

Return to:
PASSAIC VALLEY SEWERAGE COMMISSIONERS
780 Broad Street
Newark, N. J. 07102

018

000001

Date: April 14, 1972

Plant Ref. No. 1BE0334

WASTE EFFLUENT SURVEY

(For Industries Served by the Passaic Valley Sewerage Commissioners)

Plant Name: Tiffany & Company

Address: 820 Highland Avenue, Newark, N.J. Zip 07104

Person and Title to whom any further inquiries should be directed:

Anthony E. Doknovitch, Office Manager

Phone No.: 483-0140

Number of Employees: 157

Number of Working Days Per Week: 5

Number of Shifts Per Day: 1

Area of Property: Acres, or 110,000 Sq. Ft.

Type of Industry and 4 digit U. S. Standard Industrial Classification No.: 3911

Light manufacturing

Finished Product(s): Silverware

Average Production: 25,000 troy ozs. per month

Raw Materials Used: Silver

Brief Description of Operations: Fine silver is alloyed to make sterling silver. The sterling silver is made into sheet silver to produce Flatware, Hollow Ware, and Fancy Goods.

FNI000001

TIERRA-B-015297

Water received in Gallons (Note: multiply cu. ft. x 7.48)

Purchased water in 1971 from: January through December

1st Quarter 2,030,820

2nd Quarter 1,945,548

3rd Quarter 1,919,368

4th Quarter 2,146,760

Total Purchased 1971: 8,042,496

Well Water

1st Quarter

2nd Quarter

3rd Quarter

4th Quarter

Total well water received in 1971:

River Water

1st Quarter

2nd Quarter

3rd Quarter

4th Quarter

Total river water taken in in 1971:

TOTAL OF ALL WATER RECEIVED IN 1971: 8,042,496

Water Use in 1971:

Water to Product (include evaporated and lost water):

Water to Sanitary Sewer: 8,042,496

Water to Storm Sewer, River or Ditch:

TOTAL WATER USE IN 1971: 8,042,496

Name of River, Stream, or Tributary, and location of storm sewer or ditch outlet to river, stream, or tributary:

FNI000002

TIERRA-B-015298

**ANSWER THE FOLLOWING QUESTIONS ONLY IF THE
PLANT WASTE INCLUDES WASTE ATTRIBUTABLE TO INDUSTRIAL OPERATIONS**

(Note: Analyses should be based on a 24-hour composite sample)

Characteristics of Plant Waste discharged to sanitary or combined sewer, after treatment if any. Indicate units of measure where applicable (e.g. Mg/l).

- a) pH: b) Turbidity:
- c) Temperature: d) Radioactive? Yes No
- e) Solids Concentration:
- 1) Total Solids Volatile Mineral
- 2) Suspended Solids Volatile Mineral
- f) Oil and Grease Concentration:
- 1) Floatable Oils
- 2) Emulsified Oils
- g) Chlorides
- h) Chemical Oxygen Demand (C.O.D.):
- i) 5-day Bio-chemical Oxygen Demand (B.O.D.):
- j) Total organic carbon (T.O.C.):
- k) Metallic Ions—Name and concentration (Important—list each metal in waste, e.g., chromium hex. and triv. Antimony, Lead, Mercury, Copper, Vanadium, Nickel; give concentration and total daily discharge of each metal.)
-
-
- l) Toxic Material—Name and concentration e.g., cyanide salts, etc.):
-
- m) Solvents—Name and concentration:
-
- n) Resins—Name and concentration (Lacquers, Varnishes, Synthetics):
-
- o) Date and time span of sample

Explain hours, method of discharge of waste to Sanitary Sewer and peak rate of flow, e.g., (continuing for 8 hours per day, 5 days per week at 100 gal./day rate) (batch twice a day for 20 minutes at 100 gal./min.) (Continuous 24 hours steady or with peaks at 2 P.M., peak rate 3 M.G.D.) etc.

.....

.....

.....

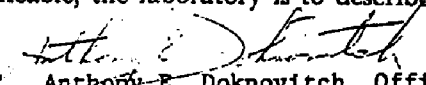
FNI000003

TIERRA-B-015299

Characteristics of Plant Discharge to Storm Sewer, River, or Ditch, after treatment if any.
Indicate units of measure where applicable (e.g., Mg/l).

- a) pH: b) Turbidity:
c) Temperature: d) Radioactive? Yes No
e) Solids Concentration:
 1) Total Solids Volatile Mineral
 2) Suspended Solids Volatile Mineral
f) Oil and Grease Concentration:
 1) Floatable Oils
 2) Emulsified Oils
g) Chlorides
h) Chemical Oxygen Demand (C.O.D.):
i) 5-day Bio-chemical Oxygen Demand (B.O.D.):
j) Total Organic Carbon (T.O.C.):
k) Metallic Ions—Name and concentration (Important—list each metal in waste, e.g., chromium hex. and triv. Antimony, Lead, Mercury, Copper, Vanadium, Nickel; give concentration and total daily discharge of each metal.):
.....
.....
l) Toxic Material—Name and concentration (e.g., cyanide salts, etc.):
.....
m) Solvents—Name and concentration:
.....
n) Resins—Name and concentration (Lacquers, Varnishes, Synthetics):
.....
o) Date and time span of sample:
Do you pretreat any waste before discharge?
If so, describe process and disposal of residue removed:
.....
.....
.....

Certification of Laboratory doing sampling and making analyses shall be given. Procedures shall be those shown in the 13th edition of Standard Methods for the Examination of Water and Wastewater, where applicable. If no procedure is applicable, the laboratory is to describe method and procedure used in analyses.


Anthony E. Doknovitch, Office Manager

Signature and title of person preparing report

FNI000004

TIERRA-B-015300

000012

GERAGHTY & MILLER, INC.

HYDROGEOLOGIC INVESTIGATION AT THE
TIFFANY & CO. FACILITY,
ROCKAWAY, NEW JERSEY

May 1967

Geraghty & Miller, Inc.
7 Atlantic Street
Rockaway, New Jersey 07866

FNI000101

TIERRA-B-015301

GERAGHTY & MILLER, INC.

HYDROGEOLOGIC INVESTIGATION AT THE

TIFFANY & CO. FACILITY,

NEWARK, NEW JERSEY

INTRODUCTION

In January 1987, Geraghty & Miller, Inc. was retained by Tiffany & Co. to carry out a hydrogeologic investigation at the Tiffany & Co. Facility in Newark, New Jersey; the location of the facility is shown on Figure 1. The investigation was carried out in cooperation with the New Jersey Department of Environmental Protection (NJDEP) in compliance with the Environmental Cleanup and Recovery Act (ECRA); the ECRA case number is 87-257. The focus of the investigation was on ground-water flow and quality conditions in the bedrock aquifer system underlying the site.

GERAGHTY & MILLER, INC.

-3-

Five (5) monitoring wells were developed after installation by pumping the wells with a centrifugal pump until the water was found to be clear and free of silt. A sixth well (MW-6) was developed after installation with compressed air from the drilling rig.

The monitoring wells were surveyed on February 17, 1987 by Burke, McDonald and Watson, land surveyors, of Bloomfield, New Jersey. The elevations of the ground surface, protective steel casings, and PVC casings for all six wells are provided in Table 1. Water levels were measured in the six (6) monitoring wells on February 17, 1987 and February 1, 1987.

Ground-Water Sampling

On February 23, 1987, water samples were collected from the six (6) Tiffney & Co. monitoring wells. The protocol used to collect water samples from the monitoring wells is presented in Appendix B. All water samples were analyzed for volatile organic compounds (VOCs) (+25 peaks), base/neutral extractable compounds (+25 peaks), metals, cyanide, phenols, and total petroleum hydrocarbons. Water samples collected from wells MW-1, MW-2, and MW-6 were also analyzed for acid extractable compounds.

As a quality assurance measure, a laboratory-blind, duplicate sample was prepared at well MW-1 (labeled MW-6), and was analyzed for VOCs and total petroleum hydrocarbons. A field blank was also prepared to verify the quality of field decontamination methods between wells. The field blank was prepared by pouring distilled

-4-

GERAGHTY & MILLER, INC.

water through the sampling bailer, directly into a sample container. This field blank was labeled MB-7, and was analyzed for VOCs and total petroleum hydrocarbons. A trip blank accompanied the empty vials from the laboratory to the site and the filled vials from the site to the laboratory; this trip blank was analyzed for VOCs.

Table 3: Concentrations of Metals, Cyanide, and Phenols in Tiffany & Co. Monitoring Wells

Parameter	HW-1	HW-2	HW-3	HW-4	HW-5	HW-6
Arsenic	1.8(J)					
Cadmium				7.0	7.0	10.0
Lead	2.0					7.4
Mercury						0.2
Nickel	111	81.0	99.0			
Silver				7.0		
Thallium				2.3		
Zinc	313(B)	13.0(B)	20.0(B)	0.0(B)	0.0	24.0
Cyanide						
Phenols						

Notes:

Blank space indicates none detected.

Analysis performed by SwissTech Research Station, New Jersey.

All concentrations in micrograms per liter (ug/l).

J = Mass spectral data indicates the presence of a compound that meets the identification criteria. The result is less than the specified detection limit, but greater than zero. The concentration given is an approximate value.

B = The analyte was found in laboratory blank as well as the sample.

This indicates possible laboratory contamination of the environmental sample.

J1102811000.



Table 4: Concentrations of Volatile Organic Compounds in Tiffany & Co. Monitoring Wells

Parameter	(Blind MW-1 Replicate)		MW-2	MW-3	MW-4	MW-5	MW-6	Field Blank MW-7	Trip Blank
	MW-1	MW-8							
Tetrachloroethane	4.3(J)	5.9	9.1	734		2.3(J)	10.6		
1,1-Dichloroethane	4.0(J)		13.5						
1,1-Dichloroethane	.7(J)		10.5						
trans, 1-2-Dichloroethane	42	34.6	750	.0(J)	47.9	300	42.7		
Isopentane	31.5	10.1							
Methylene chloride	1.0(J)	3.1(J)	2.2(J)	1.0(J)	2.0(J)		1.0(J)	2.0(J)	1.0(J)
Toluene	1.3(J,B)	2.3(J,B)	1.1(J,B)			1.2(J,B)		1.2(J,B)	
1,1,1-Trichloroethane	7.7	11.3	10.1		2.1(J)		16.7		
Trichloroethane	20.4	24.3	220	3.5	71.3	7.9	64.9		
Vinyl Chloride			4.0(J)		3.3(J)				
Chloroform						10.7			
Benzene									
Number of tentatively identified compounds	8	7				6			

Notes:

Blank space indicates none detected.

Analysis performed by Envirotech Research Station, New Jersey.

All concentrations in micrograms per liter (ug/L).

J = Mass spectral data indicates the presence of a compound that meets the identification criteria. The result is less than the specified detection limit, but greater than zero. The concentration given is an approximate value.

B = The analyte was found in laboratory blank as well as the sample.

This indicates possible laboratory contamination of the environmental sample.

11000011000.



FNI000106

TIERRA-B-015306

Table 3: Concentration of Base/Neutral Extractable Organic Compounds and Total Petroleum Hydrocarbons in Tiffney & Co. Monitoring Wells

Parameter	(Blind MW-1 Replicate)		MW-2	MW-3	MW-4	MW-5	MW-6	MW-7
	MW-1	MW-8						
Naphthalene	23.2		0.2(J)			.4(J)	.9(J)	
Di-n-octyl phthalate	21.2(B)		23.6(B)	64.6(B)	66.6(B)	9.7(J,B)	63.7(B)	
Diethylphthalate	.3(J)			0.3(J)	.4(J)		.3(J)	
Dibutyl phthalate	2.0(J,B)		2.4(J,B)	1.0(J,B)	2.2(J,B)	2.7(J)		
Bis (2-ethylhexyl) phthalate	1.9(J,B)		3.9(J,B)	.0(J,B)	2.0(J,B)	3.1(J,B)	2.6(J,B)	
Benzene (a) pyrene	0.2(J)							
1,8-Dichlorobenzene			1.7(J)					
Acenaphthene			1.1(J)			1.0(J)		
Fluoranthene			0.4(J)			0.1(J)	2.0(J,B)	
Fluorenone			.1(J)					
Pyrene			1.2(J)			.5(J)		
Butyl benzyl phthalate				.3(J,B)	.3(J,B)			
Anthracene						.1(J)		
Number of tentatively identified compounds	25		20	22	25	25	12	
Total Petroleum Hydrocarbons		12.4						

Notes:

Blank space indicates none detected.

MW-7 (field blank) analyzed for total petroleum hydrocarbons, but not for base/neutral extractable organic compounds.

Analysis performed by Envirotech Research Station, New Jersey.

All concentrations in micrograms per liter (ug/L), except for total petroleum hydrocarbons, in milligrams per liter (mg/L).

J = Mass spectral data indicates the presence of a compound that meets the identification criteria. The result is less than the specified detection limit, but greater than zero. The concentration given is an approximate value.

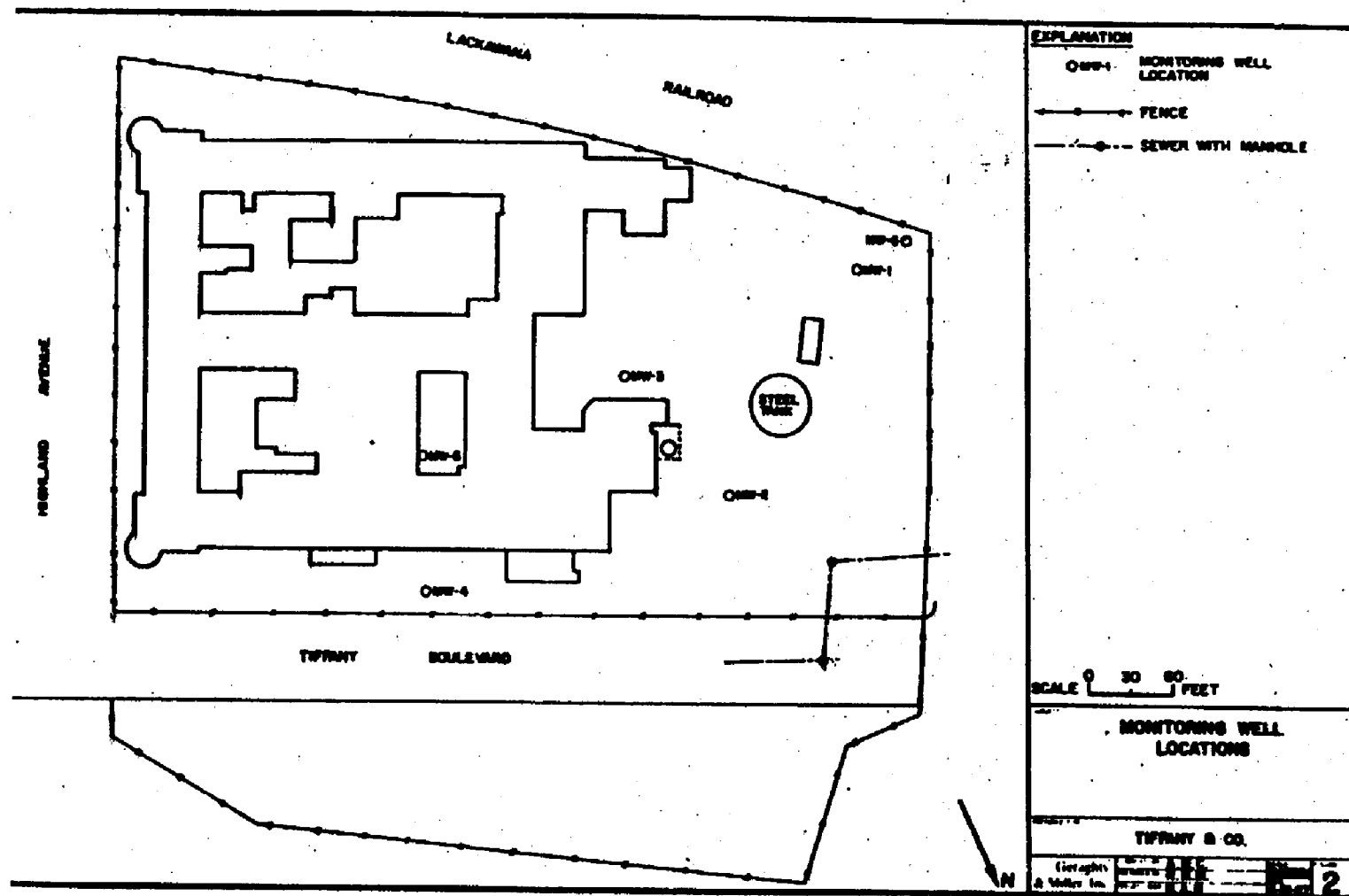
B = The analyte was found in laboratory blank as well as the sample. This indicates possible laboratory contamination of the environmental sample.

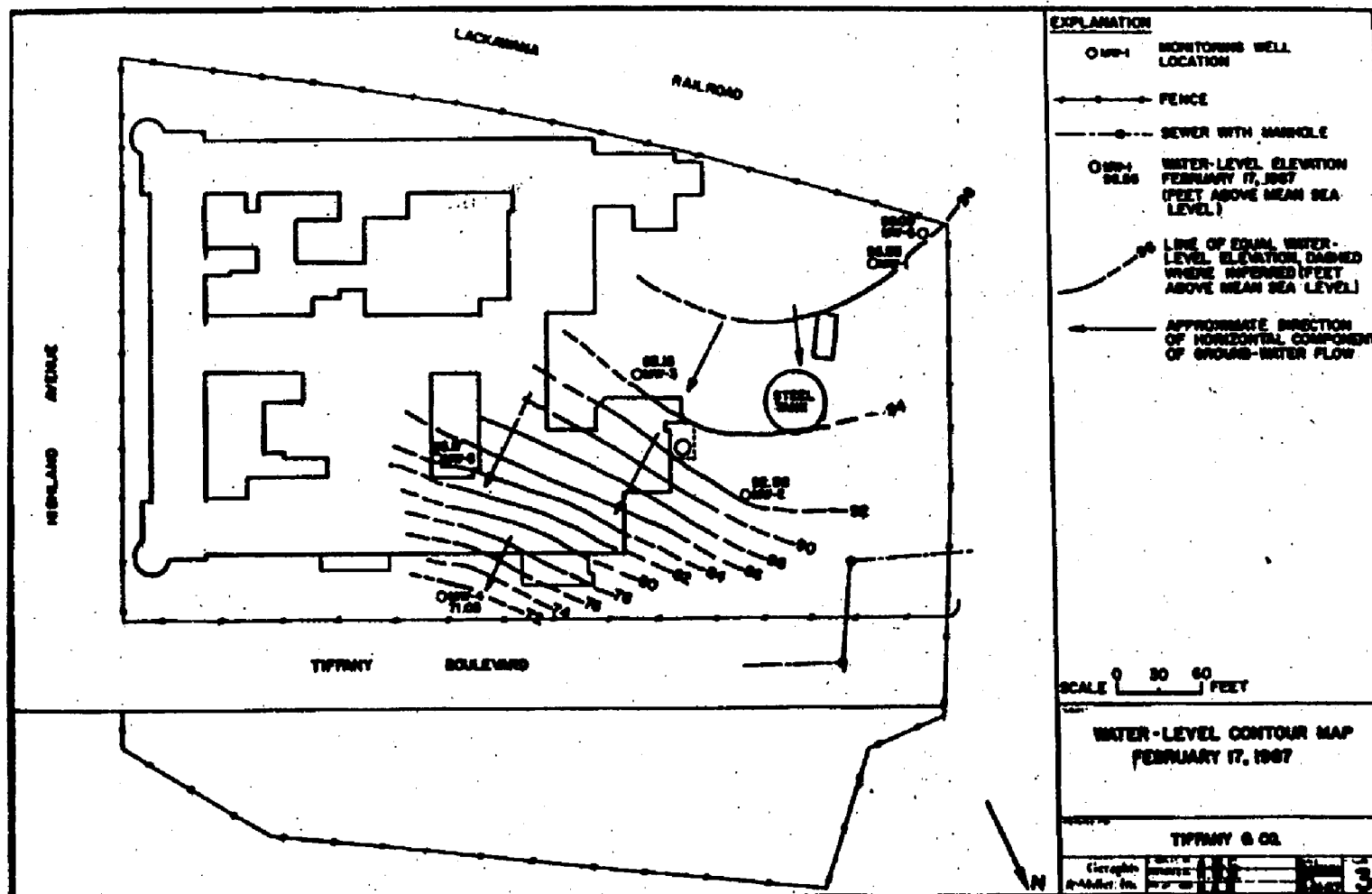
3/15/92/MSL

**GERAGHTY
& MILLER, INC.**
Ground-Water Consultants

FNI000107

TIERRA-B-015307





FN1000109

REPORT UPON

OVERFLOW ANALYSIS

TO
PASSAIC VALLEY SEWERAGE COMMISSIONERS

PASSAIC RIVER OVERFLOWS

VERONA AVENUE NEWARK
NPDES. NO. 028-N-001

1976

ELSON T. KILLAM
Environmental and Hydraulic Engineers

ASSOCIATES, INC.
40 HESSE STREET MILLBURN NEW JERSEY 07041

FNI000417

TIERRA-B-015310

PASSAIC VALLEY SEWERAGE COMMISSIONERS

PASSAIC RIVER OVERFLOWS

VERONA AVENUE, NEWARK
NPDES NO. 028/N-001

TABLE OF CONTENTS

<u>Overflow Data Extract</u>	<u>Page</u>
Chamber Location and Description	1
Area Served and Dry Weather Flow	5
Storm Water Overflows	7
Storm Water Overflow Characteristics	13
APPENDIX	15

List of Illustrations

Plate A Plan and Profile	2
Plate B Contract Drawings	3
Plate C Schematic	4
Plate D Plan of Collection System	6
Table 1 Overflow Observations	8a
Plate E Average Rainfall Intensity vs. Rainfall Duration	10
Plate F Maximum Rainfall Intensity vs. Peak Overflow Rate	12

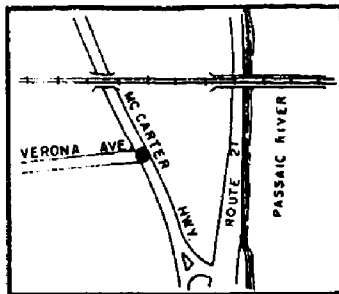
OVERFLOW DATA EXTRACT

VERONA AVENUE OVERFLOW CHAMBER
NPDES NO. 028/N-001
NEWARK

Chamber Location and Description

Overflow Chamber Status:	Active
Overflow to:	Passaic River
Character of District Served:	primarily residential with some (22 percent) industrial flow
Overflow Location (See Plate A):	in southwest corner of intersection of Riverside Avenue (McCarter Highway) and Verona Avenue
District Outlet Sewer (See Plates A and B):	56" diameter brick sewer
Outfall to River (See Plates A and B):	72" x 55" horseshoe brick sewer
Outfall Condition:	clear of debris and functioning
Tidal Effects:	some tidal intrusions noted
Surcharge Effects:	surcharge observed*
Overflow and Regulator Operation (See Plates B and C):	Under normal dry weather flow conditions, the flow is diverted to the PVSC interceptor via the regulator. During periods of rainfall, a portion of the combined flow enters the interceptor, with the balance overflowing the stop logs and being discharged through the outfall line into the Passaic River.

*due to capacity limitations and/or tide gate closure during high tide conditions



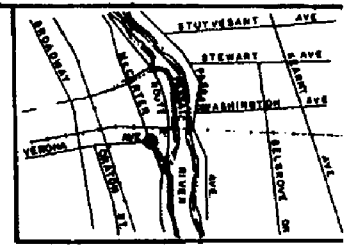
LOCATION PLAN
SCALE IN FEET
0 200 400

NOTE:

ALL SIDE PIPELINES EXCEPT PVSC
MAIN INTERCEPTOR ARE OMITTED IN
PROFILE FOR CLARITY

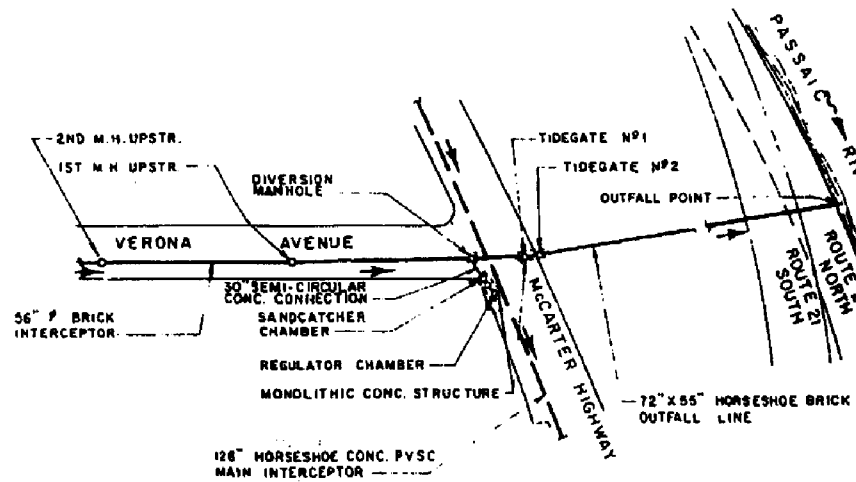
LEGEND

- DIRECTION OF FLOW
- S.C. = SAND CATCHER
- T.G. = TIDE GATE
- UP STR. = UP STREAM
- DN STR. = DOWN STREAM
- N.T.S. = NOT TO SCALE
- = OVERFLOW LOCATION



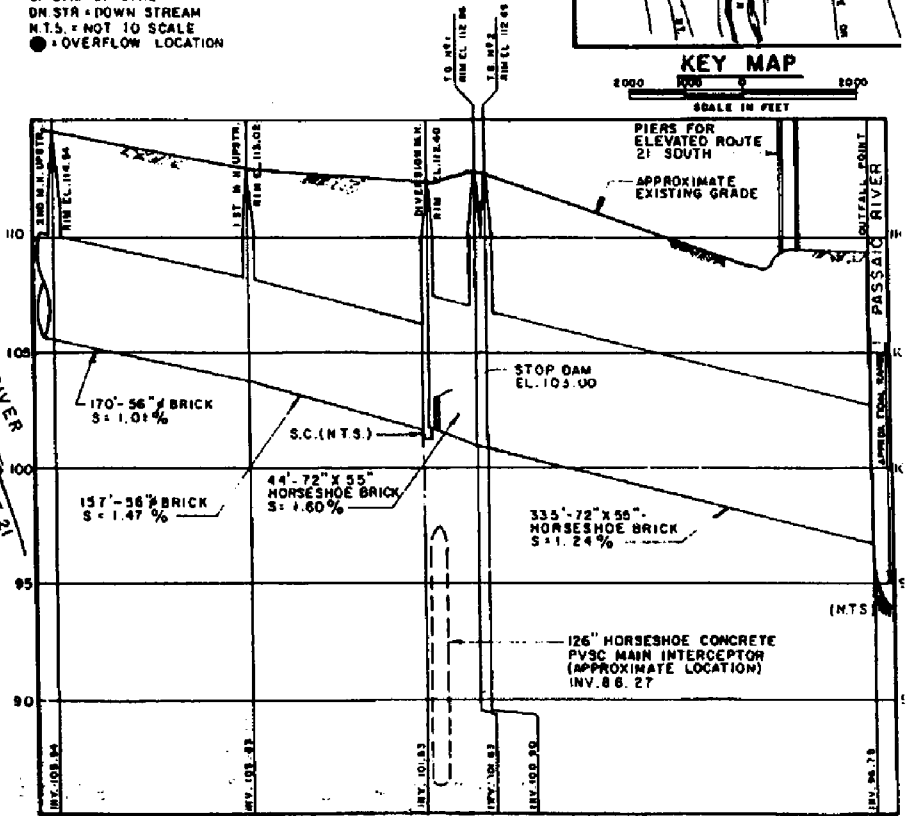
KEY MAP

SCALE IN FEET
0 1000 2000



PLAN

SCALE IN FEET
0 50 100

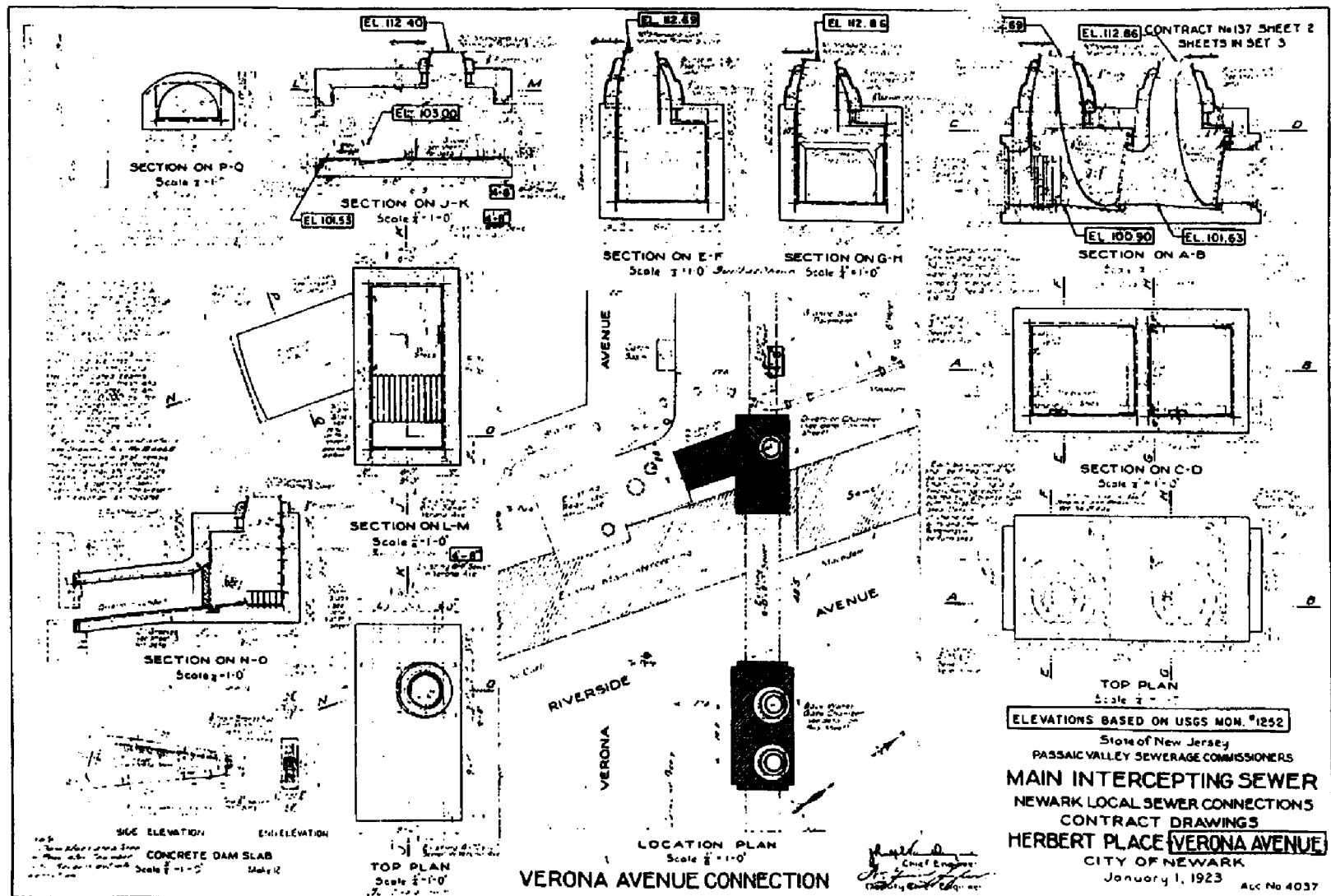


PROFILE

HORIZONTAL SCALE IN FEET
0 50 100
VERTICAL SCALE IN FEET
0 5 10

PASSAIC VALLEY SEWERAGE COMMISSIONERS
OVERFLOW CHAMBER NO. 02B/N-001
VERONA AVENUE, NEWARK
PLAN AND PROFILE
ELSON F. WILLIAM ASSOCIATES, INC.
Civil and Hydraulic Engineers

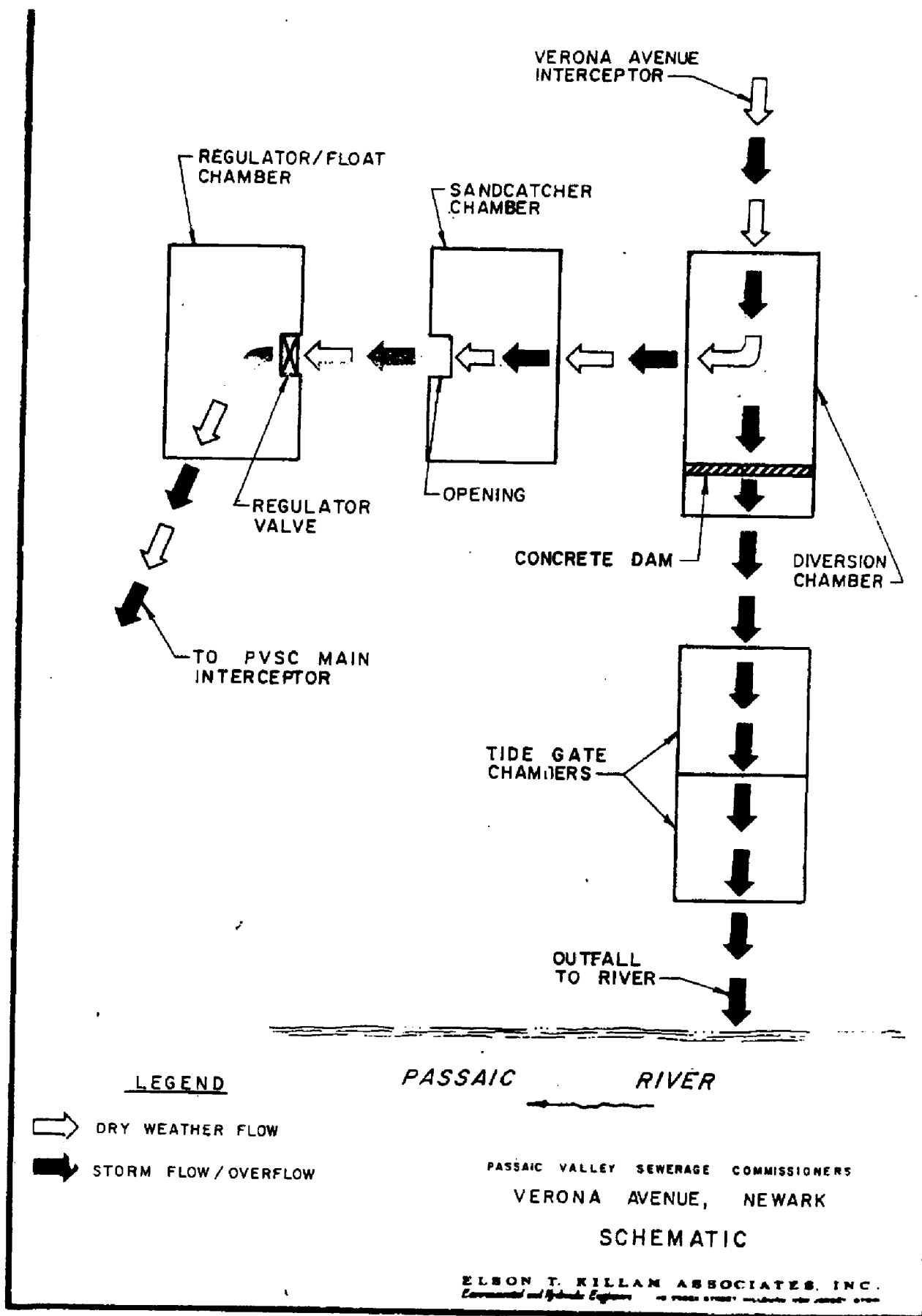
(3)



FN1000421

PIATE B

TIERRA-B-015314



(4)

PLATE C

FNI000422

TIERRA-B-015315

ELSON T. KILLAM ASSOCIATES, INC.

VERONA AVENUE OVERFLOW (NPDES NO. 028/N-001) (Cont'd)

Condition of Regulator: appears inoperable

Special Actions Required: none

Overflow Stop Log/D.
Condition: stop dam located just beyond diversion chamber at entrance to outfall line

Tide Gate Condition: both gates leaking

Note:

During the investigation, the Overflow chambers were examined, verifying information and dimensions pertinent to this study. The verified information has been recorded on Plate B (See boxed annotations).

Area Served and Dry Weather Flow

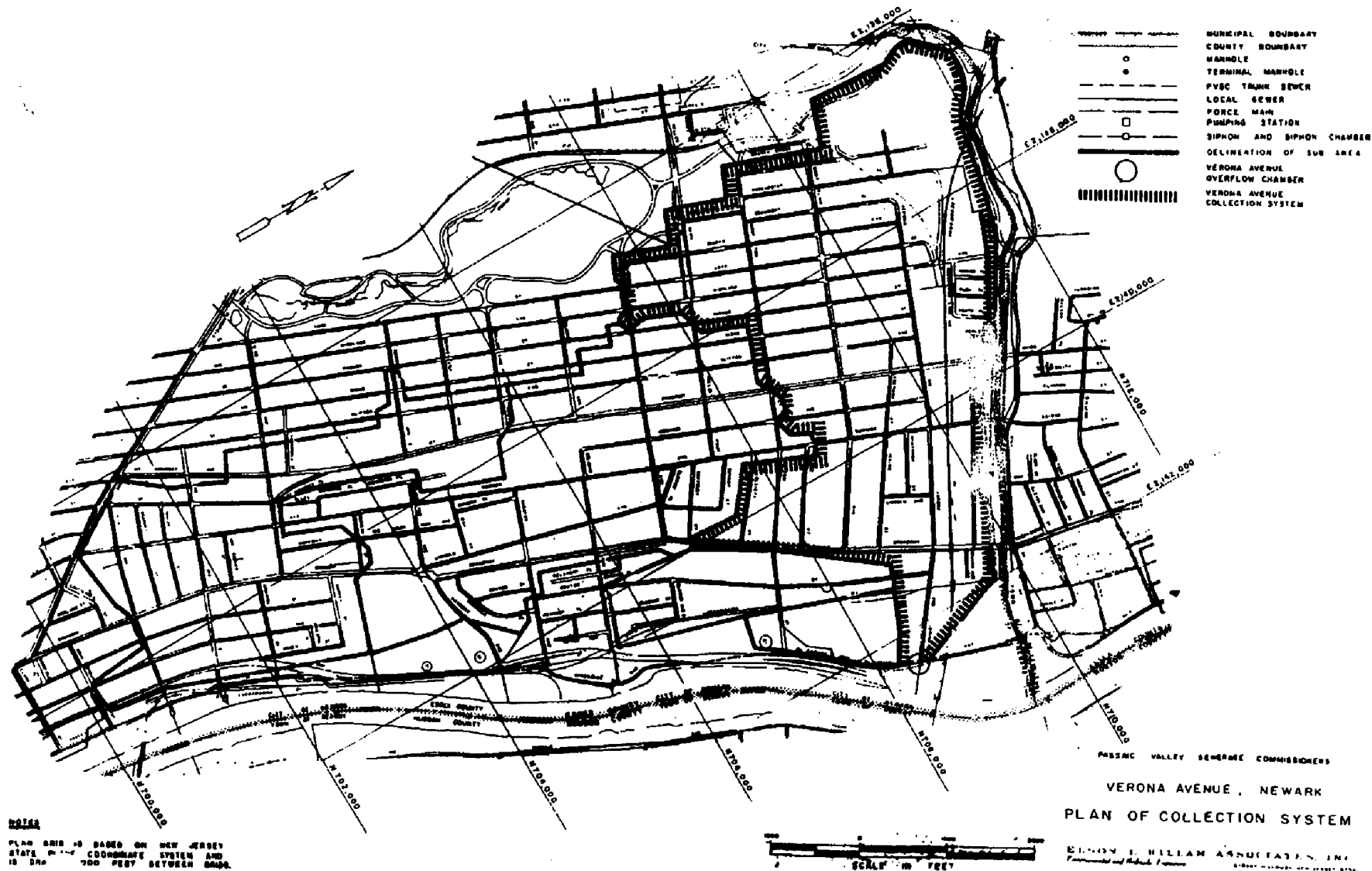
Combined Area Served (See Plate D): 0.573 square miles - 367 acres

Average Daily Flow
Seasonal Dry Weather: 1.59 MGD
Seasonal Wet Weather: 2.28 MGD

Estimated Combined Flow to Produce an Overflow: 19.0 MGD

Approximate Length of Combined Sewers Serving District: 56,800 linear feet

FN1000424



TIERRA-B-015317

VERONA AVENUE OVERFLOW (NPDES NO. 028/N-001) (Cont'd)

**Breakdown of Combined
Sewers:**

<u>Size Range</u>	<u>Linear Feet</u>
8" - 20" diameter	41,000
22" - 30" diameter	10,500
46" - 55" diameter	1,300
Egg shaped, ovals, rectangles varying in size from 24" x 36" to 40" x 60"	4,000

Storm Water Overflows

Flow Measurement and
Sampling Equipment
Installed in:

Diversion (manhole) Chamber

Samples Collected:

Four 125-ml. samples each 3.75 minutes,
compositing a 500-ml. sample each
15-minute period.

Activation of Sampler:

upon flow over stop logs/dam

Period of Observation:

December, 1974 through June, 1975

No. of Rainfall Occasions
During Period:

50

No. of Overflows Observed:

36

No. of Meter Installations
During Overflows:

25

No. of Overflows Recorded
During Period:

16

Note: See Table 1

Table 1 presents pertinent data
regarding rainfall characteristics,
overflow measurements, and waste-
water quality observed.

TABLE 1
OVERFLOW OBSERVATIONS

VERONA AVENUE
NEWARK, NEW JERSEY

NPDES No. 028/N-001

Rain Date	RAINFALL				OVERFLOW **				SAMPLING - WATER QUALITY															
	Amount (In.)	Duration (Hrs.)	Average	Maximum	Duration (Hrs.)	Peak Rate (MGD)	Average	Volume (MG)	Sampling Duration (Hrs.)	Number of Samples	TSS			COD			BOD							
			Intensity (In/Hr.)	Intensity (In/Hr.)			Rate (MGD)				1st	Max	Min	Avg	1st	Max	Min	Avg	1st	Max	Min	Avg		
1-1	0.37	11.00	0.034																					
1-6/7	0.55	12.00	0.046	0.09	3.20/-	7.5/-	3.6/-	0.5/-																
1-8	0.05	1.00	0.050	0.05		No Overflow																		
*1-9	0.77	9.50	0.076	0.16	4.00/-	15.2/-	6.7/-	1.1/-																
1-11	0.12	9.00	0.013																					
1-13	0.77	16.00	0.084						5.00	20	528	572	100	297.5	982	1220	218	586.1	285	820	105	294.0		
1-18	0.73	6.00	0.122																					
1-19/20	0.30	16.00	0.019	0.07		No Overflow																		
1-25	0.64	13.50	0.047																					
*1-29	0.54	8.00	0.068	0.12	5.90/-	9.8/-	4.2/-	1.0/-																
2-5/6	0.48	13.00	0.037																					
2-12	0.62	7.00	0.089																					
2-19	0.15	2.00	0.075																					
2-23	0.40	3.50	0.114																					
2-24	1.15	22.00	0.052						0.75	3	352	800	352	609.3	330	1281	330	950.7	90	684	90	332.7		
3-12	0.62	6.50	0.095	0.26	7.25/-	20.3/-	7.3/-	2.2/-	5.75	23	740	740	216	308.3	937	982	255	486.3	311	311	81	162.8		
*3-14	0.40	9.00	0.044	0.15	3.25/-	3.2/-	1.2/-	0.2/-																
3-19/20	1.40	23.00	0.061	0.20	6.38/-	16.2/-	7.9/-	2.1/-																
3-21	0.05	2.00	0.025																					
3-24	0.19	8.75	0.022																					
3-29	0.07	1.00	0.070																					
3-30	0.38	4.50	0.084	0.18	2.62/-	10.5/-	3.6/-	0.4/-																
4-3	0.75	6.00	0.125	0.23	5.50/-	14.2/-	5.6/-	1.3/-	5.25	21	752	752	48	202.9	1864	1864	104	344.0	645	645	56	184.9		
4-15	0.10	-	-			No Overflow																		
4-16	0.04	1.00	0.040	0.04		No Overflow																		
4-24	0.68	6.00	0.113	0.21	2.62/-	11.5/-	4.7/-	0.5/-																
4-24/25	0.64	9.00	0.071	0.14	2.37/-	6.0/-	2.4/-	0.2/-	1.25	5	110	110	10	69.9	396	360	396	930.0	107	403	107	240.2		
4-25/26	0.35	7.50	0.047	0.09	1.00/-	1.5/-	0.7/-	Neg. /-																
5-1	0.06	4.00	0.015	0.03		No Overflow																		
5-2	0.12	0.75	0.160	0.16	1.37 /-	7.5 /-	2.7/-	0.2/-																
5-4/5	1.05	25.75	0.041	0.14	4.42 /-	5.5 /-	1.5/-	0.3/-																
5-6	0.21	1.20	0.175	0.28	0.75/-	14.2 /-	3.9/-	0.1/-																
5-7	T	-	-			No Overflow																		
5-12/13	0.47	5.75	0.082						2.00	8	16	16	6	11.0	1054	1054	501	690.9	382	382	114	268.1		
5-13	1.05	4.50	0.233																					
5-16	0.63	5.17	0.122	0.20	3.25/-	8.1/-	2.9/-	0.4/-																
5-21	0.05	2.00	0.025																					
5-25	0.32	1.75	0.183																					
5-30	0.22	8.75	0.025																					
5-31/6-1	1.60	12.00	0.133																					
6-2	0.06																							
6-5	0.18	1.50	0.120																					

(ba)

TABLE 1
OVERFLOW OBSERVATIONS

NPDES No. 028/N-001

VERONA AVENUE
NEWARK, NEW JERSEY

(CONTINUED)

RAINFALL					OVERFLOW **			SAMPLING - WATER QUALITY												
Rain Date	Amount (In.)	Duration (Hrs.)	Average Intensity	Maximum Intensity	Duration (Hrs.)	Peak Rate (MCD)	Average Rate (MCD)	Volume (MC)	Sampling Duration (Hrs.)	Number of Samples	TSS			COD			BOD			
			(In/Hr.)	(In/Hr.)							1st	Max	Min	Avg	(mg/l)	1st	Max	Min	Avg	(mg/l)
6-5/6	1.60	11.00	0.145	0.96																
6-6	0.57	1.67	0.342	0.96																
6-12/13	1.85	25.00	0.074	0.15																
6-16	0.10	1.00	0.100	0.10																
6-19	0.81	0.63	1.279	2.24																
6-24	0.36	1.25	0.288	0.64																
6-28	0.75	2.30	0.326	1.91	0.66/-	+80.0/-	53.3/-	1.5/-												
6-29	0.45	0.67	0.675	0.83																

* Tide Effect; Tidal levels higher than stop plank elevation caused tide gates to remain closed during part of the rainfall, resulting in only a partial overflow to river.

+ Estimated Peak Overflow Rate - Surcharge Condition

** Overflow with regulator valve opened/Overflow with regulator valve closed.

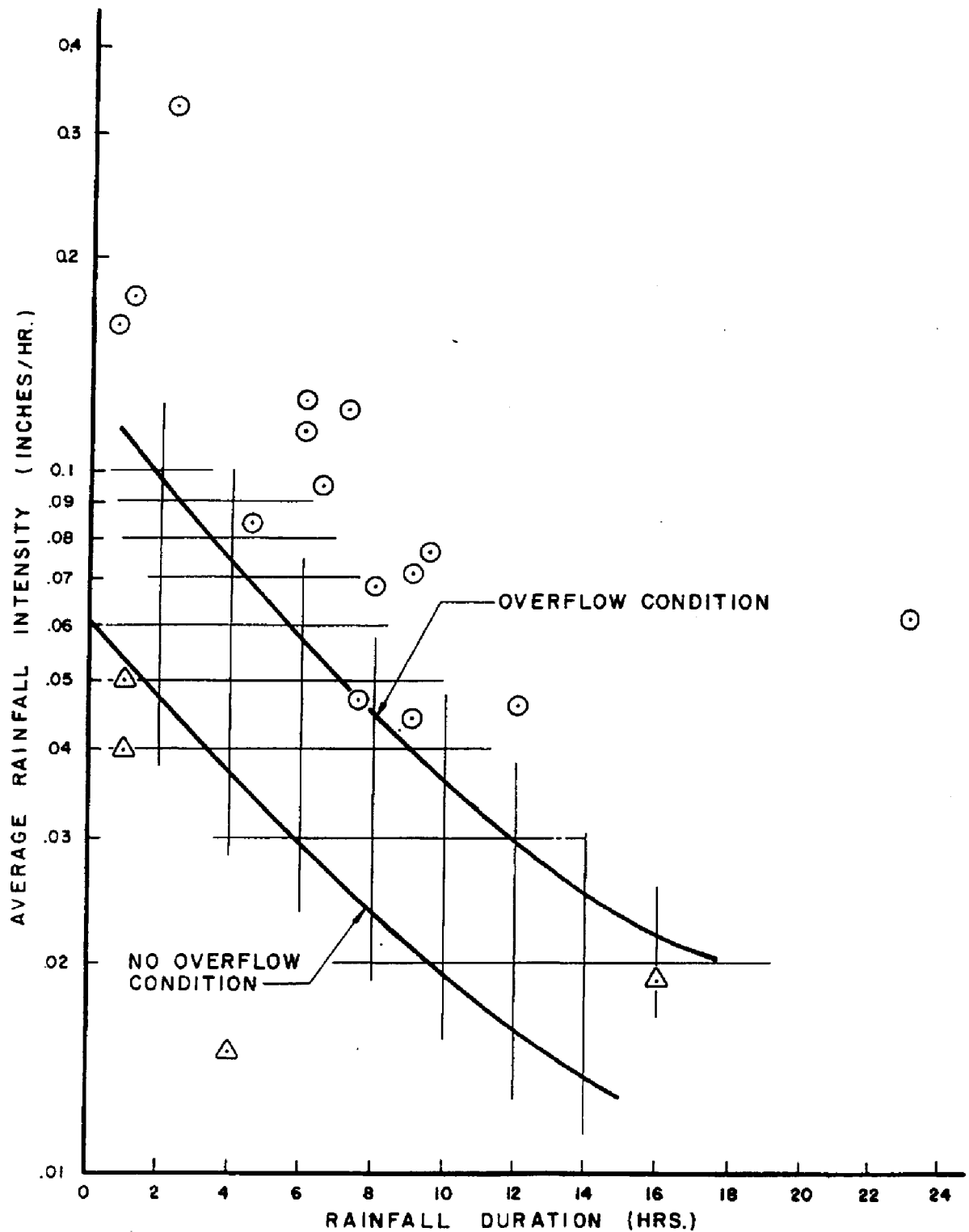
(88)

VERONA AVENUE OVERFLOW (NPDES NO. 028/N-001) (Cont'd)

Range of Rainfall Observed:	Trace-1.85 inches
Range of Rainfall Duration:	0.63-25.75 hours
Range of Average Rainfall Intensity:	0.013-1.279 inches per hour
Range of Average Rainfall Intensity vs. Duration producing no overflow (Table 1 and Plate E):	0.050 inches/hour for 1.00 hour - 0.019 inches/hour for 16.00 hours
Range of Average Rainfall Intensity vs. Duration producing an overflow (Table 1 and Plate E):	0.160 inches/hour for 0.75 hours- 0.047 inches/hour for 7.50 hours
Estimated Time of Concentration (Tc) to Overflow Chamber:	30 minutes
Range of Maximum Rainfall Intensity (i.e., during Tc) producing an overflow (Table 1):	0.09-1.91 inches per hour

Note: Overflow Prediction

Plate E presents the relationship of Average Intensity vs. Duration of Rainfall to describe conditions of overflow. The curve indicates a range of Intensities vs. Duration for which an overflow might be expected to occur.



LEGEND

- OVERFLOW
- △ NO OVERFLOW

PASSAIC VALLEY SEWERAGE COMMISSIONERS
 VERONA AVENUE, NEWARK
 AVERAGE RAINFALL INTENSITY
 VS.
 RAINFALL DURATION

ELSON T. KILLAM ASSOCIATES, INC.
 Environmental and Hydraulic Engineers 40 EGGSTON STREET, MILLBURN, N.J. 07041-0704

ELSON T. KILLAM ASSOCIATES, INC.

VERONA AVENUE OVERFLOW (NPDES NO. 028/N-001) (Cont'd)

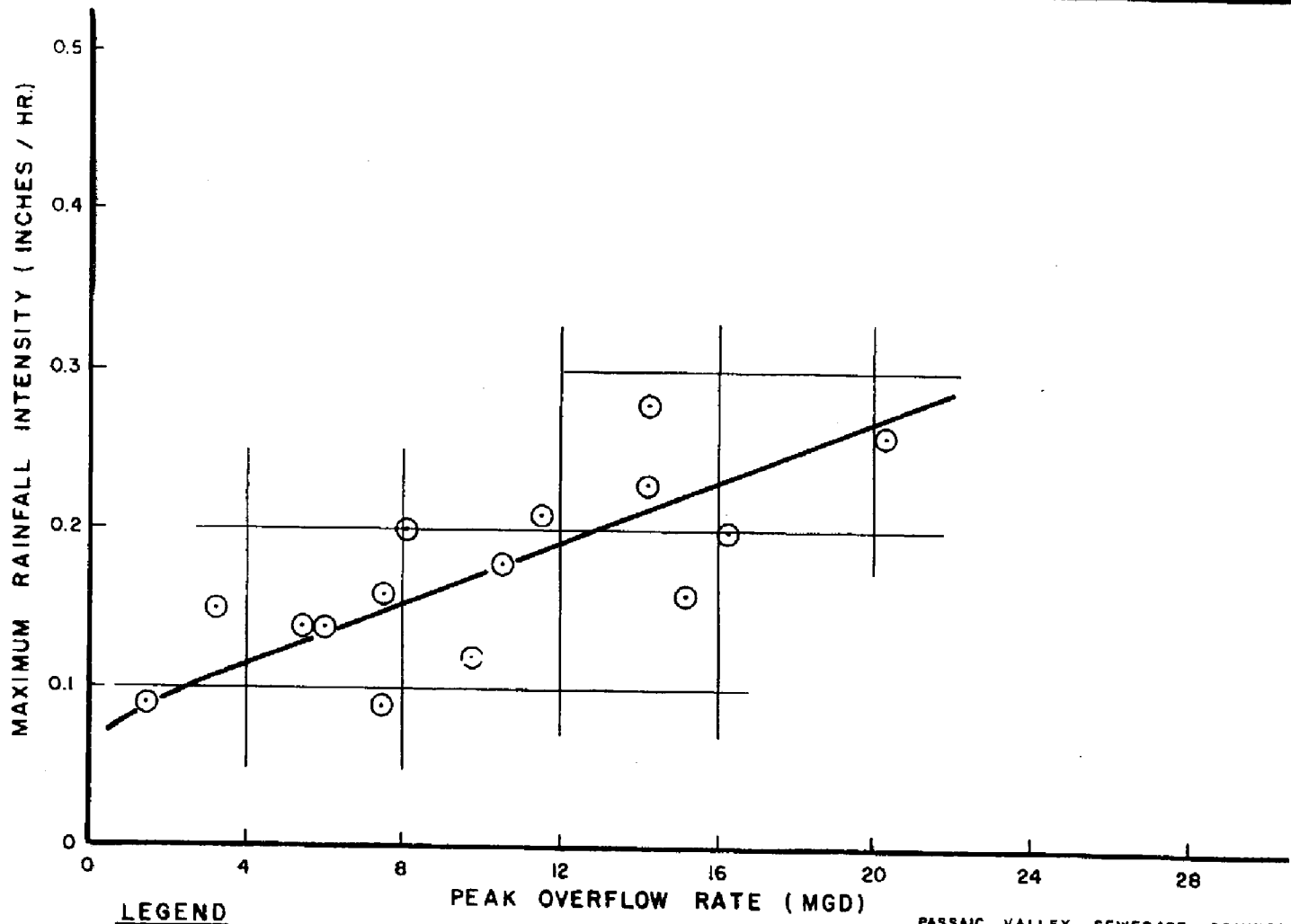
Range of Overflow Duration Observed:	0.66-7.25 hours
Range of Peak Rate of Overflow Observed:	1.5-80.0 MGD
Range of Overflow Volume Observed:	Neg+2.2 MG
Data for Maximum Observed Overflow:	Date: 3/12/75 Volume: 2.2 MG Peak Rate: 20.3 MGD Duration: 7.25 hours

Note: Overflow Rate Estimation

Plate F presents the relationship
of Maximum Rainfall Intensity vs.
Peak Overflow Rate.

(12)

PLATE F



LEGEND

○ DATA POINTS

PASSAIC VALLEY SEWERAGE COMMISSIONERS
VERONA AVENUE , NEWARK
MAXIMUM RAINFALL INTENSITY
VS.
PEAK OVERFLOW RATE
ELSON T. WILLIAM ASSOCIATES INC.
Environmental and Hydraulic Engineers 40 TRAFALGAR STREET HILLSIDE, NEW JERSEY 07034

FN1000431

TIERRA-B-015324

Storm Water Overflow Characteristics

Note:

Sample of Sanitary Flow (Baseline), as well as of Combined Flow during overflow, were analyzed, with results tabulated in the Appendix.

Parameters:

pH, TSS, VSS, COD, TOC, BOD, and Lithium determined for each sample. (See Appendix).

Parameters used in Analysis:

TSS, COD, and BOD.

Notes:

Data presented graphically for rainfall of April 3, 1975. TSS, COD and BOD, as well as flow data for storm and baseline.

Water quality data in Table 1 (Overflow Observations) are arranged to indicate the results of the first 15-minute sample, as a reference to possible initial strength at the onset of an overflow, as well as to indicate the maximum and minimum concentrations during the overflow period. An arithmetic mean (average) concentration is also listed for each characteristic, based on the number of samples obtained during the period of overflow.

VERONA AVENUE OVERFLOW (NPDES NO. 028/N-001)

(Cont'd)

Storm Sampling (mg/l):

	<u>Maximum</u>	<u>Minimum</u>	<u>Average</u>
TSS	609	16	243
COD	900	324	633
BOD	333	163	253

Total Pounds for
Observed Overflow:

Overflow Volume: 1.3 MG

(4/3/75)

TSS	2506	lbs.	
COD	3401	lbs.	
BOD	2006	lbs.	

Baseline Sampling (mg/l):

	<u>Maximum</u>	<u>Minimum</u>	<u>Average</u>
TSS	2350	104	572
COD	1964	122	666
BOD	756	152	418

APPENDIX

VERONA AVENUE OVERFLOW (NPDES NO. 028/N-001)

CONTENTS OF APPENDIX

- Pages A-1 to A-8....PVSC Analysis of Baseline and Rainstorm samples.
- Plate A1.....Plot of height above stop logs in Inches versus flow rate over stop logs in Million Gallons per Day (MGD).
- Plate A2.....Plot of the Passaic River tidal levels at the time of the rainfall in question, where applicable, in relation to overflow chamber stop log elevations.
- Plate A3.....Plot of overflow rate versus time and hourly rainfall intensity versus time for the particular rainfall. Average flow rates in Million Gallons per Day (MGD) and total volume in Gallons (GAL) are also shown.
- Plate A4.....Plot of Total Suspended Solids (TSS) in milligrams per liter (mg/l) versus time of day during rainfall conditions. Portions of the baseline data are also shown for comparison.
- Plate A5.....Plot of Chemical Oxygen Demand (COD) in milligrams per liter (mg/l) versus time of day during rainfall conditions. Portions of the baseline data are also shown for comparison.
- Plate A6.....Plot of Biochemical Oxygen Demand (BOD) in milligrams per liter (mg/l) versus time of day during rainfall conditions. Portions of the baseline data are also shown for comparison.
- Plate A7.....Plot of Total Suspended Solids (TSS) in pounds per day versus time for a particular rainfall.
- Plate A8.....Plot of Chemical Oxygen Demand (COD) in pounds per day versus time for a particular rainfall.
- Plate A9.....Plot of Biochemical Oxygen Demand (BOD) in pounds per day versus time for a particular rainfall.
- Plate A 10.....Plot of Total Suspended Solids (TSS) in milligrams per liter (mg/l) versus time of day during a baseline (non-rainfall) condition.
- Plate A 11.....Plot of Chemical Oxygen Demand (COD) in milligrams per liter (mg/l) versus time of day during a baseline (non-rainfall) condition.
- Plate A 12.....Plot of Biochemical Oxygen Demand (BOD) in milligrams per liter (mg/l) versus time of day during a baseline (non-rainfall) condition.

Els on Killam Associates-Infiltration Studies

P.V.S.C. Verona Avenue Sand Catcher- Not on trunk line but tributary
 24 Samples taken from 12:22 P. M., 9/9/74 to 12:07 P. M., 9/10/74

Baseline

Sample #	pH	T.S.S	V.S.S.	%Vol.	C.O.D.	T.O.C.	T.O.C/ C.O.D.	B.O.D.	B.O.D./ C.O.D.	mg. Lit
1	8.0	314	314	100	619	172	27.8	378	61.0	.00
2	7.9	234	222	95.0	506	124	24.5	320	63.2	.00
3	7.7	262	262	100	372	108	29.1	264	70.9	.01
4	9.3	310	282	91.0	388	141	36.3	---	---	.00
5	8.1	216	216	100	302	120	39.6	194	64.2	<.00
6	7.5	608	608	100	1027	330	32.2	756+	---	.00
7	6.4	318	318	100	592	168	28.4	441	74.4	<.00
8	7.1	252	252	100	416	129	31.1	---	---	<.00
9	7.1	524	506	96.8	482	140	29.1	449	93.1	<.00
10	7.3	228	228	100	314	96	30.6	---	---	<.00
11	7.3	180	180	100	212	76	35.9	---	---	<.00
12	7.4	138	138	100	192	60	31.2	152	79.1	<.00
13	7.3	104	104	100	161	44	27.3	---	---	<.00
14	7.4	114	114	100	122	44	36.1	---	---	<.00
15	11.8	840	840	100	913	318	34.8	559	61.2	<.00
16	12.1	764	608	79.6	1682	456	27.1	756+	---	.031
17	11.7	682	442	64.7	643	192	29.7	315	49.9	.017
18	12.3	2350	1820	78.0	1964	972	49.7	756+	---	---
19	9.9	1374	764	55.6	949	324	34.2	411	43.3	.013
20	9.7	644	524	81.3	619	192	31.1	225	36.3	---
21	11.2	1290	1070	83.0	1015	336	33.0	490	48.3	.016
22	11.9	1040	1030	99.2	1007	304	30.3	490	48.7	.020
23	10.7	530	530	100	647	246	38.0	277	42.3	.012
24	9.7	416	416	100	835	264	31.6	291	34.8	.009

Elson Killam Associates-Infiltration Studies - Set # 20 O.F.#028/N-001

Verona Avenue, Newark - In sandcatcher

Sampled sometime during day 1/13/75 to 5:15 P.M. 1/13/75

Storm Conditions Rainfall of 1/13/75

24 SAMPLES

Sample #	pH	T.S.S.	V.S.S.	%Vol.	C.O.D.	T.O.C.	T.O.C./C.O.D.	B.O.D.	B.O.D./C.O.D.	L
1	7.7	528	396	74.9	982	465	47.4	-	-	00
2	8.9	440	340	77.3	525	222	42.3	285	54.3	00
3	8.3	242	208	86.0	465	162	34.8	282	60.8	00
4	7.9	172	170	98.8	392	132	33.7	160	40.8	00
5	7.8	154	150	97.5	250	75	30.0	125	50.0	00
6	7.7	160	118	73.8	255	64	25.1	108	42.4	00
7	7.6	154	154	100.0	259	80	30.9	114	44.0	00
8	7.6	100	98	98.0	218	76	34.8	106	48.7	00
9	3.5	176	100	58.5	517	126	24.4	160	30.9	00
10	6.6	572	440	77.0	873	304	34.8	490	56.2	00
11	7.0	664	420	63.3	1159	660	56.9	660	56.9	00
12	7.1	600	536	89.3	1220	580	47.5	820	67.2	00
13	7.4	444	388	87.4	962	360	37.5	710	73.8	00
14	7.5	268	112	41.8	760	272	35.8	455	59.9	00
15	7.5	344	324	94.2	642	288	44.9	405	61.7	00
16	7.4	136	16	11.8	388	124	32.0	219	56.4	00
17	7.5	118	42	28.4	323	124	38.4	212	65.6	00
18	7.3	312	160	51.3	594	192	32.4	214	36.0	00
19	6.8	240	174	72.5	590	168	28.5	250	42.4	00
20	7.0	126	54	26.9	347	100	28.8	105	30.3	00

Sampled sometime during day 1/13/75 to 5:15 P.M. 1/13/75

Storm Conditions

Rainfall of 1/13/75

24 SAMPLES

A-3

B-86

Date: 2/24/75

Sampler #30398, Set #36
Chamber #028/11-001

Storm Conditions

[illegible]

PVSC Reference # R-112Date: 2/27/75

Elson T. Killam Associates - Infiltration Studies
 Verona Ave., Newark - Division manhole
 Sometime during night of 2/23/75

Sampler #398, Set #13
 Chamber #028/R-001

Rainfall of 2/23/75

Storm Conditions

23 samples										
SAMPLE	pH	TSS	VSS	%Vol.	COD	TOC	TOC (CC)	BOD	BOD (CC)	Lithi
1	7.3	740	520	70.3	937	285	30.4	311	33.2	0.00
2	7.4	560	406	72.5	982	390	39.7	235	23.9	0.00
3	No sample - - - - -									
4	7.5	354	244	68.9	699	230	32.9	273	39.1	0.00
5	7.5	404	266	65.8	731	200	27.4	268	36.7	0.00
6	7.4	392	274	69.9	743	180	24.3	169	22.7	0.00
7	7.5	334	222	66.5	598	186	31.1	174	29.1	0.00
8	7.5	412	260	63.2	739	168	22.8	183	24.8	0.00
9	7.4	308	184	59.8	557	136	24.4	197	35.4	0.00
10	7.4	280	170	60.7	416	120	28.9	189	45.5	0.00
11	7.5	262	156	59.6	376	116	30.9	164	43.7	0.00
12	7.5	234	136	58.2	299	100	33.4	202	66.9	0.00
13	7.1	234	134	57.3	255	92	36.0	98	38.4	0.00
14	7.4	268	164	61.2	351	100	28.5	180	51.3	0.00
15	7.2	230	148	64.4	327	80	24.4	101	30.9	0.00
16	7.1	218	136	62.4	303	120	39.6	182	60.0	0.00
17	7.2	218	152	69.7	347	92	26.5	87	25.0	0.00
18	7.4	250	160	64.1	339	96	28.3	88	25.9	0.00
19	7.2	216	130	60.2	319	80	25.0	81	25.3	0.00
20	7.0	240	154	64.2	364	100	28.5	201	55.2	0.00
21	7.3	240	158	65.9	574	88	15.3	91	15.8	0.00
22	7.3	224	154	68.7	307	72	23.4	93	30.2	0.00
23	7.4	238	152	63.9	356	80	22.4	90	25.2	0.00
24	7.3	236	146	61.9	267	92	34.4	88	32.9	0.00
						AVERAGE	28.6		35.5	

PVSC Reference # D-92Date: 4/8/75

Elson T. Killam Associates - Infiltration Studies
 Verona Avenue, Newark - Diversion manhole
 4/3/75

Sampler # 328 Set #33
 Chamber # 028/N-001

Rainfall of 4/3/75

STORM CONDITIONS

24 SAMPLES

SAMPLE	pH	TSS	VSS	%Vol.	COD	TOC	TOC COD	BOD	BOD COD	Lithium
1	7.4	752	590	78.5	1864	840	45.0	645	34.6	0.003
2	7.5	384	290	75.5	508	170	33.5	320	63.1	0.003
3	7.6	408	326	79.9	588	180	30.6	380	64.6	0.003
4	7.4	410	360	87.8	440	115	26.2	335	76.2	0.003
5	7.5	212	144	67.9	316	76	24.0	122	38.6	0.003
6	7.7	232	180	77.6	264	44	16.6	147	55.7	0.003
7	7.6	224	158	70.5	252	40	17.2	162	64.3	0.003
8	7.8	176	122	69.3	208	36	17.3	174	83.7	0.003
9	7.7	108	64	59.2	164	36	21.9	63	38.4	0.003
10	-	82	56	68.3	180	36	20.0	56	31.1	0.003
11	7.8	66	56	84.8	276	32	16.0	198	71.8	0.003
12	7.7	62	42	67.8	224	30	13.4	153	68.3	0.003
13	7.7	116	70	60.1	428	32	7.5	290	67.8	0.003
14	7.5	286	186	65.1	228	30	13.1	164	72.0	0.003
15	7.3	146	114	78.2	348	42	12.0	180	51.8	0.003
16	7.5	156	122	78.2	184	39	21.2	75	40.7	0.003
17	7.3	114	80	70.2	180	27	15.0	80	44.4	<0.001
18	7.5	60	28	46.7	128	21	16.4	77	60.1	<0.001
19	7.4	48	32	66.7	172	27	15.7	107	62.2	<0.001
20	4.7	126	86	68.2	168	39	23.2	82	48.8	<0.001
21	6.5	92	40	43.5	104	21	20.2	72	69.2	<0.001
22	Broken bottle	Not enough sample				-	-	-	-	<0.001
23	7.4	12	0	0.0	84	18	21.4	28	33.4	<0.001
24	7.6	34	4	11.8	144	18	12.5	78	54.1	<0.001
							20.0		56.3	

E-117

Date: 5/12/75

Elson T. Killam Associates - Infiltration Studies
Verona Avenue, Newark - Diversion Manhole
1215 - 4/24/75 to 0200 4/25/75

Sampler # 32E Set #107
Chamber # 028/N-001

STORM CONDITIONS

6 SAMPLES

Rainfall of 4/24/75

SAMPLE	pH	TSS	VSS	%Vol.	COD	TOC	TCC COD%	BOD	BOD COD%
Samples were scattered. Note sample numbers.									
1	8.0	0	-	-	812	640	78.8*	-	-
2	11.5	0	-	-	976	180	18.5	393	40.3
4	10.5	10	-	-	1360	460	33.8	408	30.0
7	10.2	88	88	100.0	956	280	29.3	293	30.7
24	8.8	110	110	100.0	396	100	25.3	107	27.0
						Average	26.7		32.0
* Not included in average.									

E-188

Date: 5/20/75

Elson T. Killam Associates - Infiltration Studies
Verona Avenue, Newark - Diversion Manhole
5/12/75 - 5/13/75

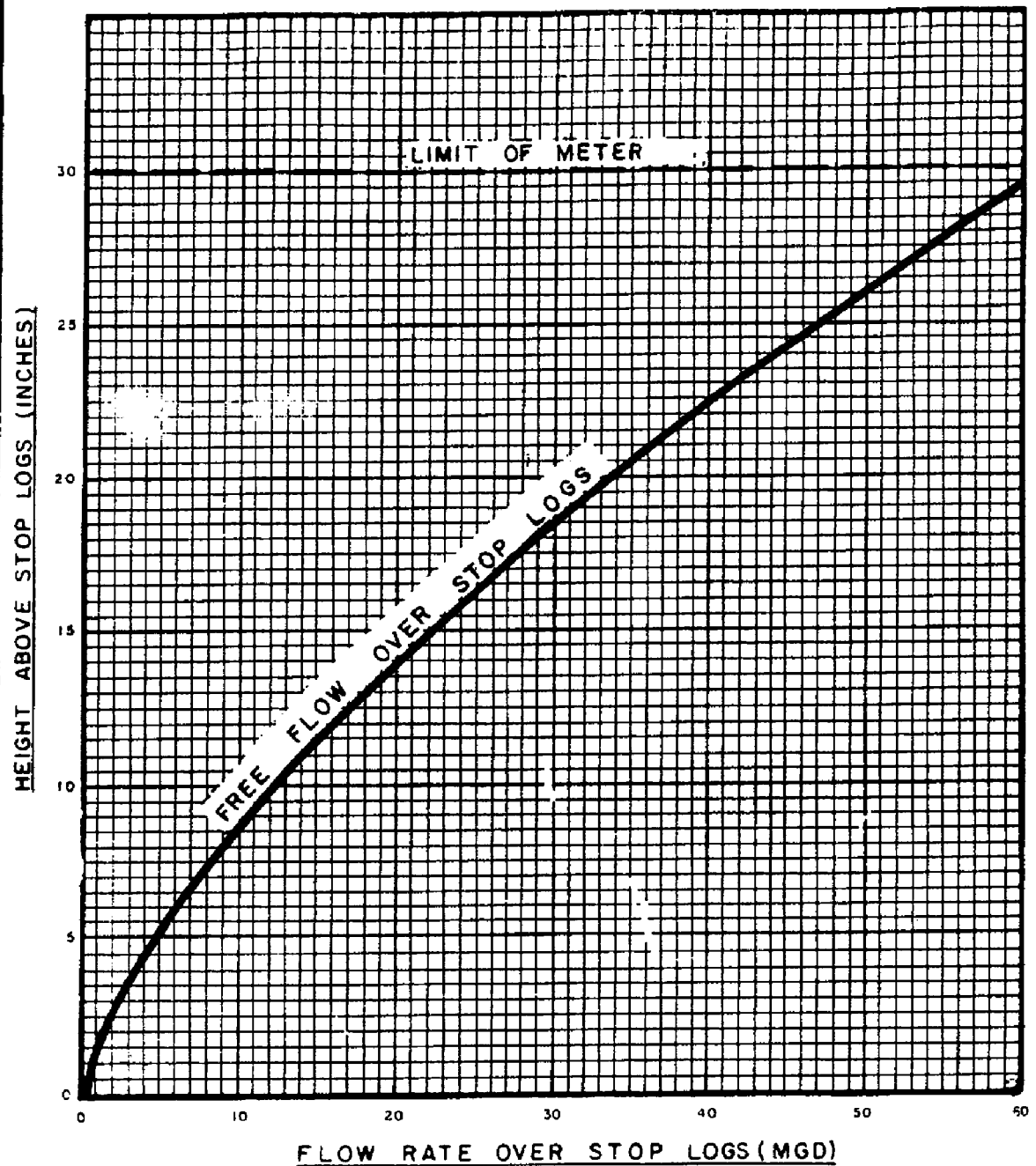
Sampler # 362 Set #10.
Chamber # 028/N-001

STORM CONDITIONS

Rainfall of 5/12/75

8 SAMPLES

[illegible]



PASSAIC VALLEY SEWERAGE COMMISSIONERS
OVERFLOW CHAMBER N° 028/N-001
VERONA AVENUE, NEWARK
FLOW RATE OVER STOP LOGS

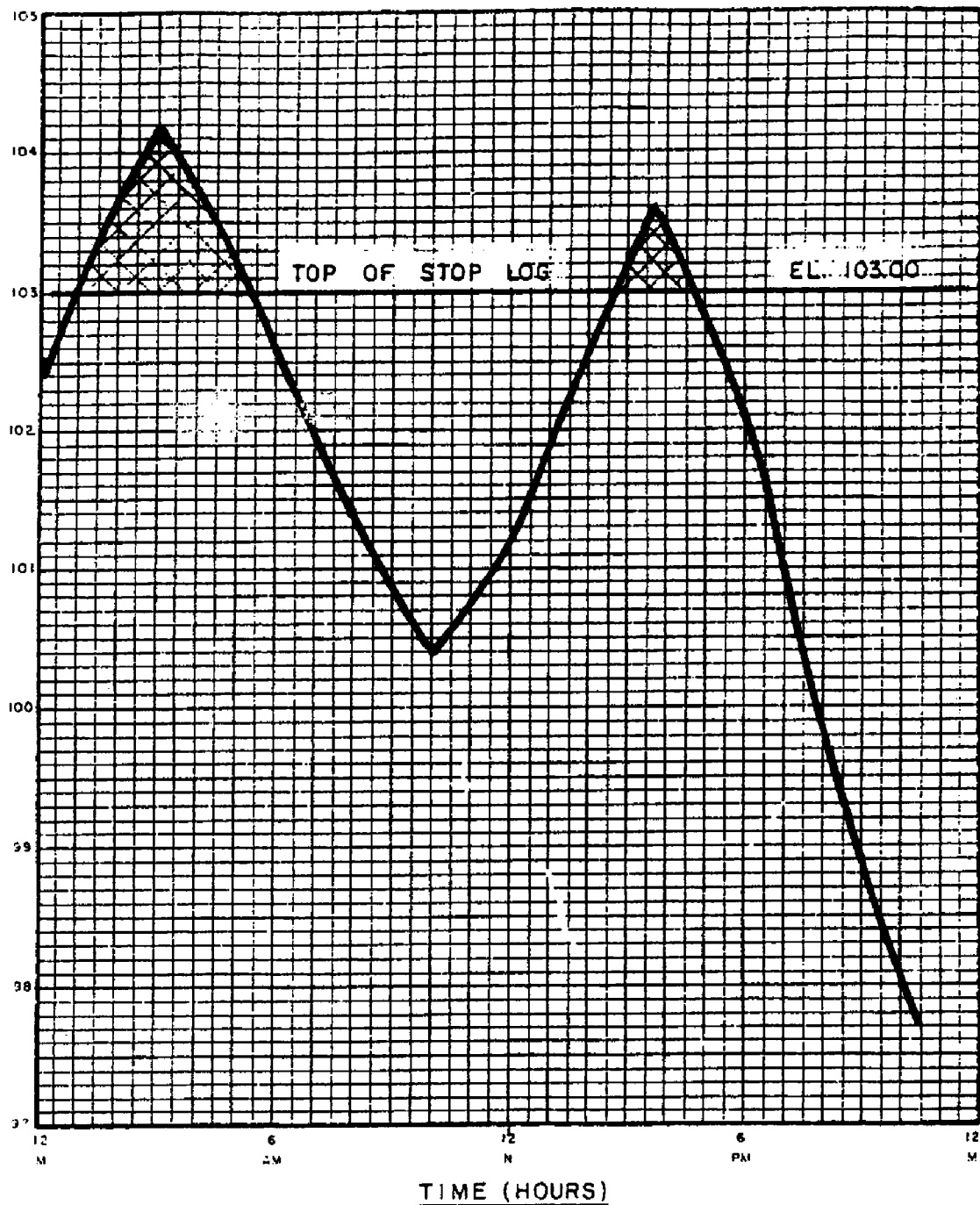
ELSON T. KILLAM ASSOCIATES INC
Environmental and Hydraulic Engineers 40 ESTATE STREET MILLBURN NEW JERSEY 07041

PLATE AI

FNI000444

TIERRA-B-015337

TIDAL ELEVATION (MEAN SEA LEVEL + 100 FEET)



NOTE

TIDAL ELEVATIONS INDICATE
SURCHARGE CONDITIONS
(CROSS - HATCHED AREA)

PASSAIC VALLEY SEWERAGE COMMISSIONERS
OVERFLOW CHAMBER N° 028/N-001
VERONA AVENUE, NEWARK
TIDAL ELEVATION

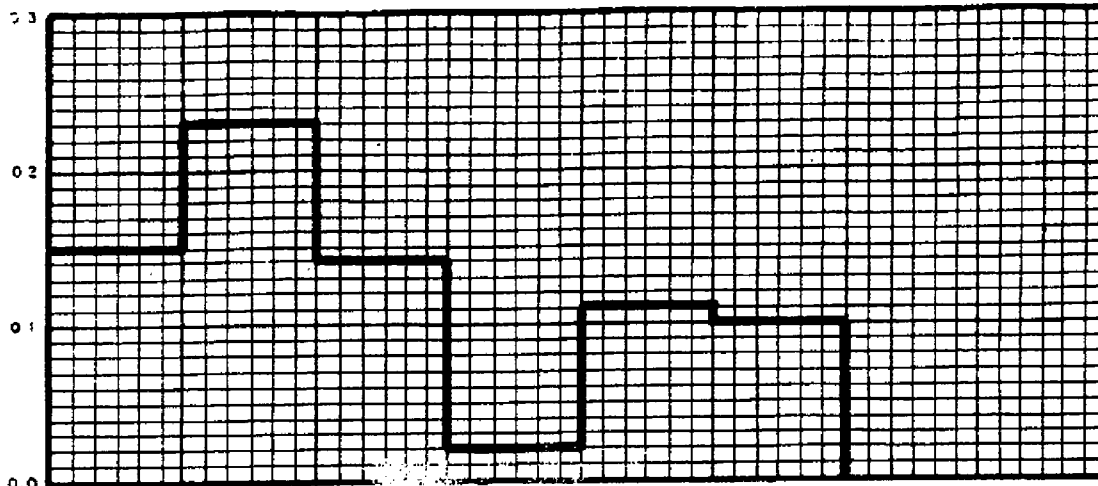
RAINFALL OF 4/3/75
ELSON T. KILLAM ASSOCIATES, INC.
Environmental and Hydraulic Engineers 40 CEDAR STREET MILLBURN NEW JERSEY 07041

PLATE A2

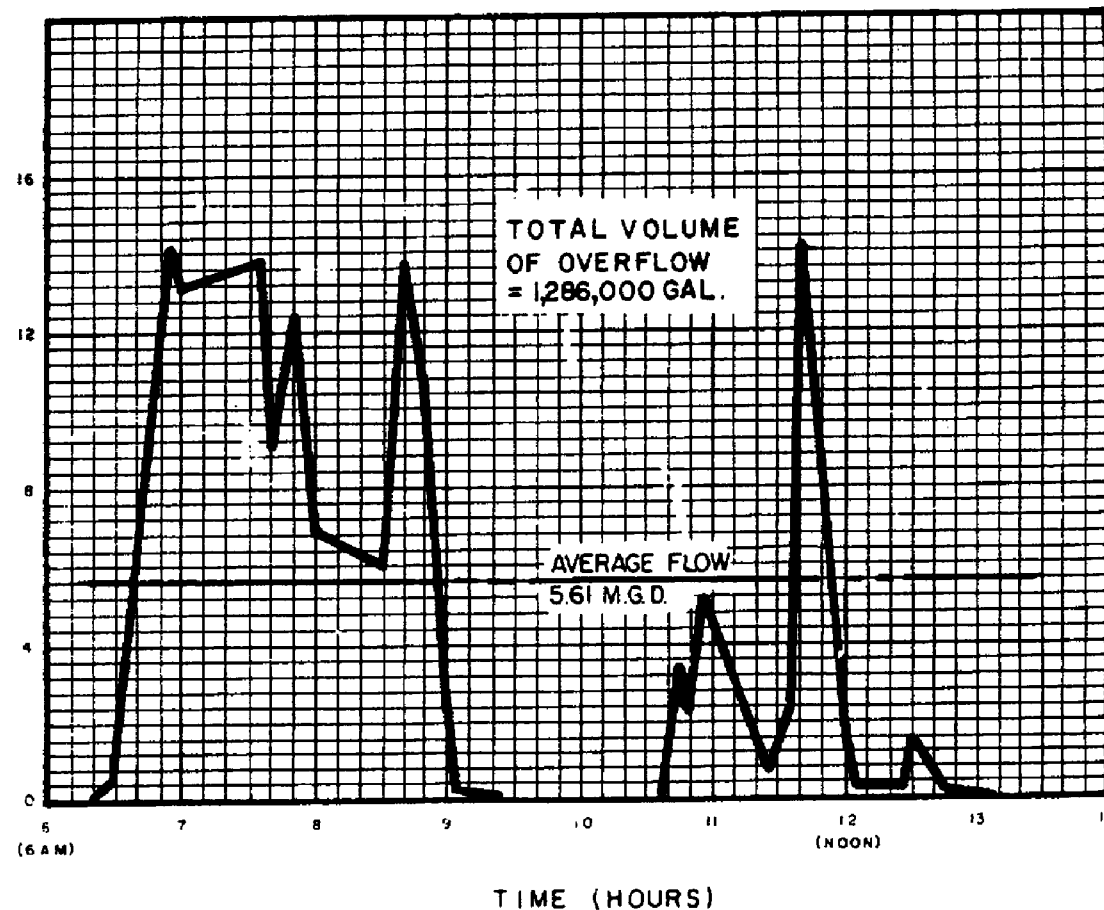
FNI000445

TIERRA-B-015338

RAINFALL INTENSITY (IN/HR)



OVERFLOW RATE OVER STOP LOGS (MGD)



NOTES:

1. TIME SHOWN IS BASED ON MILITARY TIME, 1-24 HOURS.

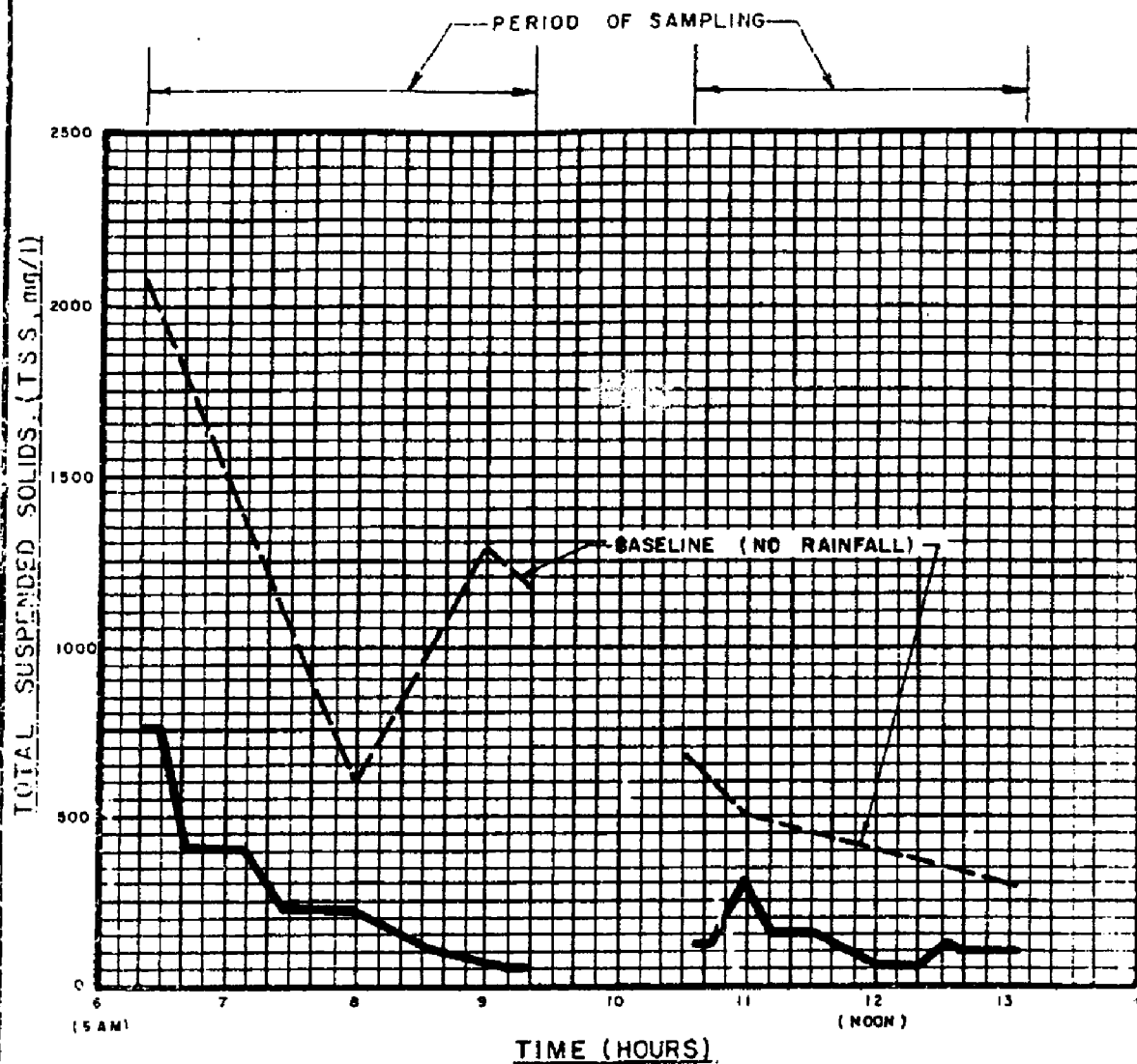
PASSAIC VALLEY SEWERAGE COMMISSIONERS
OVERFLOW CHAMBER N° 028/N-001
VERONA AVENUE, NEWARK
RAINFALL INTENSITY & OVERFLOW RATE

RAINFALL OF 4/3/75
ELSON T. KILLAM ASSOCIATES INC.
Environmental and Hydraulic Engineers 40 EGGES STREET HILLBURN NEW JERSEY 07034

PLATE A3

FNI000446

TIERRA-B-015339



NOTES:

1. TIME SHOWN IS BASED ON MILITARY TIME, 1-24 HOURS
2. PLOT REPRESENTS CONCENTRATION OF TSS FLOWING TO RIVER OVER STOP LOGS

PASSAIC VALLEY SEWERAGE COMMISSIONERS
OVERFLOW CHAMBER N° 028/N-001
VERONA AVENUE, NEWARK

TOTAL SUSPENDED SOLIDS

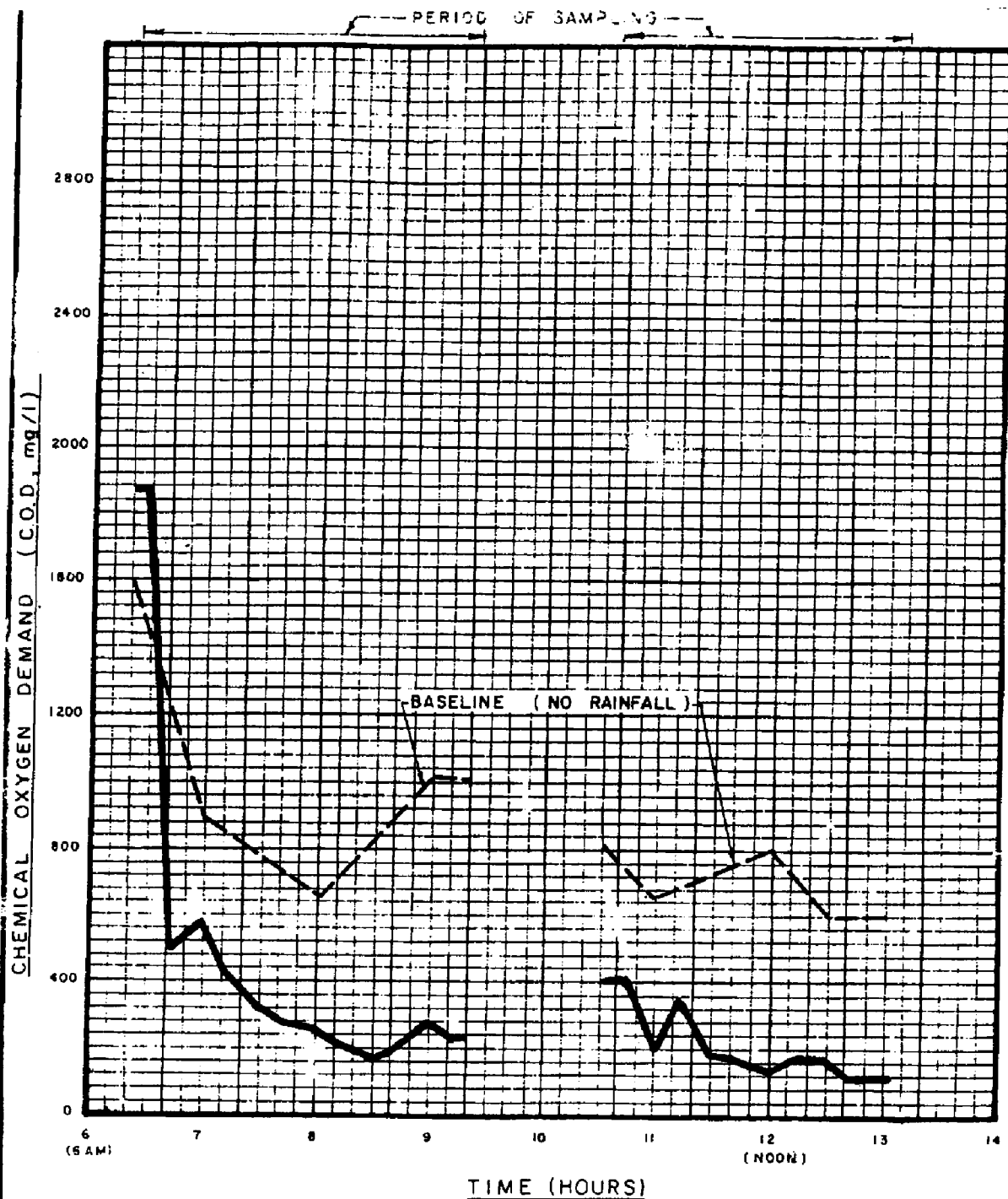
RAINFALL OF 4 / 3 / 75

ELSON T. KILLAM ASSOCIATES, INC.
Environmental and Hydraulic Engineers 40 EARTH STREET, MILLBURN, NEW JERSEY 07041

PLATE A4

FNI000447

TIERRA-B-015340



NOTES:

1. TIME SHOWN IS BASED ON MILITARY TIME, 1-24 HOURS
2. PLOT REPRESENTS CONCENTRATION OF C.O.D. FLOWING TO RIVER OVER STOP LOGS

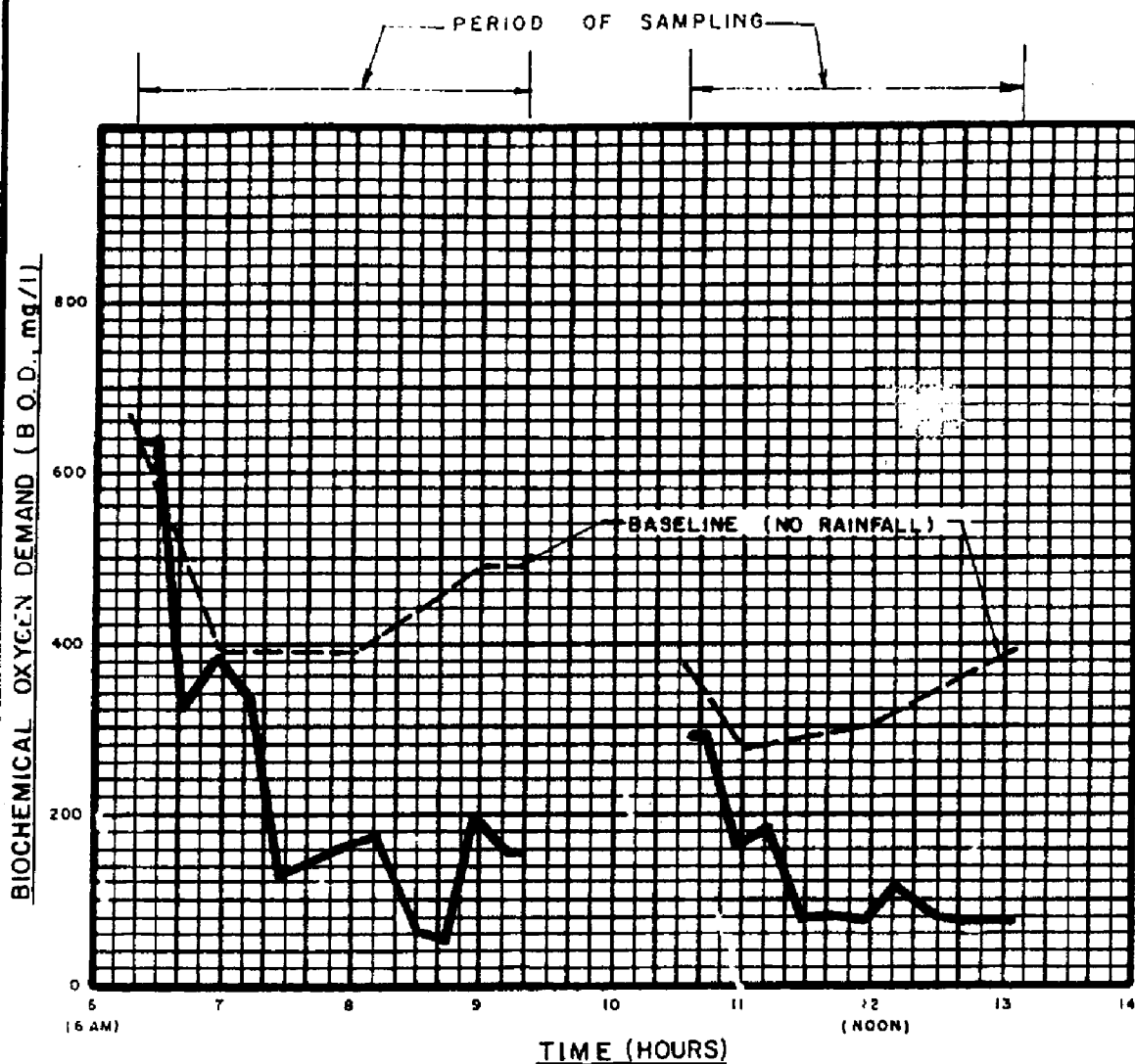
PASSAIC VALLEY SEWERAGE COMMISSIONERS
OVERFLOW CHAMBER N° 028/N-001
VERONA AVENUE, NEWARK
CHEMICAL OXYGEN DEMAND

RAINFALL OF 4/3/75
ELSON T. WILLIAM ASSOCIATES INC.
Environmental and Hydraulic Engineers 40 HESSEY STREET, NEWARK, NEW JERSEY 07102

PLATE A5

FNI000448

TIERRA-B-015341



NOTES:

1. TIME SHOWN IS BASED ON MILITARY TIME, 24 HOURS
2. PLOT REPRESENTS CONCENTRATION OF BOD FLOWING TO RIVER OVER STOP LOGS

PASSAIC VALLEY SEWERAGE COMMISSIONERS
OVERFLOW CHAMBER N°028/N-001
VERONA AVENUE, NEWARK

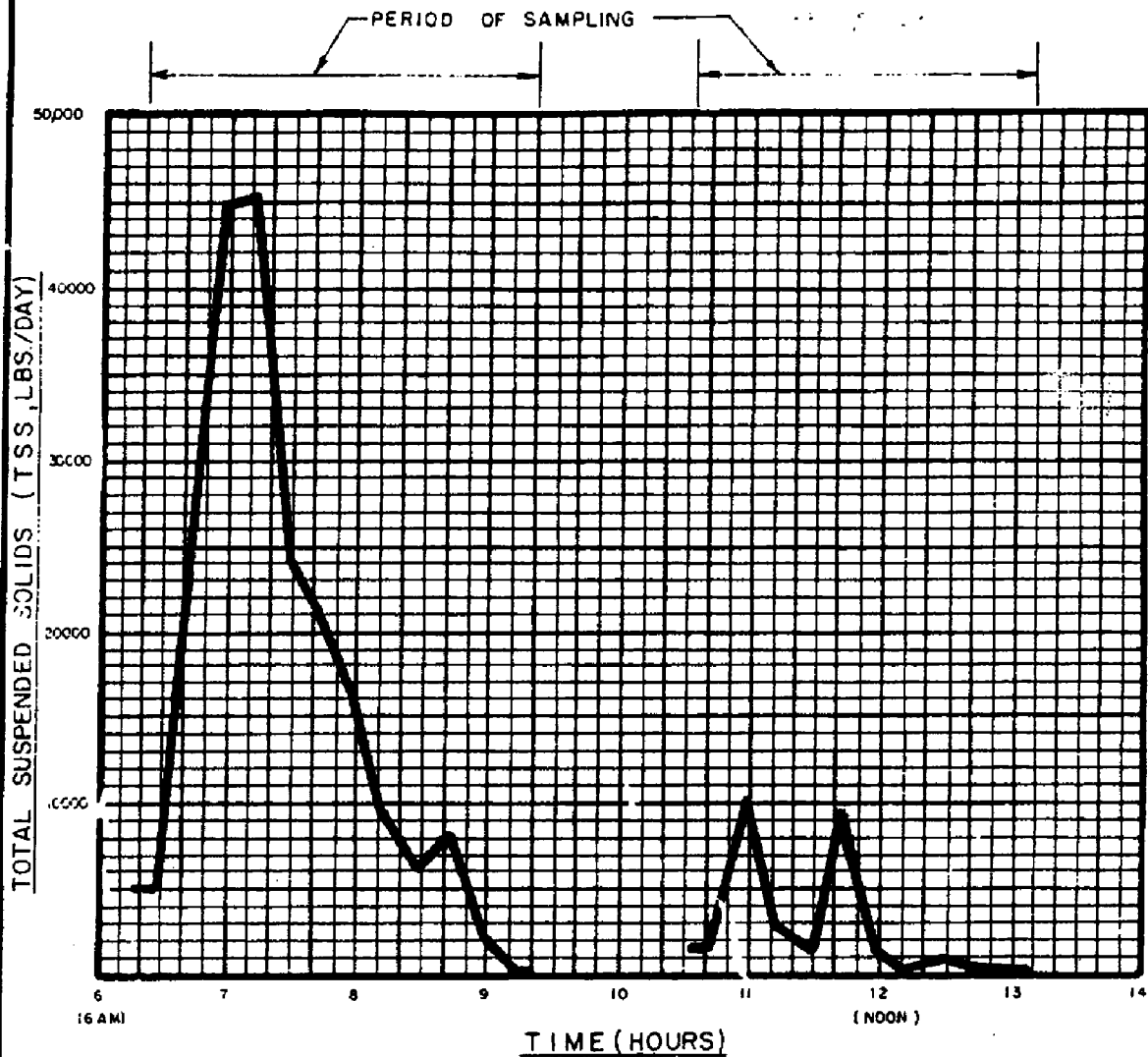
BIOCHEMICAL OXYGEN DEMAND

RAINFALL OF 4/3/75
ELSON T. KILLAM ASSOCIATES, INC.
Environmental and Hydraulic Engineers 48 EDGES STREET, MILLBURN, NEW JERSEY 07041

PLATE A6

FNI000449

TIERRA-B-015342



NOTES:

1. TIME SHOWN IS BASED ON MILITARY TIME, 1-24 HOURS
2. FLOW RATE WAS COMBINED WITH TSS CONCENTRATION TO OBTAIN LBS / DAY OF TSS

PASSAIC VALLEY SEWERAGE COMMISSIONERS
OVERFLOW CHAMBER N°028/N-001
VERONA AVENUE, NEWARK

TOTAL SUSPENDED SOLIDS

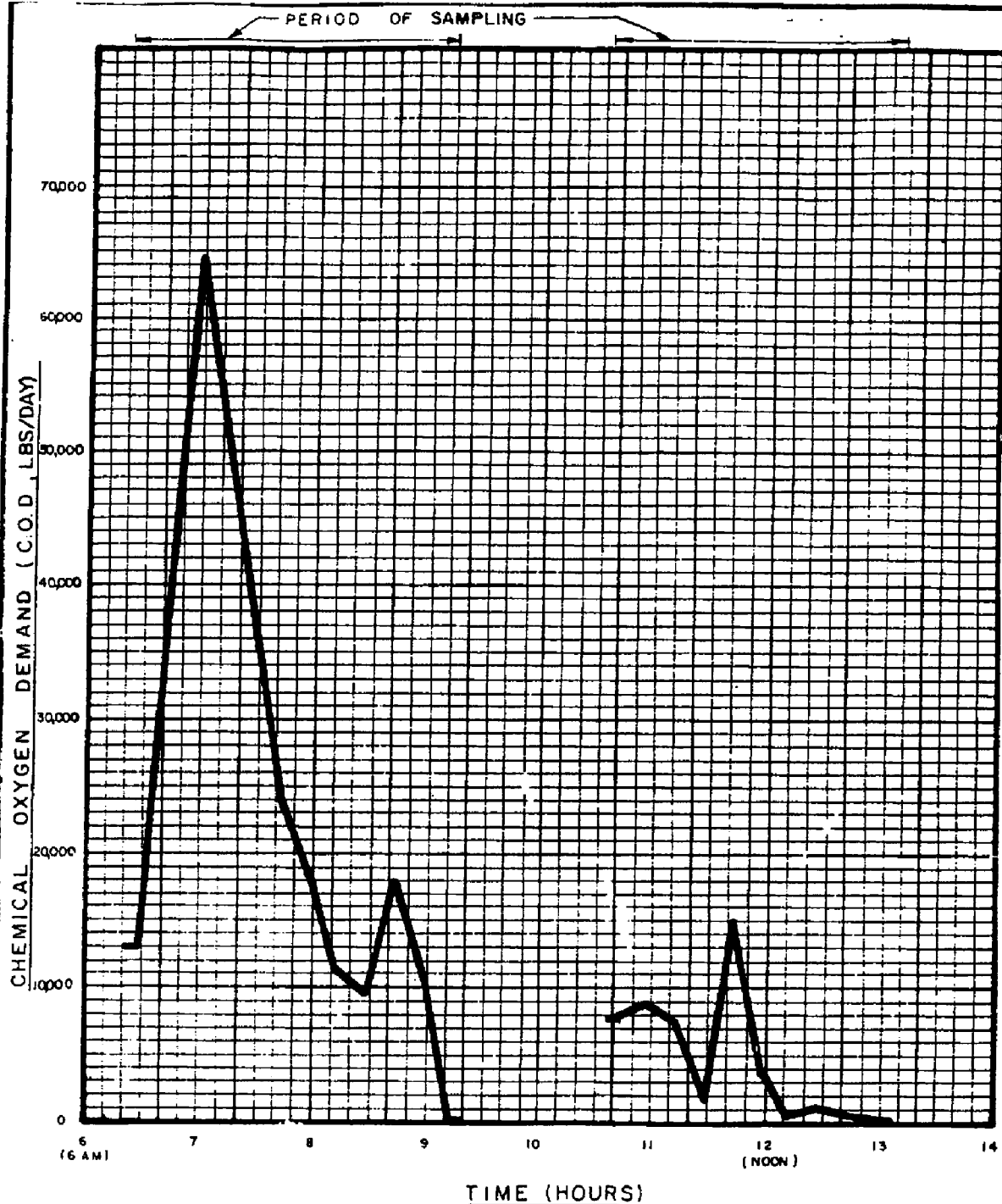
RAINFALL OF 4/3/75

ELSON T. KILLAM ASSOCIATES, INC.
Environmental and Hydraulic Engineers 45 COBURN STREET HILLGARDEN NEW JERSEY 07041

PLATE A7

FNI000450

TIERRA-B-015343



NOTES:

1. TIME SHOWN IS BASED ON MILITARY TIME, 1-24 HOURS
2. FLOW RATE WAS COMBINED WITH COD CONCENTRATION TO OBTAIN LBS / DAY OF COD

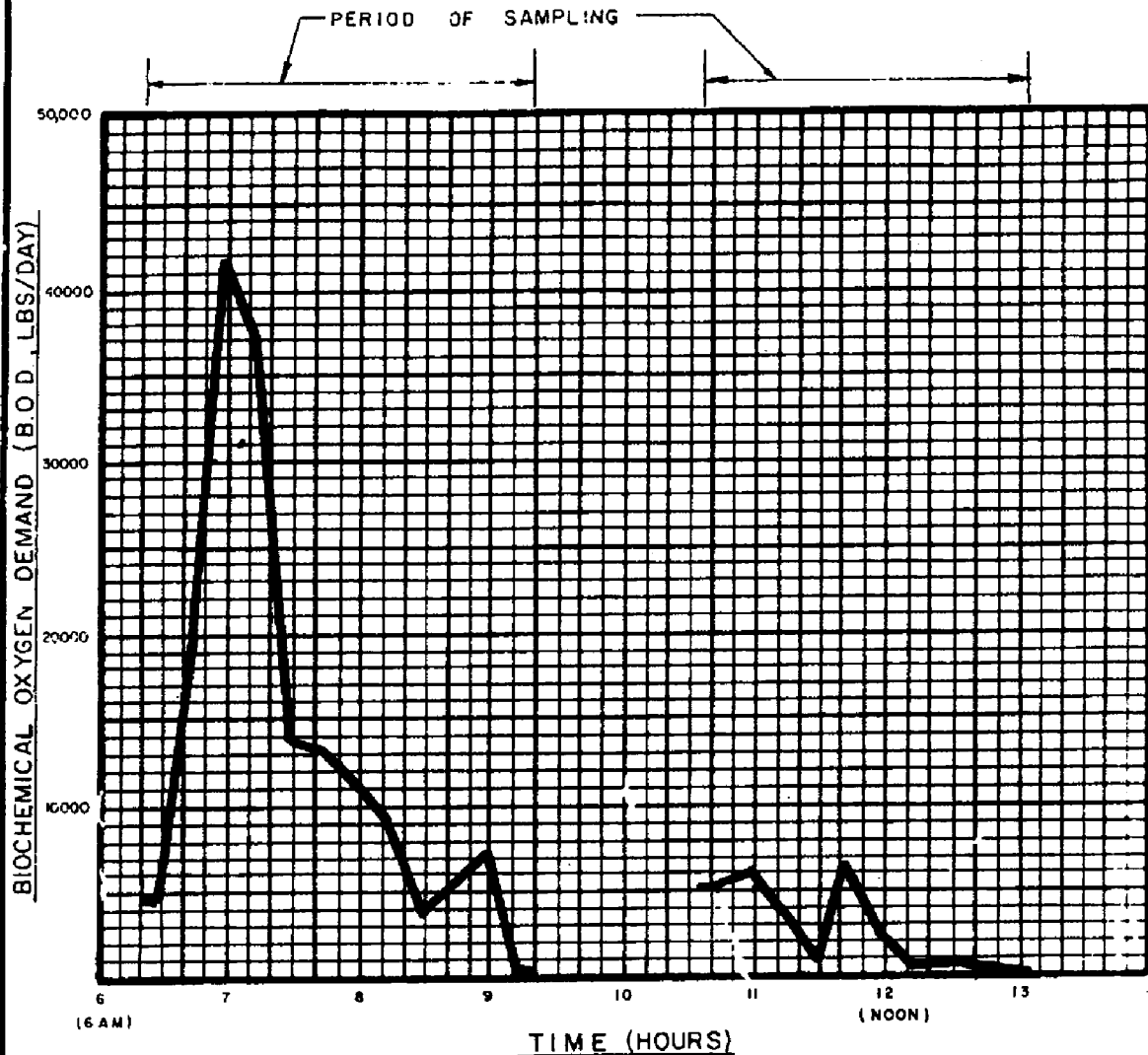
PASSAIC VALLEY SEWERAGE COMMISSIONERS
OVERFLOW CHAMBER N° 028/N-001
VERONA AVENUE, NEWARK
CHEMICAL OXYGEN DEMAND

RAINFALL OF 4/3/75
ELSON T. KILLAM ASSOCIATES, INC.
Environmental and Hydraulic Engineers 40 CEDAR STREET, HILLSIDE, NEW JERSEY 07036

PLATE AB

FNI000451

TIERRA-B-015344



NOTES:

1. TIME SHOWN IS BASED ON MILITARY TIME, 1-24 HOURS
2. FLOW RATE WAS COMBINED WITH BOD CONCENTRATION TO OBTAIN LBS / DAY OF BOD

PASSAIC VALLEY SEWERAGE COMMISSIONERS
 OVERFLOW CHAMBER N°028/N-001
 VERONA AVENUE, NEWARK
BIOCHEMICAL OXYGEN DEMAND

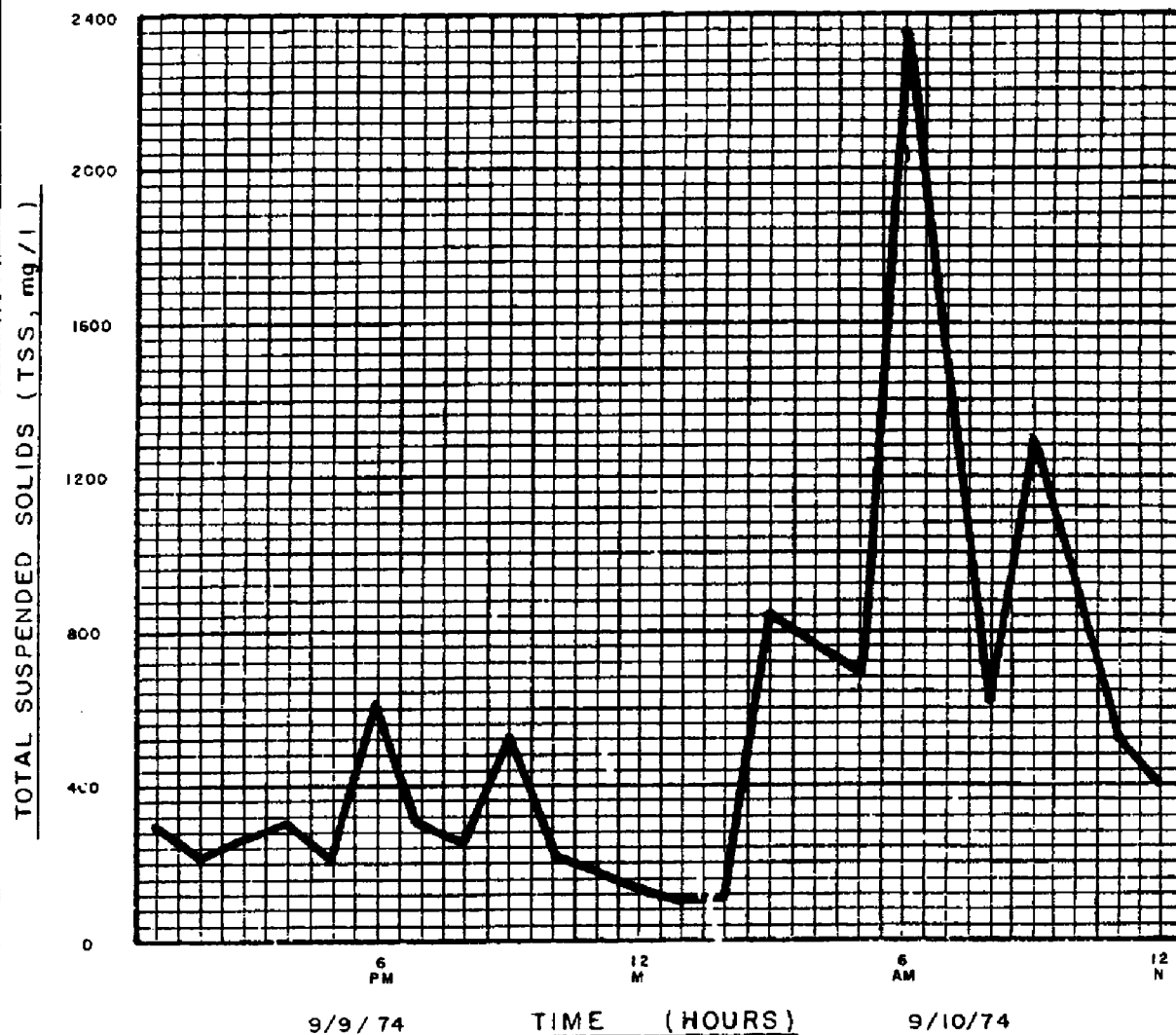
RAINFALL OF 4/3/75

ELSON T. KILLAM ASSOCIATES, INC.
Environmental and Hydraulic Engineers 40 EGGES STREET, HILLBURGH, NEW JERSEY 07034

PLATE A9

FNI000452

TIERRA-B-015345



NOTES:

1. SAMPLING STARTED 12:22 PM 9/9/74
SAMPLING ENDED 12:22 PM 9/10/74
2. SAMPLES TAKEN EACH 15 MIN. PERIOD,
COMPOSITED EACH HOUR; RESULTS ARE
PLOTED HOURLY.
3. SAMPLING REPRESENTS TYPICAL NON-RAIN-
FALL TSS CONDITIONS IN 24 HOURS.

PASSAIC VALLEY SEWERAGE COMMISSIONERS
OVERFLOW CHAMBER N°028/N-001
VERONA AVENUE, NEWARK

TOTAL SUSPENDED SOLIDS

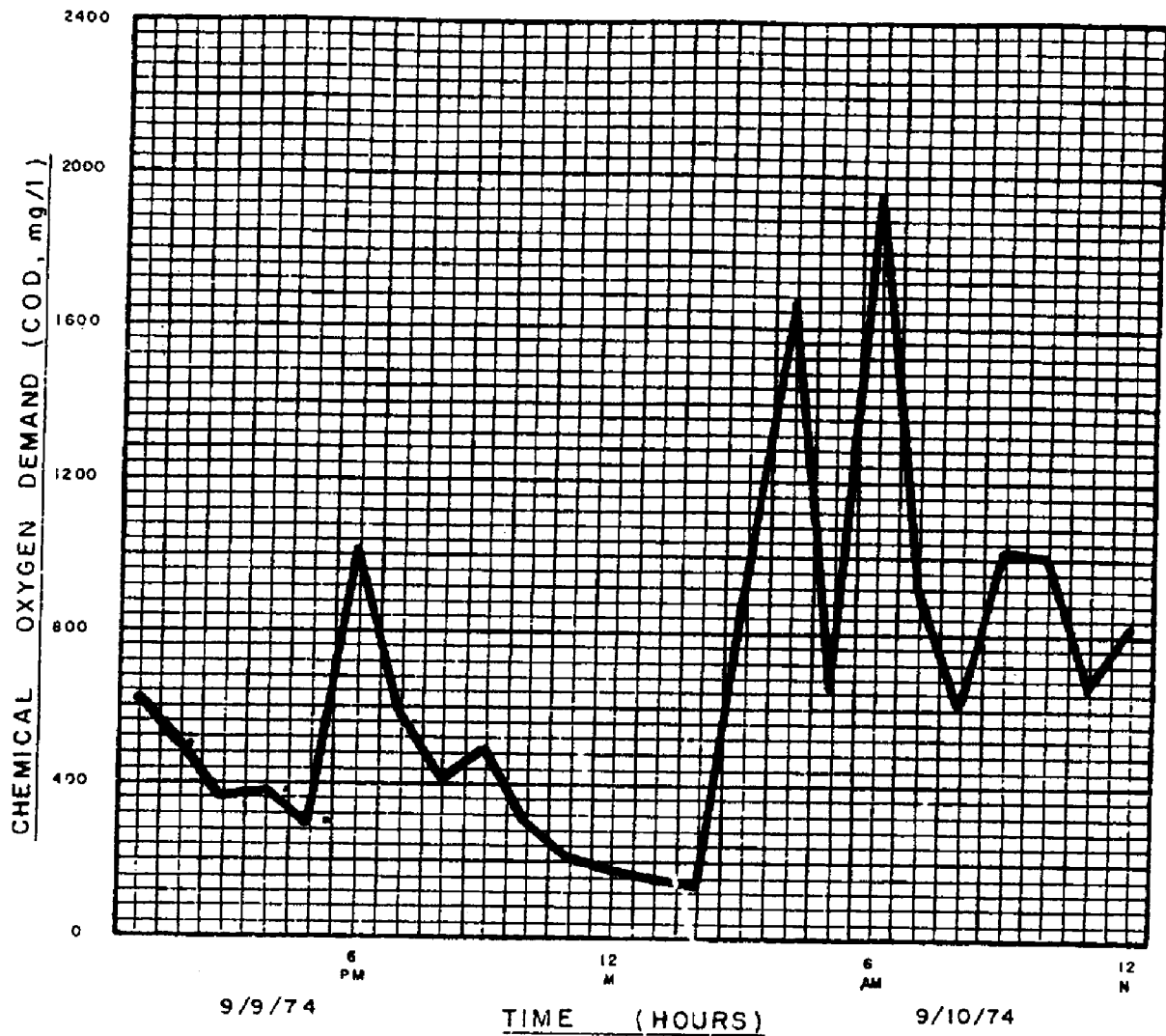
NO RAINFALL

ELSON T. KILLAM ASSOCIATES, INC.
Environmental and Hydraulic Engineers 200 PRINCE STREET, SUITE 200, NEWARK, N.J. 07102

PLATE A10

FNI000453

TIERRA-B-015346



NOTES:

1. SAMPLING STARTED 12:22 PM 9/9/74
SAMPLING ENDED 12:22 PM 9/10/74
2. SAMPLES TAKEN EACH 15 MIN. PERIOD,
COMPOSITED EACH HOUR; RESULTS ARE
PLOTTED HOURLY.
3. SAMPLING REPRESENTS TYPICAL NON-RAIN-
FALL COD CONDITIONS IN 24 HOURS.

PASSAIC VALLEY SEWERAGE COMMISSIONERS
OVERFLOW CHAMBER N°028/N-001
VERONA AVENUE, NEWARK

CHEMICAL OXYGEN DEMAND

NO RAINFALL
ELSON T. KILLAM ASSOCIATES, INC.
Environmental and Hydraulic Engineers 40 KINGS STREET, MILLBURN, NEW JERSEY 07041

PLATE AII

FNI000454

TIERRA-B-015347



NOTES

1. SAMPLING STARTED 12:22 P.M. 9/9/74
SAMPLING ENDED 12:22 P.M. 9/10/74
2. SAMPLES TAKEN EACH 15 MIN. PERIOD,
COMPOSITED EACH HOUR; RESULTS ARE
PLOTTED HOURLY.
3. SAMPLING REPRESENTS TYPICAL NON-RAIN-
FALL BOD CONDITIONS IN 24 HOURS
4. ISOLATED SAMPLE VALUES ARE PLOTTED
AND CIRCLED ON THE GRAPH.

PASSAIC VALLEY SEWERAGE COMMISSIONERS
OVERFLOW CHAMBER N°028/N-001
VERONA AVENUE, NEWARK
BIOCHEMICAL OXYGEN DEMAND

NO RAINFALL
ELSON T. KILLAM ASSOCIATES, INC.
Environmental and Hydraulic Engineers 40 EDDIE STREET, HILLSIDE, NEW JERSEY 07031

PLATE A12

FNI000455

TIERRA-B-015348



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
290 BROADWAY
NEW YORK, NY 10007-1866

DEC 27 2006

**GENERAL NOTICE LETTER
URGENT LEGAL MATTER
PROMPT REPLY NECESSARY
CERTIFIED MAIL-RETURN RECEIPT REQUESTED**

Michael J. Kowalski
Chairman and CEO
Tiffany & Co.
727 Fifth Avenue
New York, NY 10022

Re: Diamond Alkali Superfund Site
Notice of Potential Liability for
Response Actions in the Lower Passaic River Study Area, New Jersey

Dear Mr. Kowalski:

The United States Environmental Protection Agency ("EPA") is charged with responding to the release and/or threatened release of hazardous substances, pollutants, and contaminants into the environment and with enforcement responsibilities under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended ("CERCLA"), 42 U.S.C. § 9601 *et seq.* EPA is seeking your cooperation in an innovative approach to environmental remediation and restoration activities for the Lower Passaic River.

EPA has documented the release or threatened release of hazardous substances, pollutants and contaminants into the six-mile stretch of the river known as the Passaic River Study Area, which is part of the Diamond Alkali Superfund Site ("Site") located in Newark, New Jersey. Based on the results of previous CERCLA remedial investigation activities and other environmental studies, including a reconnaissance study of the Passaic River conducted by the United States Army Corps of Engineers ("USACE"), EPA has further determined that contaminated sediments and other potential sources of hazardous substances exist along the entire 17-mile tidal reach of the Lower Passaic River. Thus, EPA has decided to expand the area of study to include the entire

Lower Passaic River and its tributaries from Dundee Dam to Newark Bay ("Lower Passaic River Study Area").

By this letter, EPA is notifying Tiffany & Co. ("Tiffany") of its potential liability relating to the Site pursuant to Section 107(a) of CERCLA, 42 U.S.C. § 9607(a). Under CERCLA, potentially responsible parties ("PRPs") include current and past owners and operators of a facility, as well as persons who arranged for the disposal or treatment of hazardous substances at the Site, or the transport of hazardous substances to the Site.

In recognition of our complementary roles, EPA has formed a partnership with USACE and the New Jersey Department of Transportation-Office of Maritime Resources ("OMR") (the "governmental partnership") to identify and address water quality improvement, remediation, and restoration opportunities in the 17-mile Lower Passaic River Study Area. This governmental partnership is consistent with a national Memorandum of Understanding ("MOU") executed on July 2, 2002 between EPA and USACE. This MOU calls for the two agencies to cooperate, where appropriate, on environmental remediation and restoration of degraded urban rivers and related resources. In agreeing to implement the MOU, the EPA and USACE will use their existing statutory and regulatory authorities in a coordinated manner. These authorities for EPA include CERCLA, the Clean Water Act, and the Resource Conservation and Recovery Act. The USACE's authority stems from the Water Resources Development Act ("WRDA"). WRDA allows for the use of some federal funds to pay for a portion of the USACE's approved projects related to ecosystem restoration.

For the first phase of the Lower Passaic River Restoration Project, the governmental partners are proceeding with an integrated five-to-seven-year study to determine an appropriate remediation and restoration plan for the river. The study will involve investigation of environmental impacts and pollution sources, as well as evaluation of alternative actions, leading to recommendations of environmental remediation and restoration activities. The study is being conducted pursuant to CERCLA and WRDA.

Based on information that EPA evaluated during the course of its investigation of the Site, EPA believes that hazardous substances were released from the former Tiffany facility located at 820 Highland Avenue, Newark, New Jersey, into the Lower Passaic River Study Area. Hazardous substances, pollutants and contaminants released from the facility into the river present a risk to the environment and the humans who may ingest contaminated fish and shellfish. As the former owner and operator of the facility, Tiffany may be potentially liable for response costs that the government may incur relating to the study of the Lower Passaic River. In addition, responsible parties may be required to pay damages for injury to, destruction of, or loss of natural resources, including the cost of assessing such damages.

EPA is aware that the financial ability of some PRPs to contribute toward the payment of response costs at the Site may be substantially limited. If you believe, and can document, that you fall within that category, please inform Sarah Flanagan and William Hyatt in writing at the

addresses identified below in this letter. You will be asked to submit financial records including federal income tax returns as well as audited financial statements to substantiate such a claim.

Please note that, because EPA has a potential claim against you, you must include EPA as a creditor if you file for bankruptcy. You are also requested to preserve and retain any documents now in the possession or control of your Company or its agents that relate in any manner to your facility or the Site or to the liability of any person under CERCLA for response actions or response costs at or in connection with the facility or the Site, regardless of any corporate document retention policy to the contrary.

Enclosed is a list of the other PRPs who have received notices of potential liability. This list represents EPA's findings on the identities of PRPs to date. We are continuing efforts to locate additional PRPs who have released hazardous substances, directly or indirectly, into the Lower Passaic River Study Area. Exclusion from the list does not constitute a final determination by EPA concerning the liability of any party for the release or threat of release of hazardous substances at the Site. Please be advised that notice of your potential liability at the Site may be forwarded to all parties on this list as well as to the Natural Resource Trustees.

We request that you become a "cooperating party" for the Lower Passaic River Restoration Project. As a cooperating party, you, along with many other such parties, will be expected to fund the CERCLA study. Upon completion of the study, it is expected that CERCLA and WRDA processes will be used to identify the required remediation and restoration programs, as well as the assignment of remediation and restoration costs. At this time, the commitments of the cooperating parties will apply only to the study. For those who choose not to cooperate, EPA may apply the CERCLA enforcement process, pursuant to Sections 106(a) and 107(a) of CERCLA, 42 U.S.C. § 9606(a) and § 9607(a) and other laws.

You may become a cooperating party by participating in the Cooperating Parties Group ("Group") that has already formed to fund the CERCLA study portion of the Lower Passaic River Restoration Project.

We strongly encourage you to contact the Group to discuss your participation. You may do so by contacting:

William H. Hyatt, Esq.
Common Counsel for the Lower Passaic River Study Area Cooperating Parties Group
Kirkpatrick & Lockhart LLP
One Newark Center, 10th Floor
Newark, New Jersey 07102
(973) 848-4045
whyatt@kl.com

Written notification should be provided to EPA and Mr. Hyatt documenting your intention to

4

join the Group and settle with EPA no later than 30 calendar days from your receipt of this letter. The result of any agreement between EPA and your Company as part of the Group will need to be memorialized in an Administrative Order on Consent. Your written notification to EPA should be mailed to:

Sarah Flanagan, Assistant Regional Counsel
Office of Regional Counsel
U.S. Environmental Protection Agency
290 Broadway - 17th Floor
New York, New York 10007-1866

Pursuant to CERCLA Section 113(k), EPA must establish an administrative record that contains documents that form the basis of EPA's decision on the selection of a response action for a site. The administrative record file and the Site file are located at EPA's Region 2 Superfund Records Center, at 290 Broadway, New York, NY on the 18th floor. You may call the Records Center at (212) 637-4308 to make an appointment to view the administrative record and/or the Site file for the Diamond Alkali Site, Passaic River.

As you may be aware, the Superfund Small Business Liability Relief and Brownfields Revitalization Act became effective on January 11, 2002. This Act contains several exemptions and defenses to CERCLA liability, which we suggest that all parties evaluate. You may obtain a copy of the law via the Internet at <http://www.epa.gov/swerosps/bf/sblbra.htm> and review EPA guidances regarding these exemptions at <http://www.epa.gov/compliance/resources/policies/cleanup/superfund>.

Inquiries by counsel or inquiries of a legal nature should be directed to Ms. Flanagan at (212) 637-3136. Questions of a technical nature should be directed to Alice Yeh, Remedial Project Manager, at (212) 637-4427.

Sincerely yours,


Ray Basso, Strategic Integration Manager
Emergency and Remedial Response Division

Enclosure