bath was spilled onto the ground.

01 ☐ G. DRINKING WATER CONTAMINATION — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION
Local groundwater movement is away from an existing community wellfield and surface water intake.

01 ☒ H. WORKER EXPOSURE/INJURY — 02 ☒ OBSERVED (DATE: 1/23/86) ☐ POTENTIAL ☐ ALLEGED
03 WORKERS POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION
Exposed chromic acid baths in the facility could be contacted by the workers.

01 ☐ I. POPULATION EXPOSURE/INJURY — 02 ☐ OBSERVED (DATE: _____) ☐ POTENTIAL ☐ ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION
not observed.

EPA

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

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
NY	NYD 990774200

II. HAZARDOUS CONDITIONS AND INCIDENTS *(Continued)*

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

not observed

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

not observed

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

not observed

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

not observed.

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

not observed

01 ☒ O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs — 02 ☐ OBSERVED (DATE: 1984) ☐ POTENTIAL ☐ ALLEGED
04 NARRATIVE DESCRIPTION

Hydrogeologic investigation indicated that contaminated groundwater had infiltrated the city sewer system west and northwest of the site.

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

not observed.

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

III. TOTAL POPULATION POTENTIALLY AFFECTED: _____

IV. COMMENTS

Contamination occurred as a result of chromic acid from a plating bath leaking onto and dissolving underlying cinder block supports. Subsequently, any spilled acid came into contact with the soil and entered the groundwater. This prob. took many years.

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

Pendergast, 1/86; E-S site visit, 1/86; Paratt Wolff, 1984; Ecology and Environment, Inc, 1982.

EPA

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

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NY	NYD 990774200

II. PERMIT INFORMATION

01 TYPE OF PERMIT ISSUED (Check all that apply)	02 PERMIT NUMBER	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) SPDES	NY-000 1961	12/1/79	12/1/84	Permit for cooling water discharge.
☐ H. LOCAL (Specify)				
☐ I. OTHER (Specify)				
☐ J. NONE				

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 Industry (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
≈ 4 (Acres)

07 COMMENTS
The facility has a SPDES permit to discharge non-contact cooling water into Tonawanda Creek. Spills at the site occurred inside the plating facility.

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.
Contamination occurred by spillage from a plating bath entering the soil.

V. ACCESSIBILITY

01 WASTE EASILY ACCESSIBLE: ☐ YES ☒ NO

02 COMMENTS
Site is in an industrial building. Chromic acid baths are uncovered and very accessible from inside the building.

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

ES site Visit, 1/86; Pendergast, 1/86; NYSDEC SPDES Permit, 1979.

EPA

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

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NY	NYD 990774200

II. DRINKING WATER SUPPLY

01 TYPE OF DRINKING SUPPLY (Check as applicable)

	SURFACE	WELL
COMMUNITY	A. ☒	B. ☒
NON-COMMUNITY	C. ☐	D. ☐

02 STATUS

ENDANGERED	AFFECTED	MONITORED
A. ☐	B. ☐	C. ☐
D. ☐	E. ☐	F. ☐

03 DISTANCE TO SITE

A. 0.57 (mi)
B. _____ (mi)

III. GROUNDWATER

01 GROUNDWATER USE IN VICINITY (Check one)

☐ 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 16,000

03 DISTANCE TO NEAREST DRINKING WATER WELL 0.57 (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
8 (ft)	West-northwest	8 (ft)	1000 (gpd)	☒ YES ☐ NO

09 DESCRIPTION OF WELLS (Including usage, depth, and location relative to population and buildings)

Community water supply well is located 3000' east of the site. Local ground-water flow in the vicinity of the community well is in the southeastern direction.

10 RECHARGE AREA
☐ YES
☐ NO
COMMENTS

11 DISCHARGE AREA
☐ YES
☐ NO
COMMENTS

IV. SURFACE WATER

01 SURFACE WATER USE (Check one)

☒ 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
Tonawanda Creek	☐	0.6 (mi)
	☐	(mi)
	☐	(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. _____ NO. OF PERSONS	B. _____ NO. OF PERSONS	C. 16,000 NO. OF PERSONS

02 DISTANCE TO NEAREST POPULATION 0.04 (mi)

03 NUMBER OF BUILDINGS WITHIN TWO (2) MILES OF SITE _____

04 DISTANCE TO NEAREST OFF-SITE BUILDING 0.01 (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 in an urban, industrialized area. There are residential sections interspersed with industrial developments near the facility.

EPA

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

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NY	NYD 990774200

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
>20 (ft)	≃ 20 (ft)	

06 NET PRECIPITATION	07 ONE YEAR 24 HOUR RAINFALL	08 SLOPE: SITE SLOPE	DIRECTION OF SITE SLOPE	TERRAIN AVERAGE SLOPE
9 (in)	2.4 (in)	0-3 %	west-northwest	0-3 %

09 FLOOD POTENTIAL

SITE IS IN _____ YEAR FLOODPLAIN

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

11 DISTANCE TO WETLANDS *(5 acre minimum)*

ESTUARINE: A. _____ (mi)

OTHER: B. 0.75 (mi)

12 DISTANCE TO CRITICAL HABITAT *(of endangered species)*

>1 (mi)

ENDANGERED SPECIES: _____

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 (mi)	B. 0.04 (mi)	C. 0.9 (mi)	D. 0.9 (mi)

14 DESCRIPTION OF SITE IN RELATION TO SURROUNDING TOPOGRAPHY

Site is located in a flat area that was formerly a glacial lake bed. Local drainage appears to be to the west-northwest.

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

USGS, 1978; ES site visit, 1/86; USDA, 1969; Ozard, 12/85; US Dept. of Commerce, 1979; US Dept of Commerce, 1963; Pratt Wolf, 1984

EPA

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

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
NY	NYD 990774200

II. SAMPLES TAKEN

SAMPLE TYPE	01 NUMBER OF SAMPLES TAKEN	02 SAMPLES SENT TO	03. ESTIMATED DATE RESULTS AVAILABLE
GROUNDWATER	None		
SURFACE WATER			
WASTE			
AIR			
RUNOFF			
SPILL			
SOIL			
VEGETATION			
OTHER			

III. FIELD MEASUREMENTS TAKEN

01 TYPE	02 COMMENTS
None	

IV. PHOTOGRAPHS AND MAPS

01 TYPE ☐ GROUND ☐ AERIAL

02 IN CUSTODY OF _____ (Name of organization or individual)

03 MAPS ☒ YES ☐ NO

04 LOCATION OF MAPS Engineering-Science, Inc.

V. OTHER FIELD DATA COLLECTED (Provide narrative description)

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

ES site visit, 1/86.

EPA

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

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NY	NYD 980774200

II. CURRENT OWNER(S)

01 NAME	02 D+B NUMBER
US Chrome Corporation	

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
31 Swan St.	

05 CITY	06 STATE	07 ZIP CODE
Batavia	N.Y.	14020

01 NAME	02 D+B NUMBER

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

01 NAME	02 D+B NUMBER

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

01 NAME	02 D+B NUMBER

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

PARENT COMPANY (If applicable)

08 NAME	09 D+B NUMBER

10 STREET ADDRESS (P.O. Box, RFD #, etc.)	11 SIC CODE

12 CITY	13 STATE	14 ZIP CODE

08 NAME	09 D+B NUMBER

10 STREET ADDRESS (P.O. Box, RFD #, etc.)	11 SIC CODE

12 CITY	13 STATE	14 ZIP CODE

08 NAME	09 D+B NUMBER

10 STREET ADDRESS (P.O. Box, RFD #, etc.)	11 SIC CODE

12 CITY	13 STATE	14 ZIP CODE

08 NAME	09 D+B NUMBER

10 STREET ADDRESS (P.O. Box, RFD #, etc.)	11 SIC CODE

12 CITY	13 STATE	14 ZIP CODE

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

01 NAME	02 D+B NUMBER
Tibon Hard Chrome, Inc	

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
31 Swan St.	

05 CITY	06 STATE	07 ZIP CODE
Batavia	N.Y.	14020

01 NAME	02 D+B NUMBER

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

01 NAME	02 D+B NUMBER

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

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

01 NAME	02 D+B NUMBER

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

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)

NYSDEC, 1979; NYSDEC, 1985

EPA

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

I. IDENTIFICATION

01 STATE	02 SITE NUMBER
NY	NYD 990774200

II. CURRENT OPERATOR (Provide if different from owner)

01 NAME	02 D+B NUMBER
US Chrome Corporation	

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
31 Swan Street	

05 CITY	06 STATE	07 ZIP CODE
Batavia	N.Y.	14020

08 YEARS OF OPERATION	09 NAME OF OWNER
7	

OPERATOR'S PARENT COMPANY (If applicable)

10 NAME	11 D+B NUMBER

12 STREET ADDRESS (P.O. Box, RFD #, etc.)	13 SIC CODE

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
Tibon Hard Chrome	

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
31 Swan St	

05 CITY	06 STATE	07 ZIP CODE
Batavia	N.Y.	14020

08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD
20	

PREVIOUS OPERATORS' PARENT COMPANIES (If applicable)

10 NAME	11 D+B NUMBER
Tibon, Inc.	

12 STREET ADDRESS (P.O. Box, RFD #, etc.)	13 SIC CODE
2500 Post Road	

14 CITY	15 STATE	16 ZIP CODE
Fairfield	CT	05430

01 NAME	02 D+B NUMBER

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD

10 NAME	11 D+B NUMBER

12 STREET ADDRESS (P.O. Box, RFD #, etc.)	13 SIC CODE

14 CITY	15 STATE	16 ZIP CODE

01 NAME	02 D+B NUMBER

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE

05 CITY	06 STATE	07 ZIP CODE

08 YEARS OF OPERATION	09 NAME OF OWNER DURING THIS PERIOD

10 NAME	11 D+B NUMBER

12 STREET ADDRESS (P.O. Box, RFD #, etc.)	13 SIC CODE

14 CITY	15 STATE	16 ZIP CODE

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

NYSDEC, 1979; NYSDEC, 1985.

EPA

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

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
NY	NYD 990774200

II. ON-SITE GENERATOR

01 NAME	02 D+B NUMBER
US Chrome Corporation	

03 STREET ADDRESS (P.O. Box, RFD #, etc.)	04 SIC CODE
31 Swan St.	

05 CITY	06 STATE	07 ZIP CODE
Batavia	N.Y.	14020

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)

NYSDEC, 1985.

EPA

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

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
NY	NYD 990774200

II. PAST RESPONSE ACTIVITIES

01 ☐ A. WATER SUPPLY CLOSED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
no

01 ☐ B. TEMPORARY WATER SUPPLY PROVIDED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
no

01 ☐ C. PERMANENT WATER SUPPLY PROVIDED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
no

01 ☒ D. SPILLED MATERIAL REMOVED — 02 DATE 1982 — 03 AGENCY _____
04 DESCRIPTION
Groundwater pumping initiated by US Chrome in 1982.

01 ☐ E. CONTAMINATED SOIL REMOVED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
no

01 ☐ F. WASTE REPACKAGED — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
no

01 ☐ G. WASTE DISPOSED ELSEWHERE — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
no

01 ☐ H. ON SITE BURIAL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
no

01 ☐ I. IN SITU CHEMICAL TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
no

01 ☐ J. IN SITU BIOLOGICAL TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
no

01 ☐ K. IN SITU PHYSICAL TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
no

01 ☐ L. ENCAPSULATION — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
no

01 ☐ M. EMERGENCY WASTE TREATMENT — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
no

01 ☐ N. CUTOFF WALLS — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
no

01 ☐ O. EMERGENCY DIKING/SURFACE WATER DIVERSION — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
no

01 ☐ P. CUTOFF TRENCHES/SUMP — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
no

01 ☐ Q. SUBSURFACE CUTOFF WALL — 02 DATE _____ — 03 AGENCY _____
04 DESCRIPTION
no

EPA

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

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
NY	NYD 990774200

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 1982 — 03 AGENCY _____
04 DESCRIPTION
Chemical/Physical - groundwater is presently pumped and treated. Hexavalent Chromium is reduced with sulfide to the trivalent state and then precipitated with hydroxide. Effluent is discharged to the sewer. Sludge is disposed in a landfill. Treatment occurs in the U.S. Chrome facility.

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

ES site visit, 1/86.

EPA

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

I. IDENTIFICATION	
01 STATE	02 SITE NUMBER
NY	NYD 990774200

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)*

Bosh, 1985

SECTION VI

ASSESSMENT OF DATA ADEQUACY AND RECOMMENDATIONS

ASSESSMENT OF DATA ADEQUACY

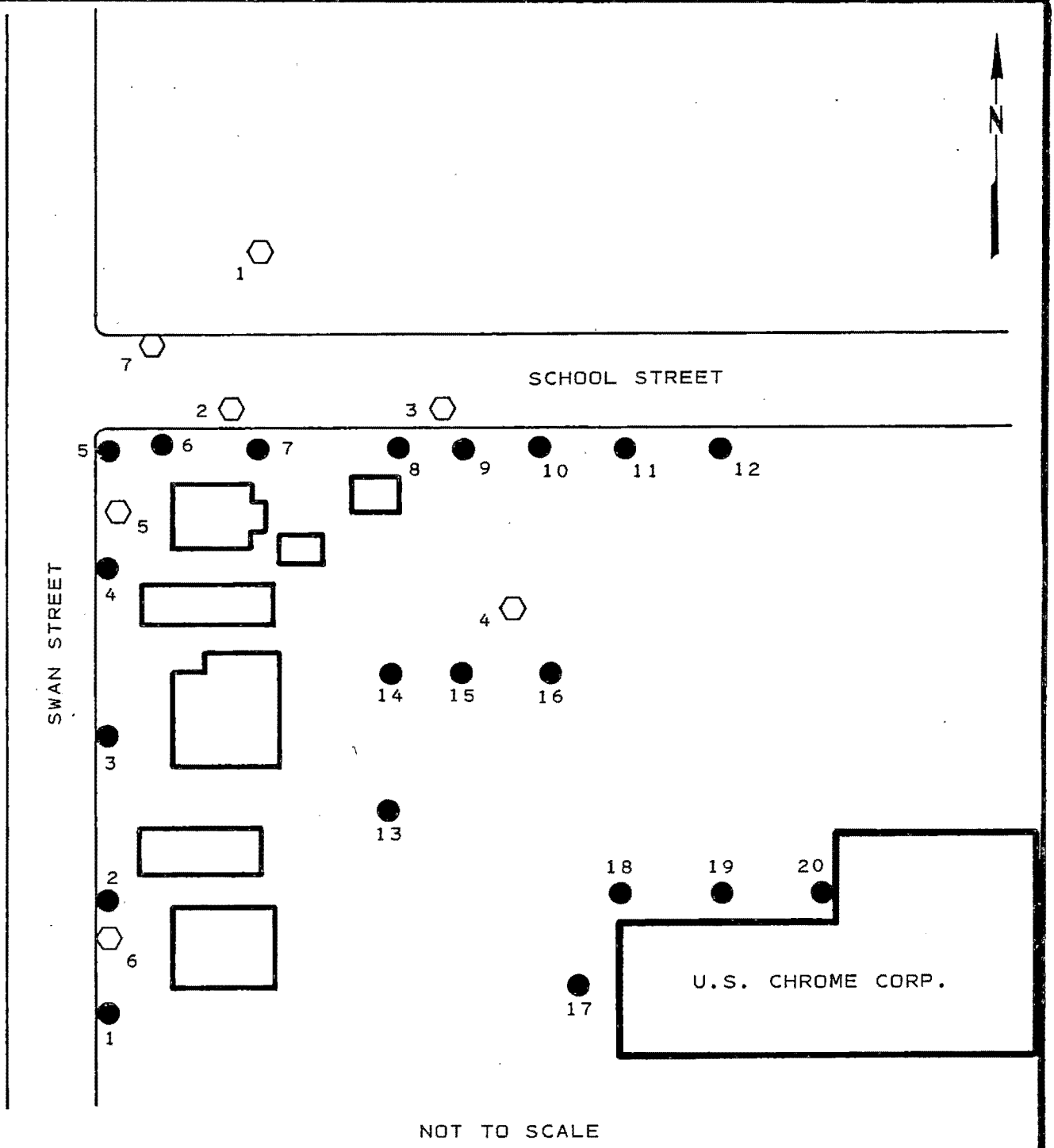
A summary assessment of the adequacy of existing data for completion of the HRS score is presented in Table VI-1. Based on this assessment and the existing remedial action program at U.S. Chrome, no Phase II investigation is recommended at this time. However, continued monitoring of all of the Parratt Wolff wells (PW-1 through PW-8) is recommended. Samples will be analyzed for total and hexavalent chromium by HSL metals methods. In the event that the area of contamination is growing or appears to be moving toward the City of Batavia wellfield, additional monitoring wells are recommended.

TABLE VI-1

ASSESSMENT OF DATA ADEQUACY

HRS Data Requirement	Comments on Data
Observed Release	
Groundwater	Data adequate for HRS score.
Surface Water	Data inadequate to score observed release.
Air	Data inadequate for HRS score.
Route Characteristics	
Groundwater	No further investigation necessary.
Surface Water	Data adequate for HRS score.
Air	Data adequate for HRS score.
Containment	Data adequate for HRS score.
Waste Characteristics	Data adequate for toxicity/persistence - information unconfirmed for waste quantity evaluation.
Targets	Data adequate for HRS score.
Observed Incident	Data adequate for HRS score.
Accessibility	Data adequate for HRS score.

DRAFT



EXPLANATION:

● RECOVERY WELL

⬡ OBSERVATION WELL

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

NEW YORK STATE DEPARTMENT
OF ENVIRONMENTAL CONSERVATION
PHASE I REPORT

PLOT PLAN

U.S. CHROME CORP.

FIGURE IV-1

APPENDIX A

SOURCES CONTACTED

REFERENCES

SOURCES CONTACTED SUMMARY SHEET
U.S. CHROME CORPORATION

Person Contacted/ Location	Telephone #	Date	Information Collected
M. Mehta NYSDEC - Division of Solid & Haz. Waste P.O. Box 57 Avon, NY	(716) 226-2466	11/22/85	Collected general information from site files.
Pat Marshall Roger Waller Rich Renalds US Geological Survey 343 US PO and Court House Albany, NY 12201	(518) 472-2815 (518) 472-2825 (518) 472-2824	12/16/85 12/18/85 12/18/85	Collected and reviewed geological information.
Jim Pendergast U.S. Chrome Corp. 31 Swan St. Batavia, NY 14020	(716) 343-7077	12/11/85- 1/23/86	Arranged site visit. Provided information on site history.
George Squires Genesee County Dept. of Soil Conservation 166 Washington Ave. Batavia, NY 14020	(716) 343-2362	12/19/85	Provided information on local sensitive environments, agricultural lands, and irrigation practices.
Constantine Markellis Genesee County DOH 3837 W. Main St. Batavia, NY 14020	(716) 344-2580	2/26/86	Provided information on potable drinking water supply for the City of Batavia.
Tom Sipolla Batavia Water Filtration Plant Batavia, NY 14020	(716) 343-8180 ext. 258	3/28/86	Provided historical pumping information for the City of Batavia wellfield.

SOURCES CONTACTED SUMMARY SHEET
U.S. CHROME CORPORATION

Person Contacted/ Location	Telephone #	Date	Information Collected
Bob Hannaford NYSDEC - Division of Water 50 Wolf Road Albany, NY 12233	(518) 457-6716	11/22/85	Reviwed SPDES Permit Index to see if any permits were issued to site.
Frank Estabrook NYSDEC - Division of Monitoring & Assessment 50 Wolf Road Albany, NY 12233	(518) 457-2672	11/22/85	Reviewed surface water monitoring locations to see if any were close to site.
Kevin Walters NYSDEC - Division of Environmental Enforcement 50 Wolf Road Albany, NY 12233	(518) 457-4346	11/22/85	Determined that no legal action was presently occurring at site.
Vince Dick NYSDEC - Division of Monitoring & Assessment P.O. Box 57 Avon, NY	(716) 226-2466	12/17/85	Collected and reviewed geologic information.
John Ozard NYSDEC - Division of Fish and Wildlife Delmar, NY 12054	(518) 439-7486	12/16/85	Collected information concerning critical habitats of threatened or endangered species.
Fred Gilbert NYS Soil Conservation James M. Hanley Federal Bldg. Syracuse, NY 13221	(315) 423-5510	11/23/85	County Soil Survey was forwarded.
Mel Hauptman USEPA Region II Federal Building Room 402 New York, NY	(212) 264-7681	12/31/85	Reviewed list of sites to determine EPA Site ID #'s.
Peter Bush NYSDEC - Division of Environmental Enforcement P.O. Box 57 Avon, NY	(716) 226-2466	11/22/85	Reviewed list of sites to determine if legal action has occurred in the past, is in progress and/or scheduled in the near future.

REFERENCES

U.S. CHROME CORPORATION

1. Great Lakes Basin Framework Study (1975), Appendix 3: Geology and Groundwater.

2. Mogg, J. L. (1962). Aquifer Test Analysis City of Batavia, New York.

3. NYSDEC (1979). State Pollutant Discharge Elimination System (SPDES) Permit, 10/22/79.

4. NYS Museum and Science Service (1970), Bedrock Geology Map, Niagara Sheet.

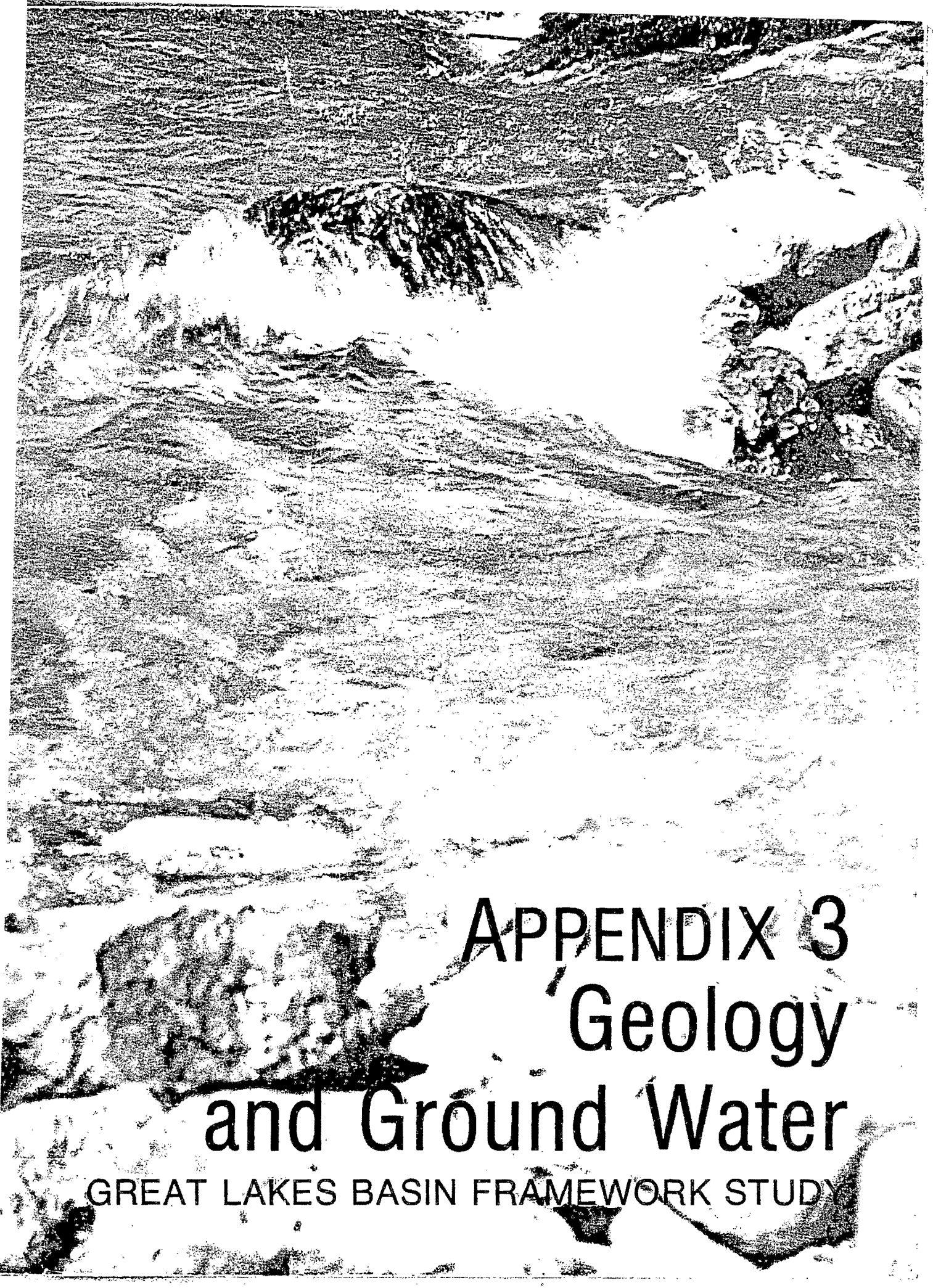
5. NYS Museum and Science Service (1970). Quaternary Geology of New York, Niagara Sheet.

6. Office of the City Engineer (1959). Map of the City of Batavia.

7. Sipolla, T. (1986), Employee of the City of Batavia Water Filtration Plant and Wellfield. Personal Communication, 3/28/86.

8. Sutton, R. G. (1951). Stratigraphy and Structure of the Batavia Quadrangle.

9. USGS (1978). Topographic Map: Batavia North Quadrangle.



APPENDIX 3
Geology and Ground Water

GREAT LAKES BASIN FRAMEWORK STUDY

ıdjacent to stream-recharge sources 3–54). In contrast, River Basin Group ; not have extensive units of good aqui- :erial, and the aquifers are not high- g. Unconsolidated sediments are quite ve in the Adirondack part of River Group 5.3, but little is known of the ex- · thickness of sand and gravel units. nflow, precipitation, and cursory : data indicate a good ground-water po- in these unconsolidated sediments.[70] yields as high as 2,000 gpm are possible best areas. Depths of glacial deposits ghly variable. Greatest thicknesses feet) are known in the Oswego basin. r data are presented in Table 3–13. Fig- -54, 3–56, and 3–58 show that more than ıe Lake Ontario basin probably has a otential for other than domestic yields he unconsolidated sediments.

nical quality of ground water in the un- idated sediment aquifers ranges from o excellent. Quality data in Table 3–14 te that the better water generally oc- n River Basin Group 5.3. Headwater of all regions generally produce water dissolved solids. Iron is the most preva- roblem. Below the headwater areas in ısin, ground water usually comes in con- 'ith carbonate material and becomes in- ngly hard and more mineralized. In the ıee-Oswego areas, sulfate and chloride nts increase markedly in the lowlands : outflow of deep bedrock aquifers con- :es highly mineralized water to shallow 'er systems. Areas where highly :alized waters are known are depicted on 'es 3–54 and 3–56.

:harge potential from precipitation and mflow is excellent. Studies elsewhere in York under similar conditions indicate 4 mgd per square mile of recharge are ble to sand and gravel units. The ıd-water potential has been depicted ·rvatively because of the lack of detailed es. Most of the area of good potential 'ers is within the Adirondack Forest Pre- :.

ıny of the aquifers in unconsolidated sed- .ts receive recharge directly from precipi- n. Runoff from the till-covered mountains appreciably to the recharge. The highest ipitation in the State occurs in River n Group 5.3, approximately half of it in the of snow. This heavy snowfall in most up- areas contributes extensive recharge to ınconsolidated aquifers. In contrast, be- e the lowland areas receive only half as much precipitation and soil permeability is generally low, recharge in the lowlands is much less.

6.3.2 Bedrock Aquifers

There are several significant bedrock aquifers in the Lake Ontario basin (Figures 3–55, 3–57, and 3–59). In some areas these provide the only ground-water source, while in others they are secondary to the overlying unconsolidated sediment aquifers. The bedrock units are significant aquifers only where they intrude into overlying sediments or are exposed. The upper part of these exposed formations makes up the major bedrock aquifer system, and this is considered the upper water-bearing zone. All rock units are shown as a single aquifer on the map for each river basin group, but different water-yielding and chemical quality characteristics make it useful to describe the various units separately.

The youngest rock formations are Devonian shales in the Genesee and Oswego River uplands. Fractures in the shale create an aquifer system capable of yielding water to wells at rates less than 100 gpm (Table 3–13). The chemical quality of the water is good, with hardness the main concern (Table 3–14). Saline water is present at depths greater than approximately 300 feet.

The next major aquifer system occurs in carbonate rocks in the Lower Devonian and Upper Silurian Series. Figures 3–55 and 3–57 show that the carbonates extrude in a narrow band along the north edge of the Appalachian Plateau border. The carbonates extend south, dipping below the Devonian shales, but decreased permeability and the presence of saline water inhibit their potential as aquifers. Well yields reach 500 gpm in the Oswego River basin, where extensive solution of the carbonates has taken place and stream recharge is available. Fifty-gpm wells are more common in most of the area (Table 3–13). Chemical quality of this carbonate-aquifer water is fair to poor, as shown in Table 3–14. Saline water, high in chlorides or sulfates, is a problem in the eastern part of the basin, where it is present at shallow depth (Figure 3–57). Saline water is present elsewhere, but at greater depths. Salinity of the aquifer is caused by upward circulation of water through underlying salt beds. The water is very hard.

Silurian shales (Salina Group) underlying the above-mentioned carbonate rocks are ex-

AQUIFER TEST ANALYSIS

CITY OF BATAVIA, NEW YORK

October, 1962

SUMMARY AND CONCLUSIONS

1. The test data indicate one of the most productive aquifers in western New York state has been encountered. There is no question about obtaining 1,000 gpm wells in the immediate area of the test site.

2. Permanent 1,000 gpm wells at the sites of test wells 12 and 14 should be seriously considered as these wells are already ideally spaced.

3. Optimum well design for the aquifer and the yields suggests 16-inch diameter casings and screens installed in naturally developed wells. At the site of test well No. 12 a screen 15 feet long should be set between the depths of 55 and 70 feet. At the site of test well No. 14 a screen 24 feet long should be set between the depths of 55 and 79 feet.

4. If two 1,000 gpm wells are constructed as recommended above, the drawdown in each would be less than 6 feet at the end of the critical pumping period. The critical pumping period assumes continuous "round the clock" operation of both wells plus the O-AT-KA dairy well (1,200 gpm) for six months and pumping entirely from storage, i.e., no aquifer recharge.

5. In the future additional wells could quite probably be located in the same well field. These could also be 1,000 gpm wells. It would be desirable, however, to locate sites at least 400 feet from the existing wells. A likely location would be about 200 feet east of test well No. 15. A small diameter test hole should be drilled first because the ground water contour map, the logs, and the formation samples indicate geologic variations both horizontally and vertically.

ttachments: General Conditions Pt. II
opies:
PDES File
egion 8, Genesee Co. H.D.
r. Crandall - BMS ✓
r. Adamczyk - BIP
r. Baker - EPA

Facility ID No. : NY-000 1961

Effective Date (EDP) : December 1, 1979

Expiration Date (ExDP) : December 1, 1984

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
STATE POLLUTANT DISCHARGE ELIMINATION SYSTEM (SPDES)
DISCHARGE PERMIT

Special Conditions
(Part I)

18
01 02
20 No

This SPDES permit is issued in compliance with Title 8 of Article 17 f the Environmental Conservation Law of New York State and in compliance with the lean Water Act, as amended, (33 U.S.C. §1251 et. seq.) (hereinafter referred to as the Act").

Tibon, Inc.
1500 Post Road
Fairfield, Connecticut 06430

Refer all correspondence to:
Tibon Hard Chrome, Inc.
31 Swan Street
Batavia, New York 14020

Attn: Mr. James G. Pendergast

.s authorized to discharge from the facility described below:

Tibon Hard Chrome
Chrome Plating Plant
31 Swan Street
Batavia (C), Genesse County

into receiving waters known as:

Tonawanda Creek

Latitude: 42°-59'-41"
Longitude: 77°-10'-37"

(Class C)

in accordance with the effluent limitations, monitoring requirements and other conditions set forth in this permit.

This permit and the authorization to discharge shall expire at midnight of the expiration date shown above and the permittee shall not discharge after the expiration date unless this permit has been renewed, or written authorization is given by the Department. In order to receive authorization to discharge beyond the expiration date, the permittee shall submit such information, forms, and fees as are required by the Department of Environmental Conservation no later than 180 days prior to the expiration date.

by Authority of George K. Hansen, P.E., Chief, P.D.E.S. Permit Section
Designated Representative of Commissioner of the
Department of Environmental Conservation

OCT 12 1979
Date

George K. Hansen
Signature

01-20-2(5/79)Pg.1

GEOLOGIC MAP OF NEW YORK

1970

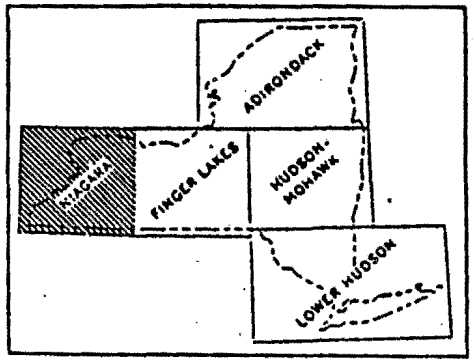
Niagara Sheet

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

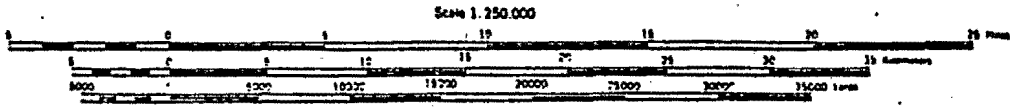
Donald W. Fisher

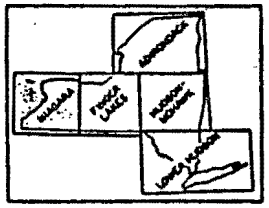
March, 1970

QUATERNARY GEOLOGY OF NEW YORK, NIAGARA SHEET

by Ernest H. Muller

Muller, Ernest H. (1977)
New York State Museum and Science Service
Map and Chart Series Number 28





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INTERVIEW FORM

INTERVIEWEE/CODE Tom Sipolla /

TITLE - POSITION Employee of City of Batavia Water Filtration Plant / Well Field

ADDRESS Water Filtration Plant, City of Batavia

CITY Batavia STATE N.Y. ZIP 14020

PHONE (716) 343 - 8180 ext. 258. RESIDENCE PERIOD _____ TO _____

LOCATION phone interview INTERVIEWER L. Cordone

DATE/TIME 3/28/86 / 1145

SUBJECT: U.S. Chrome Site (pumping at City of Batavia Wellfields)

REMARKS: Tom reviewed records to determine if the city wells were pumped during the period when water level measurements were most likely being made for the Parratt - Wolff study of U.S. Chrome. The following information was provided:

Date (1984)	Water Pumped (MGD)	Date (1984)	Water Pumped (MGD)
2/14	3	2/26	2.5
2/15	3	2/27	1.8
2/16	3	2/28	1.8
2/17	3	2/29	1.9
2/18	2	3/1	1.8
2/19	2	3/2	1.8
2/20	3		
2/21	3		
2/22	2		
2/23	2		
2/24	1.8		
2/25	2		

- Tom also noted that periodic sampling by the state has not shown high levels of chrome in the wellfield groundwater.

I agree with the above interview summary:

Signature/Title:

Comments:

Joe Wallach

STRATIGRAPHY AND STRUCTURE OF THE BATAVIA QUADRANGLE

ROBERT G. SUTTON

Reprinted from the
PROCEEDINGS OF THE ROCHESTER ACADEMY OF SCIENCE
9:348–408—December, 1951

Menteth, Kashong, and Windom, according to Cooper. The Leicester marcasite is added as the top member of the Moscow.

The Leicester marcasite represents the top of the Middle Devonian in western New York. Above it and possibly unconformable with it are the beds of the Genesee Group with a strikingly different sedimentation and fauna. The stratigraphic terminology for the Hamilton Group is that of Cooper with the following exceptions:

1. The Ledyard and Wanakah members of the Ludlowville formation are included as one unit.
2. The contact of the Kashong and Windom is defined upon a limestone zone instead of one of the many *Ambocoelia-Chonetes* zones.
3. The Leicester marcasite (formerly called the "Tully pyrite") is included as the top member of the Moscow formation.

The type locality is at West Hamilton, in Madison County. The formations of the Hamilton outcrop from the Hudson River to Lake Erie and, in general, the thicknesses increase from west to east. The following is a table of thicknesses of the Hamilton, in part from Cooper (1930).

1465 feet at Chenango Valley
670 feet at Cayuga Lake
625 feet at Canandaigua Lake
560 feet in the Livonia Salt shaft
525 feet in the Caledonia Quadrangle
230 feet at Lake Erie

The Hamilton is well exposed in the Batavia Quadrangle. The total thickness of the group is approximately 482 feet. Outcrops are numerous but most of them are small. Therefore a composite section must be made with minor parts of the column not exposed.

Lithology and Fauna—The beds of the Hamilton consist, for the most part, of shales with a few interbedded limestones. The lower part is characterized by dark gray and bituminous shales, grading into progressively lighter beds until the upper ones appear as bluish shales. The limestones form a small percentage of the rock section but are valuable horizon markers. Their persistence across the State served as the basis for Cooper's reclassification.

The lower black shales have a characteristic *Leiorhynchus* fauna (Chadwick, 1933) which reappears above in the black and dark gray shales. The Hamilton limestones also may carry a characteristic fauna so that a repetition of thin limestones serves as a source of confusion in the solution of problems in Hamilton stratigraphy.

Marcellus Formation

The name was first proposed by Hall (1839) to include the shale at Marcellus (Onondaga County) between the Onondaga limestone and the horizon marking the first appearance of the Hamilton fauna.

In 1840, Lardner Vanuxem (1840) further subdivided it. He described the upper Marcellus shales as being less highly colored than the lower shales and showing peculiar concretionary characters. Hall (1843) then admitted the division and stated that the lower part is very black, slaty, and bituminous, containing iron pyrite and concretions. This division is terminated upward by a thin band of limestone, above which the shale is more fissile and gradually passes from black to olive or dark slate color.

Clarke and Luther (1904) subdivided the Marcellus into the Marcellus (lower) and the Cardiff (upper) but their correlations to the west were confused according to Cooper (1930, p. 129), who says:

> "But they fell into confusion because farther west (of the Canandaigua Lake region) the shale below the Stafford is jet-black and the shale above the Stafford is lithologically like the Cardiff. They therefore defined the Cardiff as lying above the Stafford when actually it lies on the Marcellus and is overlain by the Mottville, which is the eastern equivalent of the Stafford, as clearly defined by Smith. Since the Stafford is actually the equivalent of the basal bed of the Skaneateles, it is necessary to exclude this member from the Marcellus."

Therefore, the only representative of the formation in this area is the Oatka Creek member.

Oatka Creek Shale Member

This shale was named by Cooper (1930) as the upper member of the Marcellus from Cayuga Lake westward to Seneca Lake, being overlain by the Mottville member of the Skaneateles shale, and underlain by the Cherry Valley limestone member of the Marcellus. To the west of Seneca Lake it comprises all of the Marcellus.

The type section is below the Main Street bridge over Oatka Creek at LeRoy where the whole section of thirty feet is exposed. In all localities studied by Cooper, it is overlain by the thin Stafford limestone. It thickens to the east and west of the type section.

The upper part of the shale is displayed in an outcrop just to the north of the Fargo and Adams road junction, two and one-half miles southwest of Stafford. Here the Oatka Creek shale and the Stafford limestone occur in the road ditch on the west side of the road and in the northwestward flowing stream, just east of the road. Only the top part of the member is exposed.

Since good exposures of the shale are lacking in the area, the writer studied the outcrop at the type locality which is less than one-half mile east of the quadrangle.

Lithology and Fauna—The lower ten feet consists of a black, bituminous, resistant, blocky, shale and its exposure reveals excellent joint patterns in the resistant beds. The upper twenty feet are less resistant with a few concretionary layers and black, fissile shales which contain

APPENDIX B

UPDATED NYS REGISTRY SHEET