State of New Jersey

James E. McGreevey
Governor

Department of Environmental Protection
Bureau of Nonpoint Pollution Control
Division of Water Quality
PO Box 029
Trenton, N.J. 08625-0029
Tel: 609-633-7021, 292-0407
FAX: 609-984-2147
www.state.nj.us./dep/dwq/nonpoint.htm

Bradley M. Campbell
Commissioner

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

April 8, 2004

Mr. Steve Gallo
Executive Director
Bayonne Municipal Utilities Authority
630 Avenue C
Bayonne, NJ 07002

Re: R9 - Tier A Municipal Stormwater General Permit
NJPDES: **NJG0151033** / PI ID #: **167238**
BAYONNE CITY
Hudson County

Dear Mr. Gallo:

Enclosed please find the City of Bayonne's corrected Authorization to Discharge (Authorization) under the New Jersey Pollutant Discharge Elimination System (NJPDES) Tier A Municipal Stormwater General Permit NJ0141852 (Tier A Permit). This corrected Authorization replaces the Authorization enclosed with my letter to you dated March 24, 2004.

As references in that letter to "BAYONNE CITY" and "your municipality" indicated, it was the intent of the Department of Environmental Protection (Department) to issue the subject authorization to Bayonne City. Due to a clerical error by the Department, however, the Authorization enclosed with that letter incorrectly identified the Bayonne Municipal Utilities Authority as the "Operating Entity" (that is, the permittee).

The Department acknowledges that Bayonne City and the Bayonne Municipal Utilities Authority have entered into an Interlocal Services Agreement that was mentioned in Mr. John Rolak's February 27, 2004 letter to me, and in the Honorable Joseph V. Doria's March 18, 2004 letter to Mr. Bruce Friedman. In light of those letters, the Department has accepted the identification of Mr. Joseph Gallo as a person duly authorized to sign the

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City's Request for Authorization (RFA) and grant application for the Tier A Permit, and to be the City's Municipal Stormwater Program Coordinator under the Tier A Permit.

However, it is also the Department's position that Bayonne City is the operating entity and permittee that has Authorization to Discharge under the Tier A Permit, and that may receive the grant that will be provided by the Department to Tier A Municipalities. The Department notes in this regard that "municipal separate storm sewer," as defined in the Tier A Permit, in the NJPDES rules at N.J.A.C. 7:14A-1.2, and in U.S. Environmental Protection Agency stormwater rules at 40 C.F.R. 122.26(b)(8), covers, in addition to storm sewer pipes and catch basins, such stormwater "conveyances" as "municipal streets," "curbs," and "gutters." The above mentioned letters did not specifically indicate that the Bayonne Municipal Utilities Authority has responsibility through the Interlocal Services Agreement to operate the City's streets, curbs, and gutters. Moreover, the City's website indicates that the City's Public Works Division is responsible for street maintenance.

In addition, the City's statutory authority to operate storm sewers and other stormwater management facilities under the Municipal and County Flood Control Financing Act, N.J.S.A. 40A:27-1 et seq. (see that Act's definition of "Flood control facilities") appears to be much clearer than the Bayonne Municipal Utilities Authority's statutory authority, if any, to operate stormwater management facilities under the "Municipal and County Utilities Authorities Law," N.J.S.A. 40:14B-1 et seq., especially for stormwater that is not discharged to a combined or sanitary sewerage system or water system operated by the Authority. It is the Department's understanding that interlocal service agreements cannot confer or expand the governmental powers of public entities not otherwise delegated by the Legislature (see the decision, which specifically affected Bayonne City, in *United Water Resources v. N. Jersey Water Com'n*, 295 *N.J.Super.* 305 (1996), affirmed 151 *N.J.* 497 (1997)).

Combined sewer systems, and stormwater discharges to combined or sanitary sewer systems, are outside the scope of the NJPDES Municipal Stormwater Regulation Program rules (see N.J.A.C. 7:14A-24.2(f)). Areas that discharge stormwater solely to combined or sanitary sewer systems may be excluded from the Tier A Permit stormwater program (see Attachment C of the permit).

The Department also notes that under N.J.A.C. 7:14A-25.7(a) and Part I, Section D.1 of the Tier A Permit ("Sharing of Responsibilities"), Bayonne City may rely on the Bayonne Municipal Utilities Authority to satisfy the City's Tier A Permit obligations to implement one or more control measures (or components thereof) if the requirements of Part I, Section D.1 are met. In this regard, however, the City may not rely on the Authority to implement control measures that the Authority clearly has no legal power to implement. For example, the Authority clearly has no legal power to adopt the municipal stormwater management plan and municipal stormwater control ordinance(s) that are required under N.J.A.C. 7:14A-25.6(b)3iv, Part I, Section F.3 of the Tier A Permit, and the grant to Tier A Municipalities.

If you have any questions or need additional information, please contact Bruce Friedman at (609) 633-7021.

Sincerely,

Barry Chalofsky, P.P. Chief
Bureau of Nonpoint Pollution Control

Enclosure

c: The Honorable Joseph V. Doria, Jr., Mayor, City of Bayonne
John S. Rolak, P.E., Hatch Mott MacDonald

New Jersey Department of Environmental Protection
Bureau of Nonpoint Pollution Control
Division of Water Quality
PO Box 029
Trenton, NJ 08625-0029
Phone: (609) 633-7021
Fax: (609) 984-2147

AUTHORIZATION TO DISCHARGE
R9 -Tier A Municipal Stormwater General Permit

Facility Name:
BAYONNE CITY

PI ID #:
167238

Facility Address:
630 AVE C
BAYONNE, NJ 07002

NJPDES #: NJG0151033

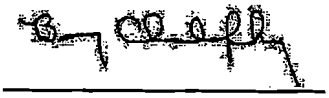
Type of Activity: Stormwater Discharge General Permit Authorization New

Owner:
BAYONNE CITY
630 AVE C
BAYONNE, NJ 07002

Operating Entity:
BAYONNE CITY
630 AVE C
BAYONNE, NJ 07002

Issuance Date:	**Effective Date:**	**Expiration Date:**
03/24/2004	04/01/2004	02/28/2009

Your Request for Authorization under NJPDES General Permit No. NJ0141852 has been approved by the New Jersey Department of Environmental Protection.



Date: 03/24/2004

Barry Chalofsky, P.P., Chief
Bureau of Nonpoint Pollution Control
Division of Water Quality
New Jersey Department of Environmental Protection

XXXXXXXXXXXXXXXXXXXX WATER RESOURCES

February 8, 1971

Honorable City Council
c/o Mr. John F. Lee, City Clerk
425 Avenue E
Bayonne, New Jersey 07002

Attn: Mr. Warren Dixon, City Engineer

Gentlemen: Re: Ingham Avenue
Combined Outfall Sewer
Bayonne

A recent inspection by a representative of this Department has shown that dry weather flow of a polluting nature was being discharged from your Ingham Avenue sewer to the Kill Van Kull. The results of analyses of a sample (Ga 01166) taken during this investigation are enclosed for your information. The discharge of polluting wastewater into waters of this State is in violation of applicable State statutes, specifically R.S. 58:12-1.

You are requested to make the corrections necessary to eliminate these deficiencies and to notify this office in writing within two weeks of receipt of this letter.

Very truly yours,

Christian T. Hoffman, Jr.
Supervising Public Health Engineer

CEE2:06

c.c. Interstate Sanitation Commission

Blind c.c. Mrs. Barbara Campbell
22 W. 45th Street
Bayonne, N. J.

BAB000001

CITY OF BAYONNE
DEPARTMENT OF PUBLIC WORKS
OFFICE OF THE CITY ENGINEER
CITY HALL
30TH STREET AND AVENUE E

WARREN W. DIXON, P. E.
CITY ENGINEER

25 February 1971

State of New Jersey
Department of Environmental Protection
Division of Water Resources
John Fitch Plaza
P.O. Box 1390
Trenton, New Jersey 08625

Attn: Mr. Christian T. Hoffman, Jr.
Supervising Public Health Engineer

Re: Ingham Avenue
Combined Outfall Sewer
Your letter February 8, 1971

Dear Mr. Hoffman:

Regarding pollution at our Ingham Avenue outfall sewer, the pollutant, Norton Company, has submitted plans for the City to accept their sewage and process water.

These plans have been approved by this office and construction will start in the very near future.

Very truly yours,

Warren W. Dixon, P.E.
City Engineer

cc: Mr. Adam W. Lapinski, Director, DPW
Mr. Fred James, Supt. Sewer/Water Utility
WWD:mgb

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MEMO — DEPARTMENT OF ENVIRONMENTAL PROTECTION

TO Mr. Delgado

FROM Mr. Gaston DATE October 23, 1970

SUBJECT Pollution Complaint, Bayonne

Reported by: Interstate Sanitation Commission, Larry Cagliostro

Pollution complaint by: Barbara Cambell
22 West 45th
Bayonne
201-436-3727

Concerning: Water Pollution
Ingraham Avenue
Outfall going into Kill Van Kull is polluted.

Additional information: Common outfall used by several industries and perhaps the City sewage treatment plant

Actions: (1) Call Richard Delgado.

(2) Call Interstate Sanitation Commission. Do we know the nature of the problem?

(3) Should a joint inspection be made?

John W. Gaston
Senior Public Health Engineer

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NEW JERSEY STATE DEPARTMENT OF ENVIRONMENTAL PROTECTION
P.O. Box 1390, Trenton, New Jersey 08625

Bureau of Water Pollution Control
SURVEILLANCE REPORT

File

Municipality: Bayonne County: Hudson Watershed: Raritan

Plant Name: Bayonne Municipal Plant Classification: S-1

Location: Foot of Oak St.

Owner: Bayonne

Licensed Operator: Fred James

Person Interviewed: " " Signature: Fred James

Treatment Process: Primary

* *Items checked ( ) should be corrected as soon as possible and this office advised of said correction within 2 weeks of date of this report. Laboratory results will be forwarded on written request.*

*	Process	Unit & Type	Remarks
	Preliminary Treatment:	Bar Screen, Communitor, Grit Chamber.	
	Primary Treatment:	8 Primary settling tanks 6 in operation	
	Secondary Treatment -		
	a. Oxidation:		
	b. Settling:		
	Tertiary Treatment:		
	Disinfection:	1 Cl2 Contact tank	BAB00000
	Sludge Treatment	8 Anaerobic Digester	
	Sludge Disposal:	Vacuum Filteration & Sludge holding lagoon	
	Chlorinator: (Gas ~~Hypo~~):	R Fischer & Porter Max. Capacity: 2000 2000	Feed: 870

Evaluation of Plant Maintenance: Satisfactory

Average Daily Flow, MGD: (Meter) 18 MGD (Est.) _____ Peak Flow, MGD: 40 MGD

Receiving Stream: ~~Arthur~~ Kill Van Kull Surface Water Classification: TW-3

Visual Observation of Receiving Stream: Upstream: Clear Downstream: Clear

Special Remarks: Sludge in holding lagoon causing heavy odors and leeching to Kill Van Kull

Turnpike to exit 14B, Avenue "E" to Linnet left then left on Oak St.
Plant located at foot of Oak St. Plant Phone 201-339-2307
Totalizer = 1192157 Emergency Phone SAME

Inspected By: SAVAGE Date: 5-16-72

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MEMO NEW JERSEY STATE DEPARTMENT OF HEALTH

TO Mr. Hoffman

FROM Mr. Delgado DATE March 25, 1970

SUBJECT Discharge of Wastes from Norton & Son to Kill Van Kull via City of Bayonne's Ingham Avenue Storm Relief Sewer

The City of Bayonne has a "combined" sewerage system, or a system in which wastewater and storm runoff flow in the same pipe. Because of the large volumes of sewage in periods of wet weather, it is necessary to bypass a portion of the sewage to local watercourses in times of storms. This is done with devices known as regulators which divert a portion of the sewage to local watercourses when flows exceed a given quantity.

One of these regulators is located at Ingham Avenue and East 22nd Street in the City of Bayonne. The storm water overflow from this regulator is diverted to the Kill Van Kull via a 60" brick sewer in Ingham Avenue.

On November 28, 1967, an inspection by this Department disclosed the fact that dry weather flow of a polluting nature was being discharged by this (Ingham Avenue) sewer to the Kill Van Kull. Mr. E. A. Taratko, Jr., City Engineer, replied on February 16, 1968 that the two industries that have been contributing flow to this storm relief sewer were E. Norton & Son and the Pharma Chemical Company. The City notified both industries that this discharge was in violation of State and Interstate Statutes, Rules and Regulations and that these discharges must cease.

On February 10, 1970, Mr. Fred James, Superintendent of the City of Bayonne Water and Sewer Utility told me that the Pharma Company (now known as the Verona Corporation) has connected the wastes formerly discharging to this storm relief sewer to the wastewater sewers.

Mr. James and I then spoke with Mr. Charles P. Lee, Plant Superintendent, Norton & Son, Bayonne. Mr. Lee told me that his firm still discharges its wastes to the storm relief sewer. Mr. Lee stated that a preliminary study by Nebolsine, Toth, & McPhee Associates has indicated that it may be possible to pre-treat these wastes and discharge to the city sewers. At present, the firm is designing a system to pre-treat these wastes and discharge them to the wastewater sewers. Mr. Lee indicated that he felt this to be problem number 19 out of twenty problems.

It is the opinion of this writer that the firm lacks the necessary motivation to solve its water pollution problems, which the firm feels are not important. Mr. Lee stated that financing the needed facilities would not be a problem for the firm.

It is the opinion of this writer that this Department should issue an Order to this firm to give the firm the motivation necessary to cease pollution of the Kill Van Kull.

Richard R. Delgado

Richard R. Delgado
Civil Engineer, Trainee

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c.c. Interstate Sanitation Commission

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JAMES R. COWAN, M.D.
STATE COMMISSIONER OF HEALTH

F-1-E

State of New Jersey

DEPARTMENT OF HEALTH
JOHN FITCH PLAZA, P.O. BOX 1540, TRENTON, N. J. 08625

ORDER

WHEREAS, the State Department of Health of the State of New Jersey has found through investigations made by its representatives that Norton & Son in the City of Bayonne, County of Hudson, and State of New Jersey, is discharging industrial waste and other polluting matter into the Ingham Avenue storm relief sewer thence into the Kill Van Kull being waters of this State, thereby causing or threatening injury to the inhabitants of this State either in their health, comfort or property, in violation of R.S. 58:12-2; and

WHEREAS, the State Department of Health of the State of New Jersey has found through investigations made by its representatives that Norton & Son in the City of Bayonne, County of Hudson, and State of New Jersey, is discharging harmful, deleterious and polluting matter from a sewer or drain into the Kill Van Kull, being waters of this State, without approval of the State Department of Health as required by R.S. 58:12-3; and

WHEREAS, the State Department of Health of the State of New Jersey, in consideration of the aforesaid findings, is of the opinion that in order for the wastewater to be properly, adequately and sufficiently treated and/or otherwise disposed of, wastewater treatment and/or disposal facilities must be provided in a manner approved by the State Department of Health of the State of New Jersey; therefore

NOTICE IS HEREBY GIVEN by the State Department of Health of the State of New Jersey, pursuant to the applicable provisions of R.S. 58:12-2 to Norton & Son in the City of Bayonne, County of Hudson, and State of New Jersey, requiring that the Company, on or before August 1, 1970, install and provide wastewater treatment and/or disposal facilities in order that the Company's wastewaters be properly, adequately and sufficiently treated and/or otherwise be disposed of in a manner approved by the State Department of Health; and

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NOTICE IS FURTHER GIVEN by the State Department of Health of the State of New Jersey, that the Company cease and desist discharging its industrial waste or other polluting matter from any sewer or drain into the waters of the Kill Van Kull being waters of this State by August 1, 1970 and thereafter.

STATE DEPARTMENT OF HEALTH OF THE STATE OF NEW JERSEY

Richard J. Sullivan, Director
Division of Clean Air and Water

Dated: April 21, 1970

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INTERSTATE SANITATION COMMISSION

Order
Concerning Discharge of Sewage
Or Other Polluting Matters from the
CITY OF BAYONNE
into the Waters of the
Interstate Sanitation District

WHEREAS, the City of Bayonne, in the State of New Jersey, was directed to appear before the Interstate Sanitation Commission at a hearing, held in the offices of the Commission, in the City of New York, on the 2nd day of March, 1949, (which hearing on application of the City of Bayonne was adjourned to May 26, 1949), to show cause why an order should not be issued directing the said City of Bayonne to discontinue the discharge of sewage or other polluting matter into the waters of the Interstate Sanitation District, in violation of the Tri-State Compact, and

WHEREAS, such hearing was held in accordance with and pursuant to the provisions of the Tri-State Compact, and

WHEREAS, the City of Bayonne was duly represented at said hearing and a record of the proceedings was made, and

WHEREAS, the Interstate Sanitation Commission has considered the record of the hearing, including representations made on behalf of the City of Bayonne, and

WHEREAS, the Interstate Sanitation Commission did, heretofore, after proper study and after public hearings upon due notice, designate the waters of the Interstate Sanitation District into classes and designate the waters

BAB 000106

in and about the City of Bayonne as being in the Class "B" water group, and

WHEREAS, the Interstate Sanitation Commission has, after investigation and after conducting public hearings, upon due notice, found from the record thereof that the City of Bayonne has been discharging sewage or other polluting matter into the waters of the Interstate Sanitation District, in violation of the law in such case made and provided, in that all of the sewage discharged or permitted to flow into said Class "B" waters of the Interstate Sanitation District from the City of Bayonne has not been so treated as to remove all floating solids and at least ten percentum (10%) of the suspended solids, or does not otherwise meet the requirements of the said Compact, and are being discharged into the said waters contrary to and in violation of the provisions of such Compact, and

WHEREAS, the Interstate Sanitation Commission, after consideration of the said record and report, has determined that the 1st day of September 1952 is a reasonable date on or before which the City of Bayonne shall have treated such sewage or other polluting matter discharged by or from the City of Bayonne into the waters of the Interstate Sanitation District, in accordance with the standards specified in the Tri-State Compact, or shall have otherwise ceased and desisted from causing or permitting the discharge of such sewage or other polluting matters to flow into, or be placed in, or

be permitted to fall, or move into the waters of the Interstate Sanitation District, contrary to the requirements and provisions of the Tri-State Compact, therefore

IT IS ORDERED that before the 1st day of September 1952, the City of Bayonne, its officers, agents and servants, and the inhabitants of the City of Bayonne, cease and desist from causing or permitting the discharge of sewage or other polluting matters to flow into, or be placed in, or permitted to fall or move into the waters of the Interstate Sanitation District, contrary to the requirements and provisions of the Tri-State Compact and of Chapters 32:18 and 32:19, Revised Statutes of the State of New Jersey, and other laws applicable thereto, or any of them, and

The Interstate Sanitation Commission has determined and now prescribes that the following specific progress shall be made in the matter of treating such sewage:

(1) Before the 1st day of June 1950, plans and specifications for the necessary pollution abatement works adequate to comply with the provisions of the Tri-State Compact shall be completed and the approval thereof by the State Department of Health of New Jersey obtained;

(2) Before the 1st day of August 1950, advertisements for bids for the construction of major contracts for the sewage treatment plant shall appear in the public press;

(3) Before the 1st day of September 1950 major contracts for the sewage treatment plant shall be awarded;

(4) Before the 1st day of September 1951, the construction of such sewage treatment works and accessories including intercepting sewers shall have been completed, or other provisions shall have been made so that not less than 75% of the sewage of the City shall be treated in such a manner as to meet the requirements of the Tri-State Compact;

(5) Before the 1st day of September 1952, construction of such sewage treatment works shall have been completed or other provisions shall have been made so that the discharge of sewage or other polluting matters from the City of Bayonne into the waters of the Interstate Sanitation District in violation of the provisions of the Tri-State Compact shall have been discontinued.

IT IS FURTHER ORDERED that in making this order it shall not be deemed to preclude the Interstate Sanitation Commission from making any further or additional orders as to the subject matter hereof, if, in its judgment, the public interest or the facts and circumstances then existing so require.

Nothing herein contained shall be construed to relieve the City of Bayonne from obtaining the approval

Bayonne

of the State Department of Health of the State of New Jersey or any other body having jurisdiction in the premise.

INTERSTATE SANITATION COMMISSION

By: [signature]
Chairman

(S e a l)

Certified to be a true copy

Seth G Hess
Seth G. Hess
Director & Chief Engineer

Authorized: July 7, 1949

9

City of Bayonne
Hudson County, New Jersey

Combined Sewer Overflow

Facilities and Sewer System Inventory and Assessment Report

NJPDES Permit No. 0105023

Individual Authorization No. 0109240

March 1998

BAB000044

John S. Rolak, Jr., P.E.
N.J. License #29108

Facilities and Sewer System Inventory

and Assessment Report

for the

City of Bayonne

Table of Contents

Facilities and Sewer System Inventory
and Assessment Report
for the
City of Bayonne

1. Purpose and Objectives

The General Permit for combined sewer systems requires the development of a CSO Discharge Characterization Study consisting of a field calibrated and verified Combined Sewer Overflow Model designed to represent the combined sewer system's response to historical events of precipitation. The purpose of the Sewer System and Inventory Report, the requirements of which are outlined in Part V.B.4.c. of the General Permit for Combined Sewer Systems NJPDES No. 0105023, is to provide the system information required for the development of a Storm Water Management Model (SWMM) for each catchment area.

The objectives of this report area are to develop, on a drainage area and system wide basis, the following:

a) a comprehensive inventory of all elements of the combined sewer system including, but not limited to all sewer lines, regulators, tide gates, diversion chambers, pumping stations, interceptors, trunk sewers, and outfall structures;

b) information on the operational status, condition, and hydraulic capacity of all facilities; and

c) an overall understanding of the control and transport facilities used to transfer wastewater flows from the combined sewer system to the treatment plant.

At a minimum the report requires detailed drawings of all regulators, tide gates, and flow diversion structures in plan and profile view and field verification of existing data.

The information provided herein has been developed from existing information and field verification. Additional information will be developed during the monitoring and modeling studies which will be undertaken as part of the requirements of the general permit.

The assessment of the combined sewer overflow facilities, which is required under the General Permit, was conducted by Killam Associates and personnel from the City's Department of Public Works and reported on in the Report entitled, **City of Bayonne Combined Sewer System, Annual Inspection and Assessment Report, NJPDES Permit No. 0105023 and Individual Authorization No. 0109240, dated October 1997.**

2. Introduction

This report was prepared for the City of Bayonne. The City is serviced by a combined sewer system and owns and operates all of the wastewater collection and transport facilities in the City, but does not currently own or operate any treatment facilities. All wastewater flows in the City of Bayonne are tributary to the Oak Street Pumping Station which transports wastewater to the Passaic Valley Sewerage Commissioners (PVSC) Water Pollution Control Facility (WPCF) in Newark for treatment. Wastewater flows from the City of Bayonne, Jersey City , and a section of the Town of Kearny are transported to the PVSC WPCF by facilities owned and operated by a joint agreement. Under the current service agreement, wastewater flows from the City of Bayonne are restricted to an average daily flow of 11 MGD and a peak flow of 17.6 MGD.

The City of Bayonne and its major combined sewer system components are on Plate A in the rear of this report. The City includes an area of approximately five (5) square miles and is located on a peninsula within the New Jersey - New York Metropolitan Area. It is surrounded by Jersey City on the North, Newark Bay which separates it from the Cities of Newark and Elizabeth on the west, the Kill Van Kull which separates it from Staten Island on the south, and Upper New York Bay which separates it from the Borough of Manhattan, New York on the east.

The City of Bayonne is an older urban community located in southern Hudson County. The 1990 population of the City was 61,444 persons and a population per housing unit of 2.39. Over 60 percent of the housing units were constructed prior to 1939. The City consists of a land area of approximately 3,200 acres of which approximately 1,780 acres are serviced by the combined sewer system. The industrial areas along the east side of the City are serviced primarily by separate

sanitary sewers. All wastewater flows are tributary to the Oak Street Pumping Station from where they are transported to the PVSC WPCF in Newark.

3. Previous Studies

A preliminary Combined Sewer Overflow Study for Planning Area II, the City of Bayonne (**Study**), was conducted as part of the 201 Wastewater Facilities Plan completed for the Hudson County Utilities Authority by Malcolm Pirnie in 1979. The **Study** investigated the status of the CSOs in the planning area and explored various management alternatives for abatement of CSO discharges. Various models were used in the study to evaluate overflow volumes, suspended solids and BOD loadings and the study documented problems with tidal inflow during high tides. It has been reported by the City that each of the regulator chambers were rehabilitated in the mid 1980's and that the tidal inflow problem has been eliminated. The **Study** did not report on estimated frequency of wet weather overflows anticipated within the City of Bayonne nor did it document any dry weather overflows. The modeling conducted did provide estimates as to the annual loads and overflow volumes discharged from all CSOs within the City during the period 1963 through 1974. Overall it estimated in the **Study** that average overflow volumes were 51.1 million cubic feet and that annual suspended solids and BOD_5 loads were 7.1 million pounds and 912,000 pounds respectively.

A Solids/Floatables Control Plan was undertaken by Killam Associates for Hudson County Planning Areas II and reported on in October 1993 and finalized in August 1995. The investigations undertaken as part of this study included the development of plans and profiles for the interceptor sewers within the City as well as the combined sewers and discharge pipes immediately upstream and downstream of each regulator. While this work covered the CSO discharges associated with the interceptor control facilities, it did not include any of the internal CSO points nor relief sewers. The investigations into the relief sewer system and associated internal overflows is currently ongoing.

4. Additional Information

The Sewer System Inventory and Assessment report does herein incorporate by reference the

Annual Inspection and Assessment Report (dated October 1997), and **the Service Area Drainage and Land Use Report (dated December 1997),** as completed by Killam Associates on behalf of the City of Bayonne, and the **Combined Sewer Overflow Planning Study for Planning Area II (revised August 1995),** undertaken by Hudson County as part of the Sewage Infrastructure Improvement Act Grant. The above referenced documents provide significant information on the combined sewer systems tributary to CSO control facilities within the City.

5. Service System Inventory

5.1 General Information

According to information obtained from various sources, there are approximately 78 miles of sewers within the City of Bayonne. For all practical purposes, there are no separate sanitary sewers within the City. While the sewers in the Constable Hook region of the City are separate, they are tributary by a sewage pumping station to the combined sewer system along Avenue F and thus become part of the combined sewer flows tributary to Regulator 1. Of the 78 miles of sewers, approximately 95 percent are combined sewers with the remaining 5 percent storms sewers.

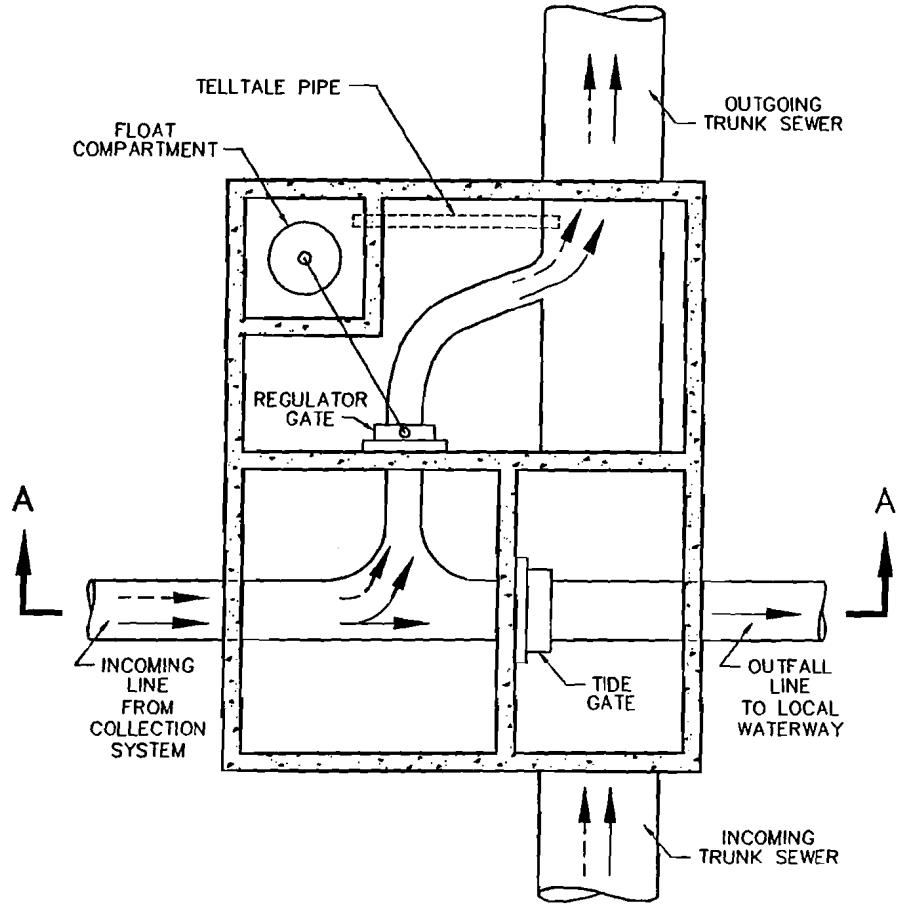
The initial segments of the City of Bayonne combined sewer system were constructed about 1910 and were originally designed to discharge untreated wastewater into Newark Bay, the Kill Van Kull, and Upper New York Harbor. Approximately 80 percent of the sewer system is circular pipe while the remaining portions are non-circular or have no available data. Pipe sizes within the City range from 4 inches to 84 inches in diameter with non-circular pipe heights ranging from about 30 inches to 60 inches. Typically, non-circular pipe has a height to width ratio of 1.5 to 1.

The City constructed a sewage treatment plant during the 1950's to provide primary treatment of wastewater from the City prior to discharge into Upper New York Harbor. In addition to a system of interceptors to transfer the wastewater to the sewage treatment plant on the east side of the City, flow control structures or regulators were constructed to divert the wastewater from

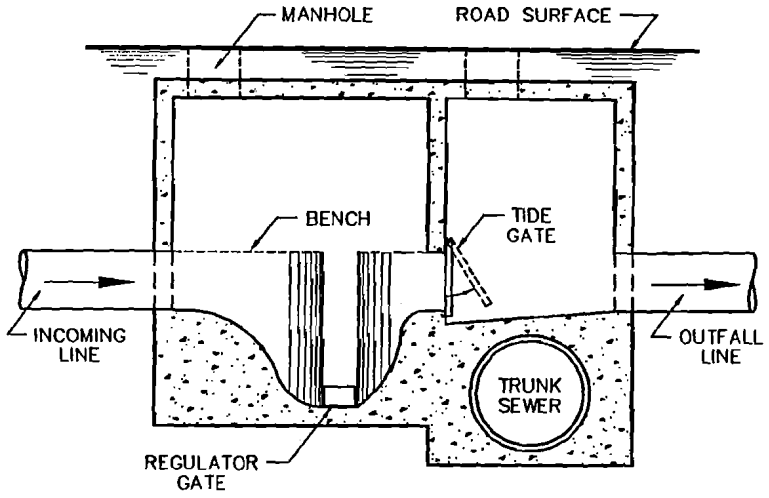
the combined sewer system to the interceptor. The flow control structures also had the function of preventing surcharging of the interceptor by restricting or closing the regulator gate to the interceptor and diverting the flow to the original outfalls during periods of rainfall.

A typical City of Bayonne combined sewer overflow control facility on its interceptor system is illustrated in Figure 1. Under dry weather conditions, wastewater enters the diversion chamber and is directed by a sluiceway to the regulator valve and then to the interceptor. There is no sandcatcher chamber in the regulator chamber and thus grit from the system can enter into the interceptor system. As flow height in the diversion chamber increases, it exceeds the height of the overflow weir and excess flow is discharged as a combined sewer overflow. A tide gate chamber is located between the receiving waters and the diversion chamber to prevent the entrance of extraneous waters into the interceptor system. A single tide gate is used in most locations.

As the City continued to grow and develop, problem areas developed within the combined sewer system due to capacity limits within the existing combined sewer system. Accordingly, the City of Bayonne undertook the construction, in specific areas, of relief sewers to provide hydraulic relief to the existing combined sewer system. These relief sewers were designed specifically to relieve street flooding and surcharging of the combined sewer system. Catch basins in the area of the relief sewer were directly connected, however, to eliminate the need to divert all catch basins from the combined sewer system; the two systems were cross-connected. Catch basins remain connected to the combined sewer system, but internal overflow pipes or weirs diverted excess combined sewer wastewater during periods of rainfall from the combined sewer system to the relief sewer. These relief sewers were designed as storm sewers with internal overflows from the combined sewer system as illustrated in Figure 2. Overall there are twelve (12) discharge pipes associated with the relief sewer system and some thirty five (35) individual overflow points. Table 1 provides information on the location of all CSO discharge pipes, the nature of the control facility, and the name of the receiving body of water.



PLAN



SECTION A–A

LEGEND

DRY WEATHER FLOW

WET WEATHER FLOW

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

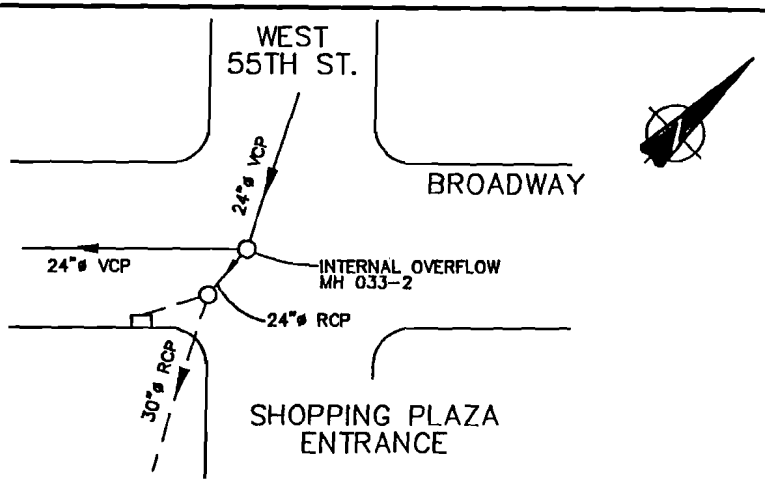
COMBINED SEWER OVERFLOW
DISCHARGE CHARACTERIZATION STUDY

TYPICAL REGULATOR

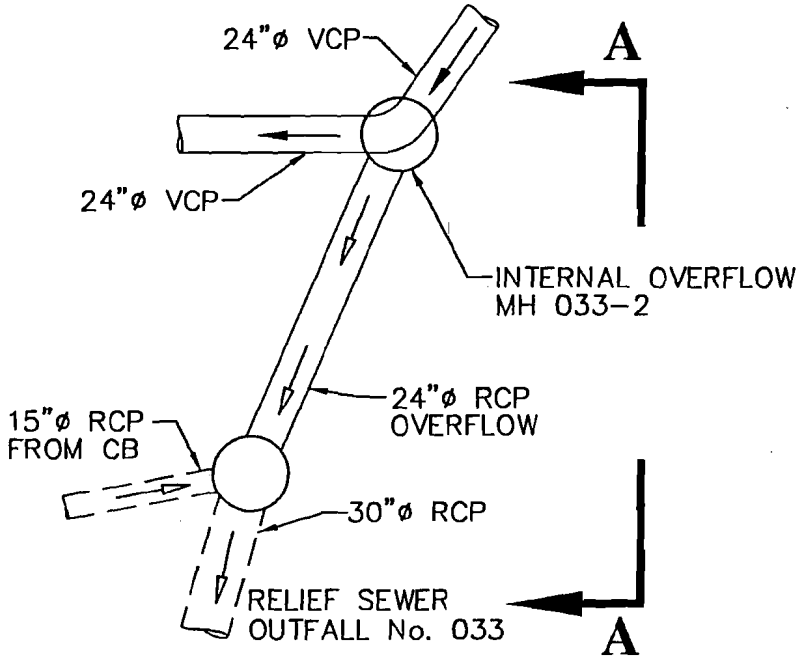
DATE		FIGURE
3/2/98	Killam	1

N: \PROJECTS\DRAWINGS\J233502\TYPREG2

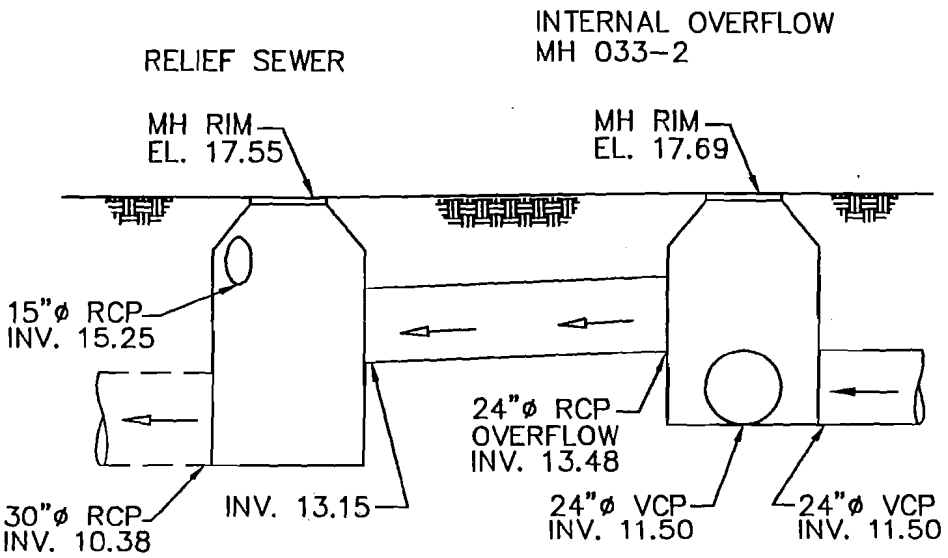
MODIFIED 3-5-98



LOCATION PLAN
N.T.S.



PLAN VIEW
SCALE: 1" = 10'



SECTION A-A
SCALE: 1" = 5'

NOTE: ELEVATIONS TAKEN FROM RECORD PLANS.

LEGEND
- RELIEF SEWER PIPE
- COMBINED SEWER PIPE
- WET WEATHER FLOWS
- DRY & WET WEATHER FLOWS

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW
DISCHARGE CHARACTERIZATION STUDY

TYPICAL INTERNAL OVERFLOW

DATE		FIGURE
3/2/98	Killam	2

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MODIFIED 3-5-98

5.2 The City of Bayonne Interceptor System

The City of Bayonne is divided into eighteen (18) major drainage basins each of which is serviced by a collector sewer system which discharges into the City's interceptor system at a CSO control facility. The City has three major interceptor systems which service the east, west, and south sides of the City. A schematic of the City's major interceptor facilities and the capacity of each is illustrated in Figure 3. Also listed on this figure are the anticipated dry weather average daily flow estimated based on information contained within the 1979 Study. The exact locations of these facilities are illustrated on Plate A.

The westerly interceptor sewer, which generally runs along Newark Bay, ranges in size from 12 inch to 48 inches in diameter and has a carrying capacity from 1.0 MGD to 18.6 MGD based on Manning's Equation and record plans. The westerly interceptor is tributary to the West 22nd Street Sewage Pumping Station which transfers the wastewater by means of a 30 inch force main to the easterly interceptor at Avenue F and 22nd Street. This pumping station has a reported design capacity between 25 and 30 MGD. The westerly interceptor sewer collects wastewater from Regulators 10 through 17.

The easterly interceptor sewer, which is generally located along Route 169 and along Avenue F, ranges in size from 42 inches to 72 inches and has a theoretical flow capacity of 16.6 MGD at Regulator 18 to 58.2 MGD near the Oak Street Pumping Station. The easterly interceptor sewer collects wastewater flows from Regulators 1 through 4 in addition to the West 22nd Street Pumping Station which enters the interceptor near Regulator 3.

The southerly interceptor sewer, which is generally located along the Kill Van Kull, ranges in size from 24 inches to 54 inches in diameter and has a theoretical carrying capacity from 5.0 MGD at Regulator 9 to 30 MGD near the Oak Street Pumping Station. The interceptor sewer services the southeastern, southwestern, and southern regions of the City and collects wastewater flows from Regulators 5 through 9.

The southerly and easterly interceptors are tributary to the City of Bayonne Oak Street Pumping Station located on the site of the old sewage treatment plant. Wastewater from these interceptors are transferred directly to the PVSC Water Pollution Control Facility (WPCF) in Newark by means of a 36 inch force main which transfers the flow to a common force main in Jersey City which then transfers flow from both municipalities across Newark Bay and to the primary tanks of the PVSC WPCF. The peak pumping capacity of the Oak Street Pumping Station to PVSC is 17.6 MGD which is set by contract with PVSC. Excess wet weather wastewater flows which exceed this capacity are diverted to a secondary pumping station. There the excess flow is pumped into the old STP Outfall which is also the outfall for regulator 2. This pumping station has a reported capacity of 40 MGD.

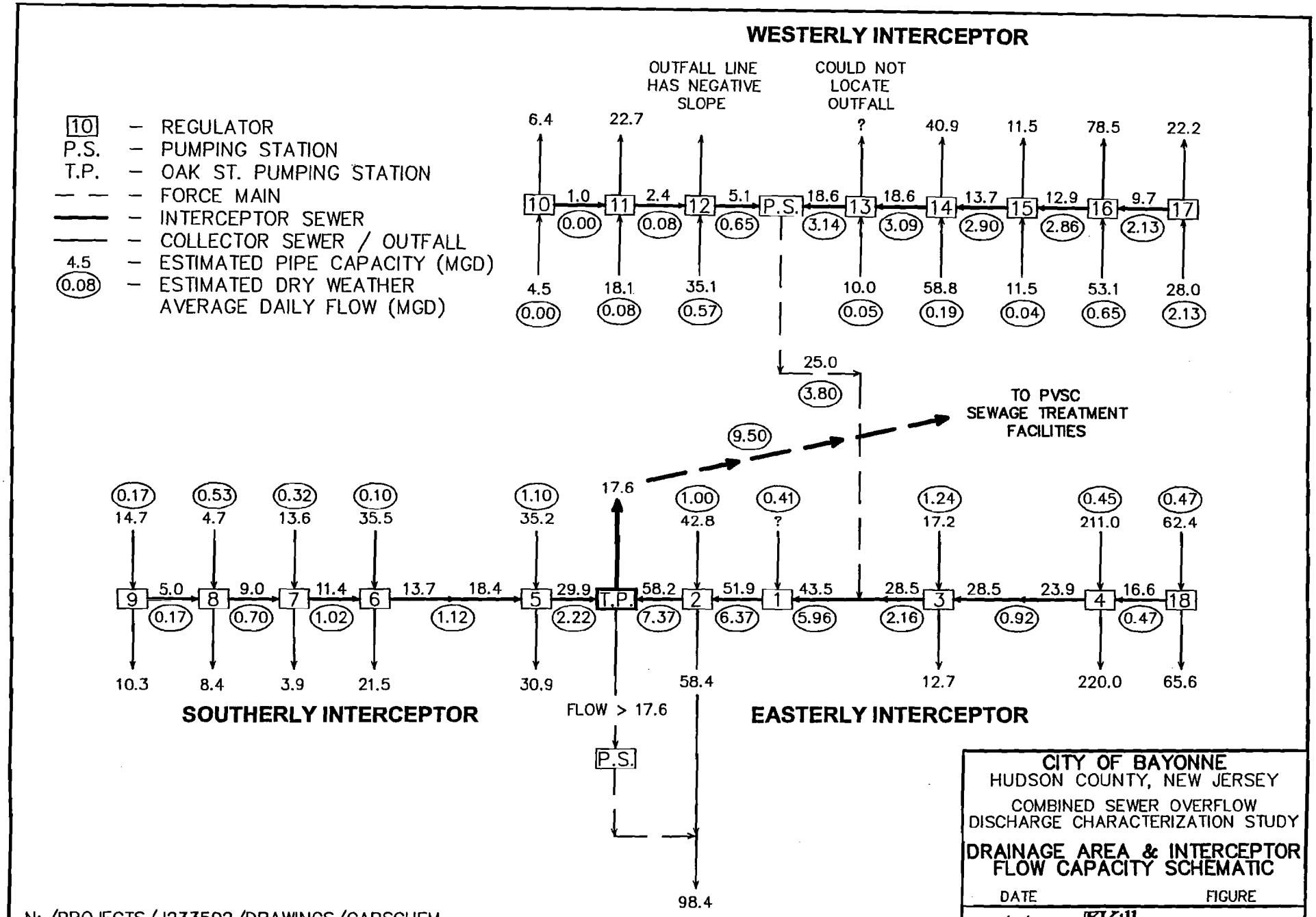
5.2.1 CSO Control Facilities

All of the combined sewer overflow control facilities associated with the interceptor system were investigated and evaluated in detail during the **CSO Solids/Floatables Control Planning Study** conducted by Killam Associates in 1993. Reproductions from the **Planning Study** are included in Appendix A of this report for each of the eighteen (18) combined sewer overflow points associated with the interceptor sewer. The Appendix provides a general background into combined sewer system tributary to each outfall as well as Plan and Profiles for major collector sewers and discharge pipes associated with each discharge point. Figure 4 provides information upon the drainage areas tributary to each regulator. Additional information on each CSO drainage basin is provided in the Drainage Area & Land Use Report prepared by Killam Associates dated December 1997.

At the present time Killam Associates is completing work on the Phase II Solids/Floatables Control Plan on the relief sewers and internal overflows. Detailed information on the internal overflows has been compiled under this phase of the Planning Study and is herein included in the Appendix. Information includes detailed schematics of each CSO Control Facility as well as Plan and Profiles of each relief sewer and discharge point. Overall the condition of the internal overflow and relief sewer system has been found

Table 1
City of Bayonne
Combined Sewer Overflow Points

NJDPES Permit Serial Number	Regulator/ Internal Overflow Number	CSO Discharge Location	Name of Receiving Water body
001	Oak St P.S.	South of Bayonne P.S.	Kill Van Kull
002	Internal Overflows	East of 5th St. P.S.	Kill Van Kull
003	Internal Overflows	South of 1st St. P.S.	Kill Van Kull
004	Internal Overflows	South of Lord Ave. & W. 1st St.	Kill Van Kull
005	Regulator 2	South of Bayonne P.S.	Same Discharge Pipe as 001
006	Regulator 3	Rte. 169, Approx. 950' NE of E. 30th St.	Upper Hudson Bay
007	Regulator 4	Port Terminal Road, Approx. 150' East of Rte. 169	Upper Hudson Bay
008	Regulator 5	South End of Ingham Ave.	Kill Van Kull
009	Regulator 6	South of Broadway & W. 1st St.	Kill Van Kull
010	Regulator 7	South of Avenue C & W. 1st St.	Kill Van Kull
011	Regulator 8	Approx. 750' NW of Avenue A & W. 3rd St.	Newark Bay
012	Regulator 9	West End of W. 5th St.	Newark Bay
013	Regulator 10	West End of Edwards Court	Newark Bay
014	Regulator 11	City Park, West of Country Village Court	Newark Bay
015	Regulator 12	West End of W. 22nd St.	Newark Bay
016	Regulator 13	West End of W. 24th St.	Newark Bay
017	Regulator 14	Southwesterly Corner of Veteran's Park	Newark Bay
018	Regulator 15	West End of W. 30th St.	Newark Bay
019	Regulator 16	Southwest of West End of Lincoln Parkway	Newark Bay
020	Regulator 17	Ramp to Rte. 440 North, Approx. 500' NW of JFK Blvd.	Newark Bay
021	Regulator 18	Pulaski St. & E. Pulaski Lane	Upper Hudson Bay
022	Internal Overflows	South of Zabriskie Ave. & W. 1st St.	Kill Van Kull
023	Not a CSO	South of West 1st St. P.S.	Kill Van Kull
024	Internal Overflows	South of Humphrey Ave. & W. 1st St.	Kill Van Kull
025	Internal Overflows	West End of W. 5th St.	Newark Bay
026	Internal Overflows	Southwesterly Corner of Veteran's Park	Newark Bay
027	Internal Overflows	West End of W. 30th St.	Newark Bay
028	Internal Overflows	West End of Lincoln Parkway	Newark Bay
029	Internal Overflows	West End of W. 37th St.	Newark Bay
030	Internal Overflows	West End of W. 54th St.	Newark Bay
031	Not a CSO	West End of W. 10th St.	Newark Bay
032	Not a CSO	West End of Benmore Terrace	Newark Bay
033	Internal Overflows	Pulaski St. & E. Pulaski Lane	Same Discharge Pipe as 021



CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW DISCHARGE CHARACTERIZATION STUDY

DRAINAGE AREA & INTERCEPTOR FLOW CAPACITY SCHEMATIC

DATE		FIGURE
3/2/98	Killam	3

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MODIFIED 3-5-98

to be acceptable.

5.2.2 Theoretical Flow Capacity Analysis

A theoretical capacity analysis of the tributary combined sewers, regulators, and interceptors has been developed to provide some understanding of the hydraulics of the regulator and interceptor system servicing the City of Bayonne. Each of the seventeen (17) active CSO points associated with the Interceptor System are connected to regulator chambers which control the amount of wastewater flow to the interceptor. When the wastewater flow depth in the interceptor sewer rises, it causes the float mechanism in the regulator to close the regulator gate thereby restricting the amount of wastewater able to enter the interceptor (See Figure 1). When the flow into the chamber from the combined sewer system exceeds the capacity of the regulator, the flow level in the chamber increases until it is great enough to flow over the weir, and through the tide gates to the receiving water. An analysis of all regulators in the City has shown that each regulator gate has a maximum flow capacity which equals or excess the capacity of the tributary sewers. Therefore, CSOs should not occur unless interceptor capacity is limited causing the regulator to close.

All of the interceptor sewers within the City have adequate design capacity for dry weather flows which currently averages around 9 MGD. Pipe capacity within the interceptor system ranges from four to thirty times the average dry weather flow depending on the area. For the most part the interceptor system is capable of transporting flows of approximately six to ten times the average daily flow without an overflow. The capacity of the westerly interceptor system is reportedly somewhat reduced by sediment in the system, however the City is currently undertaking internal inspection and cleaning of these sewers.

The southerly area of the City is the location of most of the reported flooding problems. The topography in this area is relative low which causes capacity problems in the outfall piping under high tidal conditions in both the combined sewer overflows and relief sewers

Table 3
Relief Sewer System and Internal Overflows
City of Bayonne

NJPDES Permit Outfall Serial Number	CSO Control Facility Number	Outfall Pipe Size (inches)	Interconnection Size and Pipe Material	Tide Gates Number	Tide Gates Operating Status	Individual Drainage SubAreas (acres)
Outfall 002		84" RCP				424
	2-1A		45"X29" HERCP	0	N/A	40
	2-2A		24"X38" HERCP	0	N/A	67
	2-1B		Plugged	0	N/A	plugged
	2-2B		24"X40" VERCP	0	N/A	103
	2-3B		54" RCP	0	N/A	87
	2-4B		21" RCP	0	N/A	67
	2-5B		30" RCP	0	N/A	30
	2-6B		18" RCP	0	N/A	25
	2-7B		12" RCP	0	N/A	5
Outfall 004		30"RCP				
	4-1		24" RCP	1	GOOD	10
Outfall 006		30" RCP				29
	6-1		24" RCP	0	N/A	21
	6-2		18" RCP	0	N/A	8
Outfall 022		24" RCP				45
	22-1		15" RCP	0	N/A	38
	22-2		15" RCP	0	N/A	2
	22-3		24" RCP	0	N/A	5
Outfall 024		24" RCP				25
	24-1		15" RCP	0	N/A	14
	24-2		15" RCP	0	N/A	8
	24-3		2-12" VCP	0	N/A	3
Outfall 025		24" RP				27
	25-1		15" RCP	0	N/A	13
	25-2		24" RCP	0	N/A	5
	25-3		15" RCP	0	N/A	9
Outfall 026		33" RCP				
	26-1		24" RCP	0	N/A	67
Outfall 027		24" RCP				
	27-1		18" RCP	0	N/A	14
Outfall 028		36" RCP				46
	28-1		24" RCP	0	N/A	34
	28-2		18" RCP	0	N/A	9
	28-3		18" RCP	0	N/A	3
Outfall 029		48" RCP				
	29-1		18" RCP	0	N/A	61 14
	29-2		12" RCP	0	N/A	4
	29-3		18" RCP	0	N/A	9
	29-4		18"RCP	0	N/A	10
	29-5		18" RCP	0	N/A	5
	29-6		15" RCP	0	N/A	7
	29-7		15" RCP	0	N/A	12
Outfall 030		24" RCP				21
	30-1		18" RCP	0	N/A	16
	30-2		15" RCP	0	N/A	5
Outfall 033		54" RCP				29
	33-1		Plugged	0	N/A	plugged
	33-2		24" RCP	0	N/A	29

which have been constructed. The interceptor capacity is adequate for dry weather flows, however, problems in this area are typically associated with northeasterly storms which can cause unusually high tidal conditions and flooding of low lying areas.

While the collector and interceptor sewers within the City of Bayonne generally have more than adequate capacity for peak dry weather flows, there is insufficient wet weather capacity in most areas. Simplified hydraulic models based on the Rational Method for runoff computation indicated that most interceptor sewers have capacities for rainfall intensities corresponding to a three week return period. This means that most CSO discharge pipes are active during significant rainfall periods.

The maximum interceptor flow capacity of the westerly and southerly interceptors tributary to the Oak Street Pumping Station are in excess of 90 MGD. While the interceptor system was designed to maximize flows to the old sewage treatment plant, the restricted pumping capacity of 17.6 MGD to the PVSC WPCF in Newark limits the flow transported for treatment. The Oak Street Pumping Station has the ability to transfer excess combined flows to the CSO outfall pipe for Regulator 2. Combined wastewater flows which enters the interceptor and exceed the pumping capacity of the Oak Street Pumping Station are currently discharged to the Kill Van Kull.

5.3 Internal CSO Control Facilities

In addition to the CSO control facilities which are associated with the interceptor system, there are combined sewer overflow control facilities which provide hydraulic relief to the combined sewer system (See Plate A). Overall there are twelve (12) discharge points associated with the relief sewer system which contains a total of thirty-five (35) individual control facilities or overflow points. In general the control facilities consists of piped cross-connections between the combined sewer and relief sewer systems wherein wastewater flows are diverted from one system to the other when flow heights reach the invert of the cross-connection. Table 3 provides information on the relief sewer system including the outfall size as well as the number of

individual overflow points associated with each outfall and the size of the cross-connection pipe.

All of the internal overflows on the relief sewer system have been inspected and investigated under the Phase II CSO Solids/Floatables Control Planning Study currently being conducted by Killam Associates. Schematics illustrating the location, elevations, and size of the combined/relief sewers associated with each control facility have been prepared and are included in the Appendix of this report. In addition, plan and profiles of the relief sewer system at each CSO control facility and outfall have been developed and are also included in the Appendix.

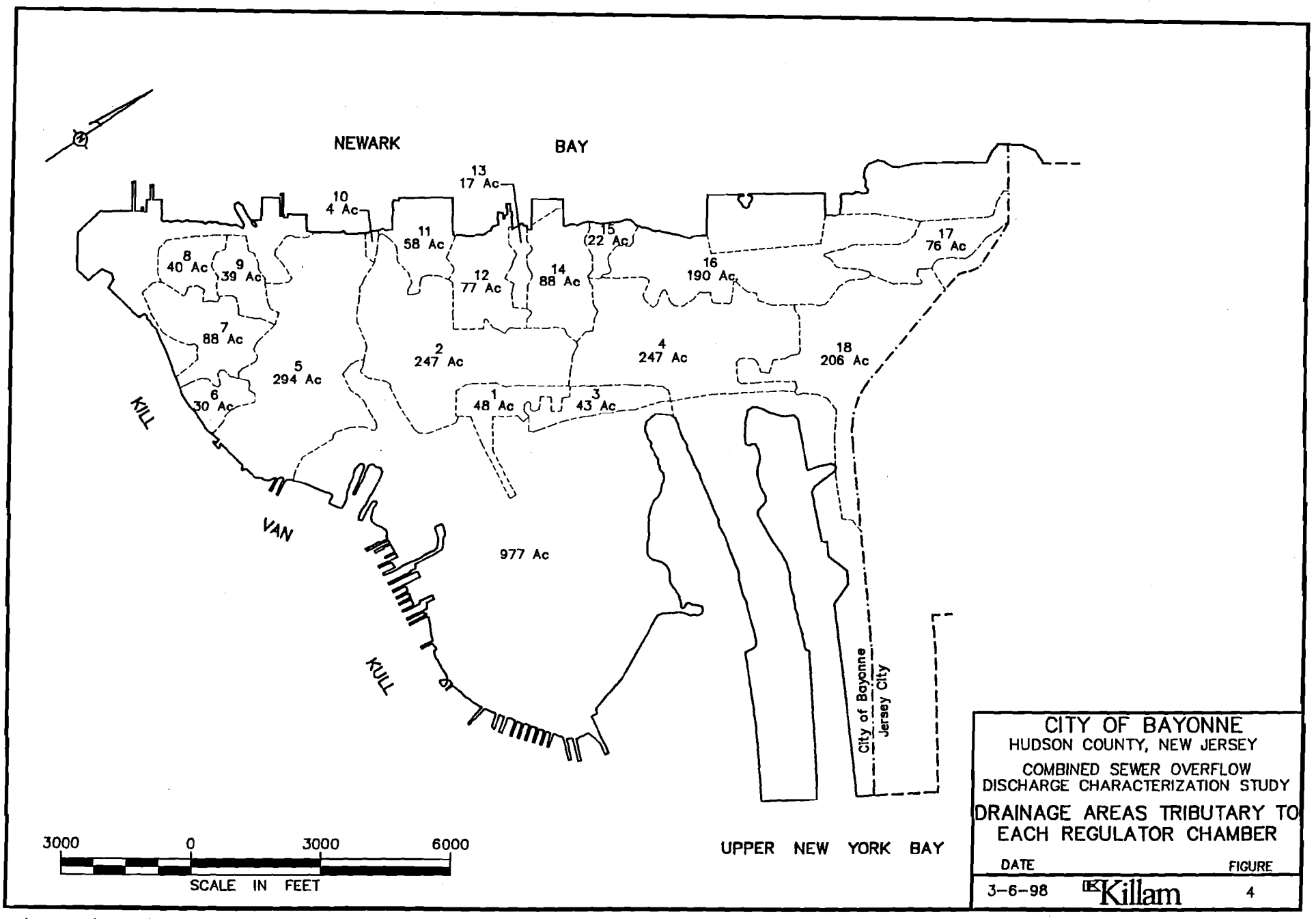
5.4 Pumping Stations

The City of Bayonne combined sewer system contains four pumping stations, two on the combined sewer system and two on the relief sewer system. The two pumping stations associated with the combined sewer system are the 22nd Street Pumping Station which transports flow from the Westerly Interceptor to the Easterly Interceptor, and the Oak Street Pumping Station which transports dry and wet weather flow from the City's interceptor system to the PVSC Water Pollution Control Facilities in Newark. The two pumping stations associated with the relief sewer system are the West 1st Street Pumping Station and the 5th Street Pumping Station. The West 1st Street Pumping Station accepts wet weather flows as the hydraulic head increases in the southerly interceptor above the crown of the pipe. The 5th Street Pumping Station accepts stormwater and combined sewer overflows from nine control facilities. The 5th Street Pumping Station discharges into an inlet tributary to the Kill Van Kull

Information concerning the combined and relief sewer pumping stations has been compiled and is provided in Table 4. This table provides information on the number of pumps, the pumping capacity, the drainage area, and whether the pumping station is associated with dry and strictly wet weather flows.

5.5 Integration of the Overall Combined and Relief Sewer Systems

Overall the City of Bayonne has a combined sewer system with twenty eight (28) active CSO



CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY
COMBINED SEWER OVERFLOW
DISCHARGE CHARACTERIZATION STUDY
DRAINAGE AREAS TRIBUTARY TO
EACH REGULATOR CHAMBER

DATE		FIGURE
3-6-98	Killam	4

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Table 5
Summary of Common Drainage Basins
Between Combined and Relief Sewers
servicing the
City of Bayonne

NJPDES Outfall Serial Number	Interceptor Regulator Number	Interceptor Control Facility Location	Drainage Area (Acres)	Relief Sewer NJPDES Serial Number in Drainage Basin	Number of Tributary CSO Facilities	Relief System Drainage Area (Acres)
		Easterly Branch				
001/005	2	Oak Street Easement	247	002B	7	214
Plugged	1	Avenue F	48		none	
006	3	30th St & Ave. F	43	006	2	29
007	4	34th St & Route 169	247		none	
021	18	50th St & Route 169	206	033	1	29
		Southerly Branch Interceptor				
008	5	E 5th St & Ingham Ave	294	002A	2	210
009	6	E 1st St & Broadway	30		none	
010	7	W 1st St & Ave C	88	022	3	45
		Humphreys Ave & 1st Street		024	3	25
011	8	W 3rd St & Ave C	40		none	
012	9	W 5th St & Ave A	39	025	3	27
		Westerly Branch				
013	10	Edwards Ct & Ave A	4		none	
014	11	W 16th St & Ave A	58		none	
015	12	W 22nd St & Ave A	77		none	
		W 22nd Street Pumping Station				
016	13	W 24th St & Ave A	17		none	
017	14	W 25th St & Ave A	88	026	1	67
018	15	W 30th St & Ave A	22	027	1	14
019	16	Lincoln Ave & Ave A	190	028 and	3	46
				029	7	61
020	17	NJ Turnpike & JFK Blvd	76	030	2	21
		Totals	1814			788

Table 2
Theoretical Flow Capacity Analysis
Collector Sewers, Control Facilities, and Interceptors
servicing the
City of Bayonne

Regulator Number	Control Facility Location	Drainage Area (Acres)	Collector Sewer Pipe Size (inches)	Collector Sewer Pipe Shape	Collector Sewer Capacity (MGD)	Regulator Size (W" X H")	Regulator Capacity (MGD)	Downstream Interceptor Pipe Size (inches)	Downstream Interceptor Shape	Downstream Interceptor Capacity (MGD)
				Easterly Branch						
2	E. 15th St. Extension	247	54	circular	42.8	32.6 x 21	62.0	72	round	58.2
1	E. 19th St. & Ave. F	48	66	circular	-	24.6 x 16	44.7	72	round	51.9
3	30th St & Ave. F	43	30	circular	17.2	12 x 12	4.7	54	round	28.5
4	34th St & Route 169	247	dual 48	circular	211.0	35.4 x 21	34.8	48	round	23.9
18	50th St & Route 169	206	48	circular	62.4	38.3 x 16	28.2	42	round	16.6
				Southerly Branch Interceptor						
5	E 5th St & Ingham Ave	294	70 x 60	horseshoe	35.2	38.5 x 21	39.1	54	round	29.9
6	E 1st St & Broadway	30	20 x 30	brick egg	35.5	12 x 12	7.7	36	round	13.7
7	W 1st St & Ave C	88	20 x 30	brick egg	13.6	18.75 x 12	14.4	33	round	11.4
8	W 3rd St & Ave A	40	dual 18	circular	4.7	15.4 x 7.5	5.8	30	round	9
9	W 5th St & Ave A	39	24	circular	14.7	12 x 12	4.5	24	round	5
				Westerly Branch						
10	Edwards Ct & Ave A	4	12	circular	4.5	6 x 5	1.0	12	round	1.0
11	W 16th St & Ave A	58	24	circular	18.1	7.75 x 7.5	2.9	18	round	2.4
12	W 22nd St & Ave A	77	28 x 42	brick egg	35.1	21 x 13	11.1	24	round	5.1
	W 22nd St. Pumping Station									
13	W 24th St & Ave A	17	16	circular	10.0	7.75 x 7.5	3.6	48	round	18.6
14	W 25th St & Ave A	88	24 x 36	brick egg	21.7	21 x 12	18.4	48	round	18.6
15	W 30th St & Ave A	22	18	circular	11.6	7.5 x 5	2.5	42	round	13.7
16	Lincoln Ave & Ave A	190	30 x 45	brick egg	53.1	30.9 x 16	27.2	36	round	13.0
17	NJ Turnpike & JFK Blvd	76	36	circular	28.0	26.3 x 12	16.5	33	round	9.7

Table 4
City of Bayonne
Pumping Station Data

Pumping Station	Location	Service Area	Tribuary Area (acres)	Number of Pumps	Pumping Capacity (MGD)	NJPDES Outfall Serial No.
Dry and Wet Weather Pumping Stations						
West 22nd Street	End of West 22nd Street near Newark Bay	Westerly Interceptor	532	2	25	None
Oak Street	Oak Street and 5th Street	Entire City	2300	2 2	17.6 40	None 001/005
Wet Weather Pumping Stations						
West 1st Street	West 1st Street near Humphreys Avenue	Southerly Interceptor	80	2	6	003
5th Street	5th Street and Ingham Avenue	Drainage Area 2	247	8	300	002

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discharge points and over fifty (50) combined sewer overflow control facilities. The combined sewer system has been modified by the construction of relief sewers in flood prone areas to provide hydraulic relief during periods of wet weather. While some CSO control facilities associated with the City's Interceptor System do not have internal overflows and relief sewers, others do. The relationship of the combined sewer and relief sewer system, including all CSO Control Facilities is illustrated on Plate B in the rear of this report. Plate B is a schematic of the overall combined sewer system servicing the City of Bayonne which illustrates the City's Interceptor Sewer Systems, those CSO regulators associated with each, the relief sewers and internal overflows associated with each, as well as flow capacities for all systems.

In addition the Plate B, a summary of the inter-relationship of the CSO drainage basins is provided in Table 5. Table 5 lists each combined sewer overflow outfall associated with the Interceptor System, the size of the drainage basin and denotes those drainage basins which are also serviced by the internal overflows and relief sewer. Information on the drainage basin size within individual relief sewers is also provided. Plate B, together with the information provided in Appendix A, provides detailed information on the combined and relief sewers within the City of Bayonne.

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Appendix A

Combined Sewer Overflow
Control Facility Data Extract
Regulator Chambers

City of Bayonne

CSO Control Facility Data Extract

Chamber Location & Description

Reg. No.	**1**
Location:	E. 19th Street and Avenue F
NJPDES Outfall No.	None
Chamber Status:	Inactive
Overflow to:	Plugged and Overflow Pipe Removed
Character of District Served:	Residential and Industrial
Regulator Location:	Plugged
District Collector Sewer (Size & Cap)	
Outfall to Receiving Water (Size & Cap)	Plugged
Outfall Condition:	30 inches and 42 inches - Both Plugged
Tidal Effects:	None
Regulator Size:	Not Applicable
Condition of Reg:	Outfall pipes are plugged which forces all flow through trunk sewer. Does not function.
Condition of Tide Gate:	Closed

Area Served & Dry Weather Flow:

Combined Area Served:	48 Acres
Average Daily Flow:	0.41 MGD

City of Bayonne

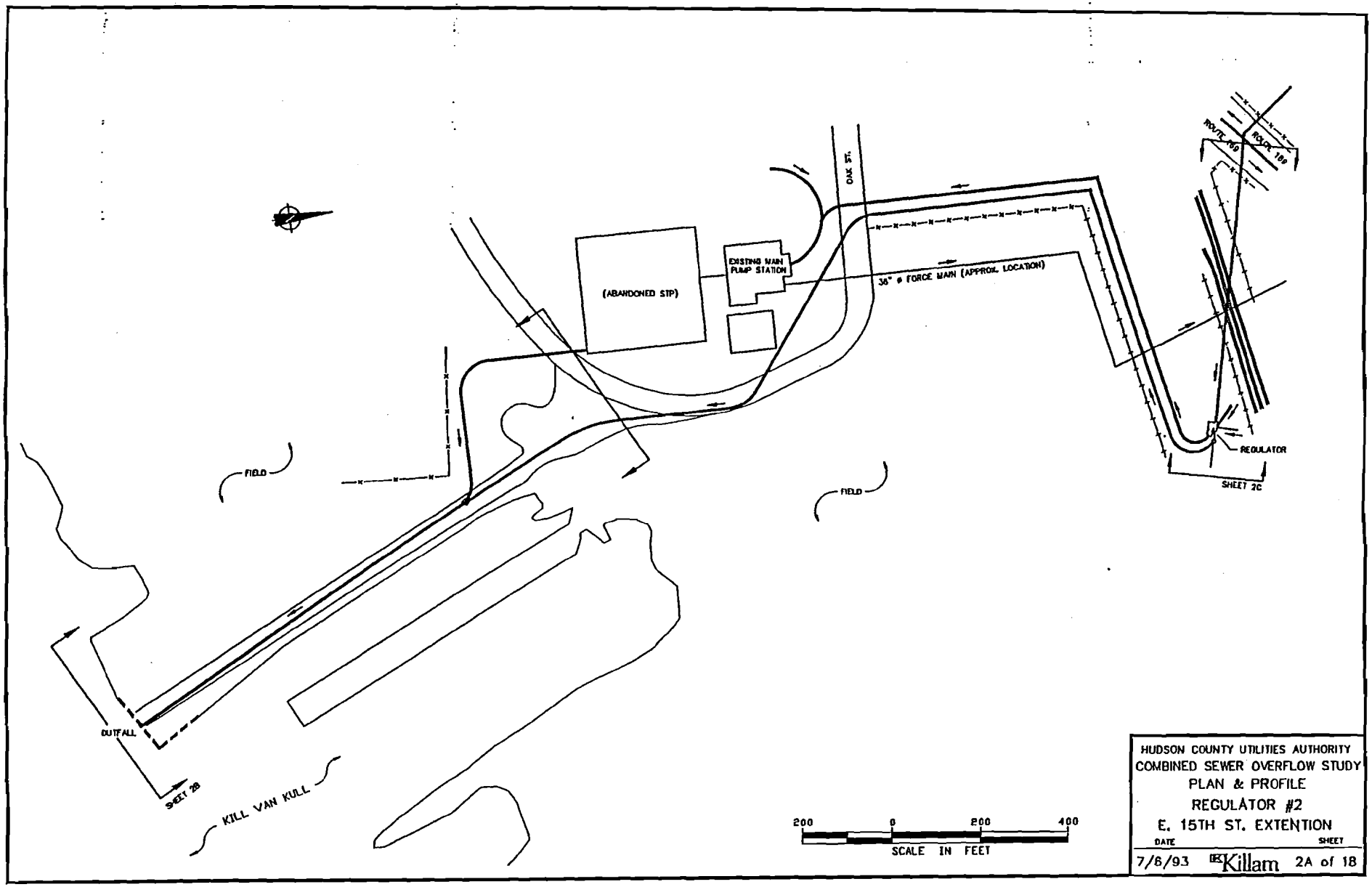
CSO Control Facility Data Extract

Chamber Location & Description

Reg. No.	2
Location:	E. 15th Street and Avenue E
NJPDES Outfall No.	005
Chamber Status:	Active
Overflow to:	Upper New York Bay
Character of District Served:	Mixed
Regulator Location:	Behind 5th Street Pump Station
District Collector Sewer (Size & Cap)	72 inches
Outfall to Receiving Water (Size & Cap)	54 inches CIP, 58 MGD Capacity
Outfall Condition:	Functional
Tidal Effects:	Yes
Regulator Size:	33 inches x 21 inches
Condition of Reg:	Functional
Condition of Overflow Stop Log:	None
Condition of Tide Gate:	Functional

Area Served & Dry Weather Flow:

Combined Area Served:	247 Acres
Average Daily Flow:	1.51 MGD



HUDSON COUNTY UTILITIES AUTHORITY
COMBINED SEWER OVERFLOW STUDY
PLAN & PROFILE
REGULATOR #2
E. 15TH ST. EXTENTION

DATE	BKillam	SHEET
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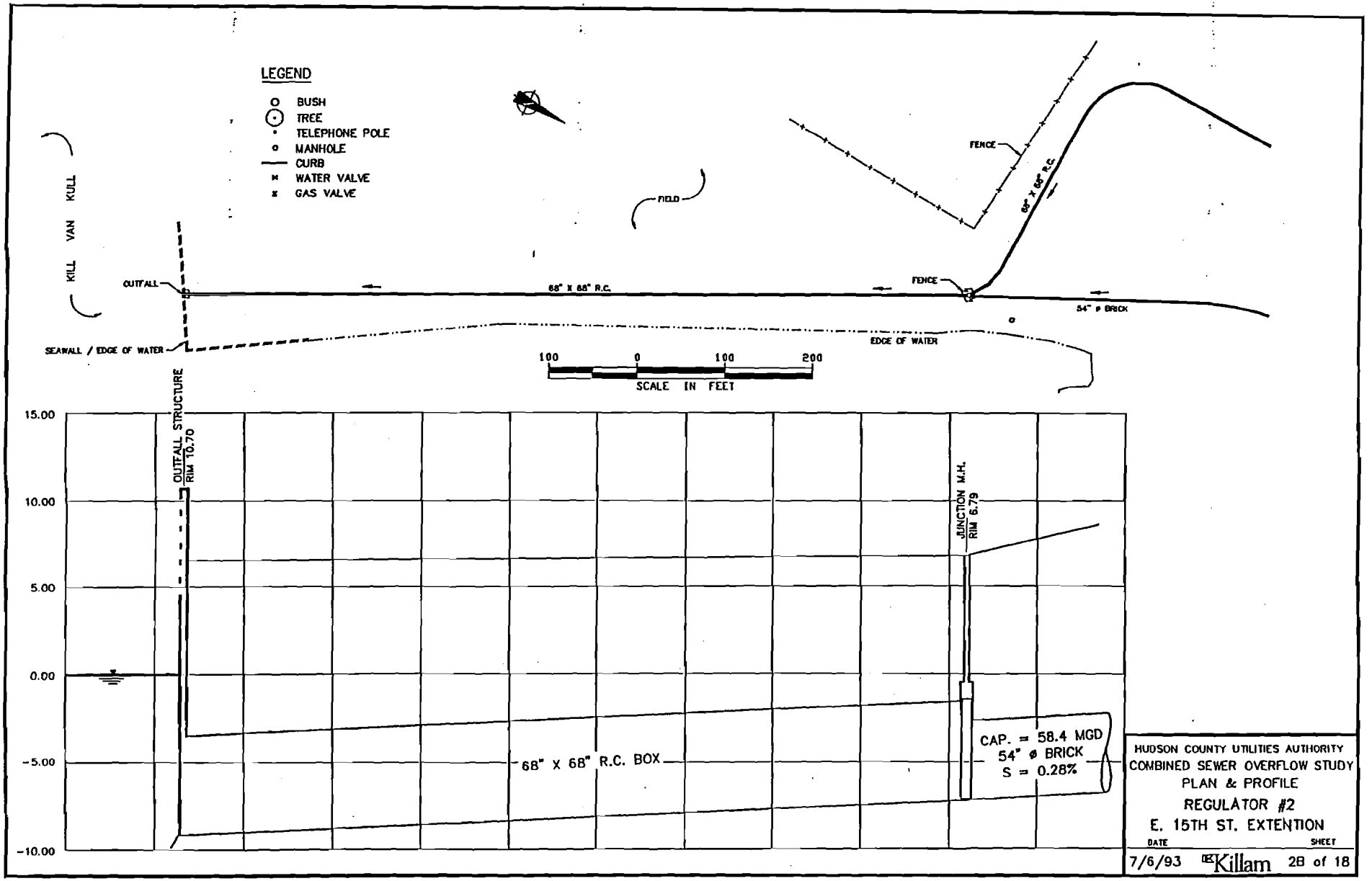

HUDSON COUNTY UTILITIES AUTHORITY
COMBINED SEWER OVERFLOW STUDY
PLAN & PROFILE
REGULATOR #2
E. 15TH ST. EXTENTION

DATE	SHEET
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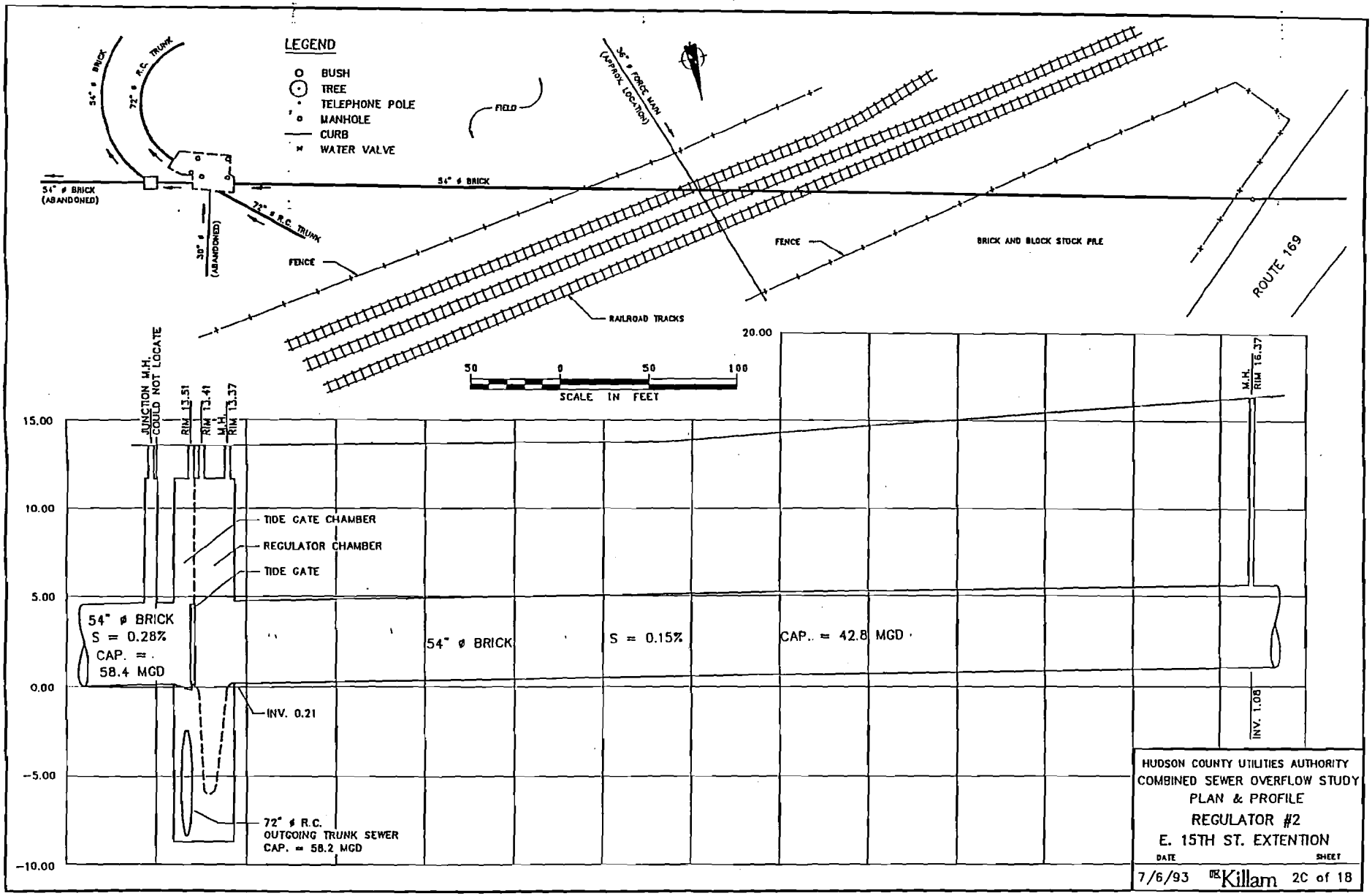
Killam



HUDSON COUNTY UTILITIES AUTHORITY
COMBINED SEWER OVERFLOW STUDY
PLAN & PROFILE
REGULATOR #2
E. 15TH ST. EXTENTION

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City of Bayonne

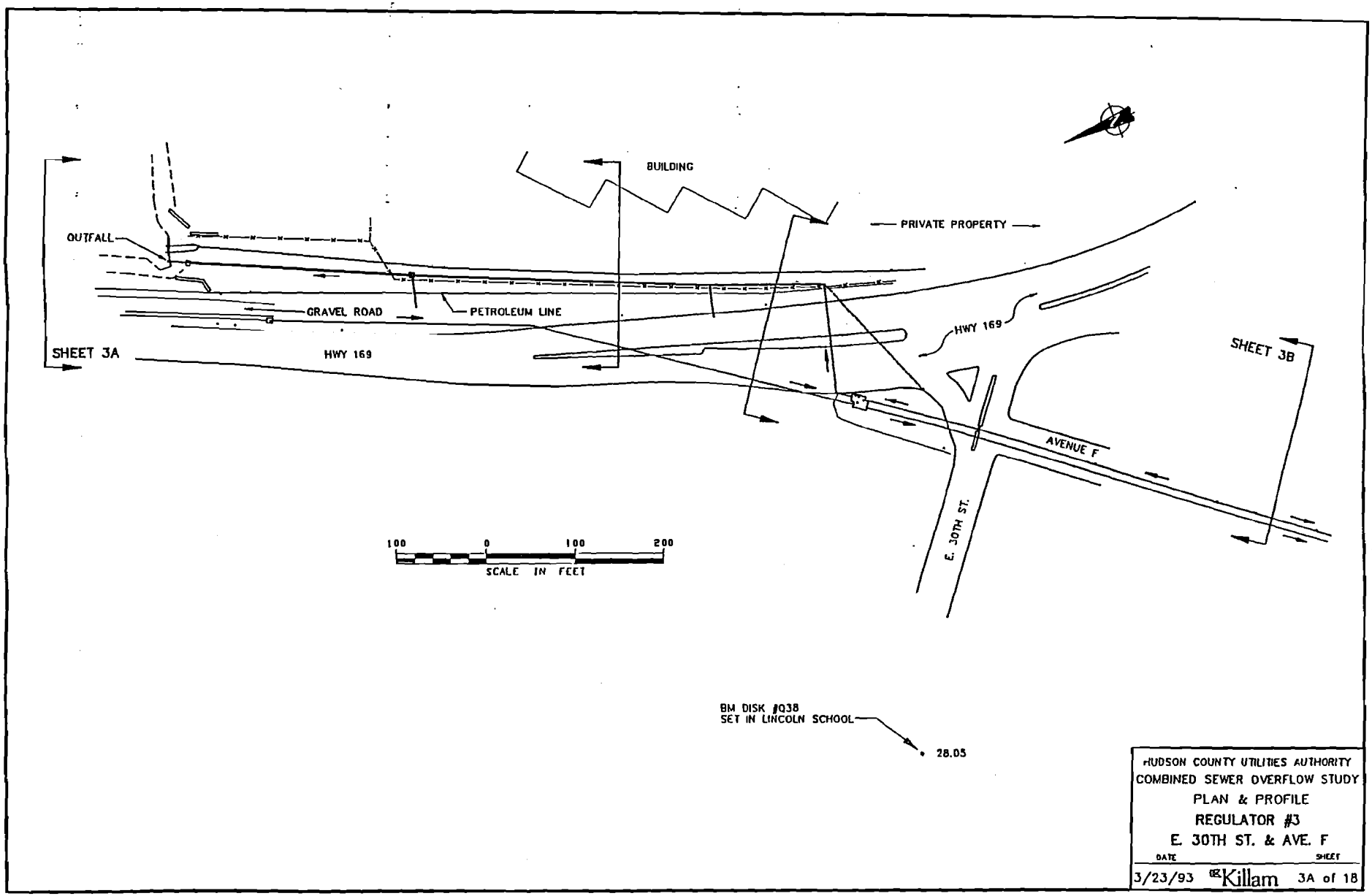
CSO Control Facility Data Extract

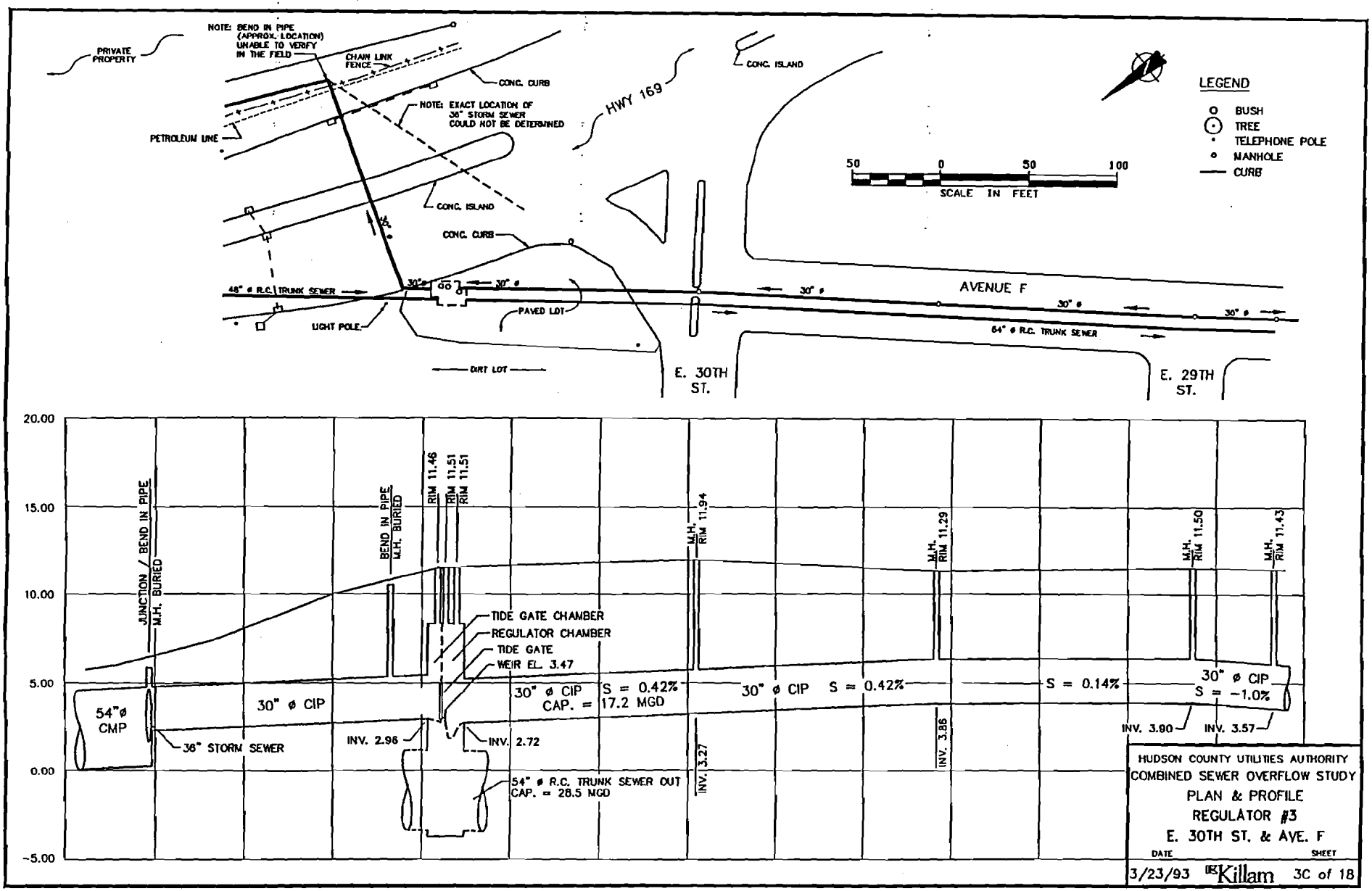
Chamber Location & Description

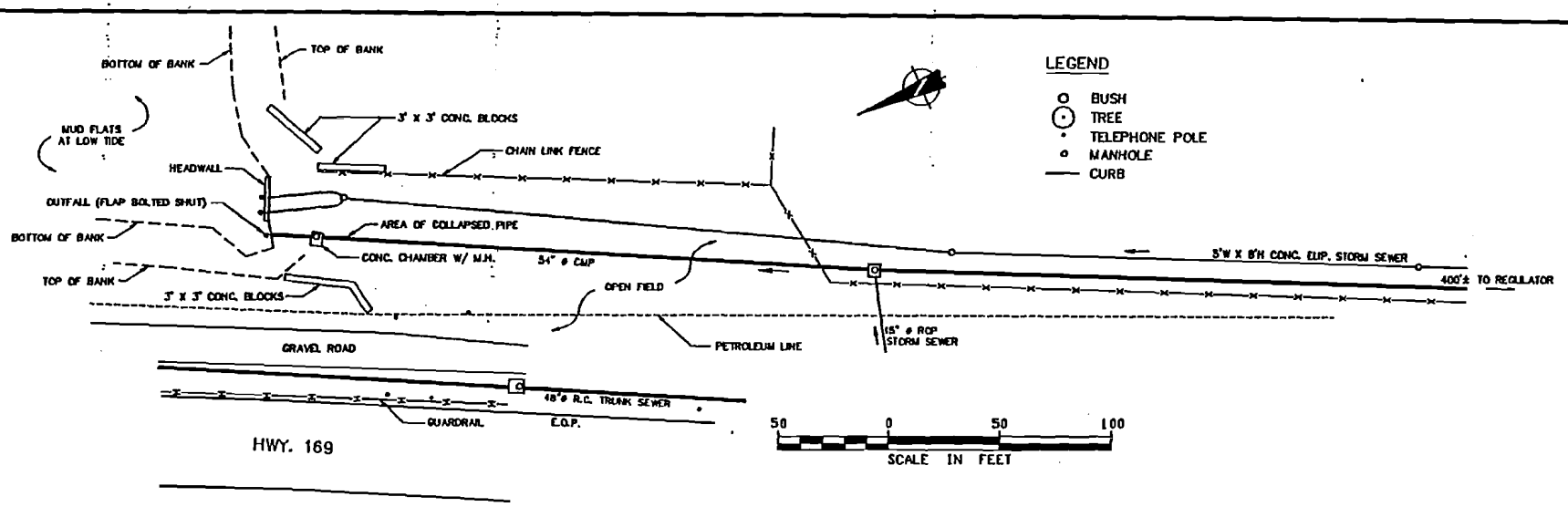
Reg. No.	**3**
Location:	E. 30th Street and Avenue F
NJPDES Outfall No.	006
Chamber Status:	Active
Overflow to:	Upper New York Bay
Character of District Served:	Residential and Industrial
Regulator Location:	In Terminus of E. 32nd St. @ Upper New York Bay
District Collector Sewer (Size & Cap)	30 inches, 17.2 MGD
Outfall to Receiving Water (Size & Cap)	54 inches CMP, 61 MGD
Outfall Condition:	Functional
Tidal Effects:	Tide Gates Leak
Regulator Size:	12 inches x 12 inches
Condition of Reg:	Functional
Condition of Overflow Stop Log:	None
Condition of Tide Gate:	Functional - 1997 Inspection Report indicates new gaskets needed.

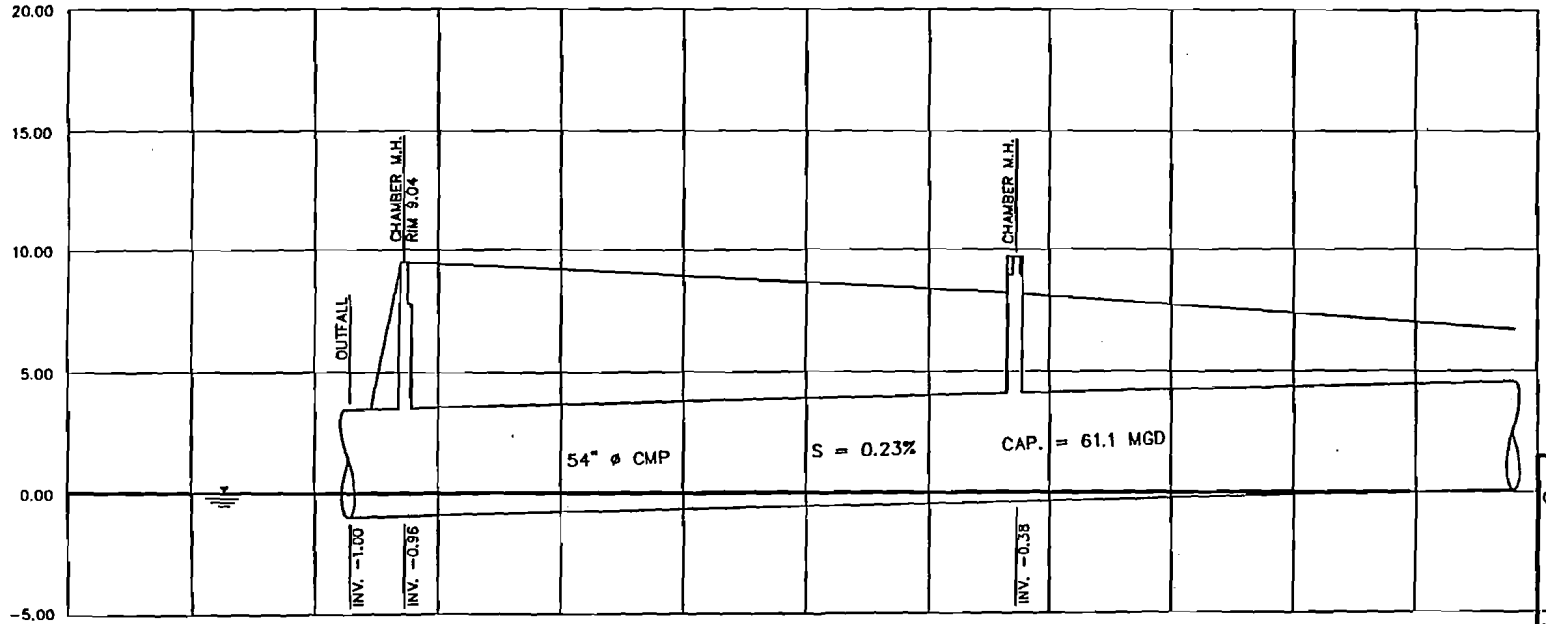
Area Served & Dry Weather Flow:

Combined Area Served:	43 Acres
Average Daily Flow:	0.043 MGD









HUDSON COUNTY UTILITIES AUTHORITY
COMBINED SEWER OVERFLOW STUDY
PLAN & PROFILE
REGULATOR #3
E. 30TH ST. & AVE. F

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City of Bayonne

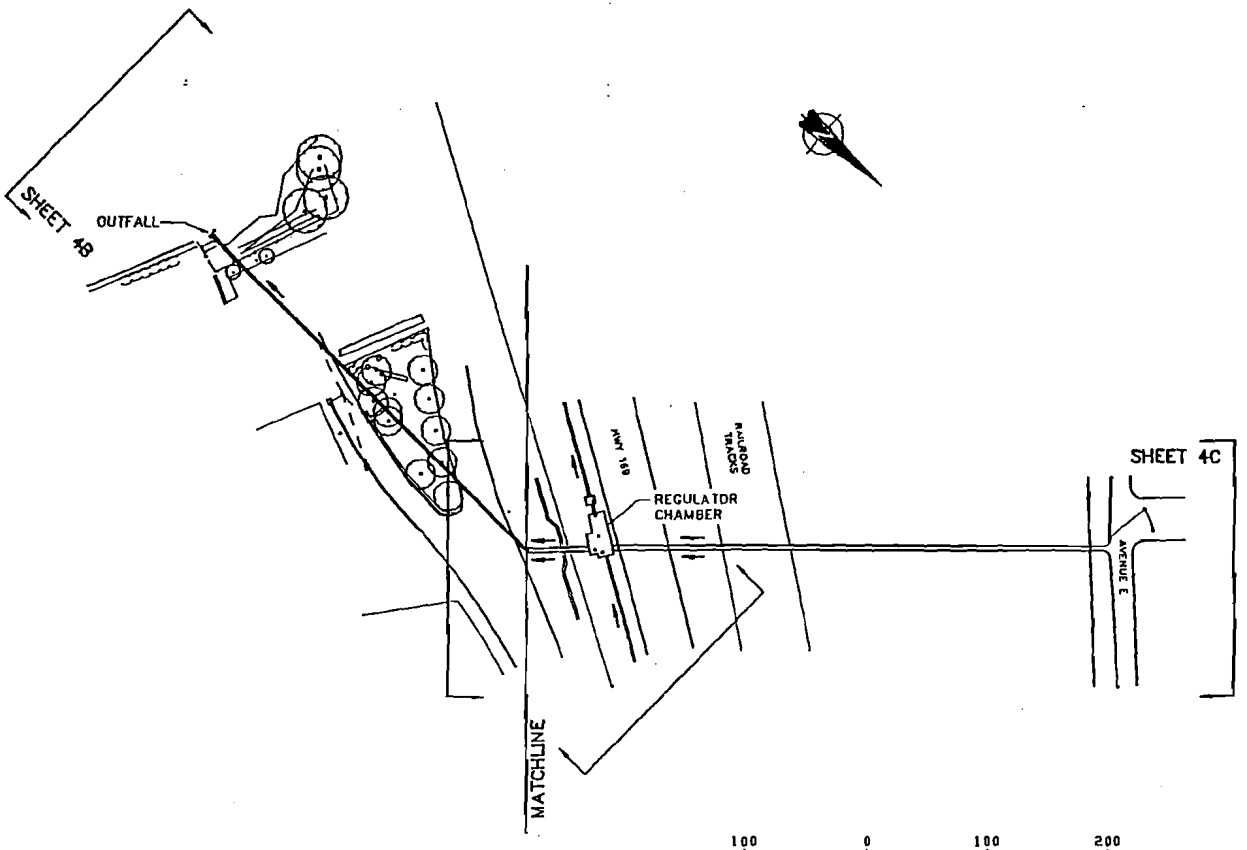
CSO Control Facility Data Extract

Chamber Location & Description

Reg. No.	**4**
Location:	E. 34th Street and Avenue F
NJPDES Outfall No.	007
Chamber Status:	Active
Overflow to:	Upper New York Bay
Character of District Served:	Residential
Regulator Location:	In Terminus of E. 34th St. @ Upper New York Bay
District Collector Sewer (Size & Cap)	(2) 48 inches, 102 MGD and 109 MGD 211 MGD Total
Outfall to Receiving Water (Size & Cap)	72 inches, 67.2 MGD
Outfall Condition:	Functional
Tidal Effects:	Yes
Regulator Size:	35 inches x 21 inches
Condition of Reg:	Locked into Place
Condition of Overflow Stop Log:	None
Condition of Tide Gate:	Functional - 1997 Inspection Report indicates new gaskets needed.

Area Served & Dry Weather Flow:

Combined Area Served:	247 Acres
Average Daily Flow:	0.45 MGD



HUDSON COUNTY UTILITIES AUTHORITY
COMBINED SEWER OVERFLOW STUDY
PLAN & PROFILE
REGULATOR #4
E. 34TH ST. & AVE. F

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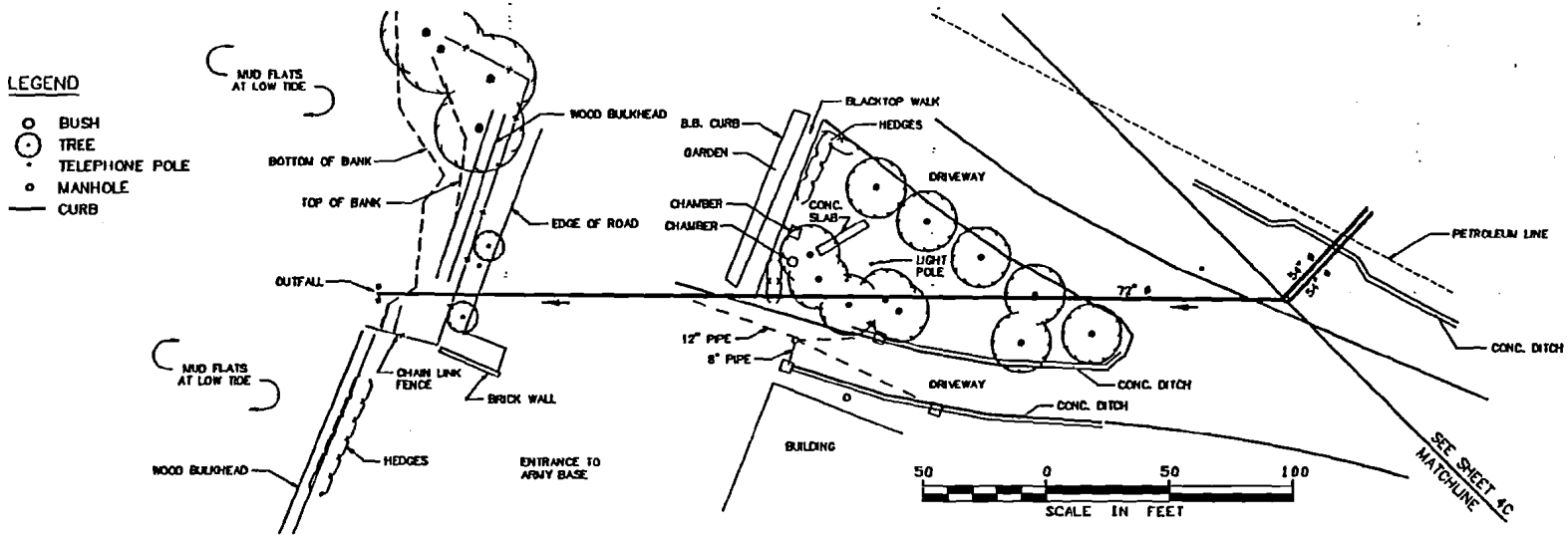

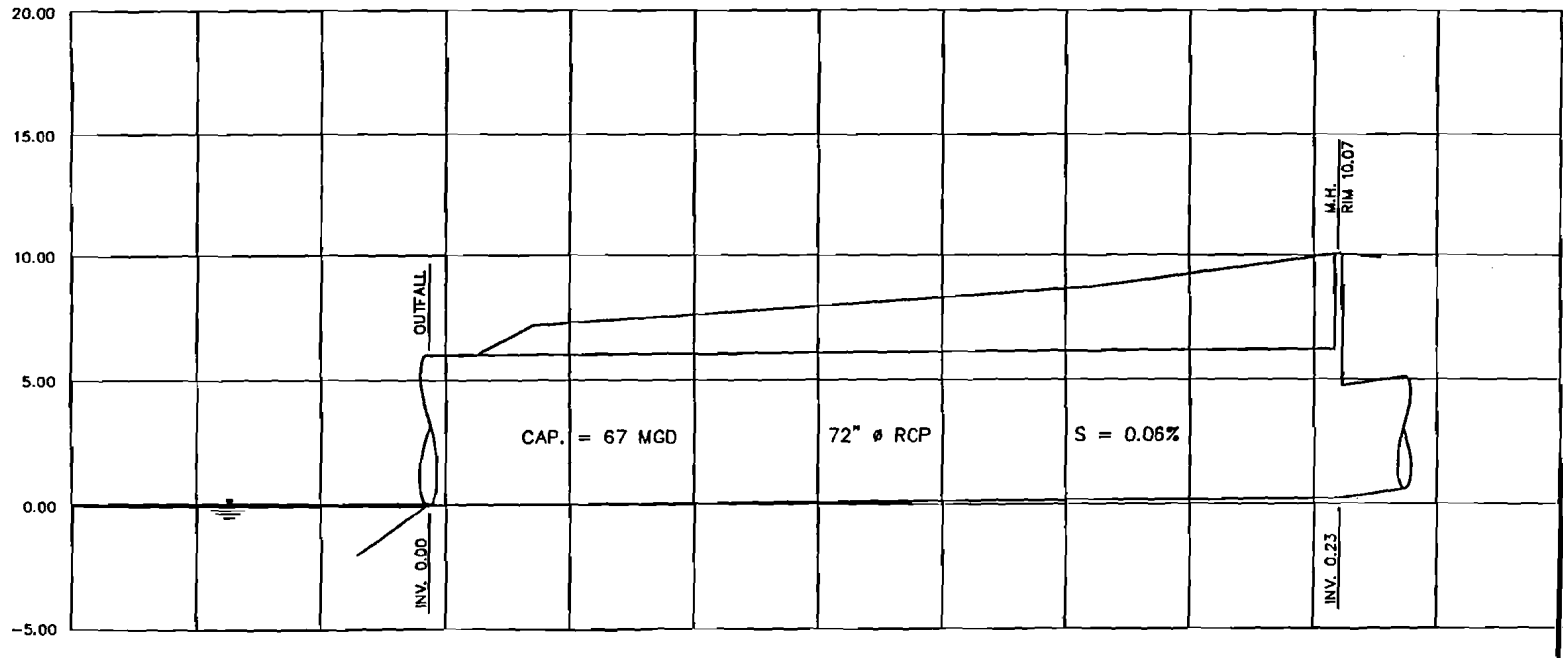

HUDSON COUNTY UTILITIES AUTHORITY
COMBINED SEWER OVERFLOW STUDY
PLAN & PROFILE
REGULATOR #4
E. 34TH ST. & AVE. F

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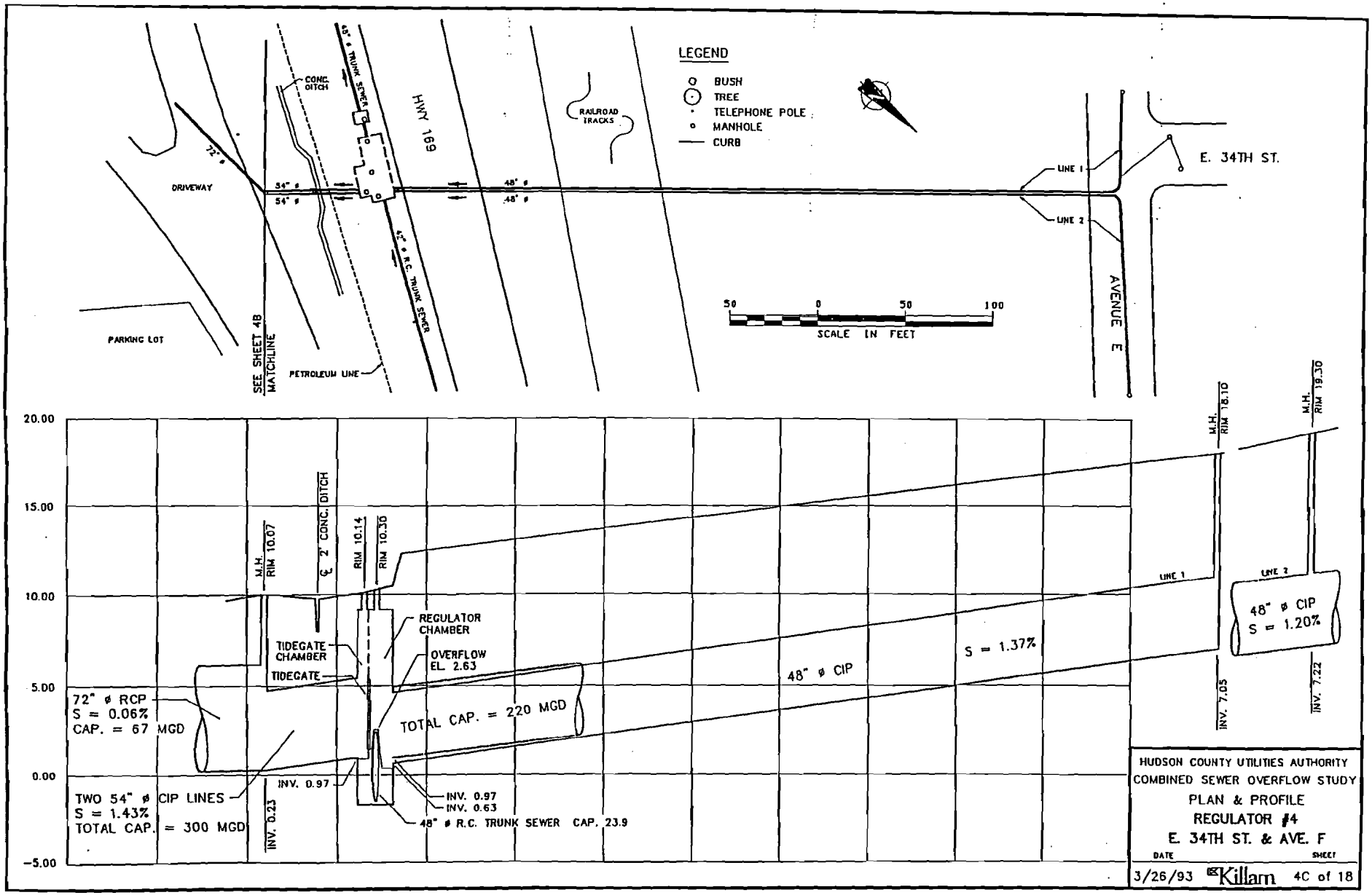
Killam



HUDSON COUNTY UTILITIES AUTHORITY
COMBINED SEWER OVERFLOW STUDY
PLAN & PROFILE
REGULATOR #4
E. 34TH ST. & AVE. F

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City of Bayonne

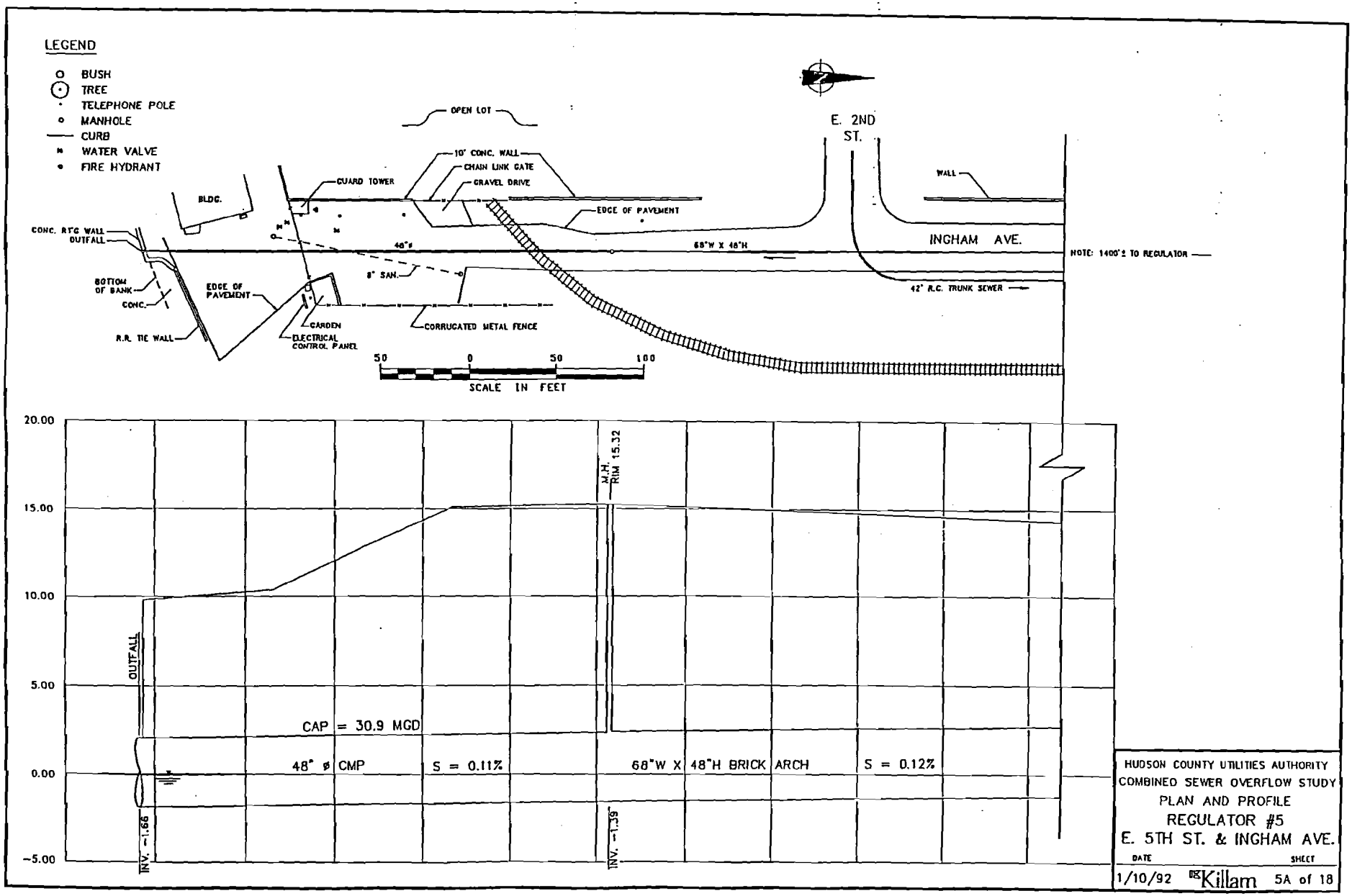
CSO Control Facility Data Extract

Chamber Location & Description

Reg. No.	5
Location:	E. 5th Street and Ingham Avenue
NJPDES Outfall No.	008
Chamber Status:	Active
Overflow to:	Kill Van Kull
Character of District Served:	Residential and Industrial
Regulator Location:	In Terminus of Ingham Ave. @ Kill Van Kull
District Collector Sewer (Size & Cap)	60 inches Horseshoe, 35.2 MGD
Outfall to Receiving Water (Size & Cap)	48 inches, 30.9 MGD
Outfall Condition:	Good
Tidal Effects:	Yes
Regulator Size:	38 inches x 21 inches
Condition of Reg:	Functional
Condition of Overflow Stop Log:	None
Condition of Tide Gate:	Functional

Area Served & Dry Weather Flow:

Combined Area Served:	294 Acres
Average Daily Flow:	1.1 MGD



HUDSON COUNTY UTILITIES AUTHORITY
COMBINED SEWER OVERFLOW STUDY
PLAN AND PROFILE
REGULATOR #5
E. 5TH ST. & INGHAM AVE.

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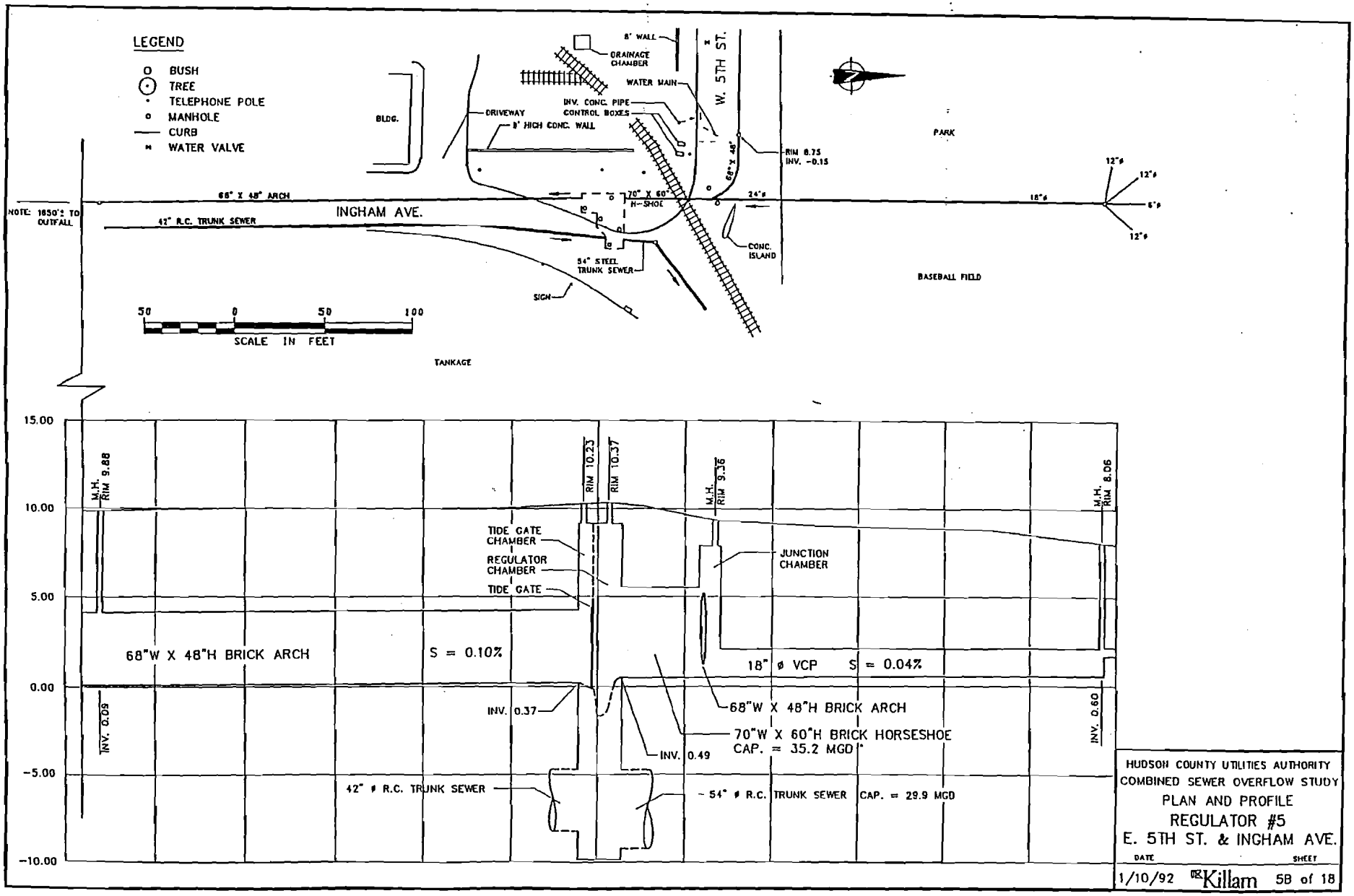

HUDSON COUNTY UTILITIES AUTHORITY
COMBINED SEWER OVERFLOW STUDY
PLAN AND PROFILE
REGULATOR #5
E. 5TH ST. & INGHAM AVE.

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City of Bayonne

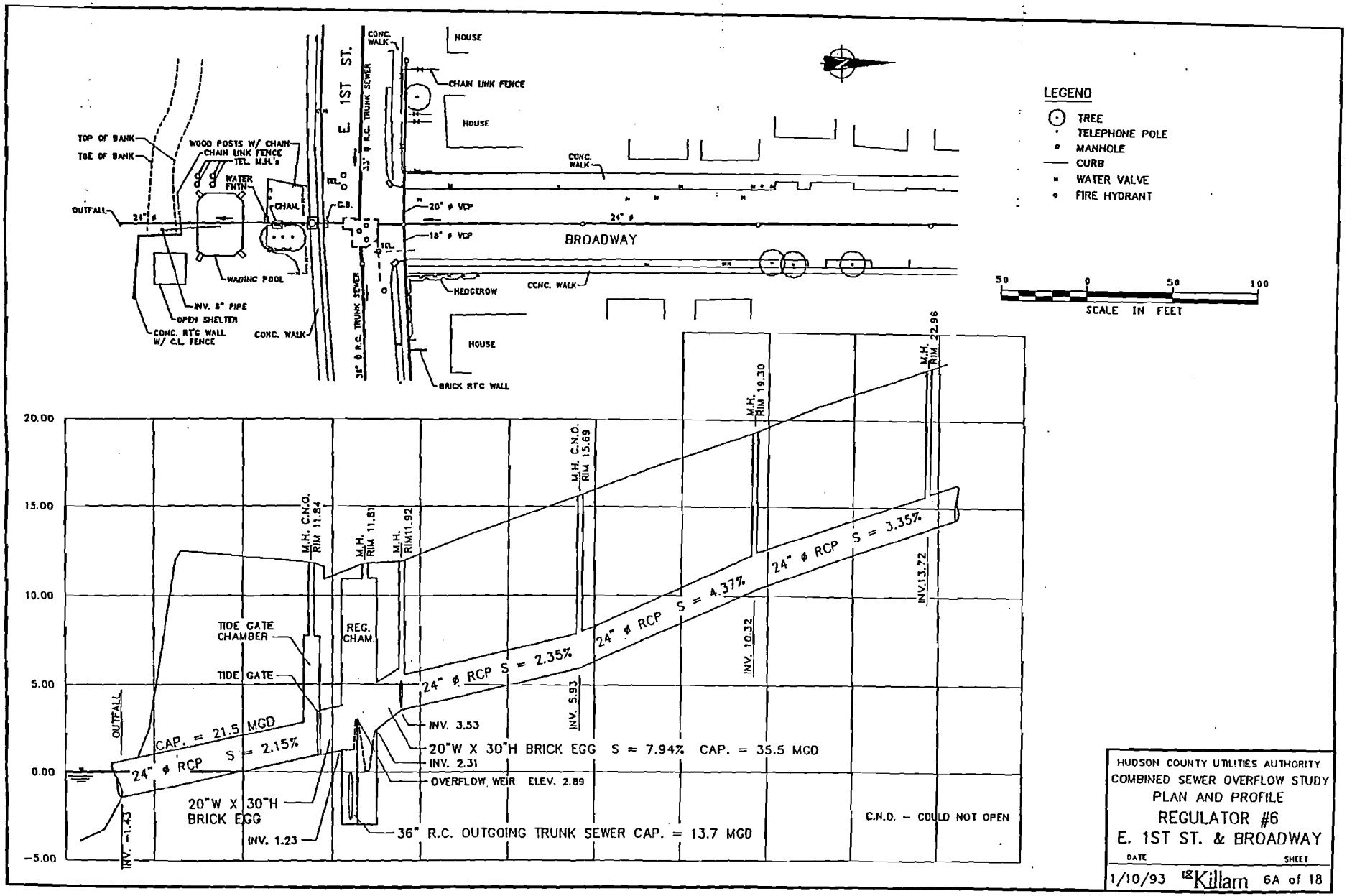
CSO Control Facility Data Extract

Chamber Location & Description

Reg. No.	**6**
Location:	E. 1st Street and Broadway
NJPDES Outfall No.	009
Chamber Status:	Active
Overflow to:	Kill Van Kull
Character of District Served:	Residential
Regulator Location:	In Terminus of Broadway @ Kill Van Kull
District Collector Sewer (Size & Cap)	30 inches, 23.6 MGD
Outfall to Receiving Water (Size & Cap)	24 inches, 21.5 MGD
Outfall Condition:	Good
Tidal Effects:	Yes
Regulator Size:	20 inches x 30 inches
Condition of Reg:	Functional
Condition of Overflow Stop Log:	None
Condition of Tide Gate:	Functional - 1997 Inspection Report indicates gates need adjustment.

Area Served & Dry Weather Flow:

Combined Area Served:	30 Acres
Average Daily Flow:	0.10 MGD



HUDSON COUNTY UTILITIES AUTHORITY
COMBINED SEWER OVERFLOW STUDY
PLAN AND PROFILE
REGULATOR #6
E. 1ST ST. & BROADWAY

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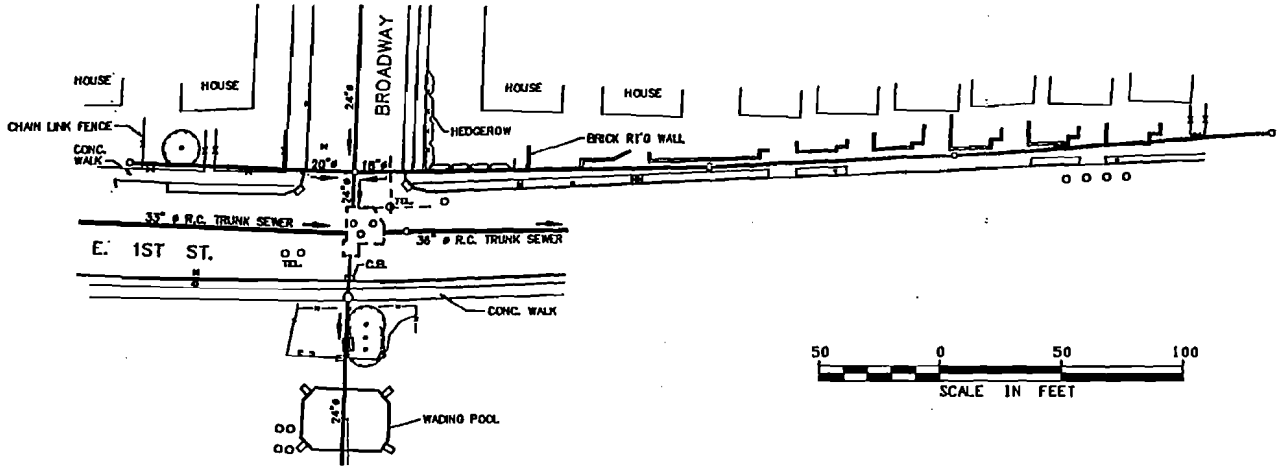
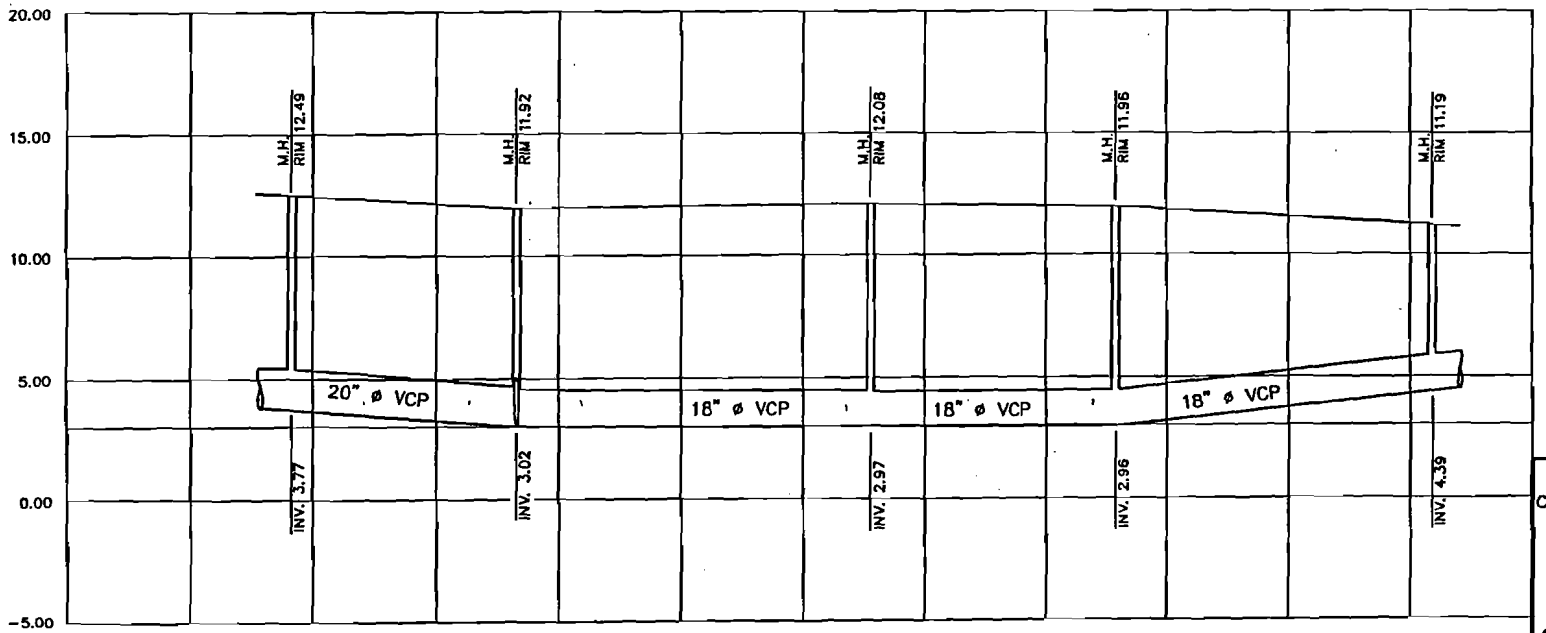


LEGEND

- BUSH
- TREE
- TELEPHONE POLE
- MANHOLE
- CURB
- WATER VALVE
- FIRE HYDRANT
- FENCE



HUDSON COUNTY UTILITIES AUTHORITY
COMBINED SEWER OVERFLOW STUDY
PLAN AND PROFILE
REGULATOR #6
E. 1ST ST. & BROADWAY

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City of Bayonne

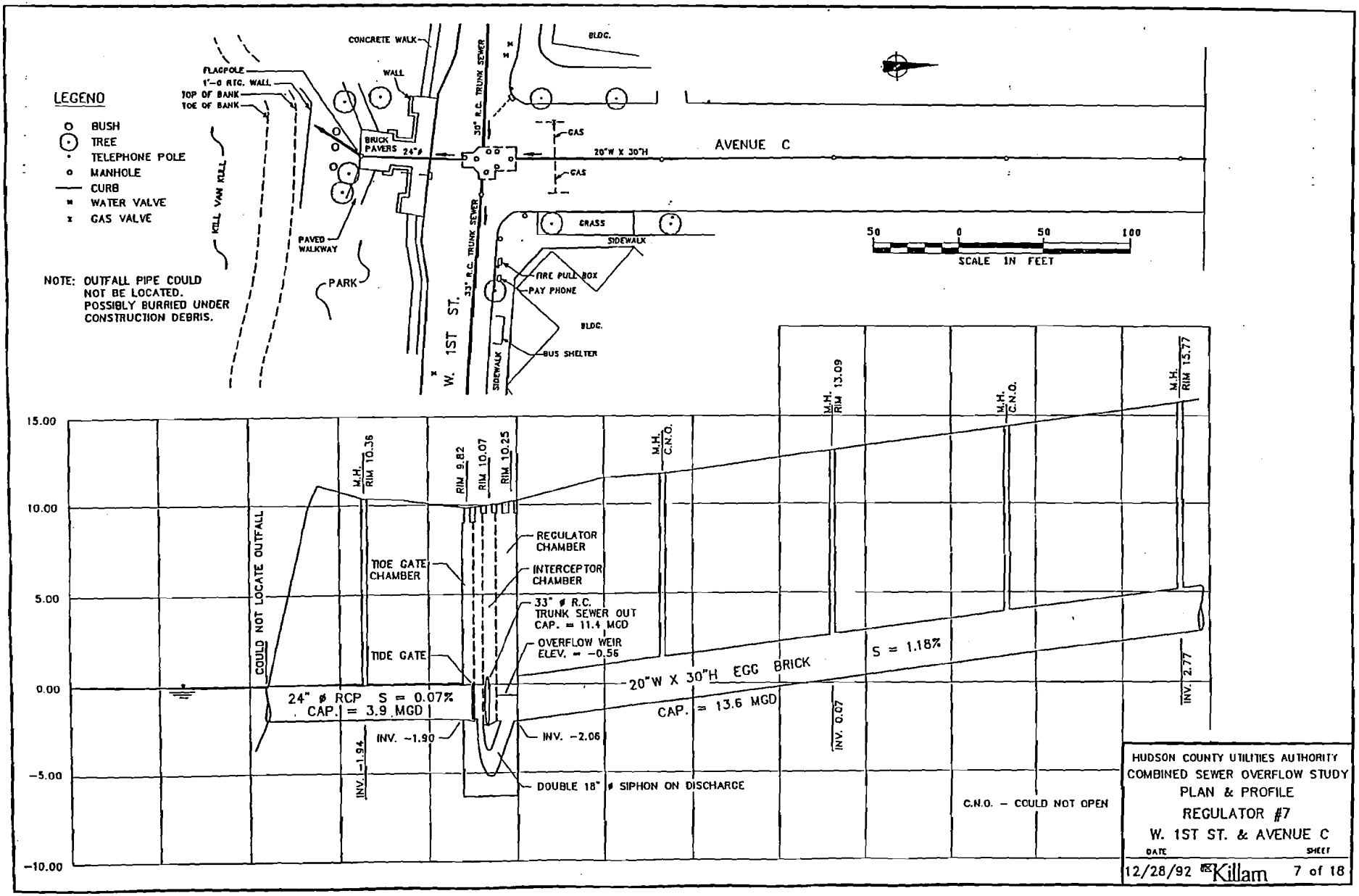
CSO Control Facility Data Extract

Chamber Location & Description

Reg. No.	**7**
Location:	W. 1st Street and Avenue C
NJPDES Outfall No.	010
Chamber Status:	Active
Overflow to:	Kill Van Kull
Character of District Served:	Residential
Regulator Location:	In Terminus Avenue C @ Kill Van Kull
District Collector Sewer (Size & Cap)	20 inches x 30 inches EGG, 13.7 MGD
Outfall to Receiving Water (Size & Cap)	24 inches, Unknown
Outfall Condition:	Outfall could not be located
Tidal Effects:	Yes
Regulator Size:	19 inches x 12 inches
Condition of Reg:	Functional
Condition of Overflow Stop Log:	None
Condition of Tide Gate:	Functional

Area Served & Dry Weather Flow:

Combined Area Served:	59 Acres
Average Daily Flow:	0.37 MGD



City of Bayonne

CSO Control Facility Data Extract

Chamber Location & Description

Reg. No.	**8**
Location:	W. 3rd Street and Avenue A
NJPDES Outfall No.	011
Chamber Status:	Active
Overflow to:	Newark Bay
Character of District Served:	Residential and Industrial
Regulator Location:	In Terminus of W. 3rd St. @ Newark Bay
District Collector Sewer (Size & Cap)	18 inches x 3.0 MGD 18 inches, 1.0 MGD
Outfall to Receiving Water (Size & Cap)	24 inches, 8.4 MGD
Outfall Condition:	Partial Plugged w/Sand
Tidal Effects:	Yes
Regulator Size:	15 inches x 8 inches
Condition of Reg:	Locked Open
Condition of Overflow Stop Log:	None
Condition of Tide Gate:	Functional

Area Served & Dry Weather Flow:

Combined Area Served:	40 Acres
Average Daily Flow:	0.53 MGD

City of Bayonne

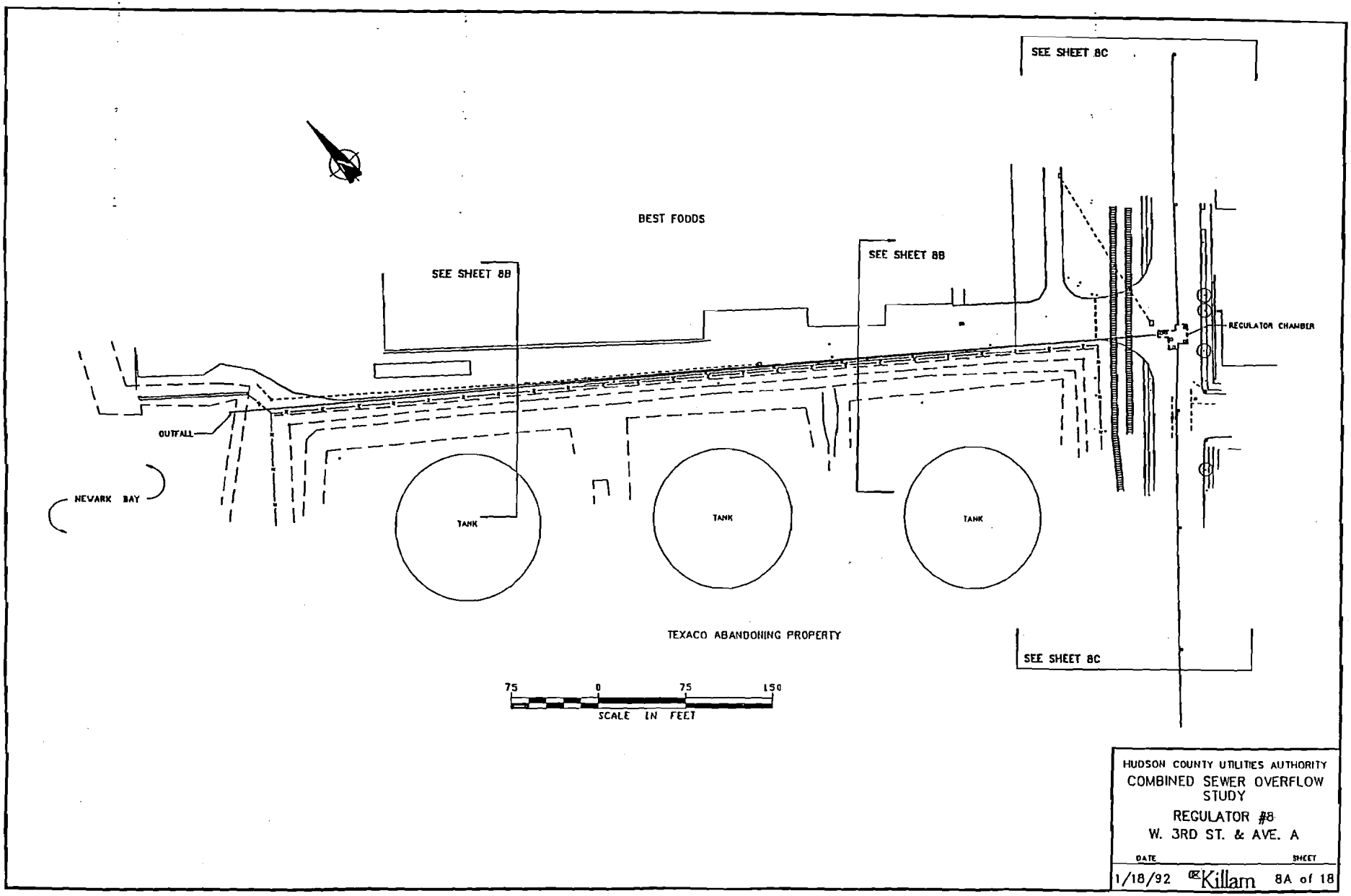
CSO Control Facility Data Extract

Chamber Location & Description

Reg. No.	8
Location:	W. 3rd Street and Avenue A
NJPDES Outfall No.	011
Chamber Status:	Active
Overflow to:	Newark Bay
Character of District Served:	Residential and Industrial
Regulator Location:	In Terminus of W. 3rd St. @ Newark Bay
District Collector Sewer (Size & Cap)	18 inches x 3.0 MGD 18 inches, 1.0 MGD
Outfall to Receiving Water (Size & Cap)	24 inches, 8.4 MGD
Outfall Condition:	Partial Plugged w/Sand
Tidal Effects:	Yes
Regulator Size:	15 inches x 8 inches
Condition of Reg:	Locked Open
Condition of Overflow Stop Log:	None
Condition of Tide Gate:	Does Not Seal

Area Served & Dry Weather Flow:

Combined Area Served:	40 Acres
Average Daily Flow:	0.53 MGD


SEE SHEET 8C
BEST FODDS
SEE SHEET 8B
SEE SHEET 8B
REGULATOR CHAMBER
OUTFALL
NEWARK BAY
TANK
TANK
TANK
TEXACO ABANDONING PROPERTY
SEE SHEET 8C
75
0
75
150
SCALE IN FEET
HUDSON COUNTY UTILITIES AUTHORITY
COMBINED SEWER OVERFLOW STUDY
REGULATOR #8
W. 3RD ST. & AVE. A
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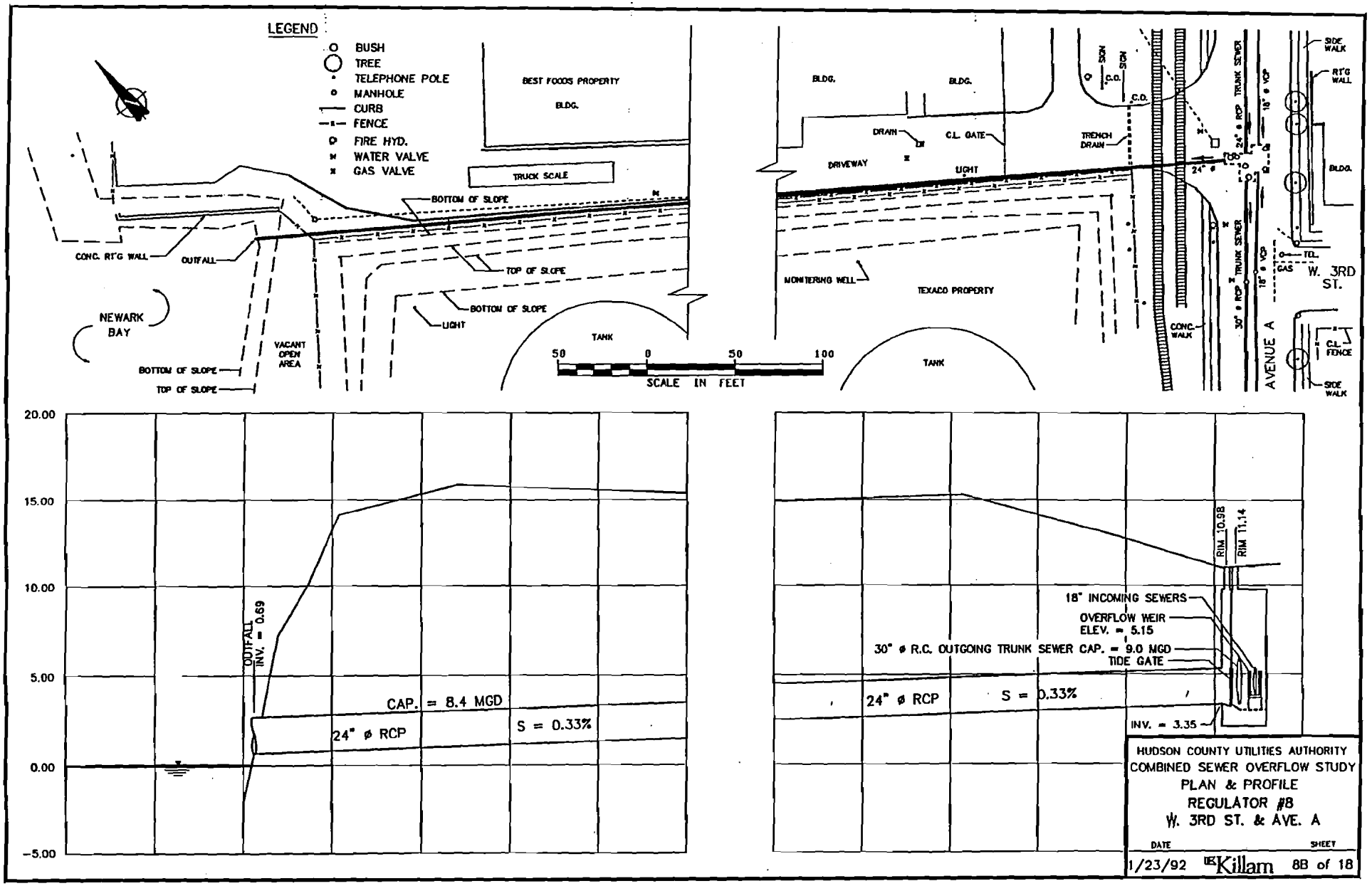

HUDSON COUNTY UTILITIES AUTHORITY
COMBINED SEWER OVERFLOW STUDY
PLAN & PROFILE
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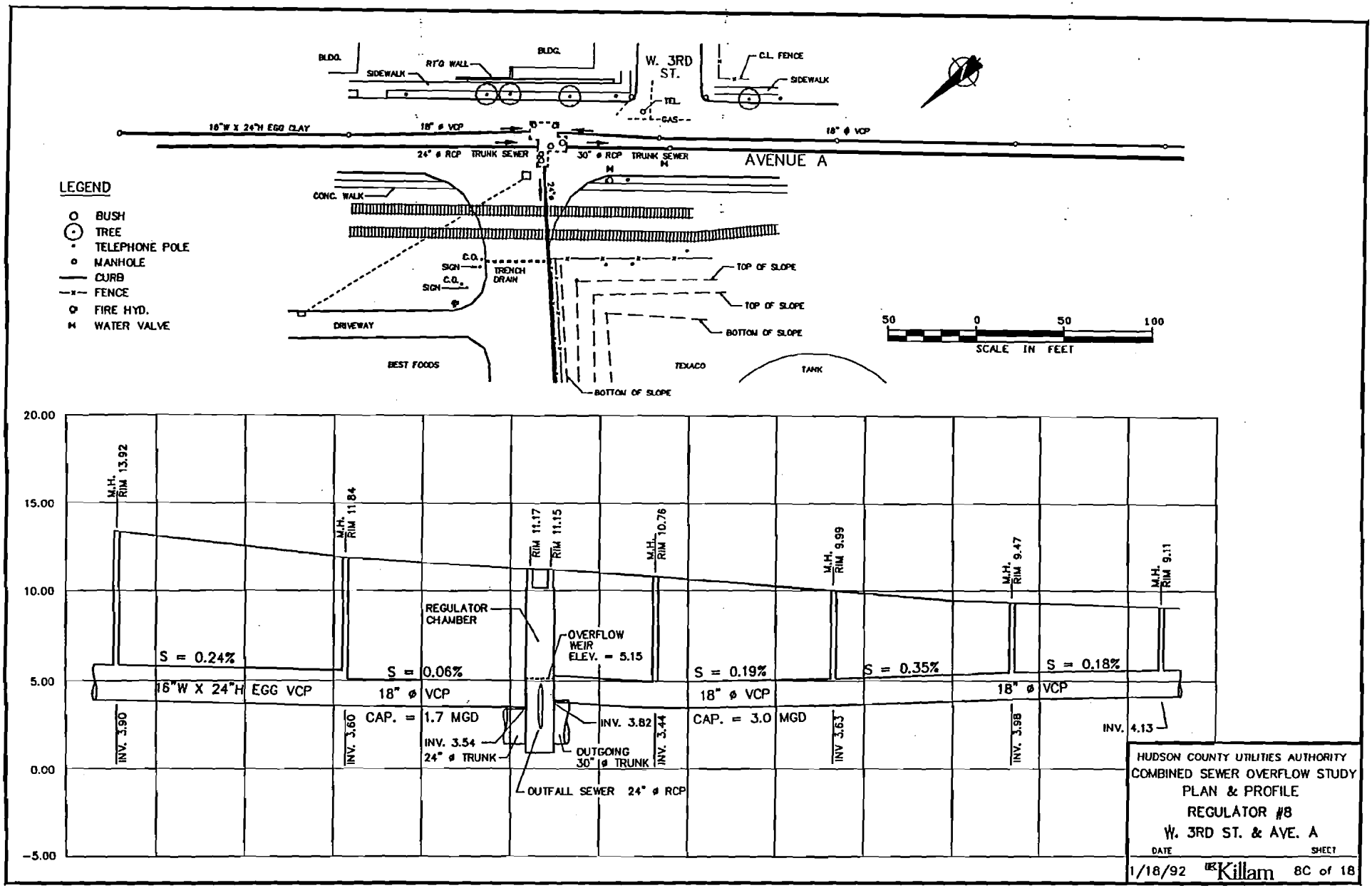

HUDSON COUNTY UTILITIES AUTHORITY
COMBINED SEWER OVERFLOW STUDY
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W. 3RD ST. & AVE. A

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City of Bayonne

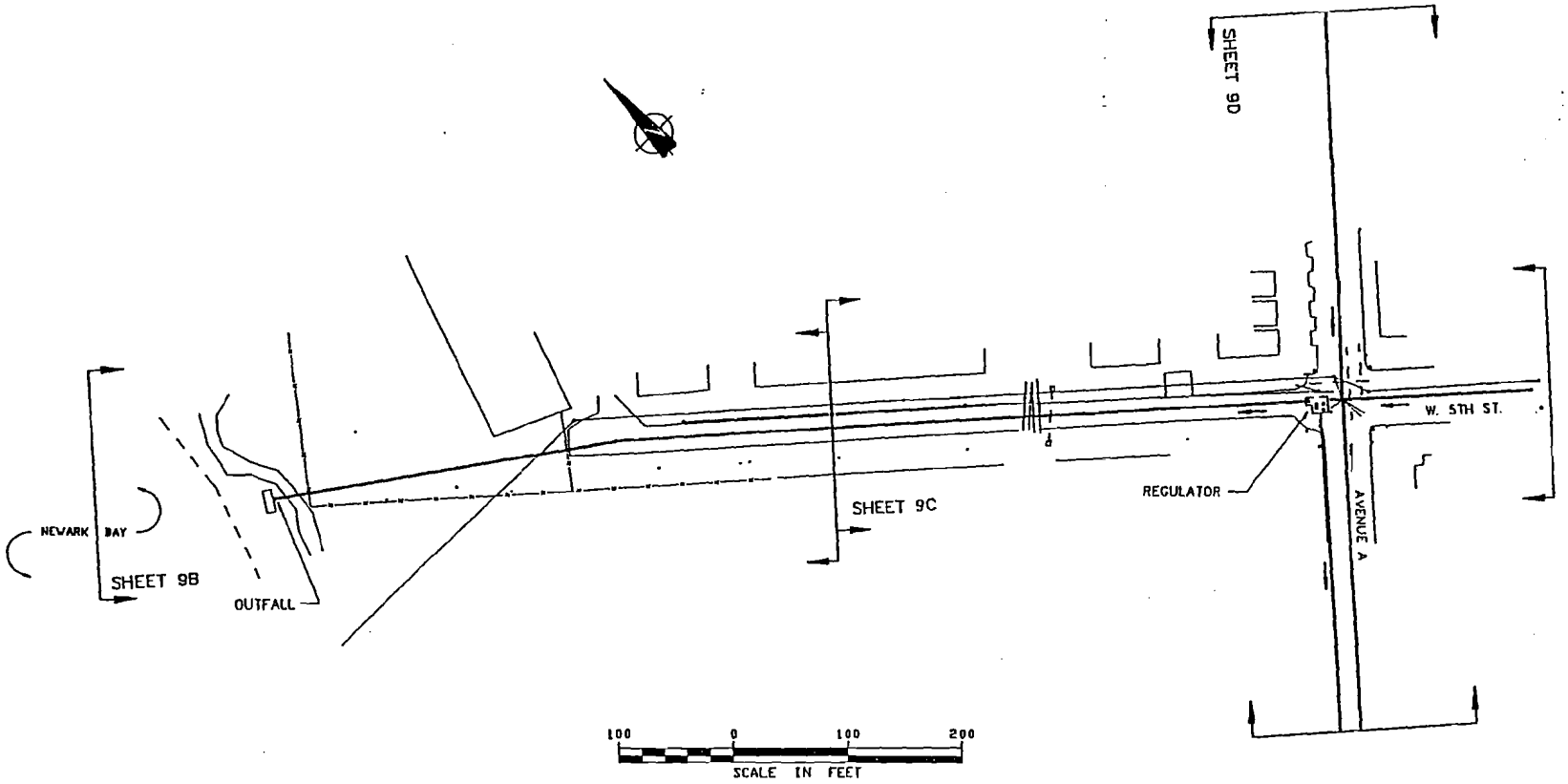
CSO Control Facility Data Extract

Chamber Location & Description

Reg. No.	**9**
Location:	**W. 5th Street and Avenue A**
NJPDES Outfall No.	**012**
Chamber Status:	**Active**
Overflow to:	**Newark Bay**
Character of District Served:	**Residential**
Regulator Location:	**In Terminus of W. 5th St. @ Newark Bay**
District Collector Sewer (Size & Cap)	**24 inches, 14.7 MGD**
Outfall to Receiving Water (Size & Cap)	**24 inches, 10.3 MGD**
Outfall Condition:	**Loosely Covered w/Trash**
Tidal Effects:	**Yes**
Regulator Size:	**12 inches x 12 inches**
Condition of Reg:	**Functional**
Condition of Overflow Stop Log:	**None**
Condition of Tide Gate:	**Functional - 1997 Inspection Report indicates new gaskets needed.**

Area Served & Dry Weather Flow:

Combined Area Served:	**39 Acres**
Average Daily Flow:	**0.17 MGD**



HUDSON COUNTY UTILITIES AUTHORITY
COMBINED SEWER OVERFLOW STUDY
PLAN & PROFILE
REGULATOR #9
W. 5TH ST. & AVE A

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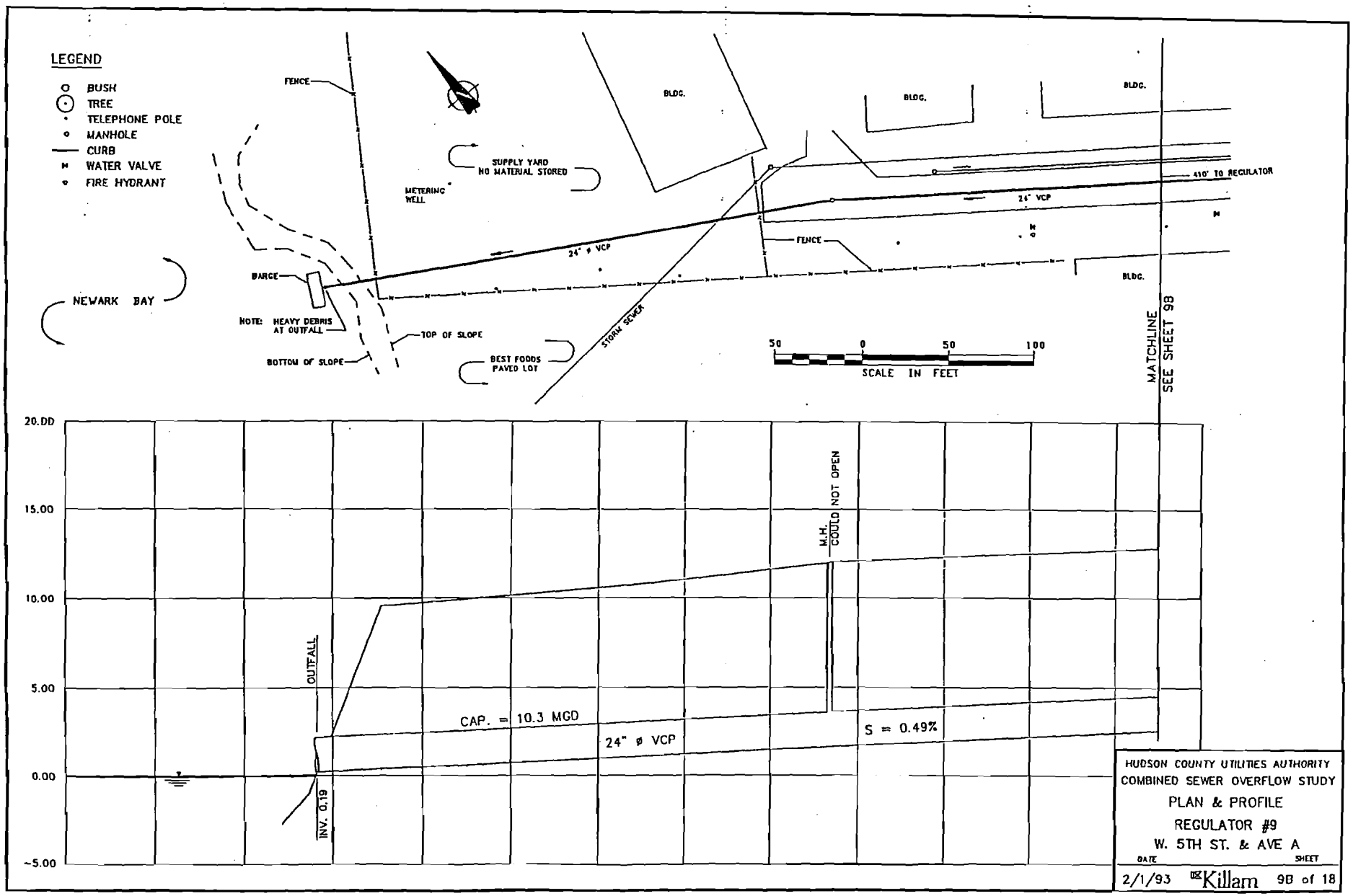

HUDSON COUNTY UTILITIES AUTHORITY
COMBINED SEWER OVERFLOW STUDY
PLAN & PROFILE
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W. 5TH ST. & AVE A

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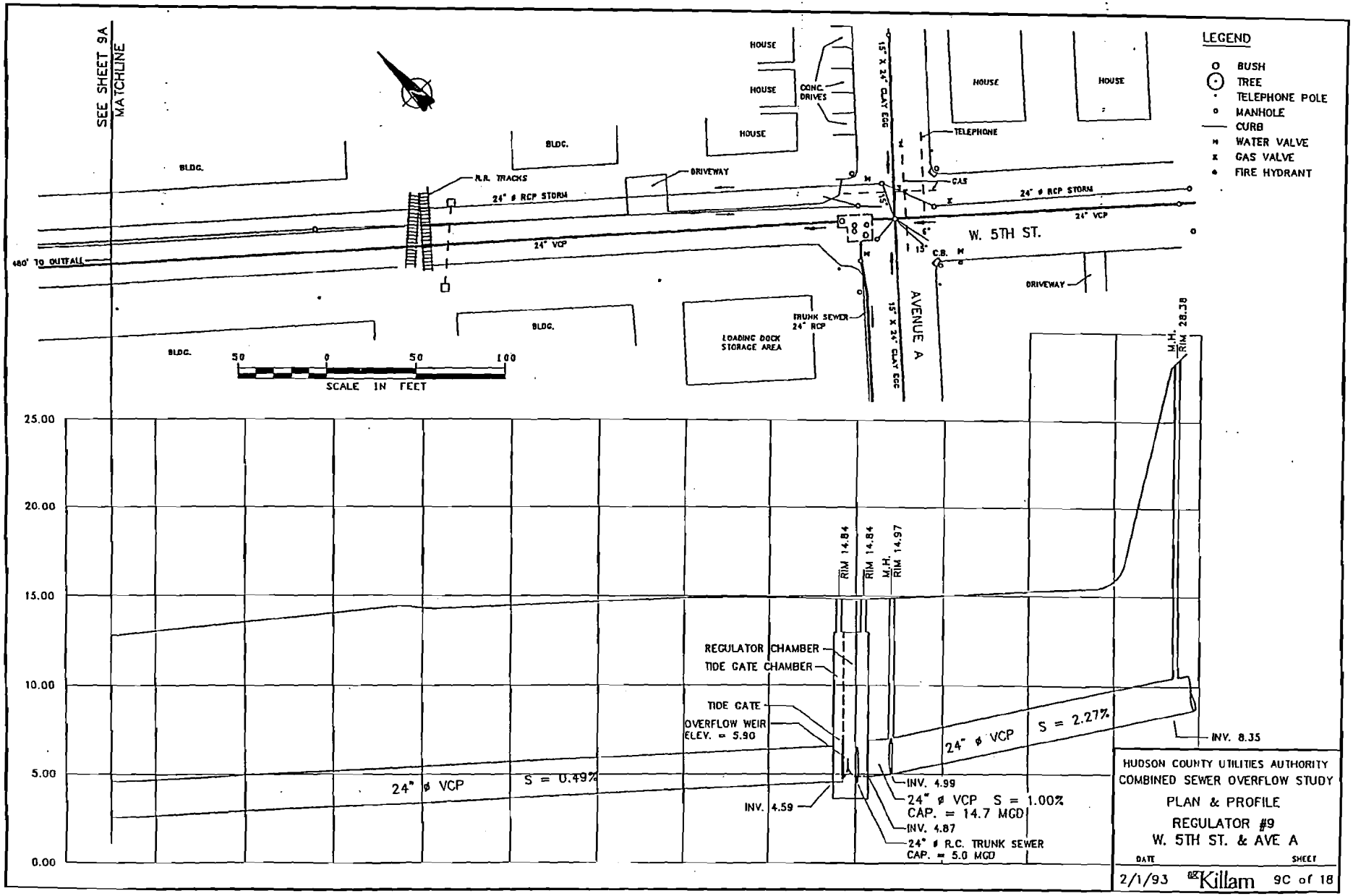
SEE SHEET 9A
MATCHLINE
LEGEND
BUSH
TREE
TELEPHONE POLE
MANHOLE
CURB
WATER VALVE
GAS VALVE
FIRE HYDRANT
HOUSE
HOUSE
HOUSE
HOUSE
HOUSE
CONC. DRIVES
BLDG.
BLDG.
BLDG.
BLDG.
R.R. TRACKS
DRIVEWAY
24" ø RCP STORM
24" VCP
480' TO OUTFALL
TELEPHONE
GAS
24" ø RCP STORM
24" VCP
W. 5TH ST.
C.B.
DRIVEWAY
AVENUE A
15" X 24" CLAY EGG
15" X 24" CLAY EGG
TRUNK SEWER 24" RCP
LOADING DOCK STORAGE AREA
M.H. RIM 28.38
50 0 50 100
SCALE IN FEET
25.00
20.00
15.00
10.00
5.00
0.00
RIM 14.84
RIM 14.84
M.H. RIM 14.97
REGULATOR CHAMBER
TIDE GATE CHAMBER
TIDE GATE
OVERFLOW WEIR ELEV. = 5.90
24" ø VCP S = 2.27%
INV. 8.35
24" ø VCP S = 0.49%
INV. 4.59
INV. 4.99
24" ø VCP S = 1.00%
CAP. = 14.7 MGD
INV. 4.87
24" ø R.C. TRUNK SEWER
CAP. = 5.0 MGD
HUDSON COUNTY UTILITIES AUTHORITY
COMBINED SEWER OVERFLOW STUDY
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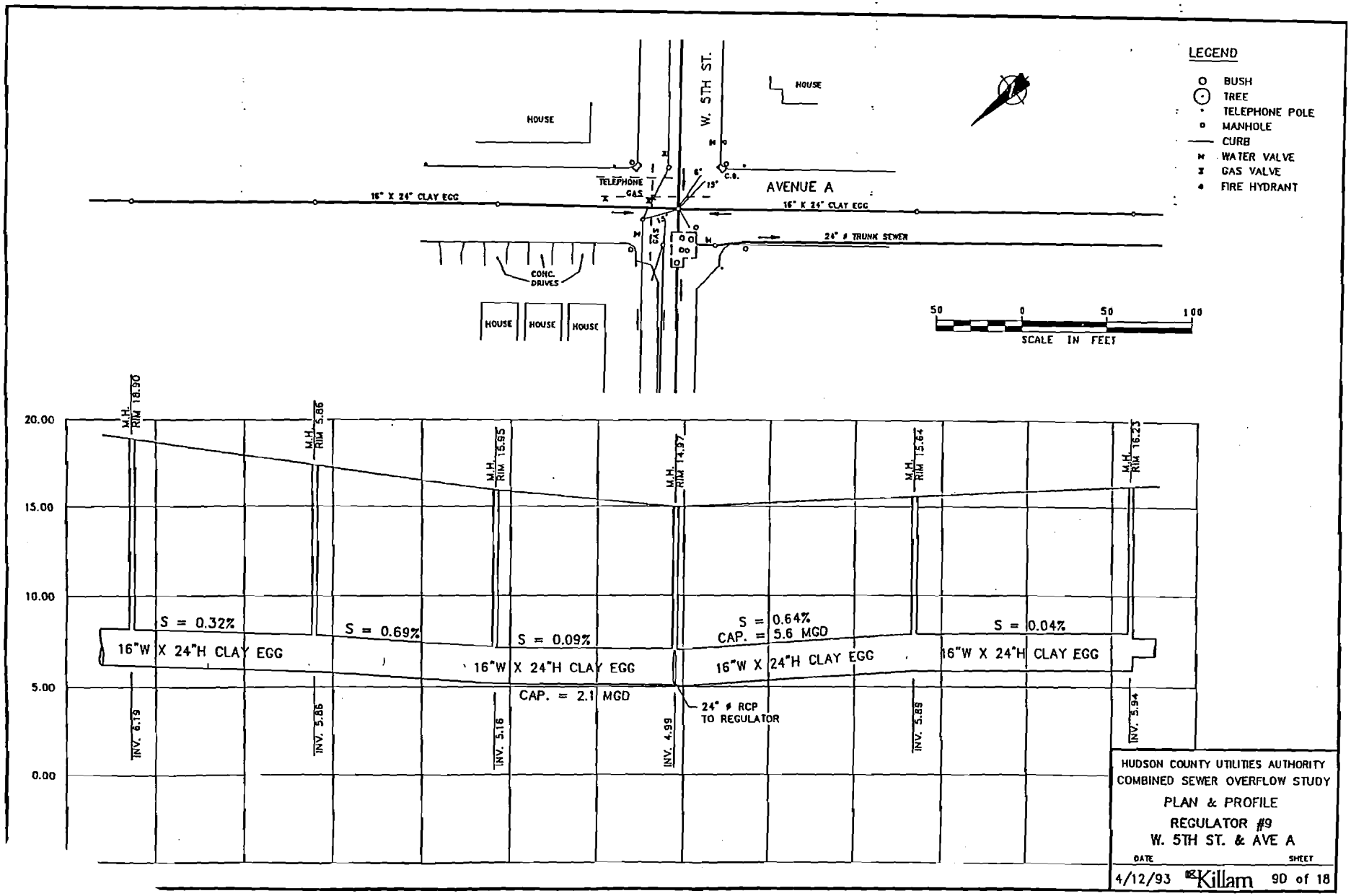

HUDSON COUNTY UTILITIES AUTHORITY
COMBINED SEWER OVERFLOW STUDY

PLAN & PROFILE

REGULATOR #9

W. 5TH ST. & AVE A

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TIERRA-A-000079

City of Bayonne

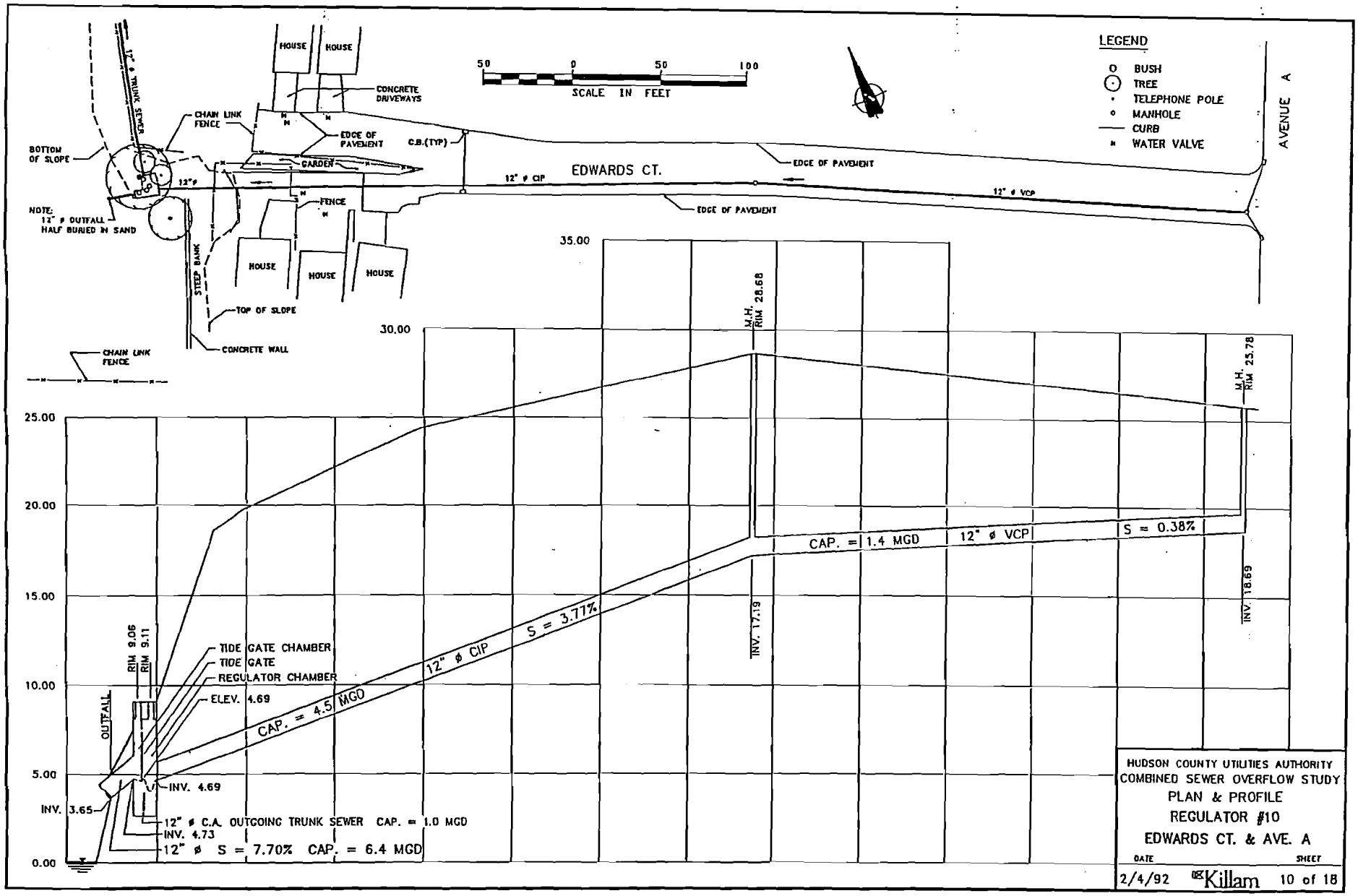
CSO Control Facility Data Extract

Chamber Location & Description

Reg. No.	**10**
Location:	Edwards Ct. & Avenue A
NJPDES Outfall No.	013
Chamber Status:	Active
Overflow to:	Newark Bay
Character of District Served:	100% Residential
Regulator Location:	In Terminus of Edwards Ct. @ Newark Bay
District Collector Sewer (Size & Cap)	12 inches, 4.5 MGD
Outfall to Receiving Water (Size & Cap)	12 inches, 6.4 MGD
Outfall Condition:	Pipe is Half Blocked w/Sand
Tidal Effects:	Yes
Regulator Size:	6 inches x 5 inches
Condition of Reg:	Functional
Condition of Overflow Stop Log:	None
Condition of Tide Gate:	Functional

Area Served & Dry Weather Flow:

Combined Area Served:	4 Acres
Average Daily Flow:	No Data


LEGEND
BUSH
TREE
TELEPHONE POLE
MANHOLE
CURB
WATER VALVE
SCALE IN FEET
50 0 50 100
EDWARDS CT.
AVENUE A
HOUSE
CONCRETE DRIVEWAYS
CHAIN LINK FENCE
EDGE OF PAVEMENT
C.B.(TYP)
GARDEN
BOTTOM OF SLOPE
12"ø
12" ø CIP
12" ø VCP
FENCE
NOTE: 12" ø OUTFALL HALF BURIED IN SAND
STEEP BANK
TOP OF SLOPE
CONCRETE WALL
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
M.H. RIM 28.68
M.H. RIM 25.78
INV. 17.19
INV. 18.69
RIM 9.06
RIM 9.11
OUTFALL
TIDE GATE CHAMBER
TIDE GATE
REGULATOR CHAMBER
ELEV. 4.69
CAP. = 4.5 MGD
12" ø CIP
S = 3.71%
CAP. = 1.4 MGD
12" ø VCP
S = 0.38%
INV. 4.69
INV. 3.65
12" ø C.A. OUTGOING TRUNK SEWER CAP. = 1.0 MGD
INV. 4.73
12" ø S = 7.70% CAP. = 6.4 MGD
HUDSON COUNTY UTILITIES AUTHORITY
COMBINED SEWER OVERFLOW STUDY
PLAN & PROFILE
REGULATOR #10
EDWARDS CT. & AVE. A
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City of Bayonne

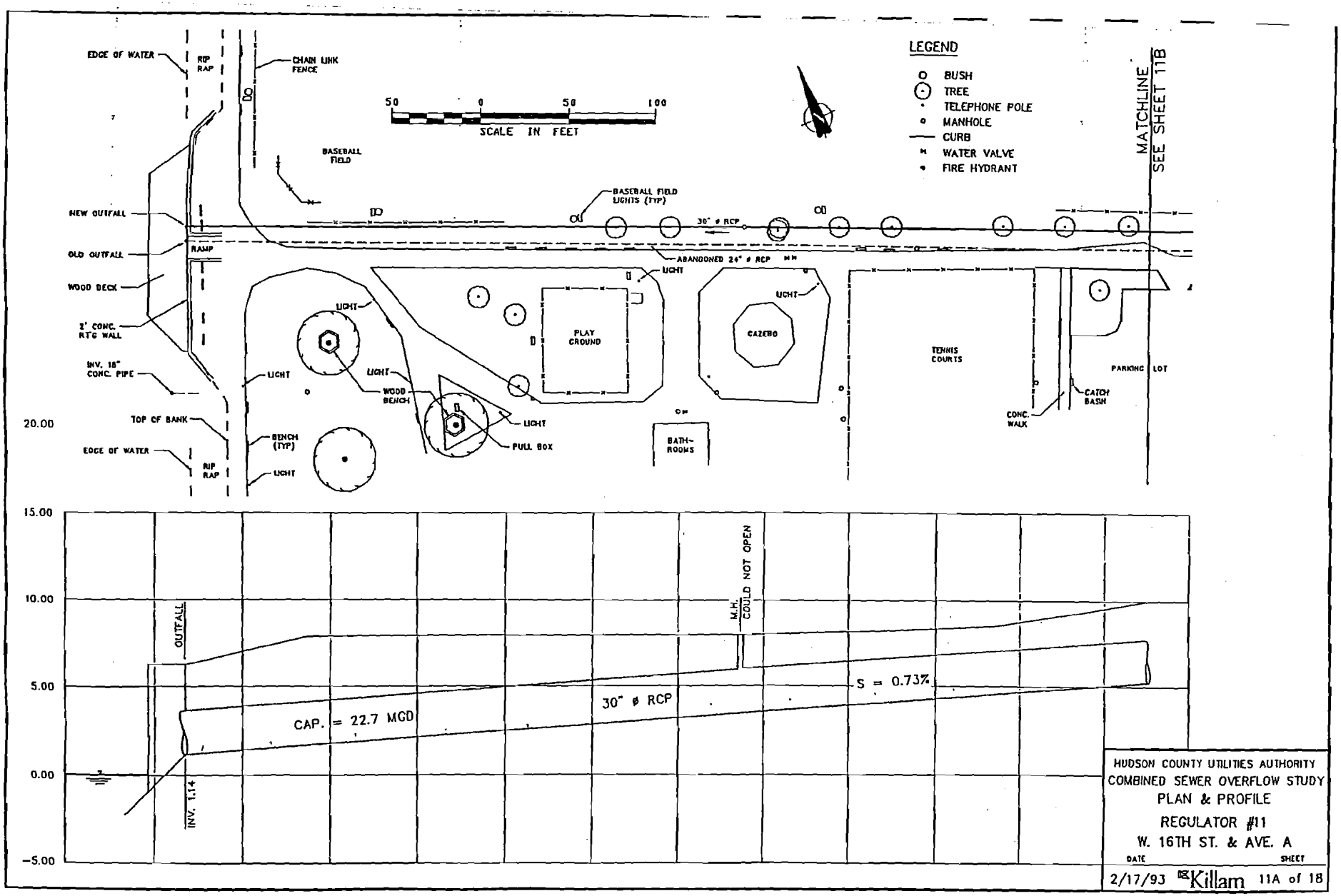
CSO Control Facility Data Extract

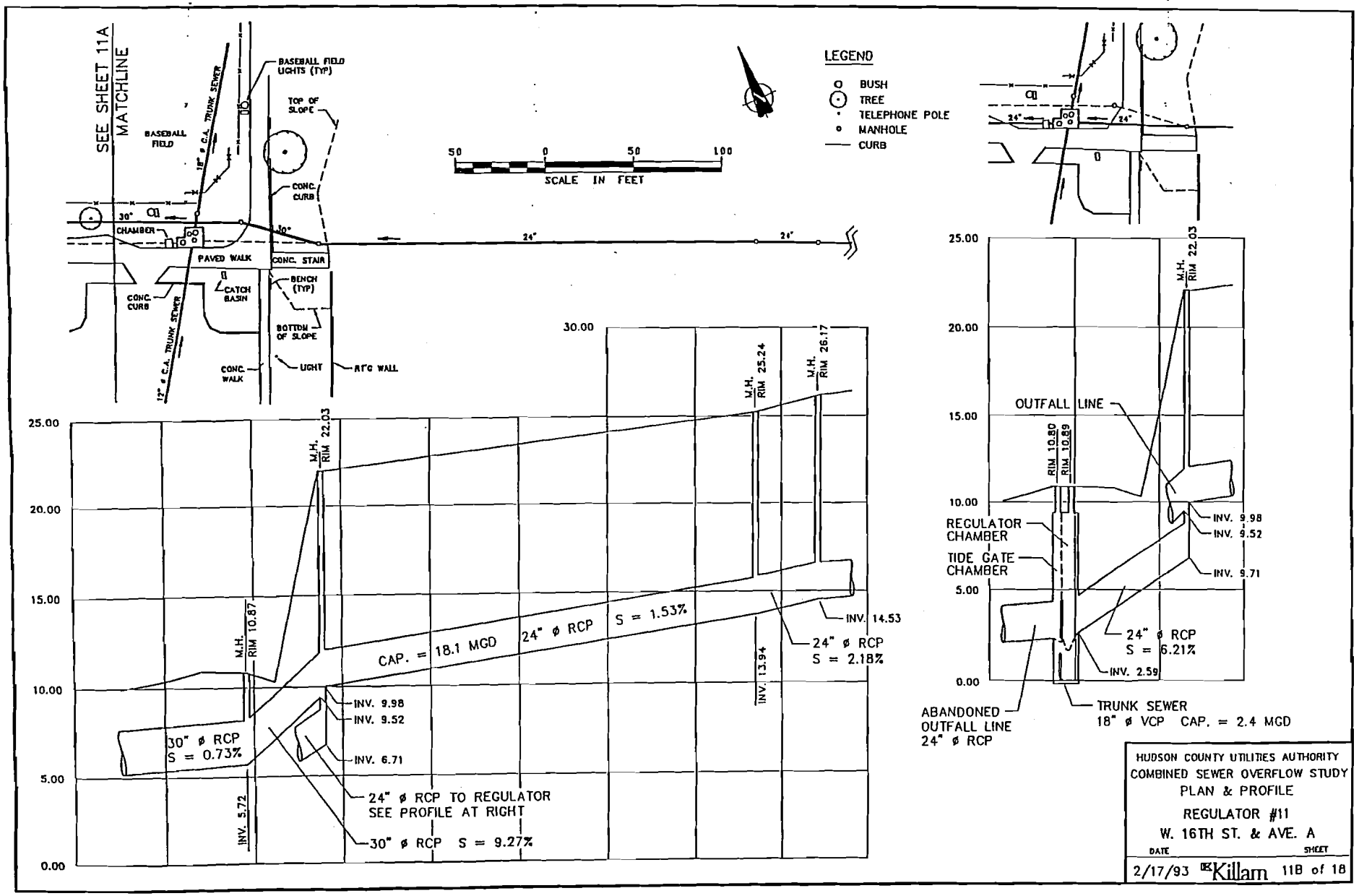
Chamber Location & Description

Reg. No.	**11**
Location:	W. 16th St. & Avenue A
NJPDES Outfall No.	014
Chamber Status:	Active
Overflow to:	Newark Bay
Character of District Served:	100% Residential
Regulator Location:	In Terminus of Country Vil Ct. @ Newark Bay
District Collector Sewer (Size & Cap)	24 inches, 18.1 MGD
Outfall to Receiving Water (Size & Cap)	30 inches, 22.7 MGD
Outfall Condition:	Slightly Blocked w/Trash
Tidal Effects:	Yes
Regulator Size:	Tide Gate Jammed Closed. First Upstream M.H. Functions as Overflow Chamber to New Outfall Line (30 inch RCP)
Condition of Reg:	Functional
Condition of Overflow Stop Log:	None
Condition of Tide Gate:	Functional - 1997 Inspection Report indicates new gaskets needed.

Area Served & Dry Weather Flow:

Combined Area Served:	58 Acres
Average Daily Flow:	0.08 MGD





HUDSON COUNTY UTILITIES AUTHORITY
COMBINED SEWER OVERFLOW STUDY
PLAN & PROFILE
REGULATOR #11
W. 16TH ST. & AVE. A

DATE	SHEET
2/17/93	Killam 11B of 18

City of Bayonne

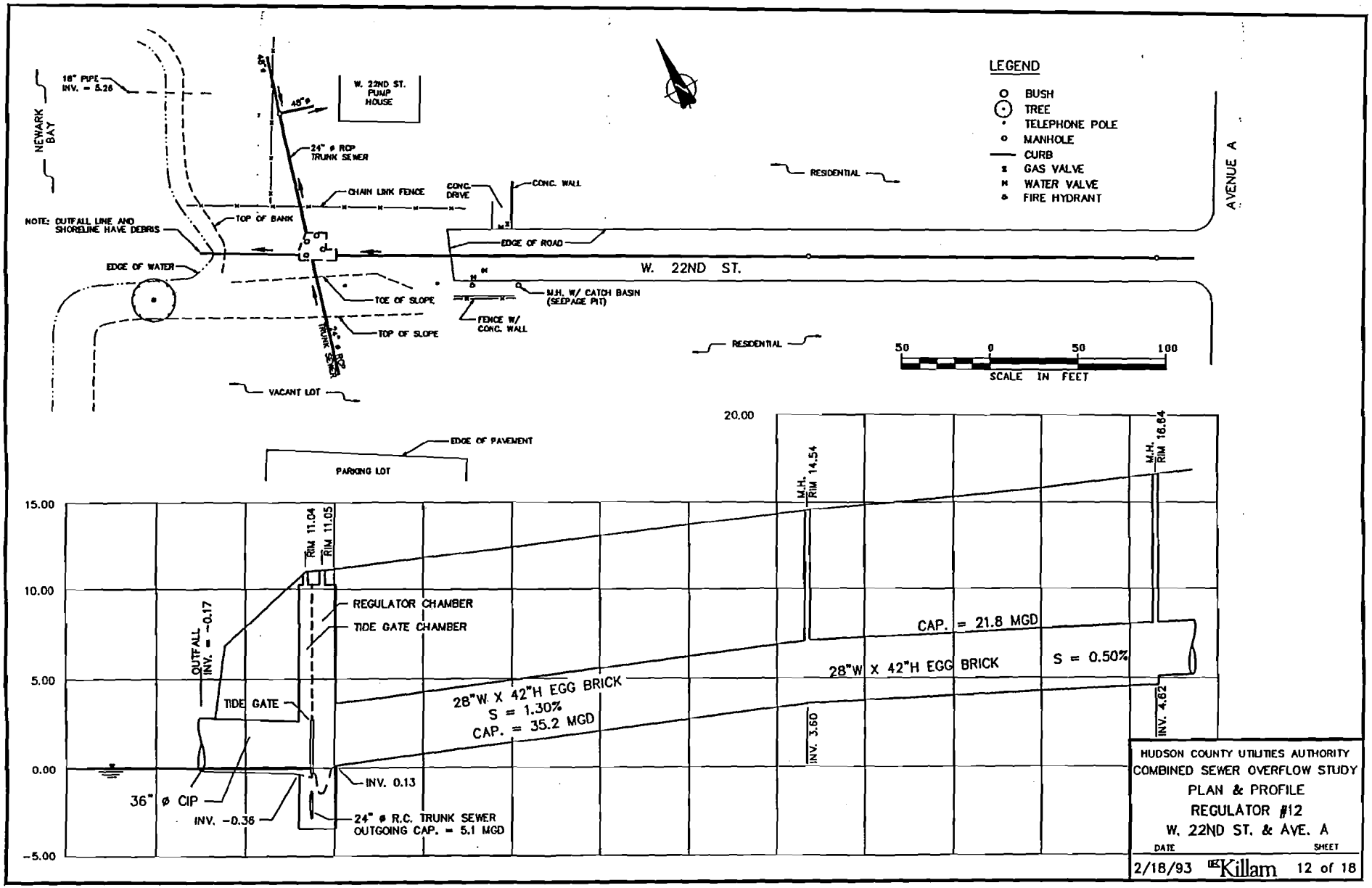
CSO Control Facility Data Extract

Chamber Location & Description

Reg. No.	12
Location:	W. 22nd St. & Avenue A
NJPDES Outfall No.	015
Chamber Status:	Active
Overflow to:	Newark Bay
Character of District Served:	Residential and Commercial
Regulator Location:	In Terminus of W. 22nd St. @ Newark Bay
District Collector Sewer (Size & Cap)	28 inch x 42 inch EGG, 35 MGD
Outfall to Receiving Water (Size & Cap)	36 inches
Outfall Condition:	Partially Blocked w/Rocks, Logs and Brush
Tidal Effects:	Yes
Regulator Size:	21 inches x 13 inches
Condition of Reg:	Functional
Condition of Overflow Stop Log:	None
Condition of Tide Gate:	Functional

Area Served & Dry Weather Flow:

Combined Area Served:	77 Acres
Average Daily Flow:	0.57 MGD



HUDSON COUNTY UTILITIES AUTHORITY
COMBINED SEWER OVERFLOW STUDY
PLAN & PROFILE
REGULATOR #12
W. 22ND ST. & AVE. A

DATE	SHEET
2/18/93	Killam 12 of 18

City of Bayonne

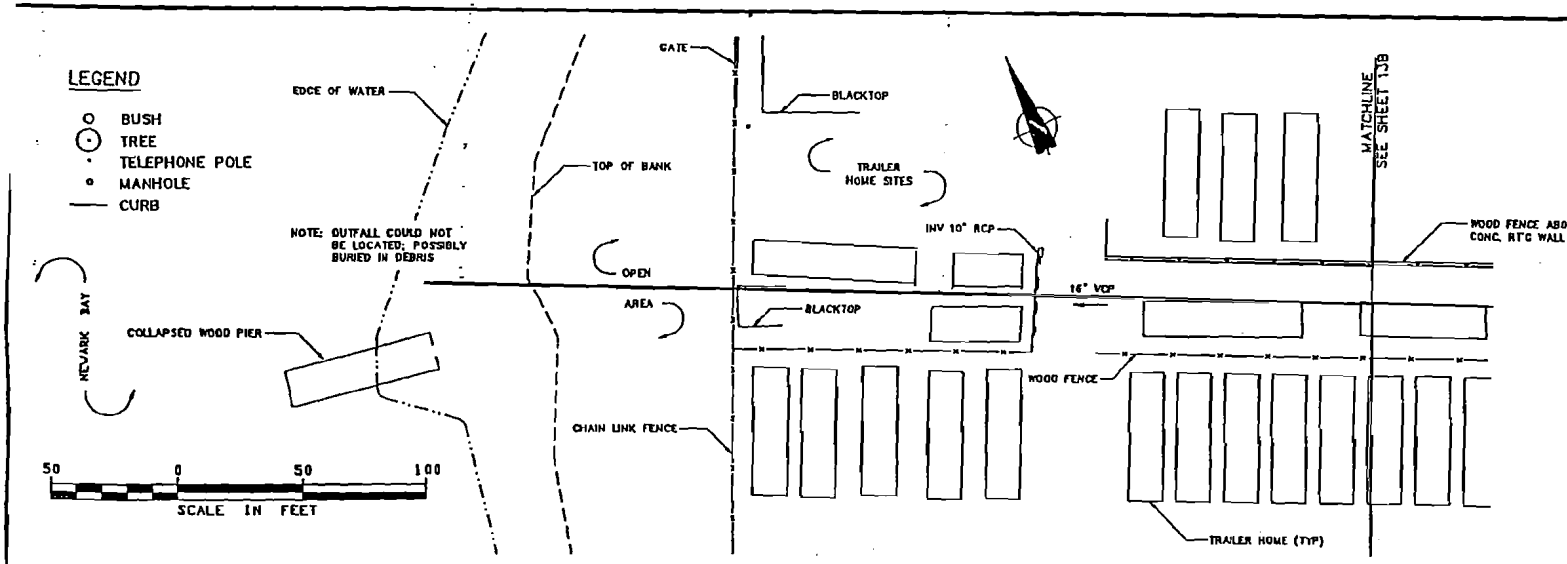
CSO Control Facility Data Extract

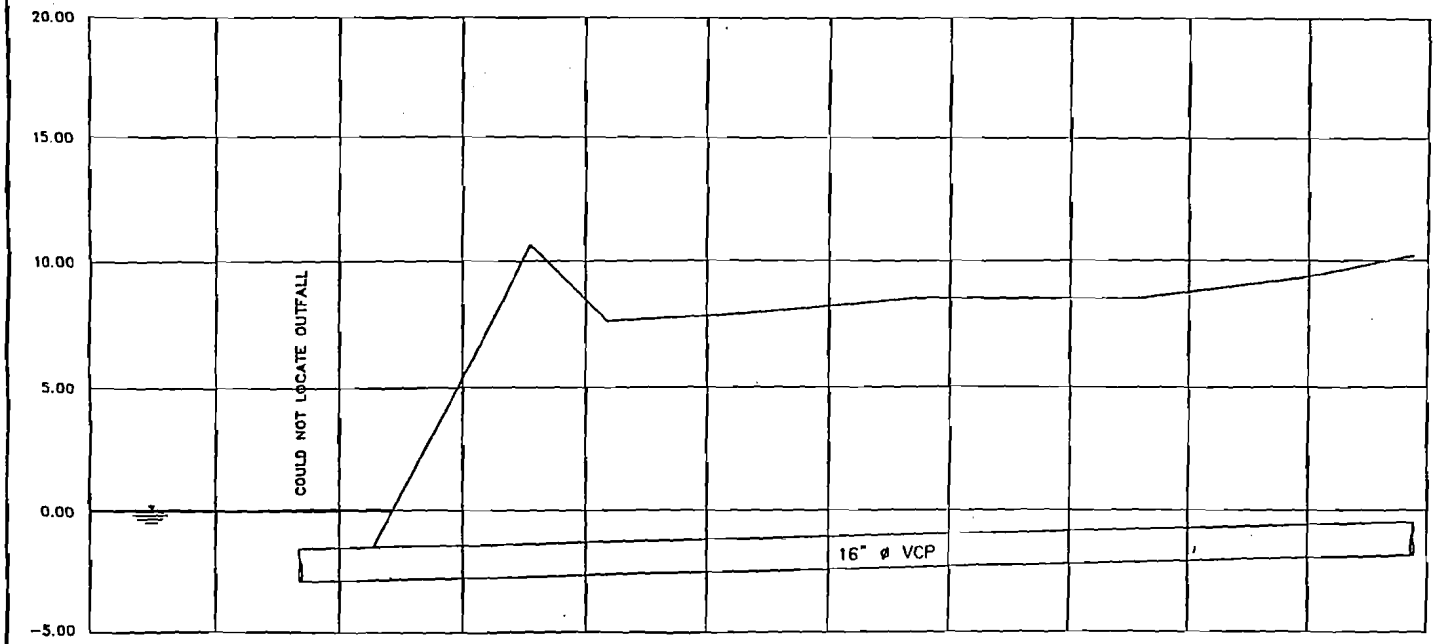
Chamber Location & Description

Reg. No.	**13**
Location:	W. 24th St. & Avenue A
NJPDES Outfall No.	016
Chamber Status:	Active
Overflow to:	Newark Bay
Character of District Served:	100% Residential
Regulator Location:	In Terminus of W. 24th St. @ Newark Bay
District Collector Sewer (Size & Cap)	16 inches, 10.1 MGD
Outfall to Receiving Water (Size & Cap)	16 inches, Unknown
Outfall Condition:	Could not Locate - Buried
Tidal Effects:	Yes
Regulator Size:	7.5 inches x 7.5 inches
Condition of Reg:	Locked Open
Condition of Overflow Stop Log:	None
Condition of Tide Gate:	Functional

Area Served & Dry Weather Flow:

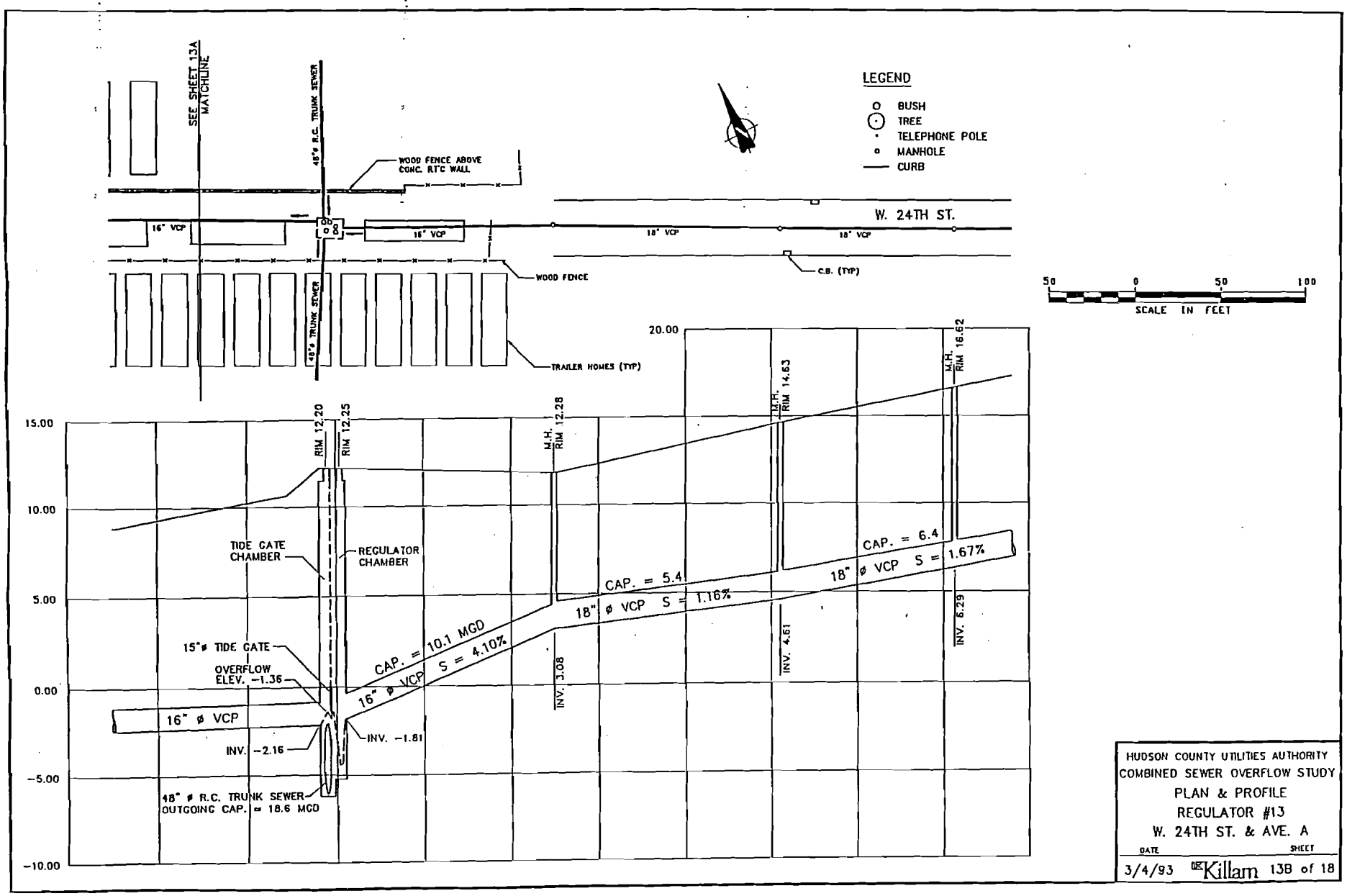
Combined Area Served:	17 Acres
Average Daily Flow:	0.05 MGD





HUDSON COUNTY UTILITIES AUTHORITY
COMBINED SEWER OVERFLOW STUDY
PLAN & PROFILE
REGULATOR #13
W. 24TH ST. & AVE. A

DATE	SHEET
3/4/93	Killam 13A of 18



HUDSON COUNTY UTILITIES AUTHORITY
COMBINED SEWER OVERFLOW STUDY
PLAN & PROFILE
REGULATOR #13
W. 24TH ST. & AVE. A

DATE	SHEET
3/4/93	13B of 18

Killam

City of Bayonne

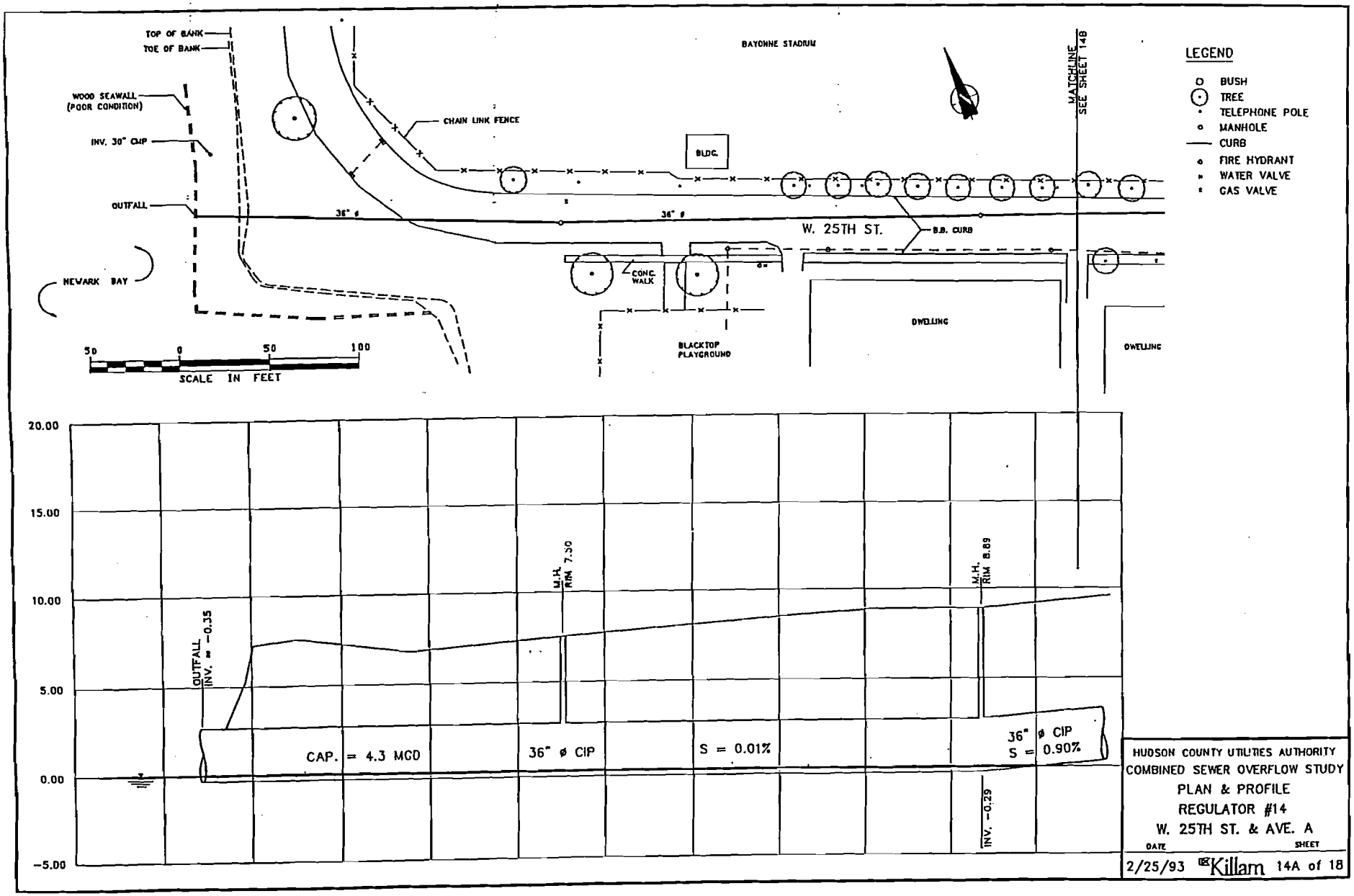
CSO Control Facility Data Extract

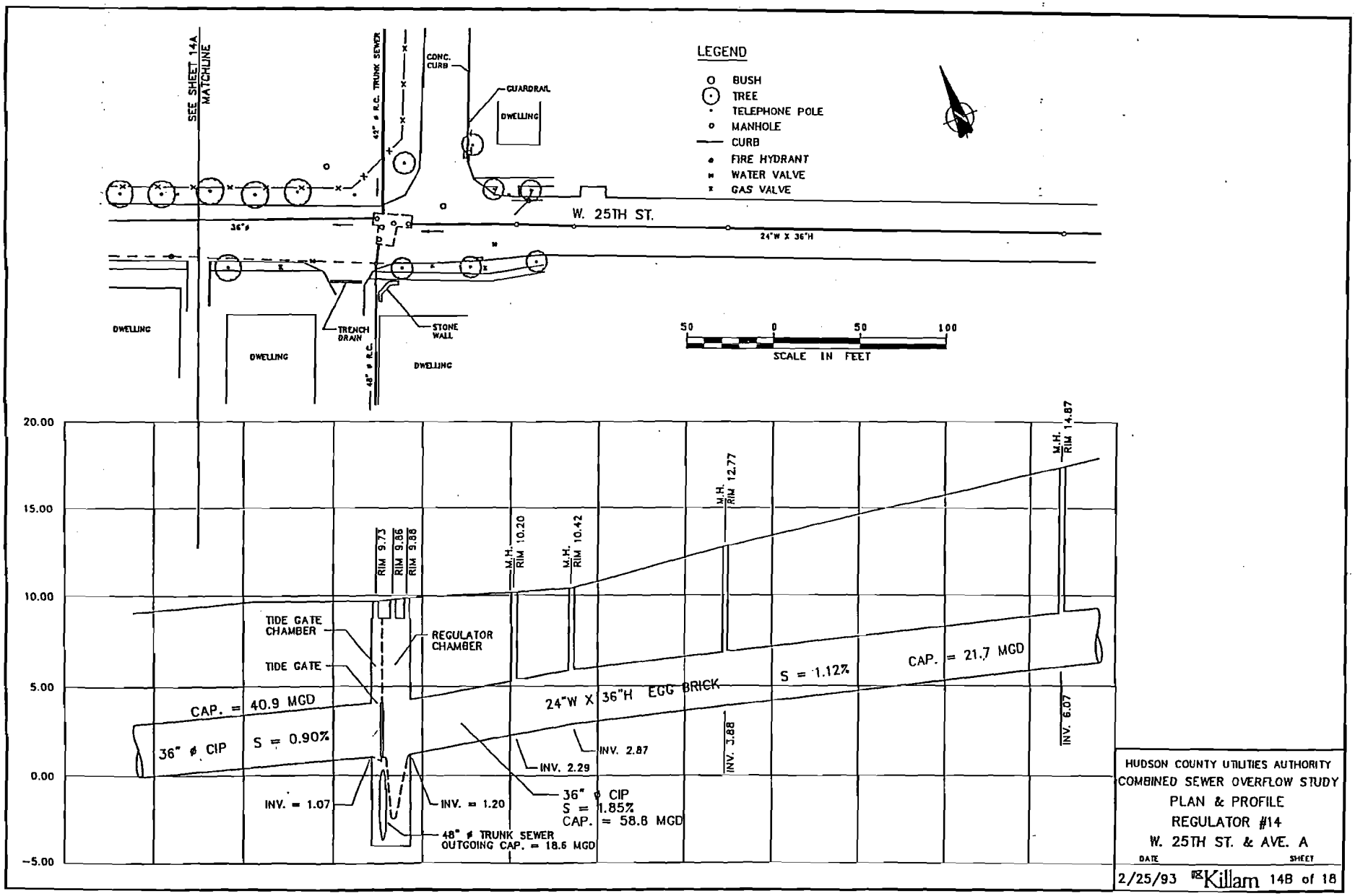
Chamber Location & Description

Reg. No.	**14**
Location:	W. 25th St. & Avenue A
NJPDES Outfall No.	017
Chamber Status:	Active
Overflow to:	Newark Bay
Character of District Served:	Residential
Regulator Location:	In Terminus of W. 25th St. @ Newark Bay
District Collector Sewer (Size & Cap)	36 inches, 58.8 MGD
Outfall to Receiving Water (Size & Cap)	36 inches, 4.3 MGD
Outfall Condition:	Functional
Tidal Effects:	Yes
Regulator Size:	21 inches x 12 inches
Condition of Reg:	Functional
Condition of Overflow Stop Log:	None
Condition of Tide Gate:	Functional - 1997 Inspection Report indicates new bolts needed to secure frame.

Area Served & Dry Weather Flow:

Combined Area Served:	88 Acres
Average Daily Flow:	0.19 MGD





HUDSON COUNTY UTILITIES AUTHORITY
COMBINED SEWER OVERFLOW STUDY
PLAN & PROFILE
REGULATOR #14
W. 25TH ST. & AVE. A

DATE	SHEET
2/25/93	Killam 14B of 18

City of Bayonne

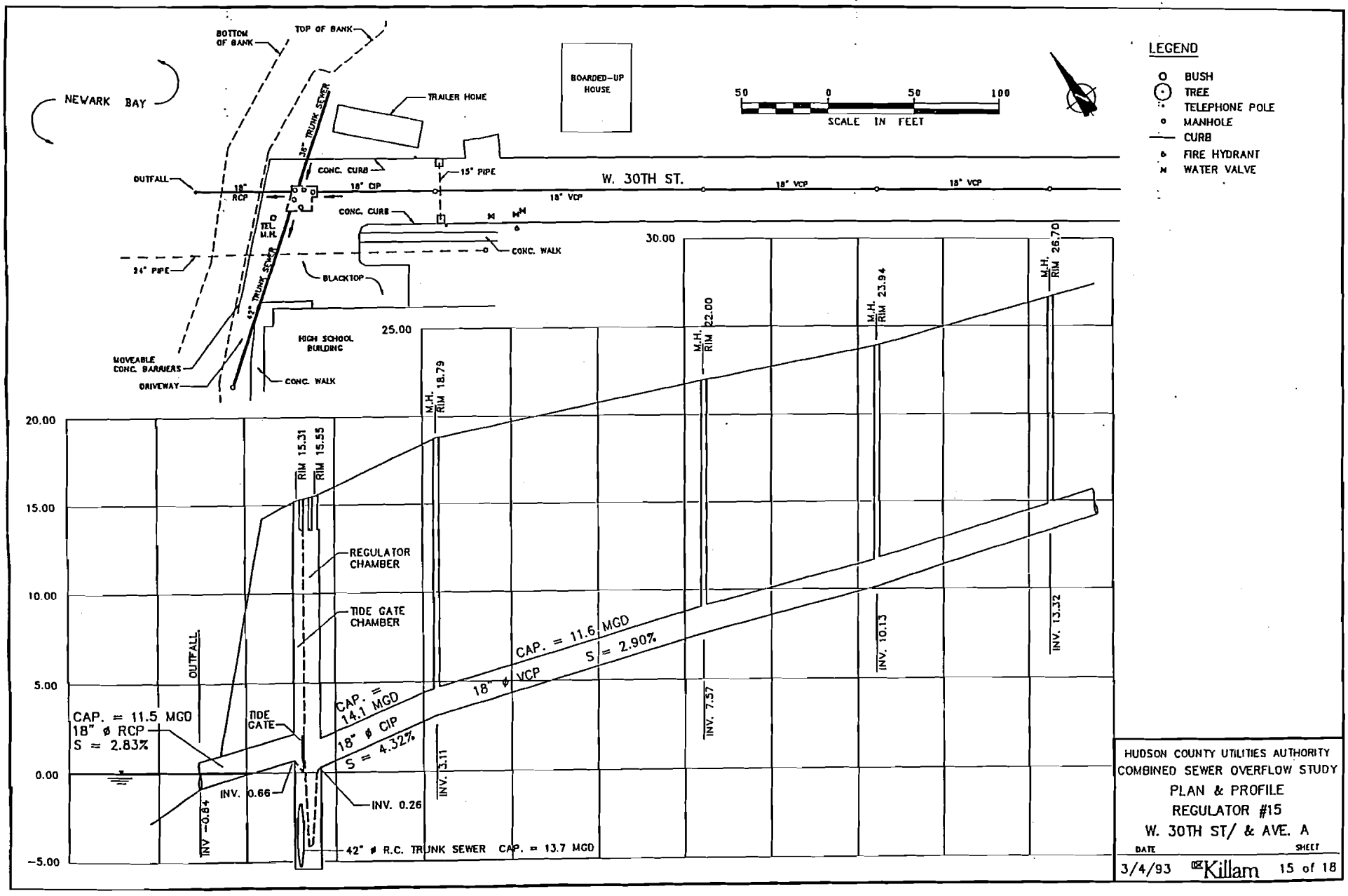
CSO Control Facility Data Extract

Chamber Location & Description

Reg. No.	**15**
Location:	W. 30th St. & Avenue A
NJPDES Outfall No.	018
Chamber Status:	Active
Overflow to:	Newark Bay
Character of District Served:	100% Residential
Regulator Location:	In Terminus of W. 30th St. @ Newark Bay
District Collector Sewer (Size & Cap)	18 inches, 14.1 MGD
Outfall to Receiving Water (Size & Cap)	18 inches, Unknown
Outfall Condition:	Functional
Tidal Effects:	Yes
Regulator Size:	7.5 inches x 5 inches
Condition of Reg:	Functional
Condition of Overflow Stop Log:	None
Condition of Tide Gate:	Functional

Area Served & Dry Weather Flow:

Combined Area Served:	22 Acres
Average Daily Flow:	0.04 MGD



HUDSON COUNTY UTILITIES AUTHORITY
COMBINED SEWER OVERFLOW STUDY
PLAN & PROFILE
REGULATOR #15
W. 30TH ST/ & AVE. A

DATE	SHEET
3/4/93	15 of 18

Killam

City of Bayonne

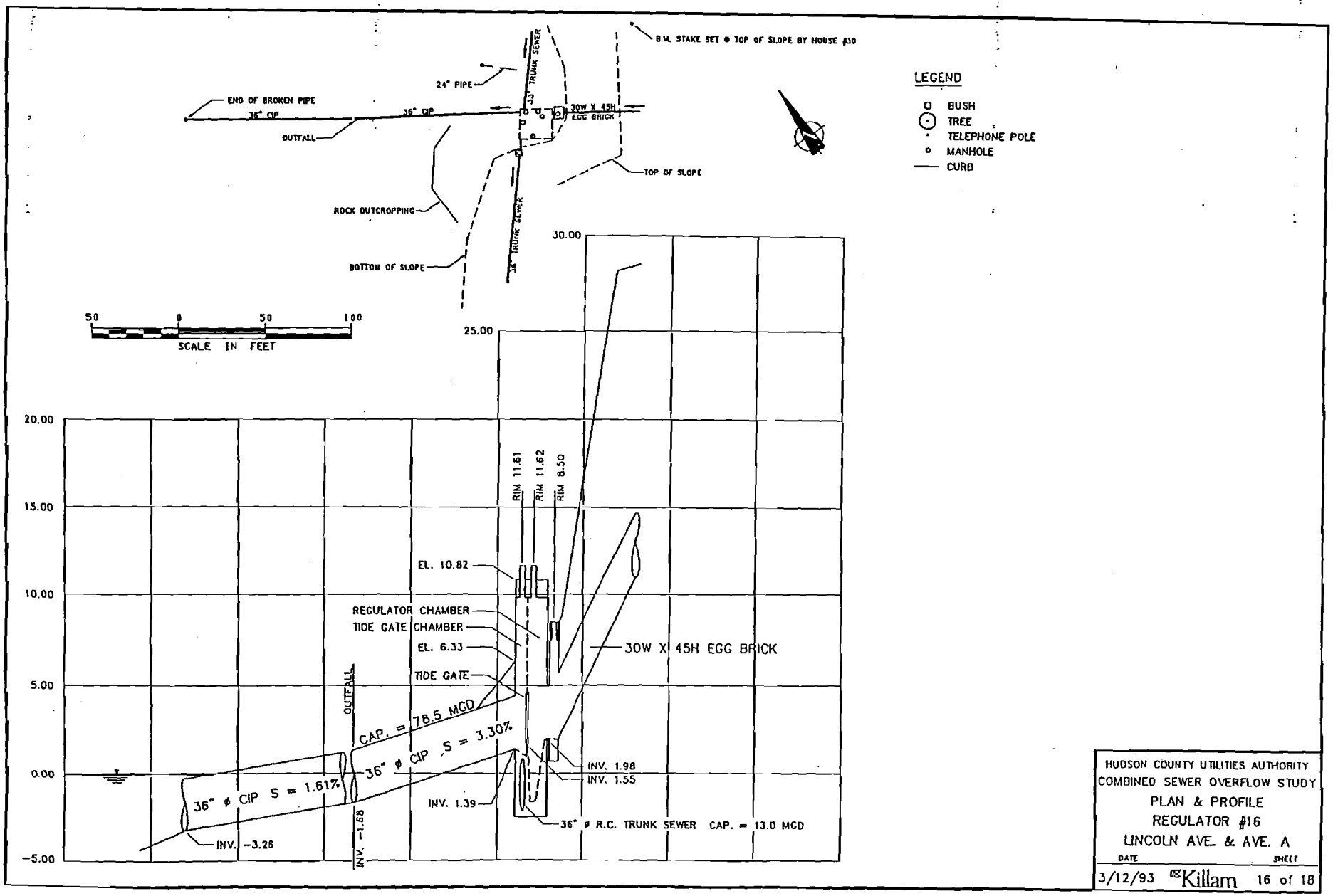
CSO Control Facility Data Extract

Chamber Location & Description

Reg. No.	**16**
Location:	Lincoln & Avenue A
NJPDES Outfall No.	019
Chamber Status:	Active
Overflow to:	Newark Bay
Character of District Served:	100% Residential
Regulator Location:	End of Lincoln Avenue
District Collector Sewer (Size & Cap)	30 inches x 45 inches EGG, Unknown
Outfall to Receiving Water (Size & Cap)	36 inches, 78.5 MGD
Outfall Condition:	Outfall Line is Separated at Joints
Tidal Effects:	Yes
Regulator Size:	31 inches x 16 inches
Condition of Reg:	Appears Inoperable
Condition of Overflow Stop Log:	None
Condition of Tide Gate:	Functional - 1997 Inspection Report indicates new gaskets needed.

Area Served & Dry Weather Flow:

Combined Area Served:	190 Acres
Average Daily Flow:	0.65 MGD



HUDSON COUNTY UTILITIES AUTHORITY
COMBINED SEWER OVERFLOW STUDY
PLAN & PROFILE
REGULATOR #16
LINCOLN AVE. & AVE. A

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3/12/93	Killam 16 of 18

City of Bayonne

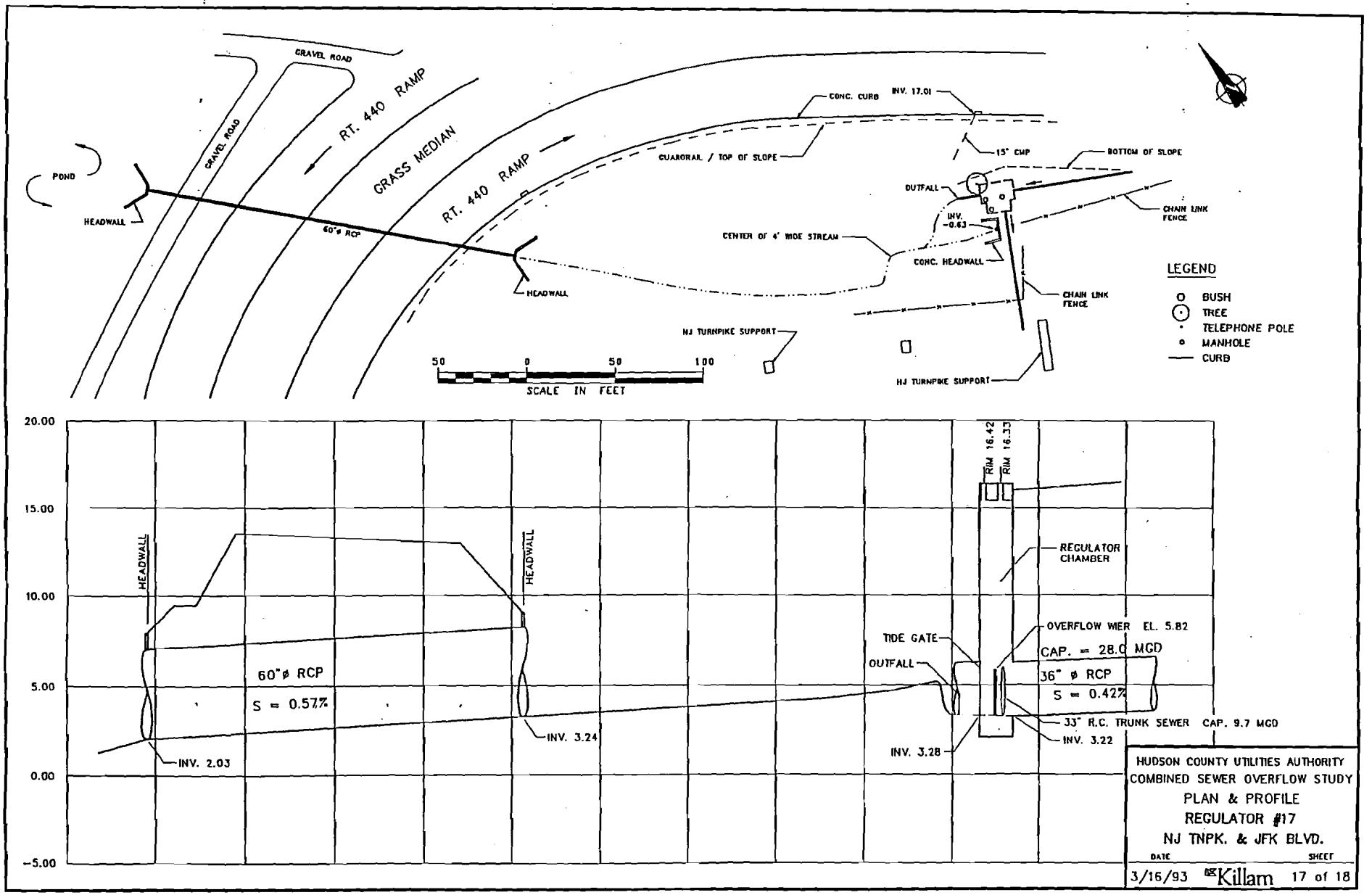
CSO Control Facility Data Extract

Chamber Location & Description

Reg. No.	17
Location:	NJ Turnpike & JFK Blvd
NJPDES Outfall No.	020
Chamber Status:	Active
Overflow to:	Newark Bay
Character of District Served:	Residential, Commercial, Industrial
Regulator Location:	Between NJ Turnpike & Rt. 440 @ Newark Bay
District Collector Sewer (Size & Cap)	36 inches, Unknown
Outfall to Receiving Water (Size & Cap)	36 inch Opening, No Pipe
Outfall Condition:	OK
Tidal Effects:	Yes
Regulator Size:	26 inches x 12 inches
Condition of Reg:	Does Not Function
Condition of Overflow Stop Log:	None
Condition of Tide Gate:	Functional

Area Served & Dry Weather Flow:

Combined Area Served:	76 Acres
Average Daily Flow:	2.13 MGD



HUDSON COUNTY UTILITIES AUTHORITY
COMBINED SEWER OVERFLOW STUDY
PLAN & PROFILE
REGULATOR #17
NJ TNPK. & JFK BLVD.

DATE	SHEET
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City of Bayonne

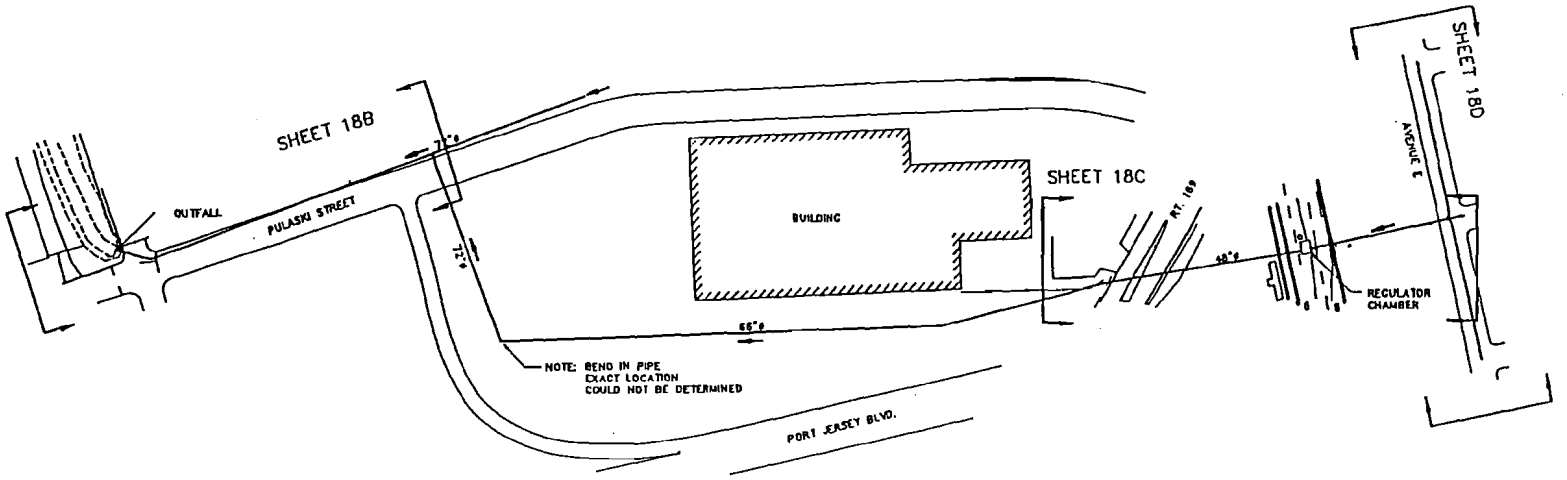
CSO Control Facility Data Extract

Chamber Location & Description

Reg. No.	18
Location:	E. 50th St. & Avenue E
NJPDES Outfall No.	021
Chamber Status:	Active
Overflow to:	Newark Bay
Character of District Served:	Residential and Commercial
Regulator Location:	In Terminus Pulaski La., West @ Upper New York Bay
District Collector Sewer (Size & Cap)	48 inches, 62.4 MGD
Outfall to Receiving Water (Size & Cap)	48 inch, Unknown
Outfall Condition:	Good
Tidal Effects:	Yes
Regulator Size:	38 inches x 16 inches
Condition of Reg:	Does Not Appear to Function
Condition of Overflow Stop Log:	None
Condition of Tide Gate:	Functional

Area Served & Dry Weather Flow:

Combined Area Served:	308 Acres
Average Daily Flow:	0.47 MGD



200 0 200 400

SCALE IN FEET

HUDSON COUNTY UTILITIES AUTHORITY
COMBINED SEWER OVERFLOW STUDY
PLAN & PROFILE
REGULATOR #18
E. 50TH ST. & AVE. E

DATE	SHEET
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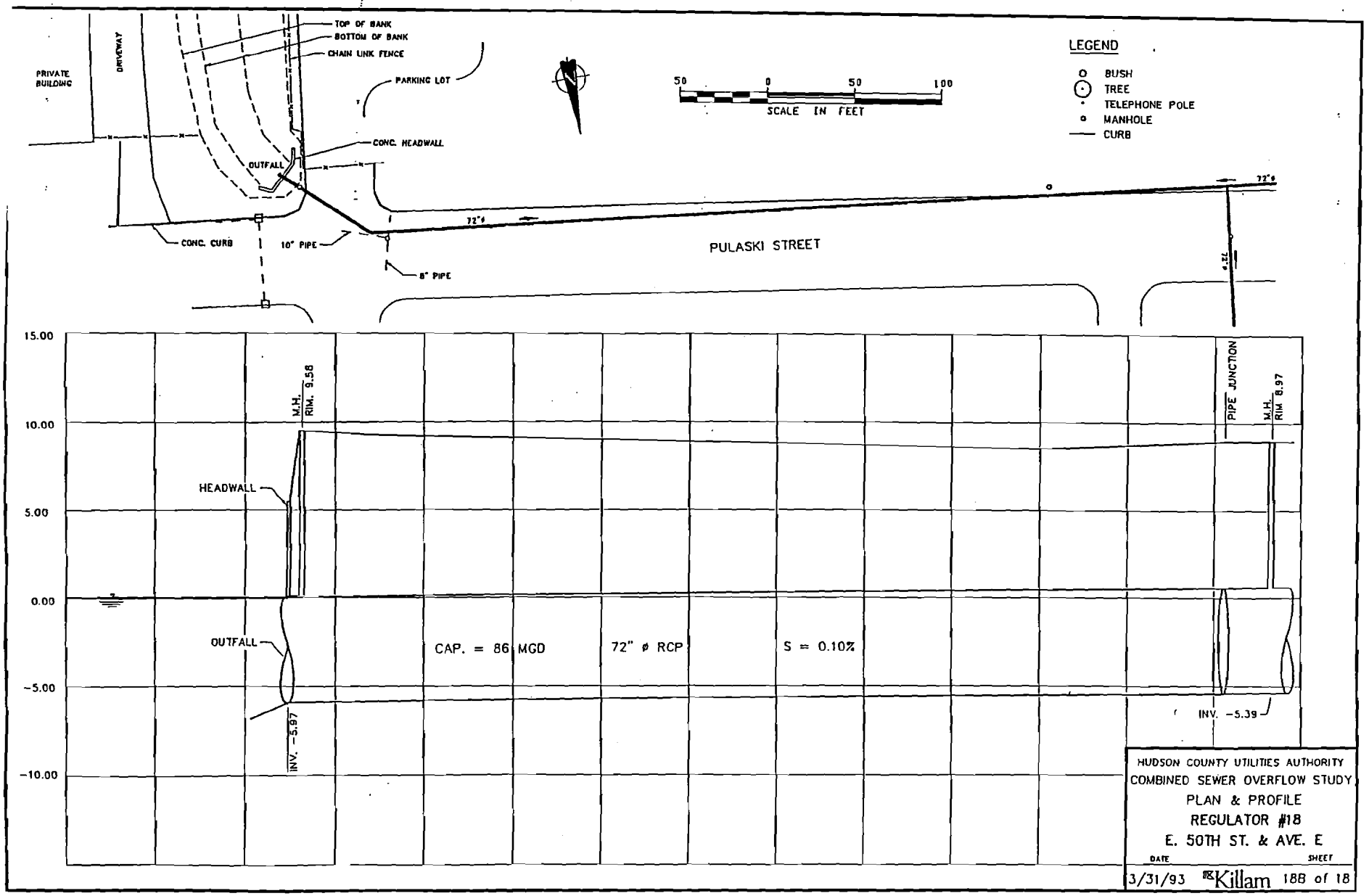

HUDSON COUNTY UTILITIES AUTHORITY
COMBINED SEWER OVERFLOW STUDY
PLAN & PROFILE
REGULATOR #18
E. 50TH ST. & AVE. E

DATE	SHEET
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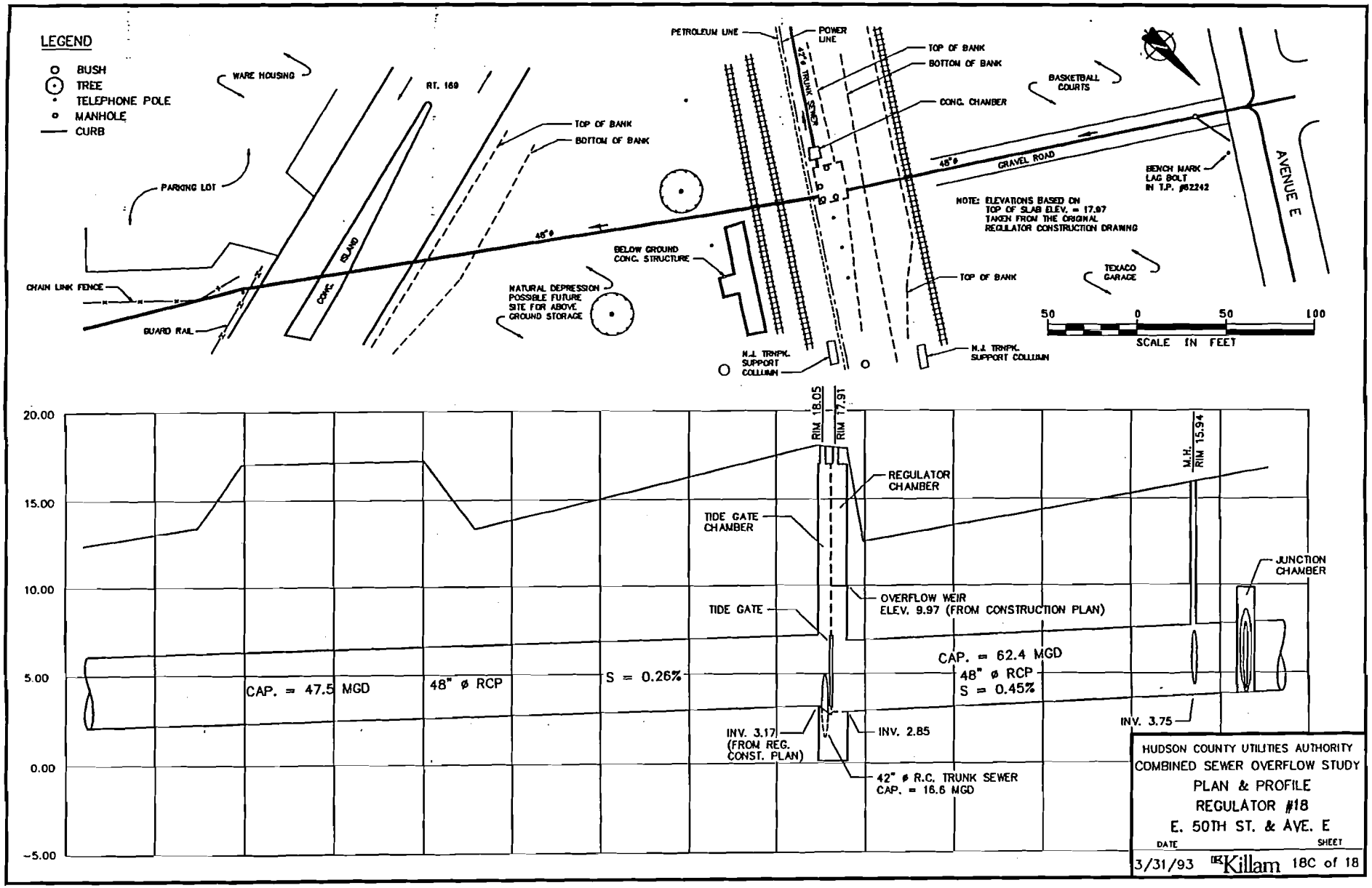
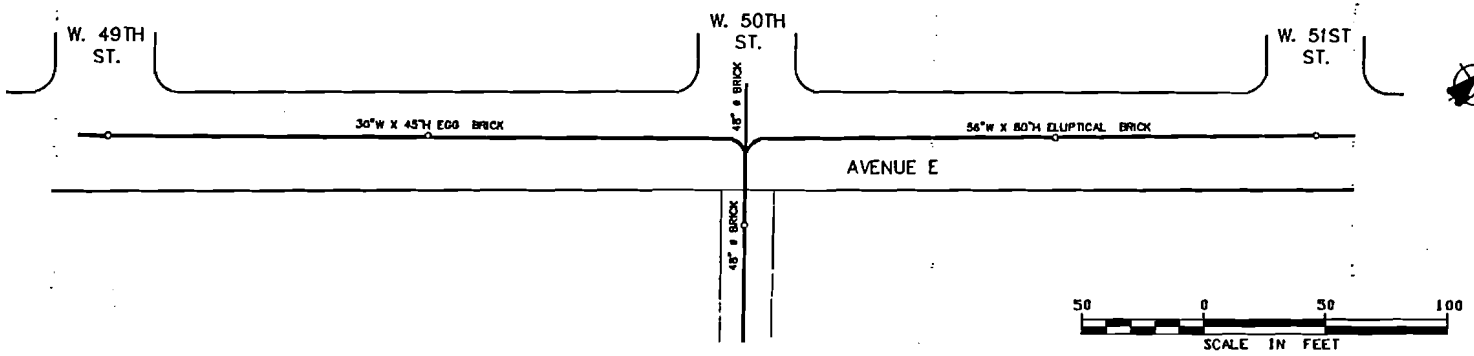
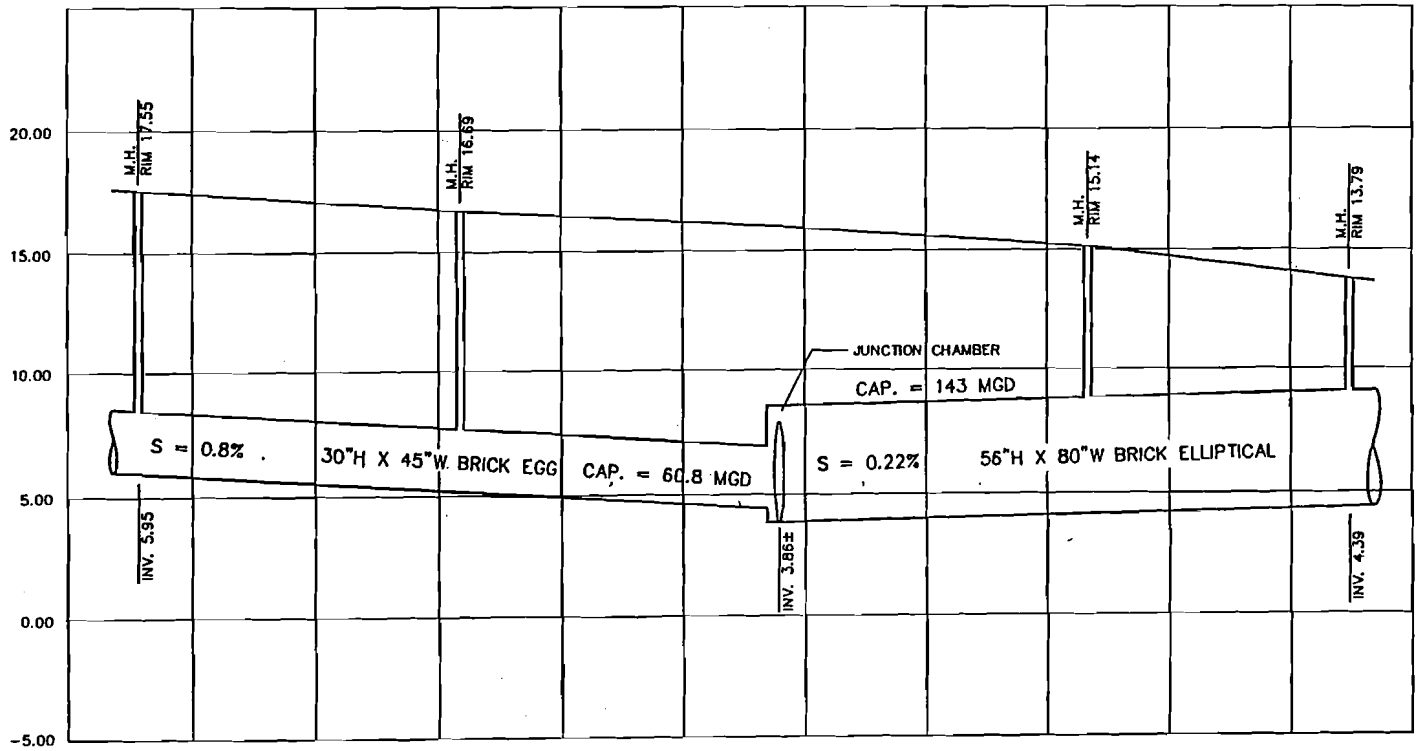




LEGEND

- BUSH
- TREE
- TELEPHONE POLE
- MANHOLE
- CURB



HUDSON COUNTY UTILITIES AUTHORITY
COMBINED SEWER OVERFLOW STUDY
PLAN & PROFILE
REGULATOR #18
E. 50TH ST. & AVE. E

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Appendix B

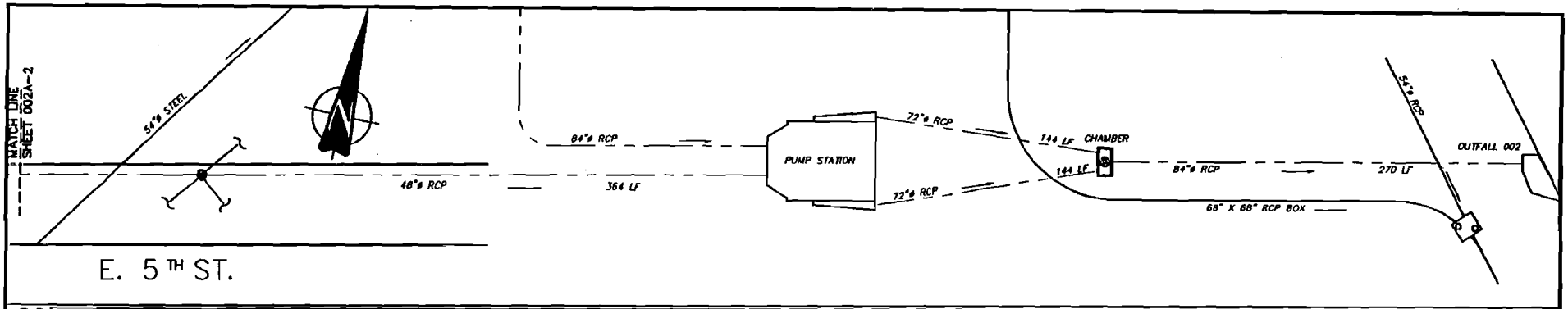
Combined Sewer Overflow
Control Facility Data Extract
Internal Overflows & Relief Sewers

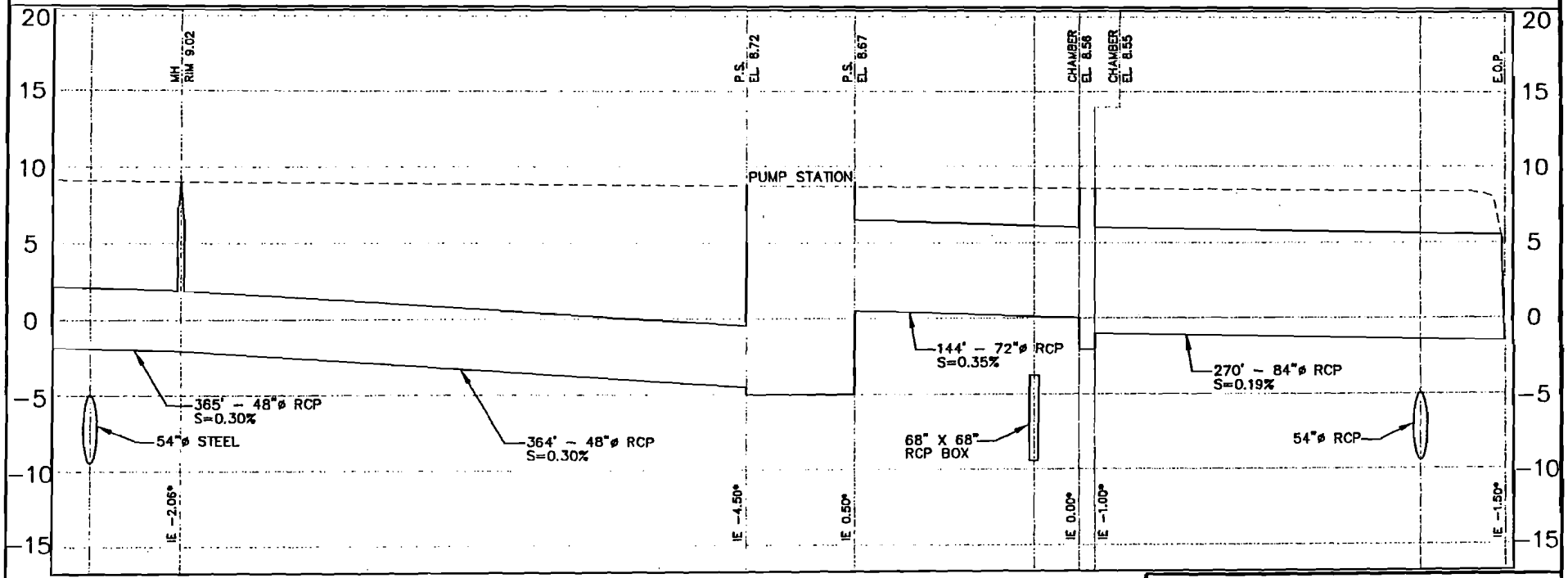
City of Bayonne

CSO Control Facility Data Extract

Relief Sewer Location & Description

NJPDES Outfall No.	**002**
Location:	5th Street Stormwater Pumping Station
Overflow to:	Inlet of Kill Van Kull
Character of District Served:	Residential, Commercial, and Industrial
Number of CSO Control Facilities:	9
Type of Control Facility	Interconnection Pipe
Size Range	12" Circular - 29"x 45" HERCP
Drainage Basin shared with the	
Following Regulators	2 and 5
Following Outfalls	001/005 and 008
Outfall to Receiving Water	
Size	84 inch RCP
Capacity	300 MGD
Outfall Condition:	Good
Tidal Effects:	No (Flow Pumped)
Tidal Gate(s) and Condition:	None
Drainage Area Serviced:	214 Acres





10 0 10 20
VERTICAL SCALE

100 0 100 200
HORIZONTAL SCALE

COMBINED SEWER
STORM SEWER
COMBINED SEWER OVERFLOW
INTERCEPTOR SEWER

* BASED ON AS-BUILT PLANS

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & PROFILE
OUTFALL 002

DATE		SHEET
9/21/97	E Killam	002A-1

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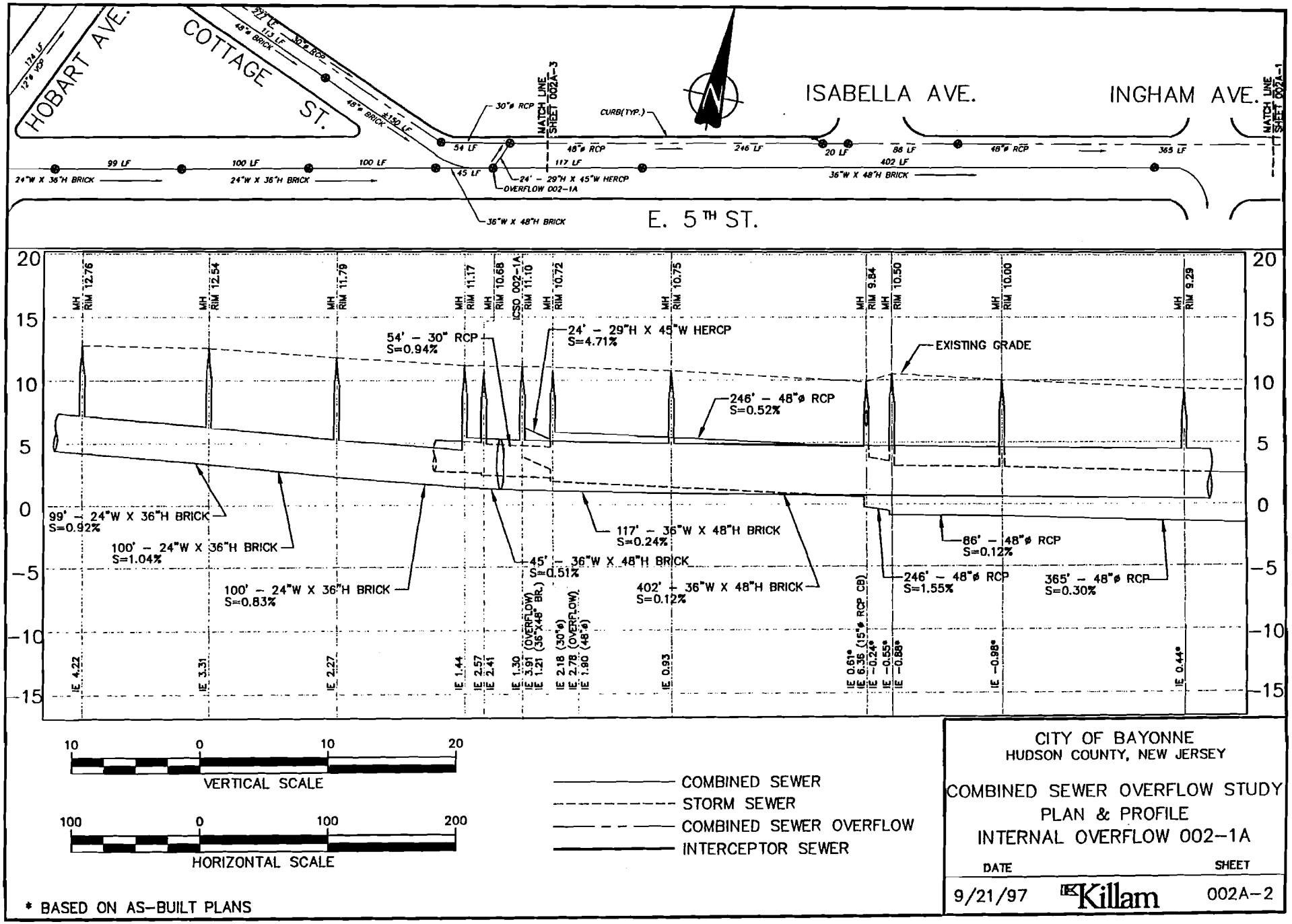

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & PROFILE
INTERNAL OVERFLOW 002-1A

DATE		SHEET
9/21/97	Killam	002A-2

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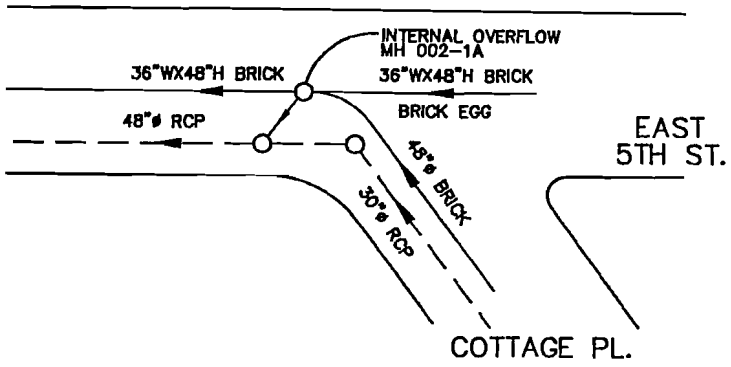
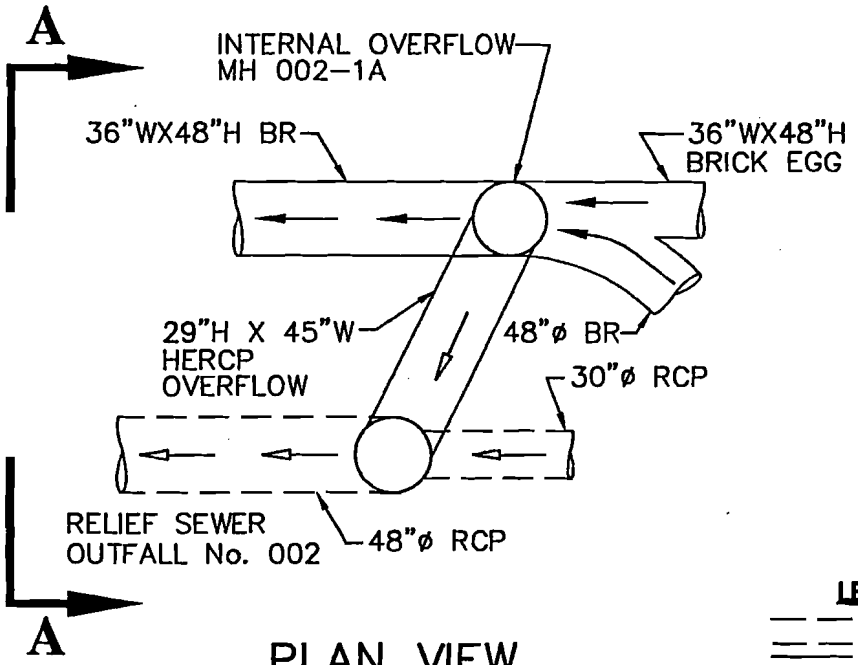


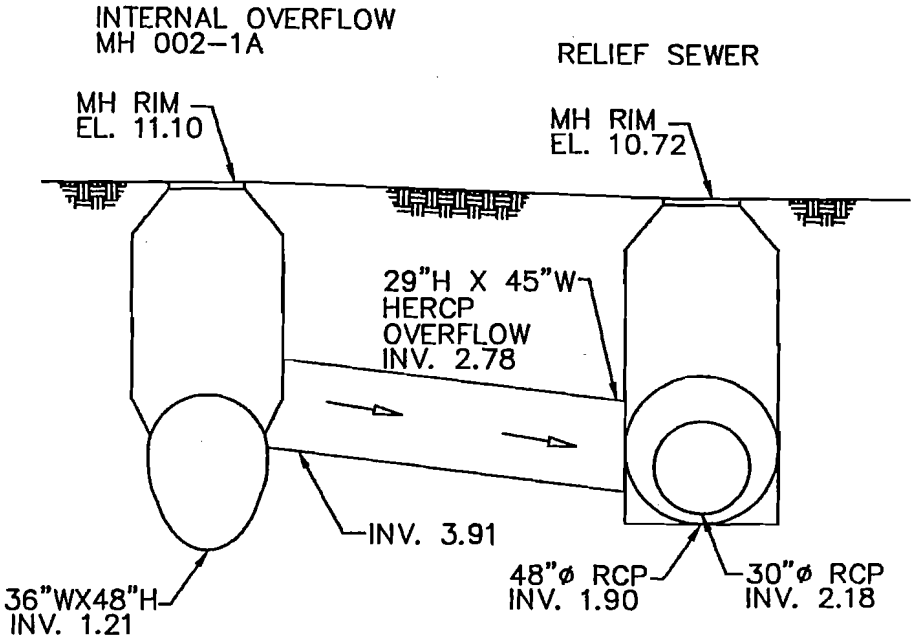
LOCATION PLAN

N.T.S.



PLAN VIEW

SCALE: 1" = 10'



SECTION A-A

SCALE: 1" = 5'

NOTE: ELEVATIONS TAKEN FROM RECORD PLANS.

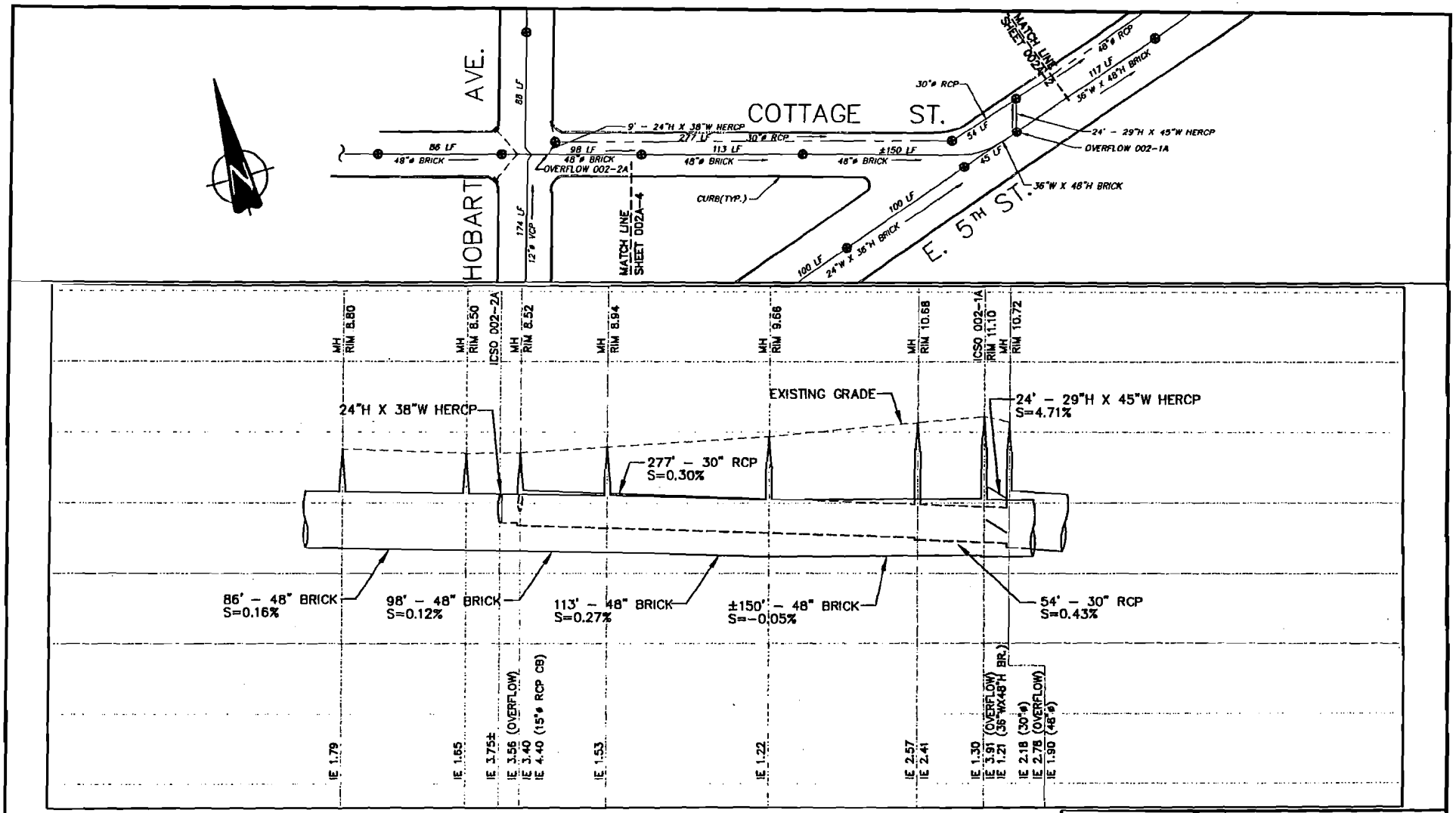
LEGEND

- RELIEF SEWER PIPE
- COMBINED SEWER PIPE
- WET WEATHER FLOWS
- DRY & WET WEATHER FLOWS

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & CROSS SECTIONAL VIEW
INTERNAL OVERFLOW 002-1A
E. 5TH ST. & COTTAGE PL.

DATE	SHEET
04/24/97 Killam	SC02-1A



10 0 10 20
VERTICAL SCALE

100 0 100 200
HORIZONTAL SCALE

COMBINED SEWER
STORM SEWER
COMBINED SEWER OVERFLOW
INTERCEPTOR SEWER

* BASED ON AS-BUILT PLANS

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & PROFILE
INTERNAL OVERFLOW 002-1A & 2A

DATE		SHEET
9/21/97	Killam	002A-3

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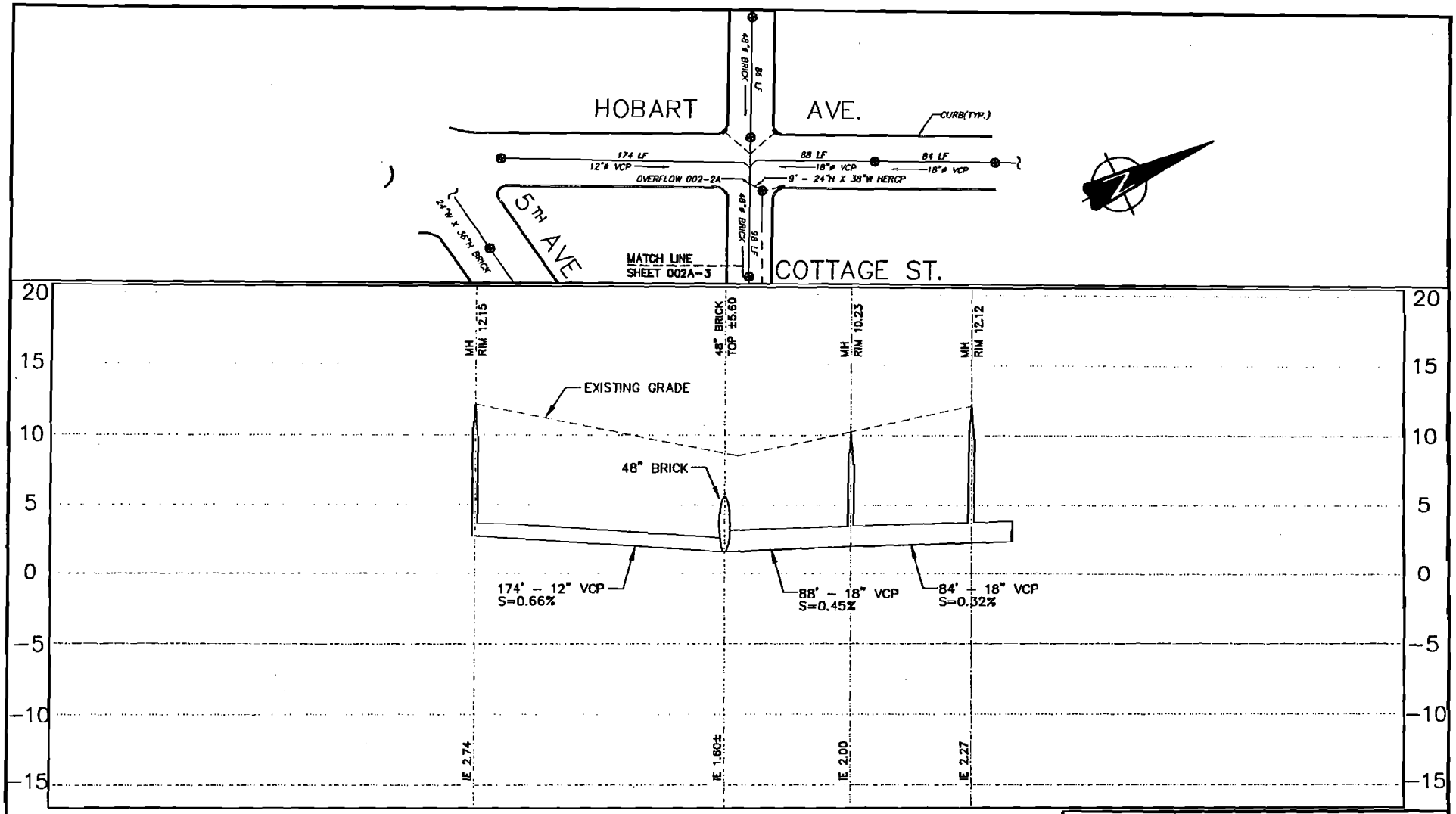

10 0 10 20
VERTICAL SCALE

100 0 100 200
HORIZONTAL SCALE

COMBINED SEWER
STORM SEWER
COMBINED SEWER OVERFLOW
INTERCEPTOR SEWER

* BASED ON AS-BUILT PLANS

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & PROFILE
INTERNAL OVERFLOW 002-2A

DATE	SHEET
9/21/97	002A-4

Killam

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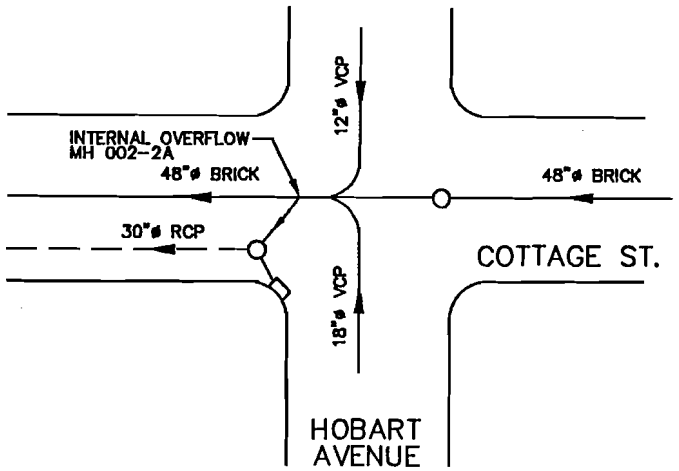
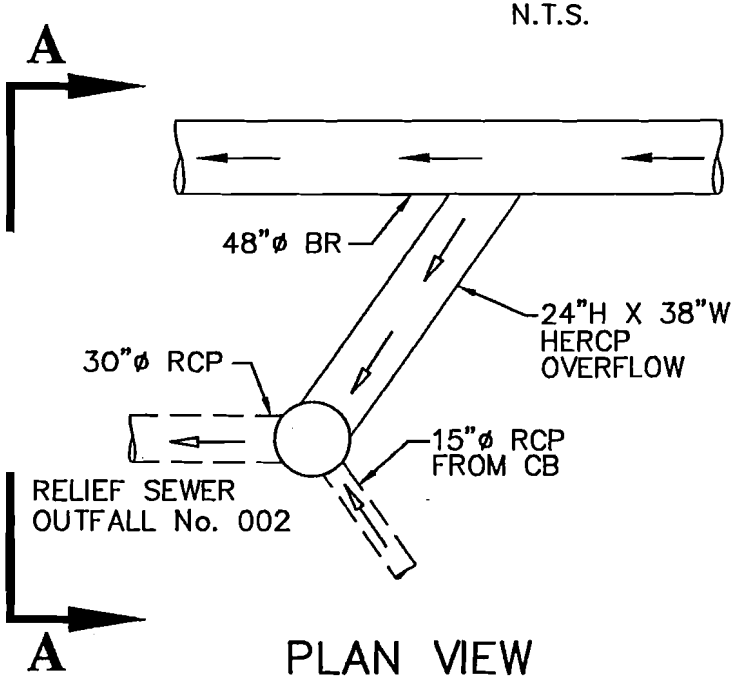
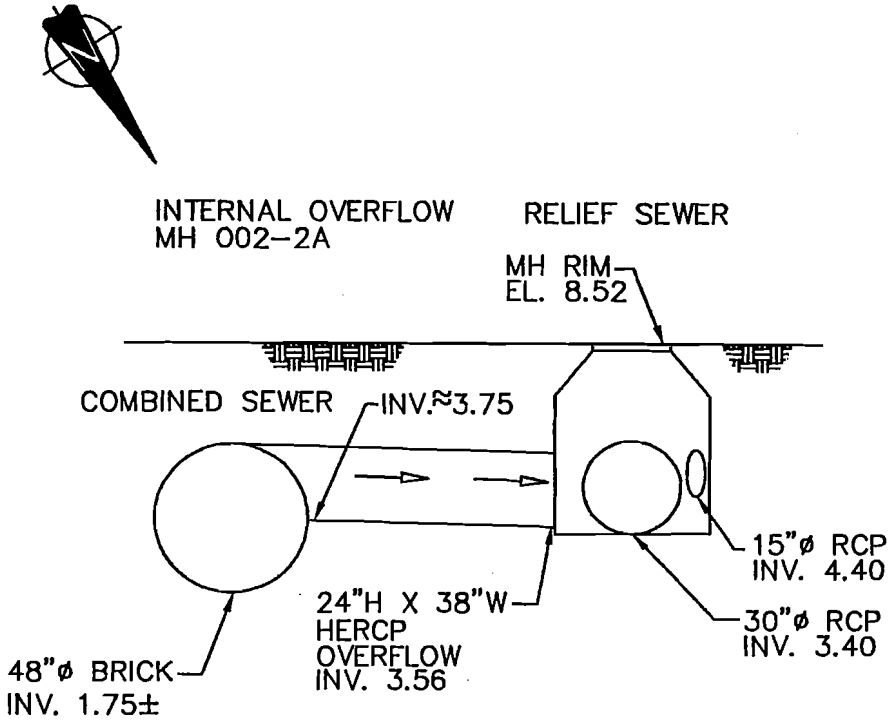


LOCATION PLAN
N.T.S.



PLAN VIEW
SCALE: 1" = 10'



SECTION A–A
SCALE: 1" = 5'

NOTE: ELEVATIONS TAKEN FROM RECORD PLANS.

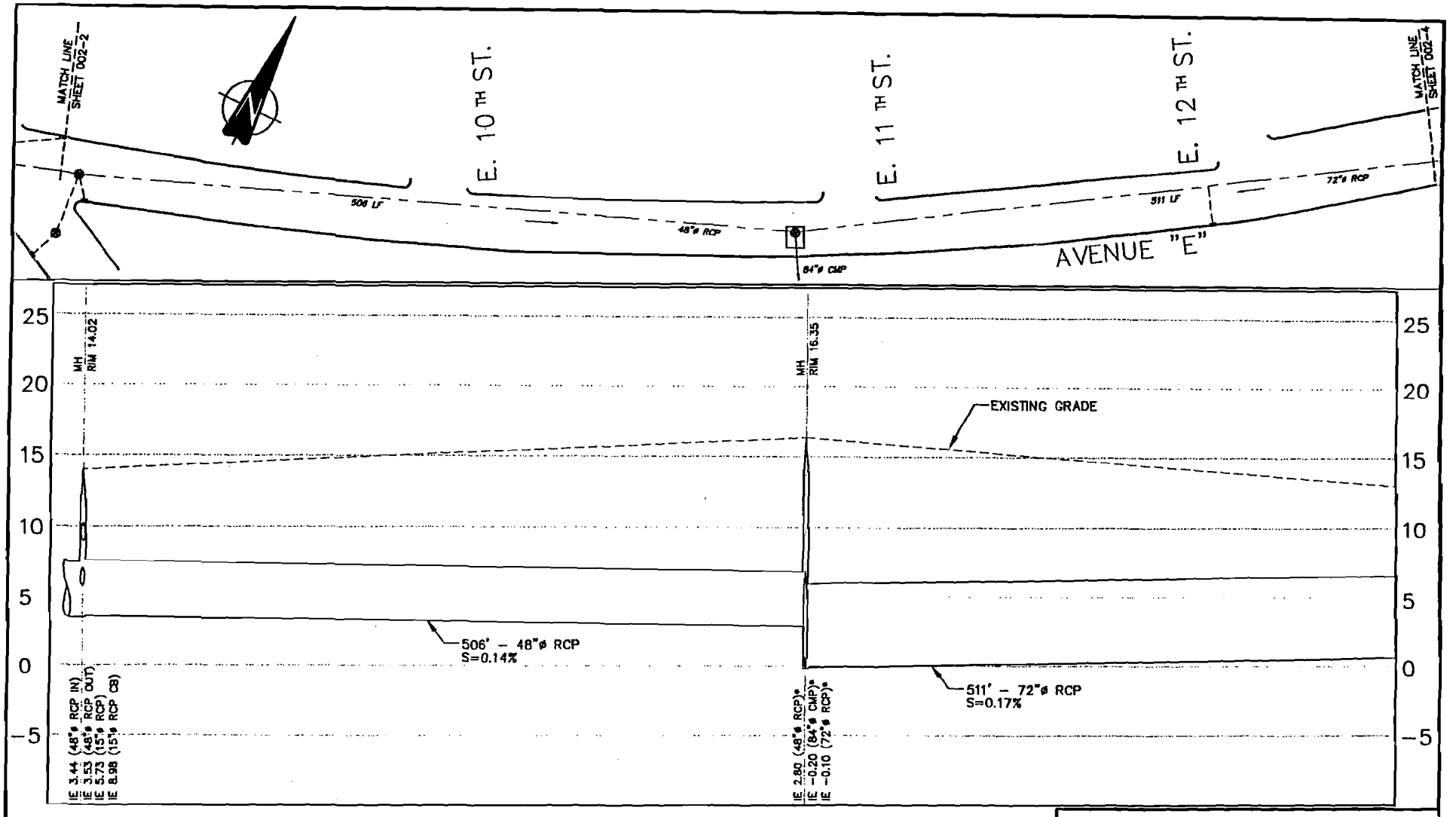
LEGEND

- RELIEF SEWER PIPE
- COMBINED SEWER PIPE
- WET WEATHER FLOWS
- DRY & WET WEATHER FLOWS

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & CROSS SECTIONAL VIEW
INTERNAL OVERFLOW 002–2A
HOBART AVE. & COTTAGE ST.

DATE		SHEET
04/24/97	Killam	SC02–2A



* BASED ON AS–BUILT PLANS

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & PROFILE
OUTFALL 002

DATE		SHEET
9/21/97	Killam	002–1

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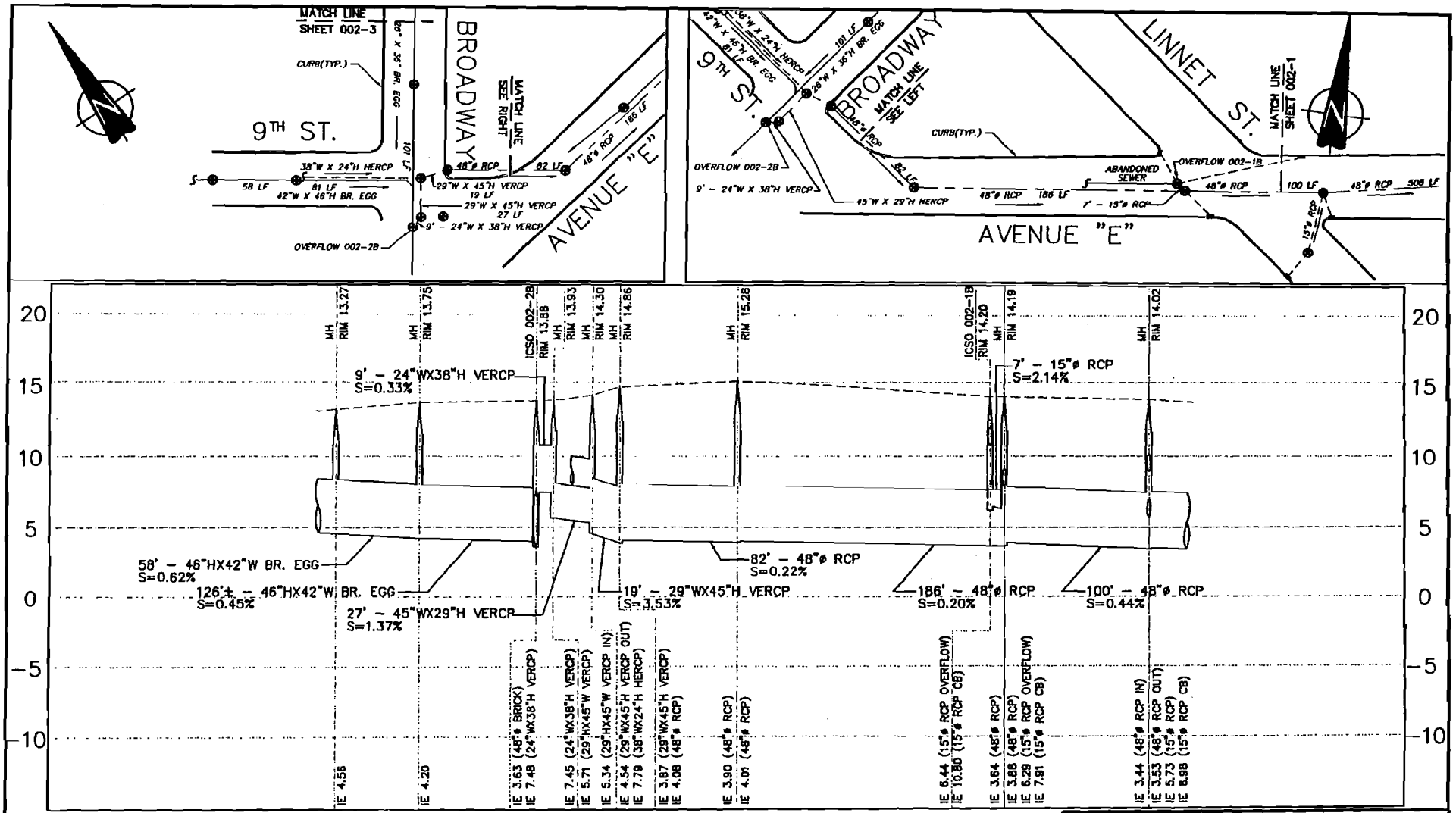

* BASED ON AS-BUILT PLANS

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & PROFILE
INTERNAL OVERFLOW 002-1B & 2B

DATE		SHEET
10/27/97	Killam	002-2

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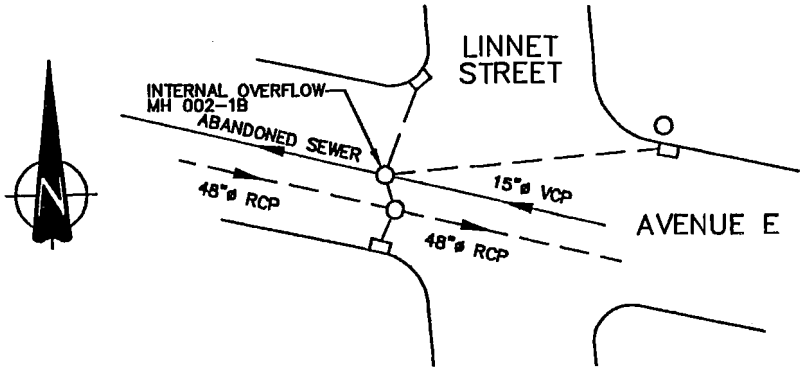
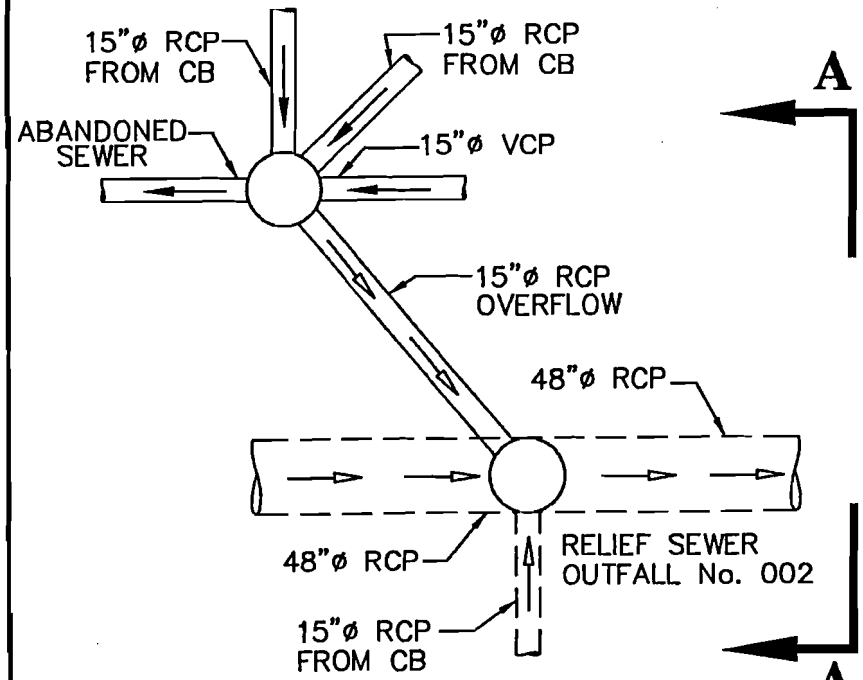
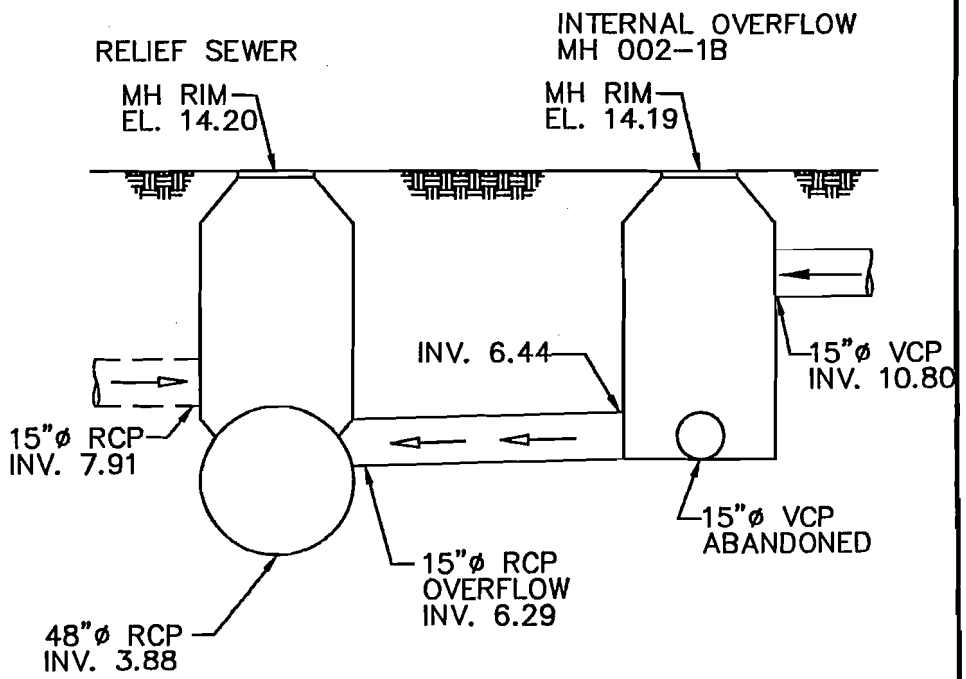


LOCATION PLAN
N.T.S.



PLAN VIEW
SCALE: 1" = 10'



SECTION A–A
SCALE: 1" = 5'

NOTE: ELEVATIONS TAKEN FROM RECORD PLANS.

LEGEND

- RELIEF SEWER PIPE
- COMBINED SEWER PIPE
- WET WEATHER FLOWS
- DRY & WET WEATHER FLOWS

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & CROSS SECTIONAL VIEW
INTERNAL OVERFLOW 002–1B
AVENUE E & LINNET ST.

DATE	SHEET
04/24/97 Killam	SC02–1B

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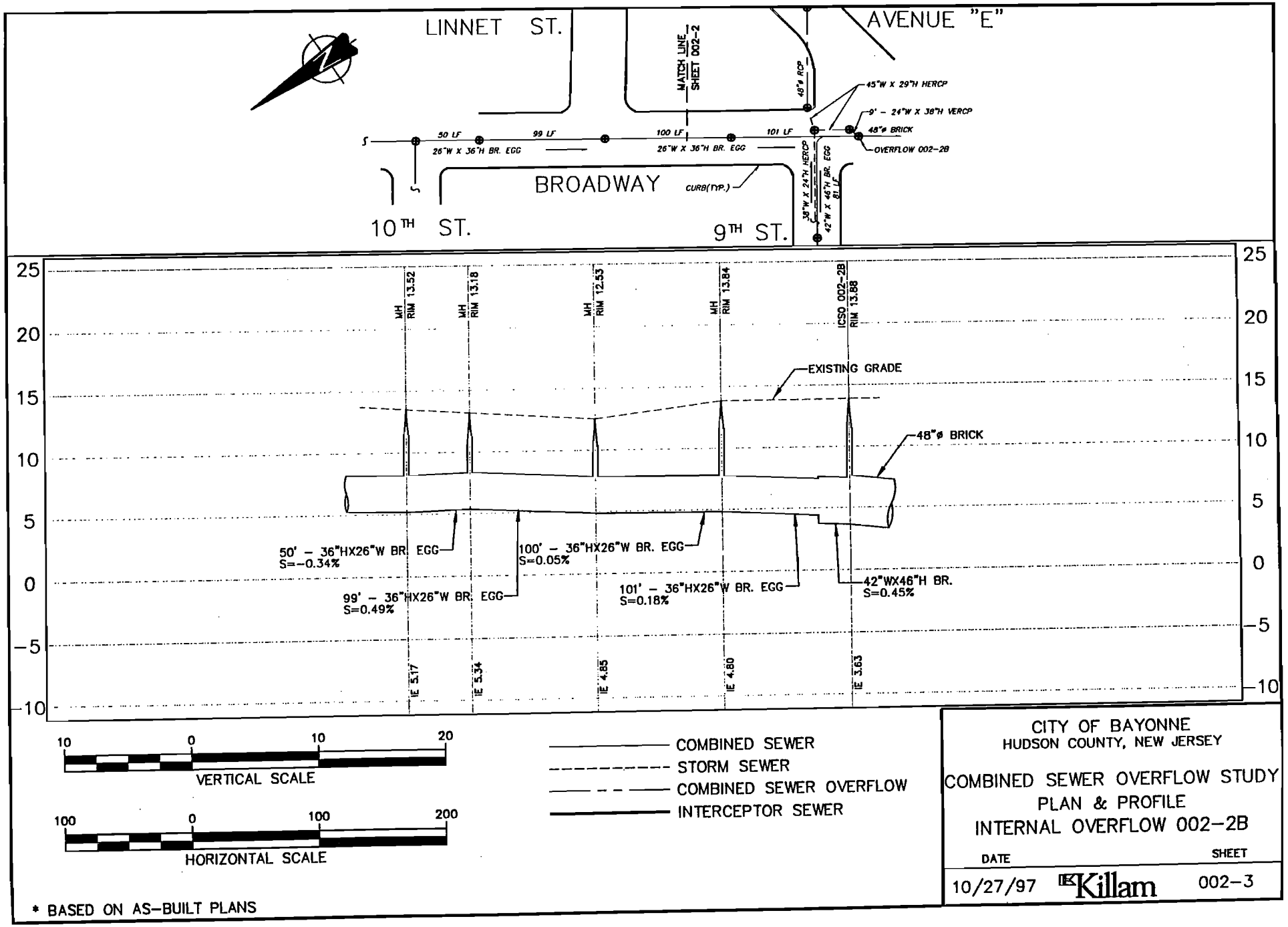

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & PROFILE
INTERNAL OVERFLOW 002-2B

DATE		SHEET
10/27/97	Killam	002-3

* BASED ON AS-BUILT PLANS

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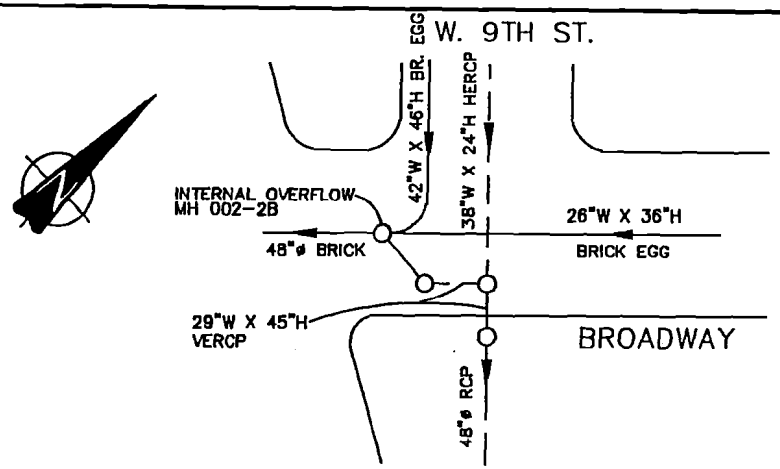
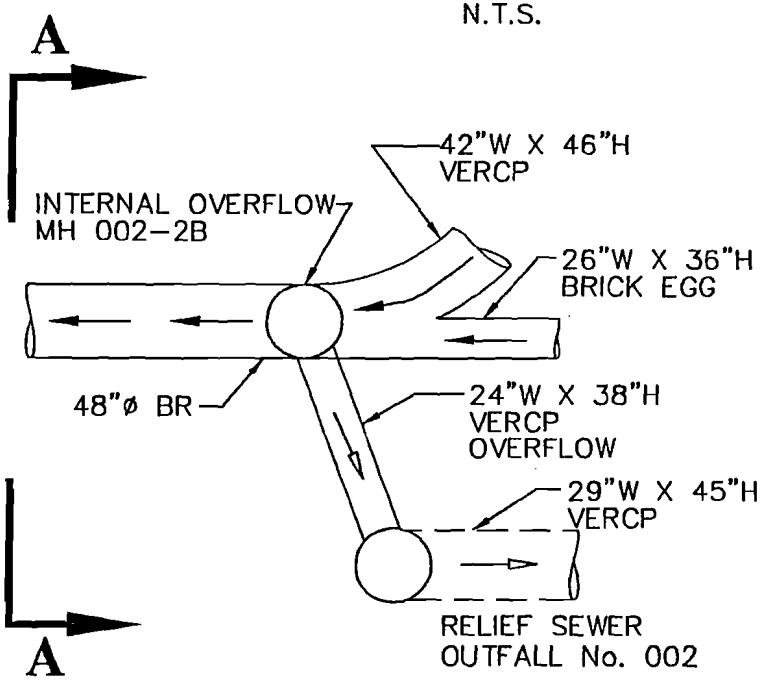
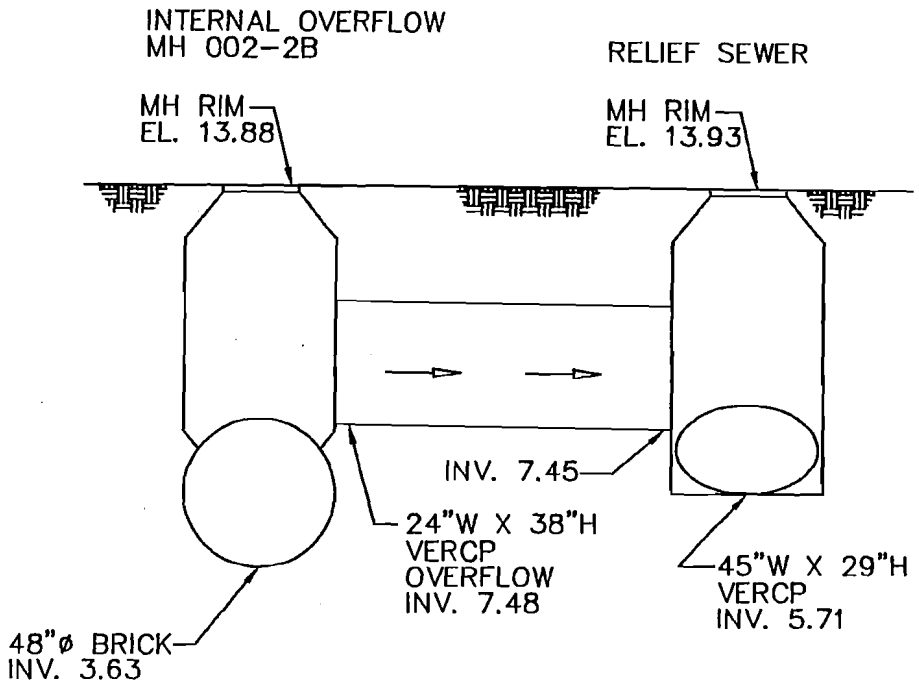


LOCATION PLAN
N.T.S.



PLAN VIEW
SCALE: 1" = 10'



SECTION A-A
SCALE: 1" = 5'

NOTE: ELEVATIONS TAKEN FROM RECORD PLANS.

LEGEND

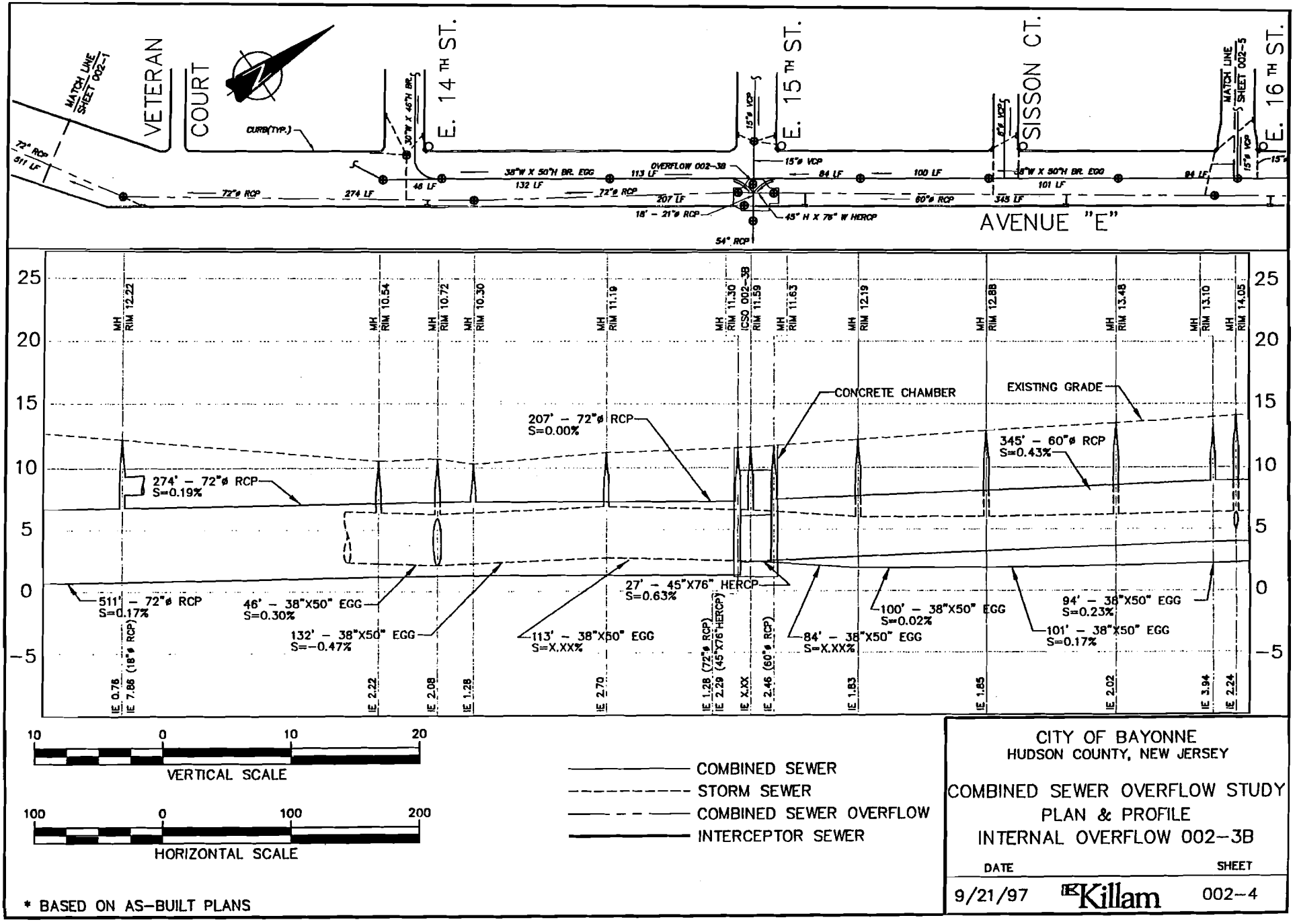
- RELIEF PIPE
- COMBINED SEWER PIPE
- WET WEATHER FLOWS
- DRY & WET WEATHER FLOWS

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & CROSS SECTIONAL VIEW
INTERNAL OVERFLOW 002-2B
BROADWAY & W. 9TH ST.

DATE	SHEET
04/24/97	SC02-2B

Killam



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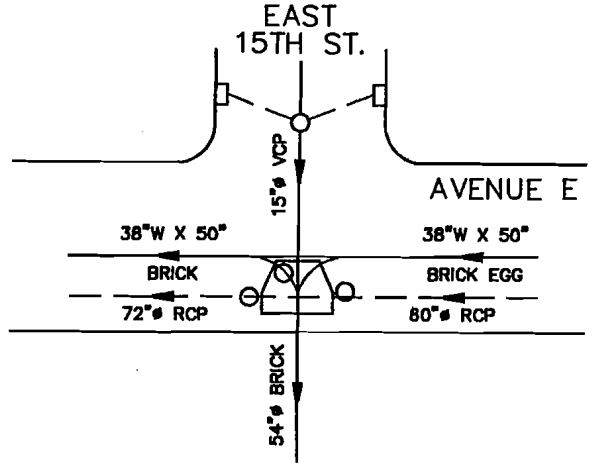
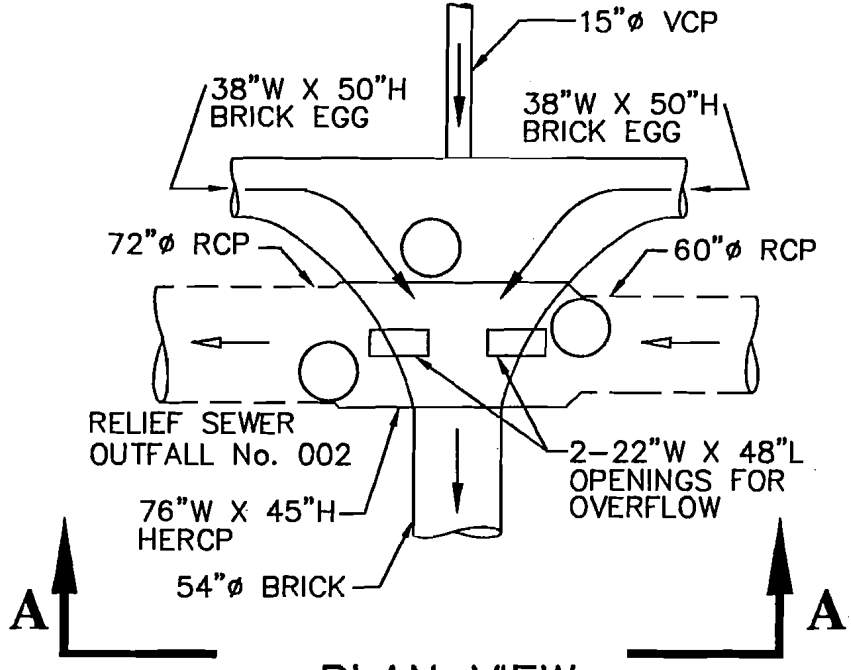


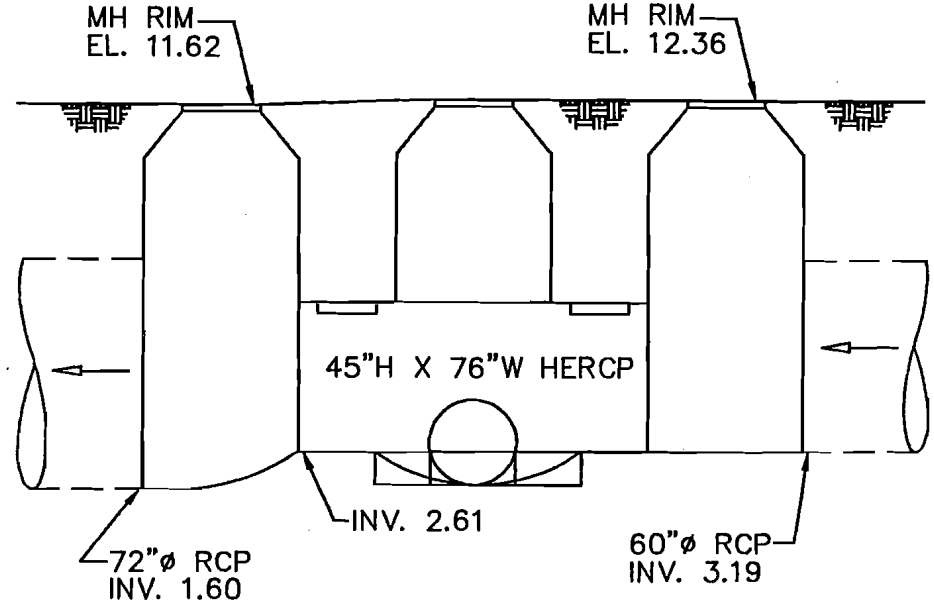
LOCATION PLAN

N.T.S.



PLAN VIEW

SCALE: 1" = 10'



SECTION A-A

SCALE: 1" = 5'

NOTE: ELEVATIONS TAKEN FROM RECORD PLANS.

LEGEND

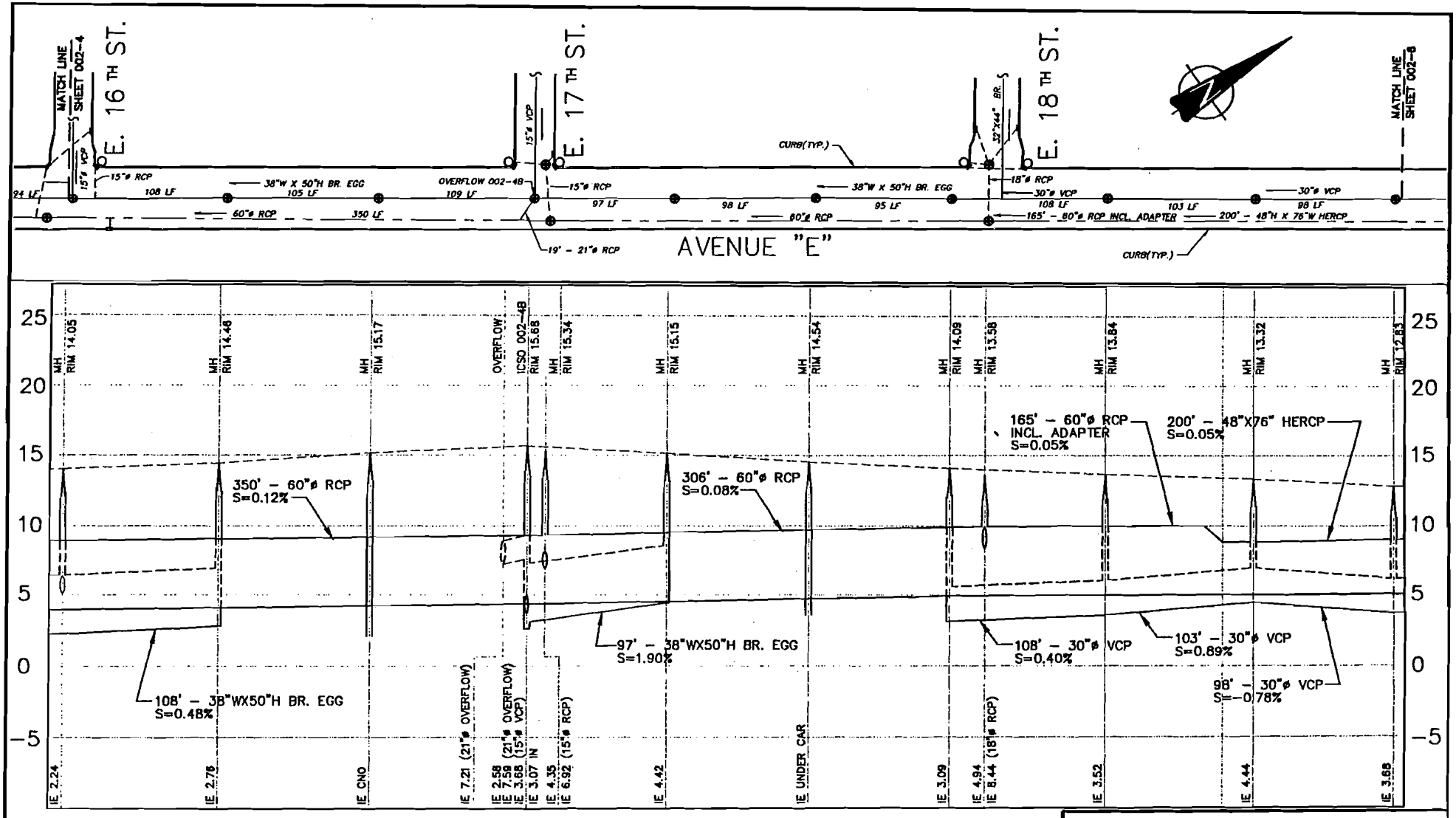
- RELIEF SEWER PIPE
- COMBINED SEWER PIPE
- WET WEATHER FLOWS
- DRY & WET WEATHER FLOWS

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & CROSS SECTIONAL VIEW
INTERNAL OVERFLOW 002-3B
AVENUE E & E. 15TH ST.

DATE	SHEET
04/24/97	SC02-3B

Killam



10 0 10 20
VERTICAL SCALE

100 0 100 200
HORIZONTAL SCALE

COMBINED SEWER
STORM SEWER
COMBINED SEWER OVERFLOW
INTERCEPTOR SEWER

* BASED ON AS-BUILT PLANS

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & PROFILE
INTERNAL OVERFLOW 002-4B

DATE		SHEET
9/21/97	Killam	002-5

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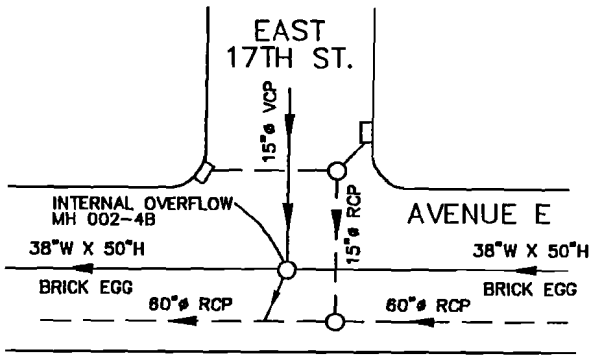
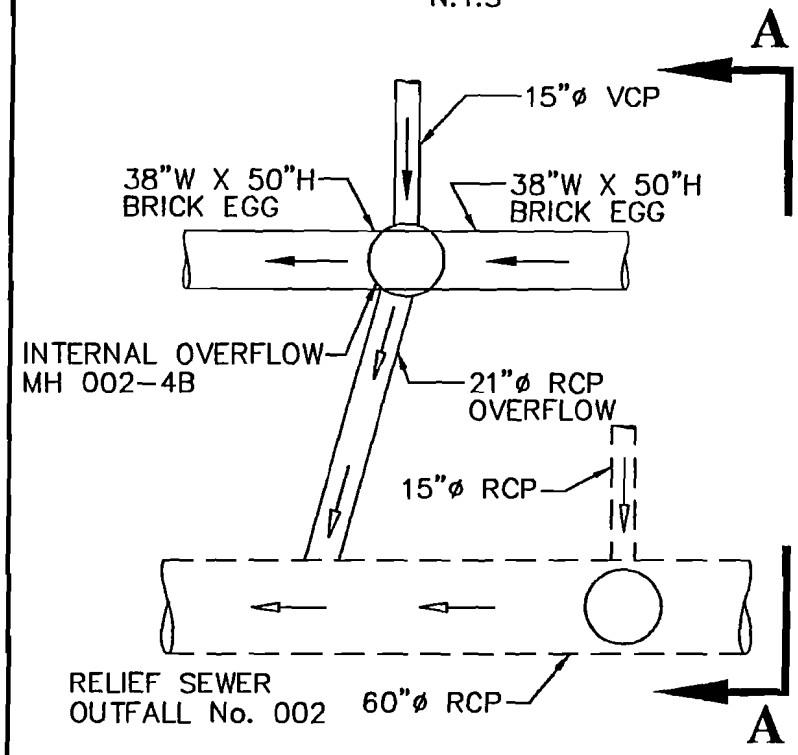


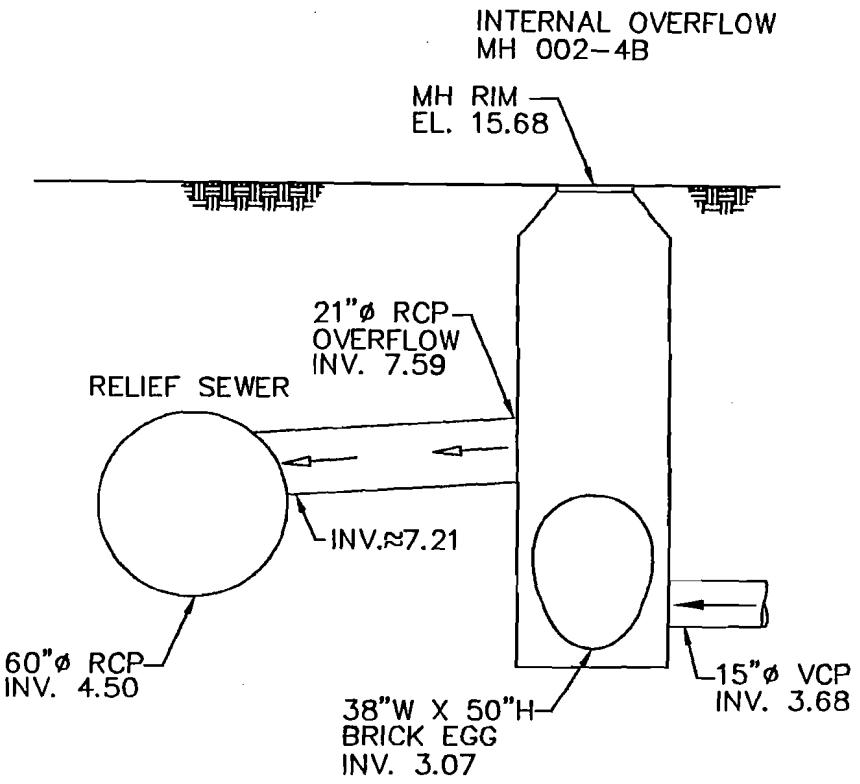
LOCATION PLAN

N.T.S



PLAN VIEW

SCALE: 1" = 10'



SECTION A-A

SCALE: 1" = 5'

NOTE: ELEVATIONS TAKEN FROM RECORD PLANS.

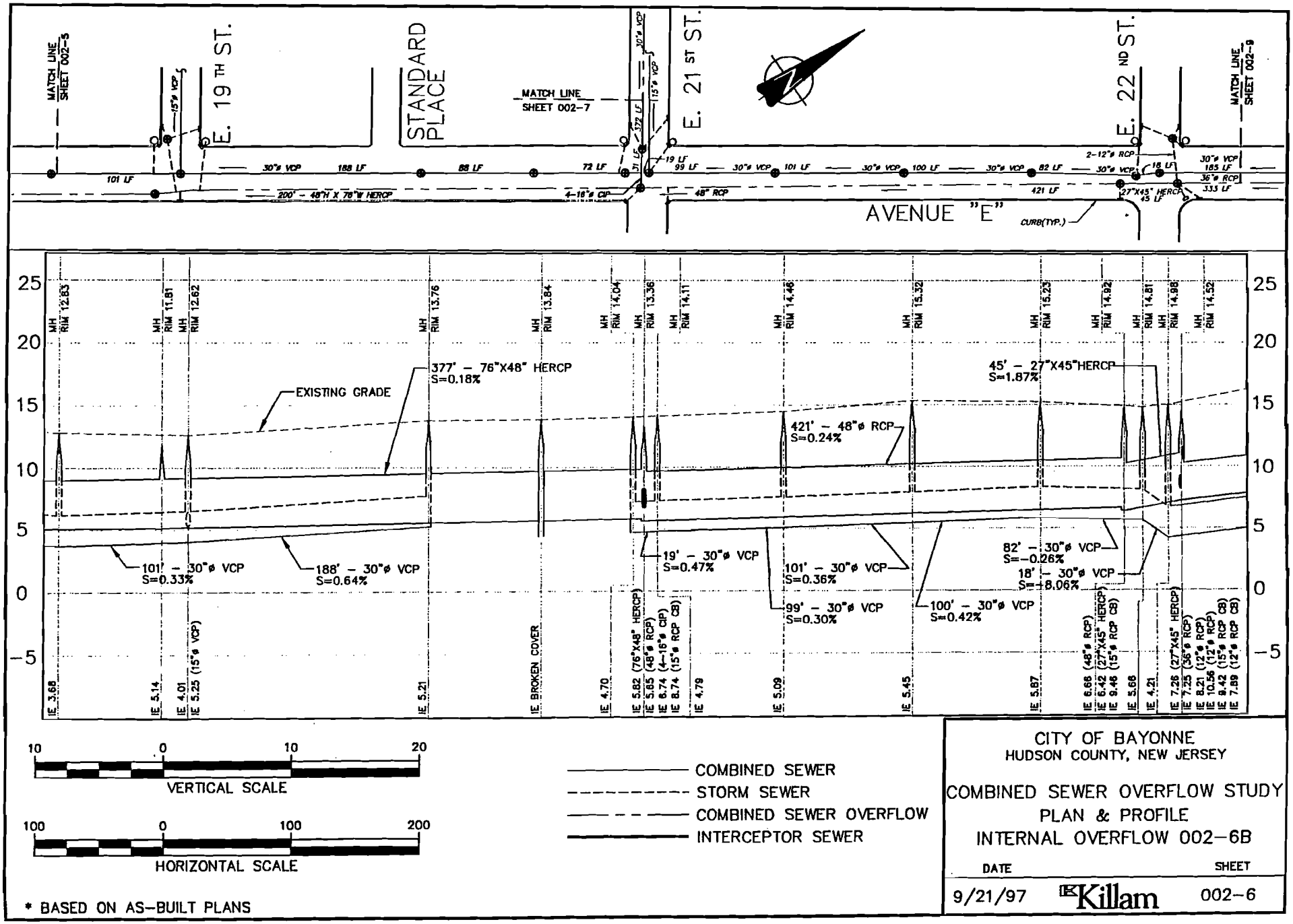
LEGEND

- RELIEF SEWER PIPE
- COMBINED SEWER PIPE
- WET WEATHER FLOWS
- DRY & WET WEATHER FLOWS

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & CROSS SECTIONAL VIEW
INTERNAL OVERFLOW 002-4B
AVENUE E & E. 17TH ST.

DATE	SHEET
04/24/97 Killam	SC02-4B



* BASED ON AS-BUILT PLANS

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & PROFILE
INTERNAL OVERFLOW 002-6B

DATE	SHEET
9/21/97	002-6

Killam

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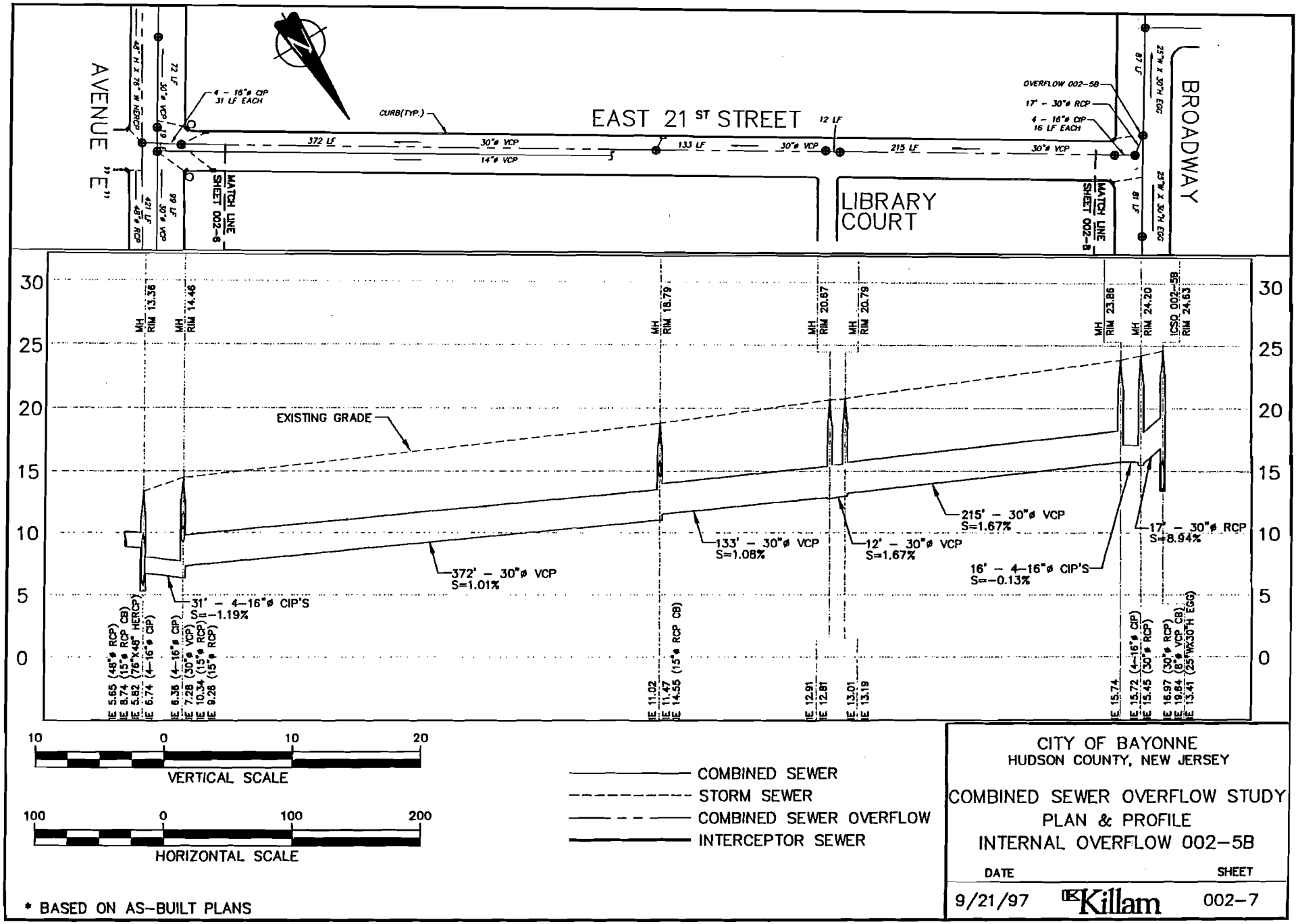

* BASED ON AS-BUILT PLANS

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & PROFILE
INTERNAL OVERFLOW 002-5B

DATE		SHEET
9/21/97	Killam	002-7

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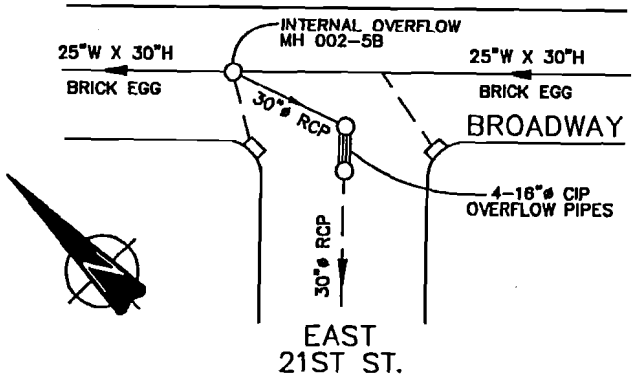
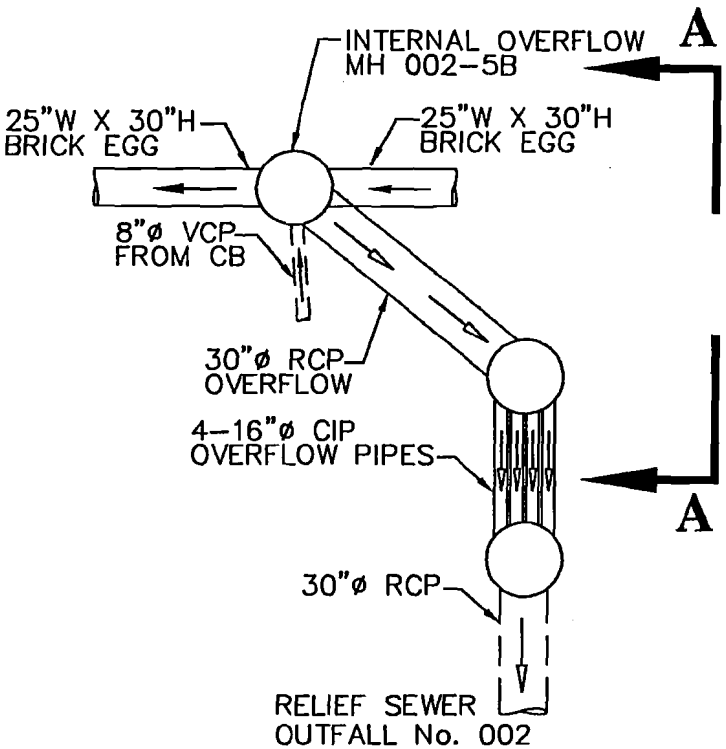
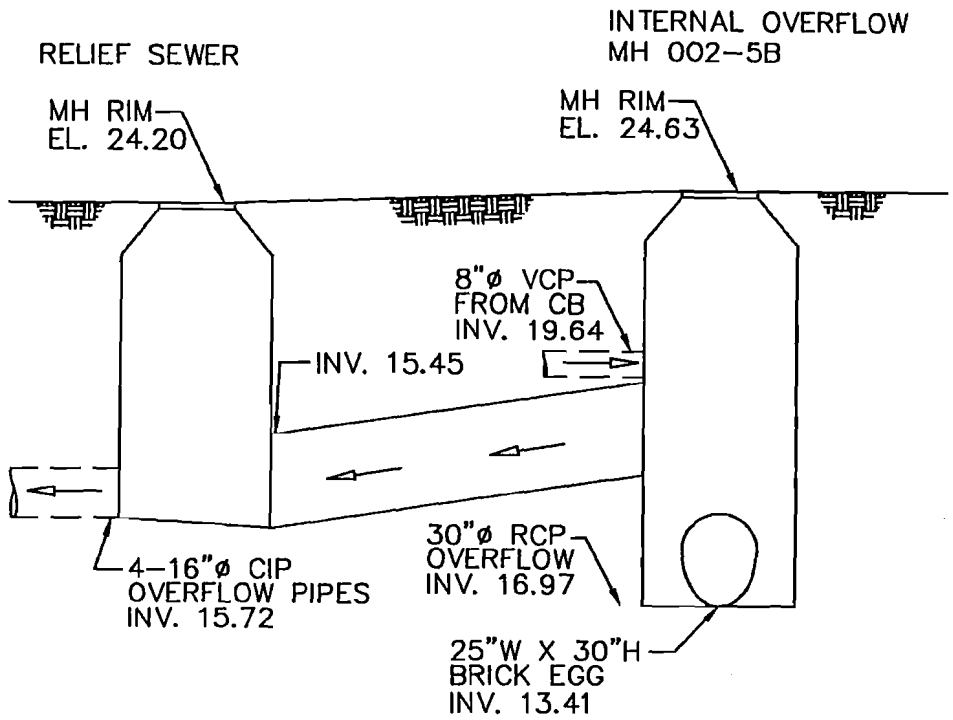


LOCATION PLAN
N.T.S.



PLAN VIEW
SCALE: 1" = 10'



SECTION A-A
SCALE: 1" = 5'

NOTE: ELEVATIONS TAKEN FROM RECORD PLANS.

LEGEND

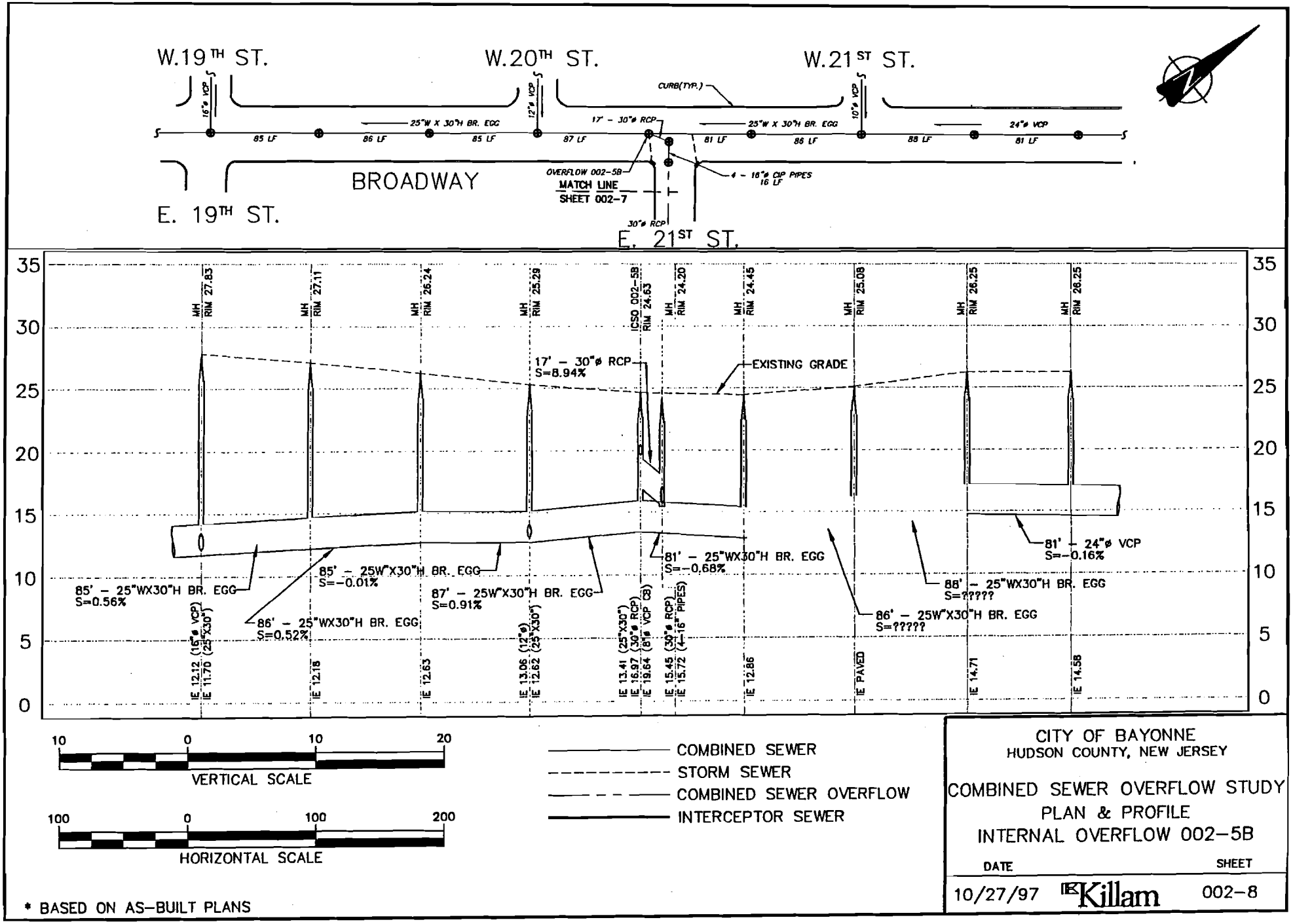
- RELIEF SEWER PIPE
- COMBINED SEWER PIPE
- WET WEATHER FLOWS
- DRY & WET WEATHER FLOWS

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & CROSS SECTIONAL VIEW
INTERNAL OVERFLOW 002-5B
E. 21ST ST. & BROADWAY

DATE	SHEET
04/24/97	SC02-5B

Killam



CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & PROFILE
INTERNAL OVERFLOW 002-5B

DATE		SHEET
10/27/97	Killam	002-8

* BASED ON AS-BUILT PLANS

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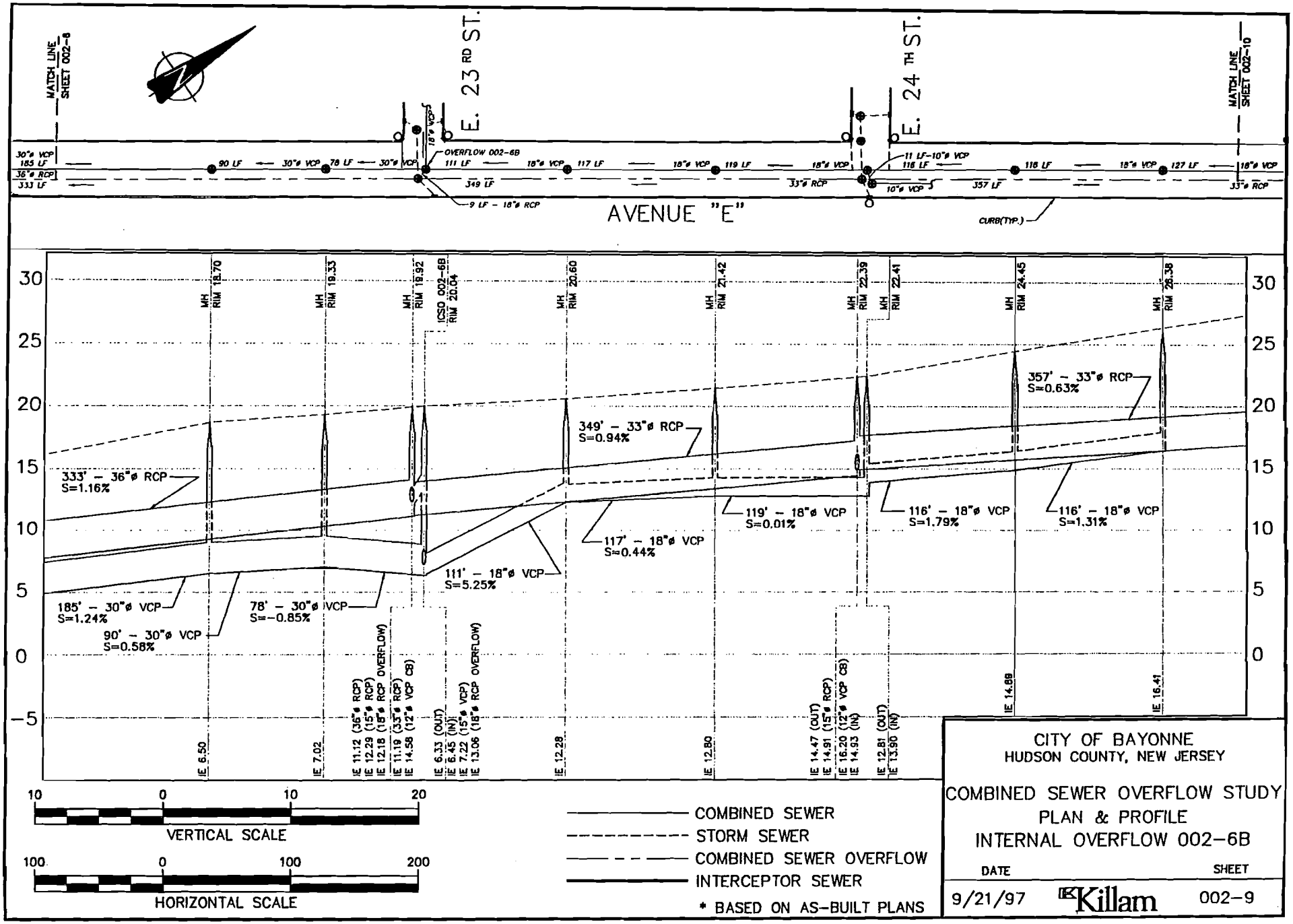

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & PROFILE
INTERNAL OVERFLOW 002-6B

DATE		SHEET
9/21/97	Killam	002-9

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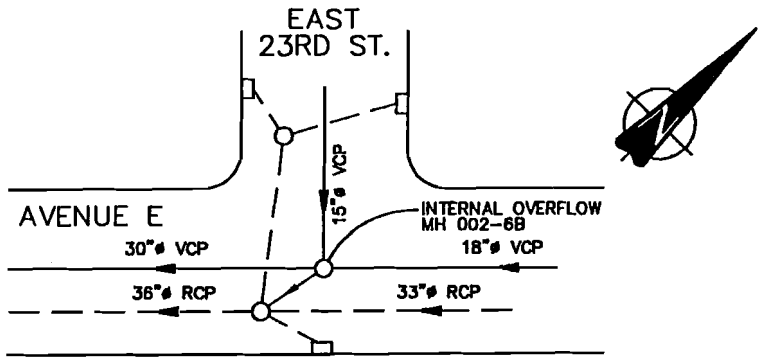
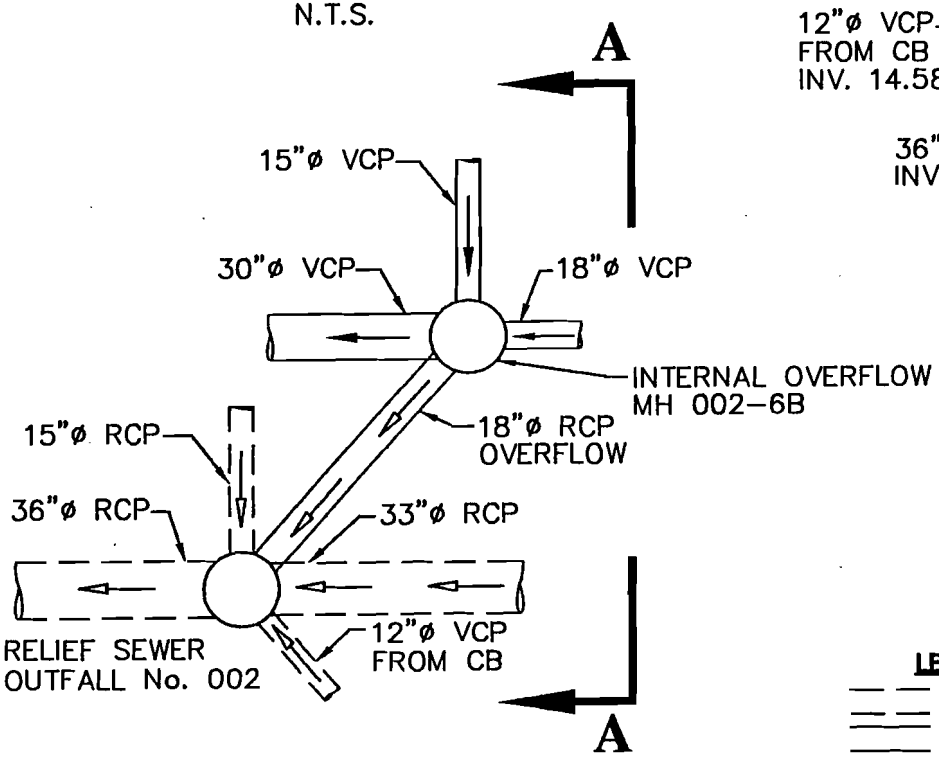
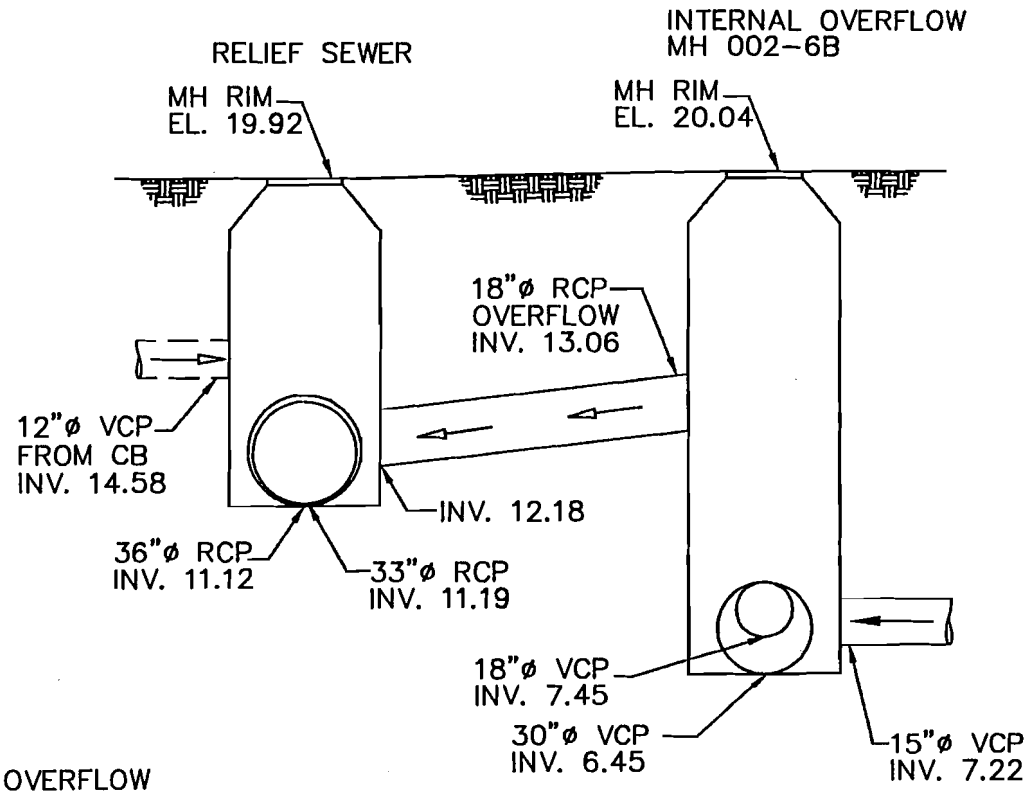


LOCATION PLAN
N.T.S.



PLAN VIEW
SCALE: 1" = 10'



SECTION A-A
SCALE: 1" = 5'

NOTE: ELEVATIONS TAKEN FROM RECORD PLANS.

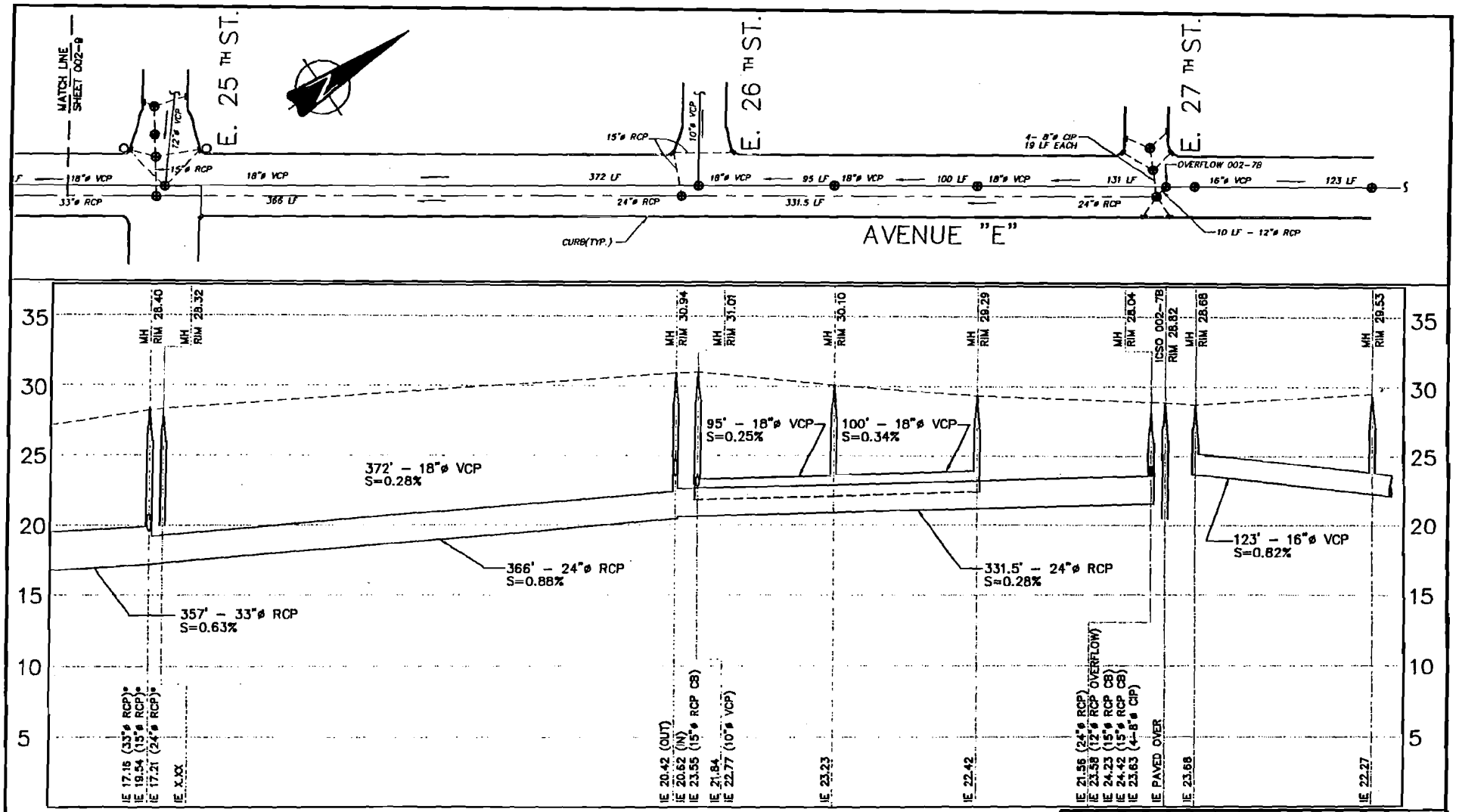
LEGEND

- RELIEF SEWER PIPE
- COMBINED SEWER PIPE
- WET WEATHER FLOWS
- DRY & WET WEATHER FLOWS

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & CROSS SECTIONAL VIEW
INTERNAL OVERFLOW 002-6B
AVENUE E & E. 23RD ST.

DATE		SHEET
04/24/97	Killam	SC02-6B



* BASED ON AS-BUILT PLANS

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & PROFILE
INTERNAL OVERFLOW 002-7B

DATE		SHEET
9/21/97	Killam	002-10

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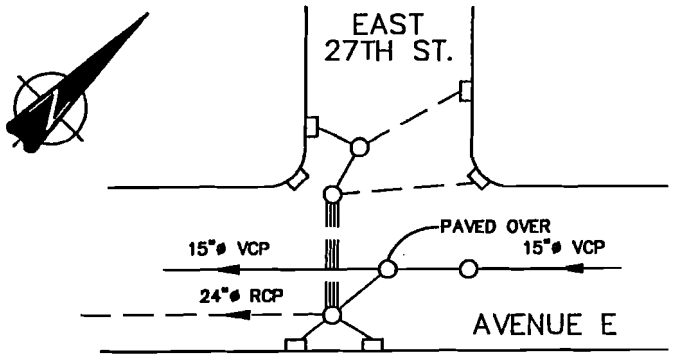
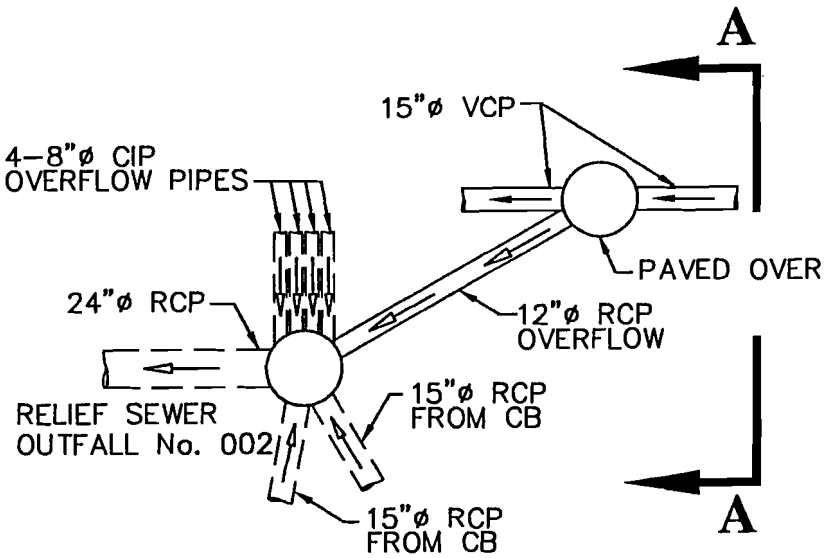
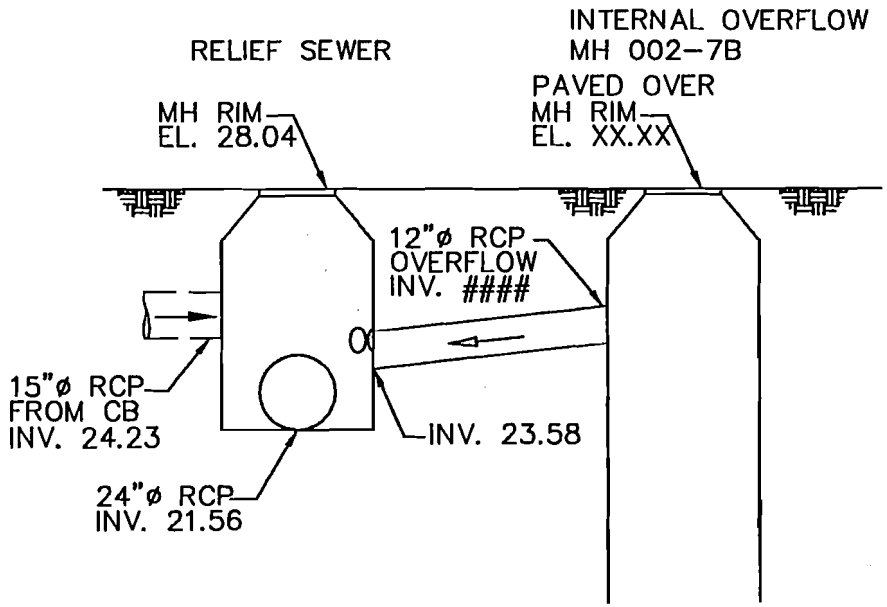


LOCATION PLAN
N.T.S.



PLAN VIEW
SCALE: 1" = 10'



SECTION A–A
SCALE: 1" = 5'

NOTE: ELEVATIONS TAKEN FROM RECORD PLANS.

LEGEND

- RELIEF SEWER PIPE
- COMBINED SEWER PIPE
- WET WEATHER FLOWS
- DRY & WET WEATHER FLOWS

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & CROSS SECTIONAL VIEW
INTERNAL OVERFLOW 002–7B
E. 27TH ST. & AVENUE E

DATE	SHEET
04/24/97	SC02–7B

Killam

City of Bayonne

CSO Control Facility Data Extract

Relief Sewer Location & Description

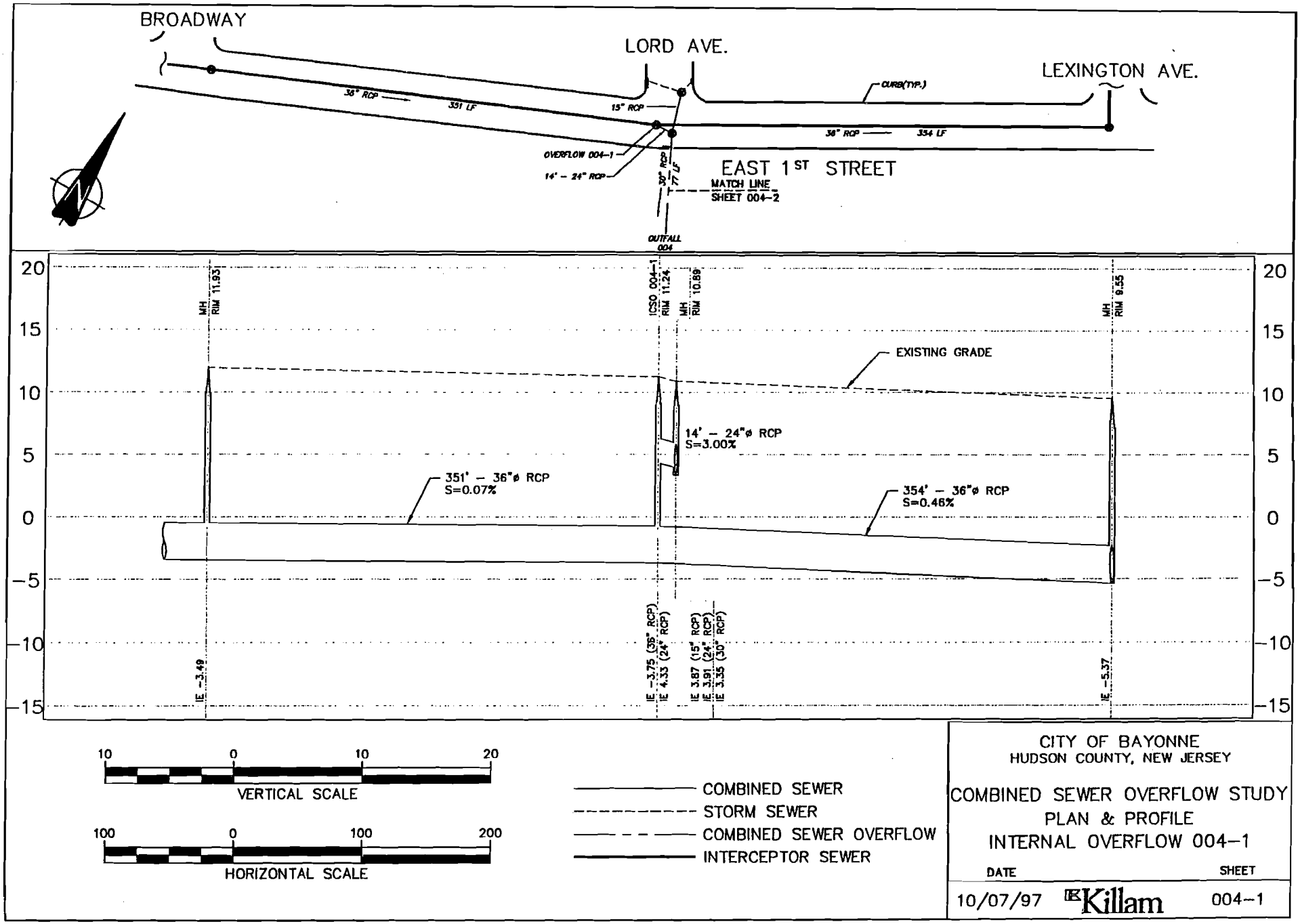
NJPDES Outfall No.	**003**
Location:	West 1st Street Stormwater Pumping Station
Overflow to:	Kill Van Kull
Character of District Served:	Primarily Residential
Number of CSO Control Facilities:	1
Type of Control Facility	Interconnection Pipe
Size Range	18" Circular
Drainage Basin shared with the	
Following Regulators	8 and 9
Following Outfalls	011 and 012
Outfall to Receiving Water	
Size	12 " Force Main
Capacity	6 MGD
Outfall Condition:	Good
Tidal Effects:	No (Flow Pumped)
Tidal Gate(s) and Condition:	None
Drainage Area Serviced:	80 Acres

City of Bayonne

CSO Control Facility Data Extract

Relief Sewer Location & Description

NJPDES Outfall No.	**004**
Location:	East 1st Street
Overflow to:	Kill Van Kull
Character of District Served:	Primarily Residential; minor Commercial and Industrial
Number of CSO Control Facilities:	1
Type of Control Facility	Interconnection Pipe
Size Range	30" Circular
Drainage Basin shared with the	
Following Regulators	6, 7, 8, and 9
Following Outfalls	009, 010, 011, and 012
Outfall to Receiving Water	
Size	30 inch RCP
Capacity	20 MGD
Outfall Condition:	Good
Tidal Effects:	Yes
Tidal Gate(s) and Condition:	1 - Good
Drainage Area Serviced:	169 Acres



CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & PROFILE
INTERNAL OVERFLOW 004-1

DATE		SHEET
10/07/97	Killam	004-1

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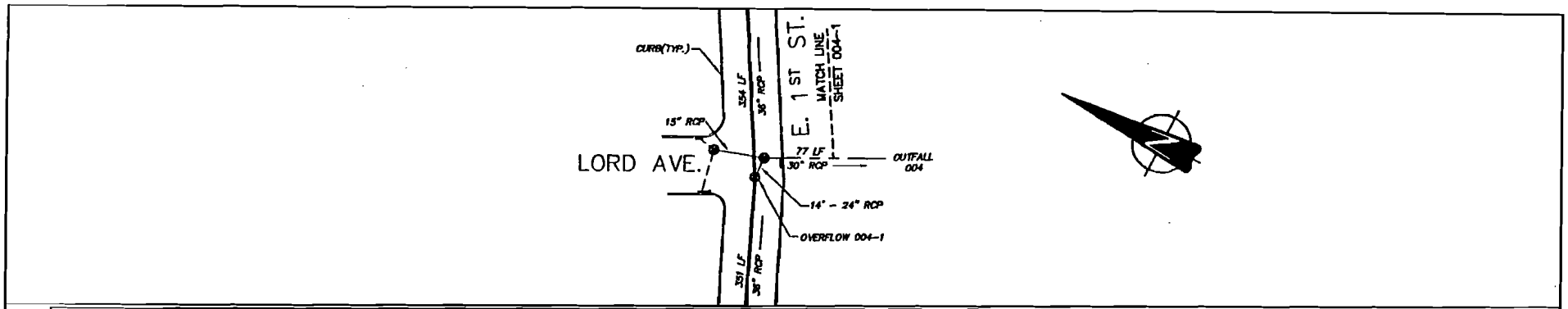

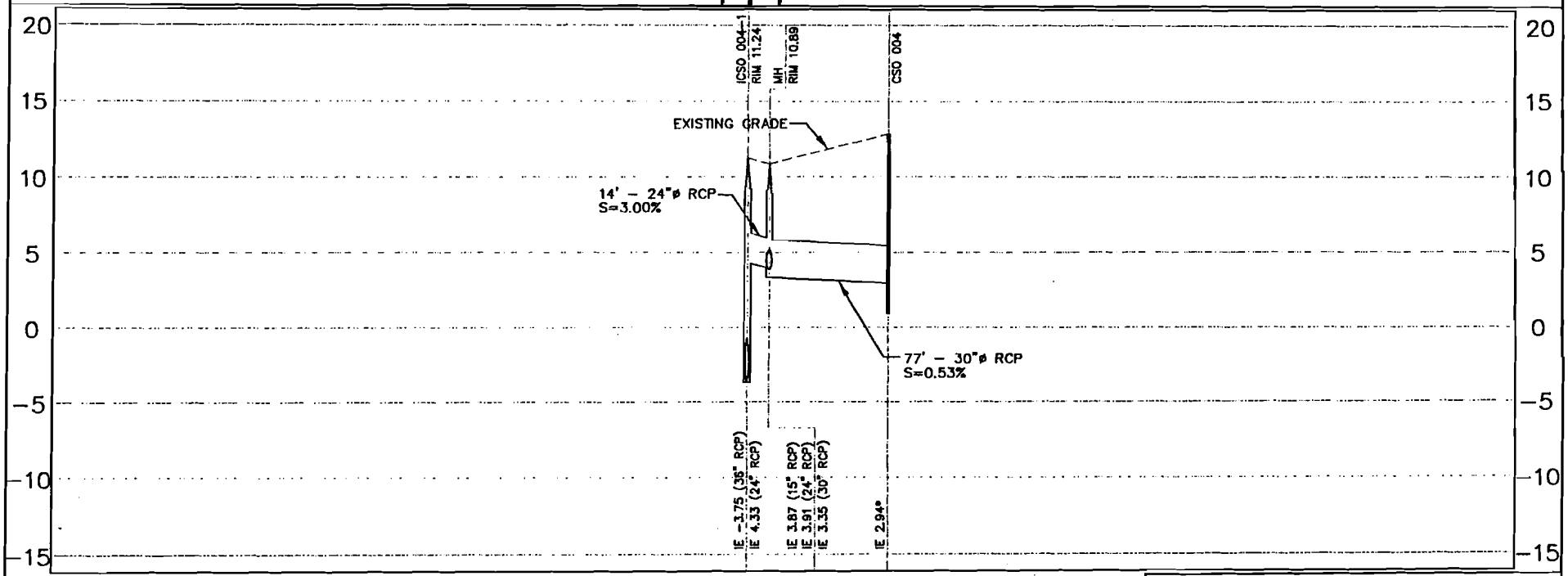

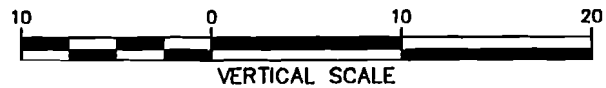

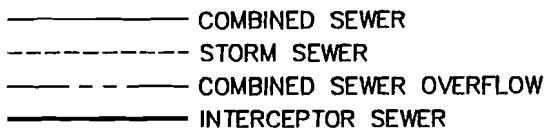

* BASED ON AS-BUILT PLANS

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & PROFILE
INTERNAL OVERFLOW 004-1

DATE		SHEET
10/07/97	Killam	004-2

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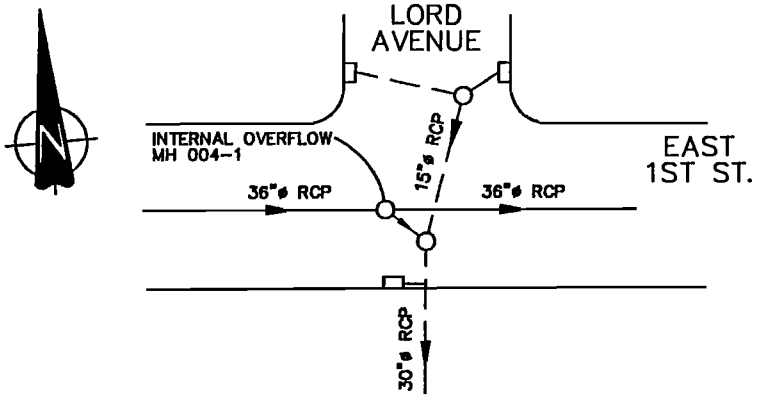
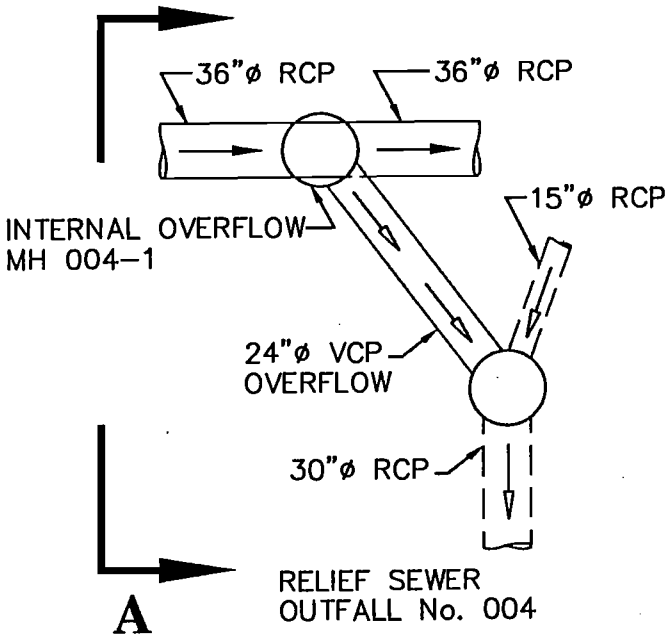
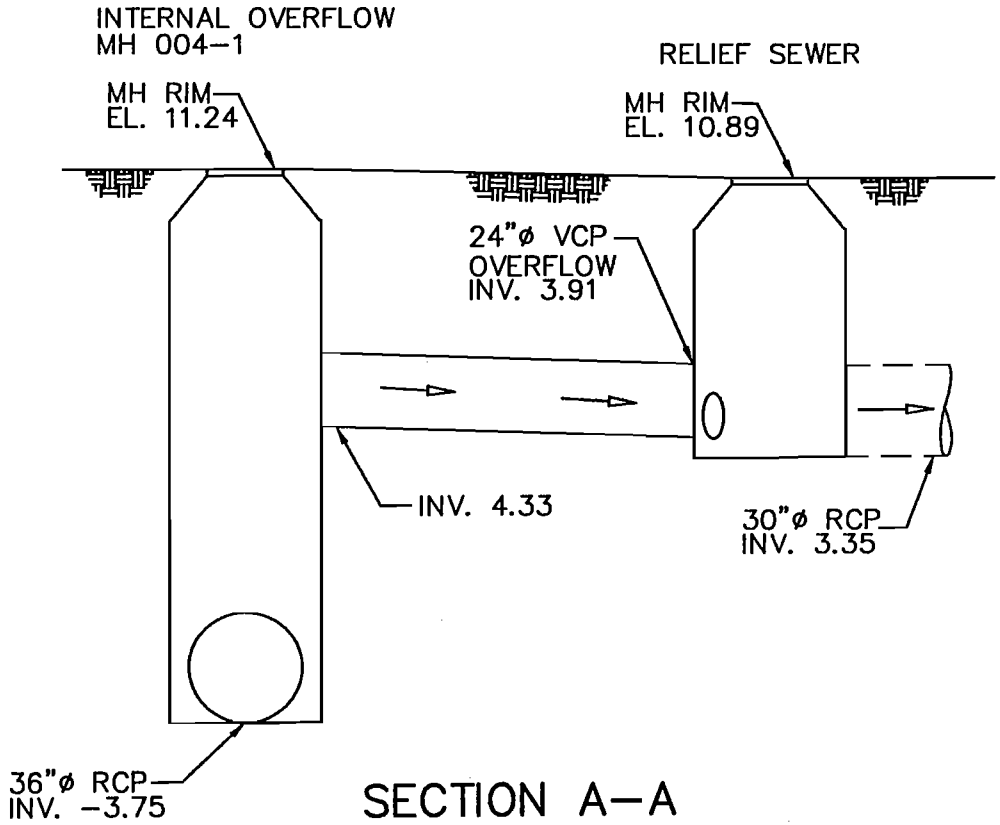


LOCATION PLAN
N.T.S.



PLAN VIEW
SCALE: 1" = 10'



SECTION A-A
SCALE: 1" = 5'

NOTE: ELEVATIONS TAKEN FROM RECORD PLANS.

LEGEND

- RELIEF SEWER PIPE
- COMBINED SEWER PIPE
- WET WEATHER FLOWS
- DRY & WET WEATHER FLOWS

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & CROSS SECTIONAL VIEW
INTERNAL OVERFLOW 004-1
E. 1ST ST. & LORD AVE.

DATE	SHEET
04/24/97	SC04-1

Killam

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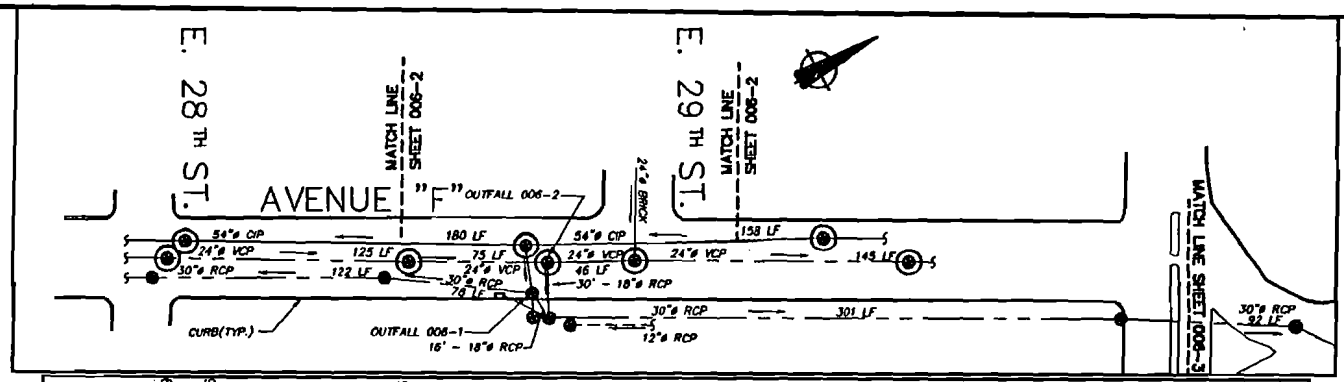
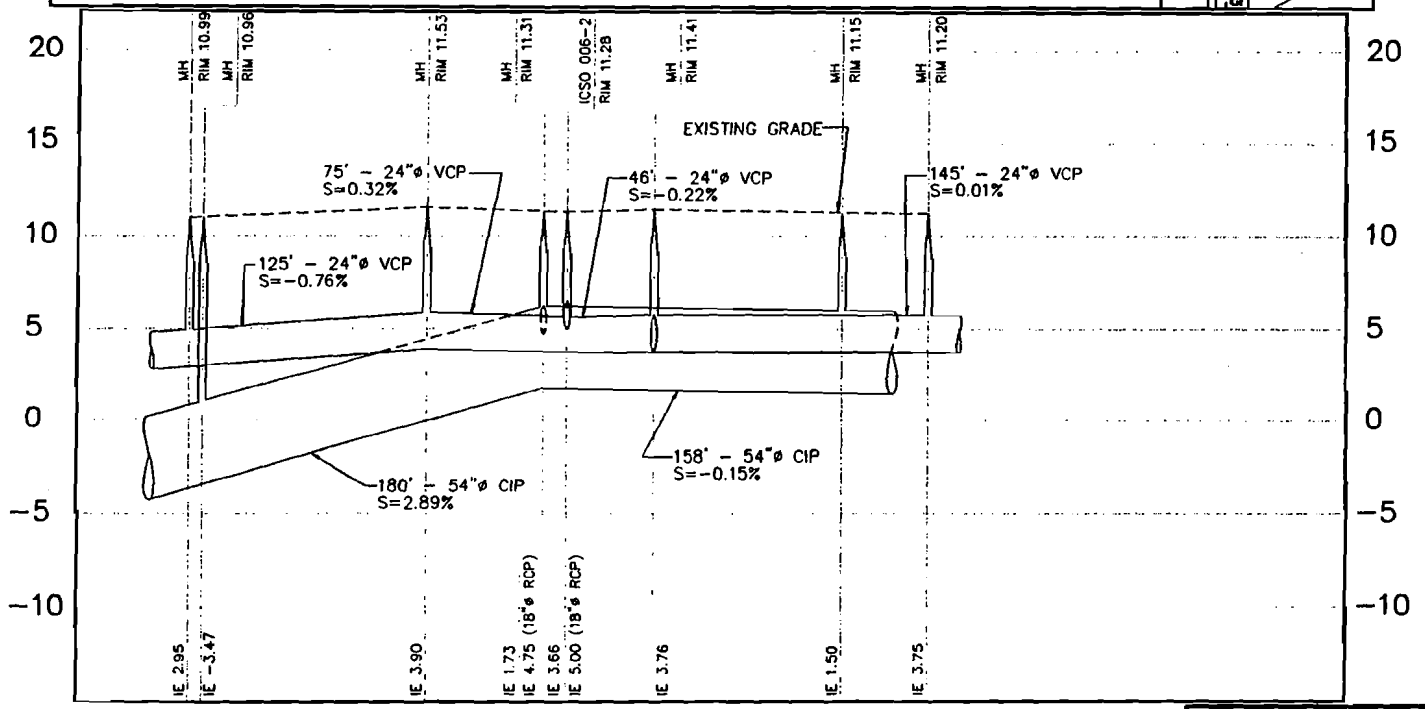
City of Bayonne

CSO Control Facility Data Extract

Relief Sewer Location & Description

NJPDES Outfall No.	**006**
Location:	Avenue F
Overflow to:	Kill Van Kull
Character of District Served:	Residential and Industrial
Number of CSO Control Facilities:	2
Type of Control Facility	Interconnection Pipe
Size Range	18" - 24" Circular
Drainage Basin shared with the	
Following Regulators	3
Following Outfalls	006
Outfall to Receiving Water	
Size	54 inch CMP
Capacity	61 MGD
Outfall Condition:	Good
Tidal Effects:	Yes
Tidal Gate(s) and Condition:	2
Drainage Area Serviced:	29 Acres





10 0 10 20
VERTICAL SCALE

100 0 100 200
HORIZONTAL SCALE

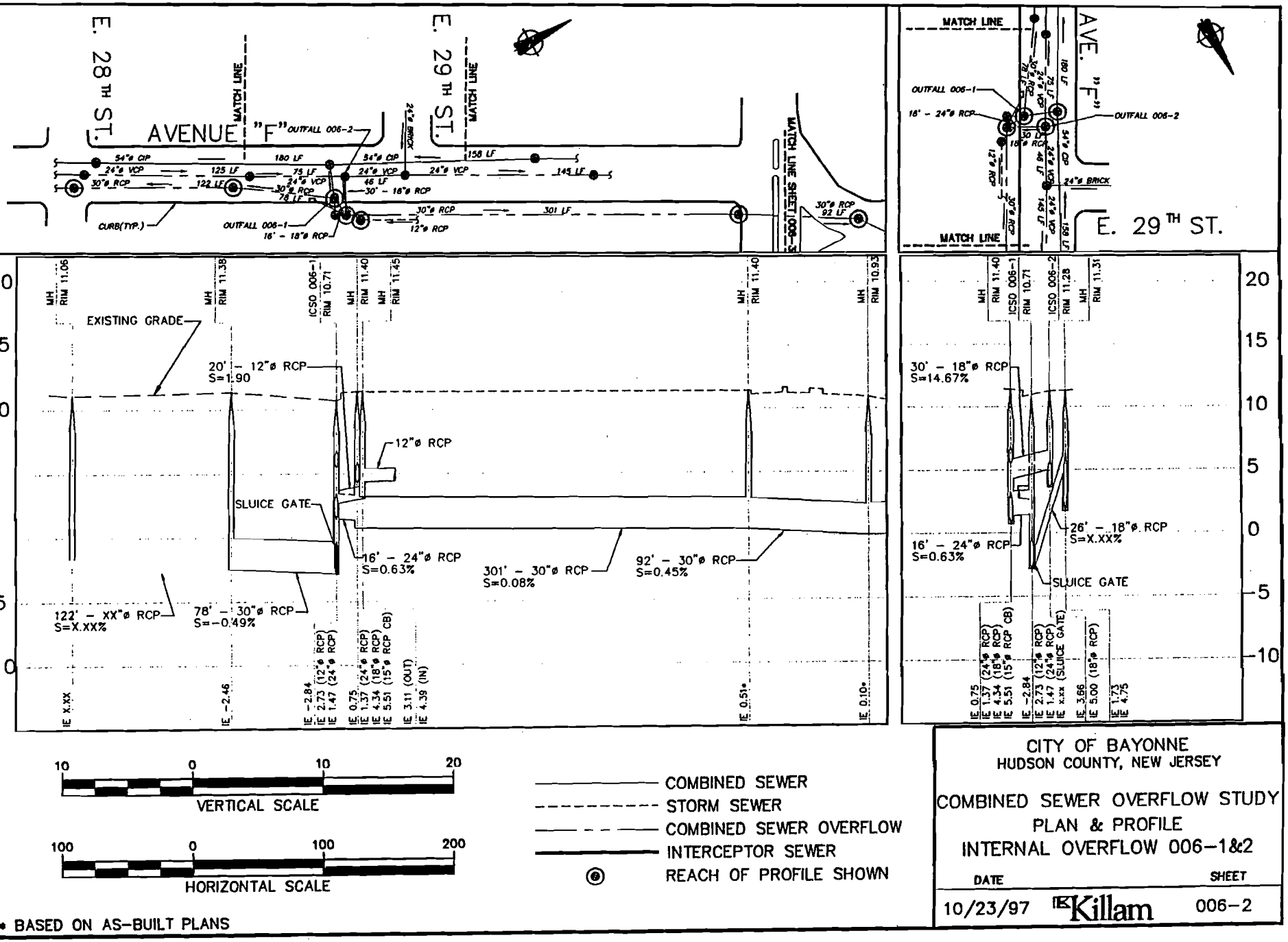
COMBINED SEWER
STORM SEWER
COMBINED SEWER OVERFLOW
INTERCEPTOR SEWER
REACH OF PROFILE SHOWN

* BASED ON AS-BUILT PLANS

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & PROFILE
INTERNAL OVERFLOW 006-1&2

DATE		SHEET
10/23/97	Killam	006-1



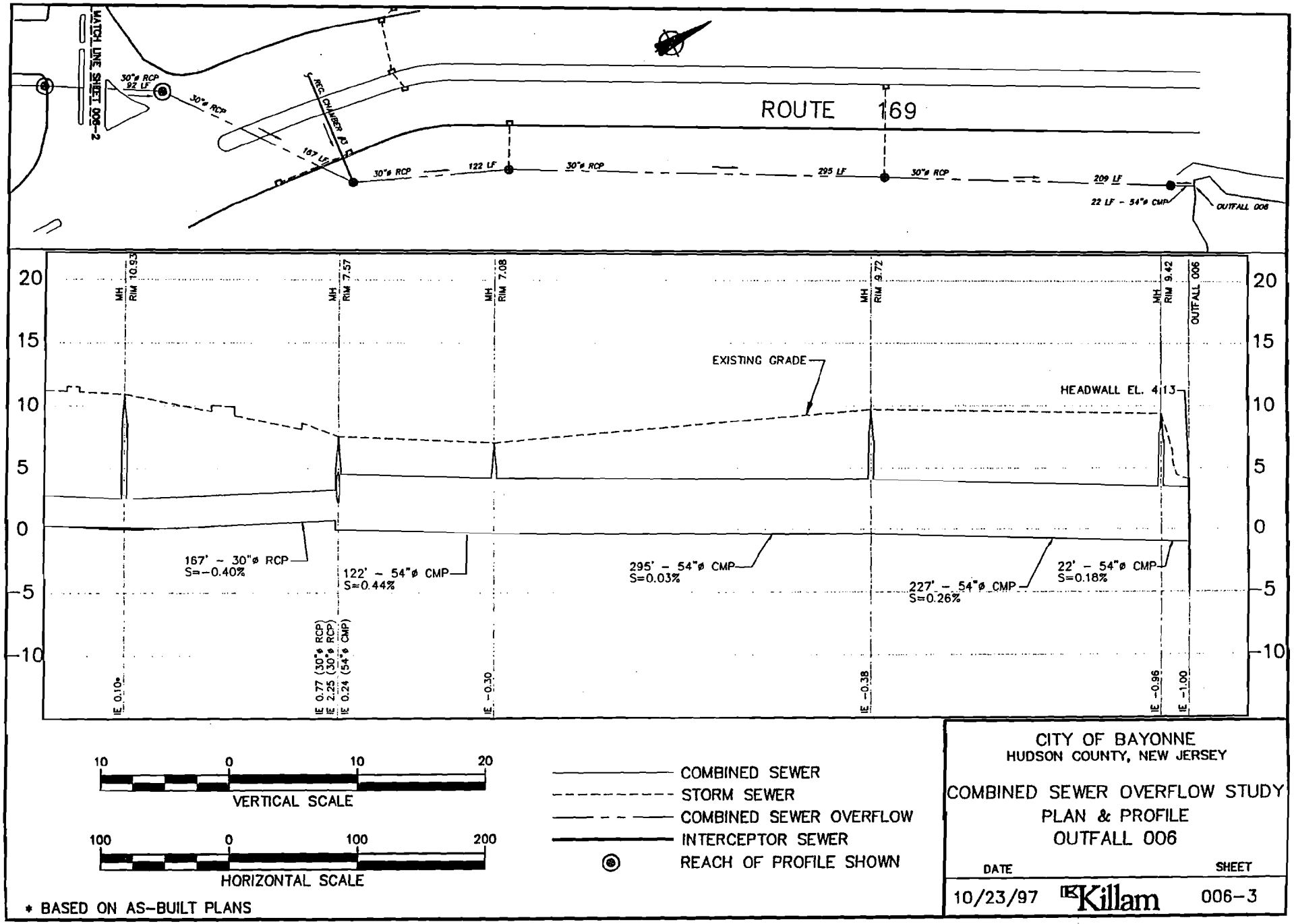
CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & PROFILE
INTERNAL OVERFLOW 006-1&2

DATE	SHEET
10/23/97	006-2

Killam

TIERRA-A-000136

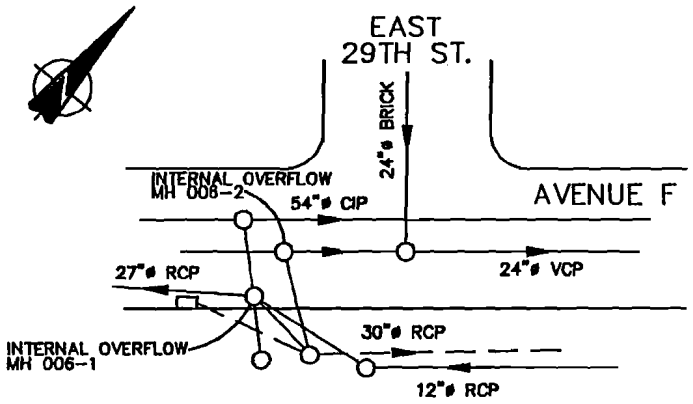


* BASED ON AS-BUILT PLANS

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

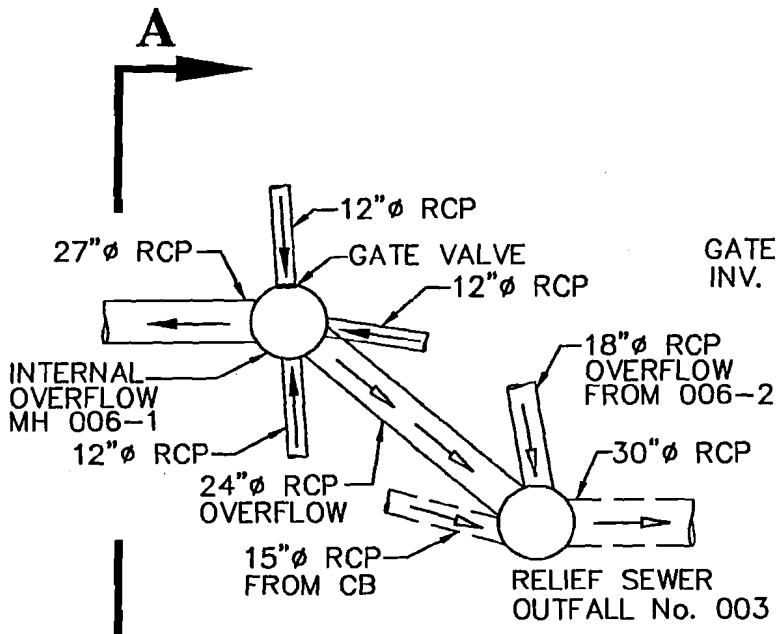
COMBINED SEWER OVERFLOW STUDY
PLAN & PROFILE
OUTFALL 006

DATE		SHEET
10/23/97	Killam	006-3



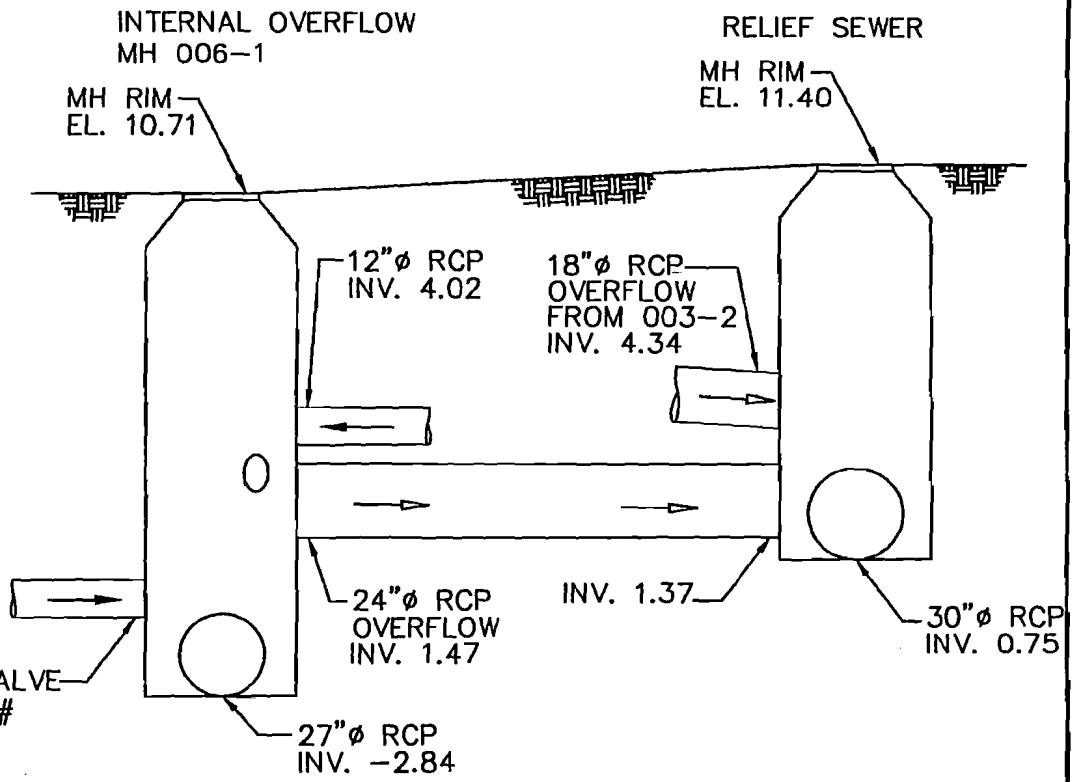
LOCATION PLAN

N.T.S.



PLAN VIEW

SCALE: 1" = 10'



SECTION A-A

SCALE: 1" = 5'

NOTE: ELEVATIONS TAKEN FROM RECORD PLANS.

LEGEND

- RELIEF SEWER PIPE
- COMBINED SEWER PIPE
- WET WEATHER FLOWS
- DRY & WET WEATHER FLOWS

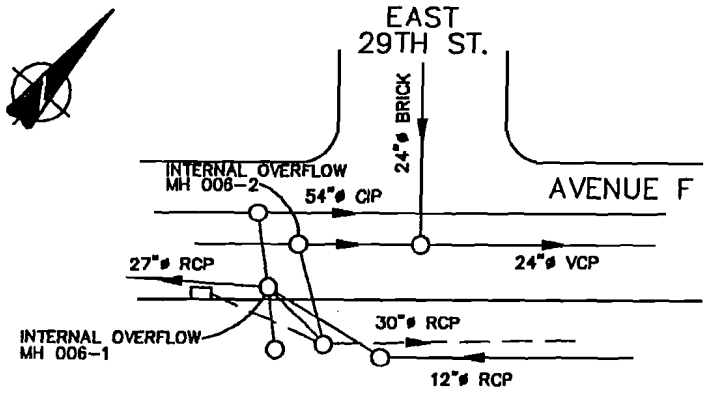
CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & CROSS SECTIONAL VIEW

INTERNAL OVERFLOW 006-1
AVENUE F & E. 29TH ST.

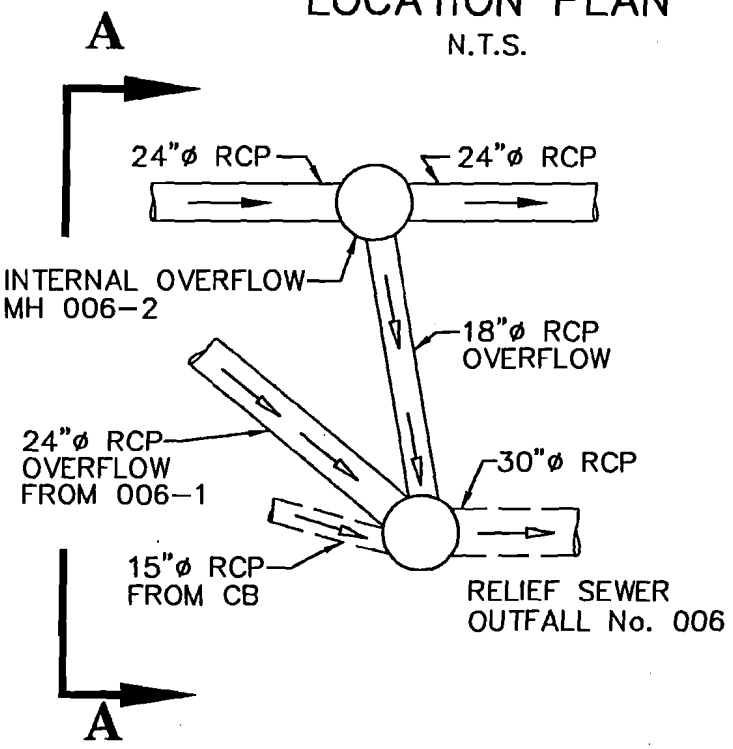
DATE	SHEET
04/24/97	SC06-1

Killam



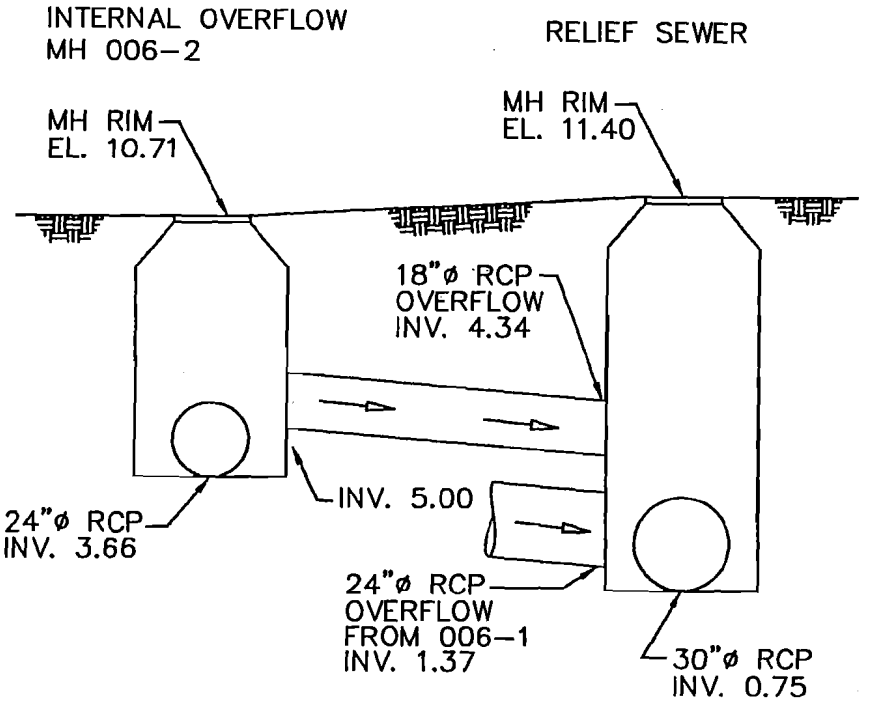
LOCATION PLAN

N.T.S.



PLAN VIEW

SCALE: 1" = 10'



SECTION A-A

SCALE: 1" = 5'

NOTE: ELEVATIONS TAKEN FROM RECORD PLANS.

LEGEND

- RELIEF SEWER PIPE
- COMBINED SEWER PIPE
- WET WEATHER FLOWS
- DRY & WET WEATHER FLOWS

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & CROSS SECTIONAL VIEW
INTERNAL OVERFLOW 006-2
AVENUE F & E. 29TH ST.

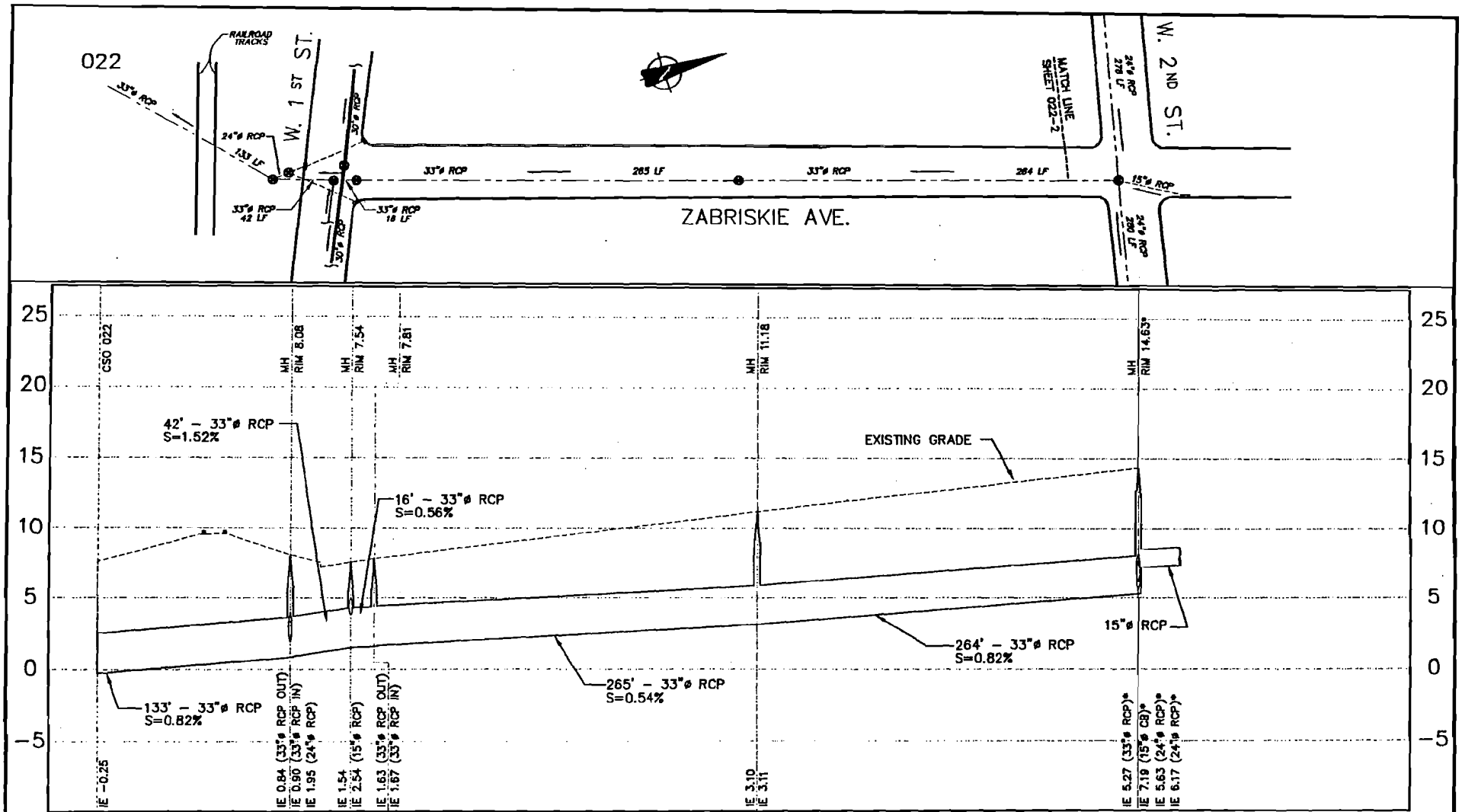
DATE		SHEET
04/24/97	Killam	SC06-2

City of Bayonne

CSO Control Facility Data Extract

Relief Sewer Location & Description

NJPDES Outfall No.	**022**
Location:	West 2nd Street
Overflow to:	Kill Van Kull
Character of District Served:	Residential
Number of CSO Control Facilities:	3
Type of Control Facility	Interconnection Pipe
Size Range	15" - 24" Circular
Drainage Basin shared with the	
Following Regulator(s)	7
Following Outfall(s)	010
Outfall to Receiving Water	
Size	33 inch RCP
Capacity	30 MGD
Outfall Condition:	Good
Tidal Effects:	Yes (at 100 year flood level)
Tidal Gate(s) and Condition:	none
Drainage Area Serviced:	45 Acres



CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & PROFILE
OUTFALL 022

DATE	SHEET
9/21/97	022-1

Killam

* BASED ON AS-BUILT PLANS

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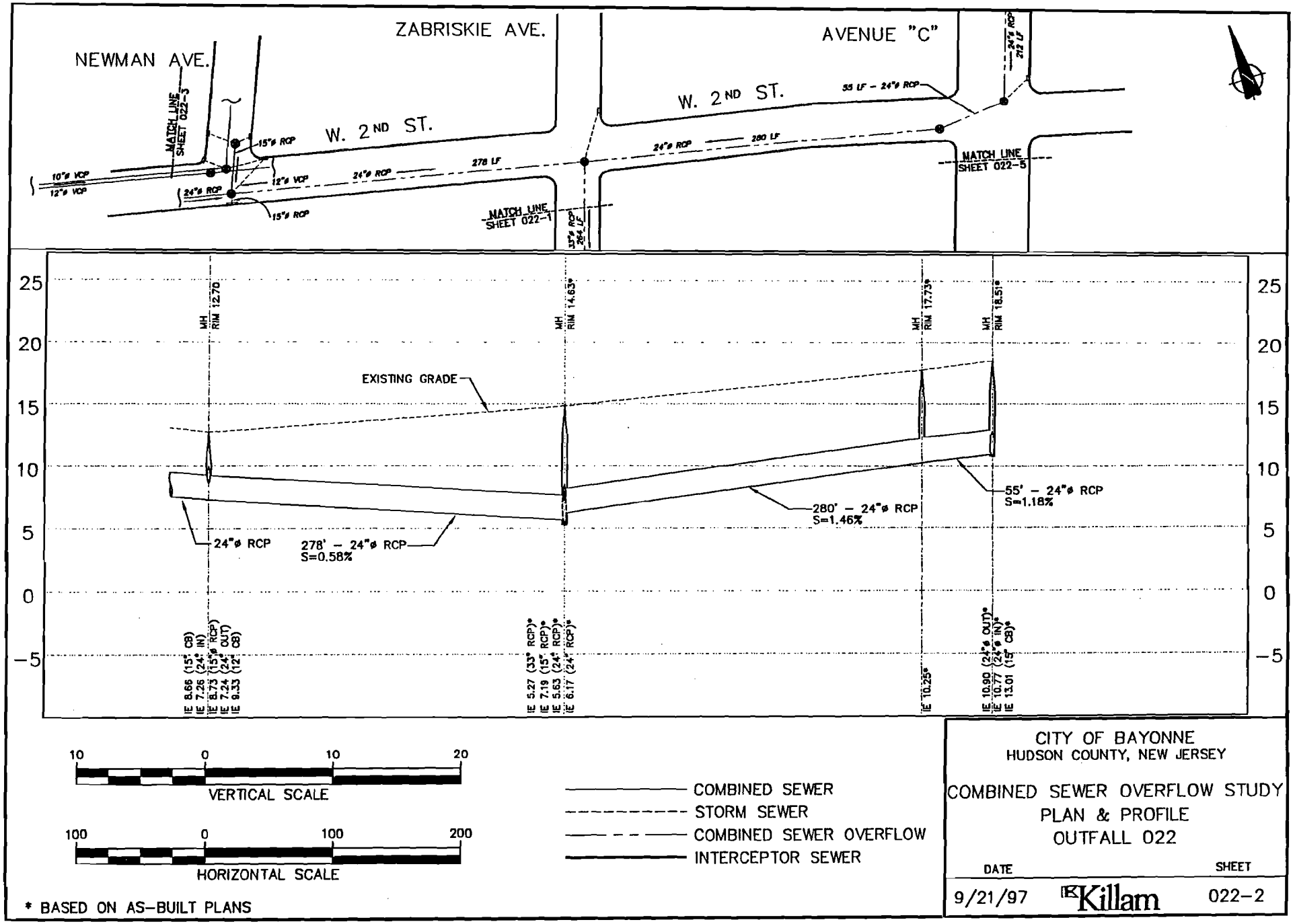

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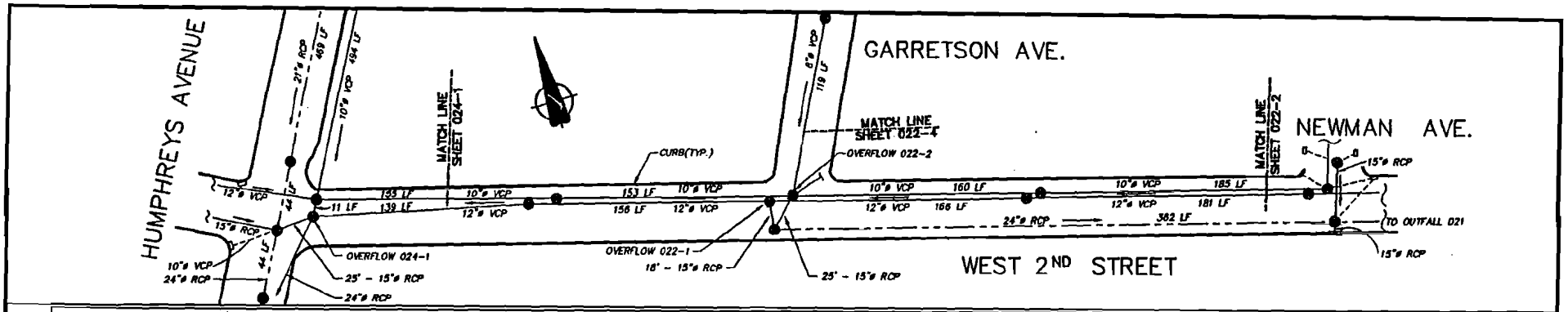

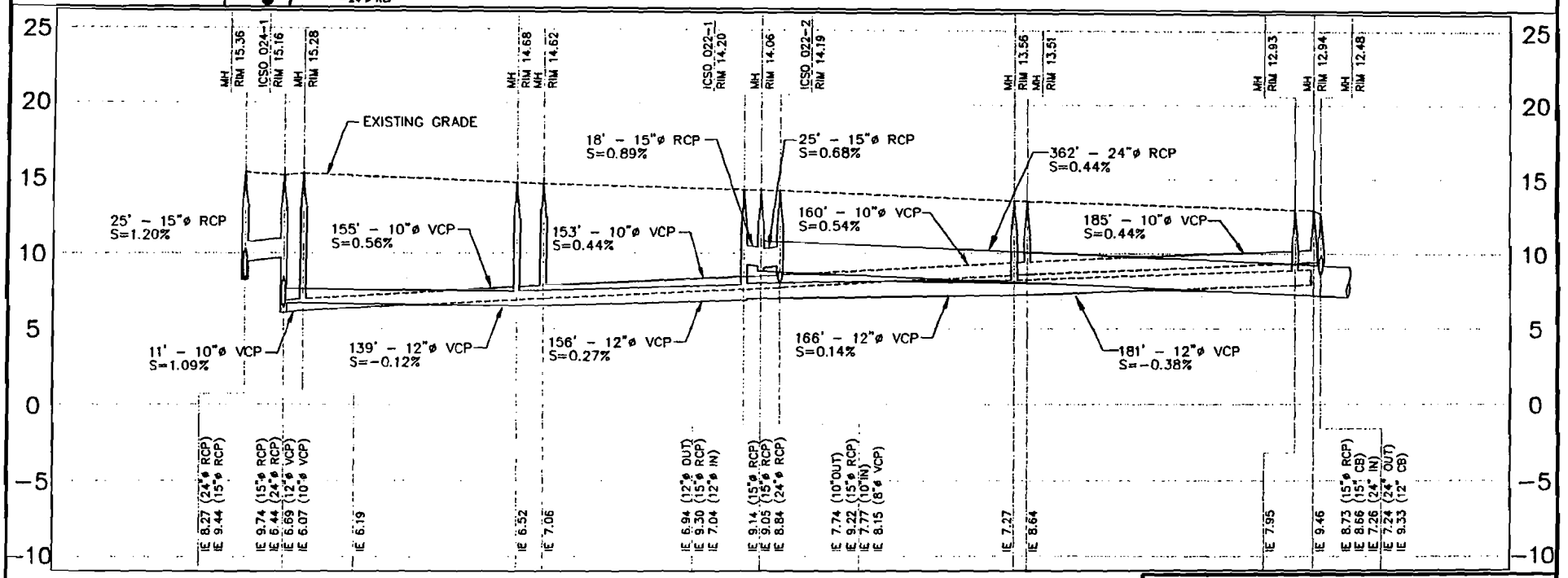

10 0 10 20
VERTICAL SCALE

100 0 100 200
HORIZONTAL SCALE

* BASED ON AS-BUILT PLANS

COMBINED SEWER
STORM SEWER
COMBINED SEWER OVERFLOW
INTERCEPTOR SEWER

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & PROFILE
INTERNAL OVERFLOW 022-1,2

DATE		SHEET
9/21/97	Killam	022-3

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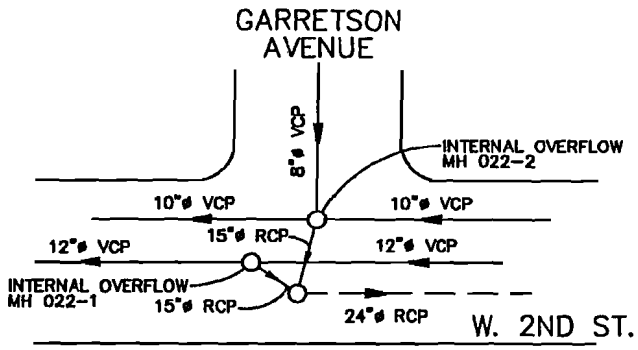
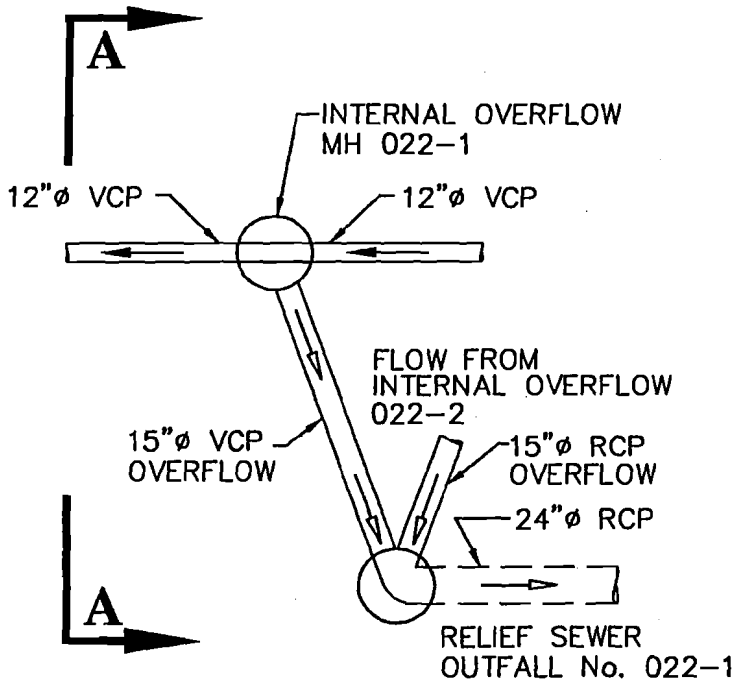
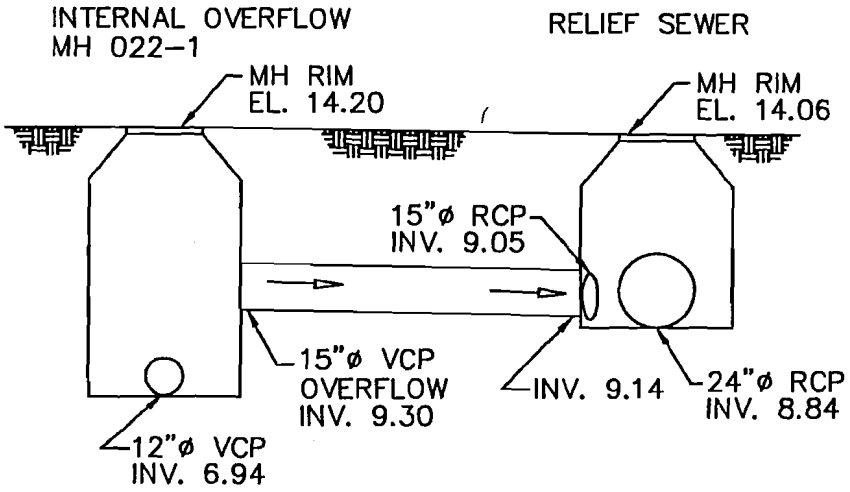


LOCATION PLAN
N.T.S.



PLAN VIEW
SCALE: 1" = 10'



SECTION A-A
SCALE: 1" = 5'

NOTE: ELEVATIONS TAKEN FROM RECORD PLANS.

LEGEND

- RELIEF SEWER PIPE
- COMBINED SEWER PIPE
- WET WEATHER FLOWS
- DRY & WET WEATHER FLOWS

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & CROSS SECTIONAL VIEW
INTERNAL OVERFLOW 022-1
W. 2ND ST. & GARRETSON AVE.

DATE	SHEET
04/24/97	SC22-1

Killam

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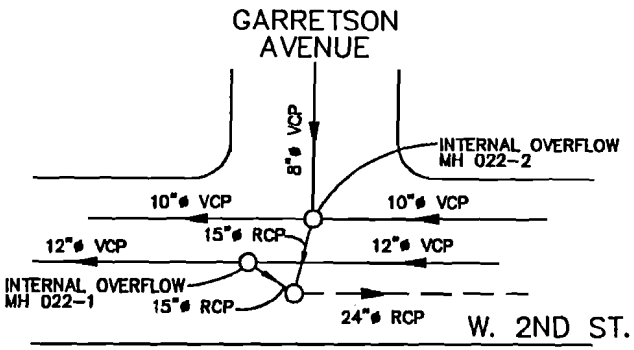
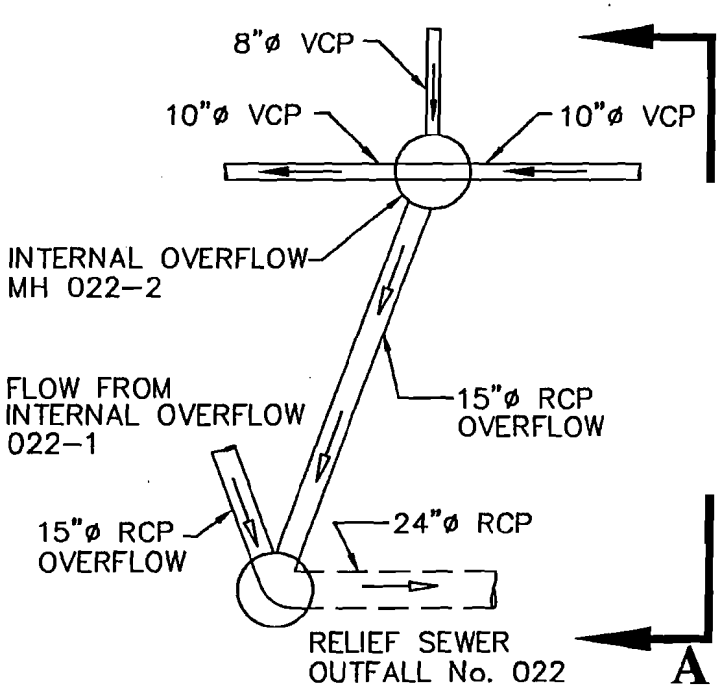
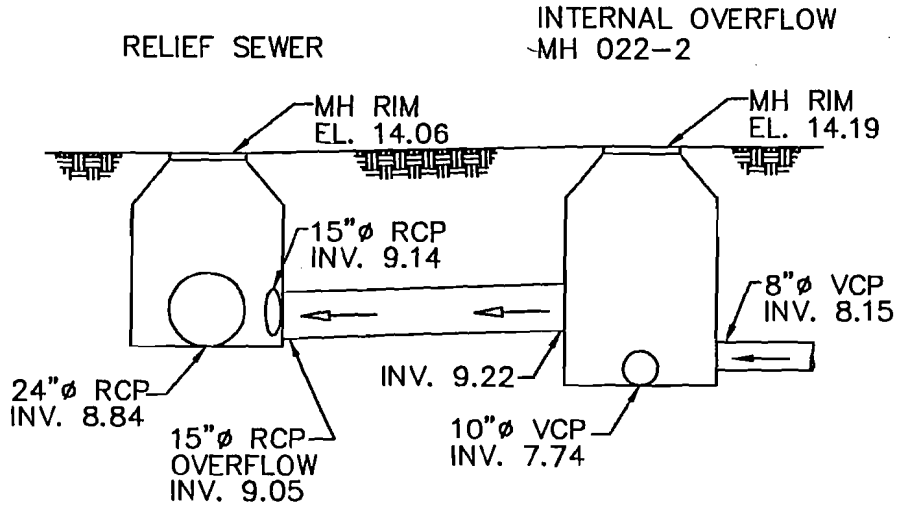


LOCATION PLAN
N.T.S.



PLAN VIEW
SCALE: 1" = 10'



SECTION A–A
SCALE: 1" = 5'

NOTE: ELEVATIONS TAKEN FROM RECORD PLANS.

LEGEND

- RELIEF SEWER PIPE
- COMBINED SEWER PIPE
- WET WEATHER FLOWS
- DRY & WET WEATHER FLOWS

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY
COMBINED SEWER OVERFLOW STUDY
PLAN & CROSS SECTIONAL VIEW
INTERNAL OVERFLOW 022–2
W. 2ND ST. & GARRETSON AVE.

DATE	SHEET
04/24/97	SC22–2

Killam

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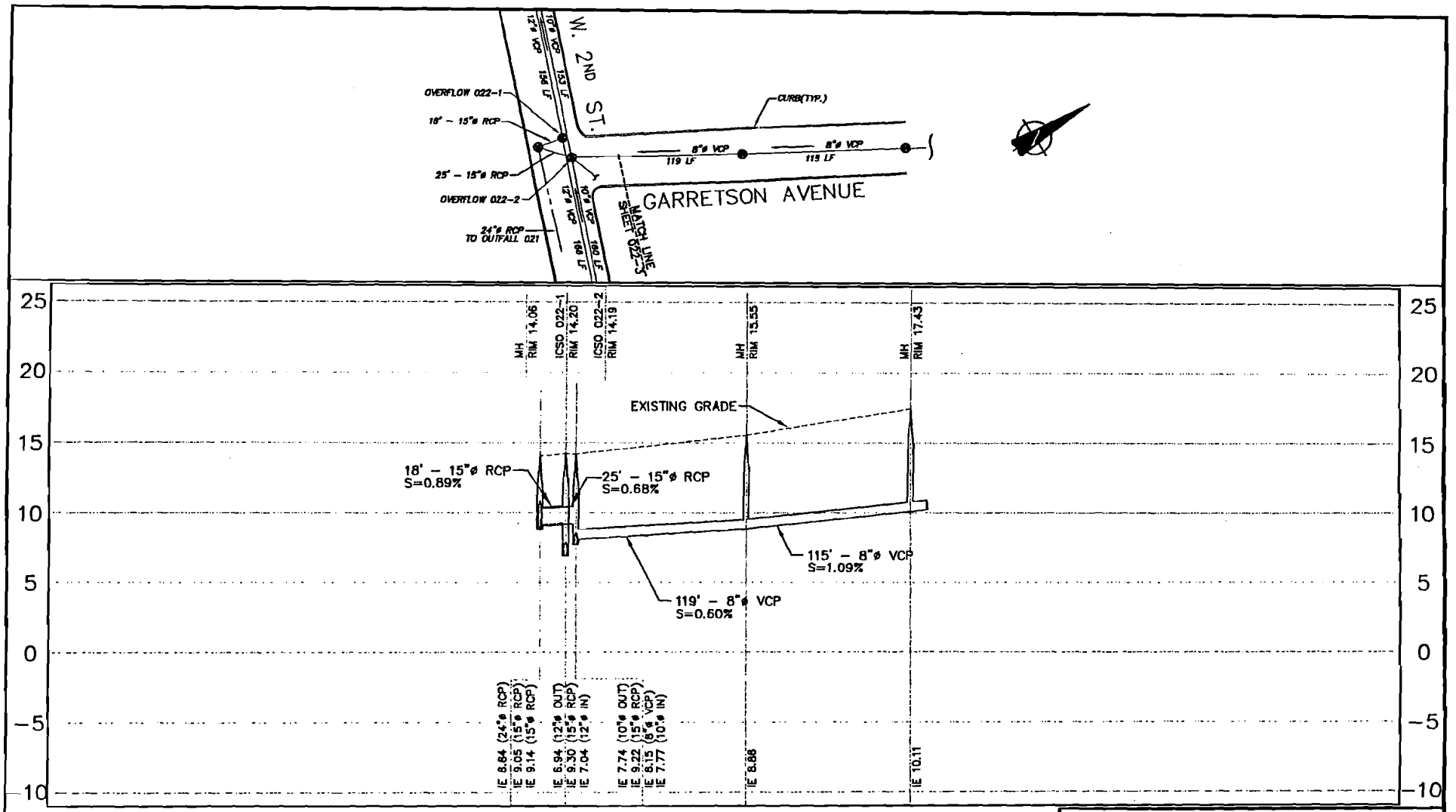

10 0 10 20
VERTICAL SCALE

100 0 100 200
HORIZONTAL SCALE

* BASED ON AS-BUILT PLANS

COMBINED SEWER
STORM SEWER
COMBINED SEWER OVERFLOW
INTERCEPTOR SEWER

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & PROFILE
INTERNAL OVERFLOW 022-1,2

DATE		SHEET
9/21/97	Killam	022-4

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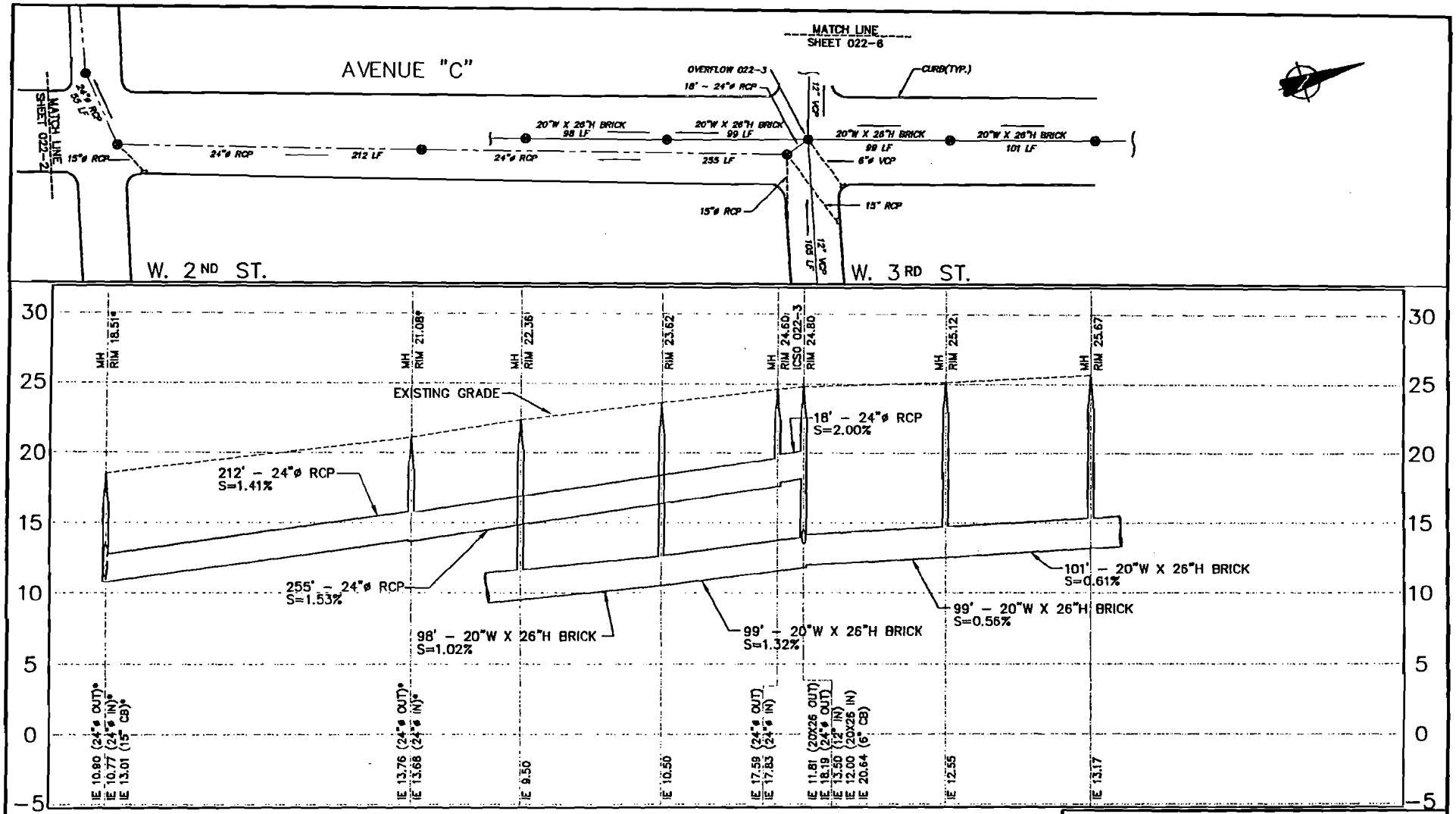

* BASED ON AS-BUILT PLANS

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & PROFILE
INTERNAL OVERFLOW 022-3

DATE		SHEET
9/21/97	IEKillam	022-5

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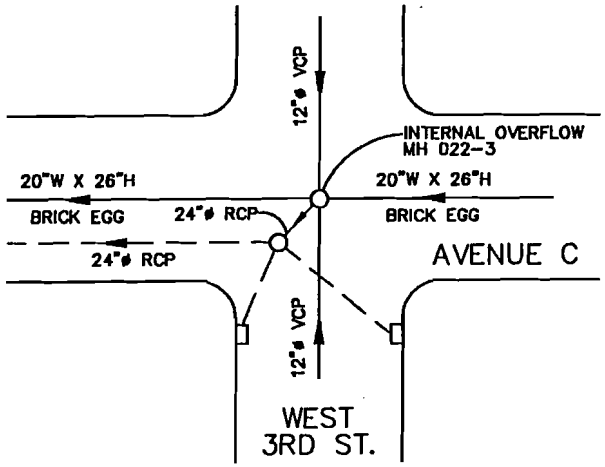
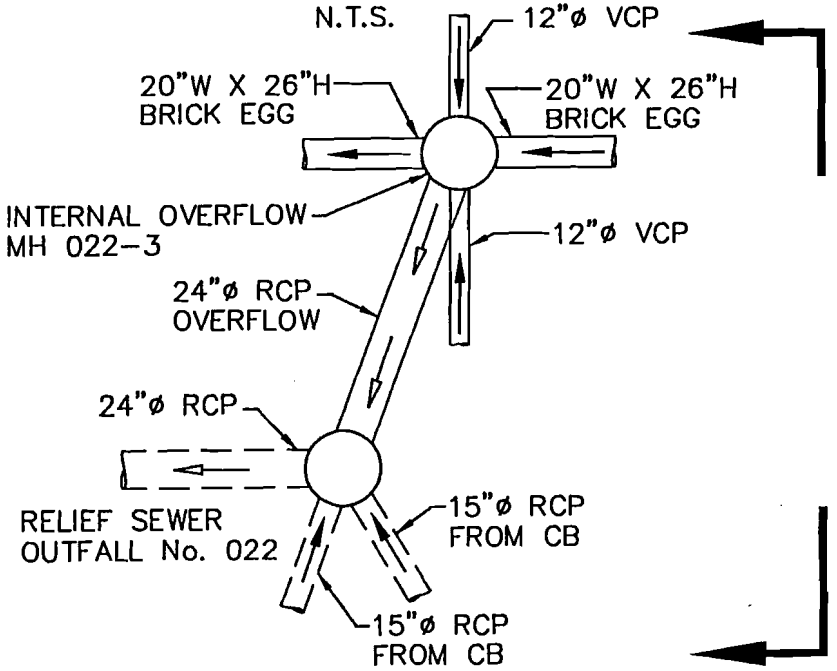


LOCATION PLAN

N.T.S.

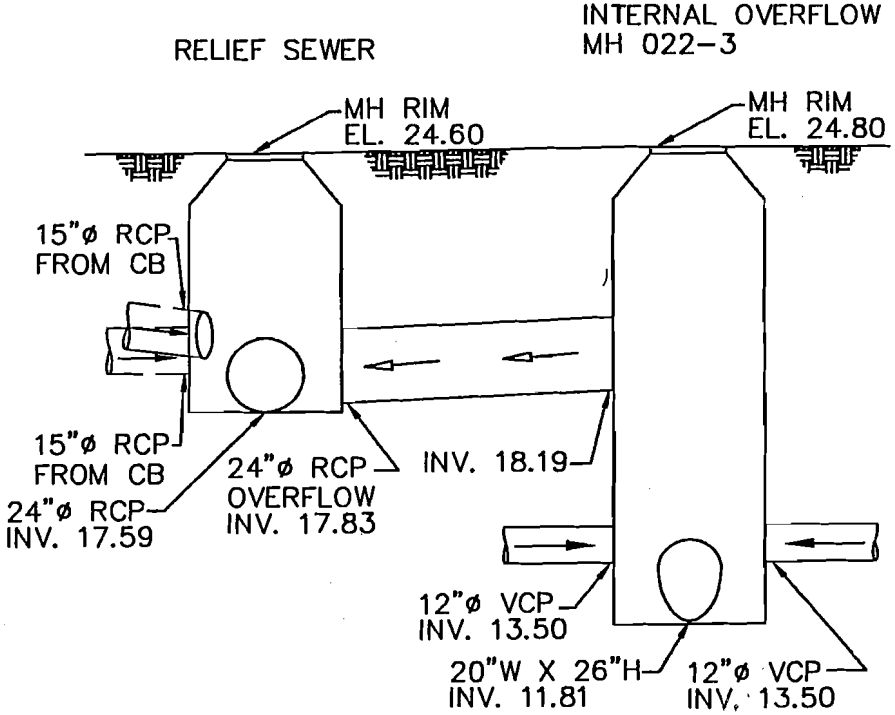


PLAN VIEW

SCALE: 1" = 10'

A

A



SECTION A-A

SCALE: 1" = 5'

NOTE: ELEVATIONS TAKEN FROM RECORD PLANS.

LEGEND

- RELIEF SEWER PIPE
- COMBINED SEWER PIPE
- WET WEATHER FLOWS
- DRY & WET WEATHER FLOWS

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & CROSS SECTIONAL VIEW
INTERNAL OVERFLOW 022-3
AVENUE C & W. 3RD ST.

DATE	SHEET
04/24/97	SC22-3

Killam

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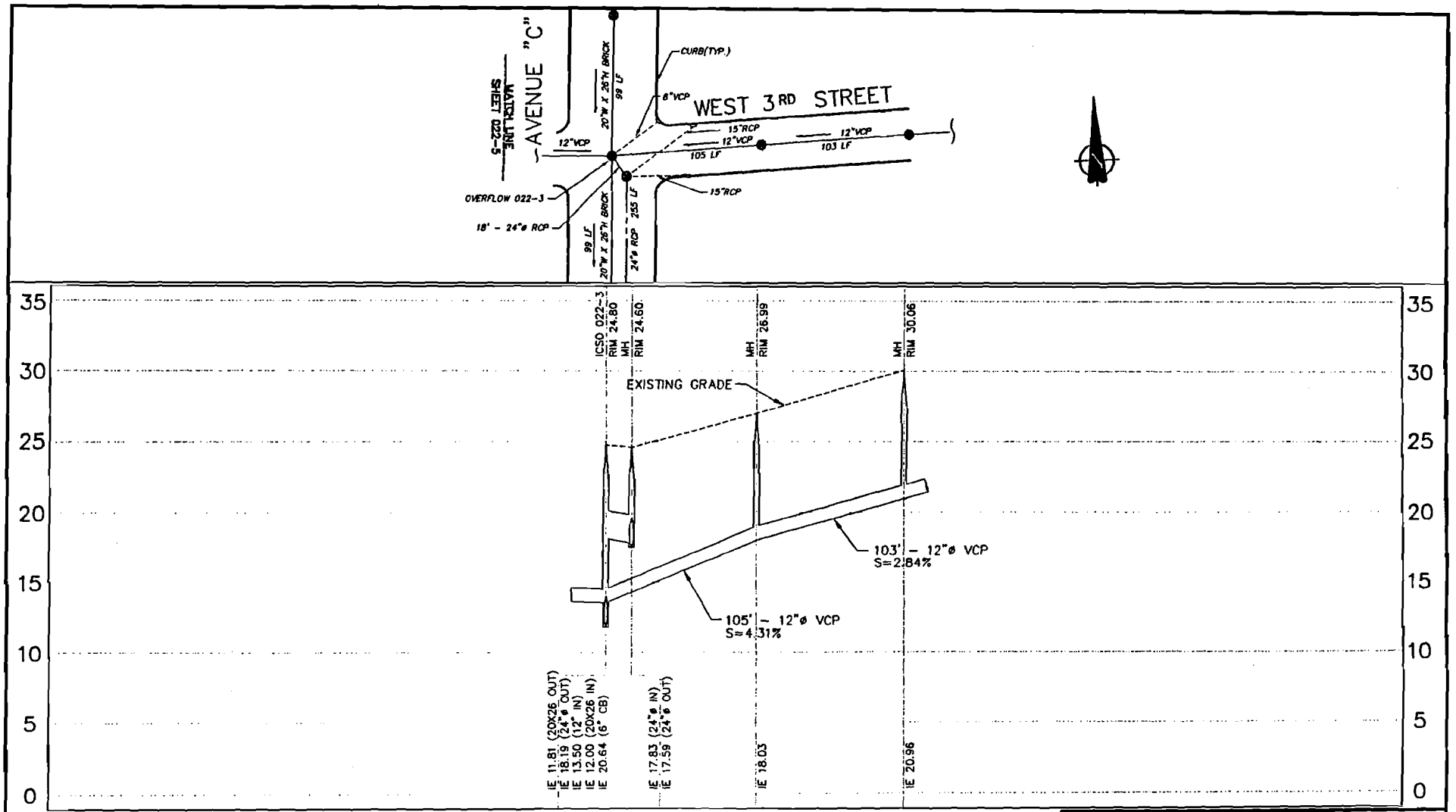

* BASED ON AS-BUILT PLANS

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & PROFILE
INTERNAL OVERFLOW 022-3

DATE		SHEET
9/21/97	T&M Killam	022-6

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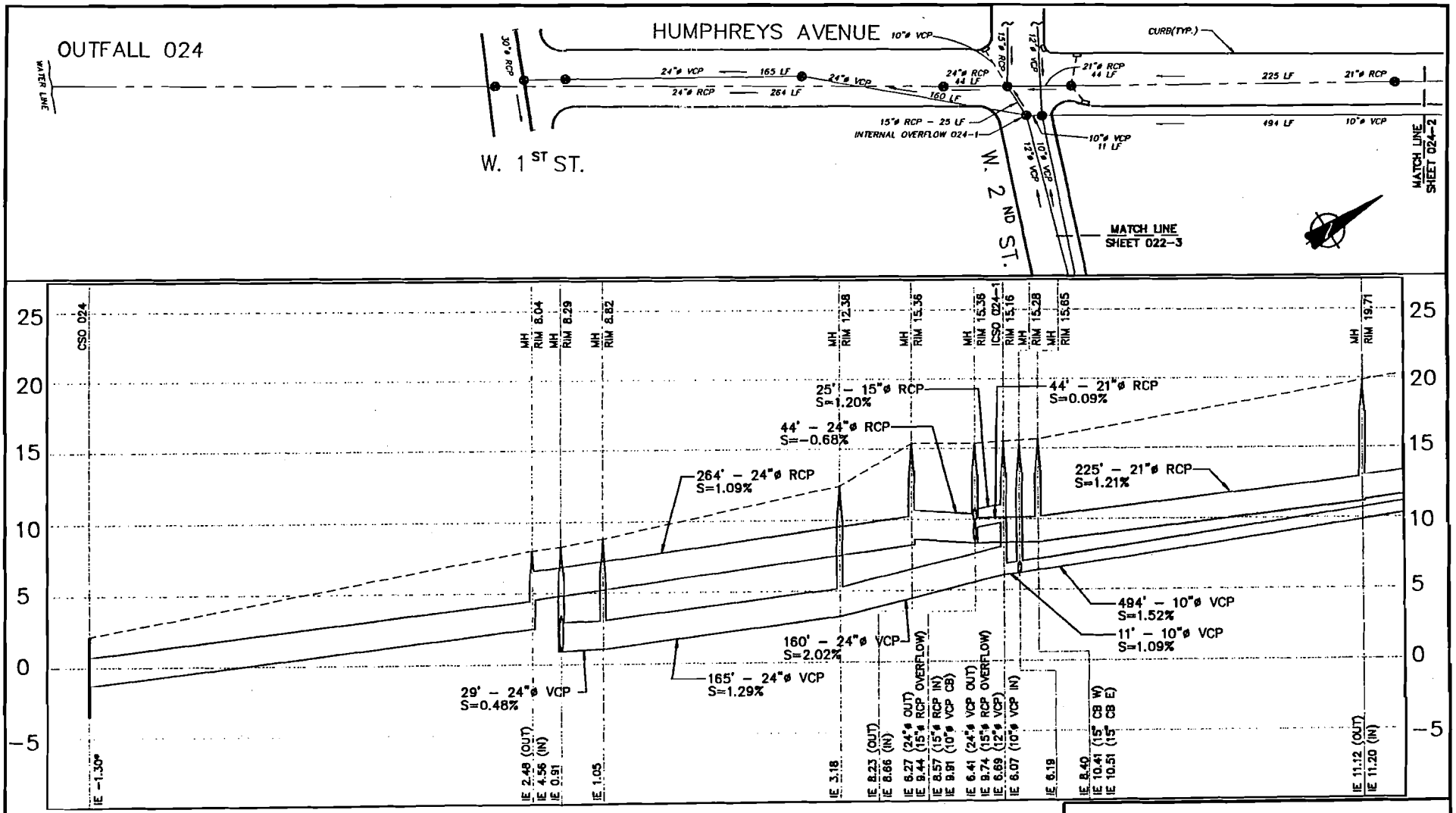
City of Bayonne

CSO Control Facility Data Extract

Relief Sewer Location & Description

NJPDES Outfall No.	**024**
Location:	Humphreys Avenue
Overflow to:	Kill Van Kull
Character of District Served:	Residential and Industrial
Number of CSO Control Facilities:	3
Type of Control Facility	Interconnection Pipe
Size Range	12" - 15" Circular
Drainage Basin shared with the	
Following Regulators	7
Following Outfalls	010
Outfall to Receiving Water	
Size	24 inch CMP
Capacity	15 MGD
Outfall Condition:	Good
Tidal Effects:	Yes (at 100 year flood level)
Tidal Gate(s) and Condition:	none
Drainage Area Serviced:	25 Acres



* BASED ON AS-BUILT PLANS

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & PROFILE
INTERNAL OVERFLOW 024-1

DATE		SHEET
10/02/97	Killam	024-1

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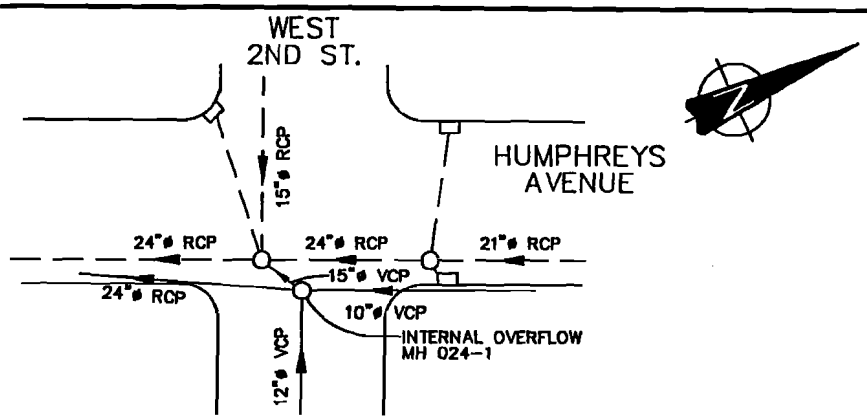
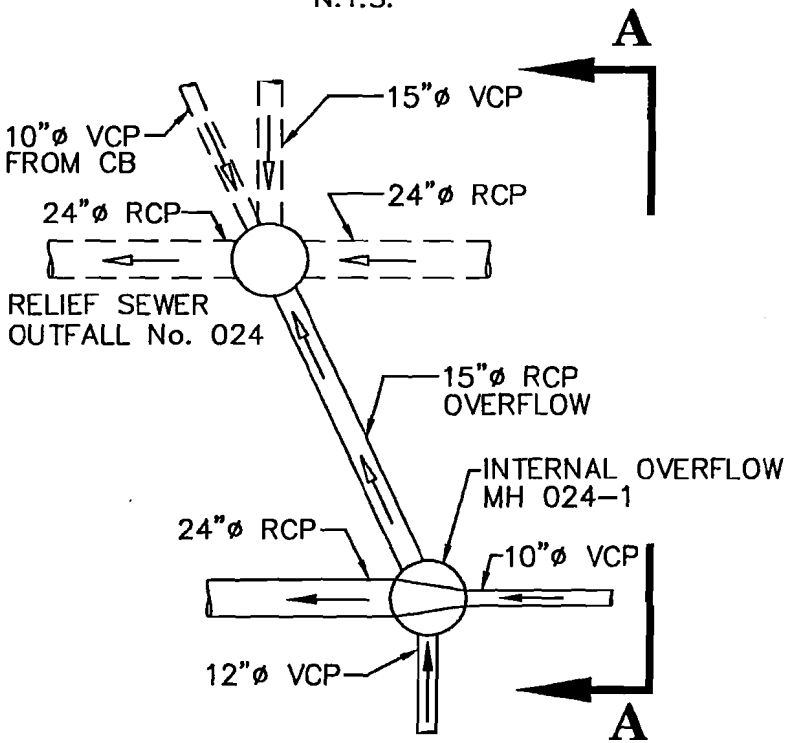


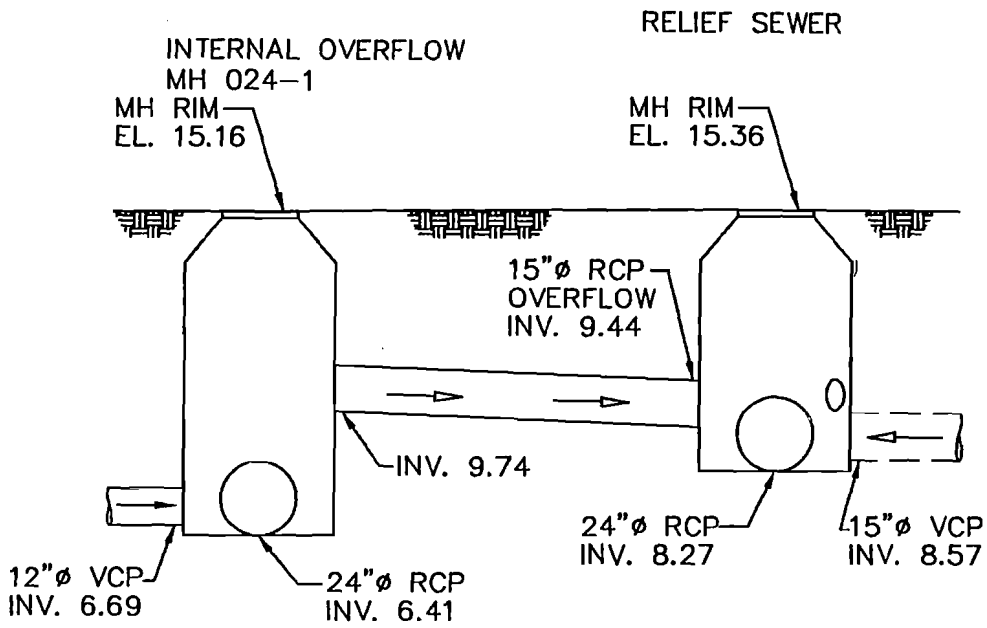
LOCATION PLAN

N.T.S.



PLAN VIEW

SCALE: 1" = 10'



SECTION A-A

SCALE: 1" = 5'

NOTE: ELEVATIONS TAKEN FROM RECORD PLANS.

LEGEND

- RELIEF SEWER PIPE
- COMBINED SEWER PIPE
- WET WEATHER FLOWS
- DRY & WET WEATHER FLOWS

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & CROSS SECTIONAL VIEW
INTERNAL OVERFLOW 024-1
W. 2ND ST. & HUMPHREYS AVE.

DATE		SHEET
04/24/97	E Killam	SC24-1

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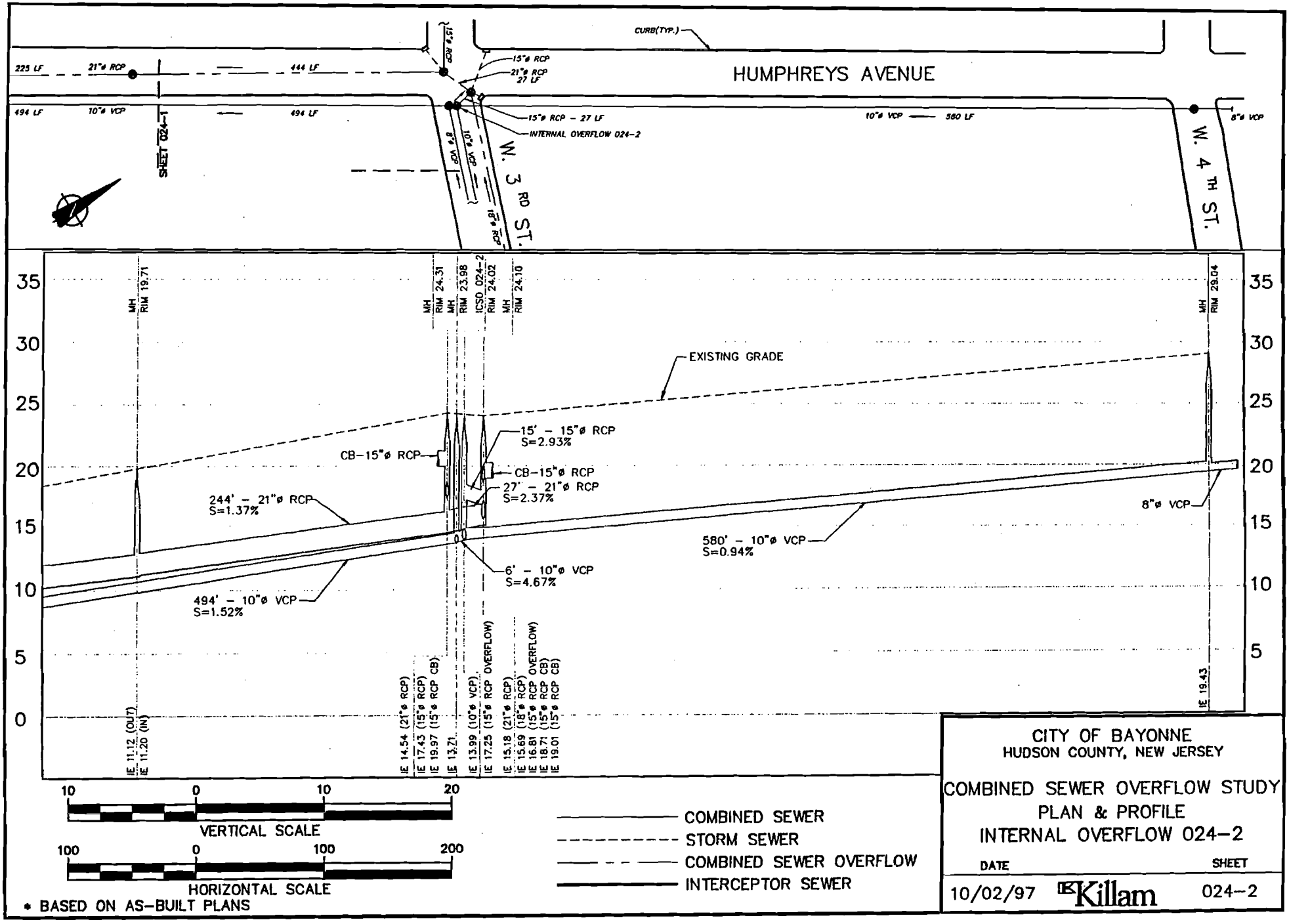

* BASED ON AS-BUILT PLANS

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & PROFILE
INTERNAL OVERFLOW 024-2

DATE		SHEET
10/02/97	Killam	024-2

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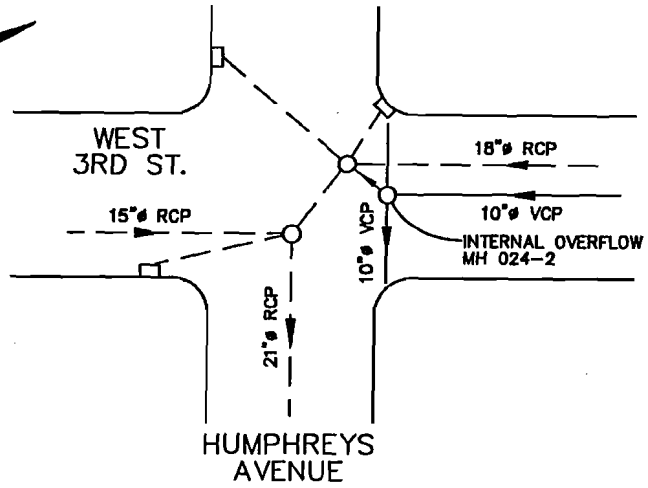
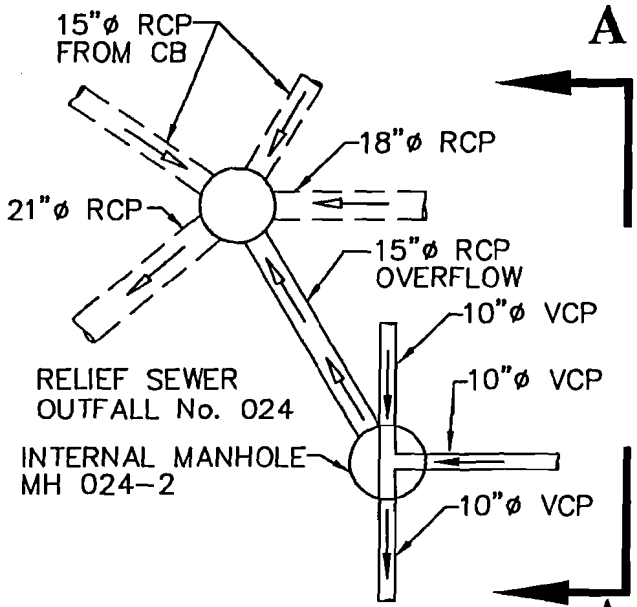


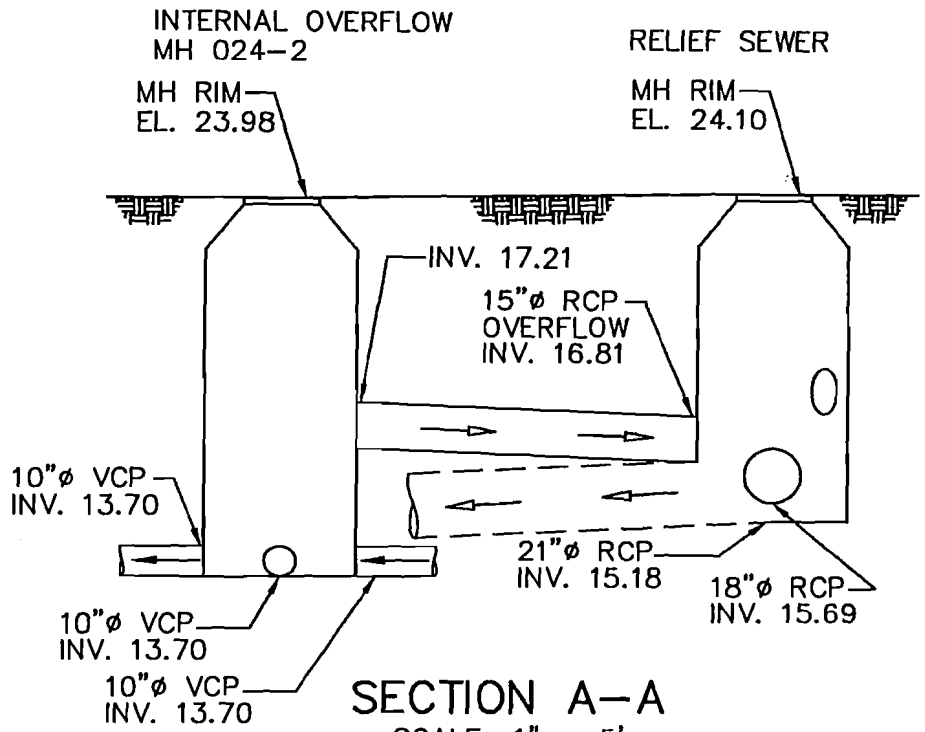
LOCATION PLAN

N.T.S.



PLAN VIEW

SCALE: 1" = 10'



SECTION A-A

SCALE: 1" = 5'

NOTE: ELEVATIONS TAKEN FROM RECORD PLANS.

LEGEND

- RELIEF SEWER PIPE
- COMBINED SEWER PIPE
- WET WEATHER FLOWS
- DRY & WET WEATHER FLOWS

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & CROSS SECTIONAL VIEW
INTERNAL OVERFLOW 024-2
W. 3RD ST. & HUMPHREYS AVE.

DATE		SHEET
04/24/97	Killam	SC24-2

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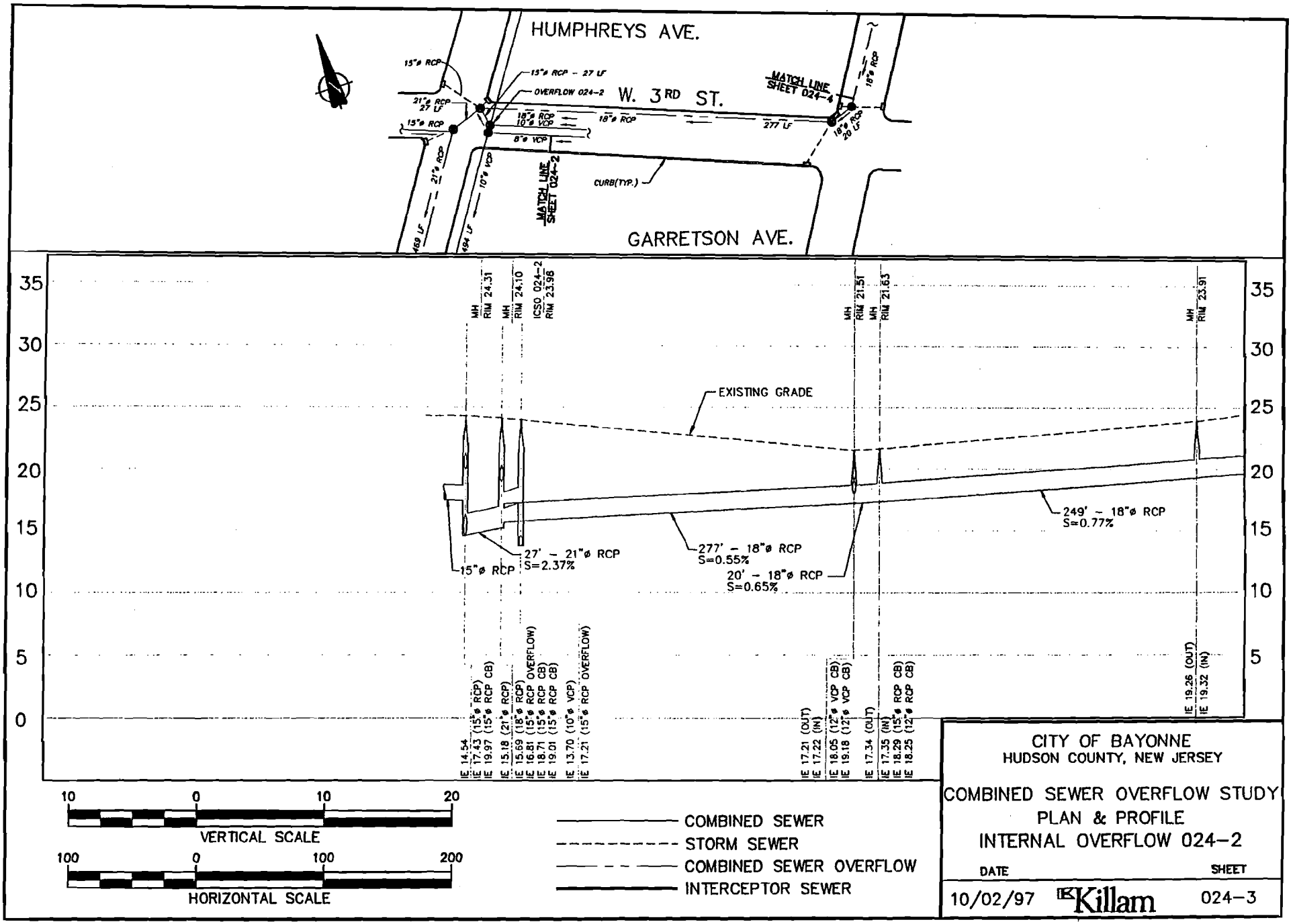

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & PROFILE
INTERNAL OVERFLOW 024-2

DATE		SHEET
10/02/97	Killam	024-3

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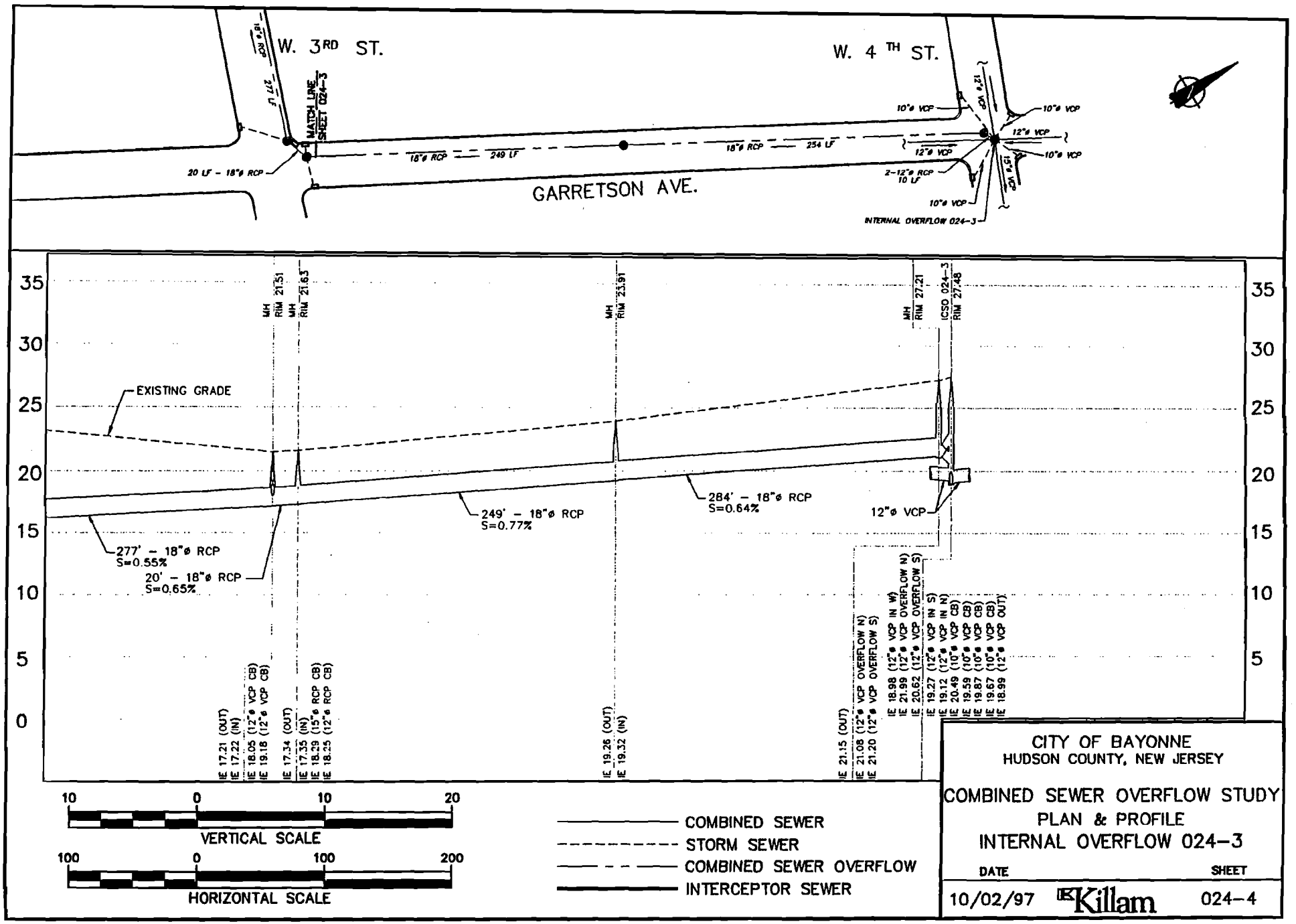

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & PROFILE
INTERNAL OVERFLOW 024-3

DATE	SHEET
10/02/97	024-4

Killam

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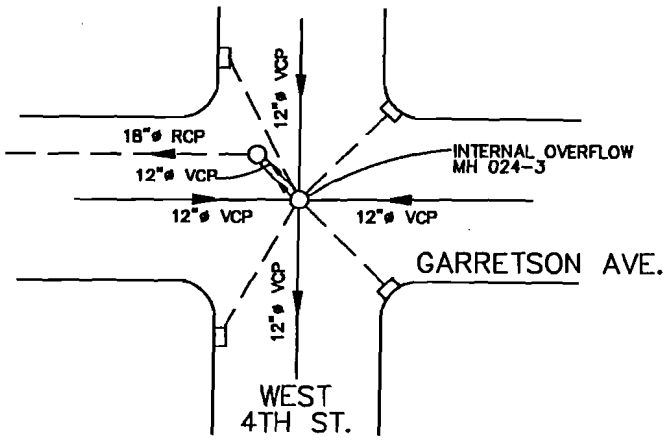
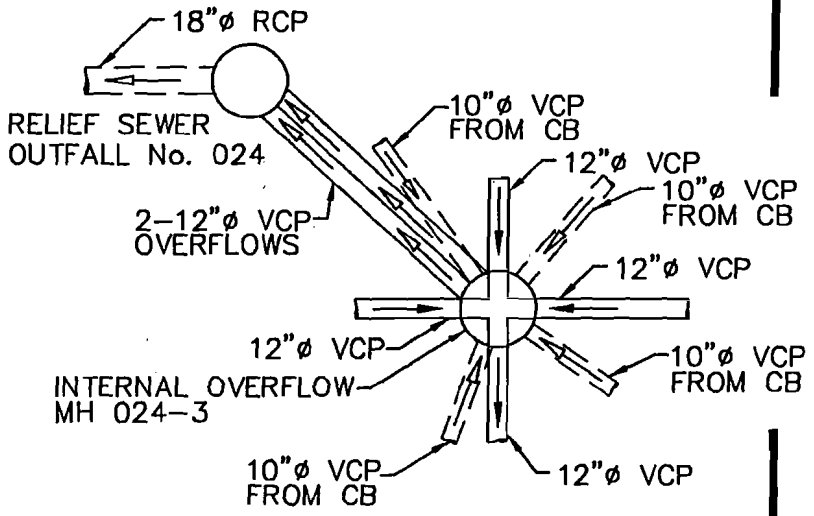
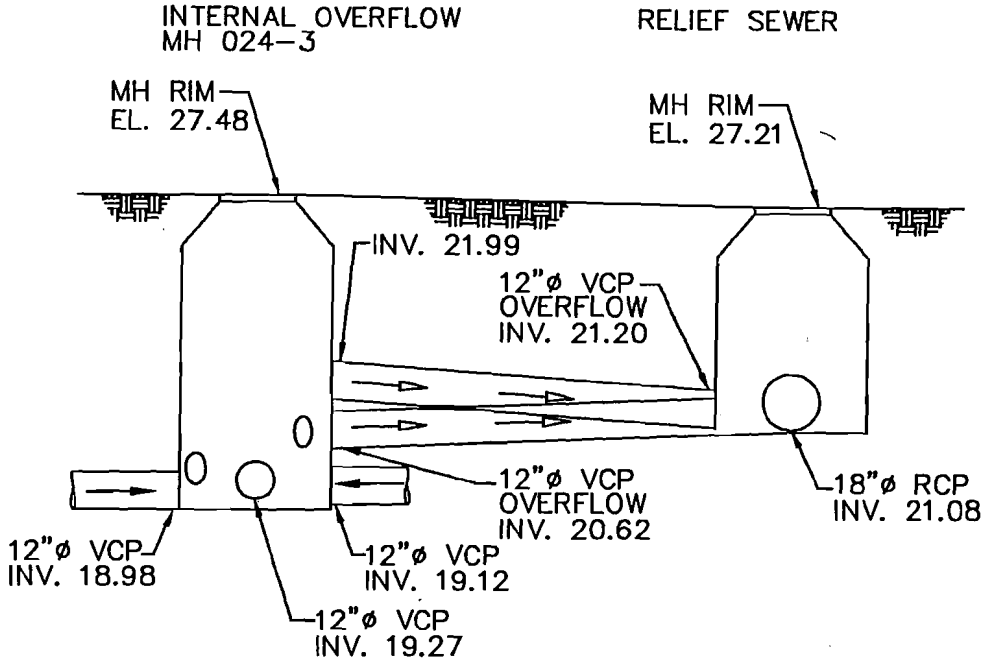


LOCATION PLAN
N.T.S.



PLAN VIEW
SCALE: 1" = 10'



SECTION A-A
SCALE: 1" = 5'

NOTE: ELEVATIONS TAKEN FROM RECORD PLANS.

LEGEND

- RELIEF SEWER PIPE
- COMBINED SEWER PIPE
- WET WEATHER FLOWS
- DRY & WET WEATHER FLOWS

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & CROSS SECTIONAL VIEW
INTERNAL OVERFLOW 024-3
GARRETSON AVE. & W. 4TH ST.

DATE	SHEET
04/24/97	SC24-3

Killam

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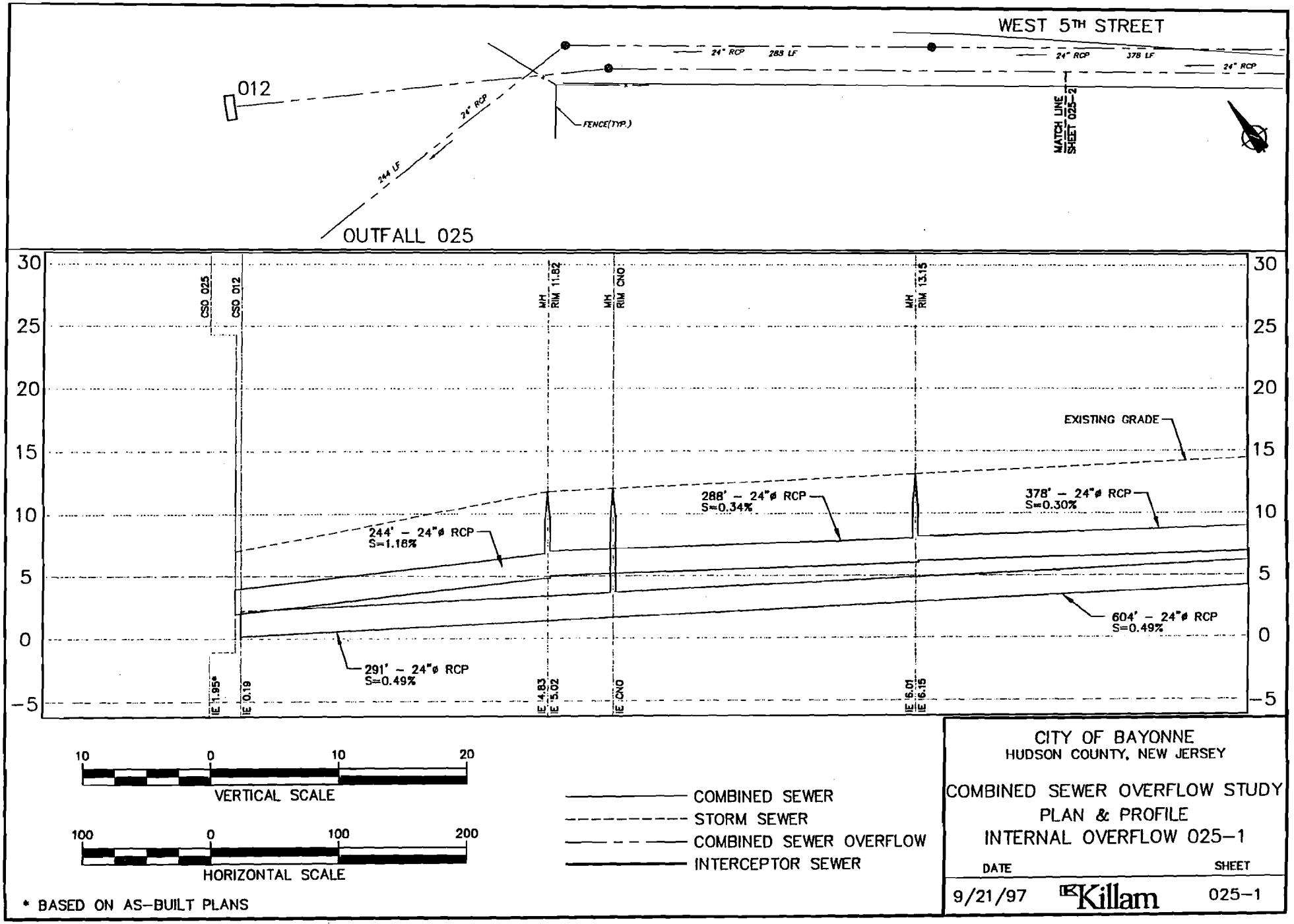
City of Bayonne

CSO Control Facility Data Extract

Relief Sewer Location & Description

NJPDES Outfall No.	**025**
Location:	West 5th Street
Overflow to:	Newark Bay
Character of District Served:	Residential
Number of CSO Control Facilities:	3
Type of Control Facility	Interconnection Pipe
Size Range	15" - 24" Circular
Drainage Basin shared with the	
Following Regulators	9
Following Outfalls	012
Outfall to Receiving Water	
Size	24 inch RCP
Capacity	8 MGD
Outfall Condition:	Good
Tidal Effects:	Yes (around 100 year flood level)
Tidal Gate(s) and Condition:	none
Drainage Area Serviced:	27 Acres



* BASED ON AS-BUILT PLANS

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & PROFILE
INTERNAL OVERFLOW 025-1

DATE		SHEET
9/21/97	Killam	025-1

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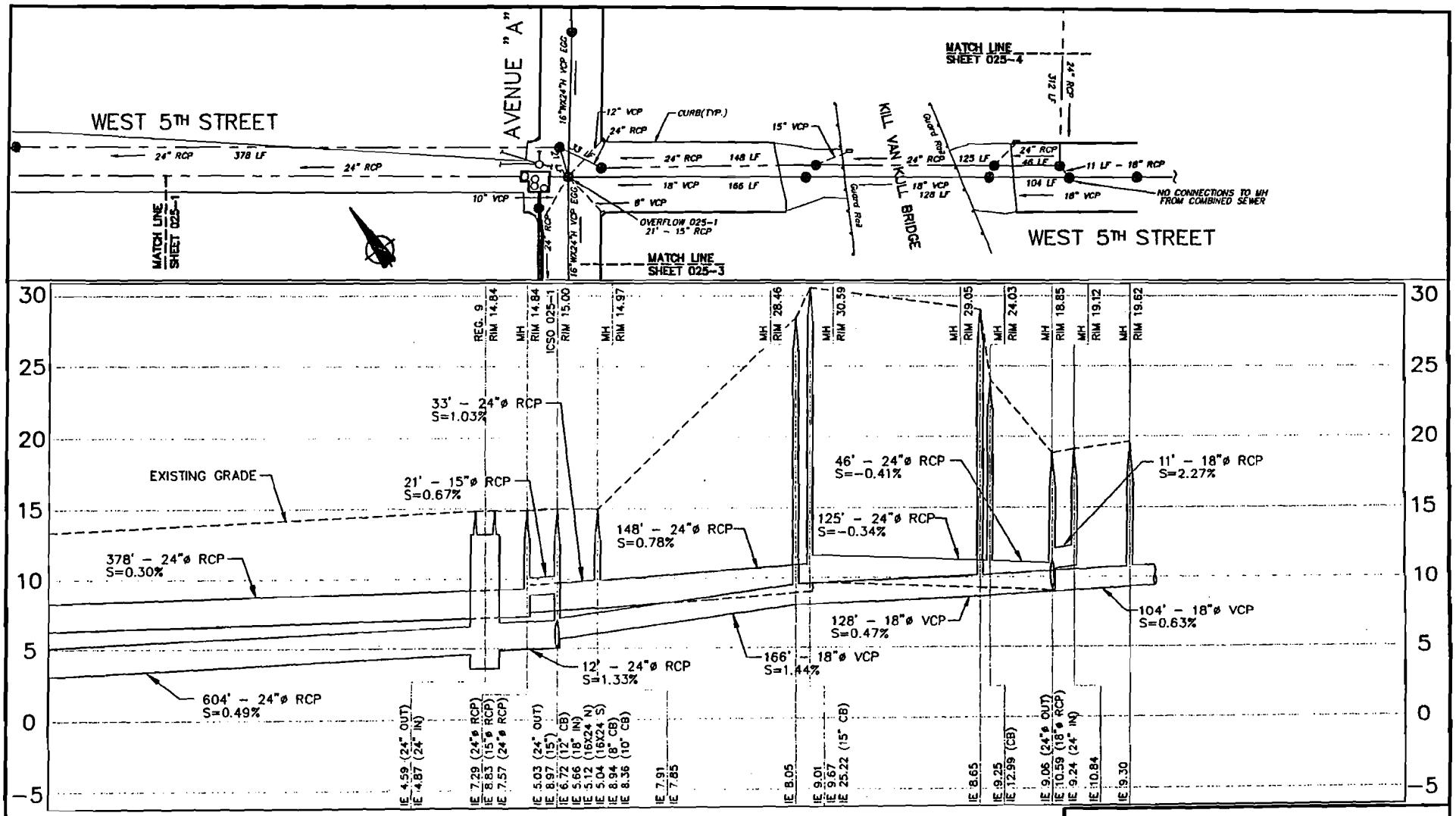

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & PROFILE
INTERNAL OVERFLOW 025-1

DATE		SHEET
9/21/97	Killam	025-2

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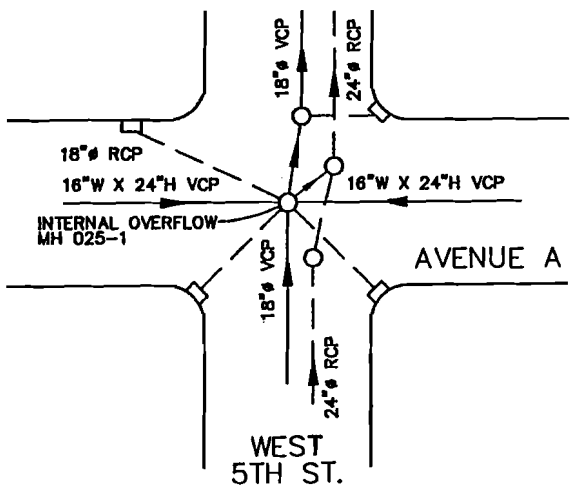
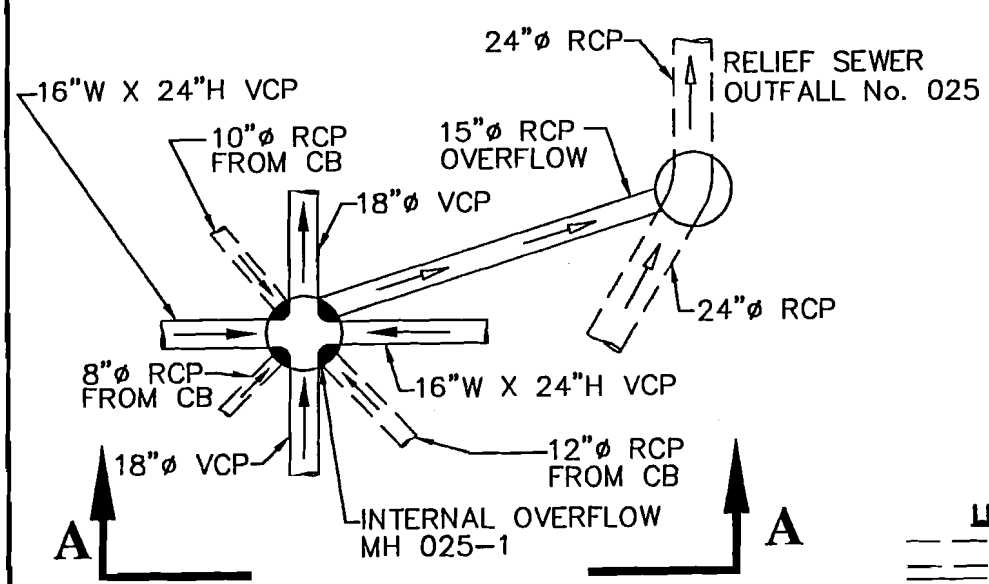


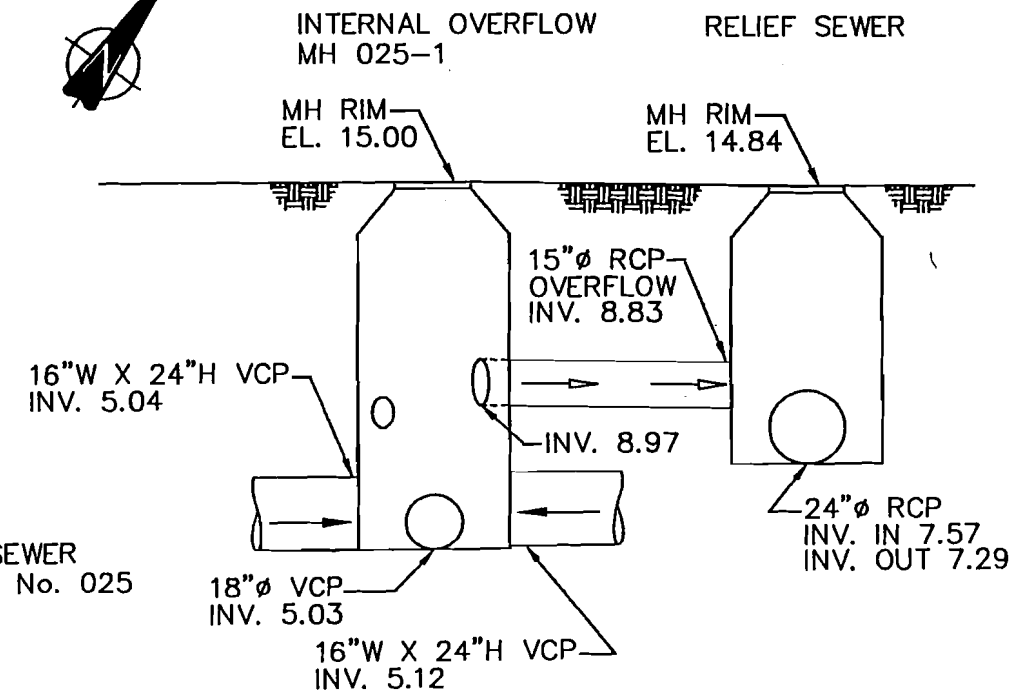
LOCATION PLAN

N.T.S



PLAN VIEW

SCALE: 1" = 10'



SECTION A-A

SCALE: 1" = 5'

NOTE: ELEVATIONS TAKEN FROM RECORD PLANS.

LEGEND

- RELIEF SEWER PIPE
- COMBINED SEWER PIPE
- WET WEATHER FLOWS
- DRY & WET-WEATHER FLOWS

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & CROSS SECTIONAL VIEW
INTERNAL OVERFLOW 025-1
W. 5TH ST. & AVENUE A

DATE	SHEET
04/24/97 Killam	SC25-1

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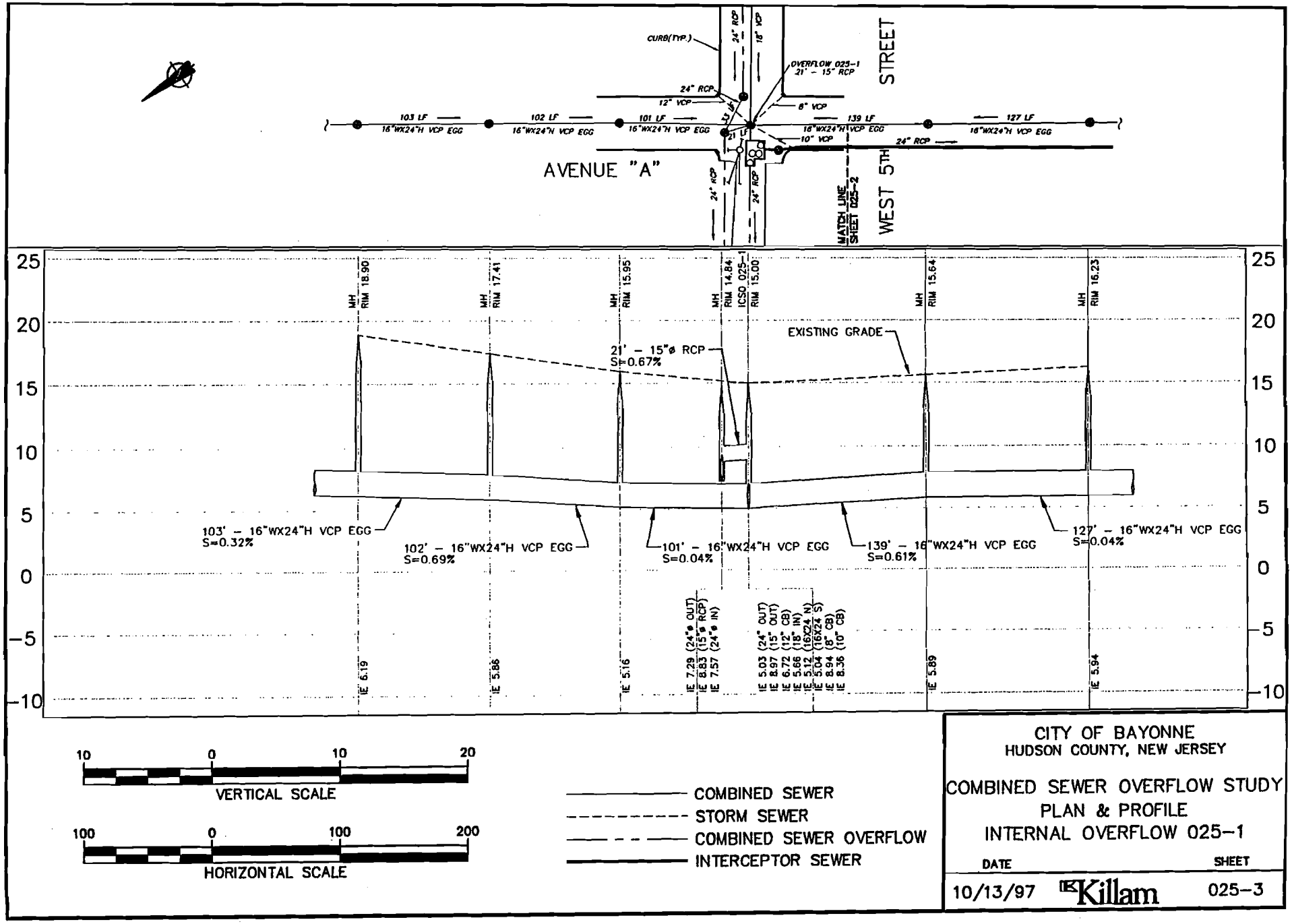

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & PROFILE
INTERNAL OVERFLOW 025-1

DATE		SHEET
10/13/97	Killam	025-3

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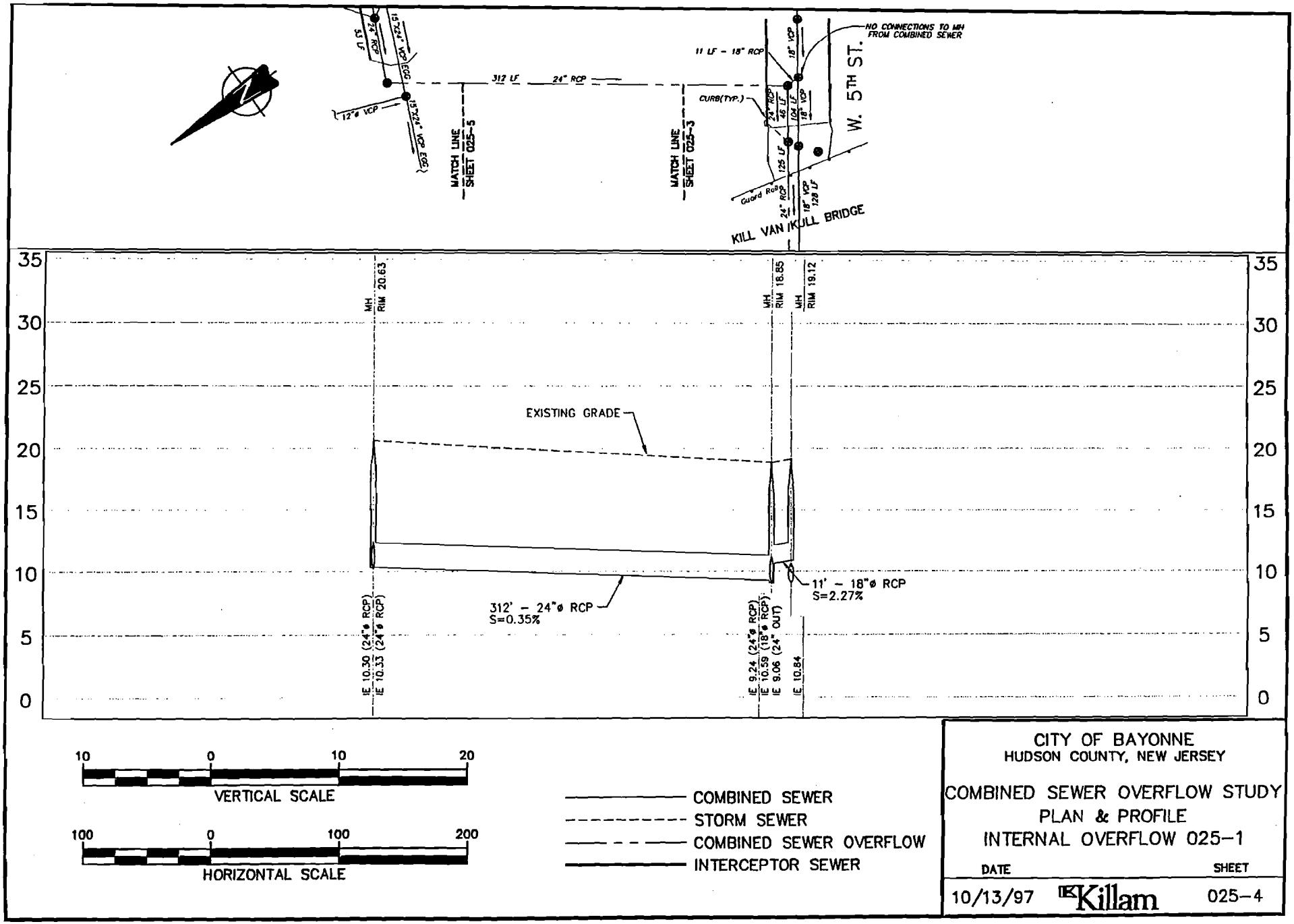

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & PROFILE
INTERNAL OVERFLOW 025-1

DATE		SHEET
10/13/97	Killam	025-4

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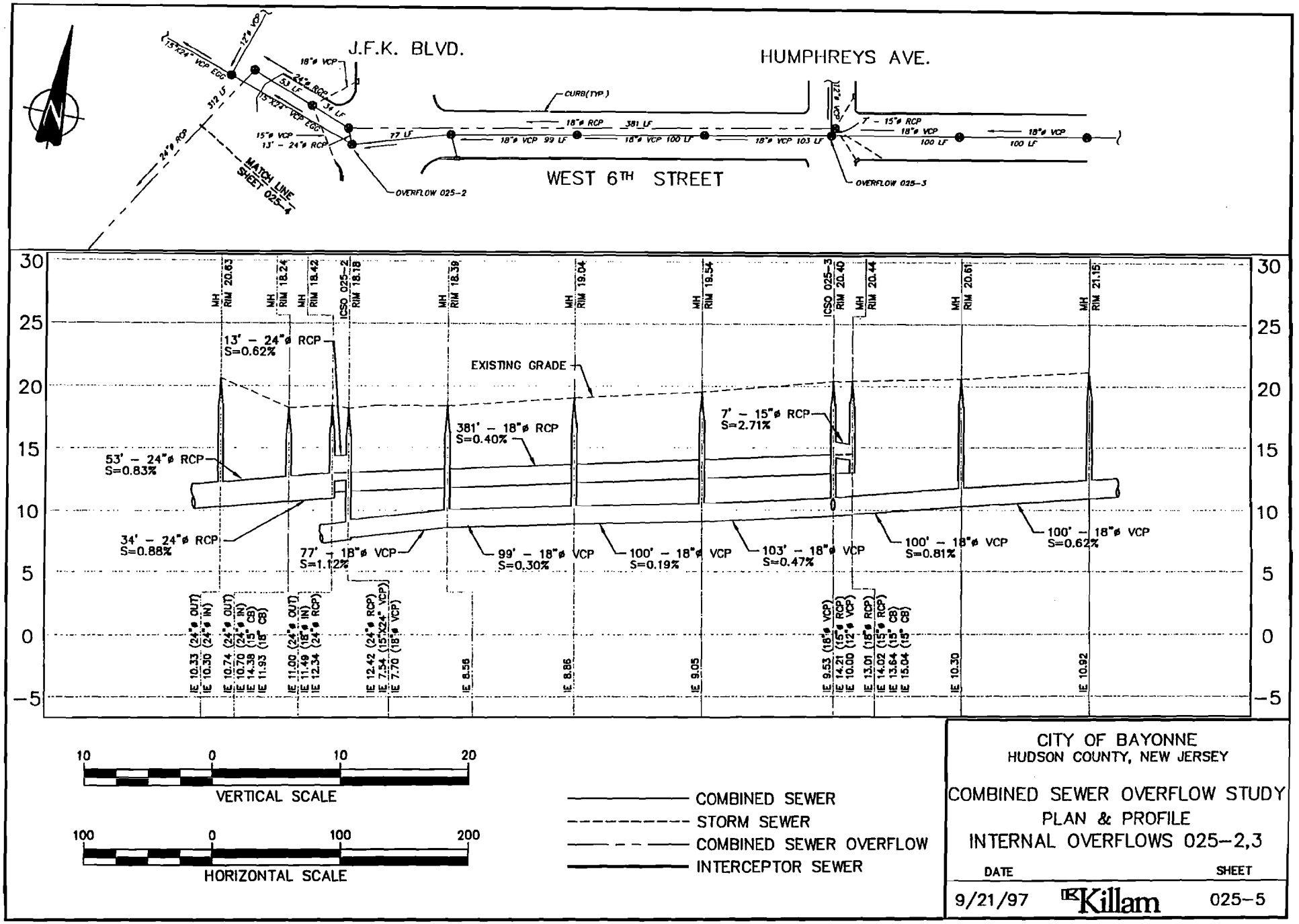

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & PROFILE
INTERNAL OVERFLOWS 025-2,3

DATE		SHEET
9/21/97	Killam	025-5

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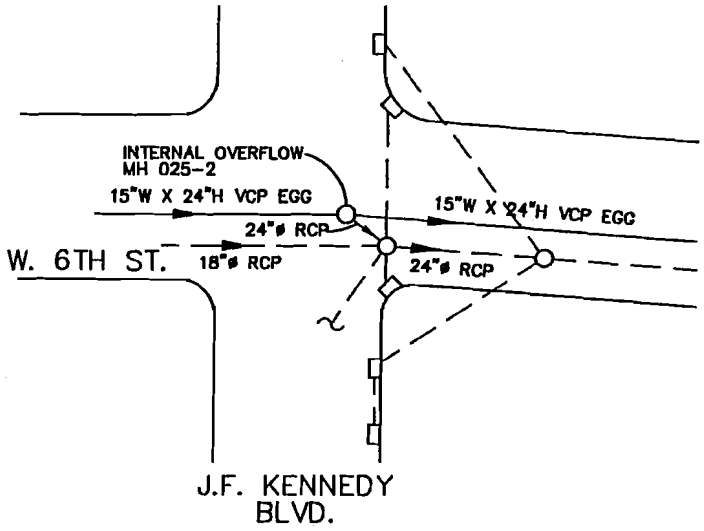
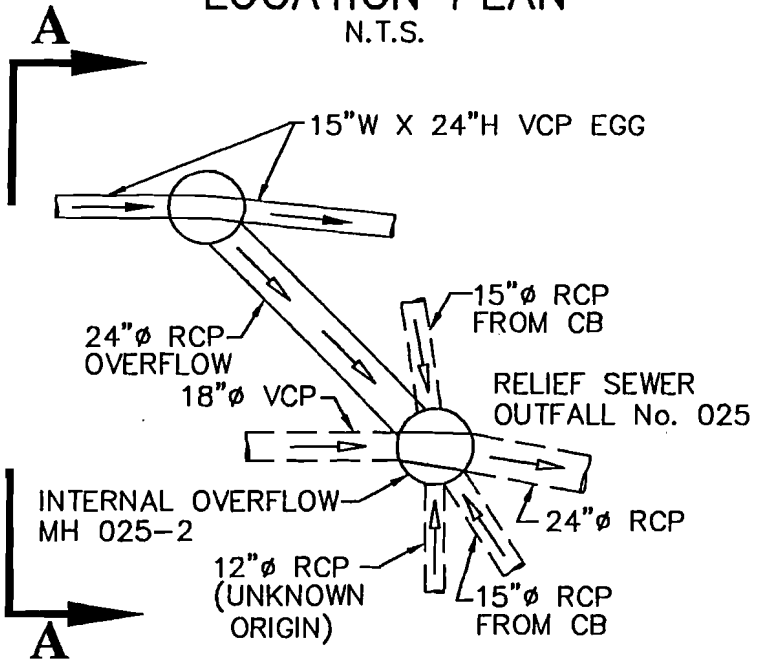
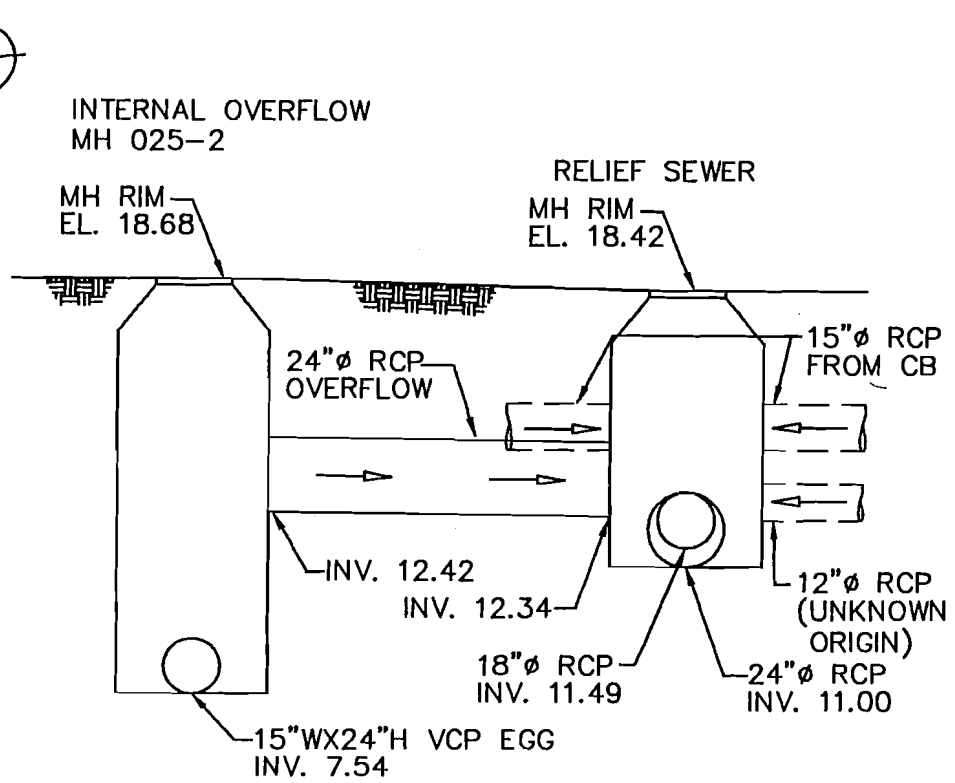


LOCATION PLAN
N.T.S.



PLAN VIEW
SCALE: 1" = 10'



SECTION A-A
SCALE: 1" = 5'

NOTE: ELEVATIONS TAKEN FROM RECORD PLANS.

LEGEND

- RELIEF SEWER PIPE
- COMBINED SEWER PIPE
- WET WEATHER FLOWS
- DRY & WET WEATHER FLOWS

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & CROSS SECTIONAL VIEW
INTERNAL OVERFLOW 025-2
W. 6TH ST. & J.F KENNEDY BLVD.

DATE	SHEET
04/24/97 E Killam	SC25-2

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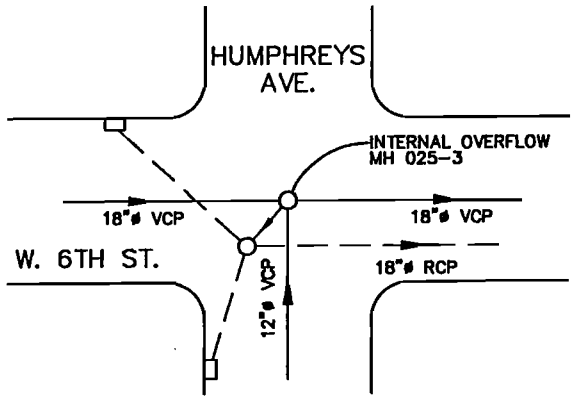
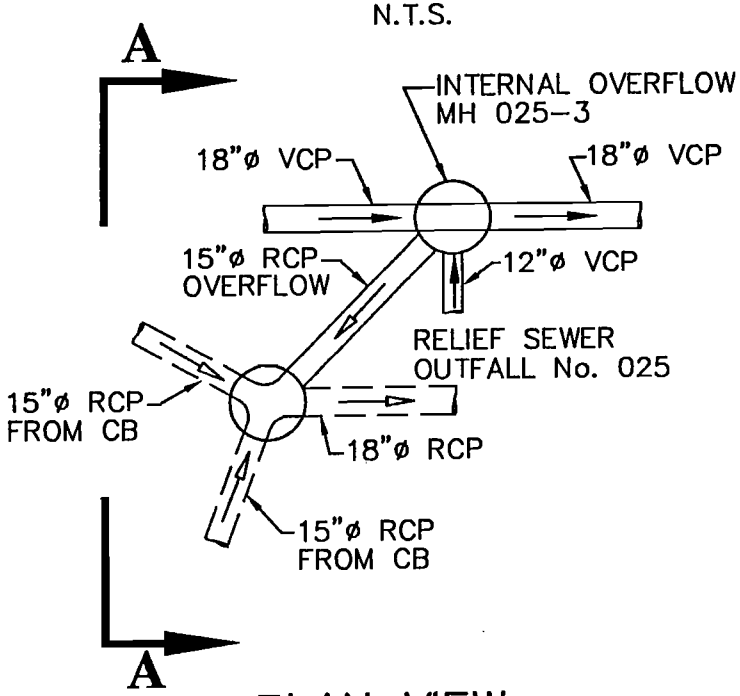


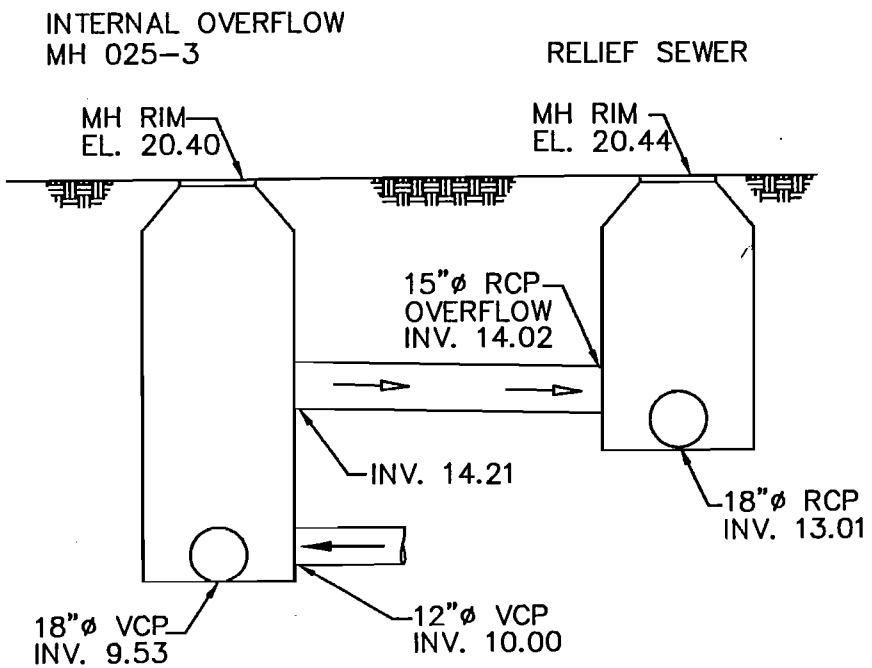
LOCATION PLAN

N.T.S.



PLAN VIEW

SCALE: 1" = 10'



SECTION A-A

SCALE: 1" = 5'

LEGEND

- RELIEF SEWER PIPE
- COMBINED SEWER PIPE
- WET WEATHER FLOWS
- DRY & WET WEATHER FLOWS

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & CROSS SECTIONAL VIEW
INTERNAL OVERFLOW 025-3
W. 6TH & HUMPHREYS AVE.

DATE	SHEET
04/24/97	SC25-3

E Killam

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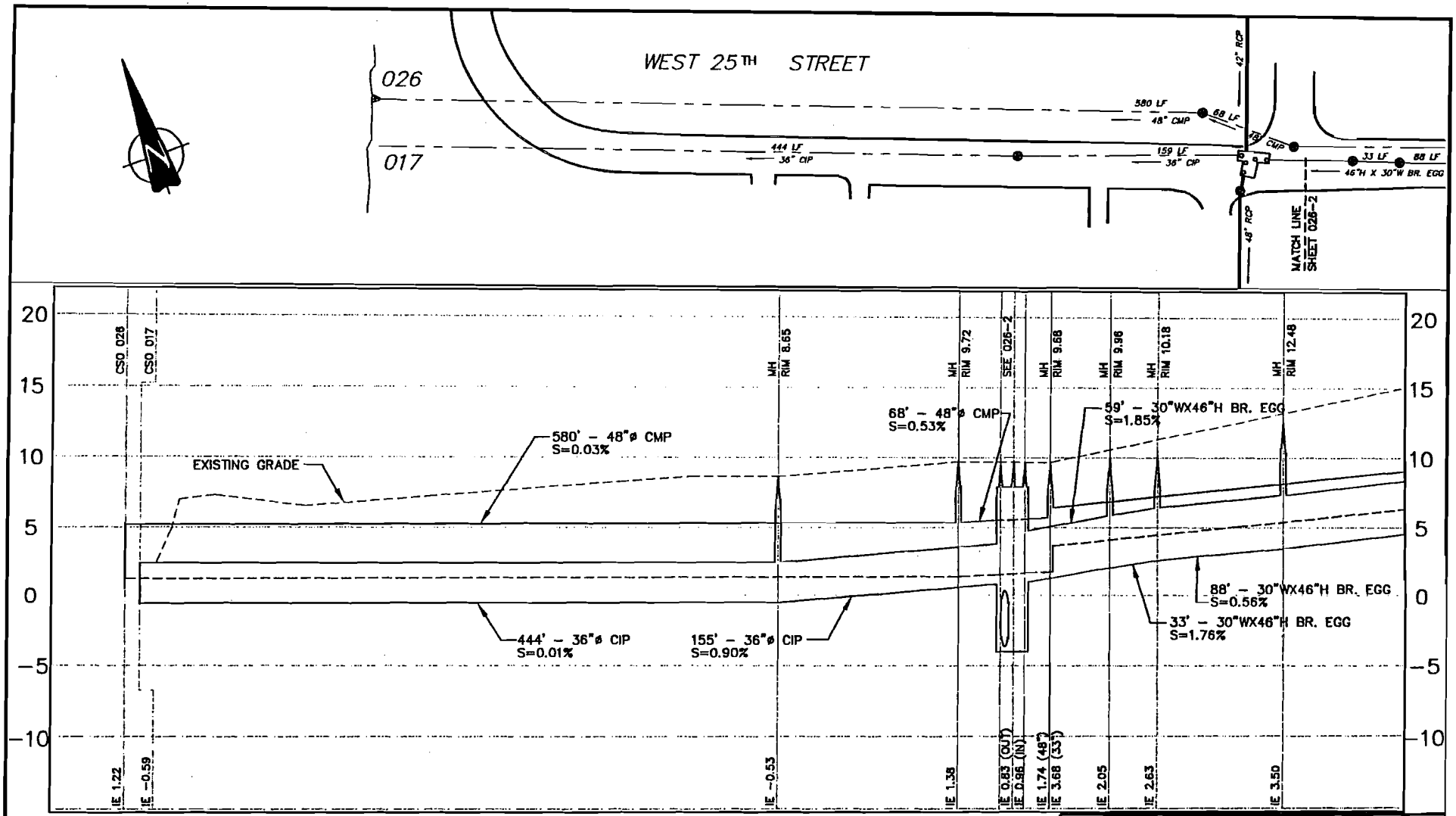
City of Bayonne

CSO Control Facility Data Extract

Relief Sewer Location & Description

NJPDES Outfall No.	**026**
Location:	**West 25th Street**
Overflow to:	**Newark Bay**
Character of District Served:	**Residential**
Number of CSO Control Facilities:	**1**
Type of Control Facility	**Interconnection Pipe**
Size Range	**24" Circular**
Drainage Basin shared with the	
Following Regulators	**14**
Following Outfalls	**017**
Outfall to Receiving Water	
Size	**48 inch CMP**
Capacity	**59 MGD**
Outfall Condition:	**Fair**
Tidal Effects:	**No**
Tidal Gate(s) and Condition:	**none**
Drainage Area Serviced:	**67 Acres**



CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & PROFILE
INTERNAL OVERFLOW 026-1

DATE		SHEET
9/21/97	IEKillam	026-1

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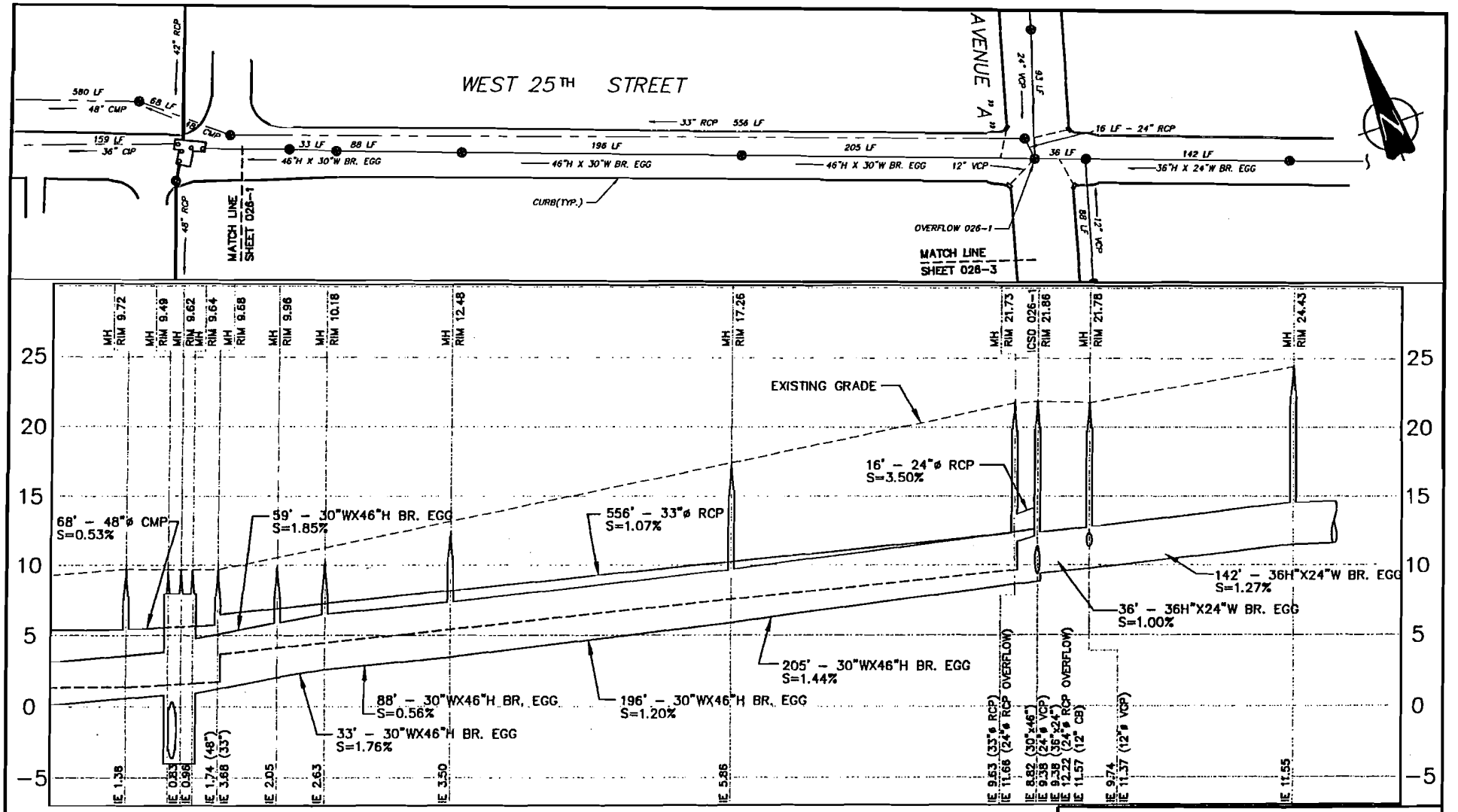

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & PROFILE
INTERNAL OVERFLOW 026-1

DATE		SHEET
9/21/97	Killam	026-2

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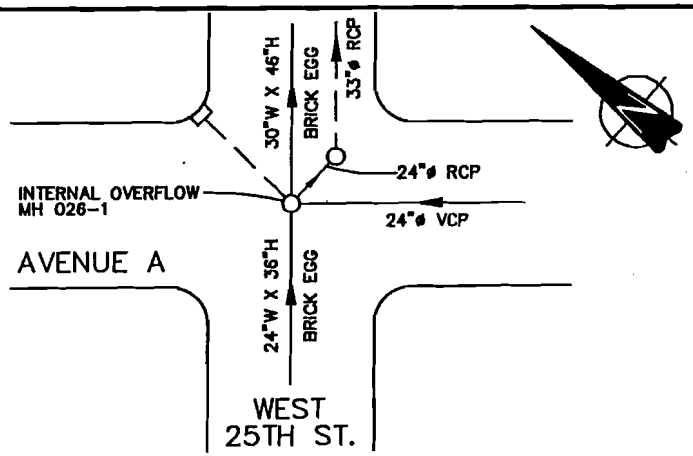
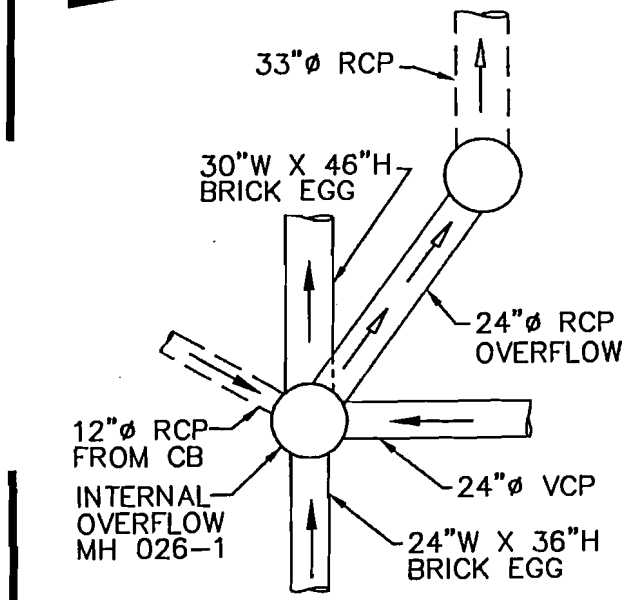


LOCATION PLAN
N.T.S.

A

RELIEF SEWER
OUTFALL No. 026

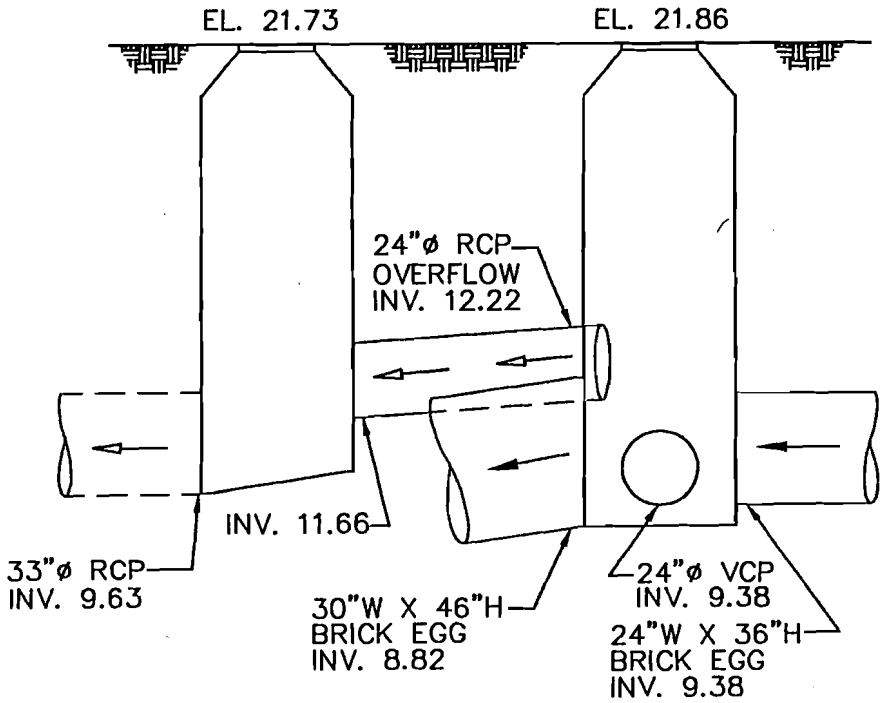


A

PLAN VIEW
SCALE: 1" = 10'

RELIEF SEWER

INTERNAL OVERFLOW
MH 026-1



SECTION A-A
SCALE: 1" = 5'

NOTE: ELEVATIONS TAKEN FROM RECORD PLANS.

LEGEND

- RELIEF SEWER PIPE
- COMBINED SEWER PIPE
- WET WEATHER FLOWS
- DRY & WET WEATHER FLOWS

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & CROSS SECTIONAL VIEW
INTERNAL OVERFLOW 026-1
AVENUE A & W. 25TH ST.

DATE	SHEET
04/24/97 Killam	SC26-1

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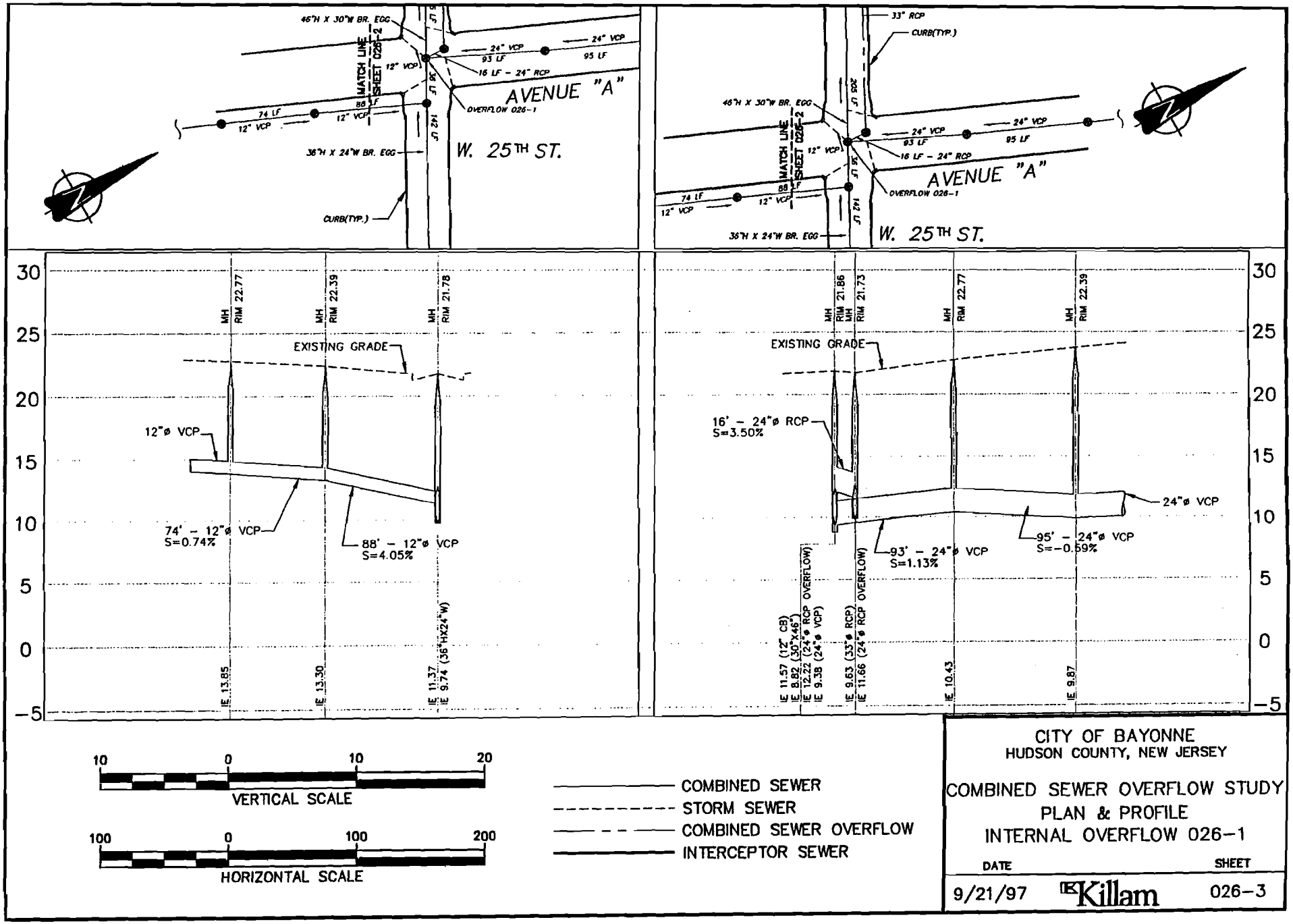

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & PROFILE
INTERNAL OVERFLOW 026-1

DATE		SHEET
9/21/97	Killam	026-3

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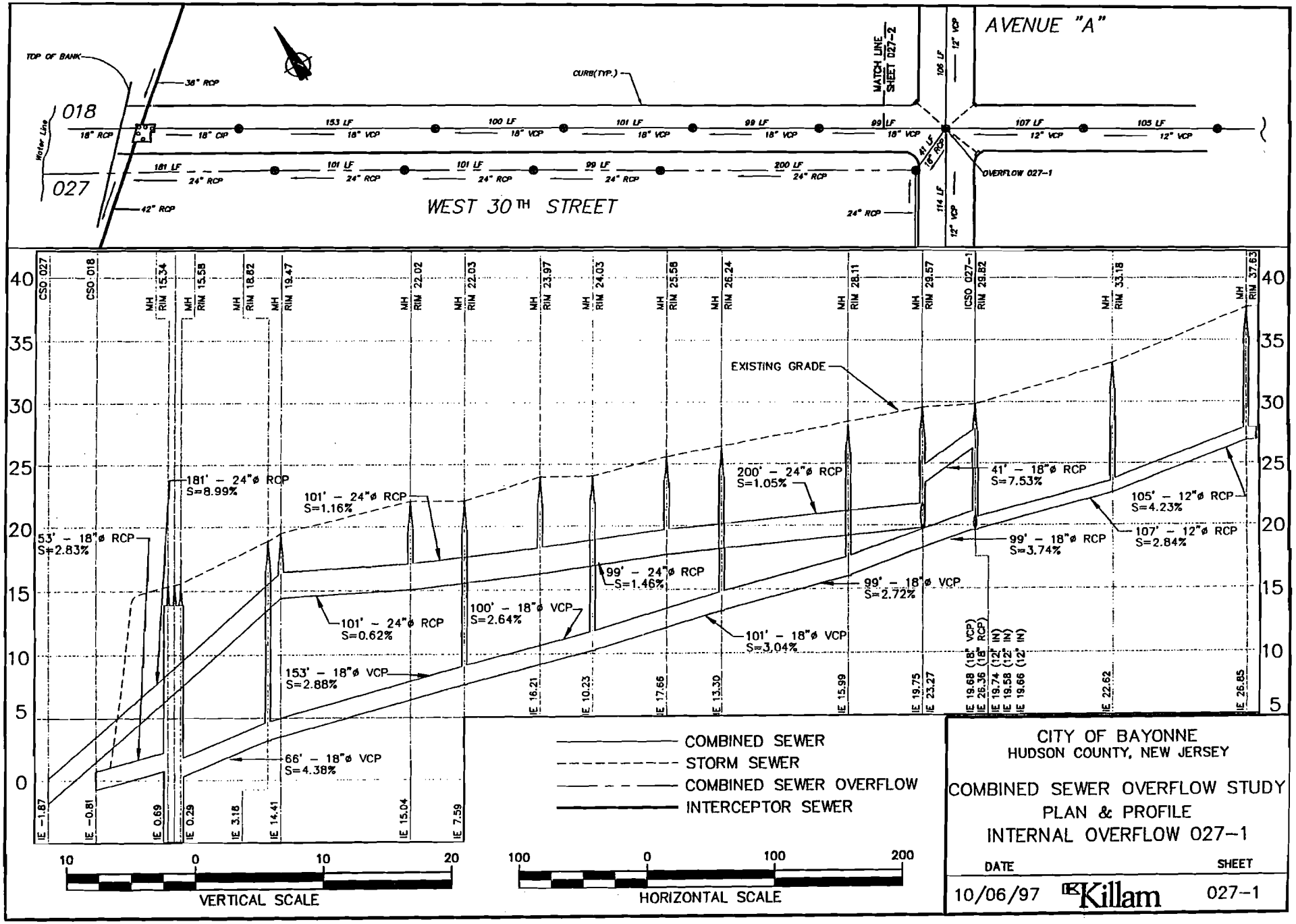
City of Bayonne

CSO Control Facility Data Extract

Relief Sewer Location & Description

NJPDES Outfall No.	**027**
Location:	West 30th Street
Overflow to:	Newark Bay
Character of District Served:	Residential and Industrial
Number of CSO Control Facilities:	1
Type of Control Facility	Interconnection Pipe
Size Range	18" Circular
Drainage Basin shared with the	
Following Regulators	15
Following Outfalls	018
Outfall to Receiving Water	
Size	18 inch VCP
Capacity	18 MGD
Outfall Condition:	Good
Tidal Effects:	No
Tidal Gate(s) and Condition:	none
Drainage Area Serviced:	14 Acres



CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & PROFILE
INTERNAL OVERFLOW 027-1

DATE	SHEET
10/06/97	027-1

Killam

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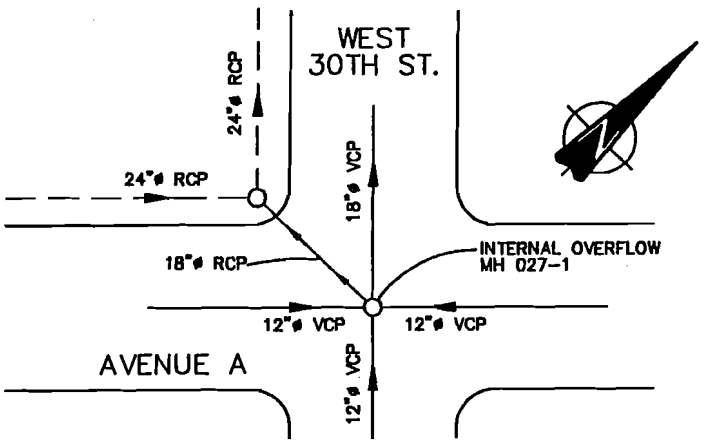
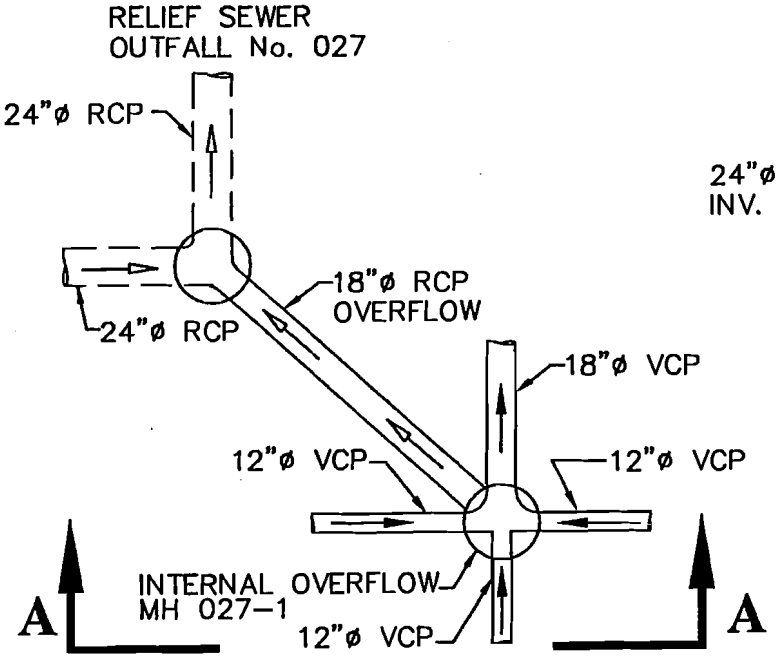
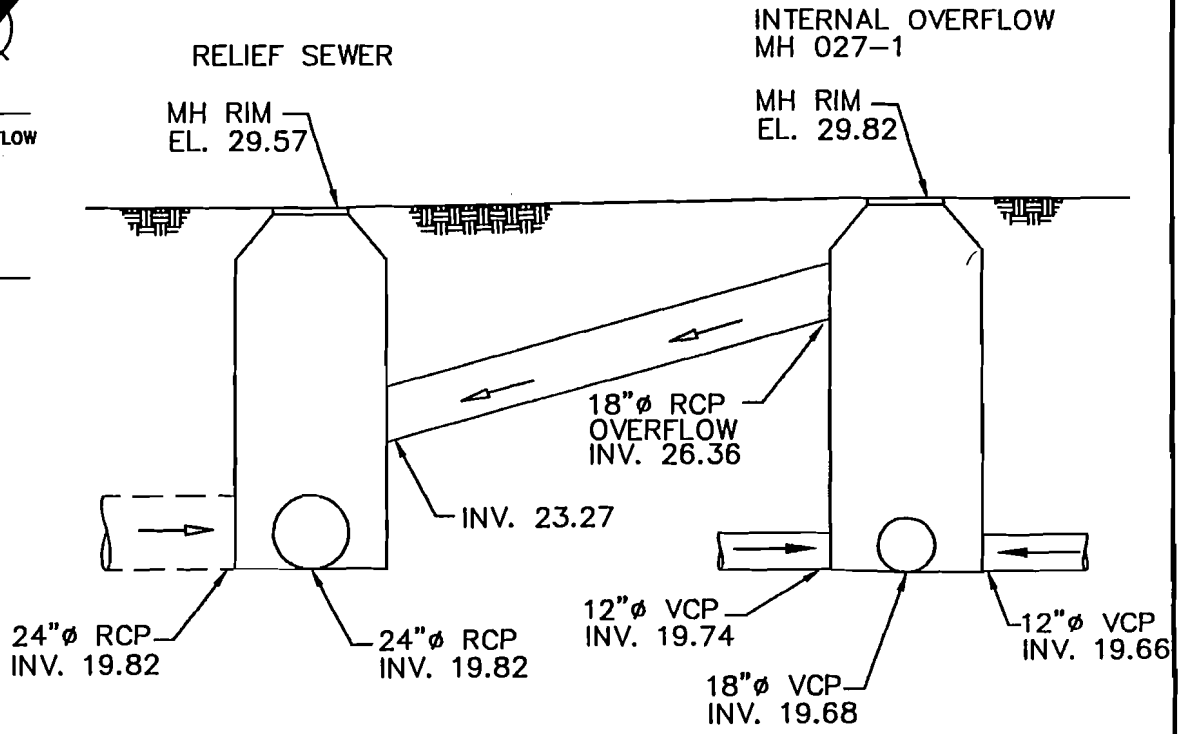


LOCATION PLAN
N.T.S.



PLAN VIEW
SCALE: 1" = 10'



SECTION A-A
SCALE: 1" = 5'

NOTE: ELEVATIONS TAKEN FROM RECORD PLANS.

LEGEND

- RELIEF SEWER PIPE
- COMBINED SEWER PIPE
- WET WEATHER FLOWS
- DRY & WET WEATHER FLOWS

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & CROSS SECTIONAL VIEW
INTERNAL OVERFLOW 027-1
W. 30TH ST. & AVENUE A

DATE	SHEET
04/24/97 E Killam	SC27-1

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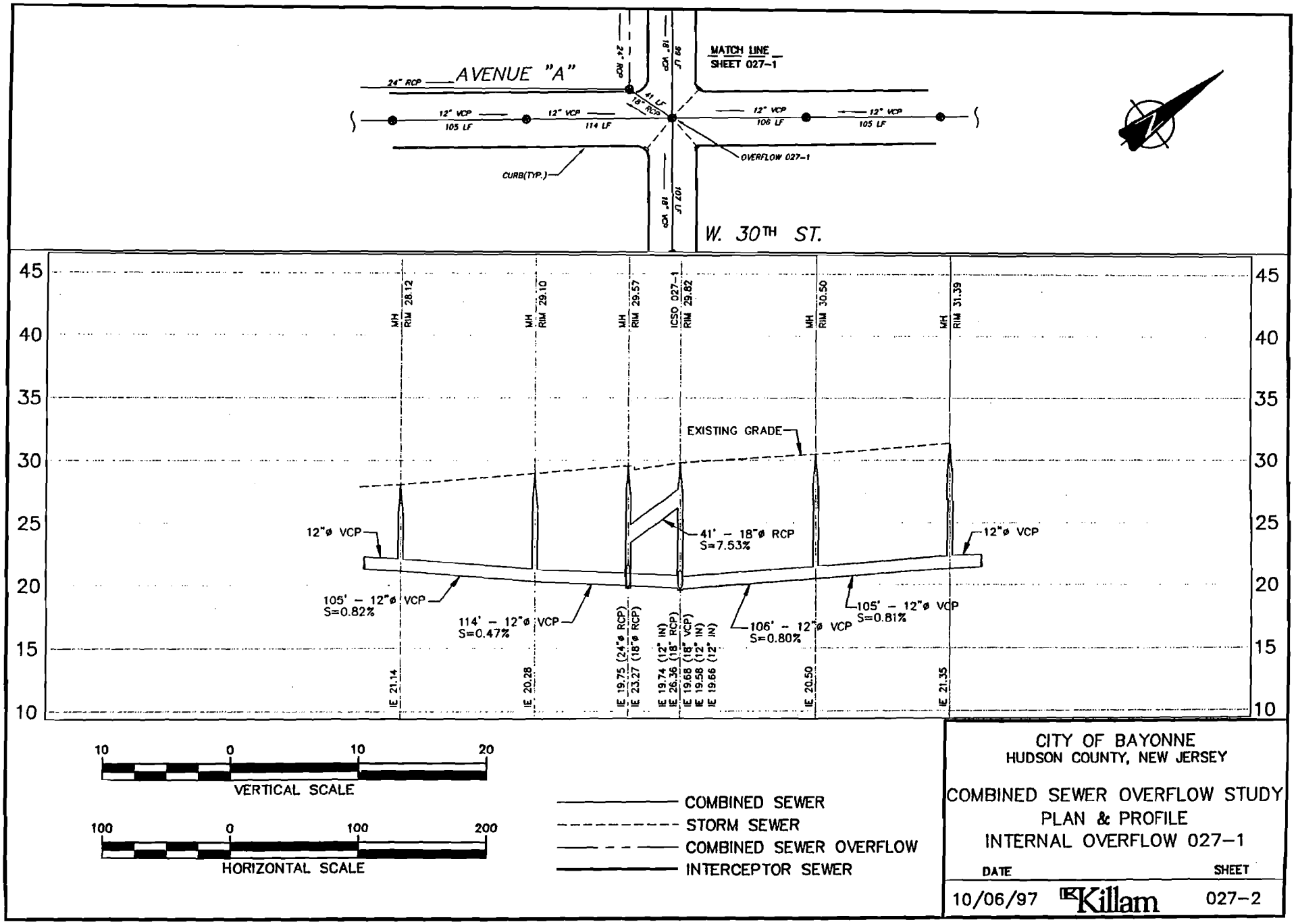

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & PROFILE
INTERNAL OVERFLOW 027-1

DATE		SHEET
10/06/97	Killam	027-2

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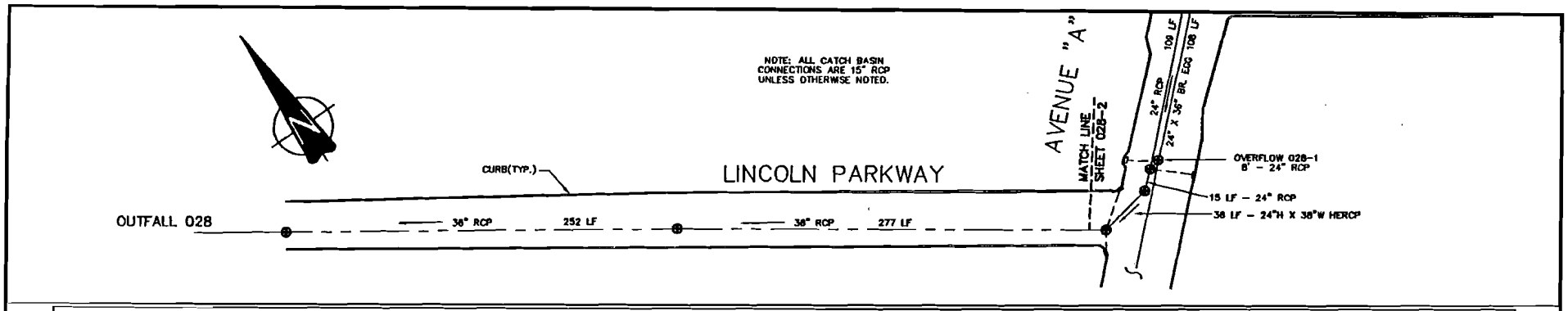
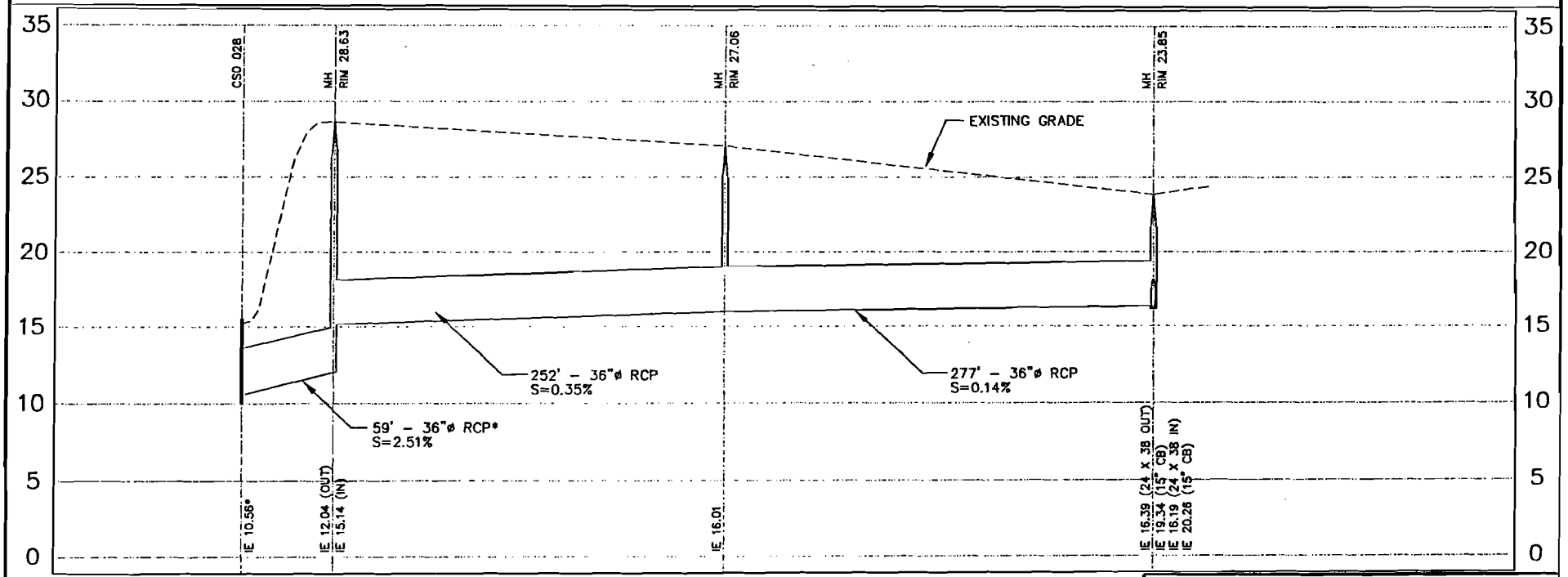
City of Bayonne

CSO Control Facility Data Extract

Relief Sewer Location & Description

NJPDES Outfall No.	**028**
Location:	Lincoln Parkway
Overflow to:	Newark Bay
Character of District Served:	Residential
Number of CSO Control Facilities:	3
Type of Control Facility	Interconnection Pipe
Size Range	18" - 24" Circular
Drainage Basin shared with the	
Following Regulators	16
Following Outfalls	019
Outfall to Receiving Water	
Size	36 inch RCP
Capacity	25 MGD
Outfall Condition:	Good
Tidal Effects:	No
Tidal Gate(s) and Condition:	none
Drainage Area Serviced:	46 Acres





10 0 10 20
VERTICAL SCALE

100 0 100 200
HORIZONTAL SCALE

COMBINED SEWER
STORM SEWER
COMBINED SEWER OVERFLOW
INTERCEPTOR SEWER

* BASED ON AS-BUILT PLANS

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & PROFILE
INTERNAL OVERFLOW 028-1

DATE		SHEET
9/21/97	Killam	028-1

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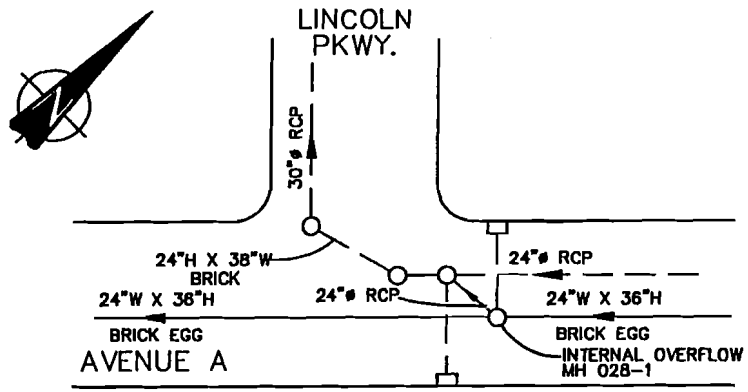
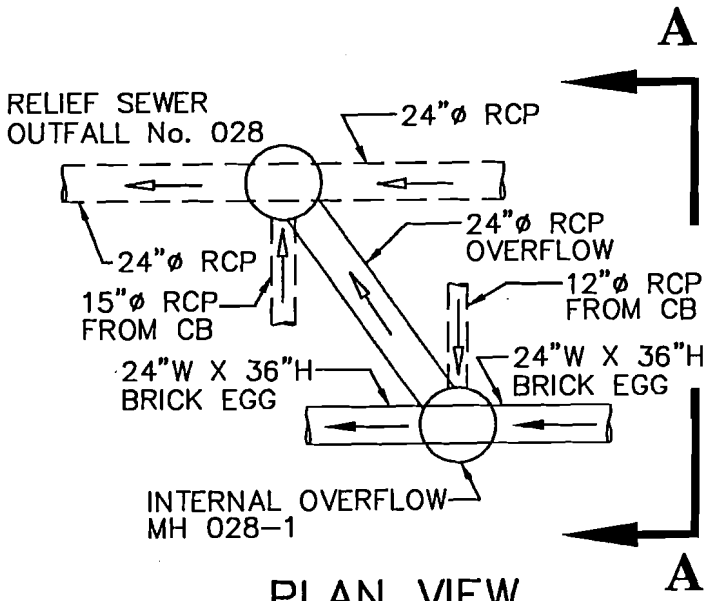
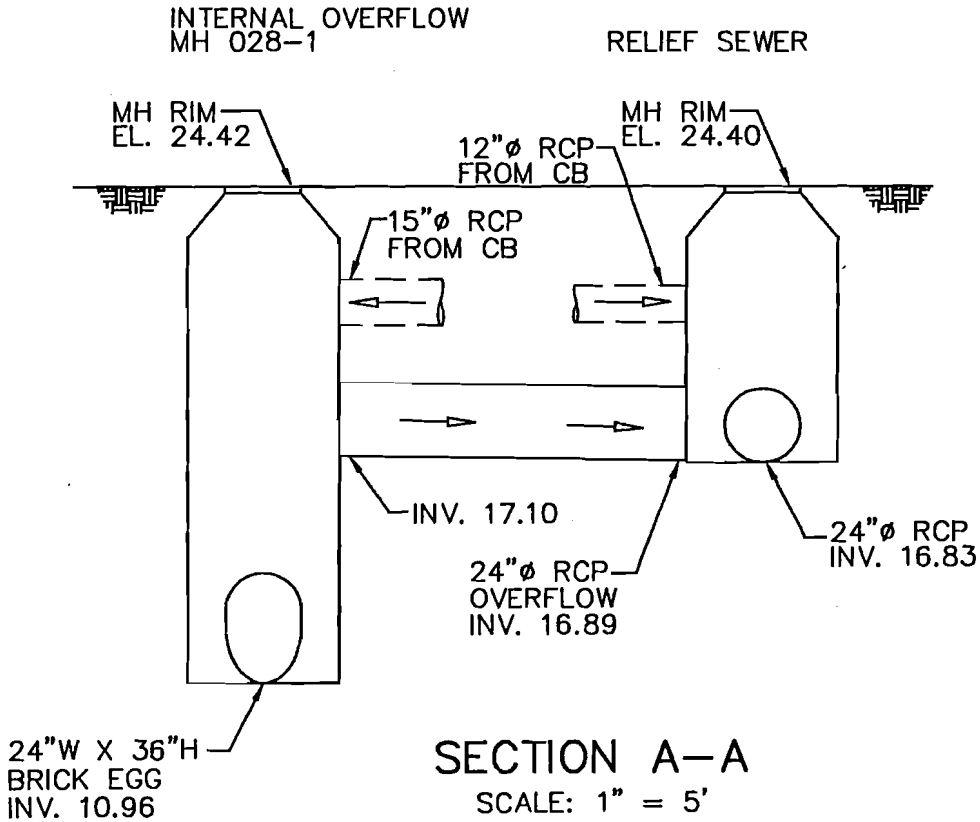


LOCATION PLAN
N.T.S.



PLAN VIEW
SCALE: 1" = 10'



SECTION A-A
SCALE: 1" = 5'

NOTE: ELEVATIONS TAKEN FROM RECORD PLANS.

LEGEND

- RELIEF SEWER PIPE
- COMBINED SEWER PIPE
- WET WEATHER FLOWS
- DRY & WET WEATHER FLOWS

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & CROSS SECTIONAL VIEW
INTERNAL OVERFLOW 028-1
AVENUE A & LINCOLN PKWY.

DATE	SHEET
04/24/97	SC28-1

Killam

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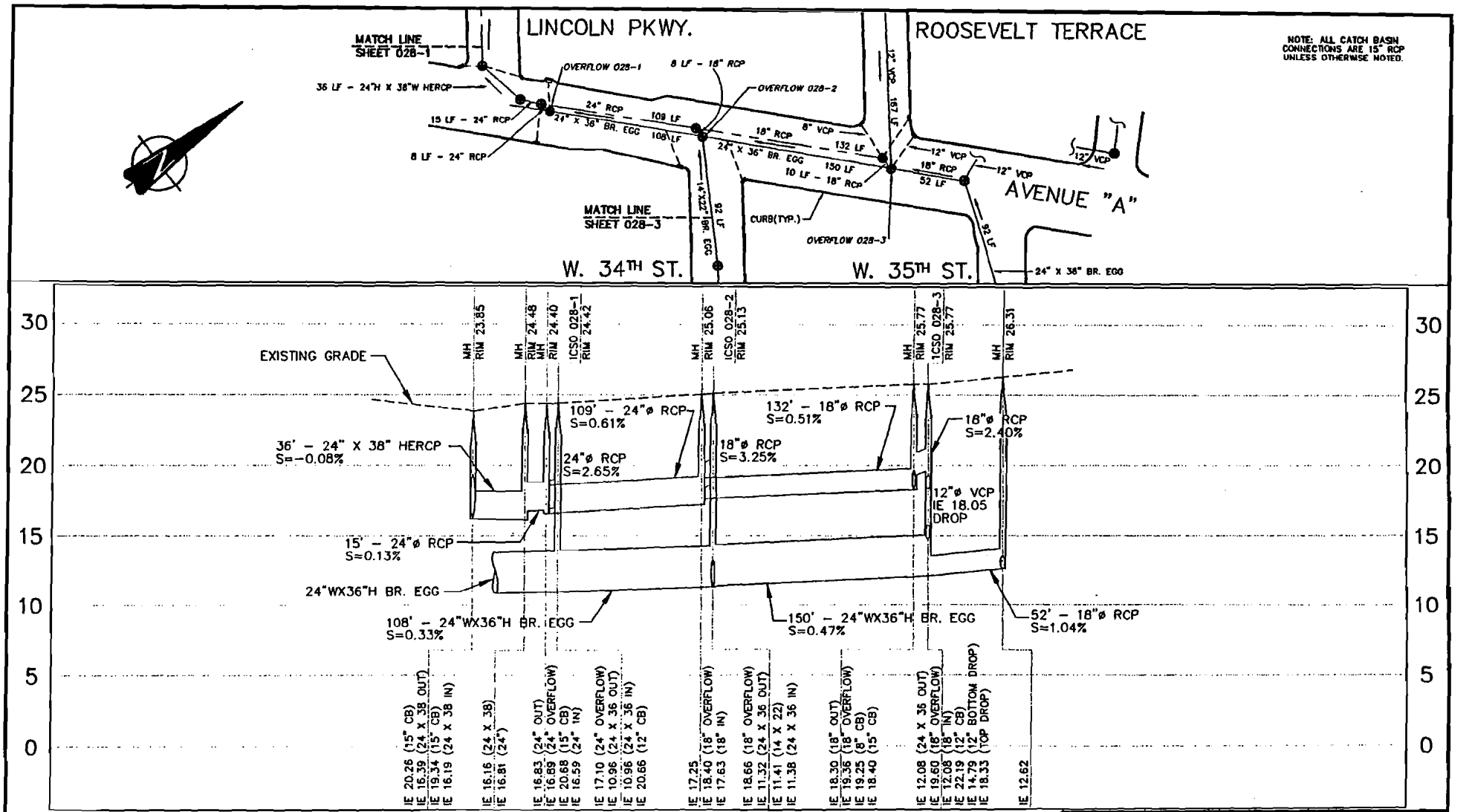

10 0 10 20
VERTICAL SCALE

100 0 100 200
HORIZONTAL SCALE

COMBINED SEWER
STORM SEWER
COMBINED SEWER OVERFLOW
INTERCEPTOR SEWER

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & PROFILE
INTERNAL OVERFLOWS 028-1,2,&3

DATE		SHEET
9/21/97	Killam	028-2

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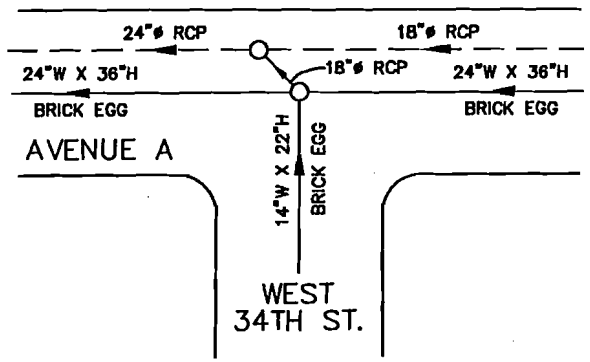
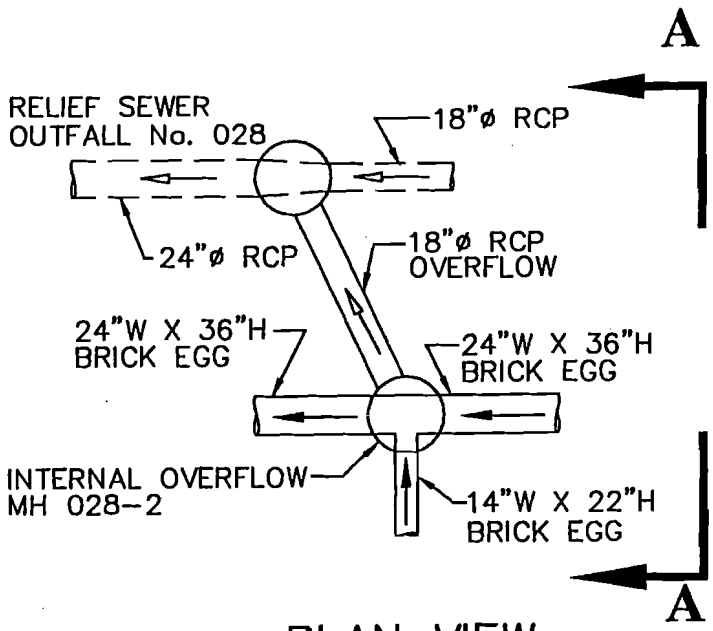
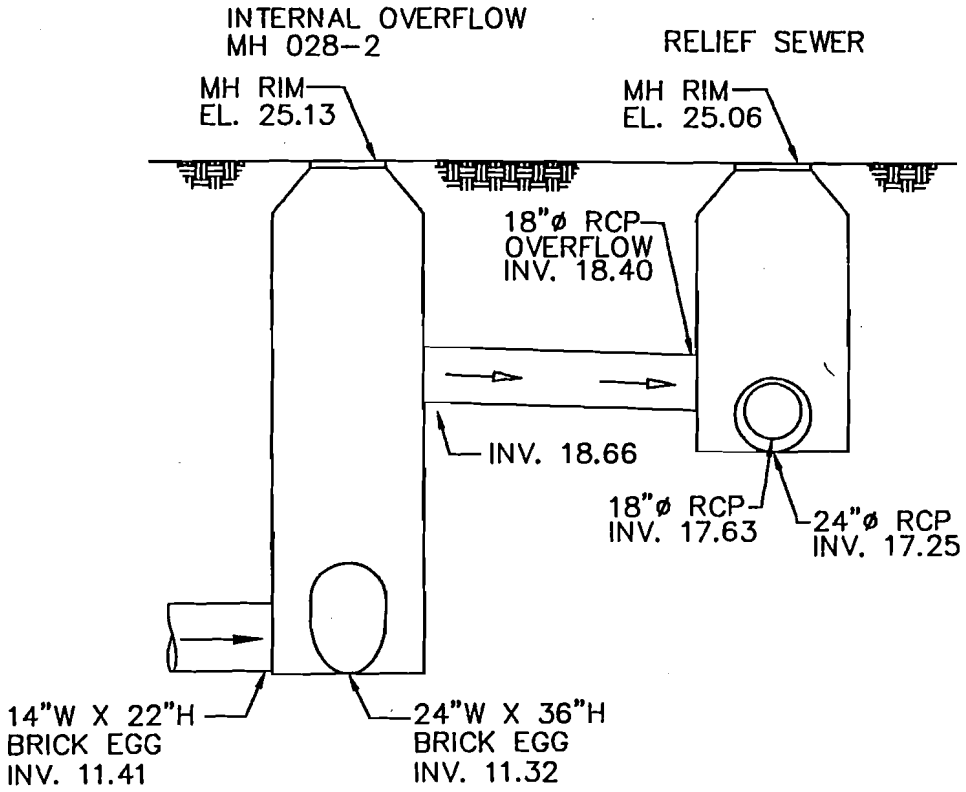


LOCATION PLAN
N.T.S.



PLAN VIEW
SCALE: 1" = 10'



SECTION A-A
SCALE: 1" = 5'

NOTE: ELEVATIONS TAKEN FROM RECORD PLANS.

LEGEND

- RELIEF SEWER PIPE
- COMBINED SEWER PIPE
- WET WEATHER FLOWS
- DRY & WET WEATHER FLOWS

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & CROSS SECTIONAL VIEW
INTERNAL OVERFLOW 028-2
W. 34TH ST. & AVENUE A

DATE		SHEET
04/24/97	Killam	SC28-2

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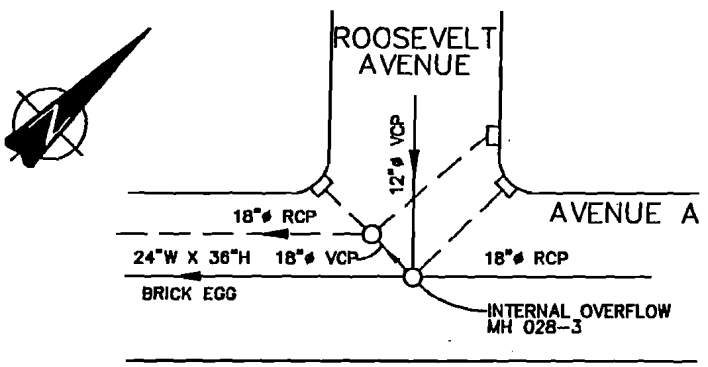
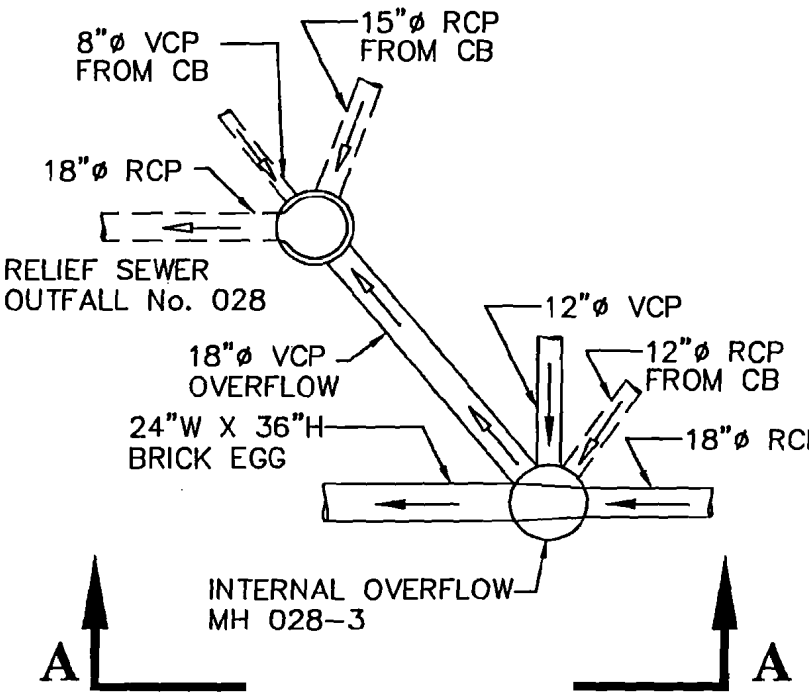
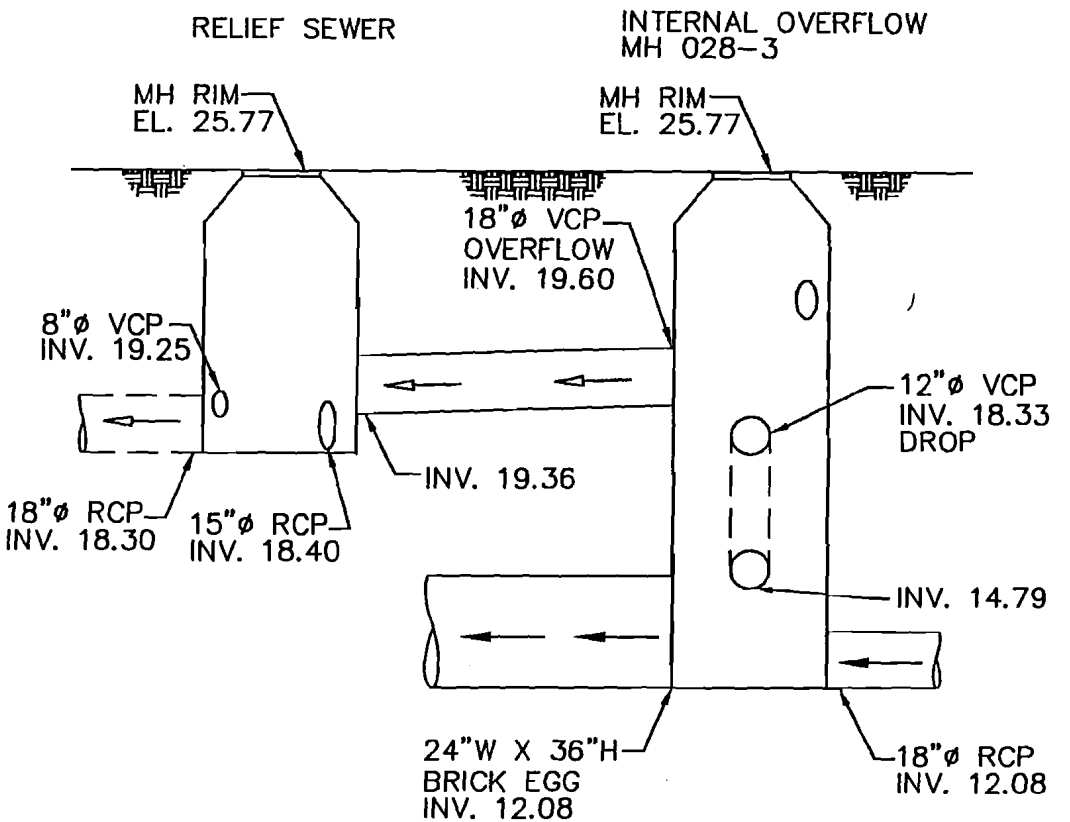


LOCATION PLAN
N.T.S.



PLAN VIEW
SCALE: 1" = 10'



SECTION A-A
SCALE: 1" = 5'

NOTE: ELEVATIONS TAKEN FROM RECORD PLANS.

LEGEND

- RELIEF SEWER PIPE
- COMBINED SEWER PIPE
- WET WEATHER FLOWS
- DRY & WET WEATHER FLOWS

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & CROSS SECTIONAL VIEW
INTERNAL OVERFLOW 028-3
AVENUE A & ROOSEVELT TERR.

DATE		SHEET
04/24/97	Killam	SC28-3

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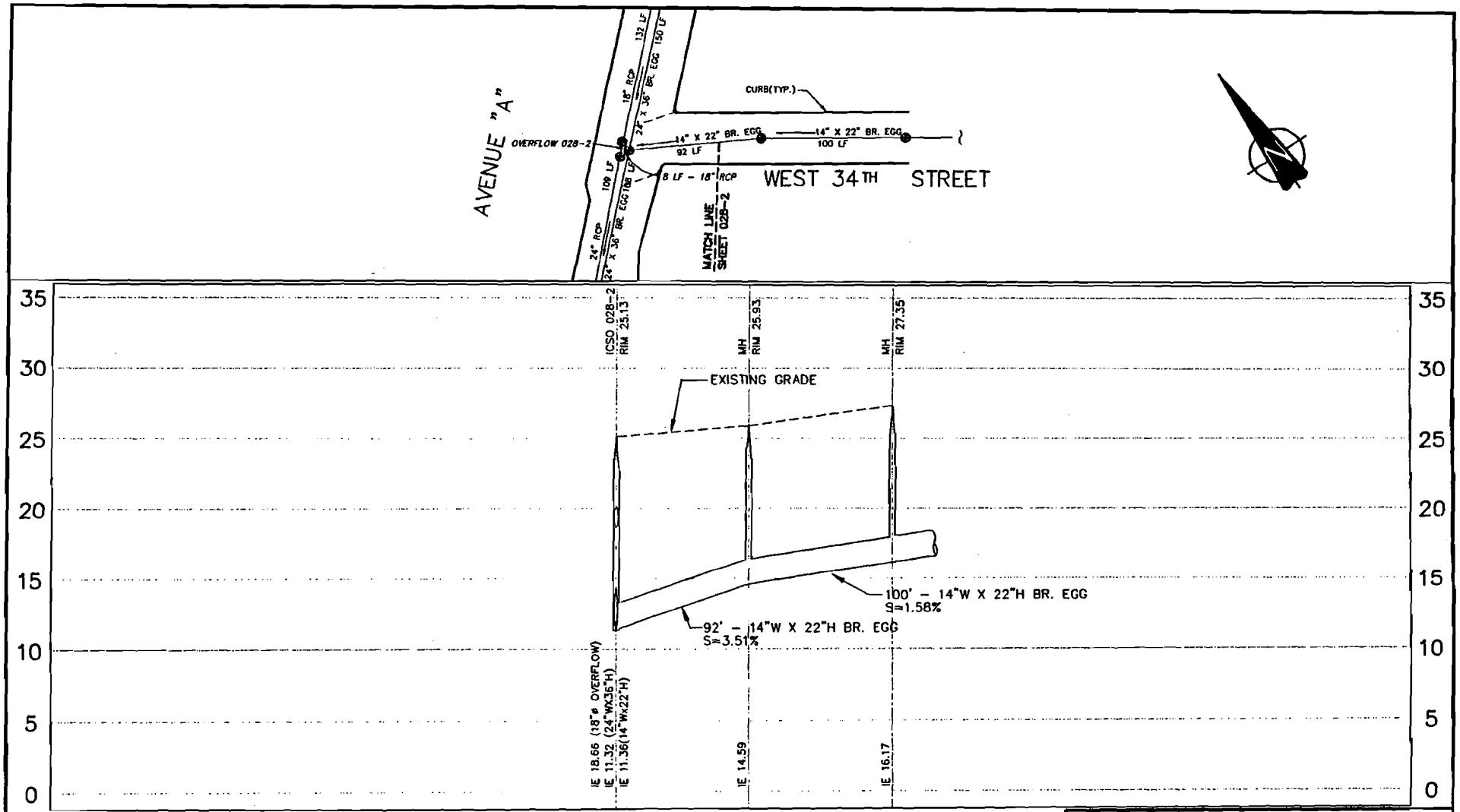

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & PROFILE
INTERNAL OVERFLOW 028-2

DATE		SHEET
9/21/97	Killam	028-3

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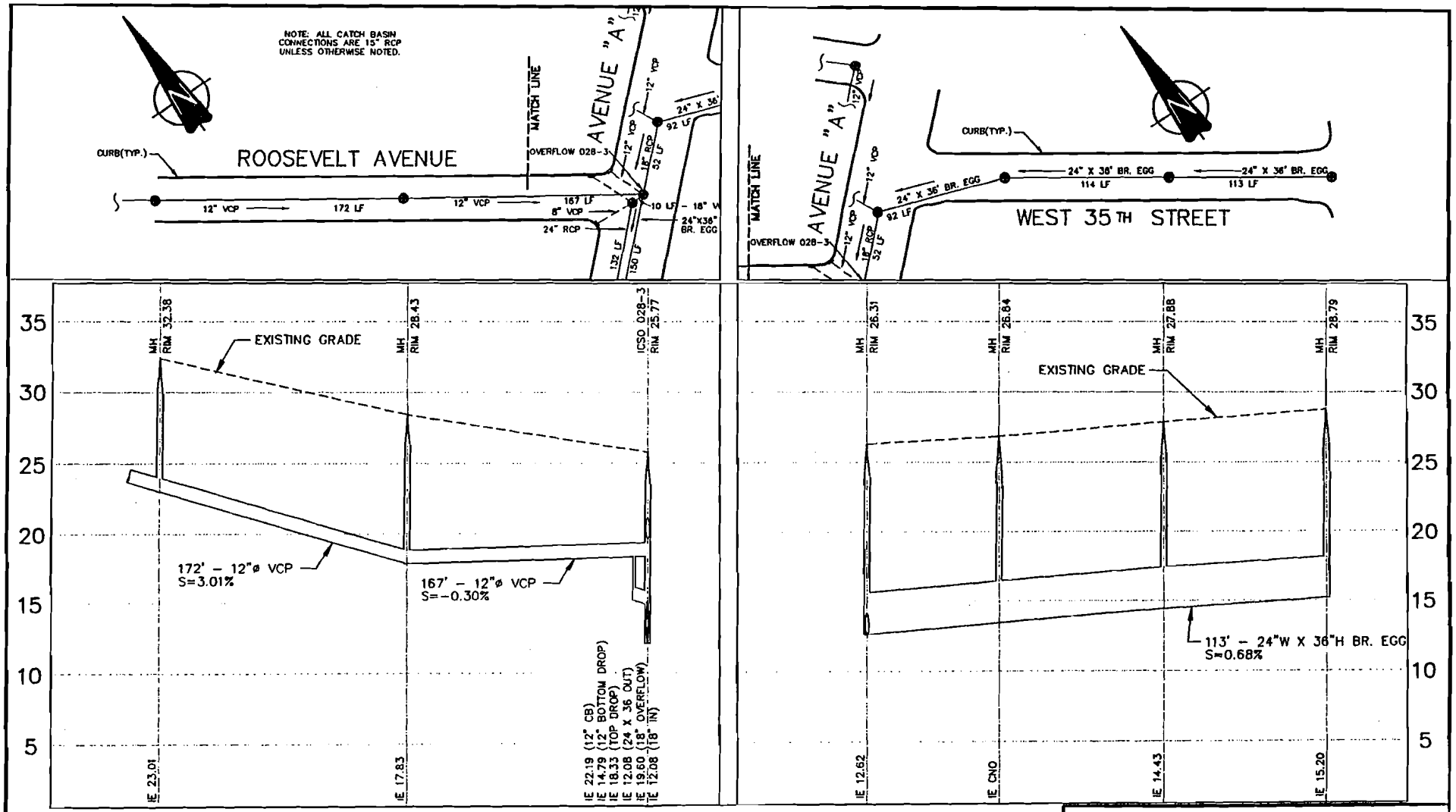

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & PROFILE
INTERNAL OVERFLOW 028-3

DATE		SHEET
9/21/97	IEKillam	028-4

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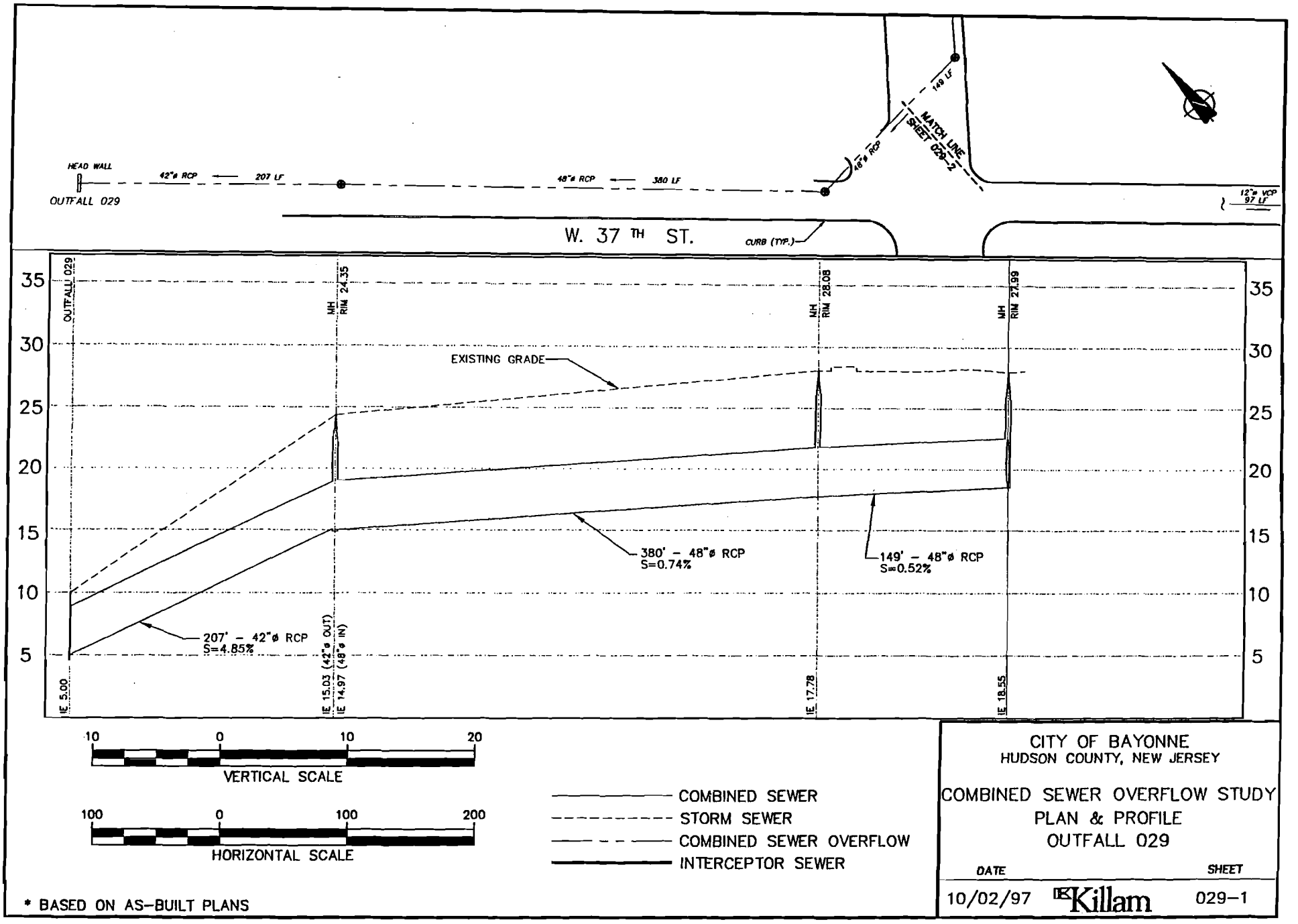
City of Bayonne

CSO Control Facility Data Extract

Relief Sewer Location & Description

NJPDES Outfall No.	**029**
Location:	West 37th Street
Overflow to:	Newark Bay
Character of District Served:	Residential
Number of CSO Control Facilities:	7
Type of Control Facility	Interconnection Pipe
Size Range	12" - 18" Circular
Drainage Basin shared with the	
Following Regulators	16
Following Outfalls	019
Outfall to Receiving Water	
Size	42 inch VCP
Capacity	80 MGD
Outfall Condition:	Good
Tidal Effects:	No
Tidal Gate(s) and Condition:	none
Drainage Area Serviced:	61 Acres



* BASED ON AS-BUILT PLANS

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & PROFILE
OUTFALL 029

DATE		SHEET
10/02/97	Killam	029-1

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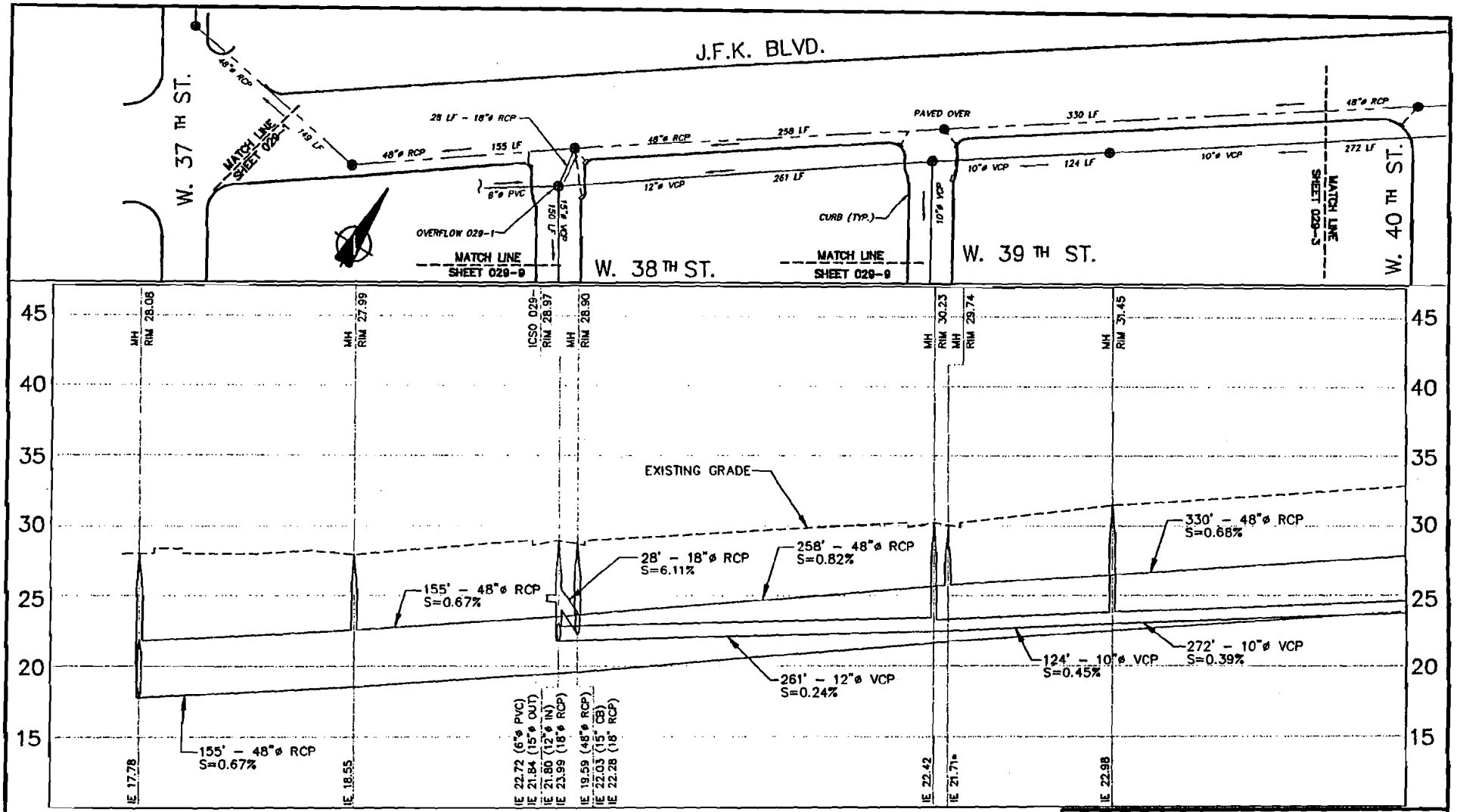

* BASED ON AS-BUILT PLANS

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & PROFILE
INTERNAL OVERFLOW 029-1

DATE		SHEET
10/02/97	Killam	029-2

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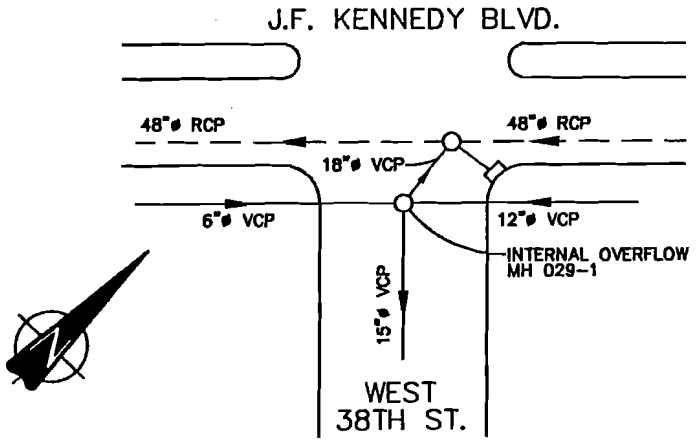

LOCATION PLAN
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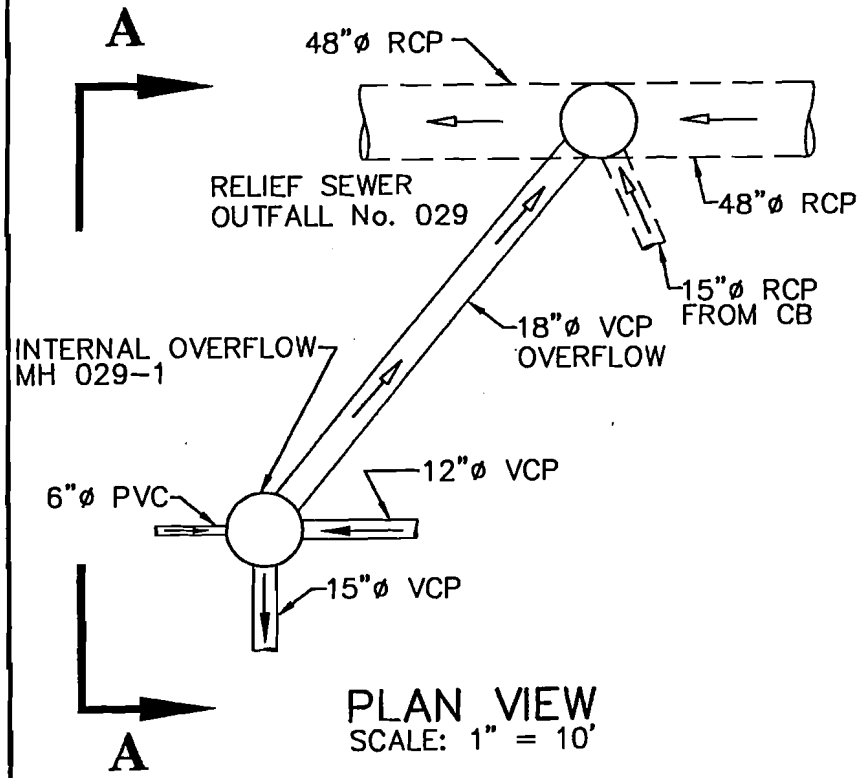
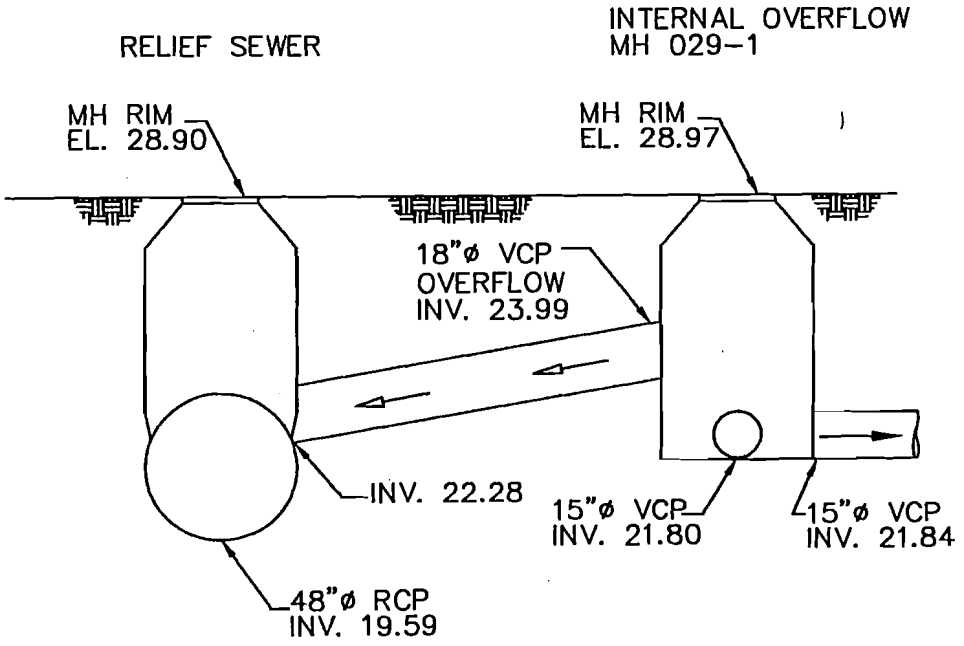


PLAN VIEW
SCALE: 1" = 10'



SECTION A–A
SCALE: 1" = 5'

NOTE: ELEVATIONS TAKEN FROM RECORD PLANS.

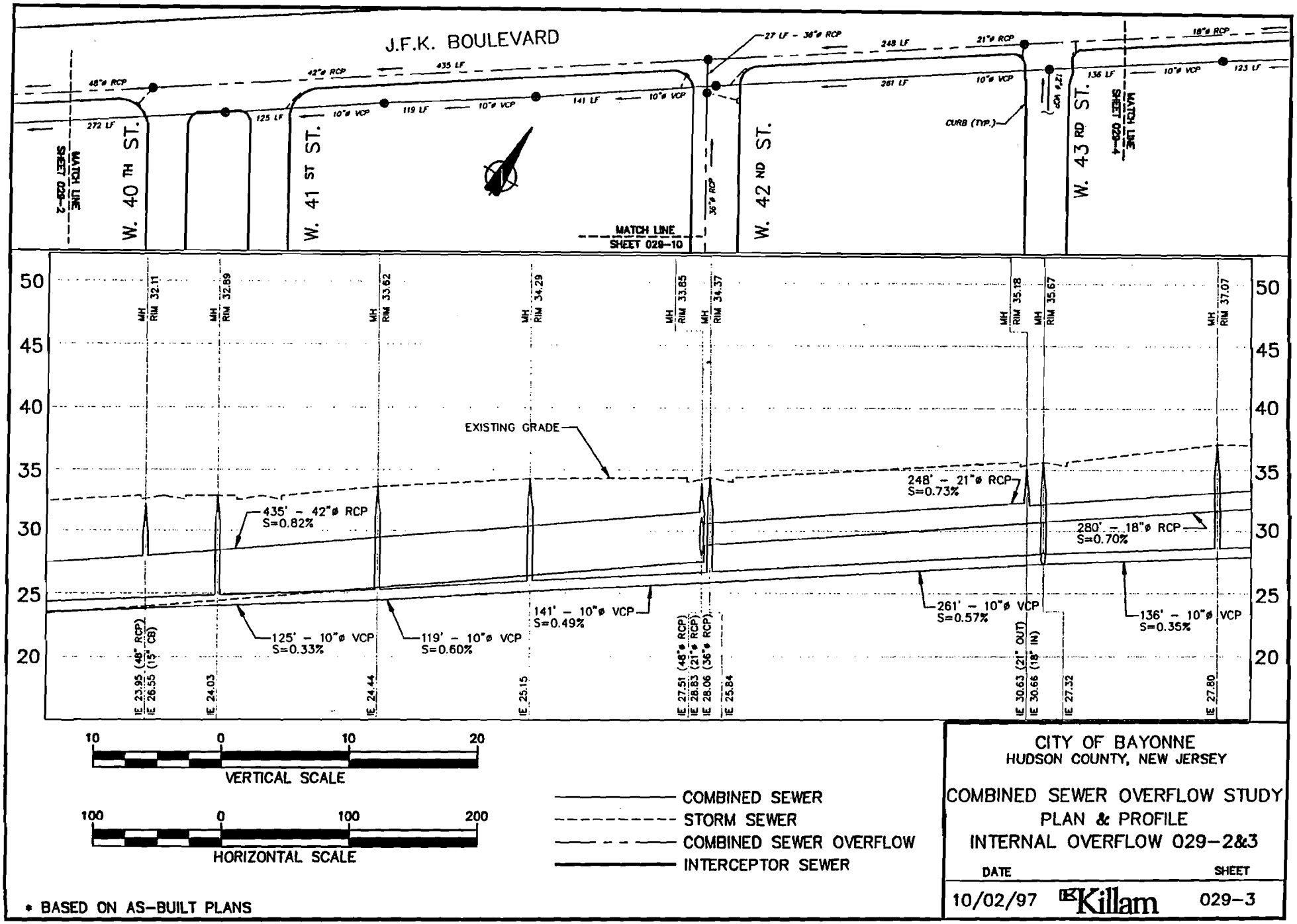
LEGEND

- RELIEF SEWER PIPE
- COMBINED SEWER PIPE
- WET WEATHER FLOWS
- DRY & WET WEATHER FLOWS

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & CROSS SECTIONAL VIEW
INTERNAL OVERFLOW 029–1
W. 38TH ST. & J.F. KENNEDY BLVD.

DATE		SHEET
04/24/97	E Killam	SC29–1



* BASED ON AS-BUILT PLANS

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & PROFILE
INTERNAL OVERFLOW 029-2&3

DATE	SHEET
10/02/97	029-3

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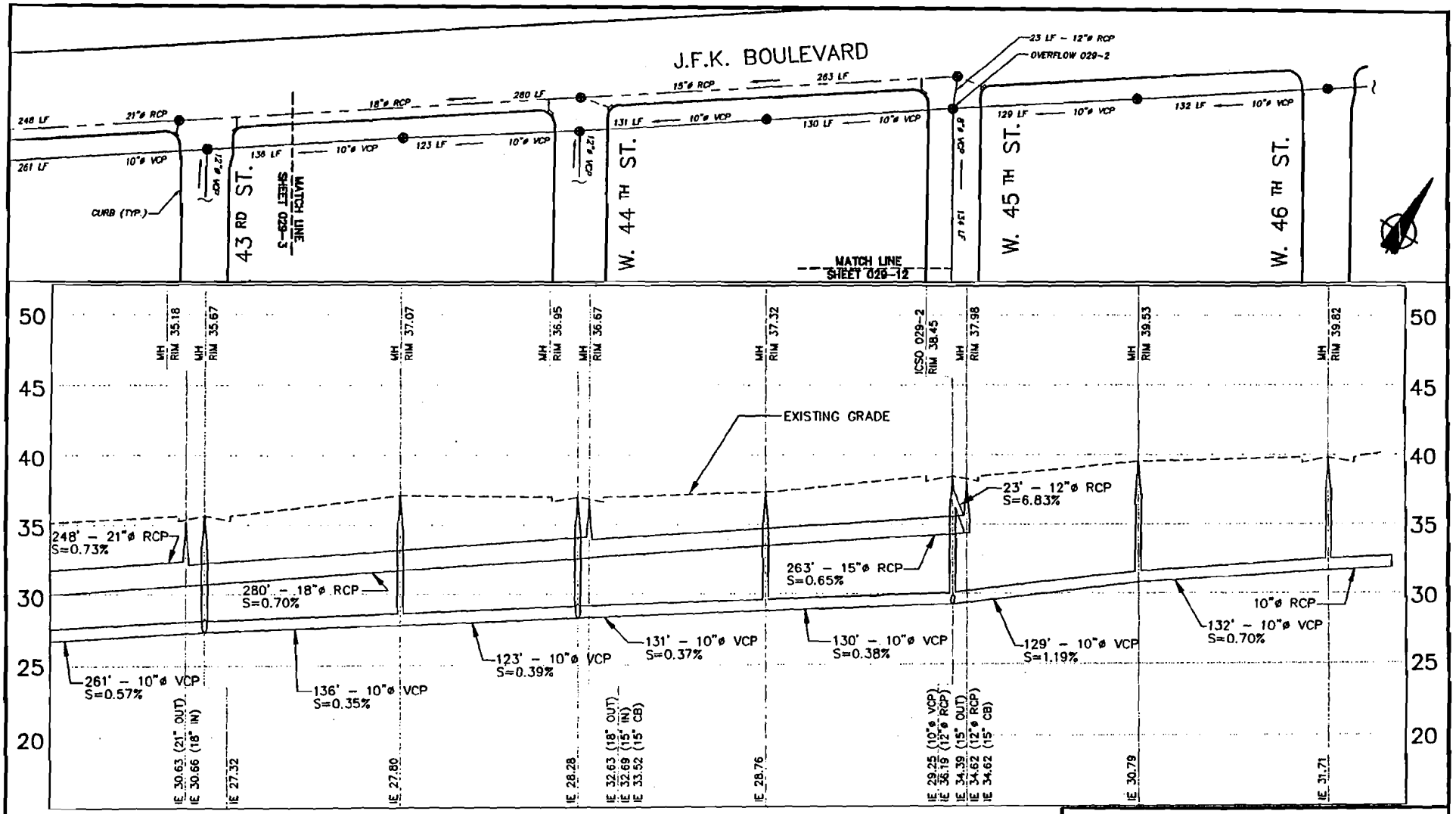

* BASED ON AS-BUILT PLANS

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & PROFILE
INTERNAL OVERFLOW 029-2

DATE		SHEET
10/02/97	DEKillam	029-4

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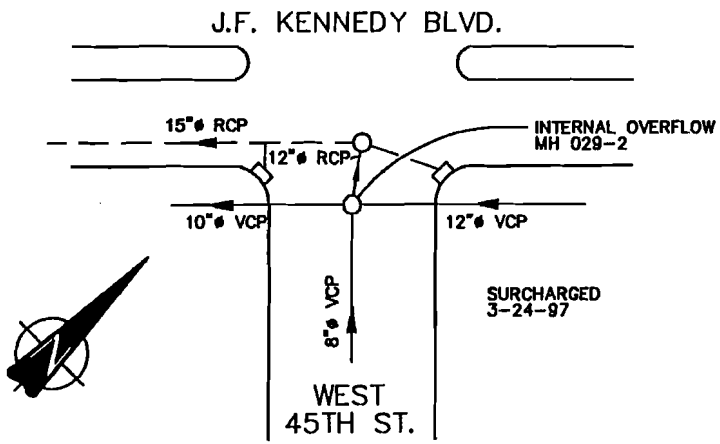
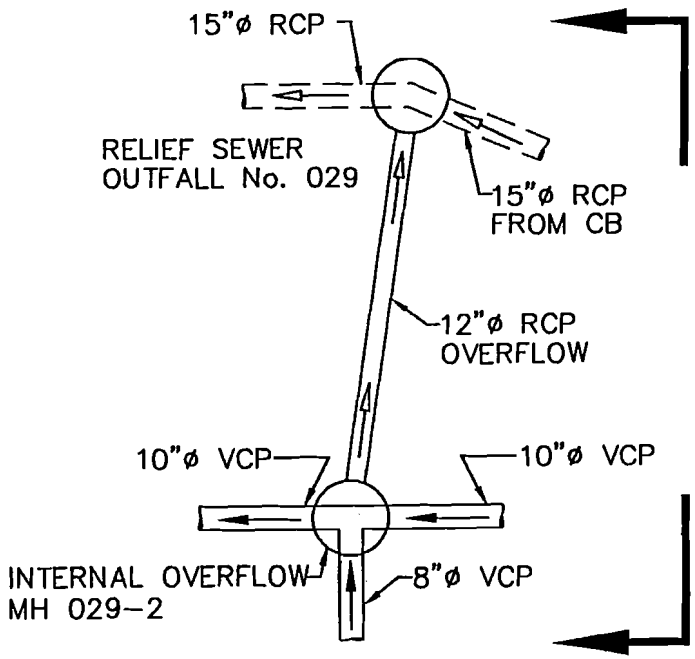
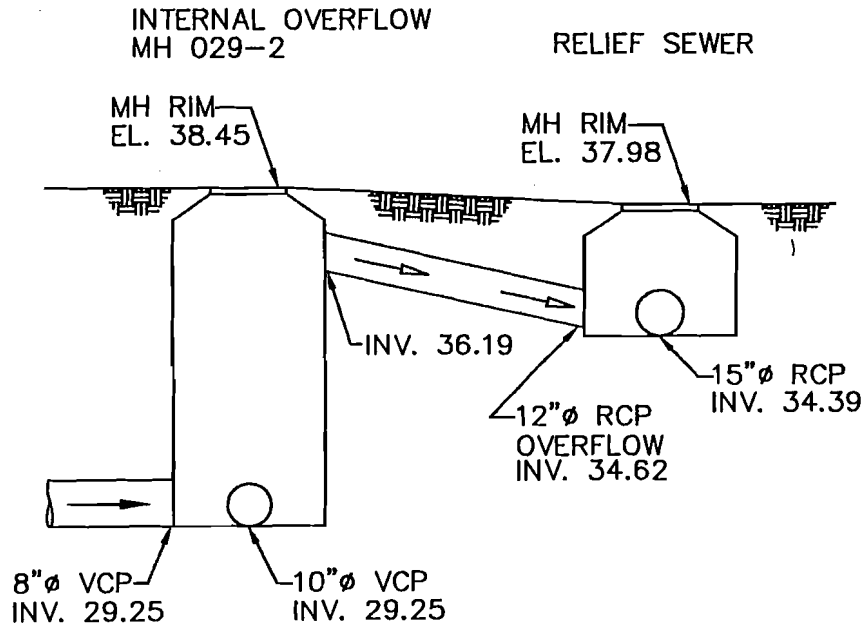


LOCATION PLAN
N.T.S.



PLAN VIEW
SCALE: 1" = 10'



SECTION A–A
SCALE: 1" = 5'

NOTE: ELEVATIONS TAKEN FROM RECORD PLANS.

LEGEND

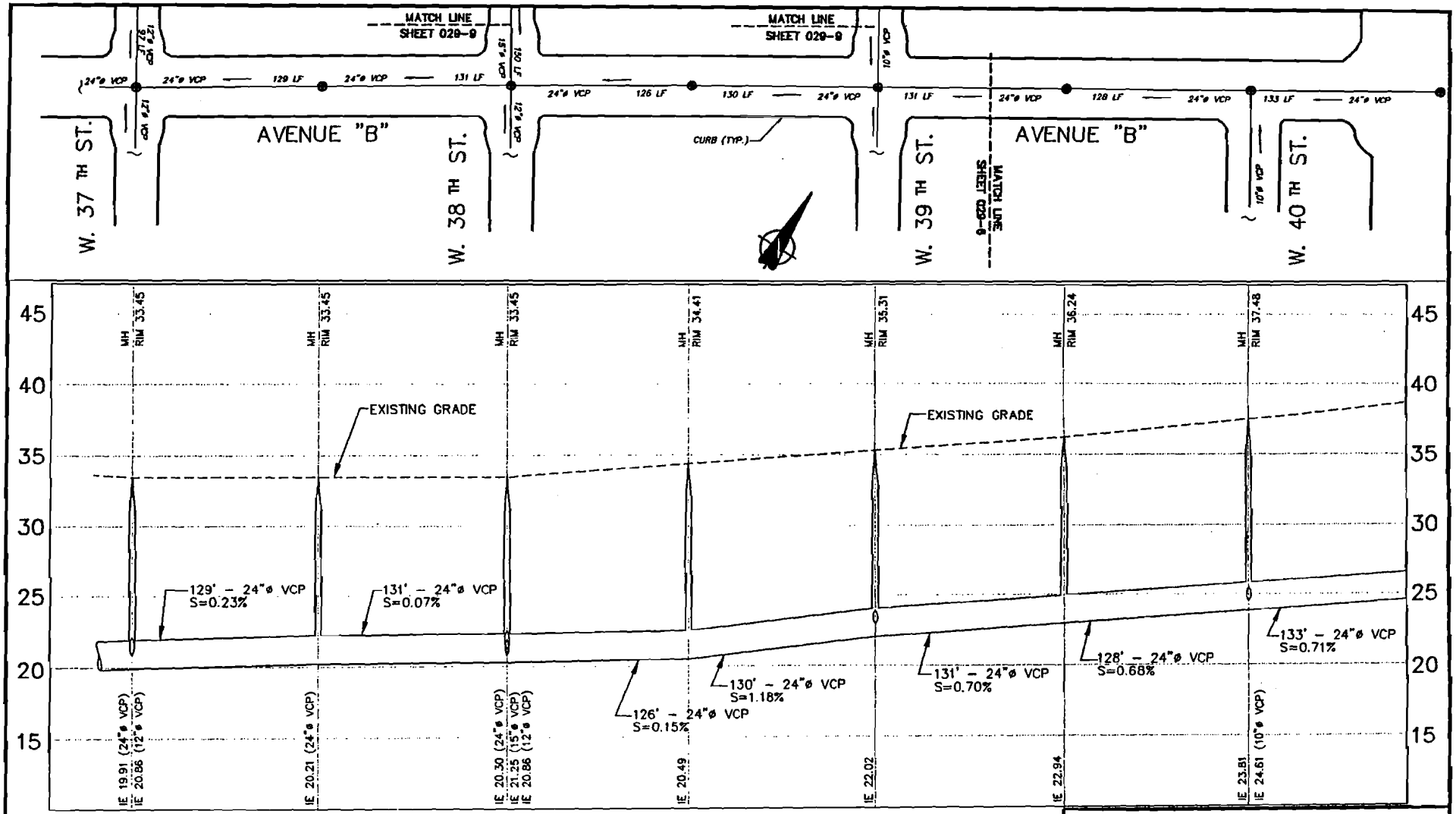
- RELIEF SEWER PIPE
- COMBINED SEWER PIPE
- WET WEATHER FLOWS
- DRY & WET WEATHER FLOWS

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & CROSS SECTIONAL VIEW
INTERNAL OVERFLOW 029–2
W. 45TH ST. & J.F. KENNEDY BLVD.

DATE	SHEET
04/24/97	SC29–2

Killam



* BASED ON AS-BUILT PLANS

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & PROFILE
INTERNAL OVERFLOW 029-1&2

DATE		SHEET
10/02/97	IEKillam	029-5

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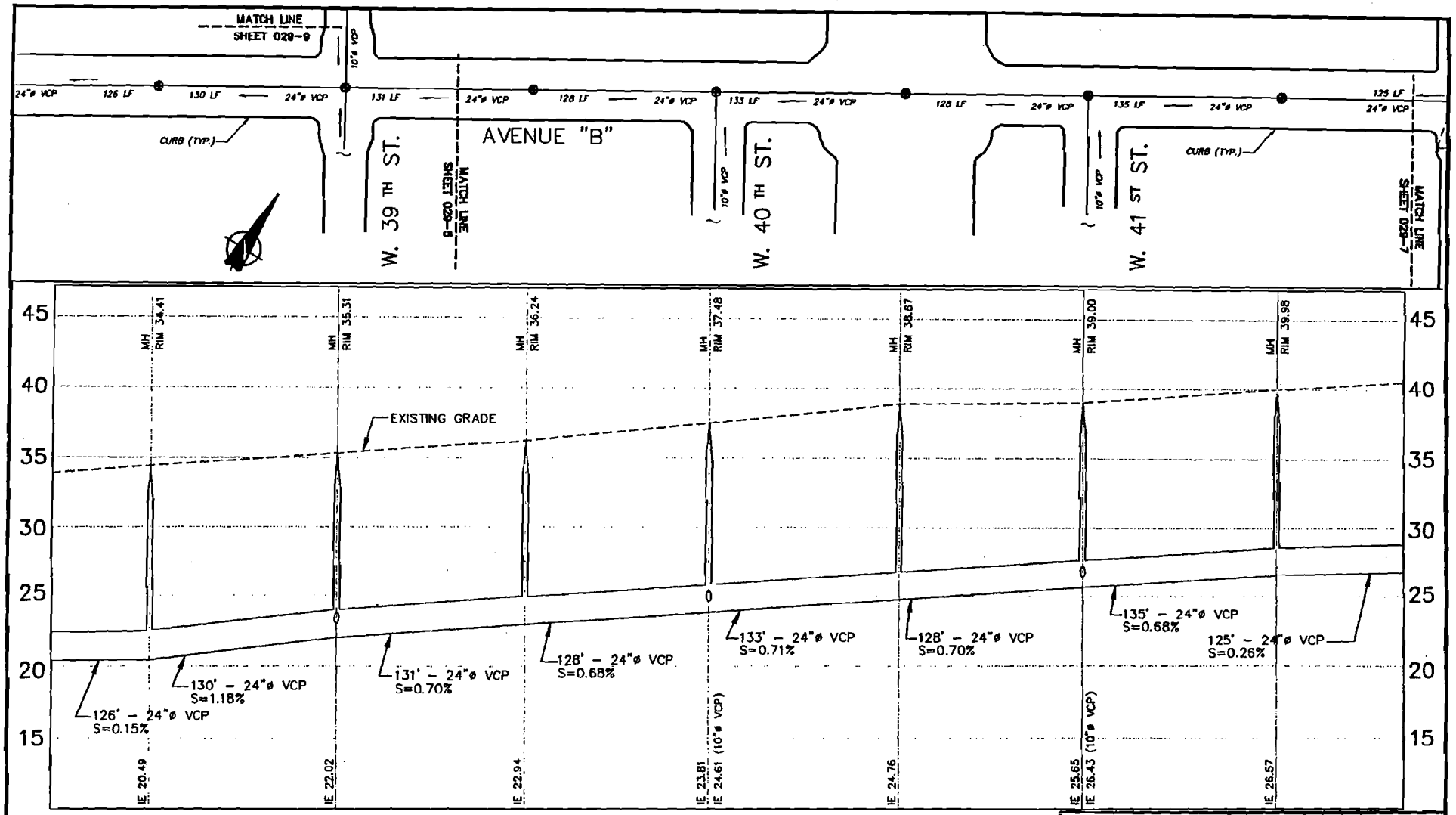

10 0 10 20
VERTICAL SCALE

100 0 100 200
HORIZONTAL SCALE

COMBINED SEWER
STORM SEWER
COMBINED SEWER OVERFLOW
INTERCEPTOR SEWER

* BASED ON AS-BUILT PLANS

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & PROFILE
DOWNSTREAM I.O. 029-2

DATE		SHEET
10/02/97	Killam	029-6

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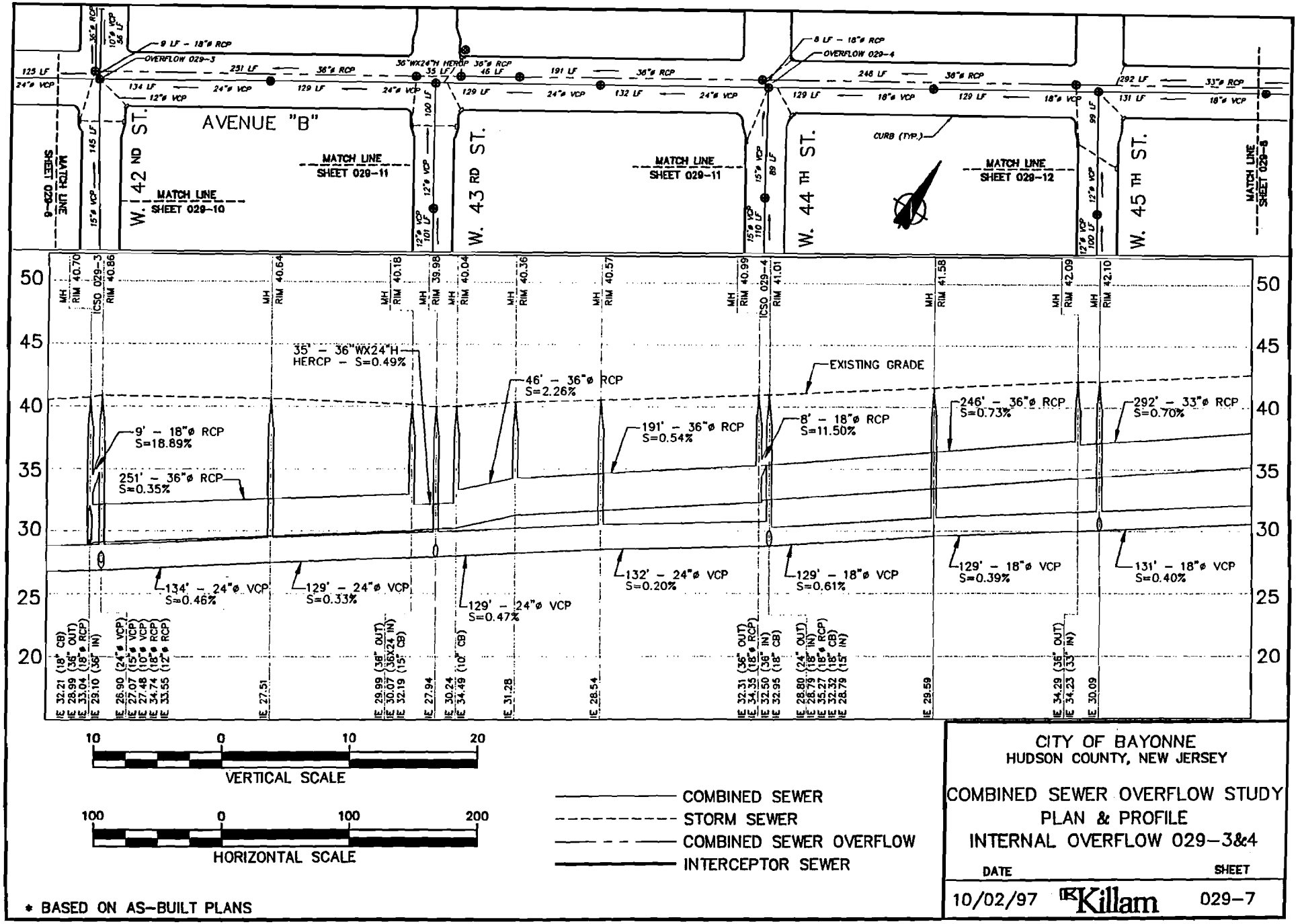

* BASED ON AS-BUILT PLANS

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & PROFILE
INTERNAL OVERFLOW 029-3&4

DATE	SHEET
10/02/97	029-7

Killam

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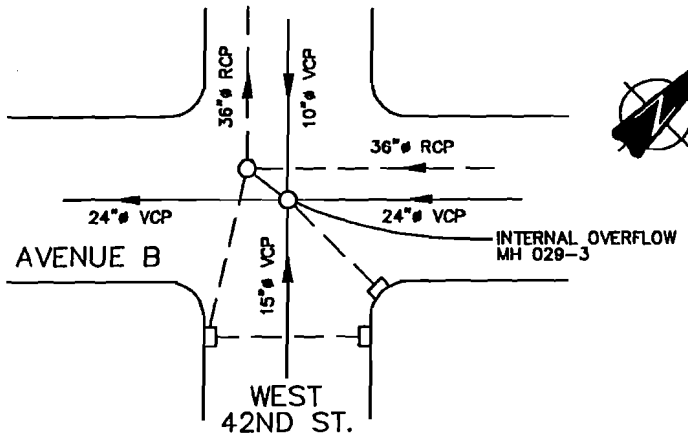
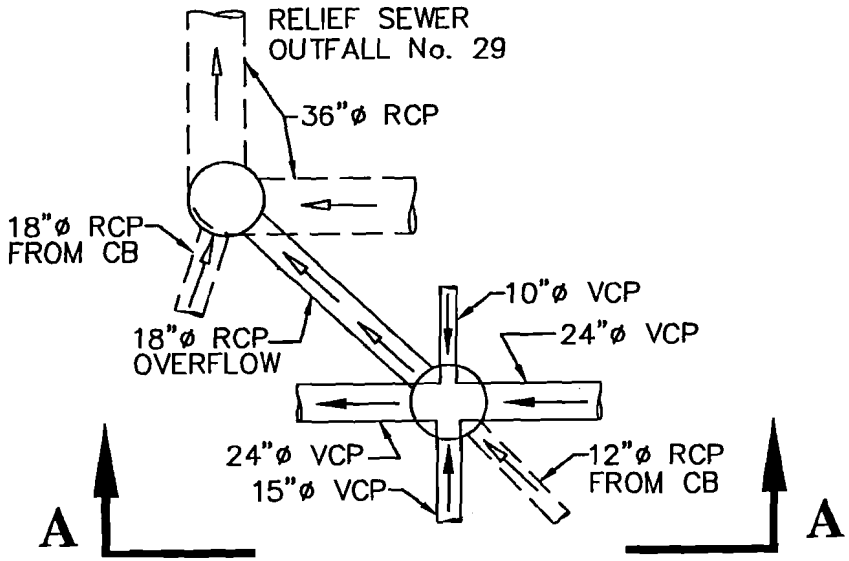
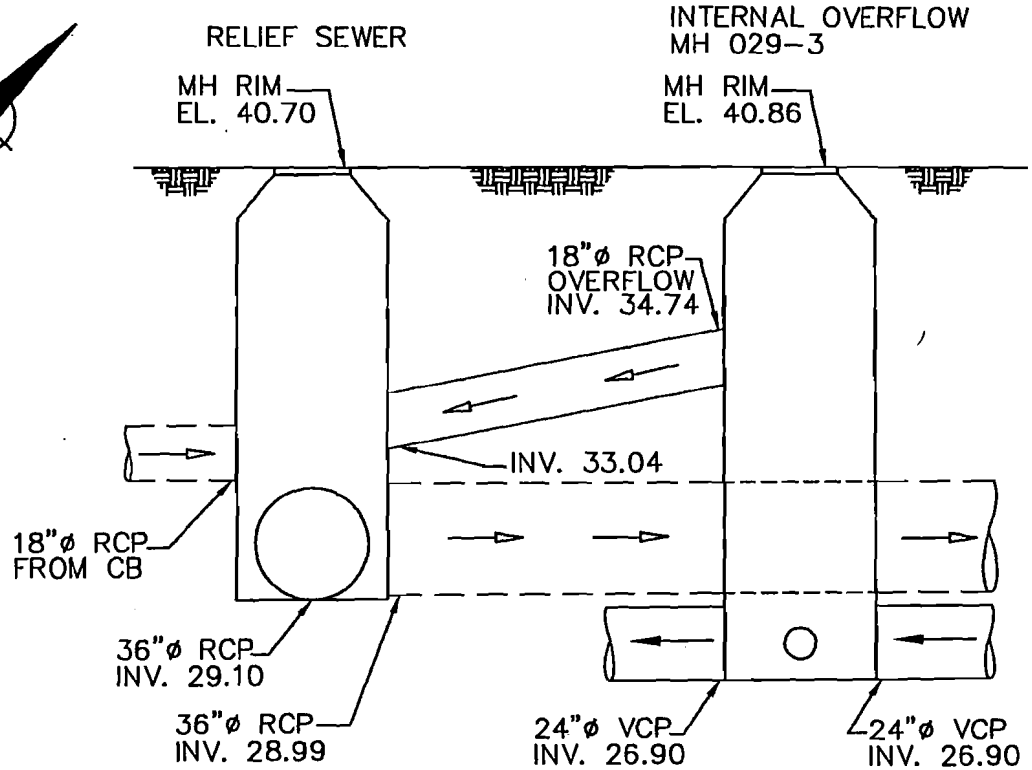


LOCATION PLAN
N.T.S.



PLAN VIEW
SCALE: 1" = 10'



SECTION A-A
SCALE: 1" = 5'

NOTE: ELEVATIONS TAKEN FROM RECORD PLANS.

LEGEND

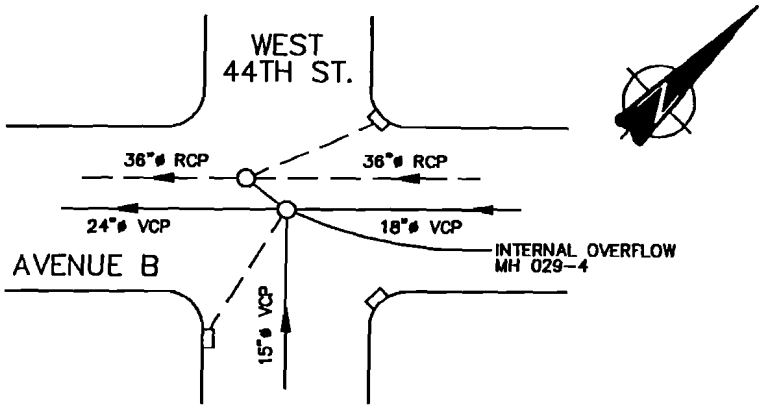
- RELIEF SEWER PIPE
- COMBINED SEWER PIPE
- WET WEATHER FLOWS
- DRY & WET WEATHER FLOWS

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

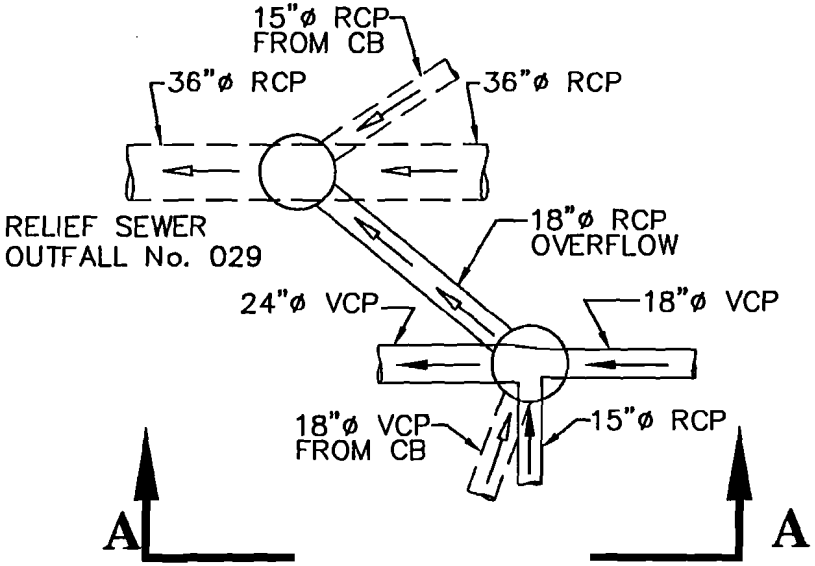
COMBINED SEWER OVERFLOW STUDY
PLAN & CROSS SECTIONAL VIEW
INTERNAL OVERFLOW 029-3
W. 42ND ST. & AVENUE B

DATE	SHEET
04/24/97	SC29-3

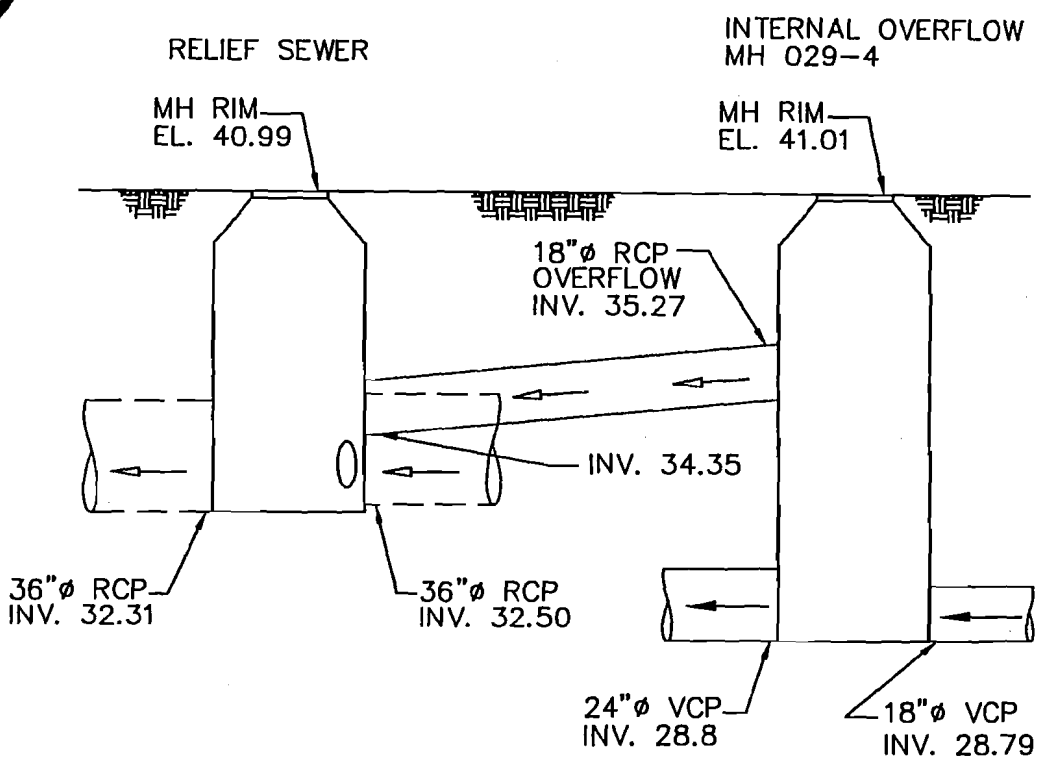
Killam



LOCATION PLAN
N.T.S.



PLAN VIEW
SCALE: 1" = 10'



SECTION A-A
SCALE: 1" = 5'

NOTE: ELEVATIONS TAKEN FROM RECORD PLANS.

LEGEND

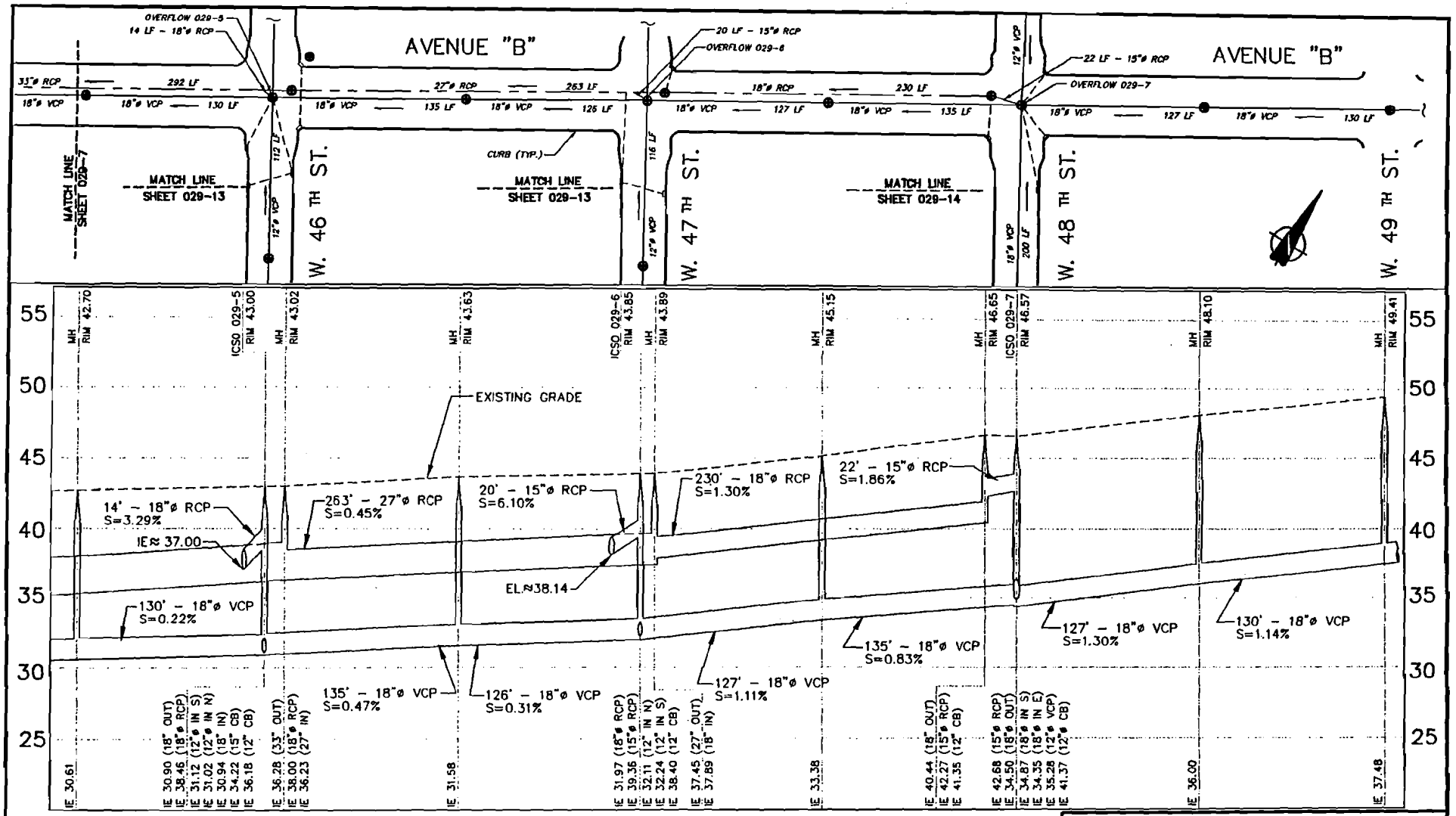
- RELIEF SEWER PIPE
- COMBINED SEWER PIPE
- WET WEATHER FLOWS
- DRY & WET WEATHER FLOWS

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & CROSS SECTIONAL VIEW
INTERNAL OVERFLOW 029-4
W. 44TH ST. & AVENUE B

DATE	SHEET
04/24/97	SC29-4

Killam



* BASED ON AS-BUILT PLANS

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & PROFILE
INTERNAL OVERFLOWS 029-5,6&7

DATE		SHEET
10/02/97	Killam	029-8

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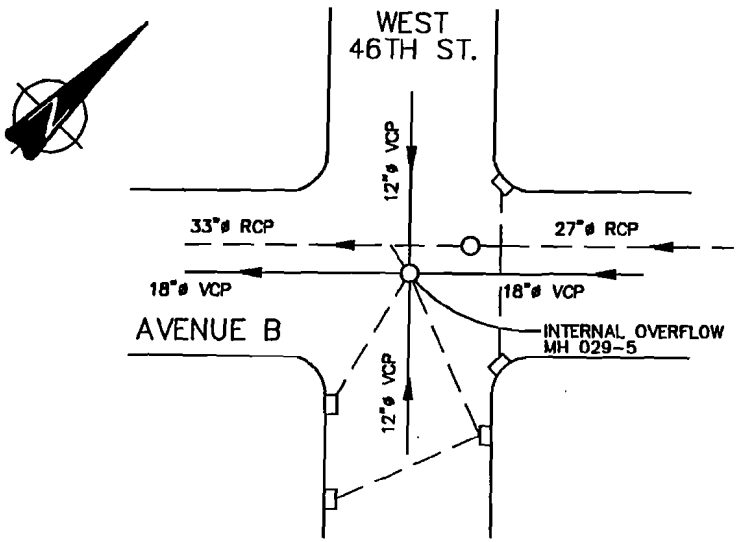
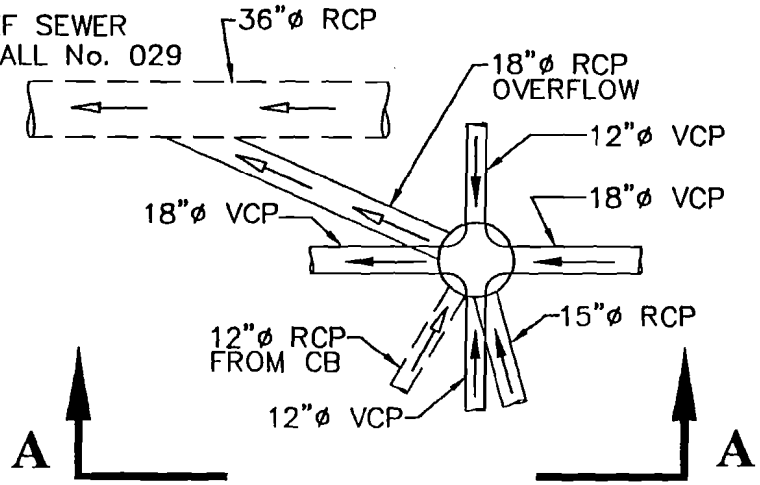
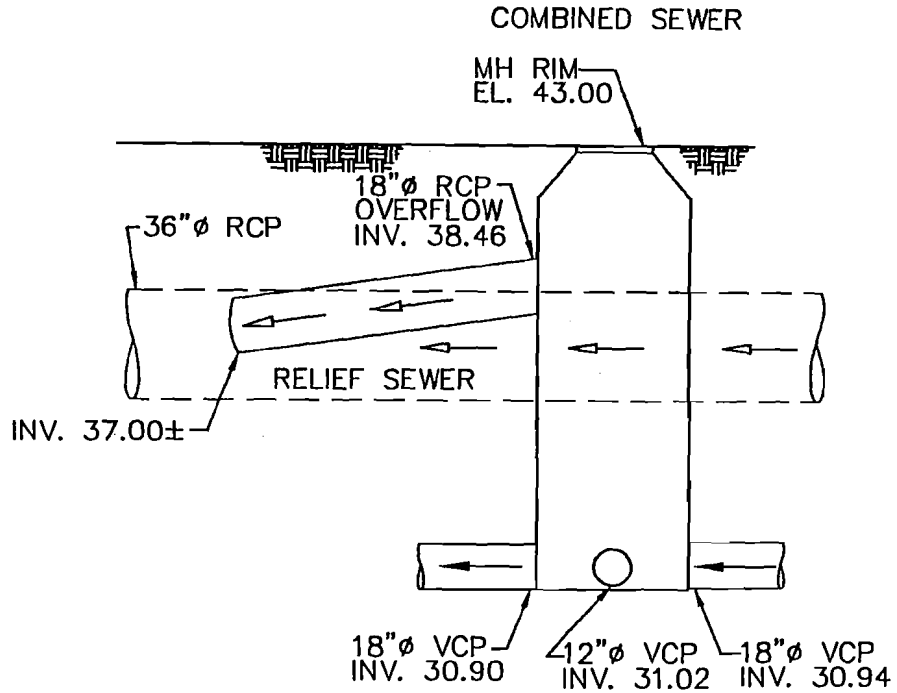


LOCATION PLAN
N.T.S.



PLAN VIEW
SCALE: 1" = 10'



SECTION A–A
SCALE: 1" = 5'

NOTE: ELEVATIONS TAKEN FROM RECORD PLANS.

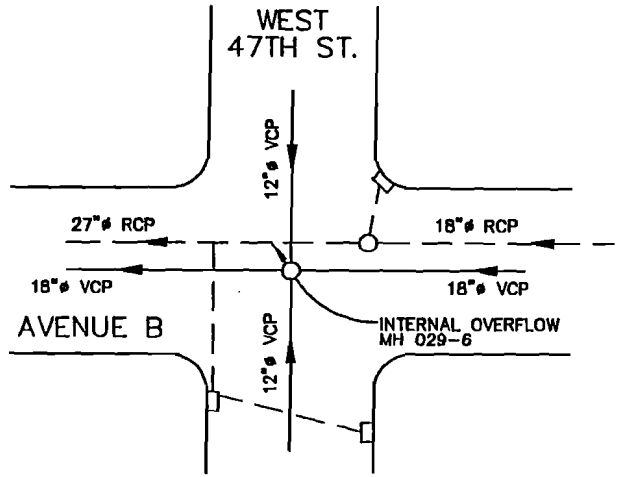
LEGEND

- RELIEF SEWER PIPE
- COMBINED SEWER PIPE
- WET WEATHER FLOWS
- DRY & WET WEATHER FLOWS

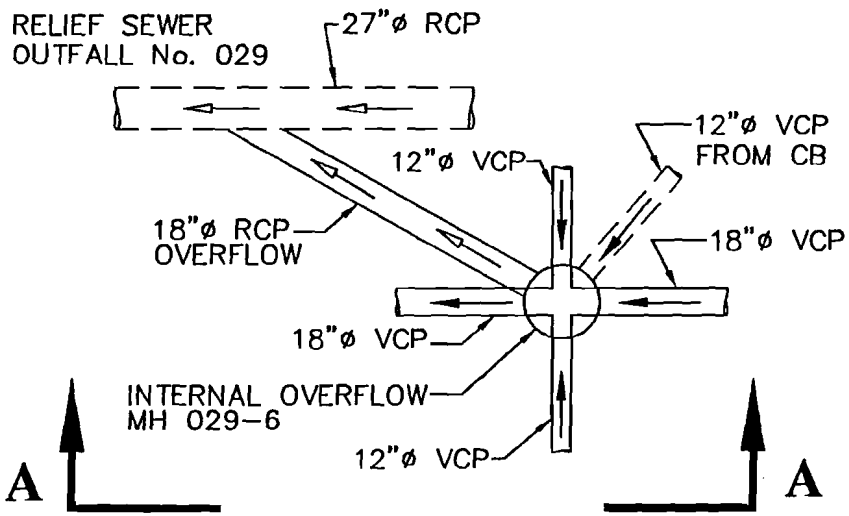
CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & CROSS SECTIONAL VIEW
INTERNAL OVERFLOW 029–5
W. 46TH ST. & AVENUE B

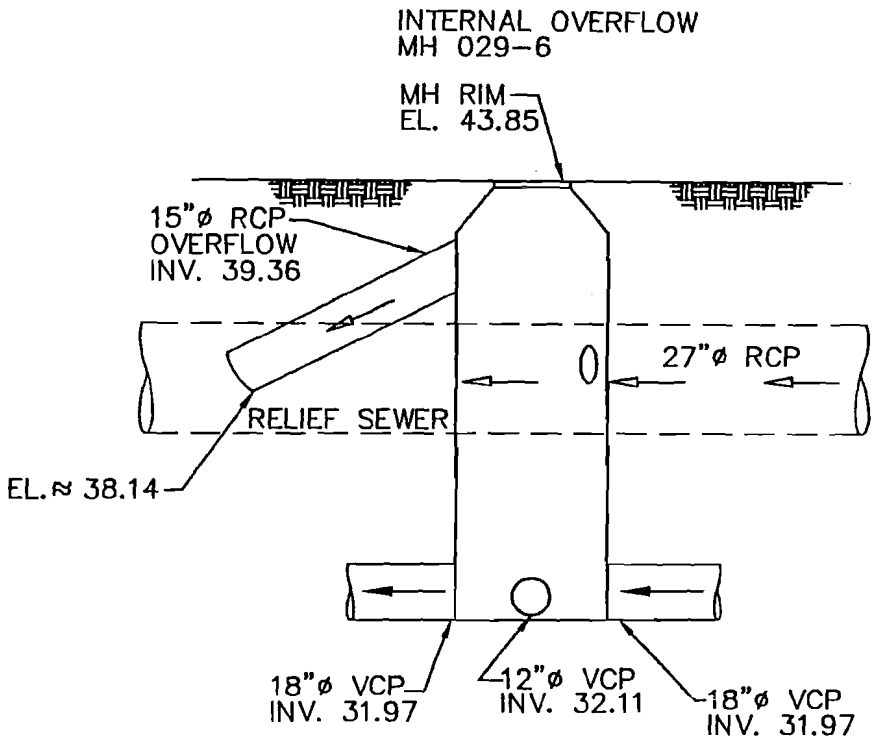
DATE	SHEET
04/24/97 E Killam	SC29–5



LOCATION PLAN
N.T.S.



PLAN VIEW
SCALE: 1" = 10'



SECTION A-A
SCALE: 1" = 5'

NOTE: ELEVATIONS TAKEN FROM RECORD PLANS.

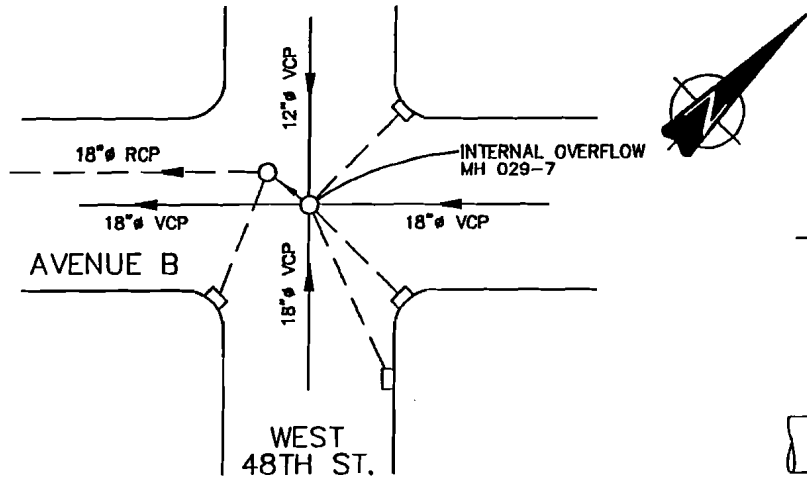
LEGEND

- RELIEF SEWER PIPE
- COMBINED SEWER PIPE
- WET WEATHER FLOWS
- DRY & WET WEATHER FLOWS

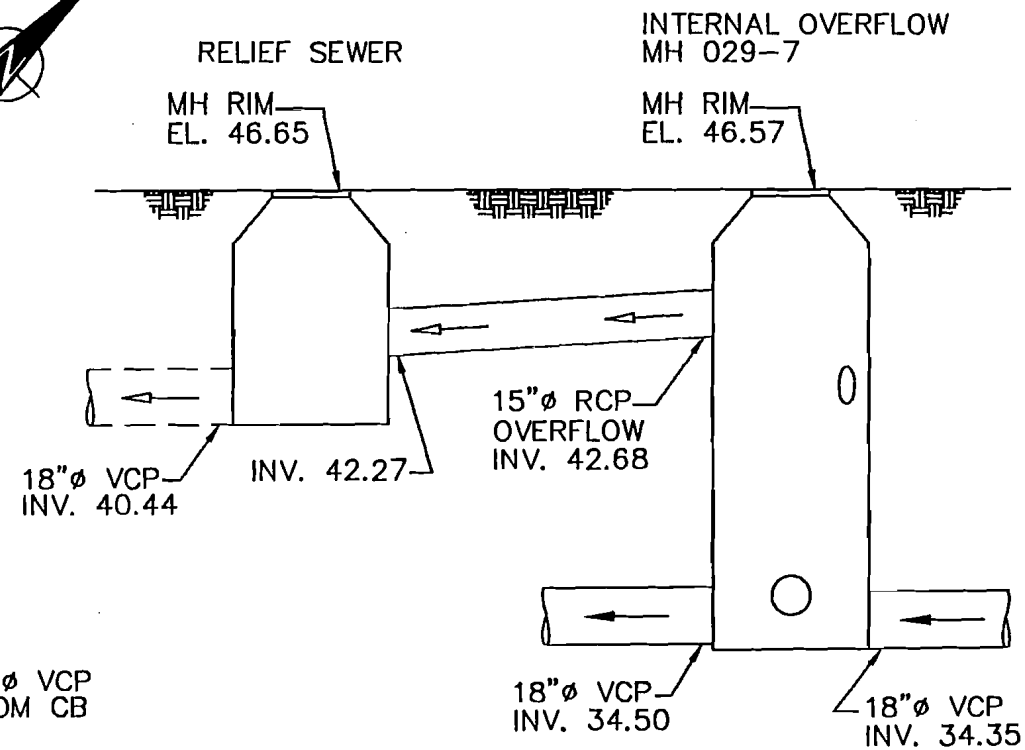
CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & CROSS SECTIONAL VIEW
INTERNAL OVERFLOW 029-6
W. 47TH ST. & AVENUE B

DATE	SHEET
04/24/97 Killam	SC29-6

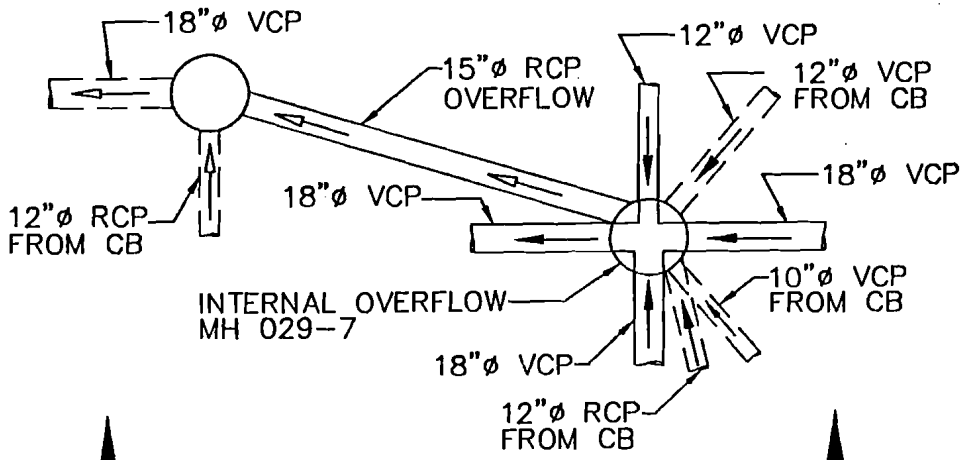


LOCATION PLAN
N.T.S.



SECTION A-A
SCALE: 1" = 5'

NOTE: ELEVATIONS TAKEN FROM RECORD PLANS.



PLAN VIEW
SCALE: 1" = 10'

LEGEND

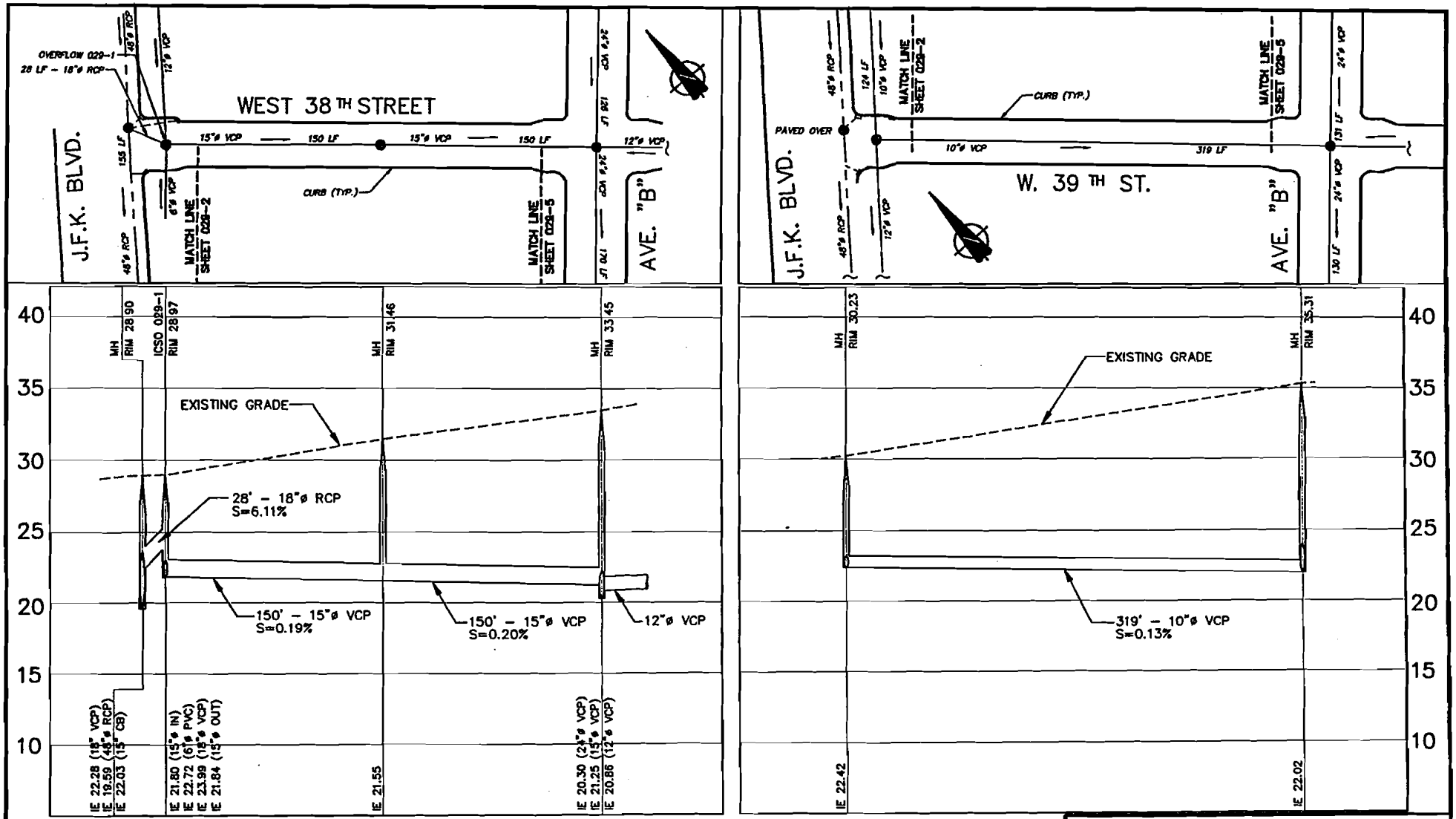
- RELIEF SEWER PIPE
- COMBINED SEWER PIPE
- WET WEATHER FLOWS
- DRY & WET WEATHER FLOWS

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & CROSS SECTIONAL VIEW

INTERNAL OVERFLOW 029-7
W. 48TH ST. & AVENUE B

DATE	SHEET
04/24/97 Killam	SC29-7



INTERNAL OVERFLOW 029–1

INTERSECTIONS OF W. 39TH ST. WITH AVE. B & J.F.K. BLVD.

10 0 10 20
VERTICAL SCALE

100 0 100 200
HORIZONTAL SCALE

COMBINED SEWER
STORM SEWER
COMBINED SEWER OVERFLOW
INTERCEPTOR SEWER

* BASED ON AS–BUILT PLANS

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & PROFILE
INTERNAL OVERFLOW 029–1

DATE

SHEET

Killam 029–9

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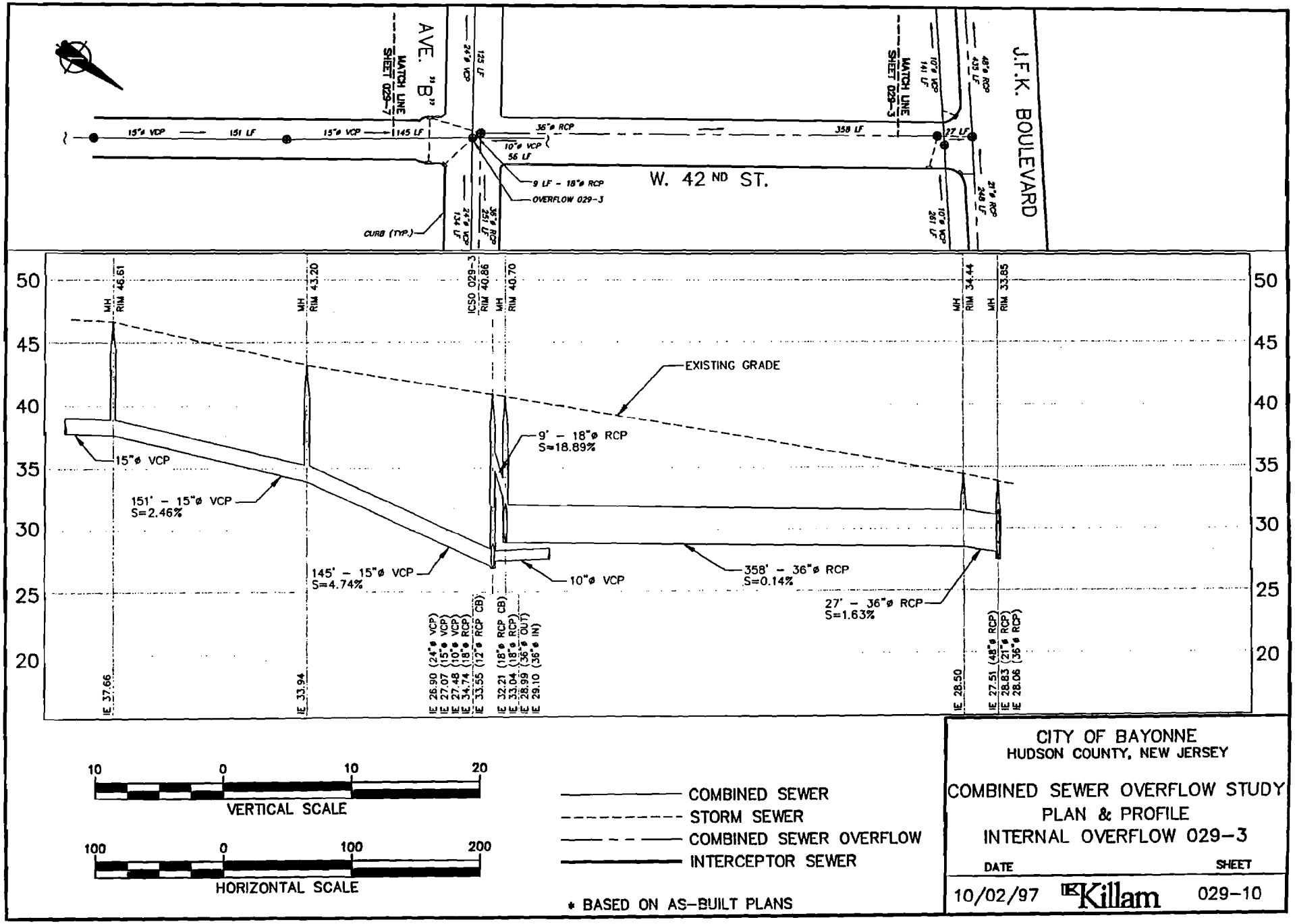

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & PROFILE
INTERNAL OVERFLOW 029-3

DATE		SHEET
10/02/97	E Killam	029-10

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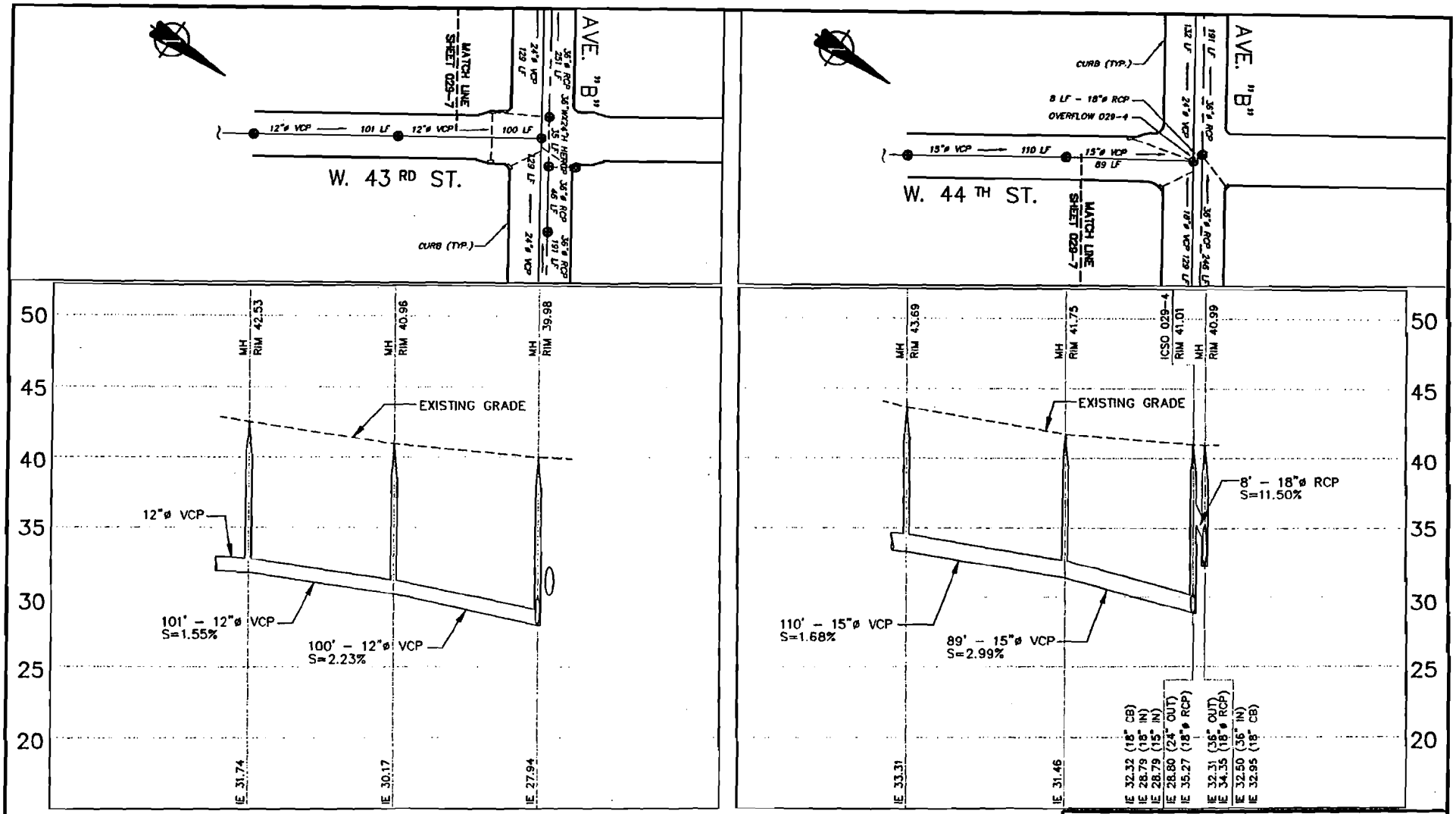

INTERSECTION OF
AVENUE "B" AND W. 43RD ST.

INTERNAL OVERFLOW 029–4

10 0 10 20
VERTICAL SCALE

100 0 100 200
HORIZONTAL SCALE

COMBINED SEWER
STORM SEWER
COMBINED SEWER OVERFLOW
INTERCEPTOR SEWER

* BASED ON AS–BUILT PLANS

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & PROFILE
INTERNAL OVERFLOW 029–4

DATE SHEET

Killam 029–11

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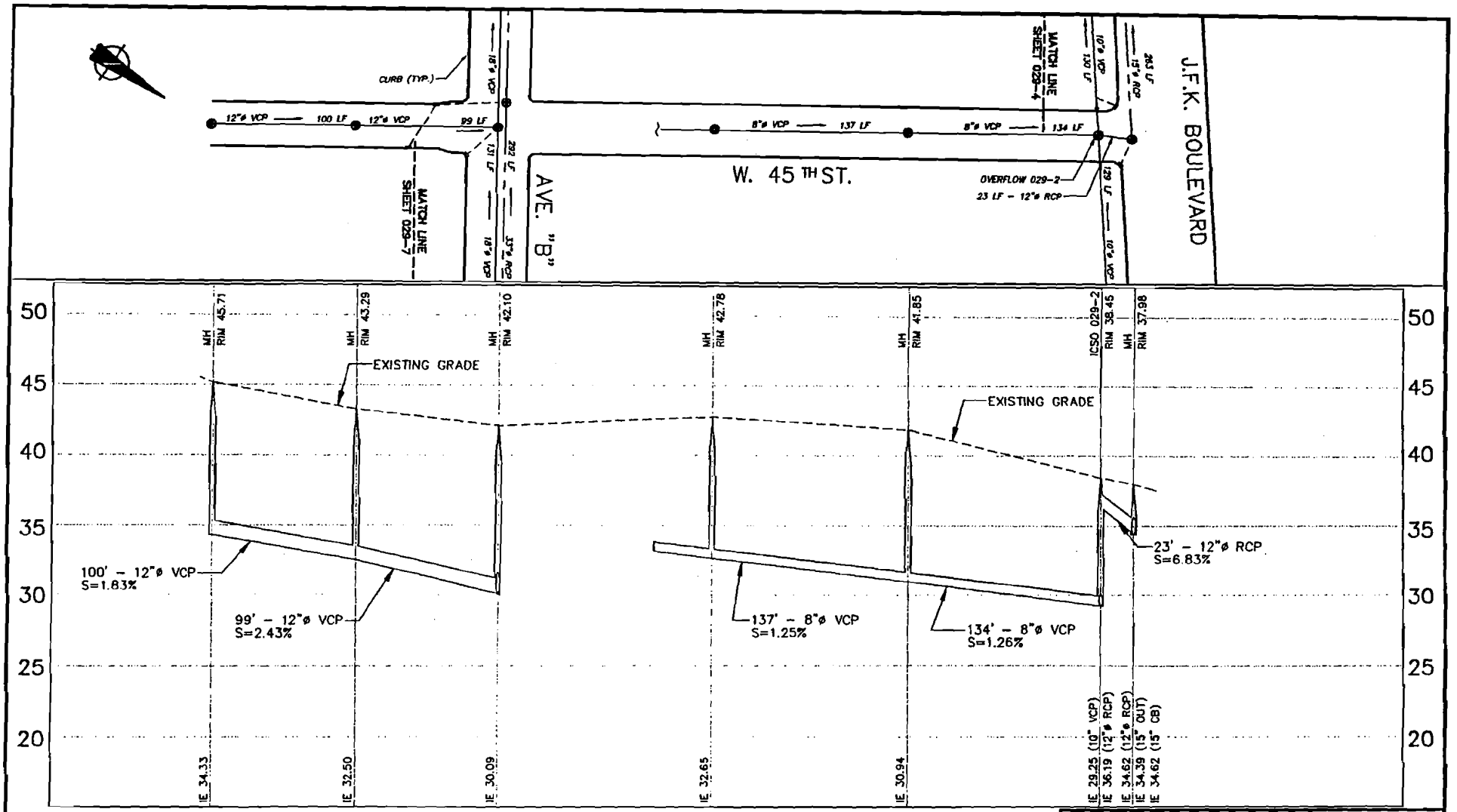

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & PROFILE
INTERNAL OVERFLOW 029-2

DATE		SHEET
10/02/97	Killam	029-12

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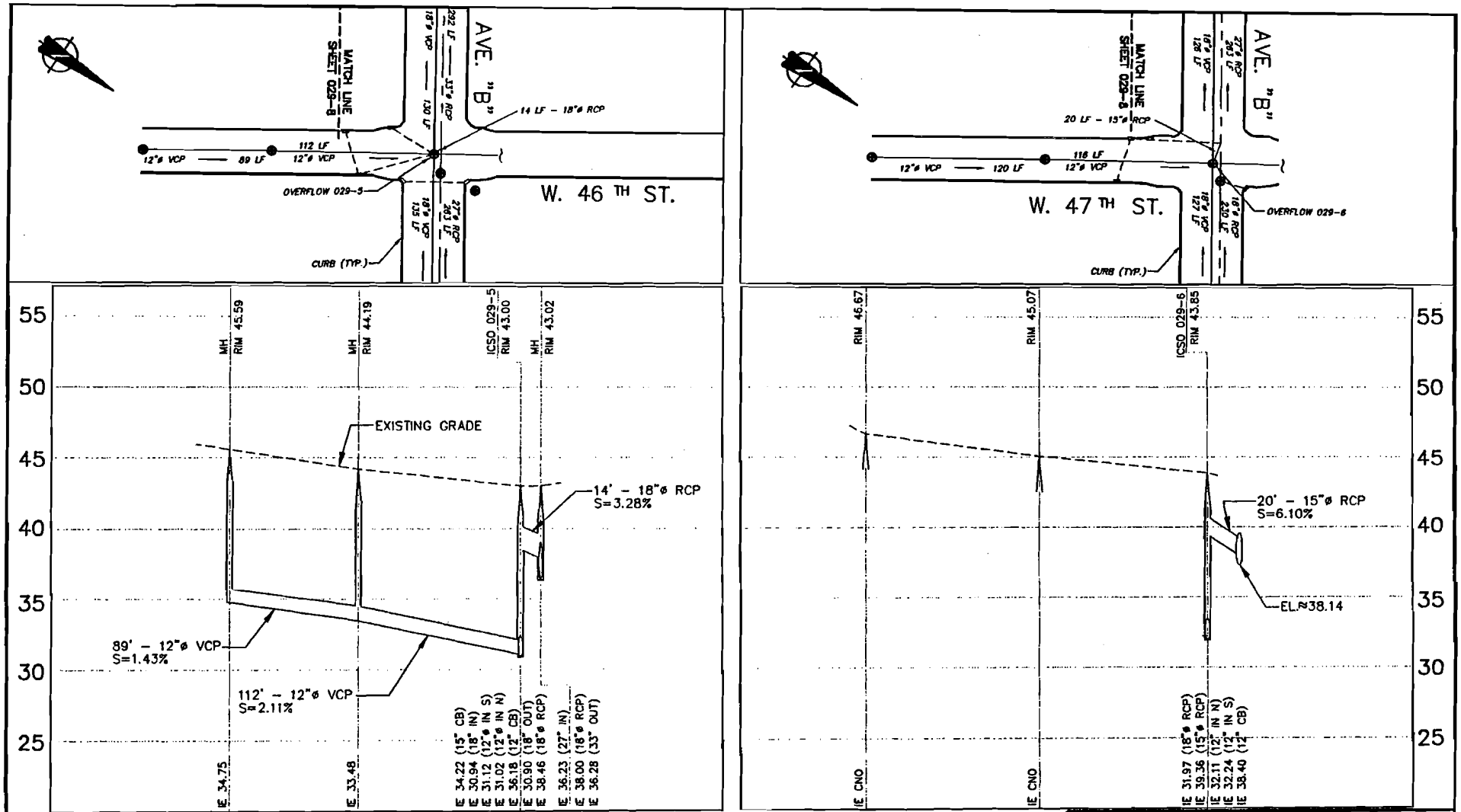

INTERNAL OVERFLOW 029-5

INTERNAL OVERFLOW 029-6

10 0 10 20

VERTICAL SCALE

100 0 100 200

HORIZONTAL SCALE

——— COMBINED SEWER

- - - - - - - - - STORM SEWER

——— - - ——— COMBINED SEWER OVERFLOW

——— INTERCEPTOR SEWER

* BASED ON AS-BUILT PLANS

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & PROFILE
INTERNAL OVERFLOW 029-5&6

DATE

SHEET

Killam 029-13

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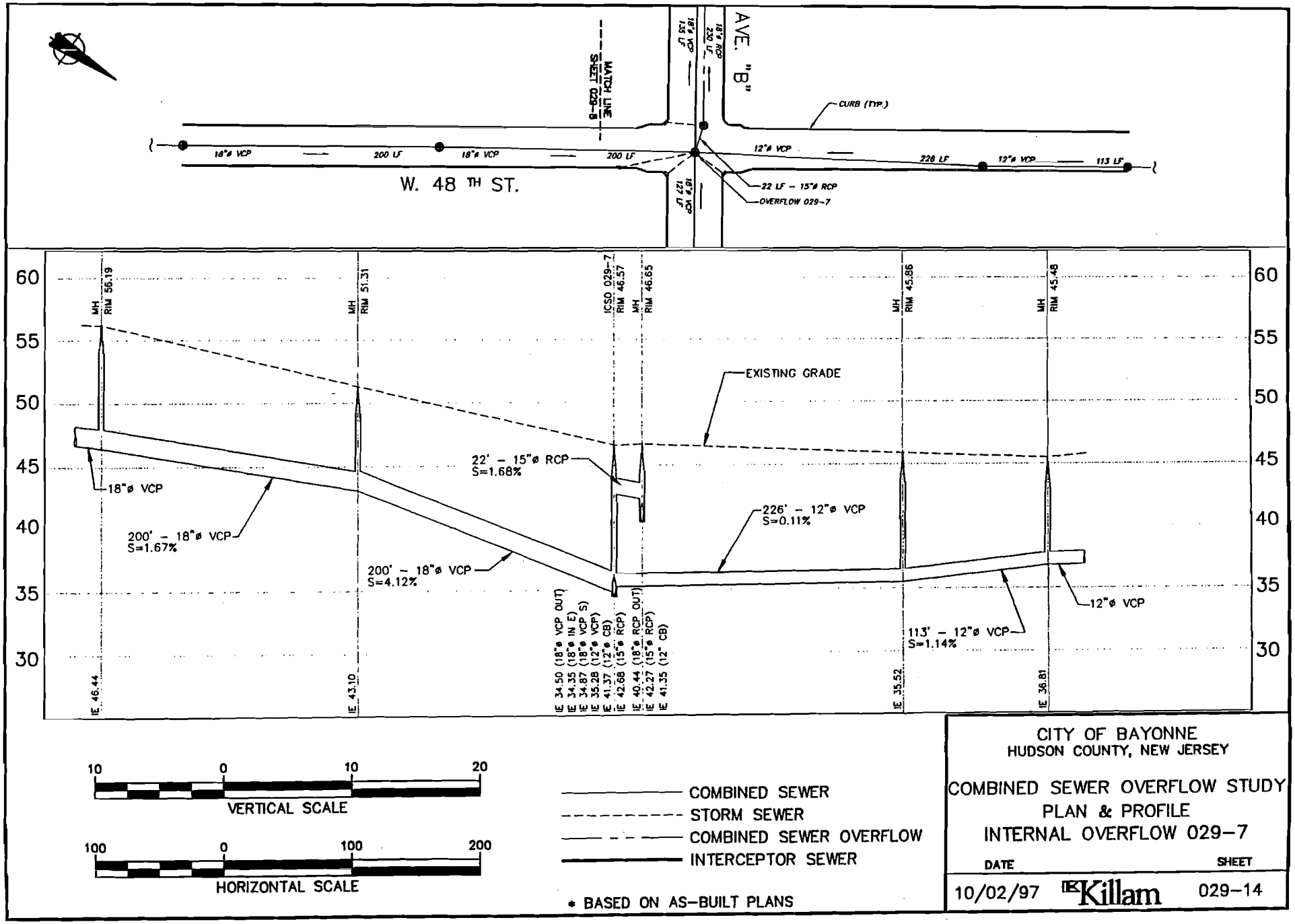

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & PROFILE
INTERNAL OVERFLOW 029-7

DATE		SHEET
10/02/97	Killam	029-14

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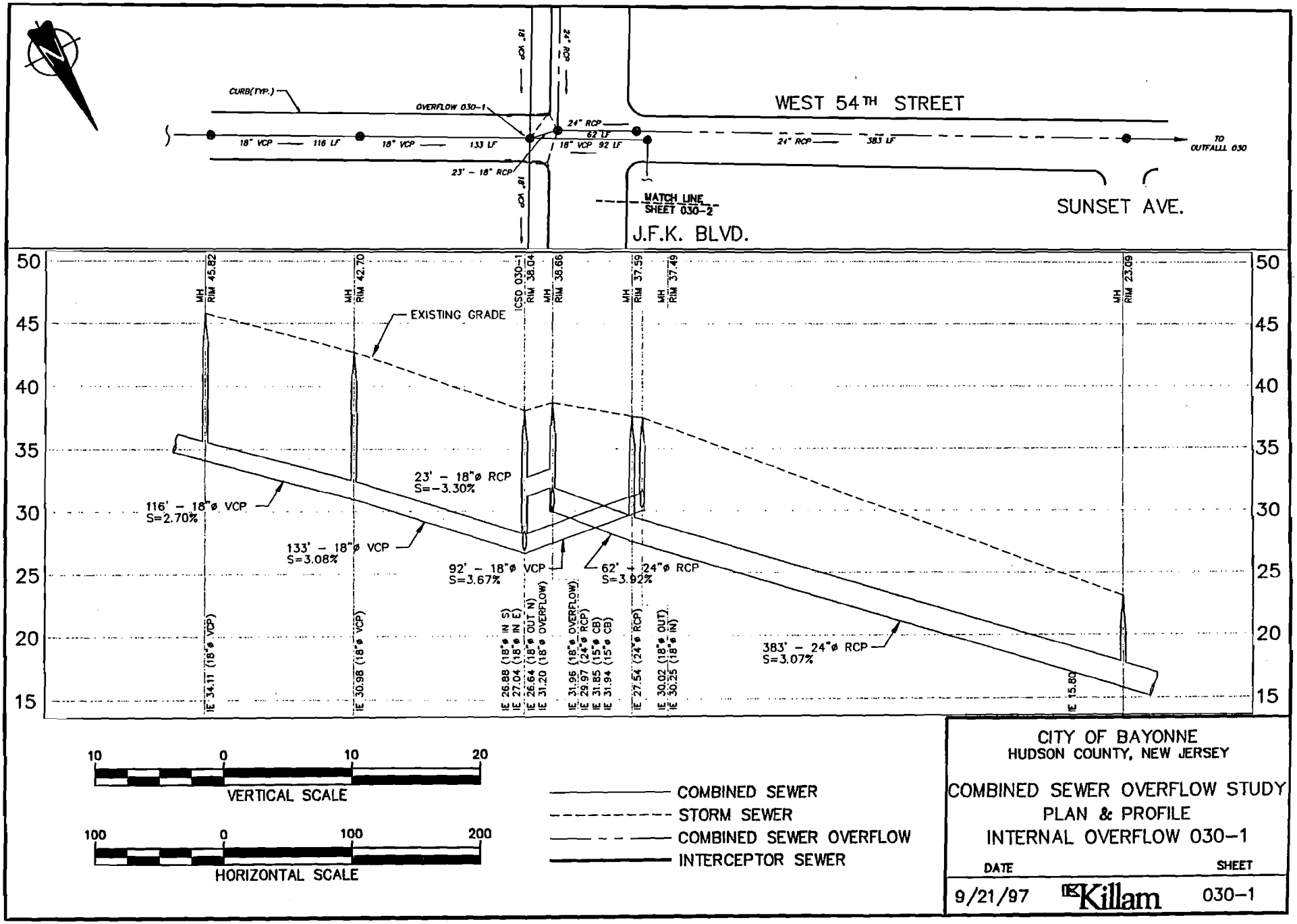
City of Bayonne

CSO Control Facility Data Extract

Relief Sewer Location & Description

NJPDES Outfall No.	**030**
Location:	West 54th Street
Overflow to:	Newark Bay
Character of District Served:	Residential
Number of CSO Control Facilities:	2
Type of Control Facility	Interconnection Pipe
Size Range	15" - 18" Circular
Drainage Basin shared with the	
Following Regulators	17
Following Outfalls	020
Outfall to Receiving Water	
Size	24 inch RCP
Capacity	26 MGD
Outfall Condition:	Good
Tidal Effects:	No
Tidal Gate(s) and Condition:	none
Drainage Area Serviced:	21 Acres



CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & PROFILE
INTERNAL OVERFLOW 030-1

DATE		SHEET
9/21/97	Killam	030-1

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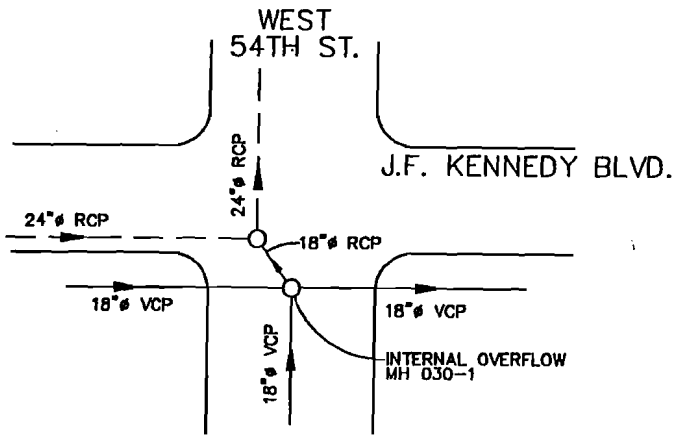
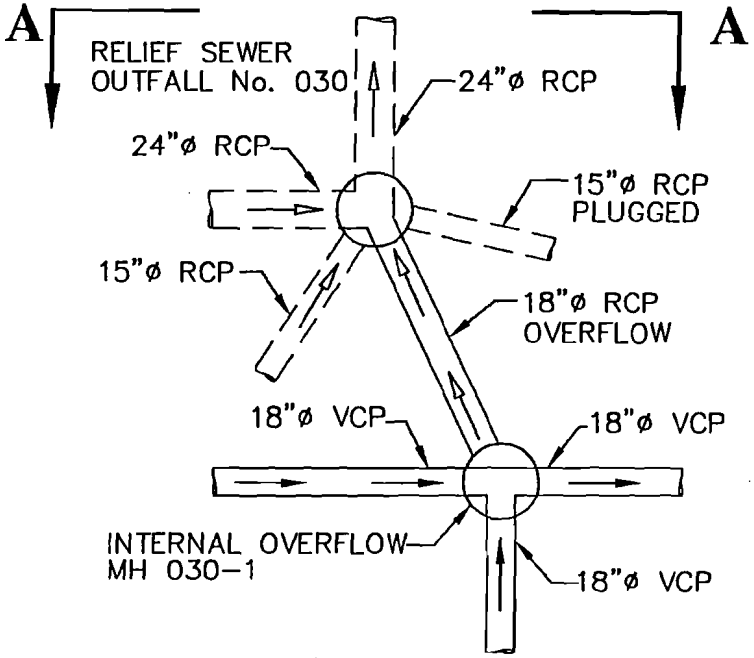
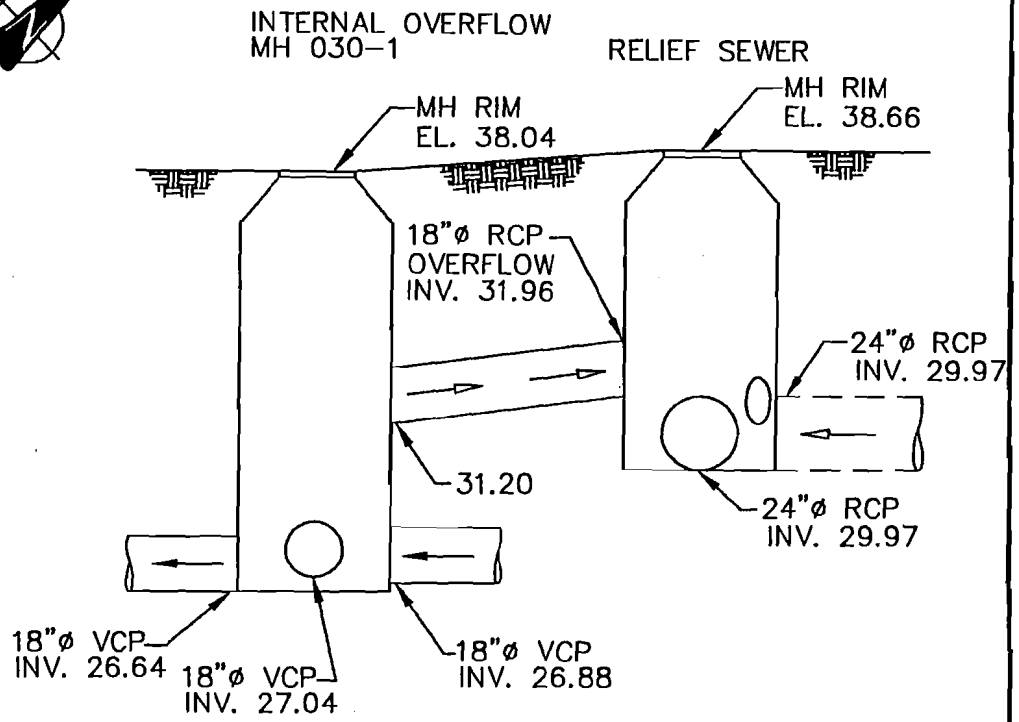


LOCATION PLAN
N.T.S.



PLAN VIEW
SCALE: 1" = 10'



SECTION A-A
SCALE: 1" = 5'

NOTE: ELEVATIONS TAKEN FROM RECORD PLANS.

LEGEND

- RELIEF SEWER PIPE
- COMBINED SEWER PIPE
- WET WEATHER FLOWS
- DRY & WET WEATHER FLOWS

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & CROSS SECTIONAL VIEW
INTERNAL OVERFLOW 030-1
W. 54TH ST. & J.F. KENNEDY BLVD.

DATE	SHEET
04/24/97	SC30-1

Killam

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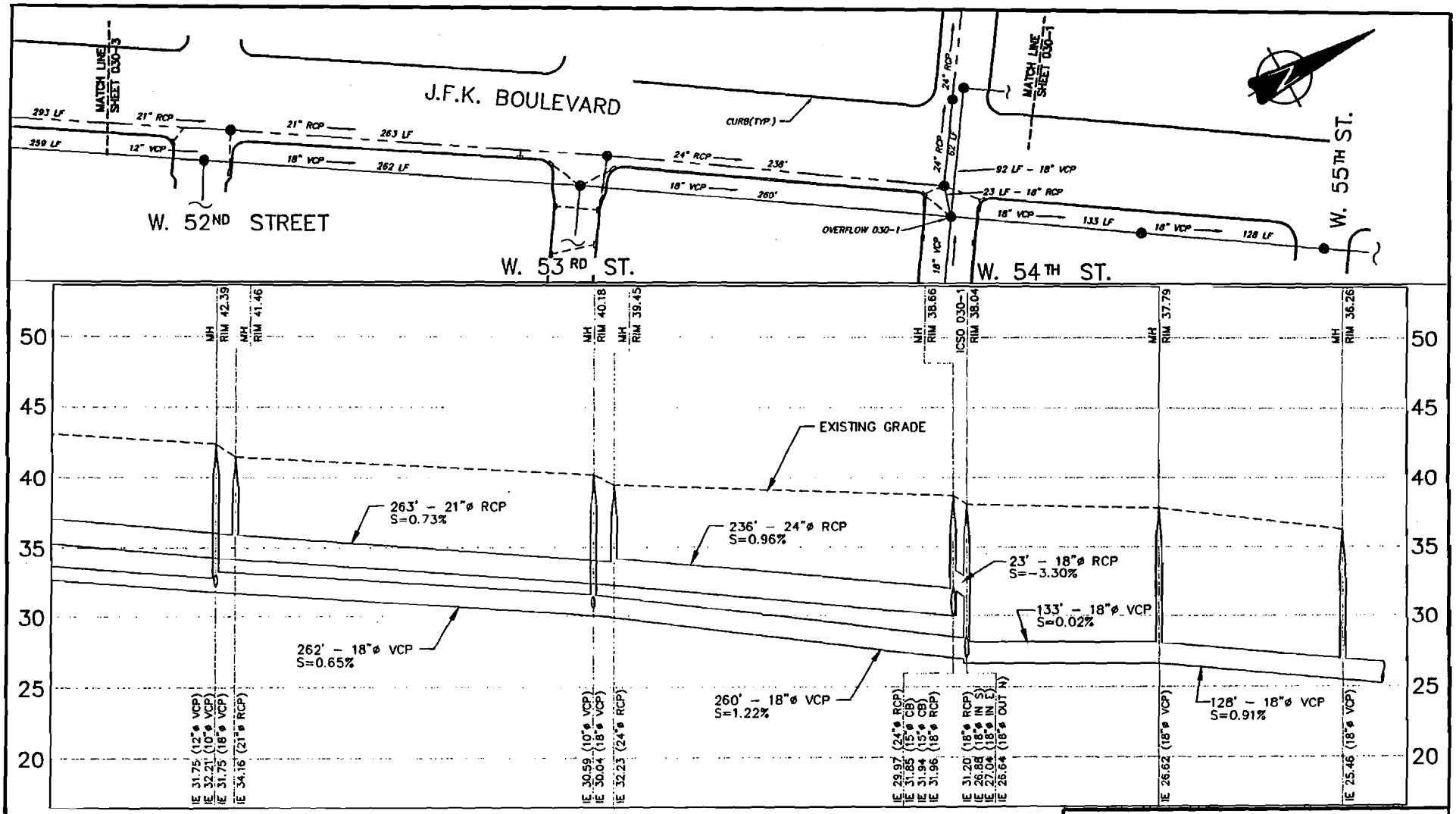

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & PROFILE
INTERNAL OVERFLOW 030-1

DATE		SHEET
9/21/97	Killam	030-2

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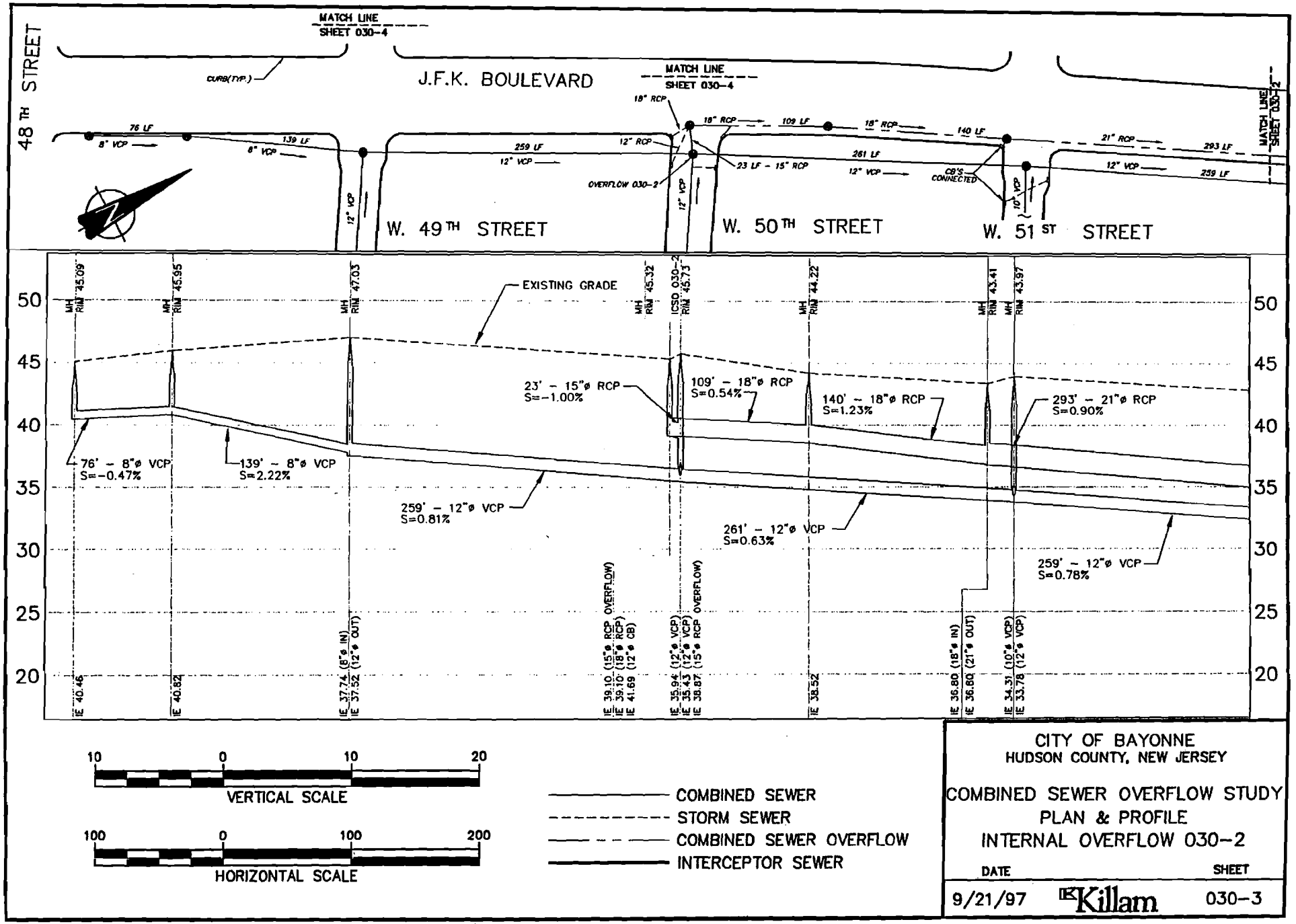

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & PROFILE
INTERNAL OVERFLOW 030-2

DATE		SHEET
9/21/97	Killam	030-3

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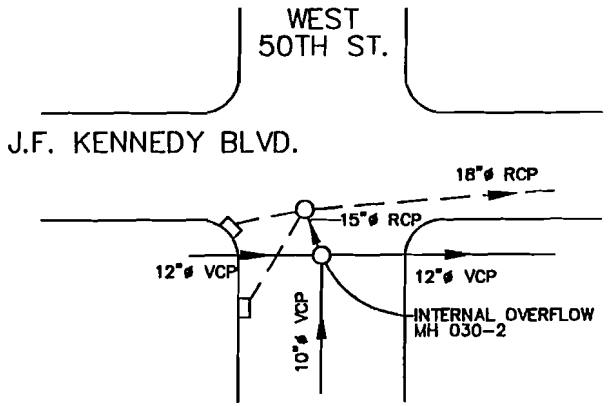
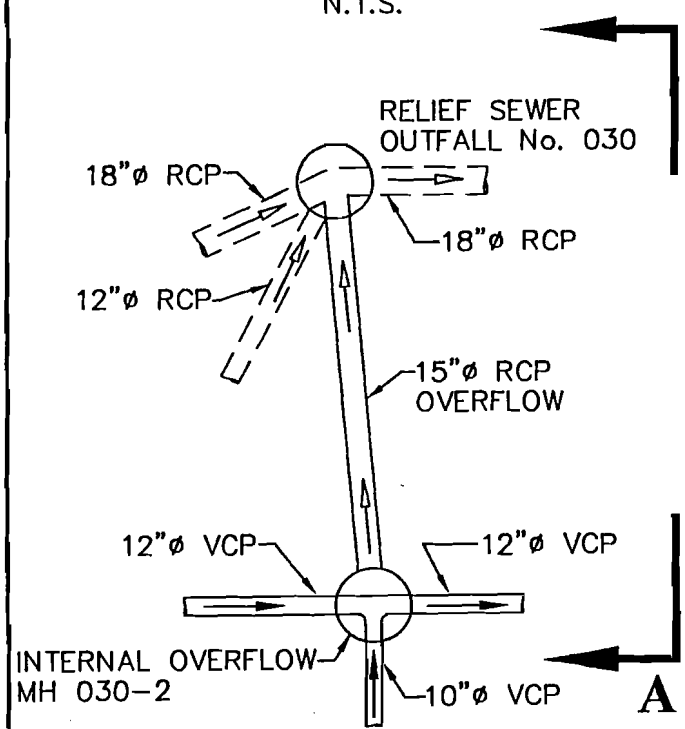
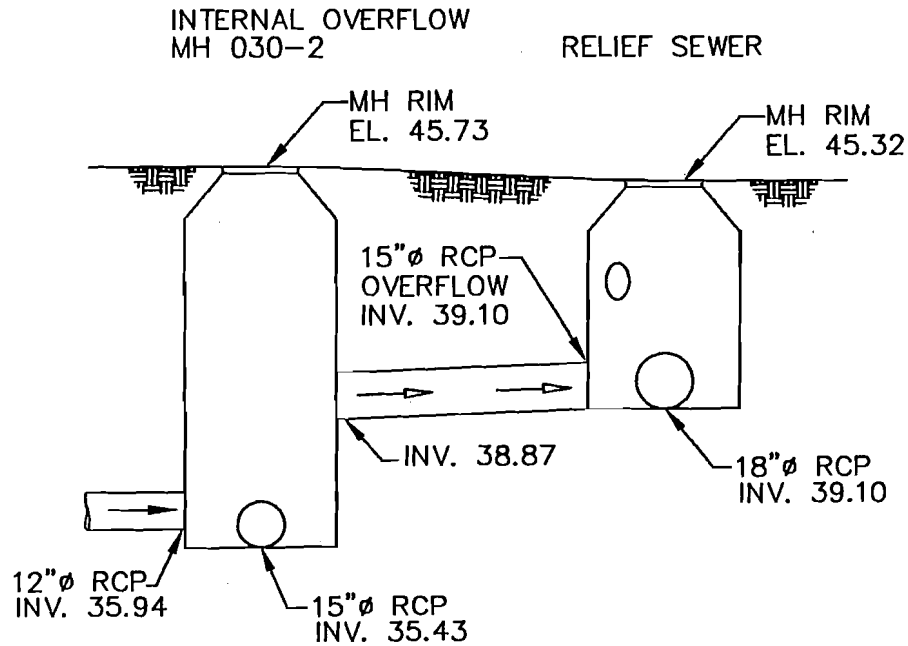


LOCATION PLAN
N.T.S.



PLAN VIEW
SCALE: 1" = 10'



SECTION A-A
SCALE: 1" = 5'

NOTE: ELEVATIONS TAKEN FROM RECORD PLANS.

LEGEND

- RELIEF SEWER PIPE
- COMBINED SEWER PIPE
- WET WEATHER FLOWS
- DRY & WET WEATHER FLOWS

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & CROSS SECTIONAL VIEW
INTERNAL OVERFLOW 030-2
W. 50TH ST. & J.F. KENNEDY BLVD.

DATE	SHEET
04/24/97	SC30-2

Killam

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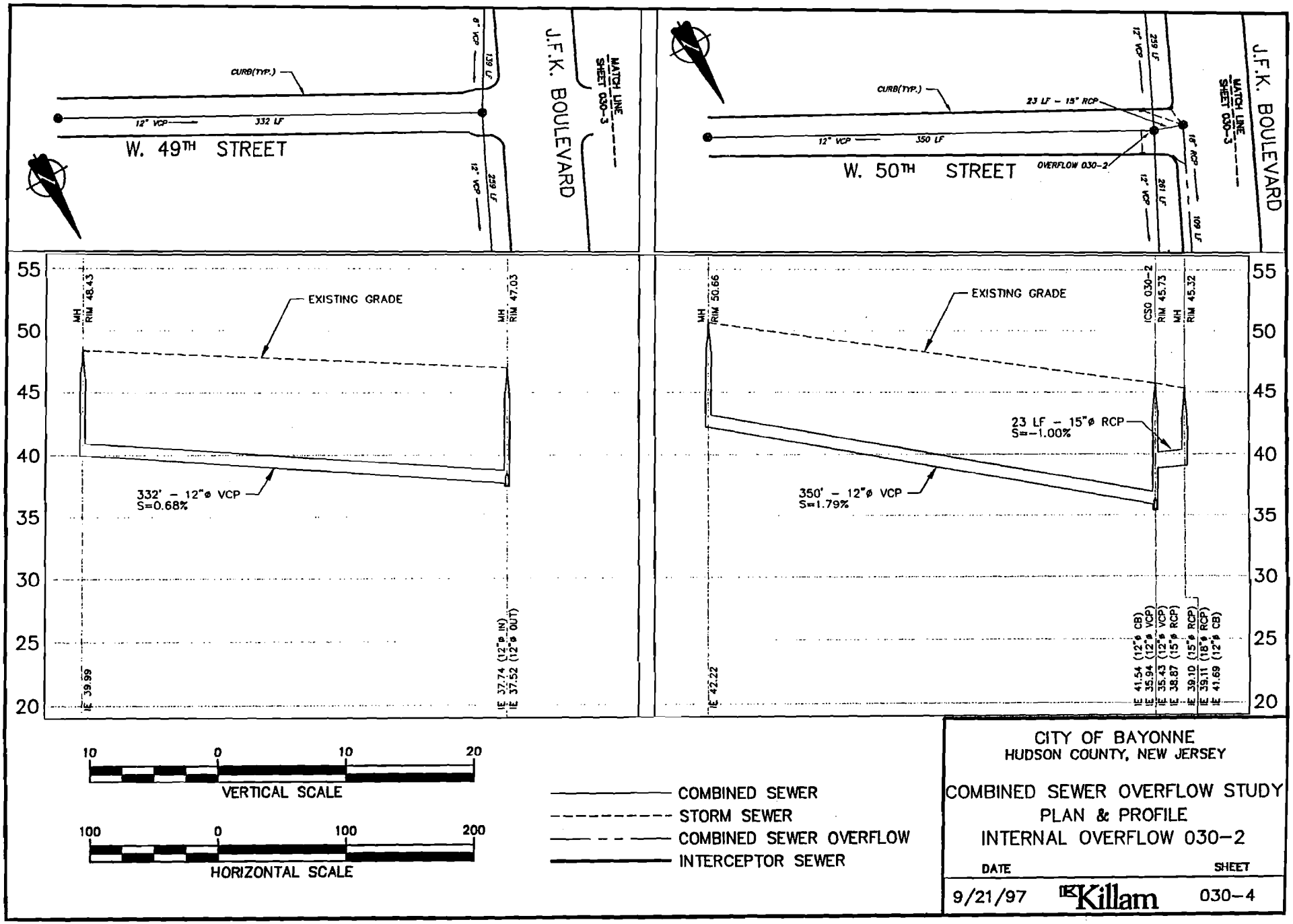

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & PROFILE
INTERNAL OVERFLOW 030-2

DATE		SHEET
9/21/97	Killam	030-4

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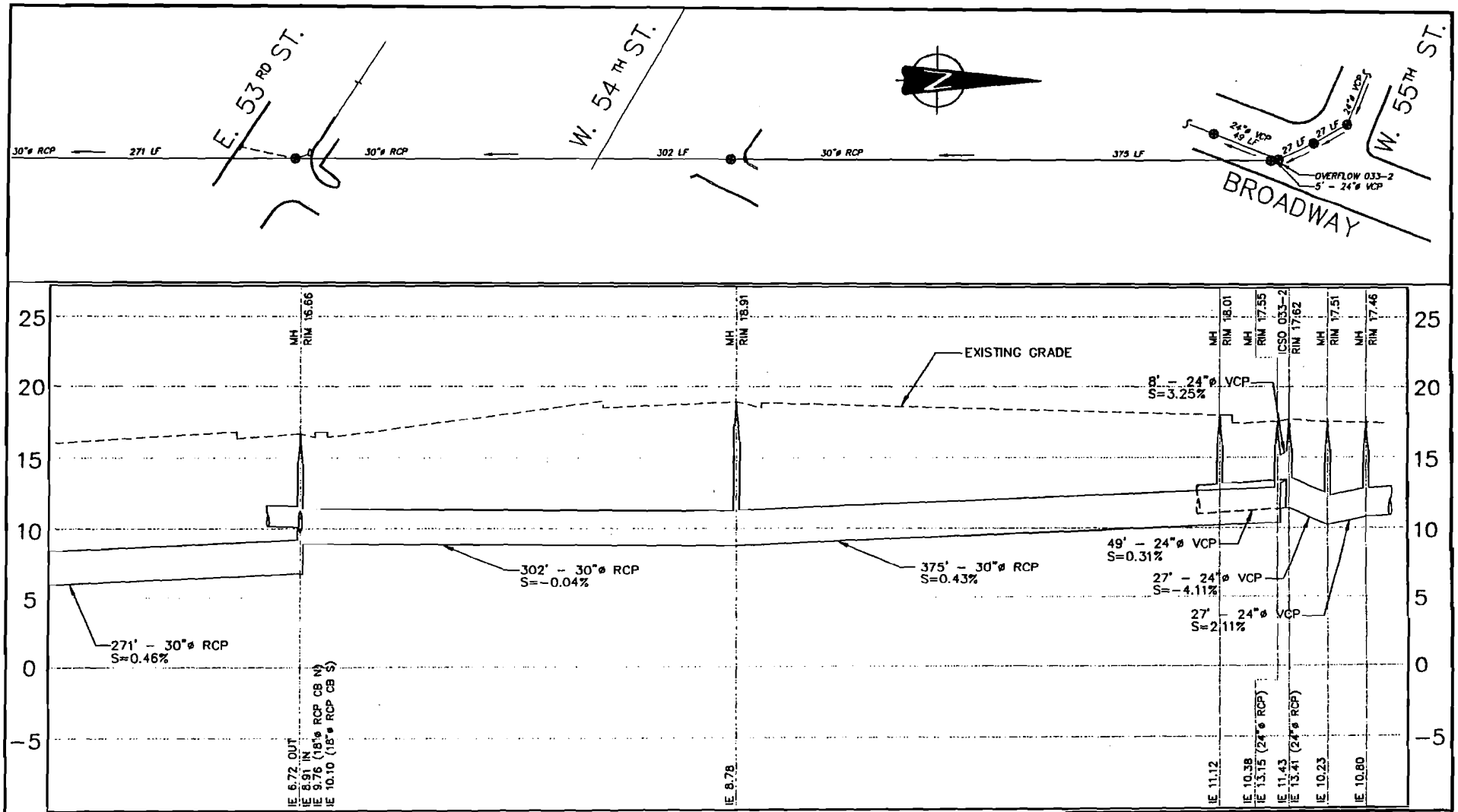
City of Bayonne

CSO Control Facility Data Extract

Relief Sewer Location & Description

NJPDES Outfall No.	**033**
Location:	Pulaski Street
Overflow to:	Upper New York Harbor
Character of District Served:	Residential and Industrial
Number of CSO Control Facilities:	1
Type of Control Facility	Interconnection Pipe
Size Range	24" Circular
Drainage Basin shared with the	
Following Regulators	18
Following Outfalls	021 (same pipe)
Outfall to Receiving Water	
Size	72 inch RCP
Capacity	86 MGD
Outfall Condition:	Good
Tidal Effects:	No
Tidal Gate(s) and Condition:	none
Drainage Area Serviced:	21 Acres



CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW STUDY
PLAN & PROFILE
INTERNAL OVERFLOW 033-2

DATE		SHEET
9/21/97	Killam	033-1

* BASED ON AS-BUILT PLANS

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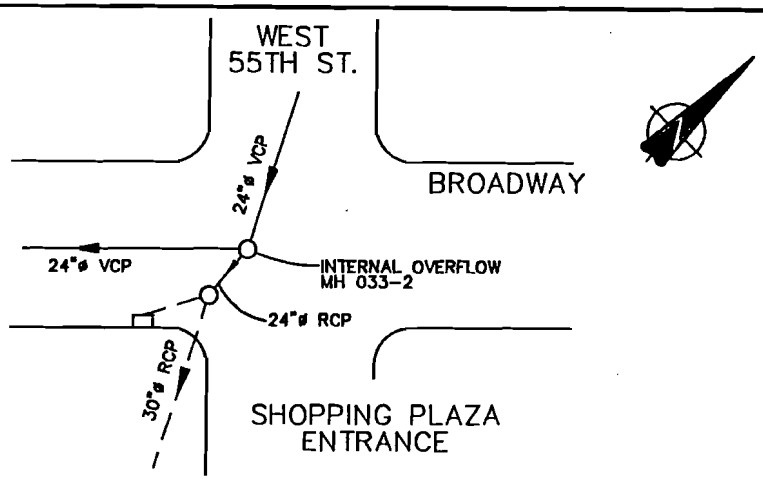
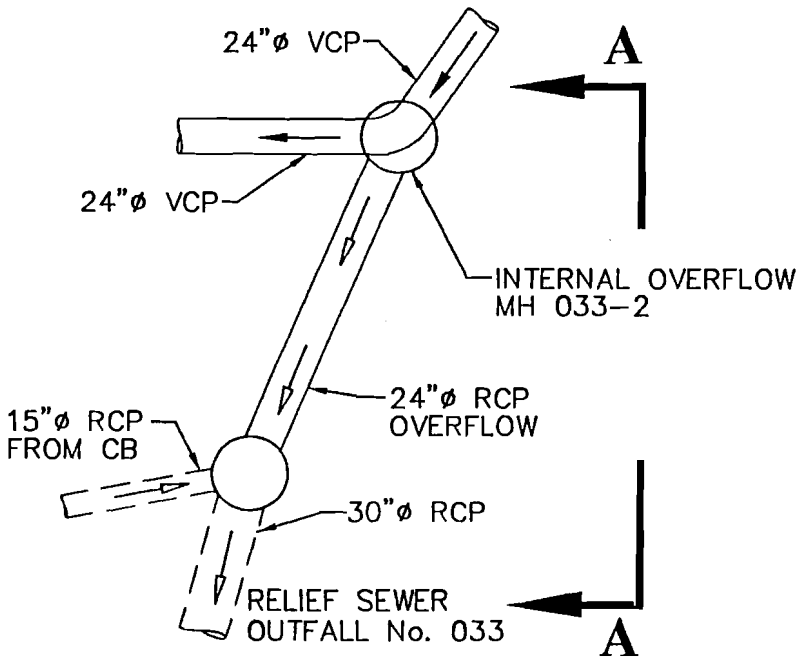
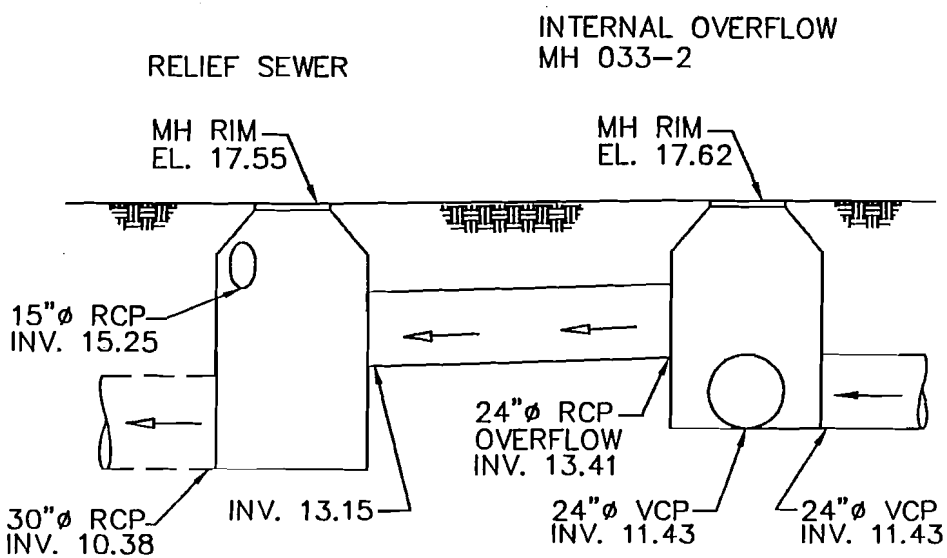


LOCATION PLAN
N.T.S.



PLAN VIEW
SCALE: 1" = 10'



SECTION A-A
SCALE: 1" = 5'

NOTE: ELEVATIONS TAKEN FROM RECORD PLANS.

LEGEND

- RELIEF SEWER PIPE
- COMBINED SEWER PIPE
- WET WEATHER FLOWS
- DRY & WET WEATHER FLOWS

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY
COMBINED SEWER OVERFLOW STUDY
PLAN & CROSS SECTIONAL VIEW
INTERNAL OVERFLOW 033-2
W. 55TH ST. & BROADWAY

DATE	SHEET
04/24/97	SC33-2

Killam

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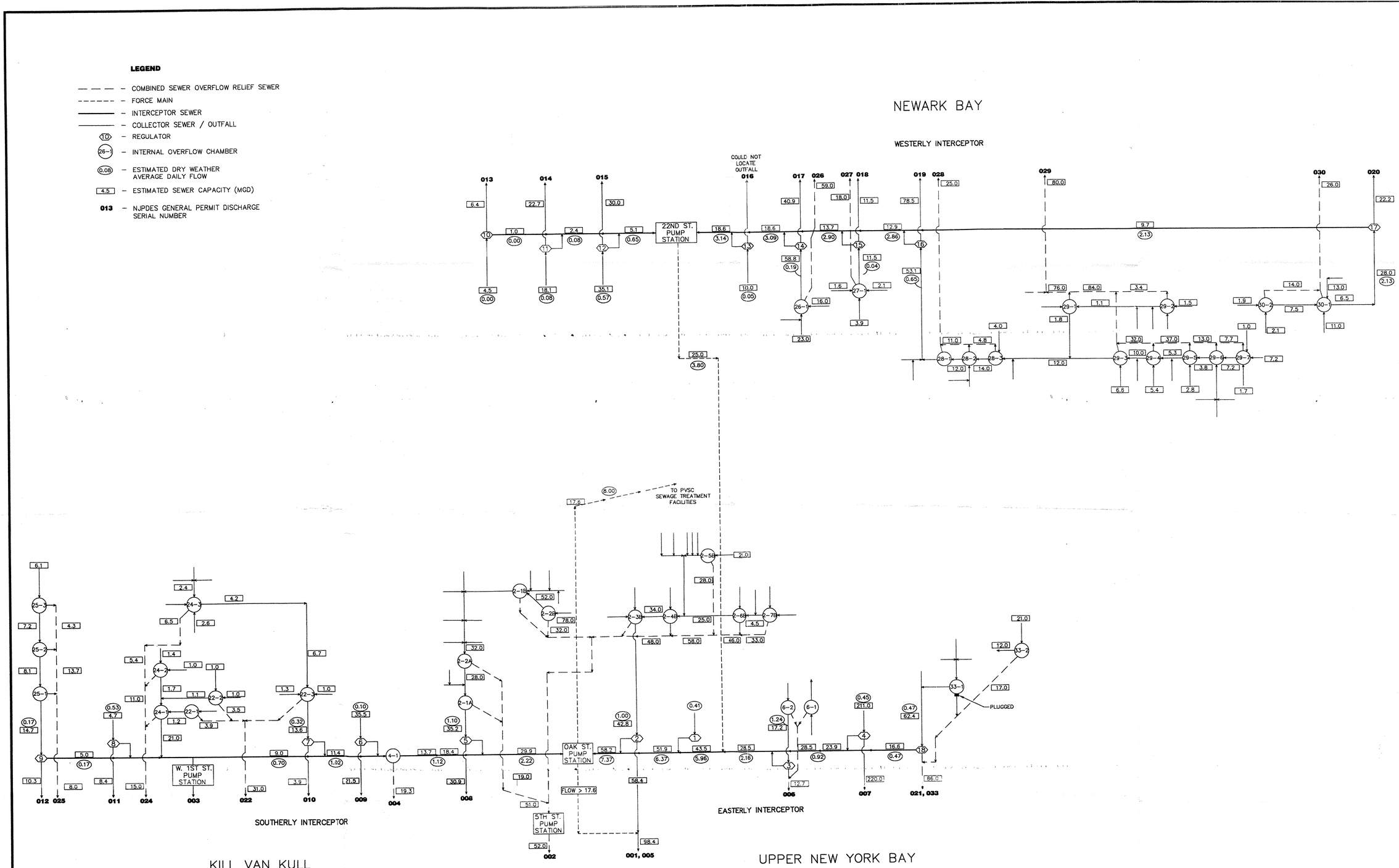
LEGEND

- — — — — COMBINED SEWER OVERFLOW RELIEF SEWER
- - - - - - FORCE MAIN
- ——— INTERCEPTOR SEWER
- ——— COLLECTOR SEWER / OUTFALL
- (10) – REGULATOR
- (26–1) – INTERNAL OVERFLOW CHAMBER
- (0.08) – ESTIMATED DRY WEATHER AVERAGE DAILY FLOW
- [4.5] – ESTIMATED SEWER CAPACITY (MGD)
- **013** – NJPDES GENERAL PERMIT DISCHARGE SERIAL NUMBER



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Killam Associates

Contract No.

Revision	Date

Designed RAA
Drawn RCC
Checked RAA
Approved USR
Date 3/5/98

Killam Associates Consulting Engineers
27 Bleeker Street
Millburn, New Jersey 07041

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

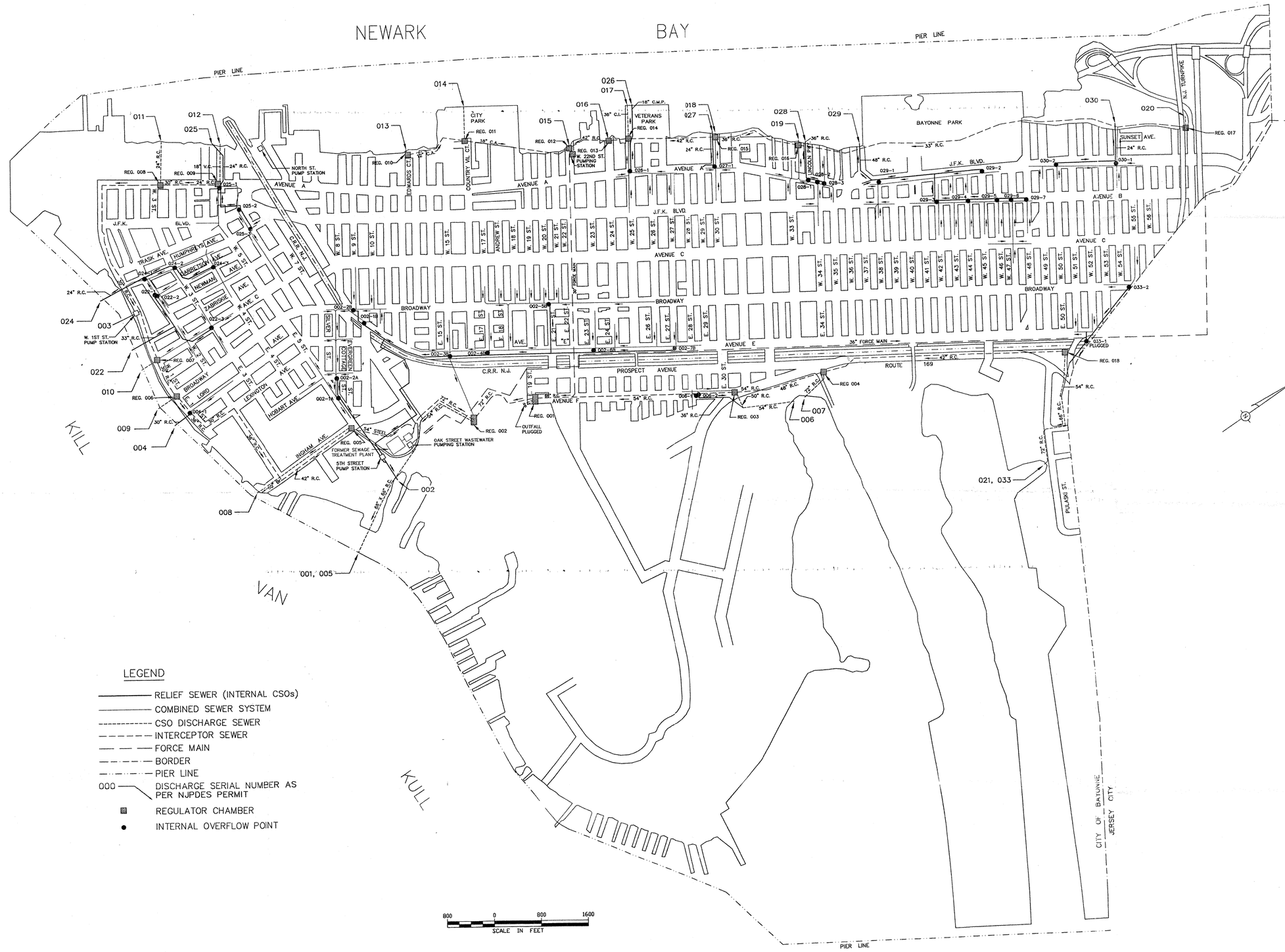
SEWER SYSTEM INVENTORY AND ASSESSMENT REPORT

SCHEMATIC - EXISTING FACILITIES

– PLATE B –

Job	No.	
233502	B/O	Total
	1	1

TIERRA-A-000216



LEGEND

- RELIEF SEWER (INTERNAL CSOs)
- COMBINED SEWER SYSTEM
- CSO DISCHARGE SEWER
- INTERCEPTOR SEWER
- FORCE MAIN
- BORDER
- PIER LINE
- 000 — DISCHARGE SERIAL NUMBER AS PER NJPDES PERMIT
- REGULATOR CHAMBER
- INTERNAL OVERFLOW POINT

Revision	Date

Designed	AAA
Drawn	AAA/RC
Checked	JSR
Approved	JSR
Date	3/2/98

Killam Associates a Consulting Engineers
27 Bleeker Street
Millburn, New Jersey 07041

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

SEWER SYSTEM INVENTORY AND ASSESSMENT REPORT
COMBINED SEWER OVERFLOW CONTROL FACILITIES AND DISCHARGE PIPES
PLAN –
PLATE A

Job	No.	
233502	PLATE A	
	B/O	Total

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Killam Associates

Contract No.

TIERRA-A-000217

10

City of Bayonne
Hudson County, N.J.

Combined Sewer Overflow Characterization Study

Service Area Drainage and Land Use Report

NJPDES Permit No. 0105023

Individual Authorization No. 0109240

December 1997

John S. Rolak, Jr., P.E.
N.J. License #29108

BAB000045

City of Bayonne
Combined Sewer Overflow Characterization Study
Service Area Drainage and
Land Use Report

Table of Contents

TABLES

City of Bayonne

Combined Sewer Overflow Characterization Study

Service Area Drainage and Land Use Report

I. Purpose and Objectives

The General Permit for combined sewer systems requires the development of a CSO Discharge Characterization Study consisting of a field calibrated and verified Combined Sewer Overflow Model designed to represent the combined sewer system's response to historical events of precipitation. The purpose of the Service Area Drainage and Land Use Report, as outlined in Part V.B.4.b. of the General Permit for Combined Sewer Systems NJPDES No. 0105023, is to provide the documentation required to substantiate the selection of monitoring locations proposed for field verification and to provide background data necessary for the development of a Storm Water Management Model (SWMM) for each catchment area.

The objectives of this report area are to develop from existing information, and on a drainage or catchment area basis, the following:

a. the drainage area boundaries for each combined sewer overflow control facility and discharge point;

b. the area and percent impervious cover;

c. the location of significant non-residential users;

d. the location of separate sanitary and storm sewered service areas including the specific point of connection to the combined sewer system;

e. the land use distribution by residential, commercial, industrial, and open space areas;

f. the service area population and estimates for dry weather flow as well as the average concentration of each pollutant; and

g. the size, location, and capacity of the sewage treatment plant, any pumping stations servicing combined sewer areas, and all CSO control facilities including an understanding of its relationship to the overall system.

It should be noted that the information provided herein is preliminary and based upon existing data. The information will be verified during the CSO Modeling Study and where necessary updated in the final version of this report.

II. Introduction

This report was prepared for the City of Bayonne. The City owns and operates all of the wastewater collection and transport facilities in the City, but does not own or operate any treatment facilities. The combined sewer system within the City has one wastewater pumping station (West 22nd Street) within the collection system and a main Pumping Station (Oak Street) which transports wastewater to the Passaic Valley Sewerage Commissioners (PVSC) Water Pollution Control Facility (WPCF) in Newark. In addition to the wastewater pumping stations on the combined sewer system, the City also owns and operates two pumping stations on the relief sewer system (5th Street and West 1st Street Pumping Stations) which transports combined sewer overflows to the receiving waters.

The City of Bayonne, as shown on Figure 1, includes an area of approximately five (5) square miles and is located on a peninsula within the New Jersey - New York Metropolitan Area. It is surrounded by Jersey City on the North, Newark Bay which separates it from the Cities of Newark and Elizabeth on the west, the Kill Van Kull which separates it from Staten Island on the south, and Upper New York Bay which separates it from the Borough of Manhattan, New York on the east.

The City of Bayonne is an older urban community located in southern Hudson County. The 1990 population of the City was 61,444 persons and a population per housing unit of 2.39. Over sixty percent of the housing units were constructed prior to 1939. The City consists of a land area of approximately 3,200 acres of which approximately 1,780 acres are serviced by the combined sewer system. The industrial areas along the east side of the City are serviced primarily by separate sanitary sewers.

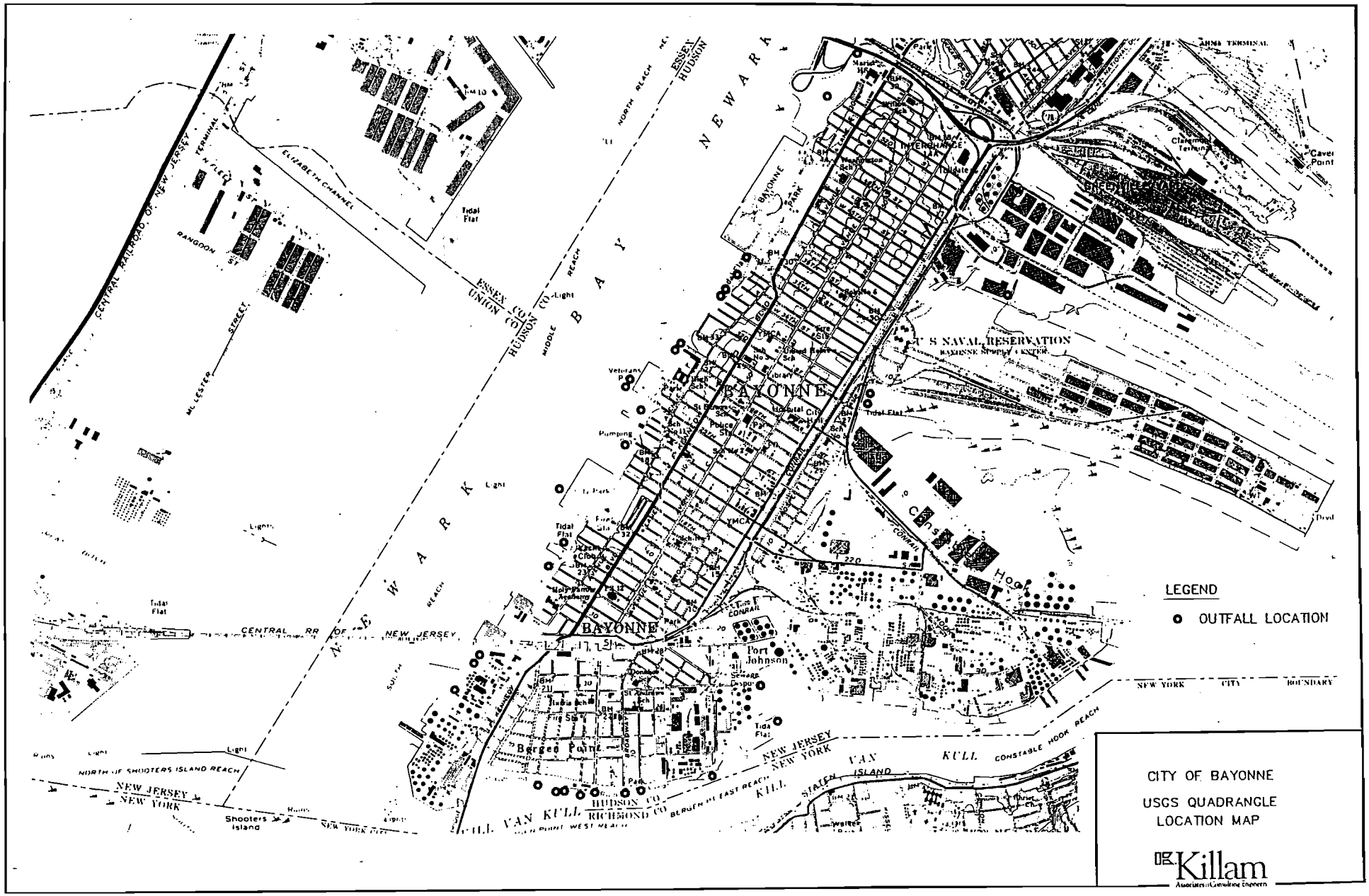

BAYONNE
BAYONNE
Port Johnson
Bergen Point
NEWARK BAY
ARTHUR KILL
KILL VAN KULL
CONSTABLE HOOK REACH
NEW JERSEY
NEW YORK
STATEN ISLAND
HUDSON CO.
RICHMOND CO.
ESSEX CO.
UNION CO.
CENTRAL RR OF NEW JERSEY
U S NAVAL RESERVATION
BAYONNE SUPPLY CENTER
Shooters Island
NORTH OF SHOOTERS ISLAND REACH
NEW YORK CITY BOUNDARY
LEGEND
OUTFALL LOCATION
CITY OF BAYONNE
USGS QUADRANGLE
LOCATION MAP
Killam
Associated Consulting Engineers

FIGURE 1

III. Service Area Drainage

1. Previous Studies

A preliminary Combined Sewer Overflow Study for Planning Area II, the City of Bayonne, was conducted as part of the 201 Wastewater Facilities Plan completed for the Hudson County Utilities Authority by Malcolm Pirnie in 1979. The 1979 Study investigated the status of the CSOs in the planning area and explored various management alternatives for abatement of CSO discharges. Various models were used in the study to evaluate overflow volumes, suspended solids and BOD loadings and the study documented problems with tidal inflow during high tides. It has been reported by the City that each of the regulator chambers were rehabilitated in the mid 1980's and that the tidal inflow problem has been eliminated. The 1979 Study did not report on estimated frequency of wet weather overflows anticipated within the City of Bayonne nor did it document any dry weather overflows. The modeling conducted did provide estimates as to the annual loads and overflow volumes discharged from all CSOs within the City during the period 1963 through 1974. Overall it estimated that average overflow volumes were 51.1 million cubic feet and that annual suspended solids and BOD_5 were 7.1 million pounds and 912,000 pounds respectively.

A Solids/Floatable Control Plan was undertaken by Killam Associates for Hudson County Planning Areas II and reported upon in October 1993 and finalized in August 1995. The investigations undertaken as part of this study included the development of plans and profiles for the interceptor sewers within the City as well as the combined sewers and discharge pipes immediately upstream and downstream of each regulator. While this work covered the CSO discharges associated with the interceptor control facilities, it did not include any of the internal CSO points nor relief

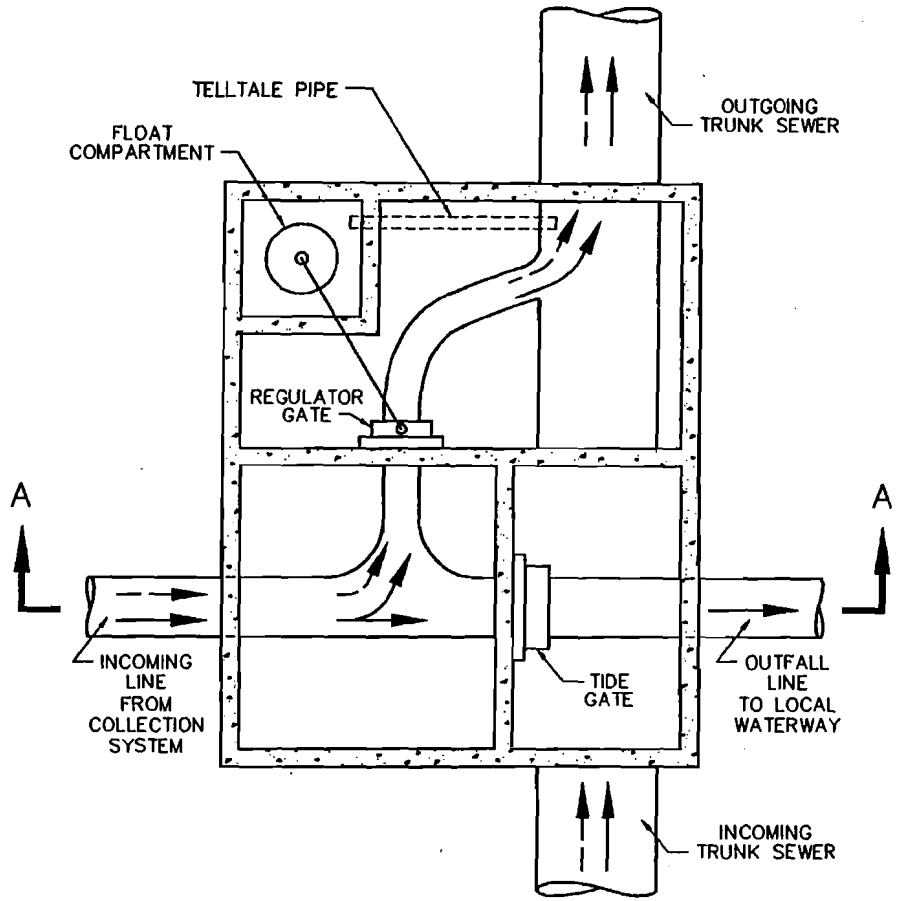
sewers. The investigations into the relief sewer system and associated internal overflows is currently ongoing.

2. Additional Information

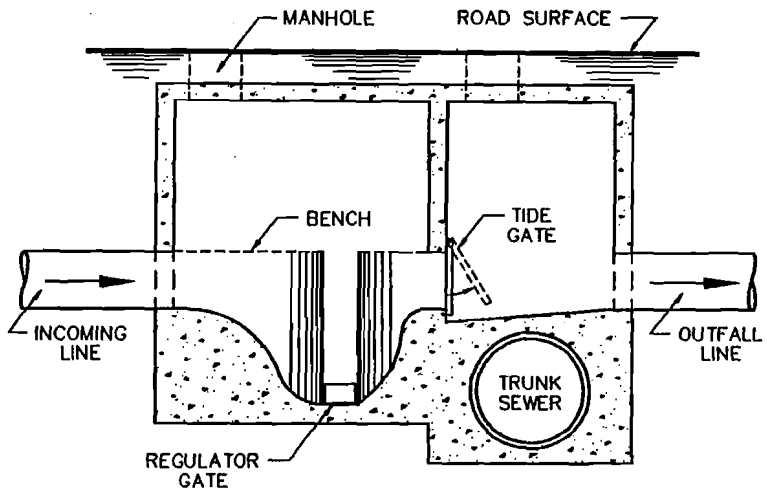
The Service Area Drainage and Land Use Report does herein incorporate by reference the **Combined Sewer Overflow Planning Study for Planning Area II (revised August 1995)** as completed by Killam Associates and undertaken by Hudson County as part of the Sewage Infrastructure Improvement Act Grant. The above referenced documents provide significant information on the combined sewer systems tributary to CSO control facilities within the study area, some of which has been reproduced and is included in Appendix A of this report.

3. Drainage Area Data

In general, the drainage basin or subcatchment of a CSO is defined by the tributary area which contributes flow to a combined sewer overflow control facility and discharge pipe. During dry weather, wastewater flow from the drainage basin enters the CSO control facility and is diverted to the downstream combined sewer or interceptor by means of a regulator gate or static weir. Wastewater flows exceeding the capacity of the regulator gate or static weir during wet weather causes water levels in the control chamber to increase until levels reach and exceed the height of the overflow weir. In most cases, once this occurs, there is a release of a combined sewer overflow. A typical combined sewer mechanical regulator control facility in the City of Bayonne is illustrated in Figure 2, while a typical combined sewer static control facility is illustrated in Figure 3.



PLAN



SECTION A–A

LEGEND

DRY WEATHER FLOW

WET WEATHER FLOW

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

SERVICE AREA DRAINAGE & LAND USE REPORT

TYPICAL REGULATOR

DATE 10/31/97

Killam

FIGURE 2

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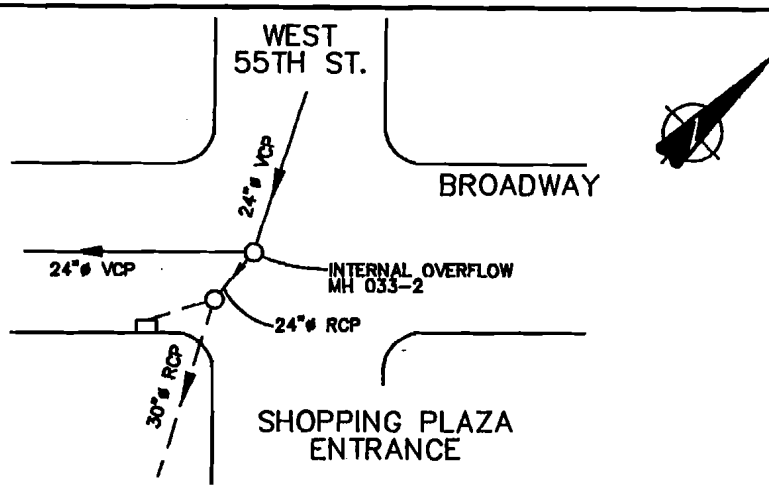
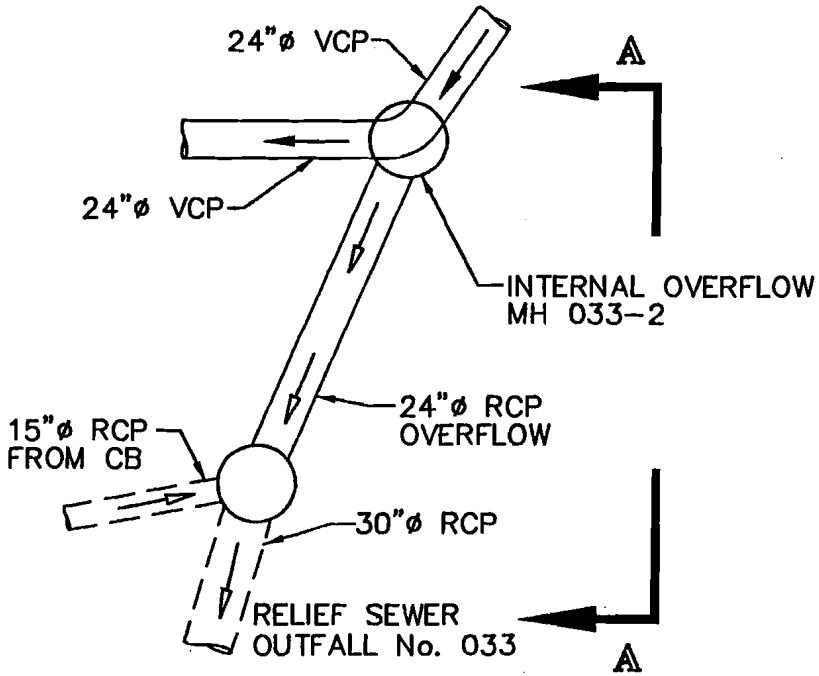
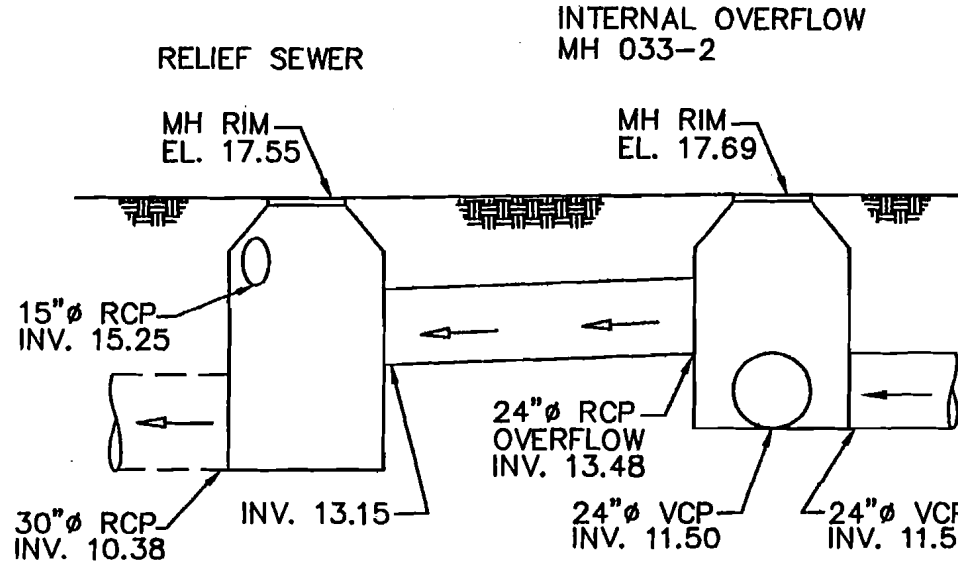


LOCATION PLAN
N.T.S.



PLAN VIEW
SCALE: 1" = 10'



SECTION A–A
SCALE: 1" = 5'

NOTE: ELEVATIONS TAKEN FROM RECORD PLANS.

LEGEND

- RELIEF SEWER PIPE
- COMBINED SEWER PIPE
- WET WEATHER FLOWS
- DRY & WET WEATHER FLOWS

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

SERVICE AREA DRAINAGE & LAND USE REPORT

TYPICAL INTERNAL OVERFLOW

DATE 10/31/97

Killam

FIGURE 3

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The City of Bayonne contains a combined sewer system with seventeen (17) combined sewer overflow (CSO) points originating at regulator chambers to the interceptor sewer. Combined sewer overflows occur during precipitation events when wastewater flows (stormwater and sanitary sewage) within the combined sewer system exceed the capacity of the regulator. The City of Bayonne owns and operates the entire combined sewer system including the discharge pipes and regulator chambers.

In addition to the CSO points originating at the seventeen (17) active regulators to the interceptor, the City has over the years constructed new combined sewer overflow control facilities (weirs, overflow pipes, and relief sewers) to provide hydraulic relief to the combined sewer system. These combined sewer overflow control facilities were specifically designed to prevent surcharging of the combined sewer collection system and street flooding. While catch basins in the area of the relief sewer were directly connected, catch basins in upstream areas remain connected to the combined sewer system. Control facilities such as overflow pipes or weirs divert excess wastewater flow from the combined sewer collection system to the receiving waters. Overall the relief sewer system contains some thirty-seven (37) control facilities tributary to ten (10) combined sewer overflow discharge pipes. Accordingly, there are more than fifty (50) CSO control facilities and twenty-seven (27) CSO discharge points within the City of Bayonne. The location of all discharge pipes and CSO control facilities are located in the rear of the report as Plate A.

The combined sewer system within the City is set up so that flow to the interceptor is controlled by a mechanical regulator, while internal CSO control facilities in the collection system are tributary to a relief sewer discharge pipe and outfall. The seventeen (17) CSO control facilities on the

interceptor system have mechanical regulators which limit flow to the interceptor or collector sewer by means of a sluice gate. The internal overflow points typically include an overflow pipe at a higher connection elevation typically at the crown of the collector sewer. In most cases, several internal CSO control facilities are tributary to an individual relief sewer. While most relief sewers have only one or two CSO control facilities, two of the relief sewers have seven and nine control facilities respectively in their drainage area.

Detailed drainage area data has been compiled for the combined sewer system tributary to each interceptor CSO control facility. Information is provided in graphical, tabular and narrative form on general subcatchment information, sewer system size and type (combined, sanitary, or storm), and those system characteristics, such as population and significant non-residential users, which impact pollutant loads and hydraulics.

3.1 Service Area Land Use Distribution and Impervious Area

As previously indicated, the City of Bayonne encompasses approximately 3,200 acres tributary to Newark Bay, the Kill Van Kull, and Upper New York Harbor drainage basins. Drainage area and land use information has been developed for the entire City broken down by CSO discharge pipes and outfalls. Land use schematics showing the drainage area boundary, total drainage area, percentage impervious coverage, major collector sewers and land use were developed for all discharge pipes associated with the interceptor system. The location and extent of discharge pipes associated with the relief sewer system are also indicated on these schematics.

Table 2
City of Bayonne
Land Use Distribution

Outfall Number	Regulator Number	Overflow Name	Total Acres	Percentage of Total Area to Land Use Noted					
				R1	R2	R3	Open Space	Industrial	Commercial
001/005	1,2	E. 15th St Ext.	295	0	67	0	8	9	16
006	3	E. 30th St & Avenue F.	44	0	70	0	0	30	0
007	4	E. 34th St & Avenue F	247	0	88	8	0	0	4
008	5	E. 5th St & Ingham Ave.	294	0	62	2	0	27	9
009	6	E. 1st St & Broadway	30	0	79	14	7	0	0
010	7	W. 1st St & Avenue C	59	0	74	23	3	0	0
011	8	W. 3rd St & Avenue A	40	0	45	0	0	55	0
012	9	W. 5th St & Avenue A	39	0	87	0	0	13	0
013	10	Edwards Court	4	0	100	0	0	0	0
014	11	W. 16th St. & Avenue A	58	0	64	0	36	0	0
015	12	W. 22nd Street	77	0	88	8	0	0	12
016	13	W. 24th Street	17	0	100	0	0	0	0
017	14	W. 25th Street	88	0	84	0	6	0	10
018	15	W. 30th Street	22	0	100	0	0	0	0
019	16	Lincoln Avenue	190	0	74	10	16	0	0
020	17	Route 440 Ramp	76	0	69	13	9	0	9
021	18	E. 50th Street	165	0	85	0	0	0	15
		Total	1745						

The percentage impervious cover analyses completed on each drainage basin in the City is based upon aerial photography. System maps were used in conjunction with the aerial photography to establish contiguous land use areas within each drainage basin. The land use distribution was developed from recent (1990) aerial photography wherein contiguous land use types were delineated and visually analyzed. Estimates of impervious areas within each area, including driveways, sidewalks, and roofs, were determined from the aerial photos with assumption made for typical sidewalk and driveway widths. The method and results of the percentage impervious coverage determinations for these areas are provided on Table 1.

In addition to the land use distribution, drainage area information concerning subcatchment characteristics were developed for all drainage basins. The area of each drainage basin was determined using the mapping prepared by Killam Associates under the Sewage Infrastructure Improvement Act (SIIA) Project. Field investigations conducted under Phase I and Phase II of the SIIA projects were used to verify existing mapping and the extent of each drainage basin.

Other catchment characteristic necessary for the development of the land side SWMM4 model will be completed during the development of the model. Many of the specific requirements noted in the general permit, i.e. ground slope, overland flow width, and subcatchment length, will be developed by HydroQual during the development of the SWMM model. Since detailed topographic information is not available for Bayonne, it is very likely that these parameters will be set, calibrated, and verified from real time flow monitoring to be completed at the time. The percentage impervious developed herein, will therefore be checked, used, or modified as necessary, by HydroQual Inc.

Table 1

CITY OF BAYONNE - Land Use Report			PERCENT IMPERVIOUS ANALYSIS						Job No. 257001
Drainage Basin	Typ. Block	Percent of Area	Total Area (Ac.)	Typ. Block Area (Sq. Ft.)	Sidewalk Area (Sq. Ft.)	Driveway Area (Sq. Ft.)	Road Surface Area (Sq. Ft.)	Bldg. Roof Area (Sq. Ft.)	Percent Impervious
REGULATOR 1									
Open Space	Q	5%	2.4	54,600	0	0	0	0	0%
Open Space	BB	5%	2.4	57,200	0	0	2,200	0	4%
Industrial	X	12%	5.8	27,300	0	0	7,600	10,074	65%
Res.(med)	R	78%	37.4	207,625	12,360	0	33,600	48,700	46%
		100%	48.0						44%
REGULATOR 2									
Res.(med)	O	3%	7.4	141,750	8,600	0	19,850	52,500	57%
Res.(med)	R	62%	153.1	207,625	12,360	0	33,600	48,700	46%
Commercial	S	1%	2.5	91,000	2,080	18,000	8,320	21,450	55%
Commercial	H	9%	22.2	110,600	10,100	4,000	16,170	36,300	60%
Commercial	B	9%	22.2	72,800	6,400	8,000	18,100	18,900	71%
Industrial	P	8%	19.8	225,500	2,460	4,000	5,040	23,000	15%
Open Space	Q	4%	9.9	54,600	0	0	0	0	0%
Open Space	BB	4%	9.9	57,200	0	0	2,200	0	4%
		100%	247.0						44%
REGULATOR 3									
Industrial	G	30%	13.2	84,600	3,900	8,200	7,050	13,040	38%
Res.(med)	M	70%	30.8	100,000	6,600	0	21,600	18,800	47%
		100%	44.0						44%
REGULATOR 4									
Res.(med)	E	43%	106.2	175,500	7,920	0	26,450	36,200	40%
Res.(med)	A	35%	86.5	197,600	11,200	0	40,400	56,400	55%
Res.(med)	I	9%	22.2	121,500	1,940	18,200	27,820	4,000	43%
Open Space	C	1%	2.5	89,700	0	0	6,500	0	7%
Commercial	H	6%	14.8	110,600	10,100	4,000	16,170	36,300	60%
Commercial	B	6%	14.8	72,800	6,400	8,000	18,100	18,900	71%
		100%	247.0						48%
REGULATOR 5									
Commercial	H	5%	14.7	110,600	10,100	4,000	16,170	36,300	60%
Commercial	S	4%	11.8	91,000	2,080	18,000	8,320	21,450	55%
Industrial	T	27%	79.5	199,500	480	3,000	14,000	91,299	55%
Res.(high)	V	1%	2.9	92,300	8,000	0	23,400	60,000	99%
Res.(high)	Y	1%	2.9	145,700	7,200	18,400	23,860	32,670	56%
Res.(med)	R	31%	91.1	207,625	12,360	0	33,600	48,700	46%
Res.(med)	U	31%	91.1	153,400	10,500	0	34,760	33,490	51%
		100%	294.0						52%
REGULATOR 6									
Res.(med)	U	83%	24.9	153,400	10,500	0	34,760	33,490	51%
Res.(high)	Y	17%	5.1	145,700	7,200	18,400	23,860	32,670	56%
		100%	30.0						52%
REGULATOR 7									
Res.(med)	U	83%	73.1	153,400	10,500	0	34,760	33,490	51%
Res.(high)	V	5%	4.4	92,300	8,000	0	23,400	60,000	99%
Res.(high)	W	9%	7.9	155,250	15,200	13,100	33,000	46,025	69%
Res.(high)	Y	3%	2.6	145,700	7,200	18,400	23,860	32,670	56%
		100%	88.0						55%
REGULATOR 8									
Res.(med)	U	45%	18.0	153,400	10,500	0	34,760	33,490	51%
Industrial	Z	55%	22.0	150,000	2,100	40,000	21,000	36,490	66%
		100%	40.0						60%
REGULATOR 9									
Res.(med)	U	87%	33.9	153,400	10,500	0	34,760	33,490	51%
Industrial	Z	13%	5.1	150,000	2,100	40,000	21,000	36,490	66%
		100%	39.0						53%

Table 1 (cont.)

CITY OF BAYONNE - Land Use Report		PERCENT IMPERVIOUS ANALYSIS							Job No. 257001
Drainage Basin	Typ. Block	Percent of Area	Total Area (Ac.)	Typ. Block Area (Sq. Ft.)	Sidewalk Area (Sq. Ft.)	Driveway Area (Sq. Ft.)	Road Surface Area (Sq. Ft.)	Bldg. Roof Area (Sq. Ft.)	Percent Impervious
REGULATOR 10									
Res.(med)	R	100%	4.0	207,625	12,360	0	33,600	48,700	46%
		100%	4.0						46%
REGULATOR 11									
Res.(med)	O	51%	29.6	141,750	8,600	0	19,850	52,500	57%
Res.(med)	R	13%	7.5	207,625	12,360	0	33,600	48,700	46%
Open Space	N	36%	20.9	135,000	3,500	0	0	0	3%
		100%	58.0						36%
REGULATOR 12									
Res.(med)	O	44%	33.9	141,750	8,600	0	19,850	52,500	57%
Res.(med)	R	44%	33.9	207,625	12,360	0	33,600	48,700	46%
Commercial	H	4%	3.1	110,600	10,100	4,000	16,170	36,300	60%
Res.(high)	J	8%	6.1	69,825	3,480	19,200	7,125	9,000	56%
		100%	77.0						52%
REGULATOR 13									
Res.(med)	O	50%	8.5	141,750	8,600	0	19,850	52,500	57%
Res.(med)	R	50%	8.5	207,625	12,360	0	33,600	48,700	46%
		100%	17.0						51%
REGULATOR 14									
Res.(med)	O	8%	7.0	141,750	8,600	0	19,850	52,500	57%
Res.(med)	R	76%	66.9	207,625	12,360	0	33,600	48,700	46%
Commercial	H	4%	3.5	110,600	10,100	4,000	16,170	36,300	60%
Commercial	L	6%	116,250	116,250	7,680	2,250	19,180	66,300	82%
Open Space	N	6%	5.3	135,000	3,500	0	0	0	3%
		100%	88.0						47%
REGULATOR 15									
Res.(med)	O	60%	13.2	141,750	8,600	0	19,850	52,500	57%
Res.(med)	R	20%	4.4	207,625	12,360	0	33,600	48,700	46%
Res.(med)	K	20%	4.4	191,400	6,550	25,000	14,110	74,900	63%
		100%	22.0						56%
REGULATOR 16									
Res.(med)	A	30%	57.0	197,600	11,200	0	40,400	56,400	55%
Res.(med)	R	37%	70.3	207,625	12,360	0	33,600	48,700	46%
Res.(med)	F	7%	13.3	116,850	5,800	0	14,800	31,840	45%
Open Space	C	16%	30.4	89,700	0	0	6,500	0	7%
Res.(high)	D	5%	9.5	61,600	3,600	8,000	4,400	17,500	54%
Res.(high)	J	5%	9.5	69,825	3,480	19,200	7,125	9,000	56%
		100%	190.0						43%
REGULATOR 17									
Res.(med)	A	69%	52.5	197,600	11,200	0	40,400	56,400	55%
Open Space	C	9%	6.8	89,700	0	0	6,500	0	7%
Commercial	S	9%	6.8	91,000	2,080	18,000	8,320	21,450	55%
Res.(high)	J	13%	9.9	69,825	3,480	19,200	7,125	9,000	56%
		100%	76.0						51%
REGULATOR 18									
Res.(med)	A	72%	148.2	197,600	11,200	0	40,400	56,400	55%
Commercial	B	6%	12.4	72,800	6,400	8,000	18,100	18,900	71%
Commercial	H	6%	12.4	110,600	10,100	4,000	16,170	36,300	60%
Industrial	AA	16%	33.0	210,000	2,040	27,000	17,000	94,500	67%
		100%	206.0						58%

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during the development and calibration of the Level 4 SWMM.

3.2 Detailed Land Use Information

The land use distribution in each combined sewer service area was determined from municipal zoning maps and a review of 1990 aerial photography of the City. Schematics illustrating the land use distribution and percentage impervious cover were established for each CSO discharge point. These schematics which include the breakdown of land use by regulator and discharge point are included, together with other drainage area information as Appendix A in the rear of this report.

Summary information on the land use distribution for CSO drainage basins within the City of Bayonne is provided on Table 2. The land use distribution analysis conducted in the City shows that the combined sewer control facilities and associated combined sewer systems within the service district include a total land area of approximately 1,745 acres. In general, a review of the land use distribution in the City shows that the City is primarily residential. While pocket commercial areas are located within residential areas, commercial areas in the City generally follow a north - south pattern with the central business district located in the central section of the City along Avenue C. Industrial areas of the City are primarily located in the eastern and western sides of the City. The industrial areas along the Upper New York Bay are primarily separate and have not been included in this analysis.

3.3 Separate Sanitary and Storm Sewer Systems

As previously indicated, the industrial section of the City is located along the east side and is

generally tributary directly to the interceptor. The systems interceptors receive combined flow from the CSO control facilities and sanitary flow from the industrial areas. There are no regulators or combined sewer overflows directly associated with the interceptor system, however there is an overflow associated with the Oak Street Pumping Station. When flows tributary to the Oak Street Pumping Station exceed the 17.6 MGD which can be pumped to the PVSC WPCF, flows are diverted to a storage tank and thereafter to the Upper New York Bay. Thus, there are no truly separate sewered areas within the City.

3.4 Pollutant Buildup

The following annual loading factors (beta) in pounds per year are provided in SWMM-1:

Land Use	BOD_5	SS	VS	PO_4	N
Residential	3.29	76.2	38.9	0.139	0.540
Commercial	13.2	91.8	579	0.312	1.220
Industrial	5.00	120.0	59.2	0.291	1.140
Other	0.47	11.1	10.8	0.041	0.250

These loading factors can be used as a method of determining which drainage areas should be monitored under the Discharge Characterization Study. The actual pollutant loads within each area will be determined through monitoring and modeling of the CSO discharge.

A preliminary review of the potential pollutant loading from each regulator and CSO discharge point drainage basin based upon the above factors. The result of these analyses are provided in Table 3 which is based upon BOD loading, and Table 4 which provides the loading based on fecal coliform contamination. These tables have been highlighted to show those discharge points which contribute

Table 3
Potential Wet Weather Monitoring Locations
Ranked by Estimated BOD Loading

Outfall Number	Regulator Number	Overflow Name	Total Acres	Percentage of Area within Land Use Type						BOD Rank
				R1	R2	R3	Open Space	Industrial	Commercial	
008	5	E. 5th St & Ingham Ave.	294	0	62	2	0	27	9	296
001/005	1,2	E. 15th St. Ext.	295	0	67	0	8	9	16	255
007	4	E. 34th St & Avenue F	247	0	88	8	0	0	4	208
021	18	E. 50th Street	165	0	85	0	0	0	15	145
019	16	Lincoln Avenue	190	0	74	10	16	0	0	132
015	12	W. 22nd Street	77	0	88	8	0	0	12	72
017	14	W. 25th Street	88	0	84	0	6	0	10	71
020	17	Route 440 Ramp	76	0	69	13	9	0	9	60
010	7	W. 1st St & Avenue C	59	0	74	23	3	0	0	47
011	8	W. 3rd St & Avenue A	40	0	45	0	0	55	0	45
006	3	E. 30th St & Avenue F.	44	0	70	0	0	30	0	44
012	9	W. 5th St & Avenue A	39	0	87	0	0	13	0	35
014	11	W. 16th St. & Avenue A	58	0	64	0	36	0	0	31
009	6	E. 1st St & Broadway	30	0	79	14	7	0	0	23
018	15	W. 30th Street	22	0	100	0	0	0	0	18
016	13	W. 24th Street	17	0	100	0	0	0	0	14
013	10	Edwards Court	4	0	100	0	0	0	0	3
		Total Acres	1745							
		Acres Shaded	836							
		Percentage Shaded	48%							

Table 4
Protential Wet Weather Monitoring Locations
Ranked by Fecal Coliforms Loading

Outfall Number	Overflow Name	Total Acres	R1	R2	R3	Open Space	Industrial	Commercial	Coliform Load Rating
5	E. 5th St & Ingham A	294	0	62	2	0	27	9	160
1,2	E. 15th St Ext.	295	0	67	0	8	9	16	147
4	E. 34th St & Avenue	247	0	87	0	1	0	12	141
16	Lincoln Avenue	190	0	74	10	16	0	0	99
18	E. 50th Street	165	0	85	0	0	0	15	93
12	W. 22nd Street	77	0	88	8	0	0	4	48
14	W. 25th Street	88	0	84	0	6	0	10	48
17	Route 440 Ramp	76	0	69	13	9	0	9	40
7	W. 1st St & Avenue	59	0	74	23	3	0	0	36
3	E. 30th St & Avenue	44	0	70	0	0	30	0	25
9	W. 5th St & Avenue	39	0	87	0	0	13	0	23
11	W. 16th St. & Avenu	58	0	64	0	36	0	0	23
8	W. 3rd St & Avenue	40	0	45	0	0	55	0	21
6	E. 1st St & Broadway	30	0	79	14	7	0	0	17
15	W. 30th Street	22	0	100	0	0	0	0	14
13	W. 24th Street	17	0	100	0	0	0	0	11
10	Edwards Court	4	0	100	0	0	0	0	2

the highest BOD and fecal coliform contamination.

3.5 Significant Industrial Users

Information has been obtained from the Passaic Valley Sewerage Commissioners concerning the name, address, the Federal Categorical Standards, and the flow of non-residential users within the City. The information, which included all industrial discharges in the study area has been processed to include only significant non-residential users separated into tributary areas for each CSO discharge point. A significant non-residential user is defined as a non-residential user with a wastewater flow in excess of 25,000 GPD or one that falls within the Federal Categorical Standards.

Information on significant non-industrial users within the City of Bayonne has been obtained from PVSC and is provided on Table 5. The table which includes the facility name, location, SIC Code, and a description of their activities indicates that there are only three facilities which fall into this category. The location of each significant non-residential user is included on Plate A in the rear of this report.

Table 5
Significant Non-residential Users
in the City of Bayonne

Facility Name	Facility Address	Business Activity SIC Code	Average Daily Flow (MGD)	Comments
Airflyte Electronics Co., Inc	56 Hook Rd	3471 Electroplating	0.004	In Separate Sewer Area
Best Foods, CPC International	88 Avenue A	2035 Mayonnaise & Vegetable Oil Manufacturing	0.177	
Exxon Co USA	764 Avenue E	5541 Groundwater	0.000	

IV. Sewer Line Data

1. Service Area Population Data

Estimates of the residential population tributary to each of the CSO drainage basins are based on 1990 Census data obtained for the City. Detailed census data, broken down by municipality, census tract, and blocks were developed from computer files provided by the Federal government. In addition to the population tables separating population numbers into census tract and block numbers, census maps showing the boundaries for each census tract and block were also obtained. Sewer system drainage boundaries were superimposed upon the census maps providing a means to determine which tracts and blocks, or portions thereof, fit within the drainage basin.

Population information for each drainage basin was then totaled using the Census population numbers provided for specific tracts and blocks. In areas where the drainage area boundary bisected the population block and tract, the percentage of the population area within the drainage basin was propertied and used to estimate the population in that segment of the drainage basin. This was conducted for each of the eighteen (18) CSO drainage basins within the City tributary to the interceptor system.

The population analysis has shown the combined sewer systems in the City of Bayonne service a population of approximately 68,735 people of which 52,788 are estimated to be in combined sewer areas. The population breakdown for CSO drainage basins in the City is provided in Table 6.

Table 6
City of Bayonne
Population Distribution

CSO Control Facility Designation	Receiving Body of Water	Regulator Number	Location Street Name	1990 Census Population
Plugged	Upper New York Bay	1		1,270
005	Upper New York Bay	2	East 15th Street	8,357
006	Upper New York Bay	3	East 30th Street	958
007	Kill Van Kull	4	East 34th Street	8,546
008	Kill Van Kull	5	East 5th Street	5,292
009	Kill Van Kull	6	Broadway & East 1st Street	1,360
010	Newark Bay	7	Avenue E & 1st Street	1,806
011	Newark Bay	8	West 3rd Street	620
012	Newark Bay	9	West 5th Street	900
013	Newark Bay	10	Edwards Court	25
014	Newark Bay	11	West 16th Street	816
015	Newark Bay	12	West 22nd Street	3,877
016	Newark Bay	13	West 24th Street	761
017	Newark Bay	14	West 25th Street	3,801
018	Newark Bay	15	West 30th Street	768
019	Newark Bay	16	Lincoln Parkway	6,121
020	Newark Bay	17	East 59th Street	1,778
021	Upper New York Bay	18	East 50th Street	5,732
			Total Population Served	**52,788**

2. Sewer Pipe Information

The size and pipe configuration is provided on the maps contained in the **Planning Study** previously referenced. All of the sewers indicated on these plans with only one pipe dimension are circular pipe, typically of concrete material. Sewer pipes denoted with both horizontal and vertical dimensions are concrete box or oval in shape with the larger dimension on the horizontal.

In addition to the sewer, detailed profiles of all major collector sewers within the City were developed under the Solids/Floatables Control Plan developed by Killam Associates under the SIIA program. The Combined Sewer Overflow Planning Study Areas II, Volume IV, provides detailed information on all major collector sewers tributary to each regulator in the City including pipe size, slope and theoretical flow capacities. This information has been reproduced and is included in Appendix B of this report.

3. Dry Weather Flow and Pollutants

Information for the dry weather flow quality was developed from the 1990 DMRs filed when the City of Bayonne owned and operated its own treatment plant. Dry weather flow quantity was developed based upon wastewater flows metered at the Oak Street Pumping Station as it is transported to the PVSC WPCF. The data indicates that the average Biochemical Oxygen Demand (BOD_5) is 146 mg/l, the pH ranges from 5.6 to 9.1 and the Total Suspended Solids (TSS) is approximately 107. Average daily flows under dry weather conditions for the Oak Street Pumping Station is Approximately 8 MGD. Additional information on other parameters will be obtained as part of Characterization Study once the Quality Assurance/Work Plan is approved.

4. Wastewater Treatment Facilities

All wastewater flows in the City of Bayonne are tributary to the Oak Street Pumping Station which transports wastewater flows to the Passaic Valley Sewerage Commissioners Water Pollution Control Facility in the City of Newark. The pumping station screens the flow prior to being pumped to the primary clarifiers at PVSC. Wastewater flows from the cities of Bayonne and Jersey City and a section of the Town of Kearny known as South Kearny are transported to PVSC through a force main owned and operated by a joint agreement. The quantity of wastewater from the City of Bayonne which can be transported to the PVSC is govern by an agreement which specifies an average daily and peak flow rate in accordance with the following:

Average Daily Flow	11.0 MGD
Peak Flow Rate	17.6 MGD

Wet weather flows entering the interceptor system above the 17.6 MGD limit are diverted to a storage tank and thereafter overflowed through the same outfall used by CSO Regulator No. 2 into Upper New York Harbor.

5. Combined Sewer Overflow Points

The location of each CSO discharge point within the City and the location of upstream CSO control facilities are illustrated on Plate A, **Combined Sewer Overflow Control Facilities and Discharge Pipes** , located in the rear of this report. This plate provides information on each CSO control facility location, and associated pipe sizes and shapes for upstream collector sewers, discharge pipes, and interceptor facilities. In addition to the information provided on this plate, more detailed information is provided on each combined sewer overflow drainage basin in the Appendix of this

report. Appendix A, which is broken down by drainage basin, includes:

a. A general description of the CSO facilities in each drainage basin;

b. Information including the location, layout, drainage basin, and profile for each control facility as developed under the CSO Planning Study; and

c. Service Area Land Use schematics indicating the service area size, land use distribution, and impermeable coverage within each CSO drainage basin.

Additional information concerning the City of Bayonne combined sewer system can be found in the reported referenced in Section III.2 of this report.

Appendix A

Combined Sewer Overflow

Drainage Area and Control Information

City of Bayonne

CSO Control Facility Data Extract

Chamber Location & Description

Reg. No.	**1**
Location:	E. 19th Street and Avenue F
NJPDES Outfall No.	None
Chamber Status:	Inactive
Overflow to:	Plugged and Overflow Pipe Removed
Character of District Served:	Residential and Industrial
Regulator Location:	Plugged
District Collector Sewer (Size & Cap)	
Outfall to Receiving Water (Size & Cap)	Plugged
Outfall Condition:	30 inches and 42 inches - Both Plugged
Tidal Effects:	None
Regulator Size:	Not Applicable
Condition of Reg:	Outfall pipes are plugged which forces all flow through trunk sewer. Does not function.
Condition of Tide Gate:	Closed

Area Served & Dry Weather Flow:

Combined Area Served:	48 Acres
Average Daily Flow:	0.41 MGD

City of Bayonne

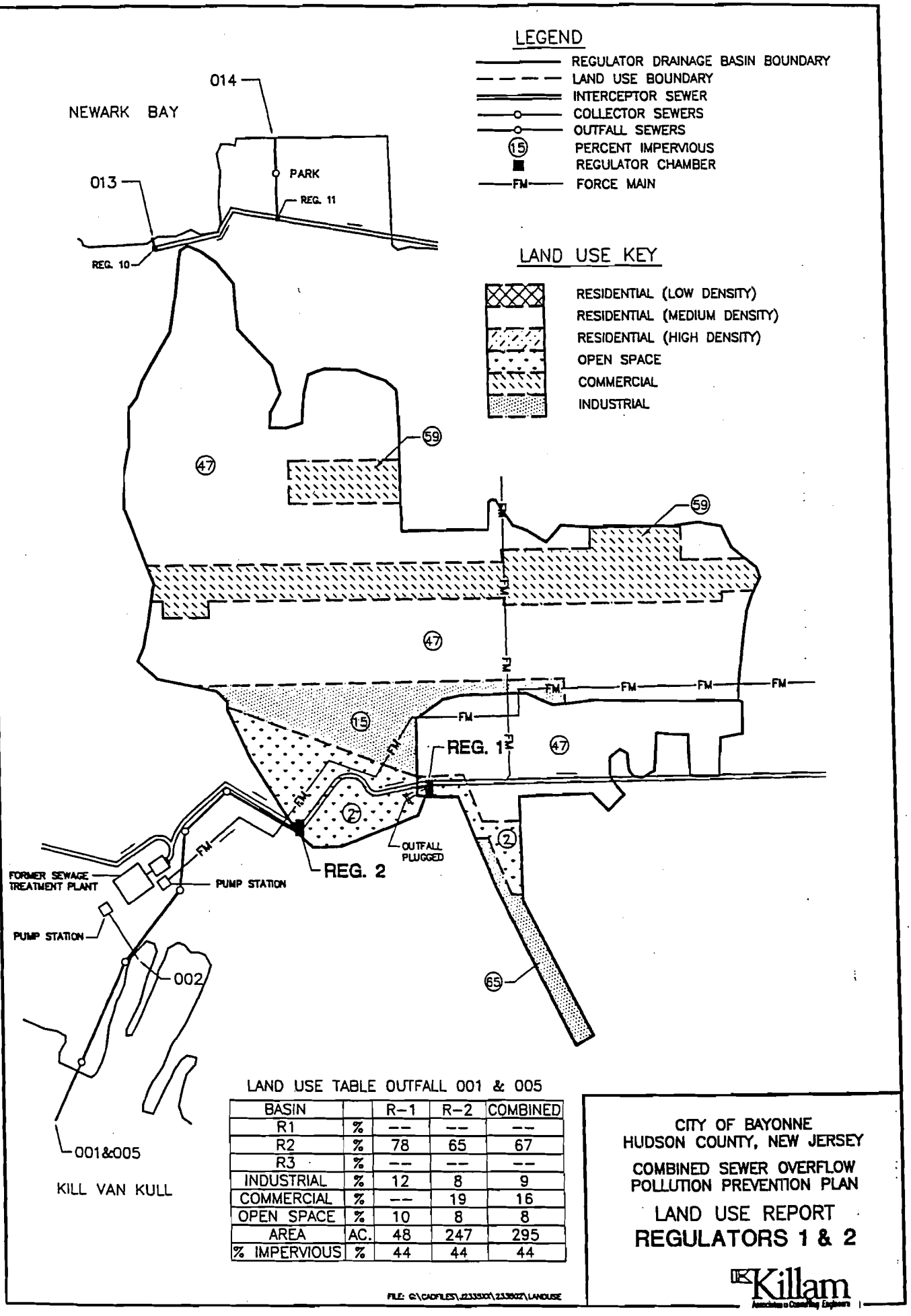
CSO Control Facility Data Extract

Chamber Location & Description

Reg. No.	**2**
Location:	E. 15th Street and Avenue E
NJPDES Outfall No.	005
Chamber Status:	Active
Overflow to:	Upper New York Bay
Character of District Served:	Mixed
Regulator Location:	Behind 5th Street Pump Station
District Collector Sewer (Size & Cap)	72 inches
Outfall to Receiving Water (Size & Cap)	54 inches CIP, 58 MGD Capacity
Outfall Condition:	Functional
Tidal Effects:	Yes
Regulator Size:	33 inches x 21 inches
Condition of Reg:	Functional
Condition of Overflow Stop Log:	None
Condition of Tide Gate:	Functional

Area Served & Dry Weather Flow:

Combined Area Served:	247 Acres
Average Daily Flow:	1.51 MGD



LAND USE TABLE OUTFALL 001 & 005

BASIN		R-1	R-2	COMBINED
R1	%	--	--	--
R2	%	78	65	67
R3	%	--	--	--
INDUSTRIAL	%	12	8	9
COMMERCIAL	%	--	19	16
OPEN SPACE	%	10	8	8
AREA	AC.	48	247	295
% IMPERVIOUS	%	44	44	44

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CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW
POLLUTION PREVENTION PLAN

LAND USE REPORT
REGULATORS 1 & 2

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City of Bayonne

CSO Control Facility Data Extract

Chamber Location & Description

Reg. No.	**3**
Location:	E. 30th Street and Avenue F
NJPDES Outfall No.	006
Chamber Status:	Active
Overflow to:	Upper New York Bay
Character of District Served:	Residential and Industrial
Regulator Location:	In Terminus of E. 32nd St. @ Upper New York Bay
District Collector Sewer (Size & Cap)	30 inches, 17.2 MGD
Outfall to Receiving Water (Size & Cap)	54 inches CMP, 61 MGD
Outfall Condition:	Functional
Tidal Effects:	Tide Gates Leak
Regulator Size:	12 inches x 12 inches
Condition of Reg:	Functional
Condition of Overflow Stop Log:	None
Condition of Tide Gate:	Leaks at High Tide

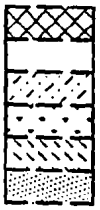
Area Served & Dry Weather Flow:

Combined Area Served:	43 Acres
Average Daily Flow:	0.043 MGD

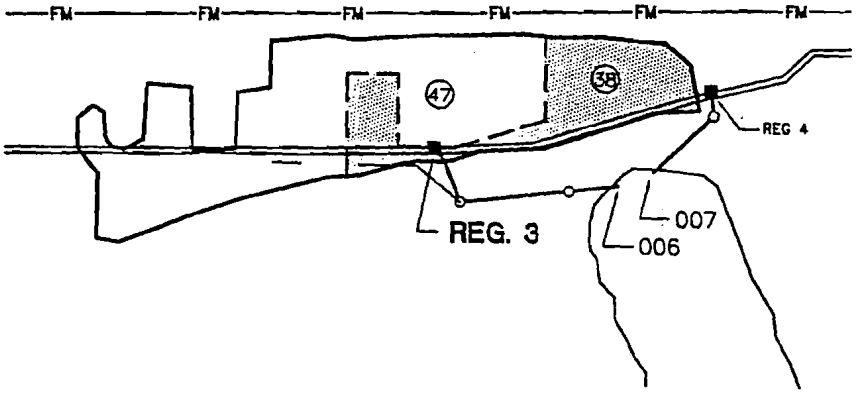
LEGEND

- REGULATOR DRAINAGE BASIN BOUNDARY
- LAND USE BOUNDARY
- INTERCEPTOR SEWER
- COLLECTOR SEWERS
- OUTFALL SEWERS
- (15) PERCENT IMPERVIOUS
- REGULATOR CHAMBER
- FM FORCE MAIN

LAND USE KEY



- RESIDENTIAL (LOW DENSITY)
- RESIDENTIAL (MEDIUM DENSITY)
- RESIDENTIAL (HIGH DENSITY)
- OPEN SPACE
- COMMERCIAL
- INDUSTRIAL



KILL VAN KULL

LAND USE TABLE OUTFALL 006

BASIN		R-3
R1	%	--
R2	%	70
R3	%	--
INDUSTRIAL	%	30
COMMERCIAL	%	--
OPEN SPACE	%	--
AREA	AC.	44
% IMPERVIOUS	%	44

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW
POLLUTION PREVENTION PLAN

LAND USE REPORT
REGULATOR 3

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Associates Consulting Engineers

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City of Bayonne

CSO Control Facility Data Extract

Chamber Location & Description

Reg. No.	4
Location:	E. 34th Street and Avenue F
NJPDES Outfall No.	007
Chamber Status:	Active
Overflow to:	Upper New York Bay
Character of District Served:	Residential
Regulator Location:	In Terminus of E. 34th St. @ Upper New York Bay
District Collector Sewer (Size & Cap)	(2) 48 inches, 102 MGD and 109 MGD 211 MGD Total
Outfall to Receiving Water (Size & Cap)	72 inches, 67.2 MGD
Outfall Condition:	Functional
Tidal Effects:	Yes
Regulator Size:	35 inches x 21 inches
Condition of Reg:	Locked into Place
Condition of Overflow Stop Log:	None
Condition of Tide Gate:	Leaks at High Tide

Area Served & Dry Weather Flow:

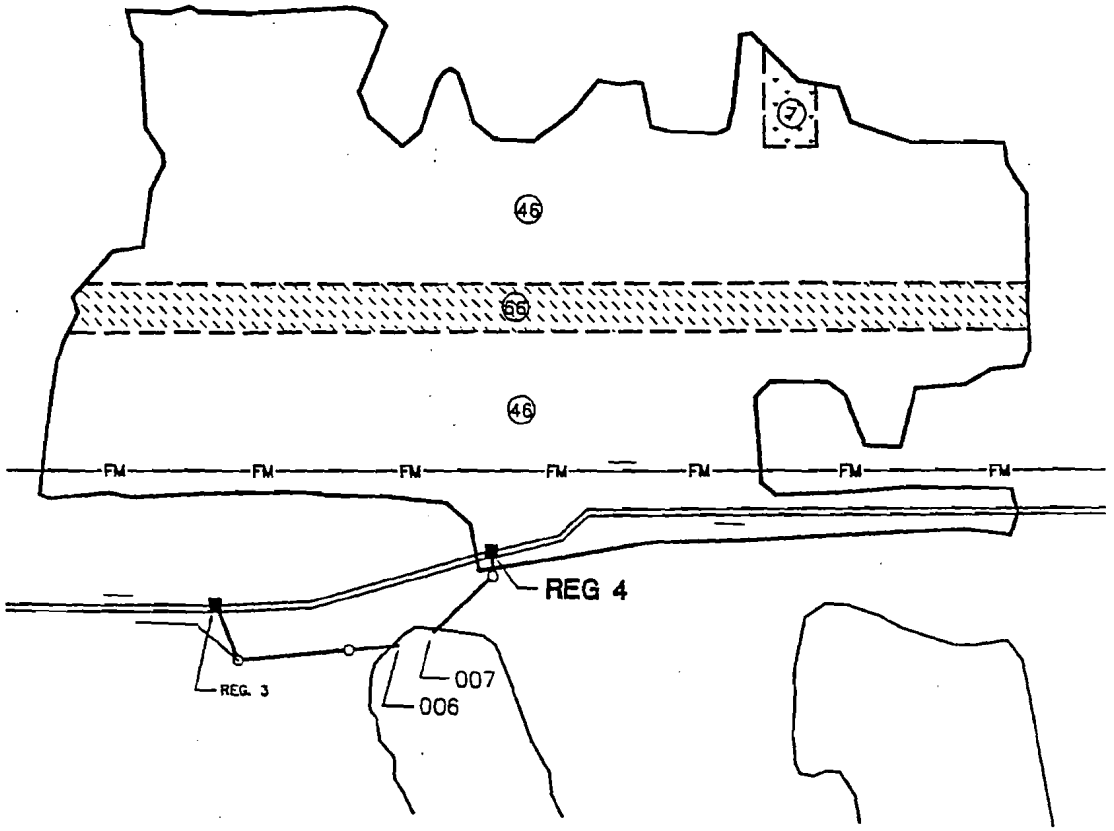
Combined Area Served:	247 Acres
Average Daily Flow:	0.45 MGD

LEGEND

- REGULATOR DRAINAGE BASIN BOUNDARY
- LAND USE BOUNDARY
- INTERCEPTOR SEWER
- COLLECTOR SEWERS
- OUTFALL SEWERS
- (15) PERCENT IMPERVIOUS
- REGULATOR CHAMBER
- FM FORCE MAIN

LAND USE KEY

- RESIDENTIAL (LOW DENSITY)
- RESIDENTIAL (MEDIUM DENSITY)
- RESIDENTIAL (HIGH DENSITY)
- OPEN SPACE
- COMMERCIAL
- INDUSTRIAL



KILL VAN KULL

LAND USE TABLE OUTFALL 007

BASIN		R-4
R1	%	--
R2	%	87
R3	%	--
INDUSTRIAL	%	--
COMMERCIAL	%	12
OPEN SPACE	%	1
AREA	AC.	247
% IMPERVIOUS	%	48

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CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW
POLLUTION PREVENTION PLAN

LAND USE REPORT
REGULATOR 4

Killam Associates • Consulting Engineers

City of Bayonne

CSO Control Facility Data Extract

Chamber Location & Description

Reg. No.	**5**
Location:	E. 5th Street and Ingham Avenue
NJPDES Outfall No.	008
Chamber Status:	Active
Overflow to:	Kill Van Kull
Character of District Served:	Residential and Industrial
Regulator Location:	In Terminus of Ingham Ave. @ Kill Van Kull
District Collector Sewer (Size & Cap)	60 inches Horseshoe, 35.2 MGD
Outfall to Receiving Water (Size & Cap)	48 inches, 30.9 MGD
Outfall Condition:	Good
Tidal Effects:	Yes
Regulator Size:	38 inches x 21 inches
Condition of Reg:	Functional
Condition of Overflow Stop Log:	None
Condition of Tide Gate:	Leaks at High Tide

Area Served & Dry Weather Flow:

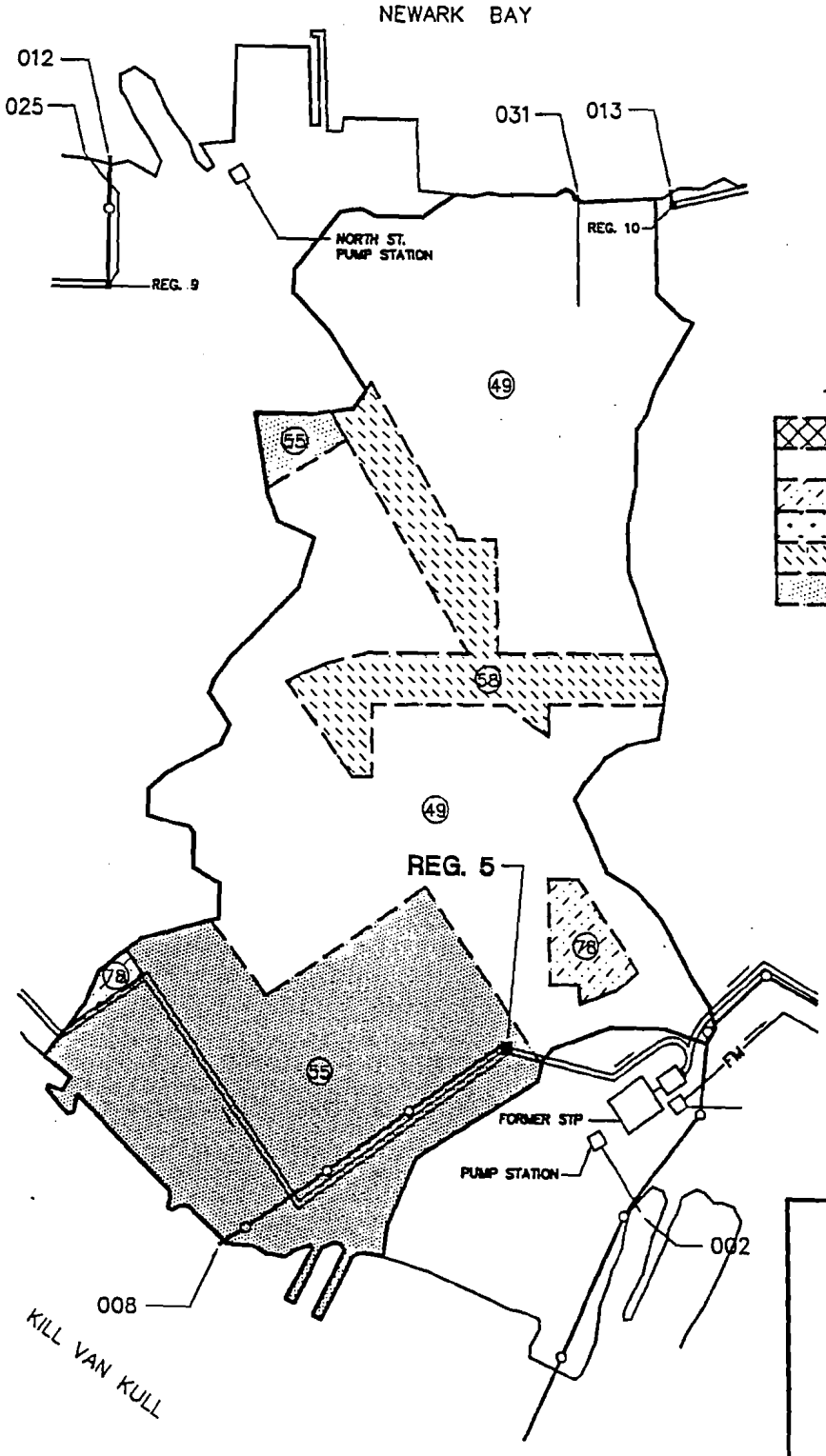
Combined Area Served:	294 Acres
Average Daily Flow:	1.1 MGD

LAND USE TABLE OUTFALL 008

BASIN		R-5
R1	%	--
R2	%	62
R3	%	2
INDUSTRIAL	%	27
COMMERCIAL	%	9
OPEN SPACE	%	--
AREA	AC.	294
% IMPERVIOUS	%	52

LEGEND

- REGULATOR DRAINAGE BASIN BOUNDARY
- LAND USE BOUNDARY
- INTERCEPTOR SEWER
- COLLECTOR SEWERS
- OUTFALL SEWERS
- (15) PERCENT IMPERVIOUS
- REGULATOR CHAMBER
- FM FORCE MAIN



LAND USE KEY

- RESIDENTIAL (LOW DENSITY)
- RESIDENTIAL (MEDIUM DENSITY)
- RESIDENTIAL (HIGH DENSITY)
- OPEN SPACE
- COMMERCIAL
- INDUSTRIAL

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CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW
POLLUTION PREVENTION PLAN

LAND USE REPORT
REGULATOR 5

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City of Bayonne

CSO Control Facility Data Extract

Chamber Location & Description

Reg. No.	6
Location:	E. 1st Street and Broadway
NJPDES Outfall No.	009
Chamber Status:	Active
Overflow to:	Kill Van Kull
Character of District Served:	Residential
Regulator Location:	In Terminus of Broadway @ Kill Van Kull
District Collector Sewer (Size & Cap)	30 inches, 23.6 MGD
Outfall to Receiving Water (Size & Cap)	24 inches, 21.5 MGD
Outfall Condition:	Good
Tidal Effects:	Yes
Regulator Size:	20 inches x 30 inches
Condition of Reg:	Functional
Condition of Overflow Stop Log:	None
Condition of Tide Gate:	Functional

Area Served & Dry Weather Flow:

Combined Area Served:	30 Acres
Average Daily Flow:	0.10 MGD

City of Bayonne

CSO Control Facility Data Extract

Chamber Location & Description

Reg. No.	7
Location:	W. 1st Street and Avenue C
NJPDES Outfall No.	010
Chamber Status:	Active
Overflow to:	Kill Van Kull
Character of District Served:	Residential
Regulator Location:	In Terminus Avenue C @ Kill Van Kull
District Collector Sewer (Size & Cap)	20 inches x 30 inches EGG, 13.7 MGD
Outfall to Receiving Water (Size & Cap)	24 inches, Unknown
Outfall Condition:	Outfall could not be located
Tidal Effects:	Yes
Regulator Size:	19 inches x 12 inches
Condition of Reg:	Functional
Condition of Overflow Stop Log:	None
Condition of Tide Gate:	Possibly Leaking

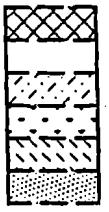
Area Served & Dry Weather Flow:

Combined Area Served:	59 Acres
Average Daily Flow:	0.37 MGD

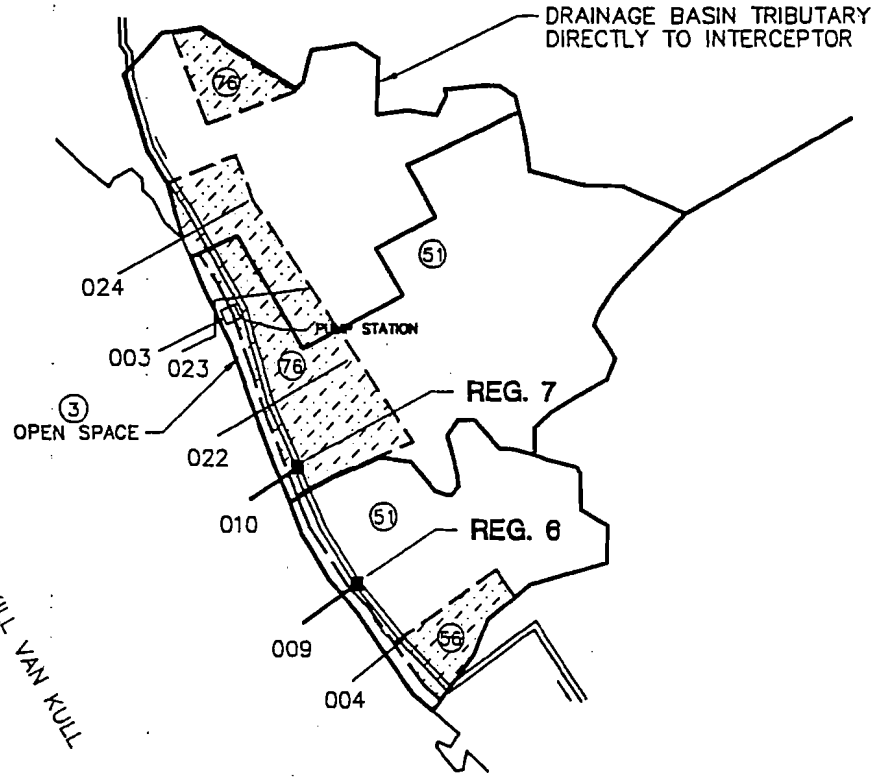
LEGEND

- REGULATOR DRAINAGE BASIN BOUNDARY
- LAND USE BOUNDARY
- INTERCEPTOR SEWER
- COLLECTOR SEWERS
- OUTFALL SEWERS
- (15) PERCENT IMPERVIOUS
- ■ REGULATOR CHAMBER

LAND USE KEY



- RESIDENTIAL (LOW DENSITY)
- RESIDENTIAL (MEDIUM DENSITY)
- RESIDENTIAL (HIGH DENSITY)
- OPEN SPACE
- COMMERCIAL
- INDUSTRIAL



LAND USE TABLE OUTFALL 009 & 010

BASIN		R-6	R-7	INT-DB
R1	%	--	--	--
R2	%	79	74	75
R3	%	14	23	25
INDUSTRIAL	%	--	--	--
COMMERCIAL	%	--	--	--
OPEN SPACE	%	7	3	--
AREA	AC.	30	59	42
% IMPERVIOUS	%	48	55	57

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CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW
POLLUTION PREVENTION PLAN

LAND USE REPORT
REGULATORS 6 & 7

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City of Bayonne

CSO Control Facility Data Extract

Chamber Location & Description

Reg. No.	**8**
Location:	W. 3rd Street and Avenue A
NJPDES Outfall No.	011
Chamber Status:	Active
Overflow to:	Newark Bay
Character of District Served:	Residential and Industrial
Regulator Location:	In Terminus of W. 3rd St. @ Newark Bay
District Collector Sewer (Size & Cap)	18 inches x 3.0 MGD 18 inches, 1.0 MGD
Outfall to Receiving Water (Size & Cap)	24 inches, 8.4 MGD
Outfall Condition:	Partial Plugged w/Sand
Tidal Effects:	Yes
Regulator Size:	15 inches x 8 inches
Condition of Reg:	Locked Open
Condition of Overflow Stop Log:	None
Condition of Tide Gate:	Does Not Seal

Area Served & Dry Weather Flow:

Combined Area Served:	40 Acres
Average Daily Flow:	0.53 MGD

City of Bayonne

CSO Control Facility Data Extract

Chamber Location & Description

Reg. No.	**9**
Location:	W. 5th Street and Avenue A
NJPDES Outfall No.	012
Chamber Status:	Active
Overflow to:	Newark Bay
Character of District Served:	Residential
Regulator Location:	In Terminus of W. 5th St. @ Newark Bay
District Collector Sewer (Size & Cap)	24 inches, 14.7 MGD
Outfall to Receiving Water (Size & Cap)	24 inches, 10.3 MGD
Outfall Condition:	Loosely Covered w/Trash
Tidal Effects:	Yes
Regulator Size:	12 inches x 12 inches
Condition of Reg:	Functional
Condition of Overflow Stop Log:	None
Condition of Tide Gate:	Leaks

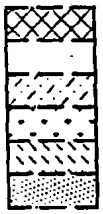
Area Served & Dry Weather Flow:

Combined Area Served:	39 Acres
Average Daily Flow:	0.17 MGD

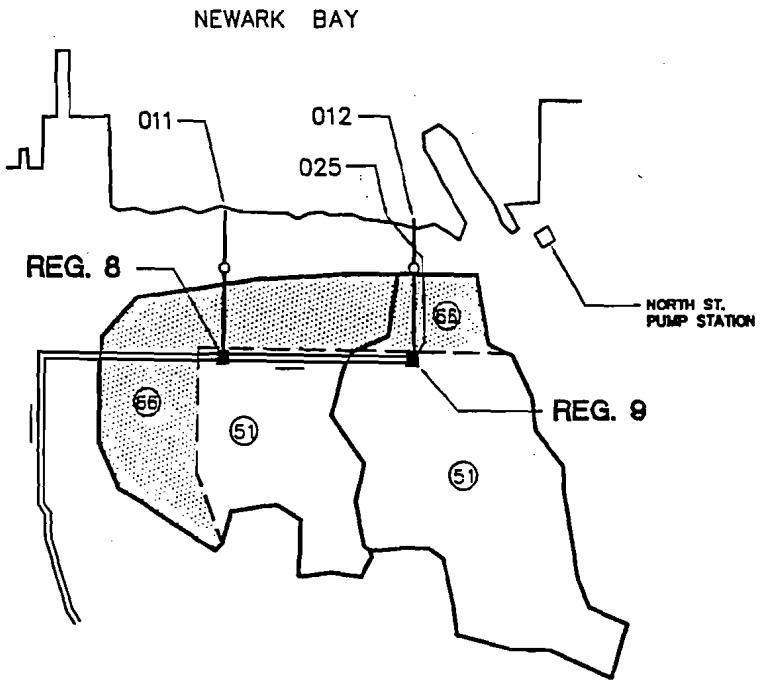
LEGEND

- REGULATOR DRAINAGE BASIN BOUNDARY
- LAND USE BOUNDARY
- INTERCEPTOR SEWER
- COLLECTOR SEWERS
- OUTFALL SEWERS
- (15) PERCENT IMPERVIOUS
- ■ REGULATOR CHAMBER

LAND USE KEY



- RESIDENTIAL (LOW DENSITY)
- RESIDENTIAL (MEDIUM DENSITY)
- RESIDENTIAL (HIGH DENSITY)
- OPEN SPACE
- COMMERCIAL
- INDUSTRIAL



LAND USE TABLE OUTFALLS 011 & 012

BASIN		R-8	R-9
R1	%	--	--
R2	%	45	87
R3	%	--	--
INDUSTRIAL	%	55	13
COMMERCIAL	%	--	--
OPEN SPACE	%	--	--
AREA	AC.	40	39
% IMPERVIOUS	%	60	53

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CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW
POLLUTION PREVENTION PLAN

LAND USE REPORT

REGULATORS 8 & 9

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City of Bayonne

CSO Control Facility Data Extract

Chamber Location & Description

Reg. No.	10
Location:	Edwards Ct. & Avenue A
NJPDES Outfall No.	013
Chamber Status:	Active
Overflow to:	Newark Bay
Character of District Served:	100% Residential
Regulator Location:	In Terminus of Edwards Ct. @ Newark Bay
District Collector Sewer (Size & Cap)	12 inches, 4.5 MGD
Outfall to Receiving Water (Size & Cap)	12 inches, 6.4 MGD
Outfall Condition:	Pipe is Half Blocked w/Sand
Tidal Effects:	Yes
Regulator Size:	6 inches x 5 inches
Condition of Reg:	Functional
Condition of Overflow Stop Log:	None
Condition of Tide Gate:	Functional

Area Served & Dry Weather Flow:

Combined Area Served:	4 Acres
Average Daily Flow:	No Data

City of Bayonne

CSO Control Facility Data Extract

Chamber Location & Description

Reg. No.	11
Location:	W. 16th St. & Avenue A
NJPDES Outfall No.	014
Chamber Status:	Active
Overflow to:	Newark Bay
Character of District Served:	100% Residential
Regulator Location:	In Terminus of Country Vil Ct. @ Newark Bay
District Collector Sewer (Size & Cap)	24 inches, 18.1 MGD
Outfall to Receiving Water (Size & Cap)	30 inches, 22.7 MGD
Outfall Condition:	Slightly Blocked w/Trash
Tidal Effects:	Yes
Regulator Size:	Tide Gate Jammed Closed. First Upstream M.H. Functions as Overflow Chamber to New Outfall Line (30 inch RCP)
Condition of Reg:	Functional
Condition of Overflow Stop Log:	None
Condition of Tide Gate:	Leaking

Area Served & Dry Weather Flow:

Combined Area Served:	58 Acres
Average Daily Flow:	0.08 MGD

City of Bayonne

CSO Control Facility Data Extract

Chamber Location & Description

Reg. No.	**12**
Location:	W. 22nd St. & Avenue A
NJPDES Outfall No.	015
Chamber Status:	Active
Overflow to:	Newark Bay
Character of District Served:	Residential and Commercial
Regulator Location:	In Terminus of W. 22nd St. @ Newark Bay
District Collector Sewer (Size & Cap)	28 inch x 42 inch EGG, 35 MGD
Outfall to Receiving Water (Size & Cap)	36 inches
Outfall Condition:	Partially Blocked w/Rocks, Logs and Brush
Tidal Effects:	Yes
Regulator Size:	21 inches x 13 inches
Condition of Reg:	Functional
Condition of Overflow Stop Log:	None
Condition of Tide Gate:	Leaking

Area Served & Dry Weather Flow:

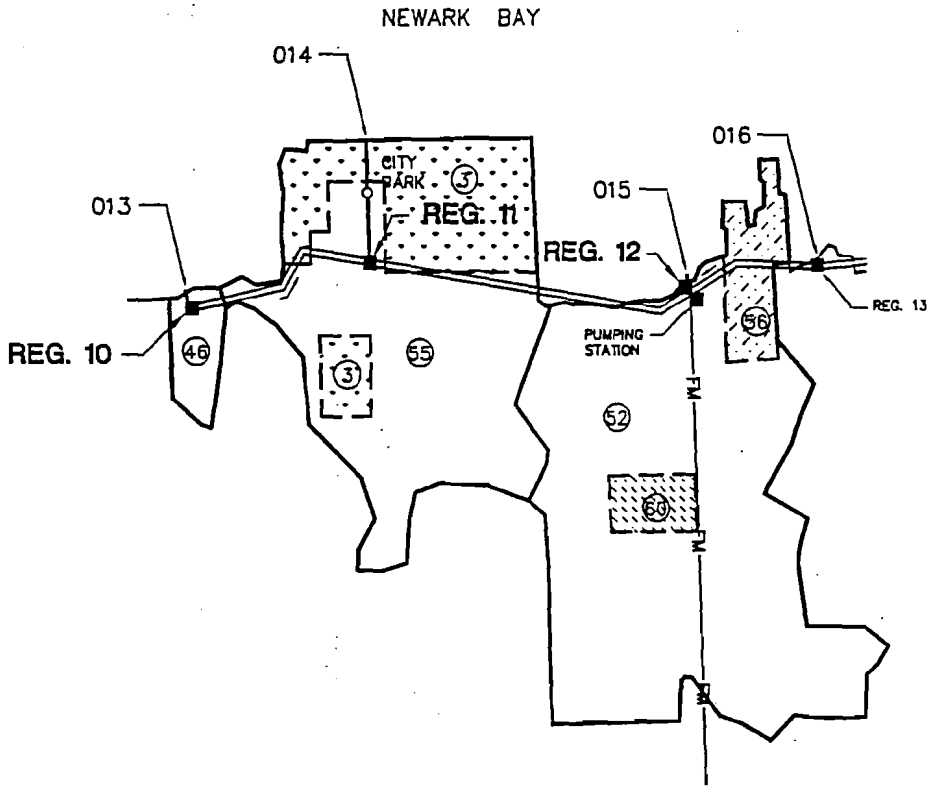
Combined Area Served:	77 Acres
Average Daily Flow:	0.57 MGD

LEGEND

- REGULATOR DRAINAGE BASIN BOUNDARY
- LAND USE BOUNDARY
- INTERCEPTOR SEWER
- COLLECTOR SEWERS
- OUTFALL SEWERS
- (15) PERCENT IMPERVIOUS
- REGULATOR CHAMBER
- FM FORCE MAIN

LAND USE KEY

- RESIDENTIAL (LOW DENSITY)
- RESIDENTIAL (MEDIUM DENSITY)
- RESIDENTIAL (HIGH DENSITY)
- OPEN SPACE
- COMMERCIAL
- INDUSTRIAL



LAND USE TABLE OUTFALL 13, 14 & 15

BASIN		R-10	R-11	R-12
R1	%	--	--	--
R2	%	100	64	88
R3	%	--	--	8
INDUSTRIAL	%	--	--	--
COMMERCIAL	%	--	--	4
OPEN SPACE	%	--	36	--
AREA	AC.	4	58	77
% IMPERVIOUS	%	46	36	52

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW
POLLUTION PREVENTION PLAN

LAND USE REPORT

REGULATORS 10, 11 & 12

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City of Bayonne

CSO Control Facility Data Extract

Chamber Location & Description

Reg. No.	**13**
Location:	W. 24th St. & Avenue A
NJPDES Outfall No.	016
Chamber Status:	Active
Overflow to:	Newark Bay
Character of District Served:	100% Residential
Regulator Location:	In Terminus of W. 24th St. @ Newark Bay
District Collector Sewer (Size & Cap)	16 inches, 10.1 MGD
Outfall to Receiving Water (Size & Cap)	16 inches, Unknown
Outfall Condition:	Could not Locate - Buried
Tidal Effects:	Yes
Regulator Size:	7.5 inches x 7.5 inches
Condition of Reg:	Locked Open
Condition of Overflow Stop Log:	None
Condition of Tide Gate:	Leaking

Area Served & Dry Weather Flow:

Combined Area Served:	17 Acres
Average Daily Flow:	0.05 MGD

City of Bayonne

CSO Control Facility Data Extract

Chamber Location & Description

Reg. No.	**14**
Location:	W. 25th St. & Avenue A
NJPDES Outfall No.	017
Chamber Status:	Active
Overflow to:	Newark Bay
Character of District Served:	Residential
Regulator Location:	In Terminus of W. 25th St. @ Newark Bay
District Collector Sewer (Size & Cap)	36 inches, 58.8 MGD
Outfall to Receiving Water (Size & Cap)	36 inches, 4.3 MGD
Outfall Condition:	Functional
Tidal Effects:	Yes
Regulator Size:	21 inches x 12 inches
Condition of Reg:	Functional
Condition of Overflow Stop Log:	None
Condition of Tide Gate:	Tidal Flows Need Repairs

Area Served & Dry Weather Flow:

Combined Area Served:	88 Acres
Average Daily Flow:	0.19 MGD

City of Bayonne

CSO Control Facility Data Extract

Chamber Location & Description

Reg. No.	15
Location:	W. 30th St. & Avenue A
NJPDES Outfall No.	018
Chamber Status:	Active
Overflow to:	Newark Bay
Character of District Served:	100% Residential
Regulator Location:	In Terminus of W. 30th St. @ Newark Bay
District Collector Sewer (Size & Cap)	18 inches, 14.1 MGD
Outfall to Receiving Water (Size & Cap)	18 inches, Unknown
Outfall Condition:	Functional
Tidal Effects:	Yes
Regulator Size:	7.5 inches x 5 inches
Condition of Reg:	Functional
Condition of Overflow Stop Log:	None
Condition of Tide Gate:	Leaking

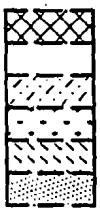
Area Served & Dry Weather Flow:

Combined Area Served:	22 Acres
Average Daily Flow:	0.04 MGD

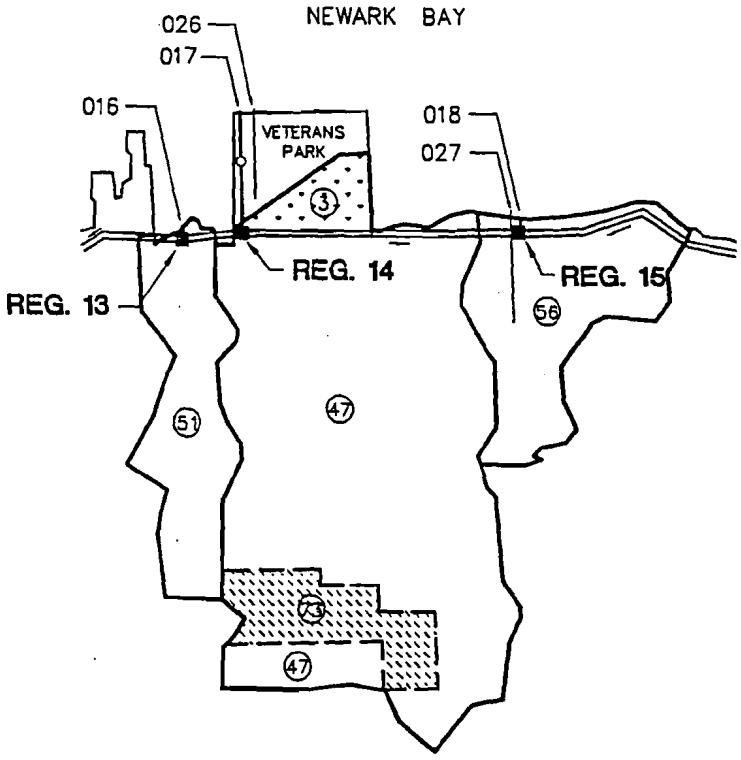
LEGEND

- REGULATOR DRAINAGE BASIN BOUNDARY
- LAND USE BOUNDARY
- INTERCEPTOR SEWER
- COLLECTOR SEWERS
- OUTFALL SEWERS
- (15) PERCENT IMPERVIOUS
- ■ REGULATOR CHAMBER

LAND USE KEY



- RESIDENTIAL (LOW DENSITY)
- RESIDENTIAL (MEDIUM DENSITY)
- RESIDENTIAL (HIGH DENSITY)
- OPEN SPACE
- COMMERCIAL
- INDUSTRIAL



LAND USE TABLE OUTFALL 013, 014 & 015

BASIN		R-13	R-14	R-15
R1	%	--	--	--
R2	%	100	84	100
R3	%	--	--	--
INDUSTRIAL	%	--	--	--
COMMERCIAL	%	--	10	--
OPEN SPACE	%	--	6	--
AREA	AC.	17	88	22
% IMPERVIOUS	%	51	47	56

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW
POLLUTION PREVENTION PLAN

LAND USE REPORT

REGULATORS 13, 14 & 15

FILE: c:\CADFILES\233501\233502\LANDUSE

Killam

TIERRA-A-000269

City of Bayonne

CSO Control Facility Data Extract

Chamber Location & Description

Reg. No.	**16**
Location:	Lincoln & Avenue A
NJPDES Outfall No.	019
Chamber Status:	Active
Overflow to:	Newark Bay
Character of District Served:	100% Residential
Regulator Location:	End of Lincoln Avenue
District Collector Sewer (Size & Cap)	30 inches x 45 inches EGG, Unknown
Outfall to Receiving Water (Size & Cap)	36 inches, 78.5 MGD
Outfall Condition:	Outfall Line is Separated at Joints
Tidal Effects:	Yes
Regulator Size:	31 inches x 16 inches
Condition of Reg:	Appears Inoperable
Condition of Overflow Stop Log:	None
Condition of Tide Gate:	Leaking

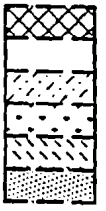
Area Served & Dry Weather Flow:

Combined Area Served:	190 Acres
Average Daily Flow:	0.65 MGD

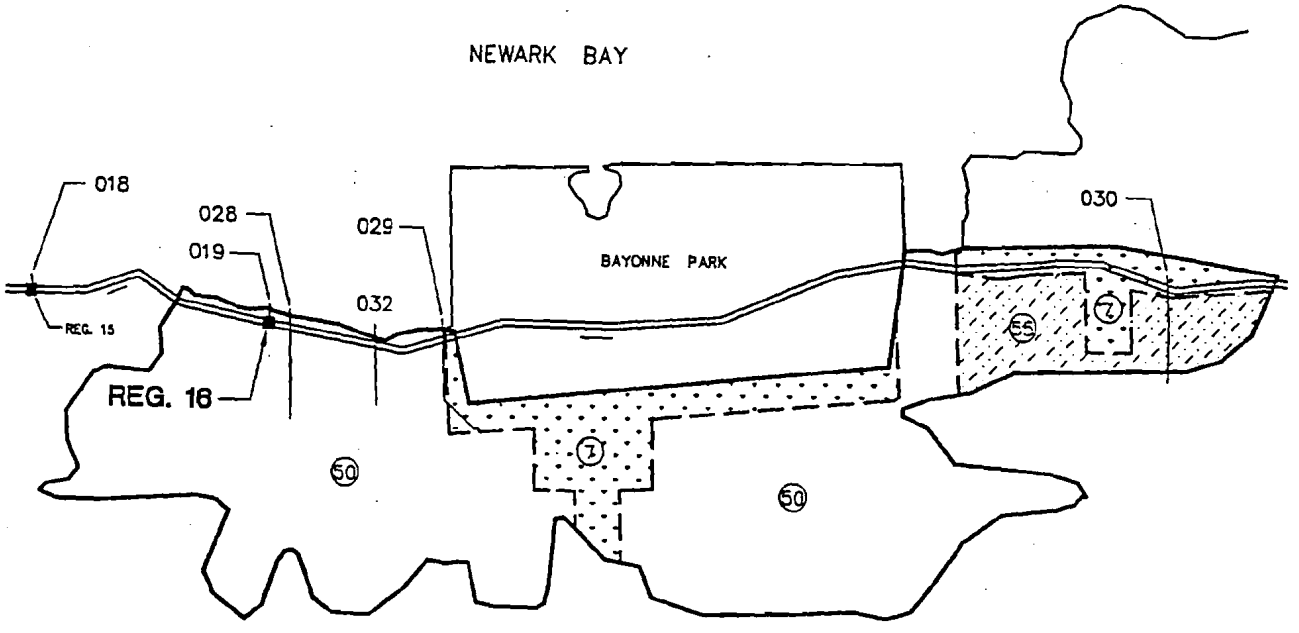
LEGEND

- REGULATOR DRAINAGE BASIN BOUNDARY
- LAND USE BOUNDARY
- INTERCEPTOR SEWER
- COLLECTOR SEWERS
- OUTFALL SEWERS
- (15) PERCENT IMPERVIOUS
- ■ REGULATOR CHAMBER
- R1 RESIDENTIAL (LOW DENSITY)
- R2 RESIDENTIAL (MEDIUM DENSITY)
- R3 RESIDENTIAL (HIGH DENSITY)

LAND USE KEY



- RESIDENTIAL (LOW DENSITY)
- RESIDENTIAL (MEDIUM DENSITY)
- RESIDENTIAL (HIGH DENSITY)
- OPEN SPACE
- COMMERCIAL
- INDUSTRIAL



LAND USE TABLE OUTFALL 019

BASIN		R-16
R1	%	--
R2	%	74
R3	%	10
INDUSTRIAL	%	--
COMMERCIAL	%	--
OPEN SPACE	%	16
AREA	AC.	190
% IMPERVIOUS	%	43

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CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW
POLLUTION PREVENTION PLAN

LAND USE REPORT
REGULATOR 16

Killam
Associates • Consulting Engineers

City of Bayonne

CSO Control Facility Data Extract

Chamber Location & Description

Reg. No.	**17**
Location:	**NJ Turnpike & JFK Blvd**
NJPDES Outfall No.	**020**
Chamber Status:	**Active**
Overflow to:	**Newark Bay**
Character of District Served:	**Residential, Commercial, Industrial**
Regulator Location:	**Between NJ Turnpike & Rt. 440 @ Newark Bay**
District Collector Sewer (Size & Cap)	**36 inches, Unknown**
Outfall to Receiving Water (Size & Cap)	**36 inch Opening, No Pipe**
Outfall Condition:	**OK**
Tidal Effects:	**Yes**
Regulator Size:	**26 inches x 12 inches**
Condition of Reg:	**Does Not Function**
Condition of Overflow Stop Log:	**None**
Condition of Tide Gate:	**Functional**

Area Served & Dry Weather Flow:

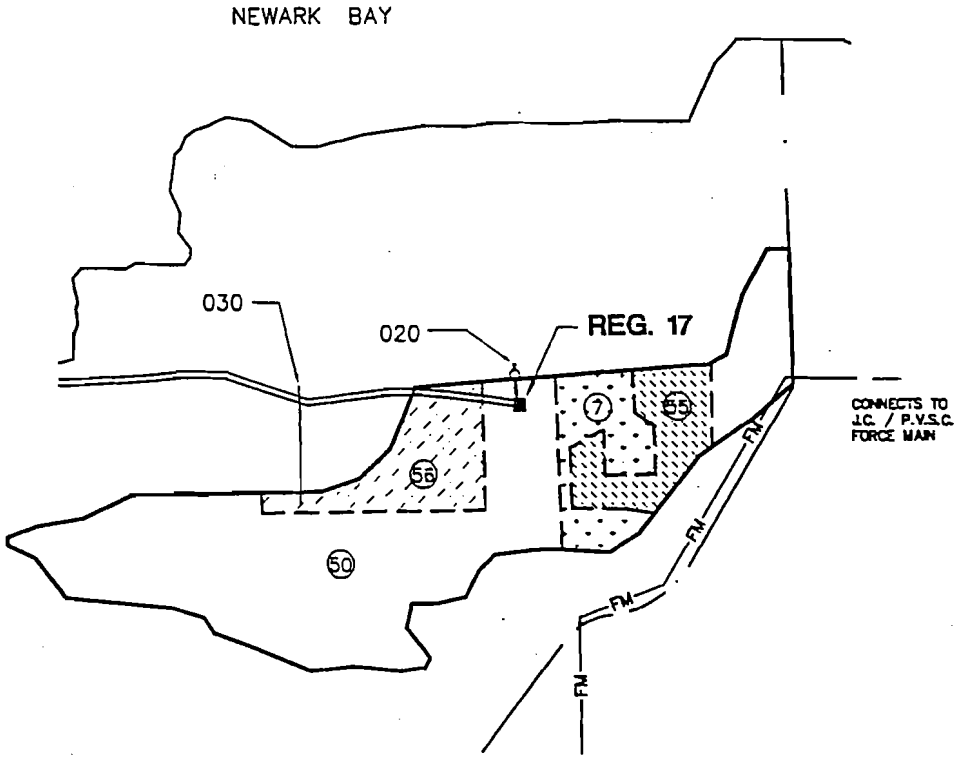
Combined Area Served:	**76 Acres**
Average Daily Flow:	**2.13 MGD**

LEGEND

- REGULATOR DRAINAGE BASIN BOUNDARY
- LAND USE BOUNDARY
- INTERCEPTOR SEWER
- COLLECTOR SEWERS
- OUTFALL SEWERS
- (15) PERCENT IMPERVIOUS
- REGULATOR CHAMBER
- FM FORCE MAIN

LAND USE KEY

- RESIDENTIAL (LOW DENSITY)
- RESIDENTIAL (MEDIUM DENSITY)
- RESIDENTIAL (HIGH DENSITY)
- OPEN SPACE
- COMMERCIAL
- INDUSTRIAL



LAND USE TABLE OUTFALL 020

BASIN		R-17
R1	%	--
R2	%	69
R3	%	13
INDUSTRIAL	%	--
COMMERCIAL	%	9
OPEN SPACE	%	9
AREA	AC.	76
% IMPERVIOUS	%	51

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CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW
POLLUTION PREVENTION PLAN

LAND USE REPORT
REGULATOR 17

Killam
Associates a Consulting Engineers

City of Bayonne

CSO Control Facility Data Extract

Chamber Location & Description

Reg. No.	**18**
Location:	E. 50th St. & Avenue E
NJPDES Outfall No.	021
Chamber Status:	Active
Overflow to:	Newark Bay
Character of District Served:	Residential and Commercial
Regulator Location:	In Terminus Pulaski La., West @ Upper New York Bay
District Collector Sewer (Size & Cap)	48 inches, 62.4 MGD
Outfall to Receiving Water (Size & Cap)	48 inch, Unknown
Outfall Condition:	Good
Tidal Effects:	Yes
Regulator Size:	38 inches x 16 inches
Condition of Reg:	Does Not Appear to Function
Condition of Overflow Stop Log:	None
Condition of Tide Gate:	Functional

Area Served & Dry Weather Flow:

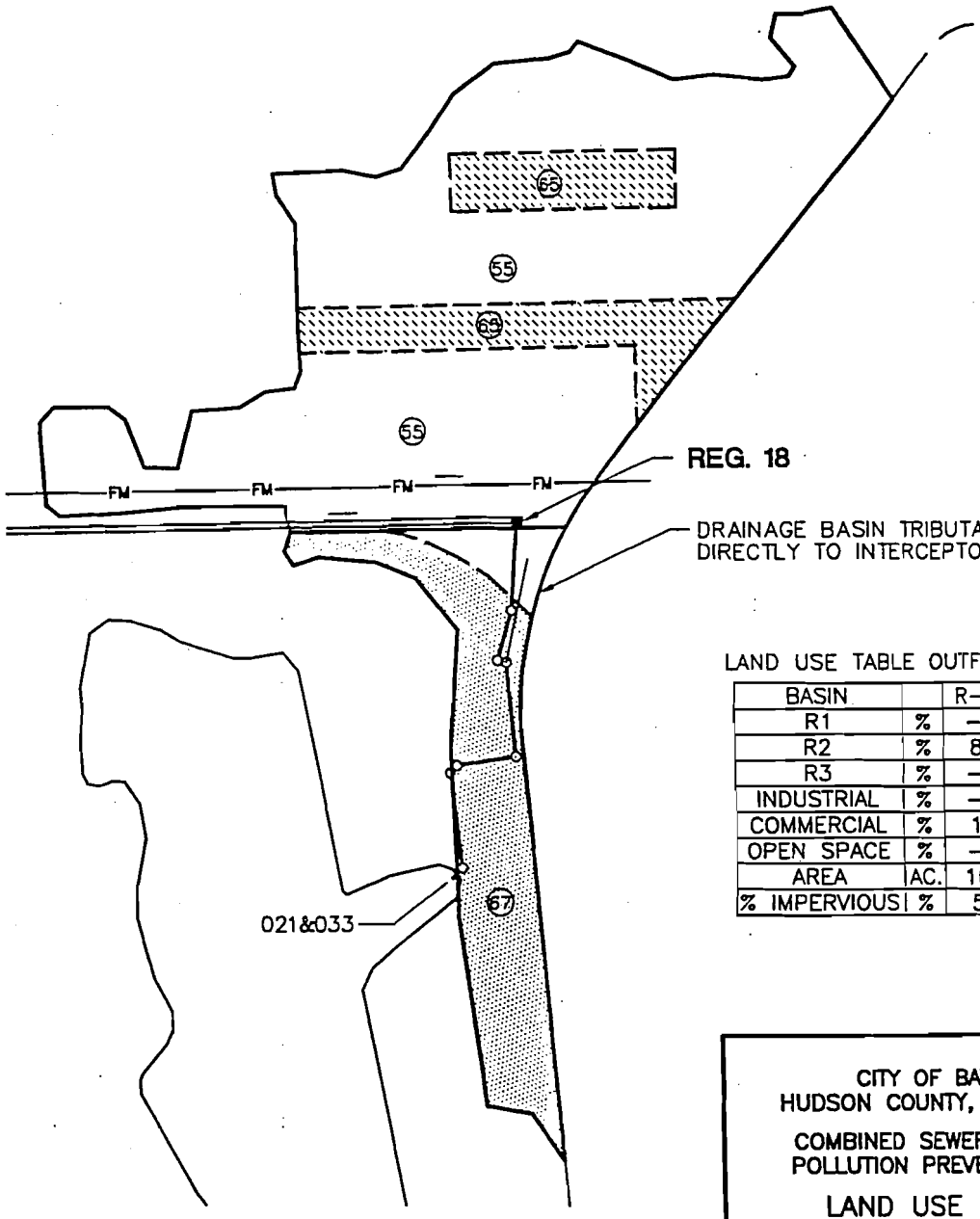
Combined Area Served:	308 Acres
Average Daily Flow:	0.47 MGD

LEGEND

- REGULATOR DRAINAGE BASIN BOUNDARY
- LAND USE BOUNDARY
- INTERCEPTOR SEWER
- COLLECTOR SEWERS
- OUTFALL SEWERS
- (15) PERCENT IMPERVIOUS
- REGULATOR CHAMBER
- FM FORCE MAIN

LAND USE KEY

- RESIDENTIAL (LOW DENSITY)
- RESIDENTIAL (MEDIUM DENSITY)
- RESIDENTIAL (HIGH DENSITY)
- OPEN SPACE
- COMMERCIAL
- INDUSTRIAL



LAND USE TABLE OUTFALL 021&33

BASIN		R-18	INT-DB
R1	%	--	--
R2	%	85	14
R3	%	--	--
INDUSTRIAL	%	--	86
COMMERCIAL	%	15	
OPEN SPACE	%	--	--
AREA	AC.	165	41
% IMPERVIOUS	%	57	65

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY

COMBINED SEWER OVERFLOW
POLLUTION PREVENTION PLAN

LAND USE REPORT
REGULATOR 18

Killam
Associates • Consulting Engineers

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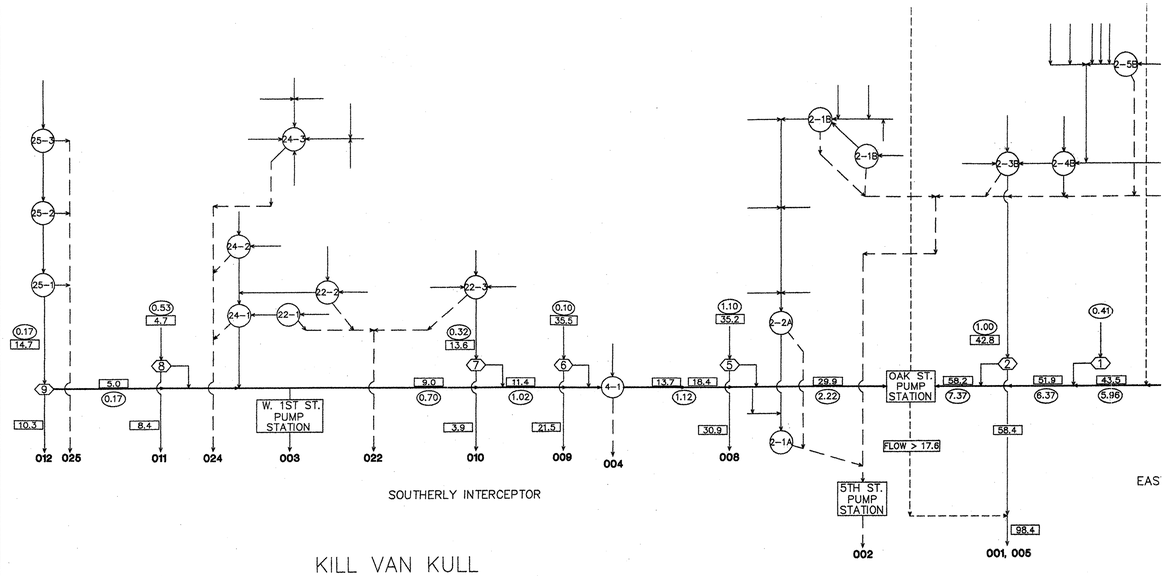
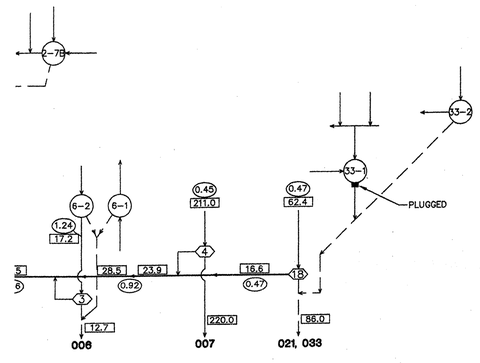


KILL VAN KULL

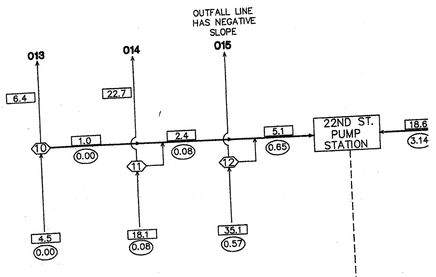


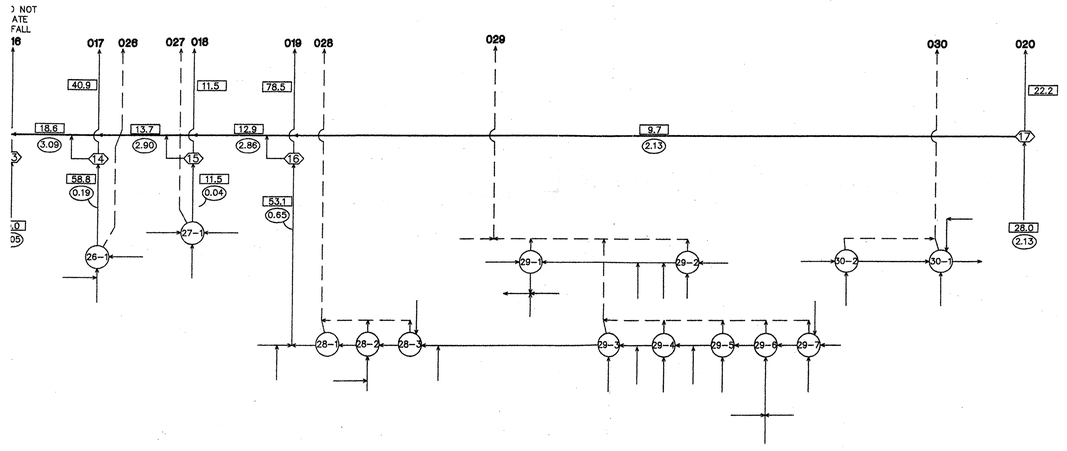
UPPER NEW YORK BAY

NEWARK BAY

LEGEND

- — — — — COMBINED SEWER OVERFLOW RELIEF SEWER
- - - - - - FORCE MAIN
- ——— INTERCEPTOR SEWER
- ——— COLLECTOR SEWER / OUTFALL
- (10) REGULATOR
- (26-1) INTERNAL OVERFLOW CHAMBER
- (0.08) ESTIMATED DRY WEATHER AVERAGE DAILY FLOW
- [4.5] ESTIMATED SEWER CAPACITY
- 013 NJPDES GENERAL PERMIT DISCHARGE SERIAL NUMBER





WESTERLY INTERCEPTOR

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY
COMBINED SEWER OVERFLOW PLANNING STUDY

Killam Associates ◻ Consulting Engineers

Job

Date

ROLAK, JR.
Engineer – N.J. Lic. No. 29108

TIERRA-A-000276

CITY OF BAYONNE
HUDSON COUNTY, NEW JERSEY
COMBINED SEWER SYSTEM
COMBINED SEWER OVERFLOW CONTROL FACILITIES AND DISCHARGE PIPES
– PLAN –
PLATE A

Revision	Date	Approved	Date
		JSR	4/29/97

Designed AAA | Drawn AA/RC | Checked JSR

Killam Associates
Consulting Engineers
27 Bleeker Street
Millburn, New Jersey 07041

Job 233500 | No. PLATE A | B/O | Total 4

Print Date

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Killam Associates

Contract No.

TIERRA-A-000277

11

STATE OF NEW JERSEY

DEPARTMENT OF HEALTH

JOHN FITCH PLAZA, P.O. BOX 1540, TRENTON, 08625

May 24, 1968

Mr. Fred J. Jr. James
1264 Boulevard
Bayonne, New Jersey

Dear Sir:

Re: Bayonne, Municipal
Wastewater Treatment Facilities

An inspection of the above wastewater treatment facilities was conducted by representatives of this Department on May 21, 1968.

The following conditions checked were found to be inadequate for discharge into (x) waters of the Hudson River Basin. You are requested to make the necessary corrections to eliminate these deficiencies and notify this office in writing within two weeks from receipt of this letter.

( ) 1. Insufficient overall reduction in Biochemical Oxygen Demand.

( ) 2. Excessive Biochemical Oxygen Demand (B.O.D.) in final effluent.

( ) 3. Excessive Suspended Solids (S.S.) in final effluent.

( ) 4. Insufficient Post Chlorination.

(x) 5. Malfunctioning Treatment Unit(s).

(x) 6. General Plant Maintenance. The sludge which is on the surface of the influent channel needs to be removed. The area around the bar screen needs to be cleaned up.

( ) 7.

( ) 8.

Very truly yours,

Christian T. Hoffman, Jr.
Principal Public Health Engineer

SE A100 6

CRF 000003

12

TO

FROM

SUBJECT Bayonne Sewage Treatment Plant DATE November 1, 1962

The writer received a call from Art Price concerning an explosion at the Bayonne Treatment Plant. I immediately contacted the City of Bayonne and spoke with Mr. Kruse, City Engineer. Mr. Kruse informed the writer that the explosion was apparently caused by a leak in the methane line from digester to the gas engines. Most of the damage appears, at this time, to be confined to the building structure and not to the operational equipment. All of the sewage is presently being diverted to the Kill Van Kull because of power failure. The flow is approximately 8 - 10 M.G.D. Chlorination is not practiced at this plant. The electrical circuits were being checked to determine if the emergency power can be switched on. The treatment facilities are expected to be back in operation some time tonight. Mr. Kruse advised that he would call if there are any further developments or need for assistance.

Gordon K. Ringsaker

652:GR

BAE 000 005

13

[redacted]

MEMO

NEW JERSEY STATE DEPARTMENT OF HEALTH

TO E. Segesser

FROM H. D. Hinchman

DATE March 5, 1965

SUBJECT By-passing Bayonne Municipal Treatment Plant

Starting at 1:30 p.m. March 5, 1965, Mr. Fred James started by-passing at the rate of 2 M.G.P.D. Heavy rains required him to by-pass.

Mr. James is also notifying Interstate Sanitation Commission.

6S3:G3

Signed H. D. Hinchman, Senior Sanitarian

[redacted]

14

MEMO NEW JERSEY STATE DEPARTMENT OF HEALTH

TO Anthony R. Micigliano

FROM Christian T. Hoffman, Jr. DATE 9-22-66

SUBJECT West 22nd Street Pumping Station Bayonne City

At 11:50 AM today Fred James, sewage treatment plant operator, called to report that he began bypassing approximately 2 mgd of raw wastewater at this pumping station at 11 AM today because bearings had failed in the grit collector. Mr. James said that repairs are underway but he could not estimate when they would be completed.

Christian T. Hoffman, Jr.
Christian T. Hoffman, Jr.
Senior Public Health Engineer

chh2:69

M 1897 Signed

15

DEPARTMENT OF REVENUE
Water Department
CITY HALL ANNEX
61 WEST 8TH STREET
07002

November 18, 1969

Mr. Christian T. Hoffman, Jr.
Supervising Public Health Engineer
N. J. State Department of Health
P.O. Box 1540
Trenton, N. J. 08625

Re: Inspection 28 October 1969
Bayonne Waste Treatment
Plant.

Dear Mr. Hoffman:

Please accept this report on the three (3) unsatisfactory items as listed in your inspection report of 28 October 1969:

Item 1 -"Two settling tanks are out of service"
These 2 tanks are out of service because of badly corroded chains. Acting on my request for money, prior to your inspection, our department is transferring a sufficient amount of money to cover the purchase of new chains and we should be able to advertise for bids before the end of the month.

Item 2 -"Raw (undigested) sludge was being filtered and then dumped on plant grounds. This could lead to fly and odor problems". Normally all raw filter cake is transported to City's Sanitary Landfill Area where it is buried. However, due to present condition of our truck, it is not possible to make the trip to the landfill area. As an emergency measure, we are stockpiling this cake on a piece of city owned land approx. 200 yards from the plant with the intent of moving it to the landfill area at a later date. The sum of $19,000 is also being appropriated this year for a new truck and as soon as this is purchased, all material will again be brought to the landfill area. I may mention, at this time, all screenings from both the main plant and the pump station are now, and always have been, disposed of at the landfill area.
Since the raw sludge is heavily dosed with lime, fly and odor problems appear to be at a minimum.

Item 3 -"Excessive color (brown) and odor (Mills) in final effluent". Part of our influent contains dye waste from the Pharma Chemical Company and this is the reason for the above mentioned item. If this color has to be removed, the city will have to go back to the source and insist that they remove the color as permission to enter the city's system was given with the understanding, that if color became a problem, they would have to pre-treat to remove it.

BAE 000020

I will be glad to inform you when we actually advertise for bids for the above mentioned truck and chains.

Very truly yours,

F. James,

F. James,
Superintendent
Water & Sewage Utility

FJ:az

16

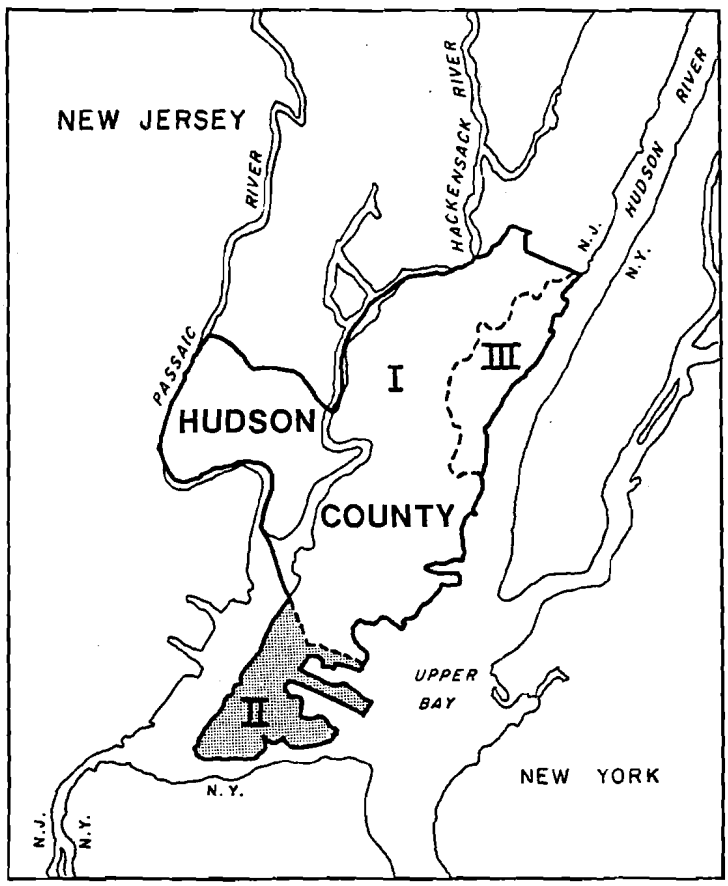
Copies at the Interstate Sanitation Commission

HUDSON COUNTY UTILITIES AUTHORITY

Hudson County, New Jersey

201 WASTEWATER FACILITIES PLAN
Planning Area II

- *Bayonne*



Volume One
REGIONAL INVENTORY

January 1979

MALCOLM PIRNIE, INC.
CONSULTING ENVIRONMENTAL ENGINEERS

TABLE 5-9

ESTIMATED INDUSTRIAL WASTEWATER FLOWS FOR 1976

Study Area/ Sub-Area	Industry Name	Water Consumption (mgy)	Water Consumption (mgd)	Estimated Wastewater Flow (mgy)	Estimated Wastewater Flow (mgd)	Days per Week in Operation
1	Hunt-Wesson Foods, Inc.	67.97	0.186	37.96	0.104	7
2A	Wachsberg Pickle Works	1.68	0.007	1.68	0.007	5
3	ICI United States, Inc.	102.38	0.280	87.97	0.241	7
3	Exxon Company, USA (b)	226.47	0.620	2.92	0.008	7
3	Korvette, Inc. Warehouse (a)	3.83	0.010	3.83	0.010	7
3	Domenico Bus Co. (a)	3.21	0.009	3.21	0.009	7
5	Dimensional Pigments, Inc.	0.91	0.004	0.48	0.002	5
5	Jersey Printing Co., Inc. (a)	1.53	0.004	1.53	0.004	7
5	Norton & Sons, Inc	9.80	0.041	5.04	0.021	5
5	Rollins Terminals, Inc.	15.30	0.064	1.44	0.006	5
5	Verona Dyestuff	73.20	0.305	60.72	0.253	5
5	Englander Co. (a)	3.39	0.014	3.39	0.014	5
8	Best Foods	116.57	0.319	99.28	0.272	7
8	NL Industries	44.42	0.148	26.10	0.087	6
8	General Cable Corp. (b)	40.88	0.112	3.65	0.010	7
8	Texaco, Inc. (b)	40.13	0.110	3.29	0.009	7
8	Garden State Container Corp. (a)	4.88	0.020	4.88	0.020	5
16	Bayonne Quality Laundry (a)	3.88	0.011	3.88	0.011	7
17	Verona Dyestuff	57.89	0.241	57.89	0.241	5
18	Port Jersey Industries	8.21	0.034	8.21	0.034	5

Notes: (a) *All of the water used by these industries is assumed as discharged into the Bayonne sewer system.*

(b) *These industries discharge only sanitary wastes into the Bayonne sewer system.*

4. WASTE LOADS AND WATER QUALITY

Water quality data for the receiving waters surrounding the City of Bayonne are summarized in Section 2.7 entitled "Water Quality". In general, the existing water quality in the planning area can be characterized by low dissolved oxygen levels and high fecal bacteria contamination.

The planning area water quality is affected by waste loads from various point and non-point sources. Point source pollutants are discharged at specific locations along a waterway from a sewer or outfall pipe and may be either continuous or intermittent. Non-point source pollutants are those which enter the receiving water as runoff from overland flow and as runoff and leachate from landfills.

The scope of this chapter includes an inventory of existing point source discharges in the planning area to determine their effects upon the water quality of the receiving waters. Both continuous and intermittent point source discharges are reviewed. In addition, all available information concerning the problem of non-point source pollution in the planning area is summarized.

4.1 Point Source Waste Loads

Point source discharges in the planning area include outfalls from municipal, institutional, and industrial wastewater treatment plants, outfalls from industrial discharges, and overflows from combined wastewater and storm sewer collection systems. Overflows from combined sewer systems are differentiated from other point source discharges and

LEGEND

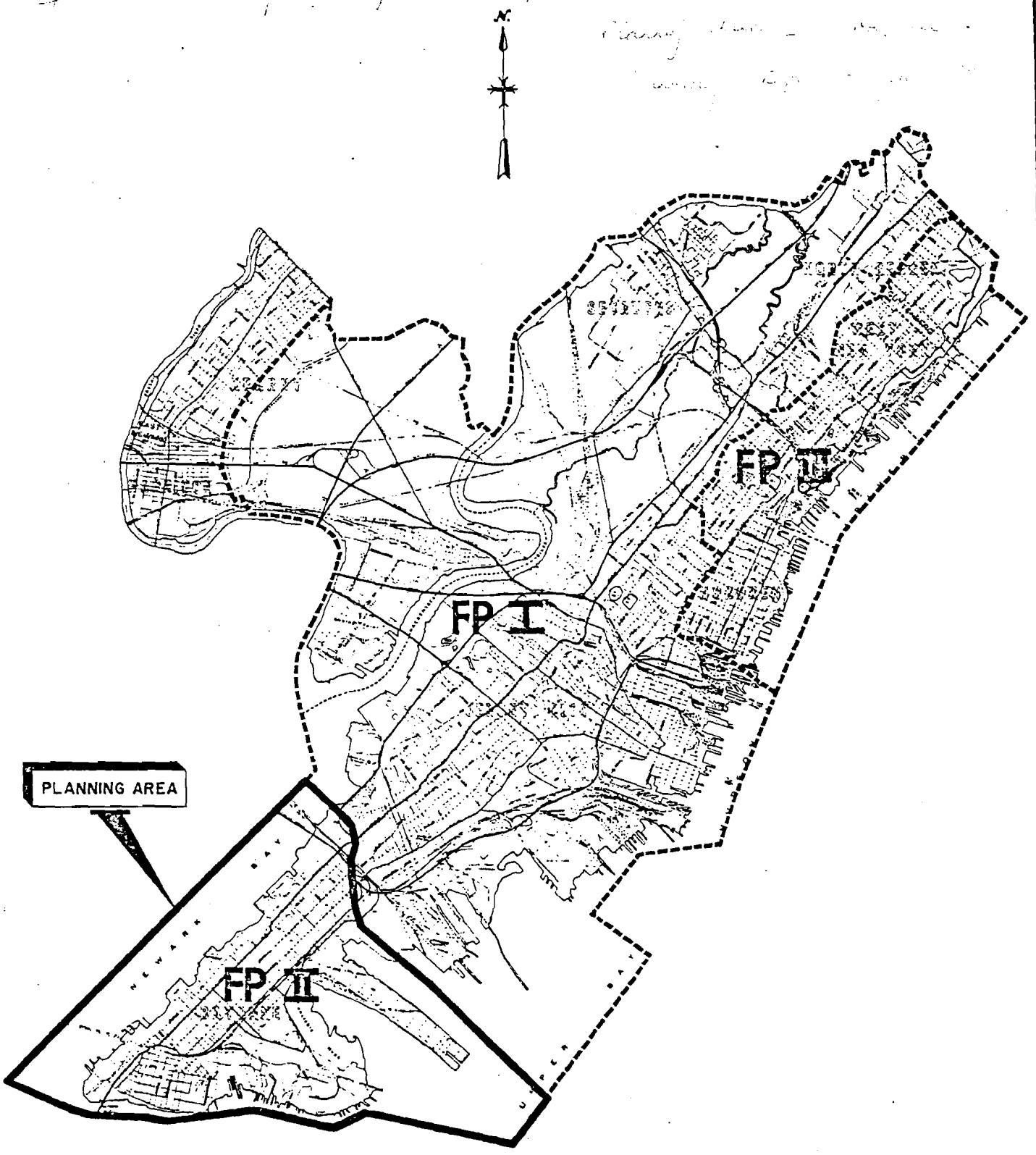
- (1) → TREATMENT PLANT DISCHARGE (SEE TABLE 4-1 IN REPORT FOR DESCRIPTION OF DISCHARGES)
- 1 ■→ OVERFLOW REGULATOR DISCHARGE W/REGULATOR NUMBER
- → STORM RELIEF SEWER DISCHARGE (UNREGULATED OUTFALL)
- ——— COMBINED SEWER DISCHARGE (UNREGULATED OUTFALL)

INDEX TO TREATMENT PLANT DISCHARGES

1. CPC INTERNATIONAL, INC.
2. NL INDUSTRIES, INC.
3. TEXACO, INC.
4. GENERAL CABLE CORP.
5. STANDARD TANK CLEANING CORP.
6. CITY OF BAYONNE
7. EXXON CO. U.S.A. 002
8. EL DORADO TERMINALS CORP.
9. NATIONAL OIL RECOVERY CORP.
10. AMERADA HESS
11. TANK STORAGE CORP.
12. RONA PEARL, INC.
13. METROPOLITAN RENDERING ASS'N., INC.
14. SO. CALIFORNIA CHEMICAL CORP.
15. BAYONNE INDUSTRIES, INC.
16. WHITE CHEMICAL CORP.
17. KENRICH PETRO CHEMICALS
18. EXXON CO. U.S.A. 001
19. ICI UNITED STATES, INC.
20. BETHLEHEM STEEL
21. U.S. MILITARY OCEAN TERMINAL

Ref: Hudson Co. Sewerage Authority
Jersey City, NJ
Wastewater Facilities Plan
Planning Area II - Bayonne
Point Source Discharges

MALCOLM PIRNIE, INC.



HUDSON COUNTY SEWERAGE A
JERSEY CITY, NEW JE
WASTEWATER FACILI
PLANNING AREA II
COUNTY S

4000 2000 0
SCALE

MALCOLM PIRNIE, INC.

frequently are referred to as intermittent point sources since they generally discharge to the receiving water only during storm events.

4.1.1 Point Discharges

Point sources in the planning area contribute waste loads from two domestic wastewater treatment facilities and from 18 industrial dischargers. The two domestic wastewater treatment facilities are the Bayonne Wastewater Treatment Plant and the U.S. Military Ocean Terminal Plant. These facilities are described and evaluated in greater detail in Chapter 5 of this report.

An identification of industrial dischargers in the planning area was made based on an inventory of the USEPA point source file to determine those industries which are authorized to discharge pollutants into the adjacent receiving waters under the National Pollutant Discharge Elimination System (NPDES). There may be additional industries in the planning area which discharge pollutants to the adjacent receiving waters and which have not applied for NPDES permits to discharge their wastes.

The location of each point source discharger in the planning area is shown on Plate 3. Pertinent information concerning each discharger is summarized in Tables 4-1a through 4-1d. These tables describe each discharger in terms of name, receiving waters, New Jersey NPDES permit number, Standard Industrial Classification (SIC), industrial activity, source of wastewater, existing treatment methods, and stream loadings.

Based on available information,[17] the total wastewater flows and waste loads which are discharged to the receiving waters from the various point sources in the planning area can be summarized as follows:

TABLE 4-1a

INVENTORY OF POINT SOURCE DISCHARGES IN BAYONNE
NEWARK BAY DRAINAGE BASIN

MAP[2] NO.	NAME	N.J.[1] NPDES NO.	SIC	INDUSTRIAL OPERATIONS	SOURCE OF WASTEWATER	TYPE OF TREATMENT	WASTEWATER CHARACTERISTICS	STREAM LOADINGS FLOW-MGD	BOD5-LB DAY	TSS-LB DAY[3]
1	CPC INTERNATIONAL,INC. BEST FOODS DIVISION	0001953	2035, 2096	REFINING OF VEGETABLE OILS FOR USE IN THE MANUFACTURE OF MAYONNAISE, MARGARINE, AND SALAD OIL	NON CONTACT COOLING WATER (SOURCE-NEWARK BAY), FROM AMMONIA CONDENSER AND CONDENSATE FROM HEATING COILS IN VEGETABLE OIL STORAGE TANKS	OIL WATER SEPARATION (SANITARY WASTES AND PROCESS WASTES TREATED AT BAYONNE STP)	OIL AND GREASE, ZINC AND CHROMIUM	0.01	3	2
2	NL INDUSTRIES INC. INDUSTRIAL CHEM. DIV. TEXCO INC	0000949	2818	MANUFACTURES CASTOR OIL AND CASTOR OIL BASED DERIVATIVES	ONCE THROUGH COOLING WATER (SOURCE-NEWARK BAY) USED FOR CONDENSERS AND HEAT EXCHANGE	NONE (SANITARY WASTES AND PROCESS WASTES TREATED AT BAYONNE STP)	HIGH SUSPENDED SOLIDS, OIL AND GREASE, ZINC, AND CHROMIUM	3.96	170	830
3		0002119	2911	STORAGE AND DISTRIBUTION OF BULK PETROLEUM PRODUCTS	STORM WATER RUNOFF, BOILER BLOWDOWN, BOILER FEED WATER CONDENSATE AND ONCE THROUGH COOLING WATER	OIL WATER SEPARATION (SANITARY WASTES TREATED AT BAYONNE STP)	OIL AND GREASE	0.09	52	19

NOTES: (1) REFERENCE NPDES PERMIT FILE OF THE U S EPA
(2) NUMBERS REFER TO LOCATION OF DISCHARGER ON PLATE 4
(3) "TSS" DENOTES TOTAL SUSPENDED SOLIDS

TABLE 4-1b

INVENTORY OF POINT SOURCE DISCHARGES IN BAYONNE KILL VAN KULL DRAINAGE BASIN(2)

MAP(3) NO	NAME	N J (1) NPDES NO.	SIC	INDUSTRIAL OPERATIONS	SOURCE OF WASTEWATER	TYPE OF TREATMENT	WASTEWATER CHARACTERISTICS	STREAM LOADINGS FLOW MGD	BOD5 LB DAY	TSS LB DAY(4)
4	GENERAL CABLE CORP	0002968	3357	MANUFACTURE OF ELECTRICAL POWER CABLE BY STRANDING INSULATION ASSEMBLY, AND COATING OF COPPER WIRE	NON-CONTACT COOLING WATER AND PROCESS WASTES	NONE (SANITARY WASTES TREATED AT BAYONNE STP)	CHROMIUM, COPPER, AND NICKEL	0.1	21	27
5	STANDARD TANK CLEAN CORP.	0003085	4489	CLEANING OF CARGO TANKS	STORM WATER RUNOFF, STEAM BOILER BLOWDOWN, RETURN CONDENSATE AND TURBINE COOLING WATER	OIL WATER SEPARATION (SANITARY WASTES TREATED AT BAYONNE STP)	N.A.	0.05	N.A	N.A
6	CITY OF BAYONNE MUNICIPAL PLANT	0025836		NOT APPLICABLE	DOMESTIC AND INDUSTRIAL WASTES	PRIMARY SETTLING AND CHLORINATION	HIGH BOD5 AND SUSPENDED SOLIDS	11.57	9 500	8 700
7	EXXON COMPANY U S A DISCHARGE 002	0002089	2992 2999	TERMINAL FOR WAXES, FUELS, ASPHALT AND SOLVENTS IN ADDITION TO BLENDER AND PACKAGER OF LUBRICANTS	STORM WATER RUNOFF FROM RECEIVING, STORING AND SHIPPING OF WAXES AND LUBRICATING OILS; AND STEAM CONDENSATE	STORM WATER RETENTION, OIL WATER SEPARATION, SAND FILTRATION WITH CHEMICAL FLOCCULATION (SANITARY WASTES TREATED AT BAYONNE STP)	HIGH BOD5 AND SUSPENDED SOLIDS, TOTAL ORGANIC CARBON, AND OIL AND GREASE	0 65	163	65
8	EL DORADO TERMINALS CORP.	0003361	5029, 5092	BULK CHEMICAL STORAGE TERMINAL. CHEMICALS STORED INCLUDE SOLVENTS AND TALLOW	STORM WATER RUNOFF	OIL WATER SEPARATION PRESENTLY INSTALLING A PHYSICAL-CHEMICAL TREATMENT UNIT FOR TOC REMOVAL (SANITARY WASTES TO SEPTIC TANK)	TOTAL ORGANIC CARBON	0 01	N A	3
9	NATIONAL OIL RECOVERY CORP.	0003565	2911	RECYCLES CRANKCASE WASTE OIL INTO USEFUL PETROLEUM PRODUCTS BY DISTILLATION	COOLING WATER (SOURCE - KILL VAN KULL)	OIL WATER SEPARATION (SANITARY WASTES TO SEPTIC TANK)	OIL AND GREASE, AND TOTAL ORGANIC CARBON	0 5	N.A.	N.A.
10	AMERADA HESS	0001422	5092	BULK STORAGE TANK FARM: RECEIVES RESIDUAL FUELS VIA BARGE, STORES, AND RESHIPS BY TRUCK	STORM WATER RUNOFF	STORM WATER RETENTION, OIL WATER SEPARATION (SANITARY WASTES TO SEPTIC TANK)	OIL AND GREASE	0 01	1	1

NOTES: (1) REFERENCE: NPDES PERMIT FILES OF THE U.S.EPA.
(2) INCLUDES ALL DISCHARGERS WHICH DISCHARGE DIRECTLY TO KILL VAN KULL.
(3) NUMBERS REFER TO LOCATION OF DISCHARGER ON PLATE 4.
(4) "TSS" DENOTES TOTAL SUSPENDED SOLIDS.
(5) "N.A." DENOTES NOT AVAILABLE.

TABLE 4-1c

INVENTORY OF POINT SOURCE DISCHARGES IN BAYONNE PLATTY KILL CREEK DRAINAGE BASIN(2)

MAP (3) NO	NAME	N J (1) NPDES NO	SIC	INDUSTRIAL OPERATIONS	SOURCE OF WASTEWATER	TYPE OF TREATMENT	WASTEWATER CHARACTERISTICS	STREAM LOADINGS FLOW MGD	BOD5 LB DAY	TSS LB DAY(4)
11	TANK STORAGE CORP (5) (THEOBALD INDUSTRIES	0003387	2094	OPERATES TANK STORAGE TERMINAL FOR HANDLING ANIMAL AND VEGETABLE FATS AND OILS	STORM WATER RUNOFF	OIL WATER SEPARATION AND NEUTRALIZATION (SANITARY WASTES TO SEPTIC TANK)	OIL AND GREASE	0 07	N A	28
12	BONA PEARL INC (5)	0030449	2844	MANUFACTURES BISMUTH OXYCHLORIDE AN INORGANIC CHEMICAL USED IN COSMETIC PRODUCTS	PROCESS WASTES BACKWASH FROM DEIONIZATION UNIT AND WATER USED IN GAS SCRUBBER	NEUTRALIZATION AND SETTLING (SANITARY WASTES TREATED AT BAYONNE STP)	HIGH SUSPENDED SOLIDS BISMUTH	0 01	N A	N A
13	METROPOLITAN (5) RENDERING ASSOC INC	NONE	2094	PROCESSES WASTE FATS AND BONES INTO INEDIBLE TALLOW MEAT AND BONE MEAL	CONTACT COOLING WATER AND CLEAN UP WATER	SETTLING (SANITARY WASTES TREATED AT BAYONNE STP)	HIGH BOD5 AND SUSPENDED SOLIDS OIL AND GREASE	0 09	N A	N A
14	SOUTHERN CALIFORNIA CHEMICAL CORP (5)	0030481	2819	MANUFACTURES INORGANIC CHEMICALS: PRINCIPAL PRODUCTS ARE AN ALKALINE ETCHANT USED IN THE MANUFACTURE OF ELECTRONIC CIRCUIT BOARDS FERRIC CHLORIDE AND COPPER OXIDE	PROCESS WASTES	SETTLING (SANITARY WASTES TO SEPTIC TANK)	HIGH SUSPENDED SOLIDS COPPER AND IRON	0 01	N A	N A
15	BAYONNE INDUSTRIES INC	0001341	5092	OPERATES OIL STORAGE TERMINAL	STORM WATER RUNOFF	OIL WATER SEPARATION SETTLING	OIL AND GREASE	0 60(6)	22	147
16	WHITE CHEMICAL CORP (5) also facility in Newark of interest.	0001538	2818	MANUFACTURES HALOGENATED ORGANIC CHEMICALS PRINCIPAL PRODUCTS ARE A BROMINATED ORGANIC COMPOUND USED AS A FLAME RETARDANT AND ACID CHLORIDES MADE BY CHLORINATING FATTY ACIDS	NON CONTACT COOLING WATER AND PROCESS WASTES	SETTLING (SANITARY WASTES TO SEPTIC TANK)	HIGH TEMPERATURE ZINC CHROMIUM TOTAL ORGANIC CARBON CHLORINATED HYDROCARBONS TOTAL SUSPENDED SOLIDS AND BROMIDE	0 42	N A	N A
17	KENRICH PETROCHEMICALS (5)	0003018	2821	MANUFACTURES RUBBER CHEMICALS THERMOPLASTIC RESIN AND PLASTICIZERS	COOLING WATER AND PROCESS WASTES	SETTLING (SANITARY WASTES TO SEPTIC TANK)	N A	0 03	N A	N A

NOTES: (1) REFERENCE NPDES PERMIT FILES OF THE U S EPA
(2) INCLUDES ALL DISCHARGERS WHICH DISCHARGE TO KILL VAN KULL VIA PLATTY KILL CREEK
(3) NUMBERS REFER TO LOCATION OF DISCHARGER ON PLATE 4
(4) TSS DENOTES TOTAL SUSPENDED SOLIDS
(5) THESE INDUSTRIES DISCHARGE THEIR WASTES TO AN OIL SKIMMING POND WHICH IS OPERATED BY BAYONNE INDUSTRIES INC
(6) INCLUDES ALL WASTES DISCHARGED FROM OIL SKIMMING POND
(7) "N A" DENOTES NOT AVAILABLE

TABLE 4-1d
INVENTORY OF POINT SOURCE DISCHARGES IN BAYONNE
UPPER NEW YORK BAY DRAINAGE BASIN

MAP 1/ NO	NAME	NJ 1/ NPDES NO	SIC	INDUSTRIAL OPERATIONS	SOURCE OF WASTEWATER	WASTEWATER CHARACTERISTICS	STREAM LOADINGS FLOW MGD	STREAM LOADINGS BODS 20 DAYS LB DAY 4/	STREAM LOADINGS TSS LB DAY 4/	TYPE OF TREATMENT
18	EXXON COMPANY U S A DISCHARGE 001	0001082	2899 2951 5092	TERMINAL FOR MAKES FUELS ASPHALT AND SOLVENTS IN ADDITION TO BLENDER AND PACKAGER OF LUBRICANTS	RESULTS FROM ASPHALT OXIDATION BLENDING PROCESSES (FROM CHEMICAL POLYMERIZATION FROM RECEIVING STORING SHIPPING AND BLENDING FUELS AND SOLVENTS	HIGH BOD5 TOTAL ORGANIC CARBON OIL AND GREASE	2 18	2 624	164	STORM WATER RETENTION OIL WATER SEPARATION SAND FILTRATION WITH CHEMICAL FLOCCULATION (SANITARY WASTES TREATED AT BAYONNE STP
19	ICI UNITED STATES INC	0029317	2811	MANUFACTURES POLYURETHANE POLY TETRAFLOURETHYLINE CHLORINATED RUBBER AND PARAFFIN	STORM WATER RUNOFF	OIL AND GREASE	0 01	N A	N A	NONE (SANITARY WASTES AND PROCESS WASTES TREATED AT BAYONNE STP
20	BETHLEHEM STEEL	0030520	3731	OPERATES A GRAVING DOCK WHICH IS USED FOR REPAIR AND MAINTENANCE OF OCEAN GOING SHIPS	SHIP MAINTENANCE AND REPAIR ABRASIVE AND OR CHEMICAL PAINT REMOVAL AND PAINTING OF SHIP PAIR	OIL AND GREASE SETTLEABLE SOLIDS ZINC COPPER TIN LEAD AND CHROMIUM	56 00	N A	N A	NONE
21	U S MILITARY OCEAN TERMINAL	0020257		NOT APPLICABLE	SANITARY WASTES AND NON CONTACT COOLING WATER (SOURCE UPPER NEW YORK BAY, FROM REFRIGERATION PLANT CONDENSER	HIGH BOD5 AND SUSPENDED SOLIDS	1 00	7	14	SANITARY WASTES SECONDARY TREATMENT

NOTES (1) REFERENCE NPDES PERMIT FILES OF THE U S EPA
(2) NUMBERS REFER TO LOCATION OF DISCHARGES ON PLATE 4.
(3) "TSS" DENOTES TOTAL SUSPENDED SOLIDS
(4) "N.A." DENOTES NOT AVAILABLE

Receiving Water	Flow (mgd)	BOD_5 (lb/day)	TSS (lb/day)
Newark Bay	4.06	225	851
Kill Van Kull			
Directly to the Kill	12.89	9,685	8,796
Via Platty Kill Creek	0.68	22	142
Upper New York Bay	59.19(1)	2,661	178
Totals	76.82	12,593	9,967

Note: 1. *Includes Bethlehem Steel's 56.0 million gallon discharge, which occurs rather infrequently.*

With the exception of the discharges from the Bayonne Wastewater Treatment Plant and from the U.S. Military Ocean Terminal Plant, the majority of the discharges result either from stormwater runoff or from cooling water. The large discharge from Bethlehem Steel includes water which is withdrawn from Upper New York Bay and used to wash down a graving dock after repairs and maintenance are made on ocean going ships.

In addition to discharging wastes which include oxygen demanding materials and suspended solids, most of the point sources discharge wastes which include oil and grease and various heavy metals. Much of the stormwater runoff includes oil and grease from the paved areas and storage areas surrounding the many petroleum related industries in the Constable Hook area. Industrial cooling water and process wastewater contribute most of the heavy metals that are discharged to the receiving waters. In all cases, sanitary wastes either are discharged to a private septic system or are collected and treated at the Bayonne Wastewater Treatment Plant.

The majority of the wastes which are discharged to the receiving waters receive at least partial treatment. Most industries provide

facilities for oil/water separation prior to discharging their wastes. Bayonne Industries, Inc. owns and operates an oil skimming pond located at the upstream end of Platty Kill Creek. Six industries, in addition to Bayonne Industries, discharge their wastes to this pond. Each of these industries is responsible for the discharge of its wastes and has applied for an NPDES permit, with the exception of Metropolitan Rendering Association, Inc. which is not listed in the USEPA files.

Eight of the dischargers in the planning area have been identified as "major" or "significant" dischargers according to the USEPA file information. The term "major" or "significant" discharger is defined by Federal regulations as a discharger for which timely remedial action is necessary within the planning period in order to meet water quality objectives. The intent is to emphasize those dischargers which most significantly affect water quality. These dischargers include:

1. Bayonne Industries, Inc.
2. El Dorado Terminals, Corp.
3. Exxon Company, U.S.A.
4. General Cable Corp.
5. Kenrich Petrochemicals, Inc.
6. National Oil Recovery Corp.
7. NL Industries, Inc. — Elizabeth & Newark Reichhold facilities of interest (formerly Spencer Kellogg - NL Industries Inc)
8. City of Bayonne Municipal Plant

In addition, two dischargers, National Oil Recovery Corp. and the U.S. Military Ocean Terminal are classified as thermal dischargers. However, it is estimated that these dischargers contribute insignificant amounts of heat to the receiving waters in comparison to the large power plants which are located upstream from the planning area.

The effects on the receiving waters of the point source discharges in the planning area vary depending on the type of wastes which are

discharged. Soluble organics cause depletion of the dissolved oxygen levels in the waterways. The discharge of solids to the waterways results in the buildup of sludge blankets or banks which are harmful to the normal aquatic life. Sludge blankets containing organic solids will undergo decomposition resulting in depletion of dissolved oxygen levels and production of noxious gases. Heavy metals and toxic organics are also harmful to aquatic life. The discharge of oil and grease to the waterways presents aesthetic problems and degrades the potential recreational value of the receiving water.

4.1.2 Combined Sewer Overflows

The subject of waste loads and water quality associated with the combined sewer overflows is held in abeyance at this time until the completion of the Combined Sewer Overflow (CSO) Study. This study will attempt to define waste loads and water quality in terms of optimum cost/benefits ratio with regard to reduction of pollutant discharge, rather than specific effluent limitations. The results of the CSO Study are scheduled for presentation in Volume V of the Wastewater Facilities Plan.

4.2 Non-Point Source Waste Loads

The water quality in the planning area is not only affected by waste loads from various point sources but also is affected by waste loads from non-point sources. A non-point source has been defined in a paper entitled "Non-Point Water Pollution: Federal and State Perspectives" prepared by John R. Churchill of the USEPA as follows:

1. They enter the receiving waters in a diffuse manner.

2. They are intermittent.

3. The pollutants arise over an extensive area of land and are in transit over land before they enter navigable waters.

4. Non-point source pollutants generally cannot be monitored readily at their point of origin and are not always traceable to their exact source.

5. Their prevention or control must be directed at a site-specific management or conservation practice.

6. Compliance monitoring for non-point sources is conducted on land rather than on water.

7. Non-point sources cannot be measured in terms of effluent limitations.

8. The extent of non-point source pollution relates, at least in part, to certain uncontrollable climate events.

9. From an institutional management point of view, man's activities which cause non-point pollution are typically nonrepetitive processes on extensive land areas, as contrasted with repetitive operations on smaller but intensively used land areas.

Non-point source waste loads in the planning area originate from various urban land surfaces and are carried to the receiving waters via runoff from overland flow of stormwater. These waste loads are affected by street litter, gas combustion products, ice-control chemicals, domestic pet wastes, fallout from industrial and residential combustion products, and chemicals applied to residential lawns and to park lands.

The concentration of these waste loads is highly variable with respect to time, place, and frequency, duration and intensity of rainfall. The variability of waste load concentrations in urban stormwater is illustrated in Table 4-2.

The majority of the land in Bayonne is utilized for commerical and industrial purposes, which tend to generate higher waste loads than

TABLE 4-2

CHARACTERISTICS OF URBAN STORMWATER*

Parameter	Concentration (range)
BOD_5	1 - 700 mg/l
COD	5 - 3,100 mg/l
TSS	2 - 11,300 mg/l
TS	450 - 14,600 mg/l
VSS	12 - 1,600 mg/l
Organic Nitrogen	0.1 - 16 mg/l
NH_3-N	0.1 - 2.5 mg/l
Soluble PO_4	0.1 - 10 mg/l
Total PO_4	0.1 - 125 mg/l
Chlorides	2 - 25,000 mg/l
Oils	0 - 110 mg/l
Phenols	0 - 0.2 mg/l
Lead	0 - 1.9 mg/l
Total Coliform	200 - 146 x 10^6 /100 ml
Fecal Coliform	55 - 112 x 10^6 /100 ml

*Sources: *Wanielista, Martin P., et. al., "Non-point Source Effects on Water Quality," Journal of the Water Pollution Control Federation, 49:441, (March 1977)*

5. MUNICIPAL FACILITIES INVENTORY

5.1 Existing Collection and Treatment Systems

Presently, there are two publicly-owned wastewater collection and treatment systems in the planning area. One system is owned and operated by the City of Bayonne and serves the existing population of the city and a portion of the commercial and industrial establishments. The other system is owned and operated by the United States Army and serves the Military Ocean Terminal complex located on a peninsula extending from the eastern side of the city.

In addition to these systems, there are two privately-owned wastewater collection and treatment systems and several privately-owned treatment facilities which serve various industrial establishments located in Constable Hook Industrial Park. Bayonne Industries, Inc., and Exxon Company, U.S.A., each own and operate collection and treatment facilities which serve their respective industrial complexes. These industrial facilities are described in Section 4.1 of this report.

This chapter includes an inventory of the existing Bayonne and U.S. Military Ocean Terminal collection and treatment systems to serve as a basis for determining the need for and the extent of upgrading, expanding, and/or replacing these systems. In addition, information concerning the characteristics of the wastewater flow which presently enters the Bayonne Wastewater Treatment Plant are described and discussed, including a summary of the industrial waste survey and sampling program which was conducted as part of this study. A brief summary of the findings,

residential areas. However, high waste loads may be generated from the following special land use areas in Bayonne:

1. Waste loads associated with human wastes

   -military ship mooring areas and marinas
   -dumps and landfills
   -domestic sludge disposal areas

2. Waste loads associated with high suspended and settleable solids

   -rail yards
   -industries with erodible materials stored outside

3. Waste loads associated with petroleum related materials

   -large parking areas
   -commerical shipping terminals
   -gas and oil storage areas

Estimates of waste loads from non-point sources discharged to the receiving waters in the planning area were made as a part of the Northeast New Jersey 303(e) Basin Plan. Estimates of average non-point source waste loads to receiving waters were introduced into steady-state models for assessing water quality. These waste loads included those contributed by combined sewer overflows and also included waste loads from point and non-point sources outside the planning area.

The average waste loads from non-point sources which were inserted in the model for each drainage basin in the planning area are as follows:

	BOD_5 (lb/day)	Ratio*
Newark Bay	9,000	0.41
Kill Van Kull	20,900	0.12
New York Bay	11,500	0.01

**This ratio represents the percentage of the total waste load from point and non-point sources which is attributed to non-point sources.*

These waste loadings indicate that non-point sources, which in the Basin Plan includes combined sewer overflows, represent less than 50 percent of the total waste load discharged to each receiving stream. This phenomenon is due to the fact that most, if not all, point source discharges are from either primary treatment plants or from industrial waste discharges. However, this phenomenon may not be true during and immediately after storm events since the ratios estimated above include average rather than peak loadings from non-point sources.

The major contributions of non-point source pollutants in the planning area may be attributed to the Constable Hook section of Bayonne. This area is characterized by heavy industrial activity and includes several oil storage terminals. In September 1974, the NJDEP filed suit against Exxon Corporation and ICI United States, Inc., two large industries located in Constable Hook Industrial Park, to halt the seepage of spilled oil into Upper New York Bay. An extensive cleanup of oil-saturated lands on which these plants are located is required.

conclusions, and recommendations of the Infiltration/Inflow Analysis of the Bayonne collection and interceptor system also is included in this chapter.

5.2 Bayonne Collection and Treatment System

The City of Bayonne wastewater collection and treatment system consists of combined collector and interceptor sewers, three pumping stations, 18 overflow regulators, and a primary treatment plant. The locations of the facilities are shown on Plate 4.

The Bayonne collection and treatment system serves the major portion of the city's population and commercial and industrial establishments. Although the city encompasses about five square miles, only about 2.8 square miles are served by the Bayonne system. The portion served by sewers is generally the densely-populated area bounded by the city line to the north near West 59th and East 43rd Streets, by West and East 1st Streets on the south, by the terminal blocks between Avenue A, Kennedy Boulevard, and Newark Bay on the west, and by New Jersey State Highway Route 169, Avenue F, and Ingham Avenue on the east. The limits of the present service area of the Bayonne Wastewater Treatment Plant are shown on Plate 4.

Most of the unsewered portion of Bayonne lies in Constable Hook Industrial Park. However, a 24-inch sanitary sewer exists along East 28th Street and New Hook Access Road to serve some industries at the western end of Constable Hook. Another extension outside this built-up area is a 24-inch sanitary sewer which serves Goldsborough Village,

which is the residential base housing for the U.S. Military Ocean Terminal, and which connects to the Bayonne collection system in the vicinity of East 34th street and Avenue F.

Presently, the city's system does not serve two streets, Colonial Drive and Sycamore Road, which are located adjacent to the Jersey City boundary line. About 60 homes located along these streets are presently served by the Jersey City Sewerage Authority's Westside Treatment Plant. The City of Bayonne currently is constructing a pumping station to convey wastewater flows from this residential area to the Bayonne collection system.

An industrial section of the City of Jersey City along Port Jersey Boulevard is now served by the Bayonne collection and treatment system. This area of about 280 acres consists primarily of distribution and warehouse facilities and is connected to the Bayonne sewer system via an 18-inch sanitary sewer in the vicinity of the East 50th Street interceptor chamber.

5.2.1 Collectors and Interceptors

The Bayonne collection system includes about 72 miles of combined collector sewers and about 6 miles of interceptor sewers. The collection system is divided by the ridgeline which runs north to south approximately between Kennedy Boulevard and Avenue C. About half of the collection system directs wastewater flows to an interceptor located along the Newark Bay shoreline, while the remainder of the collection system directs flows to interceptors located along the southerly and easterly borders of the city.

The Bayonne collection system consists primarily of combined sewers which convey normal residential and commercial wastewater flows, as well as some industrial wastes, during dry weather periods. During periods of wet weather, the combined sewers continue to collect and convey these domestic and industrial flows, but in addition, they carry the storm flow or runoff from street drainage inlets (catch basins), and roof, cellar, yard, and area drains.

About 82 percent of the combined sewers is circular in cross-section, varying from 4 to 84 inches in diameter. About 65 percent of all circular sewers falls within the size range of 8 to 18 inches in diameter. Non-circular sewers constitute about 14 percent of all sewers. The non-circular sewers most frequently encountered are egg-shaped pipes with a height-to-width ratio of 1.5 to 1, and semi-elliptical pipes. The remaining 4 percent is non-geometric in shape.

The majority of the sewers consist of vitrified clay pipe, reinforced-concrete pipe, and brick and mortar pipe. Other pipe materials include asbestos-cement, cast iron, steel, and corrugated metal. The majority of the non-circular sewers is constructed of brick and mortar.

The interceptor sewers in the Bayonne collection system were constructed in 1952. Prior to that time, the combined wastewater flows were discharged directly into the various receiving waters from numerous trunk sewers. Each trunk served as the outlet for a drainage or collection area, with all collection areas together constituting the overall collection system.

The interceptor sewers are located along the periphery of Bayonne, and consist of three major branches as shown on Plate 4. The westerly

branch is comprised of two components. The southwesterly component extends from Edwards Court (near West 12th Street and Avenue A), in a northerly direction along Newark Bay to the West 22nd Street Pumping Station. The northwesterly component extends from West 19th Street, in a southerly direction along Newark Bay to the West 22nd Street Pumping Station. Both components of the westerly interceptor branch convey wastewater flows by gravity flow to the pumping station.

Flows from the westerly interceptor branch are pumped via a 30-inch cast iron force main to a connection point with the easterly interceptor branch at East 22nd Street and Avenue F. The size of the westerly interceptor branch varies from 12 to 33 inches in diameter and consists of asbestos-cement and reinforced-concrete pipe.

The easterly interceptor branch extends from near East 50th Street in a southerly direction along N.J. Route 169 and Avenue F to the Bayonne Wastewater Treatment Plant at Oak Street. The easterly interceptor branch ranges in diameter from 42 to 72 inches, and consists of steel and reinforced-concrete pipe.

The southerly interceptor branch extends around the southerly tip of Bayonne from the west side to the east side, commencing near West 5th Street and Avenue A. This branch proceeds by gravity around the Bergen Point area along West and East 1st Streets and extends up the east side along Ingham Avenue to the treatment plant. The southerly interceptor branch combines with the easterly interceptor branch at a junction manhole located on the treatment plant site. The southerly

interceptor branch ranges in diameter from 24 to 54 inches, and is comprised of steel and reinforced-concrete pipe.

Flooding was a frequent problem with the collection system. During high tide and heavy rainfall, flooding would occur in several sections of the city due to surcharging in the interceptor sewers. In order to reduce the flooding problems, relief storm sewers have been installed in various portions of the city. The relief sewers are interconnected with the collection system and serve to relieve the collector sewers from excessive flows during wet weather periods.

Since the construction of the wastewater treatment facilities and interceptor sewers in 1954, the city has made connections to the interceptor sewers to relieve areas that had local flooding problems and to sewer new areas. These connections have been made without the benefit of regulators. The Combined Sewer Overflow Study, Volume V, addresses these conditions in more detail. The present effect of these connections is to increase the quantity of wastewater flow going to the treatment facilities during times of rainfall runoff.

Relief sewers have been constructed along several streets on the west side of the city. These sewers discharge directly to Newark Bay. Other relief sewers have been installed in the vicinity of Avenue E and in the vicinity of West 1st Street. These sewers direct flows to separate pumping stations which pump the wastewater to the Kill Van Kull. These pumping stations are described in the following section of this chapter.

More detailed information concerning the age, size, condition, and type of sewers in the Bayonne collection system is presented in Chapter 5

of Volume II, Infiltration/Inflow Analysis, of this Facilities Plan. Information concerning the capacities of the major collector sewers and of the interceptors will be developed as part of the Combined Sewer Overflow Study.

5.2.2 Pumping Stations

The Bayonne system includes three wastewater pumping stations located as shown on Plate 4. A description and evaluation of each of these pumping stations are contained in the following paragraphs.

1st Street Pumping Station - As shown on Plate 4, this pumping station is located along the southerly side of West 1st Street near Garretson Avenue. The pumping station was constructed in 1973 to relieve surcharged flows in the southerly interceptor branch. The maximum capacity of the pumping station is estimated to be two mgd with one pump acting as a standby.

The pumping station is constructed entirely below grade and consists of a reinforced-concrete chamber which houses two submersible pumps. The top slab of the chamber is at Elevation 7.75, which is about one foot below the estimated flood level for a flood with a 100-year return period. The pumping station site is surrounded by a six-foot-high chain link fence.

Surcharged flow in the southerly interceptor branch is diverted to the pumping station via a chamber which has been built around the interceptor. The diversion chamber includes a side-overflow weir which directs surcharged flows to the pumping station chamber through an 18-inch reinforced-concrete pipe. Upon entering the pumping station chamber,

flows pass through a removable basket-bar screen and are pumped to the Kill Van Kull through a 12-inch cast iron force main which is about 220 feet in length and terminates at a headwall located along the shoreline.

The station is provided with two similar pumping units which have the same pumping capacity. Each of these units can pump the maximum flow while the other acts as a standby.

The pumping units are controlled by a duplex pump controller including a level controller, three liquid level sensors, an alternator, and an alarm panel. As the water level in the pump chamber rises, the middle sensor is tripped and causes the lead pumping unit to start. If the water level rises to the upper sensor, the lag pumping unit is started. Both pumps are shut off when the water level falls below the lower sensor.

A latch-type alternator causes automatic alternation of the pumps after each complete pumping cycle. The station is equipped with an automatic alarm system which telemeters a signal to the Bayonne Wastewater Treatment Plant in the event of a pump malfunction. The motor starters, controls, and alarm system are located in an explosion-proof box which is mounted above-grade on the top of the pumping station chamber.

Electrical power to the pumping station is supplied by a Public Service Electric and Gas Company pole-mounted transformer located along West 1st Street. All incoming power and electrical equipment are located in an explosion-proof box which is mounted on the top of the pumping

station chamber. The station is not provided with a standby power source.

Maintenance of the station generally includes a weekly visual inspection. Since the pumping station was constructed, the basket-bar screen has been removed because no solids were being deposited in the basket. Presently, the pumping station does not include flow measuring or recording equipment.

The 1st Street Pumping Station appears to be adequate for future use throughout the planning period to relieve surcharged flows in the southerly interceptor branch. It may be desirable to install elapsed time meters on the pumps for maintenance purposes. Also, it may be necessary to provide partial treatment of the flows discharged to the Kill Van Kull depending on the results of the Combined Sewer Overflow Study.

5th Street Pumping Station - As shown on Plate 4, the 5th Street Pumping Station is located at the easterly end of East 5th Street adjacent to the Bayonne Wastewater Treatment Plant. This pumping station was constructed in 1965 to relieve flooding which occurs along Avenue E, East 22nd Street, Oak Street, and Linnet Street. The maximum capacity of the pumping station is about 250 mgd with one pump acting as a standby.

The relief sewers connected to the 5th Street Pumping Station are a combination of storm sewers and combined sewer overflows. Cross connections have been made extensively throughout the system to relieve

older combined sewers. The routes of the connecting sewers are shown on Plate 4. Flows from Linnet Street and vicinity are connected via a 48-inch diameter reinforced-concrete sewer and flows from Avenue E and vicinity are connected via an 84-inch diameter reinforced-concrete pipe. The 72-inch diameter discharge from the pumping station is to an inlet off the Kill Van Kull just east of the wastewater treatment plant.

The pumping station consists of two floors. The lower level includes a screen chamber and the wet well. The substructure is of reinforced-concrete construction. The operating floor level houses the pumps, motors, controls, and other equipment. The superstructure is of concrete block and brick construction. The operating floor is set at Elevation 12.0 which is about three feet above the estimated flood level for a flood with a 100-year return period.

Upon entering the pumping station, flows pass through a screen chamber which includes three mechanically-operated screens. Stop-log grooves have been provided in the screen chamber to isolate each screen. The screens are cable-operated and discharge coarse screenings to a 24-inch wide belt-type conveyor located on the operating floor. Screenings may be discharged via the conveyor to a truck for disposal.

The wet well is a common suction well for six vertical wet pit pumps, three on the north side and three on the south side of the station. The floor of the wet well slopes toward the pump suction to reduce solids accumulation. For maintenance purposes, the wet well is equipped with a 12-inch vertical shaft pump with a 40-horsepower, two-speed motor, and two 4-inch submersible sump pumps to dewater the wet well.

Flows from the wet well are pumped to either one of two reinforced-concrete manifolds which are located along the north and south sides of the station. A 36-inch diameter bypass flap valve has been provided on each side of the wet well to permit flow from the well to the manifolds in the event of power failure.

Each manifold discharges into a 72-inch diameter reinforced-concrete pipe which conveys flow to a junction chamber located east of the pumping station. From the junction chamber, flows are discharged to an inlet of the Kill Van Kull through an 84-inch diameter reinforced-concrete pipe.

The pumping station includes six vertical wet pit pumping units, each having the same pumping capacity. The operating characteristics of each pump are:

TDH* - 6 feet
Inlet Size - 36-inch diameter
Outlet Size - 36-inch diameter

** TDH - total dynamic head*

Each pump is provided with a discharge flap valve to prevent backflow into the wet well when the other pumps are operating.

Each pump is driven by a vertical, squirrel-cage motor, rated at 200 horsepower. The motors are located directly above the pumps in the pump room on the operating floor. Also located in the pump room are the pump controls and power equipment.

The pump room has sufficient area for repair of the pumps and switch gear. Hatchways have been provided in the roof of the pumping station to permit removal of any pumping unit with a crane.

The pumping station has potable water facilities available for routine equipment washdown and cleaning. A backflow prevention system has been installed on the potable water feed.

Electrical power to the pumping station is supplied by a Public Service Electric and Gas Company pad-mounted transformer located adjacent to the station. The station is not provided with a standby power source.

The ventilation systems for the pump room and for the wet well and screen room are entirely separate. The pump room ventilation system is thermostatically-controlled and consists of four exhaust fans which are interlocked with motor-operated dampers in the exhaust grilles. The ventilation system in the wet well and screen room is controlled automatically by a combustible gas detection system which activates two exhaust fans interlocked with motor-operated dampers in the exhaust grilles. The operating floor of the pumping station is heated by six electric unit heaters which are thermostatically-controlled.

Maintenance of the pumping station includes a weekly inspection of the station at which time each of the pumps is manually started and stopped. The removal of screenings from the station has been minimal because of the lack of heavy screenings in the influent wastewater.

The 5th Street Pumping Station is in good operating condition and may be utilized for future wastewater management in the planning area. The continued discharge of untreated storm flows to the Kill Van Kull from this pumping station will depend on the findings of the Combined Sewer Overflow Study. In the future, it may be desirable to improve the operation and maintenance of the station through the following measures:

1. Install an alarm system to telemeter any pump malfunction to the treatment plant.
2. Install elapsed time meters on the pumps.
3. Provide flow measuring and recording equipment.
4. Improve aesthetics of the pumping station through various architectural changes.
5. Emergency power based on past outage history.

West 22nd Street Pumping Station - As shown on Plate 4, this pumping station is located at the westerly end of West 22nd Street along the Newark Bay Shoreline. Wastewater flows from the west side of Bayonne are conveyed by gravity through the westerly interceptor branch to this pumping station and pumped across the city to the easterly interceptor branch.

The pumping station was constructed in 1952. The maximum capacity of the station is estimated to be between 25 and 30 mgd with one pump acting as a standby. Average dry weather flow to the station is estimated to be 4 mgd based on flow measurements which were taken as part of the Infiltration/Inflow Analysis.

The pumping station consists of three levels. The operating floor level includes a motor room, a grit and screen room, a lavatory, and the operator's room. The superstructure is of block and brick construction with a wood truss roofing system. The operating floor is set at Elevation 13.5, which is about 4.5 feet above the estimated flood level for a flood with a 100-year return period.

The intermediate level includes the discharge header for the pumps and a boiler for heating the station. The lower level includes an

aerated grit chamber, a wet well, and a pump room. Both the intermediate level and the lower level are below finished grade with the lower level extending about 25 feet below grade. The substructure is of reinforced-concrete construction

Wastewater flows enter the pumping station through a 48-inch diameter reinforced-concrete pipe. Upon entering the station, wastewater passes through a coarse bar screen and an aerated grit chamber and into the wet well. A manually-operated sluice gate is located at the entrance to the pumping station, providing a positive means of shutting off flow into the station in the event of an emergency. The bar screen was constructed for automatic cleaning, but presently is cleaned manually because of a deterioration of various mechanical parts caused by excess moisture in the grit and screen room.

The aerated grit chamber is equipped with a "V" bucket-type conveyor which carries the grit that settles out in the grit chamber to a hopper located in the grit and screen room. Grit is removed manually from the hopper and transferred to drums for disposal at the city's landfill. It has been estimated by city personnel that 40 cubic feet of grit and screenings are removed from the pumping station on a weekly basis.

The wet well and dry well (pump room) are completely separated. The wet well is a common suction well for the four pumping units located in the station. The sides of the wet well slope 30 degrees toward the bottom of the well to prevent solids accumulation.

The pumping station includes four vertical, variable speed pumping units, each having the same pumping capacity. Two pumps have five steps or operating speeds and the remaining pumps have three steps or operating

speeds. The rated capacity of each pump is reported to be about 10 mgd. Inlet and outlet sizes of each pump are 12 inches and 16 inches in diameter, respectively. All pumping units have a common variable speed control circuit which controls the number of pumps and speed to accommodate the influent flow rate.

Each pump is driven by a vertical, wound-rotor motor rated at 75 horsepower with a maximum speed of 875 revolutions per minute. The motors are located above the pumps in the motor room. The motors were found to be in good condition with the exception of one which was not in operation because of defective motor controls. The motor controls of the other three pumps also were found to be in need of replacement.

The piping on the discharge side of the pumps includes a header which increases from a 16-inch by 20-inch cast iron pipe to a 30-inch diameter cast iron pipe. Flows are pumped to the easterly interceptor branch through a 30-inch diameter force main. The hydraulic characteristics of the force main are summarized below:

Approximate Flow (mgd)	Velocity (ft. per second)	Loss of Head (ft. per 1,000 ft.)
4	1.3	0.4
10	3.2	2.1
20	6.3	7.6
30	9.5	16.0
40*	12.6	27.2

**With all pumps operating*

Force mains normally are designed to maintain a velocity of at least 2.0 feet per second to prevent solids accumulation and no greater than 8.0 feet per second to prevent souring.

All three levels of the pumping station are served by a common mechanically-powered ventilation system. The vent fan and motor are located in the motor room. The pumping station is heated by means of a boiler located on the intermediate level.

All levels of the pumping station include potable water facilities for routine equipment washdown and maintenance. A backflow preventer has been installed on the potable water feed.

Electrical power is supplied to the pumping station from a Public Service Electric and Gas Company pole-mounted transformer. The station is not provided with a standby power source.

The West 22nd Street Pumping Station is manned 16 hours per day. The pumping units and equipment are checked on a daily basis. As previously indicated, grit and screenings are removed on a weekly basis.

This pumping station presently is capable of handling average daily flows from the west side of Bayonne. However, during wet weather periods, peak flows to the pumping station may exceed the maximum capacity of the pumps. Peak flows to the pumping station cannot be readily determined because the station is not equipped with flow measuring and recording equipment.

In the future, the adequacy of this pumping station will depend on the results of the Combined Sewer Overflow Study. Based on these results, it may be necessary to increase the size of the pumping units and to increase the capacity of the force main.

To upgrade the existing operation of the pumping station, the following improvements may be considered:

1. Replacement of the motor controls.
2. Upgrading the heating and ventilation system.
3. Providing a standby system for grit removal.
4. Replacement of the existing bar screen.
5. Installation of flow measuring and recording equipment.
6. Installation of an alarm system to telemeter any malfunctions to the treatment plant during periods when the station is unmanned.
7. Various architectural improvements to enchance the appearance of the station in the local residential neighborhood.
8. Providing emergency power based on past outage records.

5.2.3 Overflow Regulators

The Bayonne collection system includes 18 overflow regulators which control the flows in the interceptor during wet weather periods. Normally, dry weather flows are conveyed through the interceptors to the Bayonne Wastewater Treatment Plant. During periods of wet weather, flows in the interceptors often exceed the capacity of the plant and/or interceptors. The function of the overflow regulators is to divert these excessive flows directly to the local receiving waterways. This relief also reduces the possibility of street flooding caused by surcharged sewer lines.

Of the 18 regulators, ten discharge to Newark Bay, five discharge to Kill Van Kull, and three discharge to Upper New York Bay. The location of the 18 overflow regulators are shown on Plate 4.

The characteristics of each regulator are given in Table 5-1. A plan of an overflow regulator which is typical of those found in the Bayonne collection system is shown on Figure 8.

The overflow regulators found in Bayonne generally consist of three separate chambers as shown on Figure 8. The first is a diversion chamber which utilizes, by design, a weir or a depressed invert to divert the dry weather flow from the trunk sewer to the interceptor. During periods of wet weather flow, a portion of the combined flow is diverted to the outfall line.

The second chamber is the regulator chamber which includes a float compartment and a gate compartment. The regulating equipment consists of the following:

1. A gate unit with a built-in shutter wall casting leading from the diversion chamber to the interceptor.

2. A float compartment, including a float and float guides with collars for limiting float travel.

3. A transmission unit, including a shaft with gear wheels and pillow blocks, supporting beams and wall brackets, adjustable transmission chains and counter weights, positioned so that the float overbalances the gate when it is buoyed a predetermined distance.

The float compartment or floatwell, in which the float is located, is directly connected to the interceptor by a connecting pipe (telltale pipe). This pipe is tapped into the interceptor just above the invert so that the water level in the float-well is the same as that in the interceptor.

The gate is held open by the float, provided that the water level in the interceptor remains below a predetermined level, generally seven-tenths of the diameter of the interceptor. As the water level in the

FIGURE 8

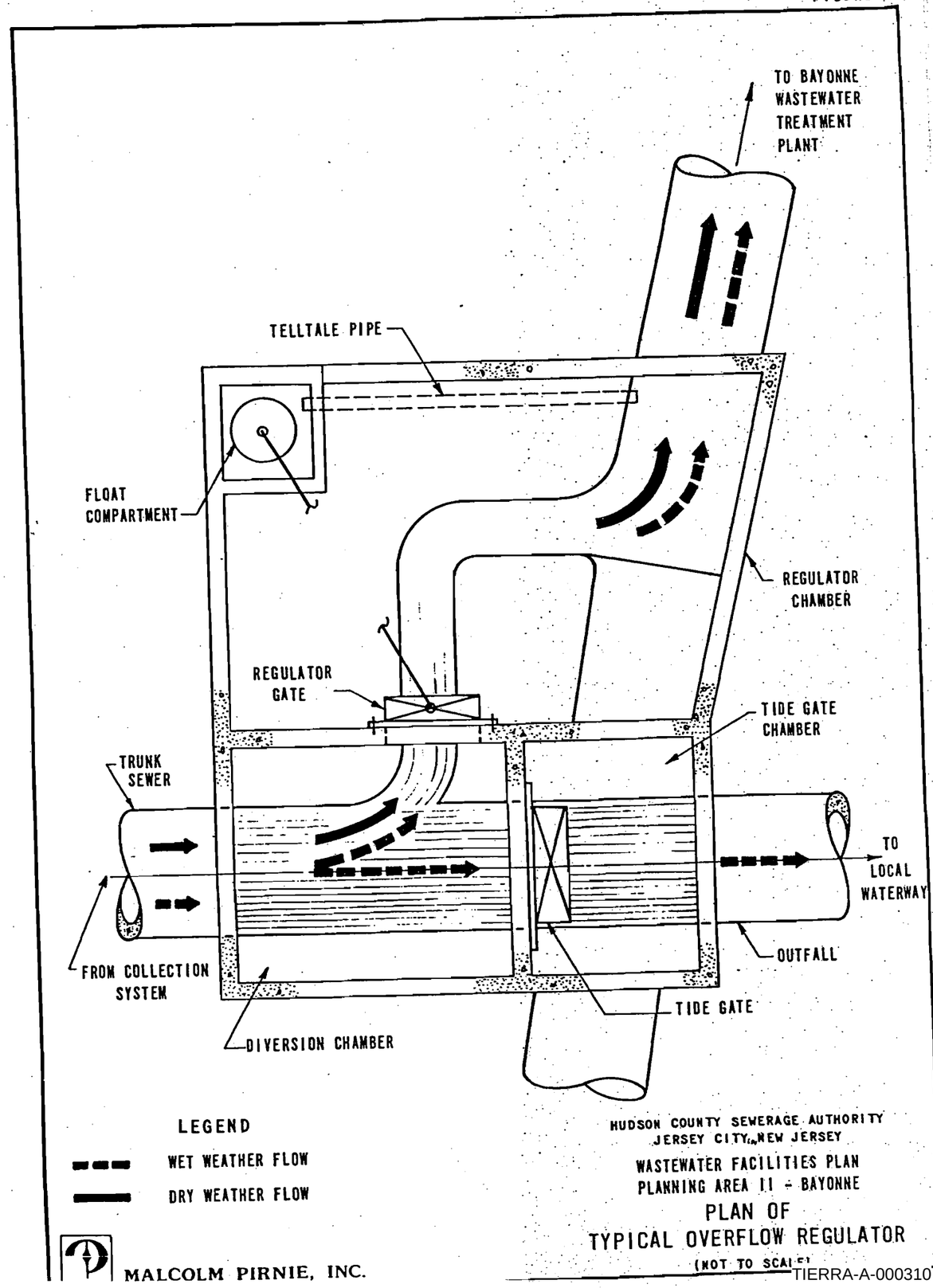


TABLE 5-1

CHARACTERISTICS OF OVERFLOW REGULATORS
IN BAYONNE

Regulator[1] No.	Location	Outfall Size (inches in diam.)	Receiving Waterway
1.	E. 19th St. & Ave. F	42	Kill Van Kull
2.	Opposite E. 15th St.	54	Kill Van Kull
3.	E. 30th St. & Ave. F	30	Upper N.Y. Bay
4.	E. 34th St. & Rte. 169	72	Upper N.Y. Bay
5.	Ingham Ave. & E. 5th St.	60	Kill Van Kull
6.	Broadway & E. 1st St.	24	Kill Van Kull
7.	Ave. C & W. 1st St.	24	Kill Van Kull
8.	Ave. A & W. 3rd St.	24	Newark Bay
9.	Ave. A & W. 5th St.	24	Newark Bay
10.	Edwards Court	12	Newark Bay
11.	W. 16th St.	24	Newark Bay
12.	W. 22nd St.	36	Newark Bay
13.	W. 24th St.	16	Newark Bay
14.	W. 25th St.	36	Newark Bay
15.	W. 30th St.	18	Newark Bay
16.	Lincoln Parkway	36	Newark Bay
17.	Kennedy Blvd., vicinity of W. 59th St.	36	Newark Bay
18.	E. 50th St.	48	Upper N.Y. Bay

Note: 1. The locations of each regulator are shown on Plate 4.

interceptor rises above this level, the float also rises and starts closing the regulator gate. Flow entering the diversion chamber from the trunk sewer is now diverted to the tide gate chamber and to the outfall line. This procedure is reversed as the water level in the interceptor recedes and the float returns to its original level.

The tide gate chamber includes the tide gate which essentially acts as a backflow prevention device. During dry weather periods, the tide gate is closed to prevent salt water flows from entering the interceptor, if functioning properly.

The overflow regulators in Bayonne generally are described as semi-automatic devices requiring no external energy source for operation. The mechanical operation of the regulators is, by design, intentionally simple in an attempt to reduce maintenance problems. Still, the float-operated gate regulators have many components which are prone to malfunctioning.

Some of the types of malfunctions common to this device are:

1. Blockage of the tide gate with wood, rags or other storm debris.
2. Clogging of the floatwell, causing the regulator gate to rest continuously in a closed, intermediate, or opened position.
3. Accumulation of sludge on the float, preventing the float from rising and resulting in the regulator gate remaining in its open position at all time.
4. Guide chains slipping off gear wheels.
5. Breakage of the chain.
6. Corrosion or incrustation between moving and stationary parts of the gate.

7. Rusting of chains and pinions, causing gear wheels to jam.
8. Clogging of the telltale pipe.
9. Surcharging due to associated debris.

With the exception of clogging in the floatwell or at the tide gate, these problems do not occur frequently, provided maintenance is carried out on a regular or preventive basis. Typical maintenance operations include removal of blockage and debris; cleaning of grit and grease from the floatwell; lubricating of metal parts, particularly friction areas; repairing or replacing chainlines; and general cleaning of the regulator chamber.

Regulator devices and appurtenant equipment and control facilities are exposed to extremely deleterious atmospheric and fluid conditions in combined sewer installations. Corrosion and wear dramatically shorten the economic life of such equipment and controls and adversely affect their efficiency of operation. Because of these environmental conditions, the effective life of mechanical equipment housed within overflow regulator is expected to be about 20 years. The regulator devices in Bayonne were designed and constructed in the time period from 1949 to 1954, indicating their age to be approximately 25 years.

A physical inspection was made of each overflow regulator in the Bayonne collection system. The inspections revealed that most of the regulator gates were not operating as designed, indicative of the age of the regulators. The most common condition found was the accumulation of heavy sludge deposits and other debris on the float. This condition was found on all of the regulators and was responsible for the regulator

gate being fixed in an open position on ten of the regulators. Weights were used on the float of two regulator chambers to keep the gate fixed in an open position.

The regulator gate at Regulator No. 10 was found in a closed position. This regulator is very inaccessible to maintenance crews and yet is subject to vandalism. At the time of inspection, the tide gate was jammed closed with large pieces of wood and other debris, the latter definitely being the work of vandals. The Bayonne Sewer Department was made aware of the vandal condition and a maintenance crew was sent out and performed cleanup and repairs.

Corrosion and the accumulation of sludge and debris on the regulator mechanisms, which includes the regulator gate, regulator, and float gear wheel, transmission rod assembly, and chains, is a major problem on all regulators. It appears that many of the regulators become surcharged, leaving deposits on the various mechanisms. Heavy grease accumulations were found in Regulator No. 1, which receives discharges from Hunt-Wesson Foods, and in Regulator No. 8, which receives discharges from Best Foods and from NL Industries.

Tide gates are included in all overflow regulators except Regulator No. 17 which is sufficiently high above tidal levels so that a tide gate is not needed. Tide gates were found to be leaking and/or partially opened on ten regulator structures, one was found inoperable due to blockage, and two were found to be working properly. The condition of four regulators was undeterminable, as they were submerged at the time of inspection.

With the exception of three of the regulators, all of the remaining regulators are on trunk sewers with inverts lower than spring tides. Because of this fact, the possibility of tidal effects on the operation of the regulators is great. In all of the regulators that could possibly be affected by tidal actions, the control of the regulator is from levels in the interceptor. If tides back-up the trunk sewers and flood out the interceptor, causing the regulator to shut, the dry weather flows would be conveyed out to the receiving waters untreated. The Combined Sewer Overflow (CSO) Study, Volume V, report addresses this problem in detail.

The major reason for the present conditions found in the Bayonne overflow regulators is the age of these regulators. The highly corrosive and deleterious atmosphere present in some of the regulators also contributes to the present conditions. More detailed information and evaluation of the overflow regulators in Bayonne are presented in the CSO Study.

5.2.4 Treatment Plant

The Bayonne Wastewater Treatment Plant is located at the easterly end of Oak Street, as shown on Plate 4. The treatment plant was placed in operation in 1954. A site plan of the treatment plant showing the location of administrative offices and of the various treatment facilities is shown on Plate 5. Also shown on Plate 5 are two city-owned facilities, a maintenance garage and water meter repair building, which are located adjacent to the wastewater treatment facilities.

The existing treatment plant encompasses an area of about five acres. The City of Bayonne presently owns an additional 67 acres of land immediately east and south of the existing facilities. Of this land, about 10 acres east and south of the existing facilities are readily available for future expansion and upgrading of the plant. The remaining land currently is occupied by boat basins, a yacht club and a new roadway. The N.J. Department of Transportation has constructed a roadway, as shown on Plate 5, around the easterly and southerly sides of the plant connecting Route 169 with East 5th Street. The location of this roadway will affect the layout of any future additions to the plant.

The Bayonne Plant is a primary wastewater treatment plant designed for an average flow of about 20 mgd. The average daily wastewater flow to the plant over the past several years has been about 12 mgd.

The treatment units at the plant presently include influent screens, an aerated grit chamber, influent pumps, mixing basins, primary sedimentation tanks, and chlorination facilities. In addition, sludge facilities presently include thickening, chemical conditioning, and vacuum filtration prior to disposal at the city's landfill. A process flow diagram of the treatment processes and sludge facilities is shown on Plate 6.

Headworks - The preliminary treatment units consist of the plant influent sewer, screening facilities, an aerated grit chamber, and influent pumping facilities. Wastewater flows from the Bayonne collection system are conveyed to the treatment plant site via the southerly interceptor branch and the easterly interceptor branch. These interceptors combine at a junction manhole located as shown on Plate 5.

Flow into the treatment plant is by gravity through an 84-inch diameter reinforced-concrete pipe from the junction manhole to the screen and grit chamber. The capacity of this influent sewer is estimated to be 80 mgd based on the slope of the pipe and an appropriate Manning's roughness coefficient.

Upon entering the treatment plant, wastewater flow normally passes through a mechanically-cleaned, coarse bar screen and into the grit chamber. During periods of wet weather, flows often exceed the capacity of the grit chamber, and excess flows bypass the grit chamber. Bypassed flows pass through a hand-cleaned coarse bar screen and then are discharged directly into the wet well for the influent pumps.

The mechanically-cleaned, coarse bar screen has 3-inch clear openings. The bar screenings are removed by mechanical cleaning devices between the bars and deposited in a container located on an intermediate level in the plant operating building. This container is hoisted manually to the operating floor and conveyed to a hauling vehicle for disposal at the city's landfill.

After the bar screen, flows enter an aerated grit chamber which measures 15 feet wide by 45 feet long. Two positive-displacement blowers provide air for the grit chamber. The blowers, with a maximum capacity each of about 535 cubic feet per minute, are driven by 20 horsepower motors and also provide air for the influent channel and mixing basins in the primary tanks.

The grit chamber is equipped with a bucket-type conveyor for grit removal. Grit is lifted to the operating floor level, deposited on a belt-type conveyor, and conveyed to a hauling vehicle for disposal at the city's landfill.

Flow from the grit chamber travels through a comminutor and then is discharged to the wet well. The comminutor has been out of service for several years. A bypass around the comminutor has been provided and includes a mechanically-cleaned fine bar screen with 1-1/2-inch clear openings. This bar screen presently is cleaned manually. After the bar screen, flows discharge over a weir and into the wet well.

The wet well and dry well (pump room) are located on the lower level of the operating building and are completely separated. Shut-off valves have been provided on the suction side of each influent pump.

The plant influent pumping facilities include six vertical, dry-pit pumping units, five gasoline-driven engines and one electrically-driven, variable-speed motor. The pumping units are located in the pump rooms and include four pumps, each with an ultimate capacity of 20 mgd and two pumps, each with an ultimate capacity of 10 mgd.

Except for one 20 mgd pump, each pump is driven by a gasoline engine. In 1965, plant personnel replaced the gasoline engine of one 20 mgd pump with an electric variable-speed motor. The five gasoline engines and the one electric motor are located directly above the pumps in the engine room. The gasoline engines which drive the 20 mgd pumps are rated at 135 horsepower, while the gasoline engines which drive the 10 mgd pumps are rated at 75 horsepower. The electric variable-speed motor is of the wound rotor type with a rated capacity of 150 horsepower.

Each pump discharges through a 4-foot by 4-foot discharge flume into an aerated pumped sewage channel which is located directly above

the wet well. Air is supplied to the channel by the same blowers which supply air to the grit chamber. The channel is 9 feet wide by 75 feet long with a side water depth of 8.5 feet.

At the end of the pumped sewage channel is the plant flow meter. This metering device is a momentum-type meter consisting of a steel and wooden frame which is rail-mounted and attached by a cable to a lead block hanging over a pulley. The force of the wastewater flowing in the channel moves the frame along the rail. As the frame moves, the lead block moves upward or downward along a graduated scale which is calibrated to measure flow in the channel. The flow rate is transmitted electronically to a flow recorder located near the administrative offices of the plant.

Flows are conveyed from the operating building to the primary treatment facilities through a reinforced-concrete siphon. The siphon is box-shaped and measures 8 feet wide by 8 feet deep by 60 feet long.

Primary Treatment Units - Primary treatment is accomplished by means of eight primary tanks as shown schematically on Plate 6. Flow is distributed to the primary tanks through an aerated influent channel. The influent channel measures 8 feet wide by 8.5 feet deep and extends the entire width of the primary tanks. Air is supplied to the aerated channel by the same blowers which supply air to the grit chamber and to the pumped sewage channel.

The flow enters each primary tank through two 24-inch diameter inlet ports. Each port includes a flow-equalizing unit consisting of a vertical counter-weighted cone valve arrangement.

Each primary tank consists of two basins which are separated by a reinforced-concrete curb arrangement. Flow first enters an aerated mixing basin which measures 32 feet wide by 20 feet long with a side-water depth of 12.8 feet. Air is supplied to the basins by the same blowers which supply air to the grit chamber, pumped sewage channel, and the influent channel to the primary tanks.

From the mixing basins, flow enters the sedimentation basins, each of which is 32 feet wide by 110 feet long with side-water depth of about 12.8 feet. The characteristics of the sedimentation basins for various flows are summarized in Table 5-2.

TABLE 5-2

BAYONNE WASTEWATER TREATMENT PLANT
CHARACTERISTICS OF SEDIMENTATION BASINS

	Hydraulic Loadings		
Flow (mgd)	Detention Time[1] (minutes)	Surface[2] Overflow Rate (gpd/sf)	Weir[3] Overflow Rate (gpd/lf)
12	325	425	10,715
20	195	710	17,860
30	130	1,065	26,790
40	100	1,420	35,715
50	80	1,780	44,640

Notes: 1. *Based on a total volume of 2.7 million gallons.*

2. *Based on a surface area of 3,520 square feet per basin.*

3. *Based on 140 linear feet of weir per basin.*

4. *New Jersey rules and regulations for the design of treatment works set forth a maximum surface overflow rate of 600 gpd/sf and a maximum weir overflow rate of 15,000 gpd/lf.*

Each basin is equipped with continuous longitudinal flight sludge collectors fitted with redwood flights which drag the sludge the length of the basin to a sludge collector hopper at the inlet end of the basin. From there the sludge is dragged by cross collectors in the hopper toward the center of the basin. The sludge from the central hopper is pumped to sludge holding tanks.

Scum skimmers are located at the effluent end of each sedimentation basin. Scum is pushed to a scum trough at the end of each basin and then pumped to the sludge holding tanks.

The effluent from the primary tanks discharges over finger-type weirs located at the end of each sedimentation basin into an effluent channel. The effluent channel is 8 feet wide by 9.5 feet deep and extends along the entire width of the primary tanks. A baffle was installed in the effluent channel to assure a flooded suction for the plant water pumps during low tides.

Disinfection and Effluent Disposal - Disinfection of the wastewater effluent is accomplished by liquid gas chlorination. A chlorine solution is applied to the effluent at the end of the primary tank effluent channel. Chlorine facilities at the plant include two gas chlorinators, two evaporators, two scales, and storage for chlorine cylinders. The chlorine dosage is set manually and is normally adjusted three times per day based on periodic analyses of the effluent for chlorine residual.

The effluent channel discharges to the plant outfall line which is a 68-inch by 68-inch reinforced-concrete pipe. The plant outfall extends about 1,350 feet to the pierhead line of the Kill Van Kull.

Solids Handling Facilities - The solids handling facilities at the Bayonne plant presently include two sludge concentration tanks and two rotary vacuum filters. The plant originally was designed to include sludge digestion. However, during the early years of operation, problems were encountered with grit accumulation in the digesters during periods of heavy rainfall. Various measures were utilized by plant personnel to correct this problem, but it was found that economical use of the digesters required a complete upgrading of the plant influent works to ensure proper grit removal. Therefore, the digesters, which are full of grit, presently are out of service.

Primary sludge from the sedimentation basins is removed by two recessed-impeller centrifugal pumps which have replaced the original pneumatic sludge ejector system. Sludge is pumped to either one of two sludge concentration tanks located as shown on Plate 5. Each sludge concentration tank has a volume of about 50,000 gallons.

The decant from the sludge concentration tanks is pumped to the influent end of the primary tanks. The underflow from the sludge concentration tanks is pumped to a sludge storage tank located on the lower level of the operating building. The storage tank has a volume of about 15,000 gallons. Plant personnel estimate that the sludge from the concentration tanks contains about 5-7 percent solids by weight.

Sludge from the storage tank is pumped to either one of two mixing tanks which are located on the operating floor level directly above the storage tank. In the mixing tanks, the sludge is conditioned, first with ferric sulfate and then with lime, prior to the mixture entering

the vacuum filters. Both chemicals are received at the plant in 100-pound bags and stored on pallets in the vacuum filter room. The chemicals are batched-mixed and pumped to the sludge mixing tanks by manually-controlled metering pumps.

The solids-handling facilities include two rotary vacuum filters. Each filter measures 14 feet in width with a drum diameter of 8 feet and a surface area of 350 square feet. Filter cake falls off the coil filter and onto a belt conveyor which conveys the cake to a flight conveyor and to a sludge storage hopper located in the rear of the operating building. The filter cake is transported to the City of Bayonne landfill for disposal.

The vacuum filters normally are operated Monday through Thursday, eight hours per operating day. It is estimated that between 20 and 25 cubic yards of dewatered sludge cake are disposed of daily. The sludge cake is estimated to contain 25 percent solids by weight. Filtrate from the filters is pumped to the influent end of the treatment plant.

Operation and Maintenance - The Bayonne Wastewater Treatment Plant is operated by the Bayonne Sewer Department. The Department also operates and maintains the Bayonne Collection system.

The Bayonne Sewer Department is run by the Water and Sewer Superintendent, who holds an S-1 license. In addition, the staff of the department includes about 30 personnel who operate and maintain the treatment plant and collection system. According to the superintendent, staffing is considered adequate, but low in the area of supervisory personnel.

Adequate laboratory facilities are maintained at the plant to permit the performance of all necessary wastewater characterization to

meet NPDES requirements. More information concerning waste characterization at the plant is presented in Section 5.4 of this chapter.

A breakdown of the 1977 budget for operation and maintenance is shown below:

Salaries and wages	- $389,400
Maintenance	- 151,000
Electricity	- 70,000
Chemicals	- 54,000
Total	- $664,400

This budget amount includes operation and maintenance of the Bayonne collection system in addition to that of the treatment plant.

Energy consumption at the plant primarily includes electrical power to operate equipment. Electric power consumption at the plant was about 1.5 million kilowatt-hours during 1977.

Residential, commercial, and industrial users of the collection and treatment system are charged for both water and sewer service together based on the volume of water used. Domestic users are charged $6.40 per 1,000 cubic feet (cf) of water consumed. Commerical and industrial users are charged $6.40 per 1,000 cf of water consumed for the first 500,000 cf per month, $6.00 per 1,000 cf for the second 500,000 cf; and $5.40 per 1,000 cf over one million cf used per month. These charges are billed quarterly.

Due to the age of the plant, a major portion of the operation and maintenance of the plant involves replacement of worn-out equipment. In addition, periodic high loadings of grit and of oil and grease result in significant operational problems.

During periods of wet weather, grit loadings at the plant increase because of the combined sewers. When a storm event occurs, large quantities

of grit and other debris which accumulate in the collection system during low flow periods, are flushed into the plant within a very short period of time. Such surges or "slugs" of grit completely overload the grit chamber, pass through the influent pumping facilities, and are deposited in the pumped sewage channel, the influent channel to the primary tanks, and the mixing basins of the primary tanks.

When these surges occur, it is often necessary to remove the accumulated grit manually. Large quantities of grit settle out especially in the mixing basins of the primary tanks, and it is necessary to remove the grit using a crane. These surges also result in additional solids processing because of the limited capacity for solids storage in the sludge concentration tanks.

Occasional industrial discharges of oil and grease also cause various operational problems. Floating grease and scum from these discharges enter the plant and accumulate in the pumped sewage channel. Occasionally, it is necessary to hire an outside scavenger to remove this floating matter. Such discharges also result in a build-up of grease and scum in the collection system and on various pieces of equipment in the treatment plant.

Evaluation of Plant Performance - The Bayonne Wastewater Treatment Plant is a primary plant and the USEPA has not set BOD or suspended solids limits for the plant because of the relatively limited removal capability of primary facilities. Primary sedimentation tanks, when used as the only means of treatment, provide for the removal of settleable solids capable of forming sludge banks in the receiving waters and

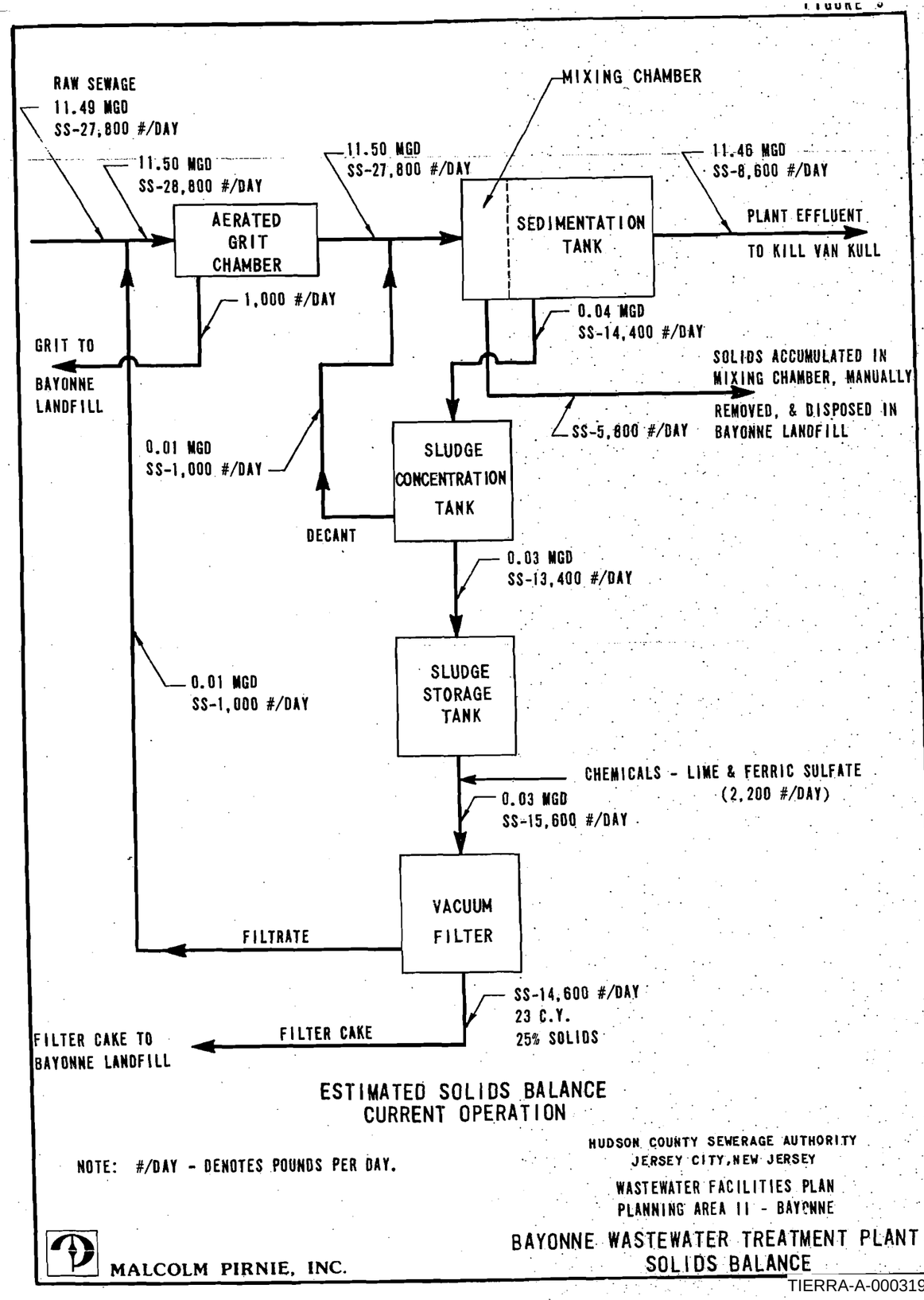
for the removal of much of the floating material. Properly designed and operated primary facilities should remove from 50 to 65 percent of the suspended solids in the plant influent stream.

Based on plant records and on USEPA discharge monitoring reports which are filed by the City of Bayonne, the Bayonne Plant generally removes more than 50 percent of the influent suspended solids and more than 30 percent of the influent 5-day biochemical oxygen demand (BOD_5) prior to discharge to the Kill Van Kull. An estimated solids balance was prepared to further evaluate the operation of the Bayonne Plant and is shown on Figure 9. The efficiency of the plant is reduced somewhat during periods of wet weather when flows and waste characteristics vary considerably from normal dry weather flow.

Because of the fact that the Bayonne collection system is a combined system, the volume of flow through the plant is extremely variable, depending on weather conditions. The average daily wastewater flow to the plant was 12.44 mgd from 1975 to mid-1978. For this period of record, the plant influent flow during a 24-hour period ranged from 5.8 mg to 56.8 mg.

A frequency distribution of the plant's daily influent flow during the period from January 1975 to July 1978 is shown on Figure 10. As indicated on the figure, 95 percent of the time the daily flow was equal to or less than 22 mgd. The influent flow for the maximum day of record during this period was about 4.5 times the average daily flow. These flows include only wastewater which is conveyed to the treatment plant and do not include wastewater which is discharged directly to the local waterways during a storm event via overflow regulators or the two storm relief pumping stations.

FIGURE 9



ESTIMATED SOLIDS BALANCE
CURRENT OPERATION

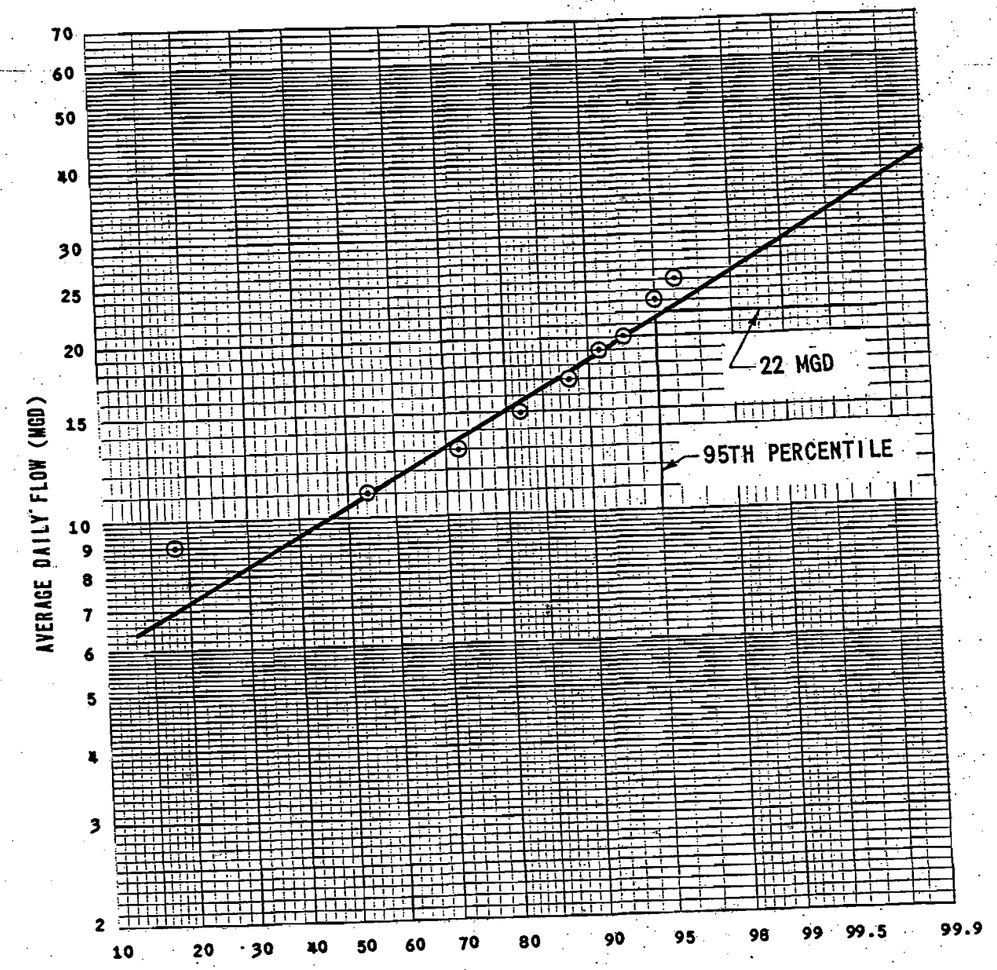
NOTE: #/DAY - DENOTES POUNDS PER DAY.

HUDSON COUNTY SEWERAGE AUTHORITY
JERSEY CITY, NEW JERSEY
WASTEWATER FACILITIES PLAN
PLANNING AREA II - BAYONNE

MALCOLM PIRNIE, INC.

BAYONNE WASTEWATER TREATMENT PLANT
SOLIDS BALANCE

FIGURE 10



YEARS: 1975 - ENTIRE YEAR
1976 - ENTIRE YEAR
1977 - ENTIRE YEAR
1978 - 1ST & 2ND QUARTERS

HUDSON COUNTY SEWERAGE AUTHORITY
JERSEY CITY, NEW JERSEY

WASTEWATER FACILITIES PLAN
PLANNING AREA II - BAYONNE

FREQUENCY DISTRIBUTION OF
AVERAGE DAILY FLOW - BAYONNE
WASTEWATER TREATMENT PLANT

The diurnal flow variations at the Bayonne Plant are illustrated on Figure 11. The figure shows flow variations for selected one-week periods. The period from January 16 to 22, 1977, illustrates a week when no precipitation influenced the flow. The period from March 14 to 20, 1976, illustrates a week which included several days of rainfall. The graph shows the effect of rainfall on the influent flow to the plant.

A hydraulic profile was prepared to determine the effects of various flows and the tidal conditions on the hydraulic capacity of the existing facilities. The plant hydraulic profile is shown on Plate 7. The hydraulic analysis of the plant indicates that the existing process units are capable of handling a flow rate of about 100 mgd when the tide is at a flood level with a 100-year return period. When one primary unit is taken out of service, the plant is unable to carry this flow rate at the same tidal conditions, and flooding of the plant units begins to occur.

Presently, the treatment plant is sub-fed electrically from the larger service installed in 1965 at the 5th Street Pumping Station. According to Public Service Electric and Gas Company, which supplies electrical power to the treatment plant, there have been four recorded power outages in the area of the plant during the period from January 1970 to January 1978. These outages lasted 29, 17, 17, and 100 minutes. Presently there is no standby power source at the plant. The plant does include a standby generator set which is a gasoline-driven engine similar to the engines which drive the influent pumps. However,

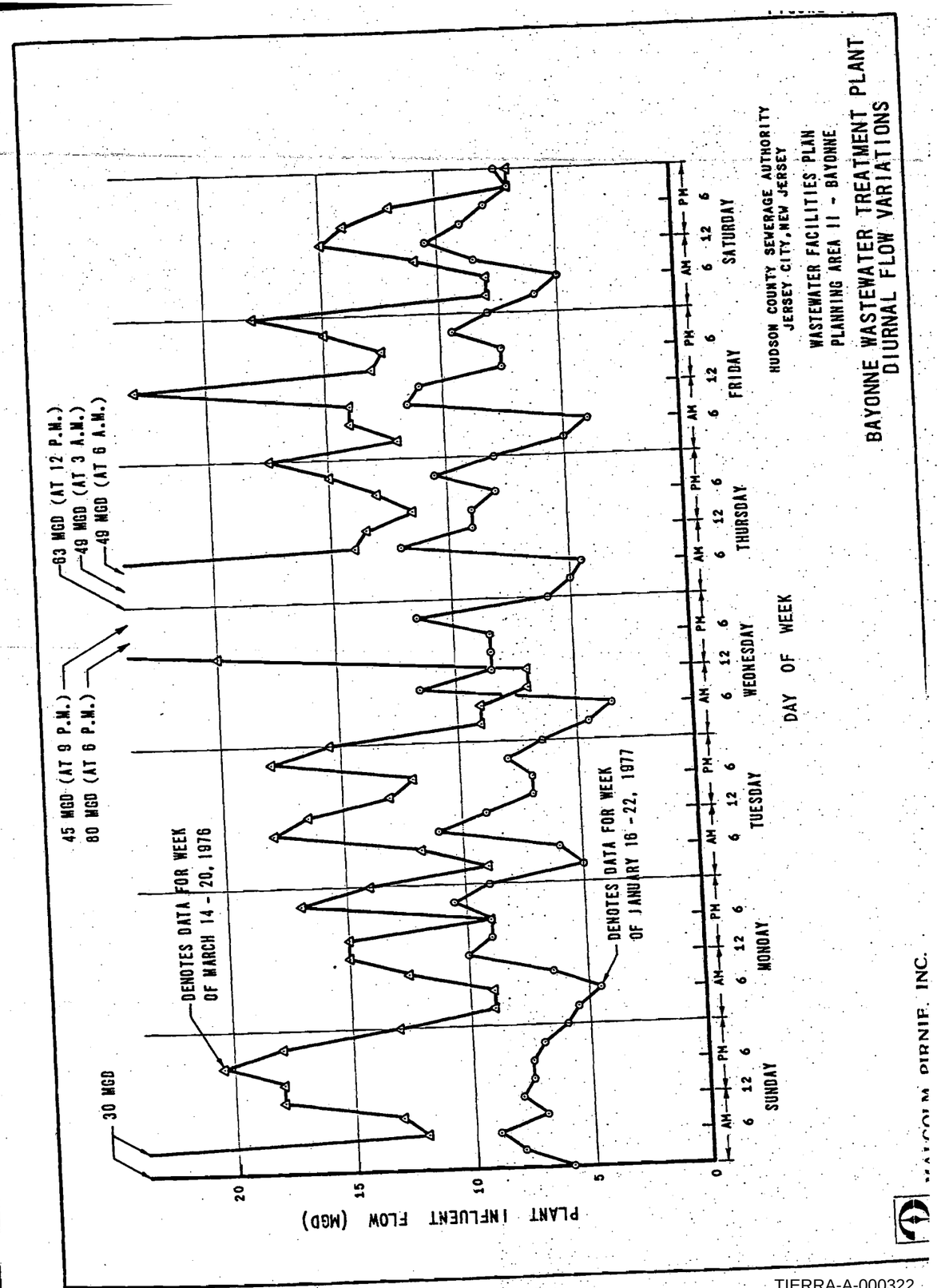
this engine has been dismantled to salvage parts for the influent pump engines and is presently inoperable.

An inspection of the structural characteristics of the plant indicated that all plant structures are in good condition, considering the age of the plant. All plant substructures are of heavy reinforced-concrete construction, while the superstructure of the operating building is of structural steel construction with concrete-encased beams and girders and brick-faced walls. Photographs taken during the construction of the plant indicate that the entire plant is constructed on a pile foundation system. No record drawings of the pile foundation system are available.

Overall, plant personnel have been able to maintain the plant in an acceptable operating condition, considering the plant's age and the frequent problems caused by surges of grit which enter the plant. The present problem concerning inadequate grit removal during periods of wet weather cannot be alleviated without a complete upgrading of the grit and screening removal facilities. Any interim improvements should be made with consideration to future upgrading of the plant. For future utilization, it will be necessary to upgrade the Bayonne Plant to include secondary treatment facilities to meet discharge requirements set by the USEPA.

5.3 U.S. Military Ocean Terminal System

The United States Army presently owns and operates a wastewater collection and treatment system which serves the Military Ocean Terminal-



Bayonne (MOTBY) complex located on the east side of Bayonne. The complex encompasses an area of about 630 acres. A plan of the MOTBY complex indicating the location of the treatment plant and the buildings served is shown on Plate 8.

The MOTBY collection and treatment system serves the majority of the presently-used facilities in the complex. The Goldsborough Village housing development and Buildings 228A and 235A, both of which are located as shown on Plate 8, are sewered separately and are connected to the Bayonne collection system.

The MOTBY collection and treatment system includes collector sewers, a pumping station, and a wastewater treatment plant. These facilities are described briefly in the following sections.

5.3.1 MOTBY Collection System

The MOTBY collection system includes about three miles of 8-inch gravity sewers which generally run from the west end to the east end of the complex. The collection system is a separate sanitary sewer system and was constructed in the early 1940's. Infiltration/Inflow is not reported to be a major problem in the collection system.

The collector sewers terminate in the wet well of a pumping station which is located at the east end of the complex as shown on Plate 8. The pumping station was constructed in the early 1940's and includes screening facilities, a wet well, and pumping facilities.

Influent to the station passes through manually-cleaned, coarse, basket-type screens before discharging into the wet well. The capacity of the wet well is about 12,000 gallons. Flows are pumped through a 10-inch diameter force main to the wastewater treatment plant.

5.3.2 MOTBY Treatment Plant

The MOTBY treatment plant is located on the east end of the complex as shown on Plate 8. The plant was constructed in the 1940's and included four Imhoff tanks and a glass-covered sludge drying bed. In 1972, the plant was upgraded to include secondary treatment using the extended aeration activated sludge process with a design capacity of 0.18 mgd. A site plan of the plant is shown on Figure 12.

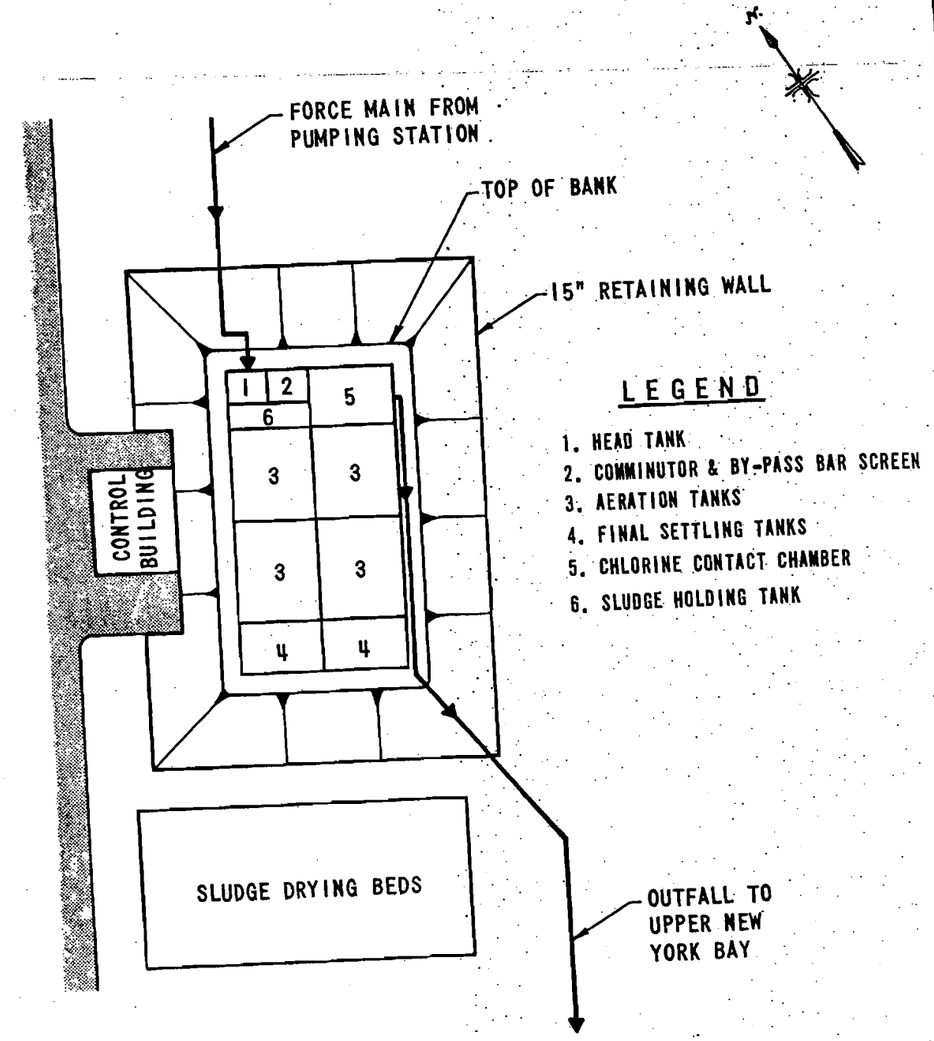
The existing plant facilities include a comminutor, four aeration tanks, two final settling tanks, and chlorination facilities. The plant effluent is discharged to Upper New York Bay. Solids processing facilities include a sludge holding tank and covered sludge-drying beds. A process flow diagram indicating the existing facilities at the plant is shown on Plate 9.

From the pumping station, flow enters a head tank at the influent end of the treatment plant. The head tank includes an overflow weir for bypassing high flows. Bypassed flows are discharged to the plant drain system which discharges into the pumping station.

Normally, flow from the head tank passes through a comminutor and into the aeration tanks. A bypass has been provided around the comminutor and includes a manually-cleaned, coarse bar screen.

There are four aeration tanks, each measuring 24.5 feet by 17.5 feet with a 14-foot side-water depth. The volume of each tank is about 45,000 gallons. Each tank is equipped with a floating mechanical aerator with draft tubes. Each aerator is driven by an electric motor with a rated capacity of five horsepower.

FIGURE 12



HUDSON COUNTY SEWERAGE AUTHORITY
JERSEY CITY, NEW JERSEY

WASTEWATER FACILITIES PLAN
PLANNING AREA II - BAYONNE

U.S. MILITARY OCEAN TERMINAL
TREATMENT PLANT
SITE PLAN

SCALE: 1" = 40'

MALCOLM PIRNIE, INC.

From the aeration tanks, flow enters one of the two final settling tanks. Each tank has a volume of about 32,000 gallons. The tanks have been constructed with conical-shaped bottom s for sludge collection and removal. Sludge is removed pneumatically from the bottom of each tank utilizing air lift pumps. The sludge is either pumped to a sludge holding tank or returned to the aeration tanks.

Effluent from the final settling tanks flows to a chlorine contact tank and is discharged through a 16-inch cast iron pipeline to Upper New York Bay. The flow rate is measured prior to discharge and is transmitted to a flow recorder located in the control building.

Waste-activated sludge from the final settling tanks is conveyed to a sludge holding tank. Sludge normally is held in this tank from one to three months before being spread on the sludge drying beds. Dried sludge from the drying beds is utilized as a soil conditioner on the MOTBY complex.

The MOTBY treatment plant presently receives an average flow of about 0.125 mgd. Monthly average flows and waste characteristics of the plant influent and effluent stream are presented in Table 5-3. The peak flow during the period from November 1976 to October 1977 was recorded as 0.2 mgd.

The waste characteristics of the plant's influent stream are similar to those of weak-strength domestic wastewater. The weak strength of the plant's influent waste stream may be attributed to the fact that boiler blowdown and cooling water from the complex are discharged to the treatment plant.

Based on the data presented in Table 5-3, the MOTBY treatment plant presently is achieving, on the average, treatment efficiencies of 94 percent BOD_5 removal and 92 percent suspended solids removal. The plant's NPDES permit sets forth minimum removal efficiencies of 85 percent for both BOD_5 and suspended solids removal. An estimated solids balance of the treatment plant operations, indicating present BOD_5 and suspended solids removal efficiencies, is presented on Figure 13.

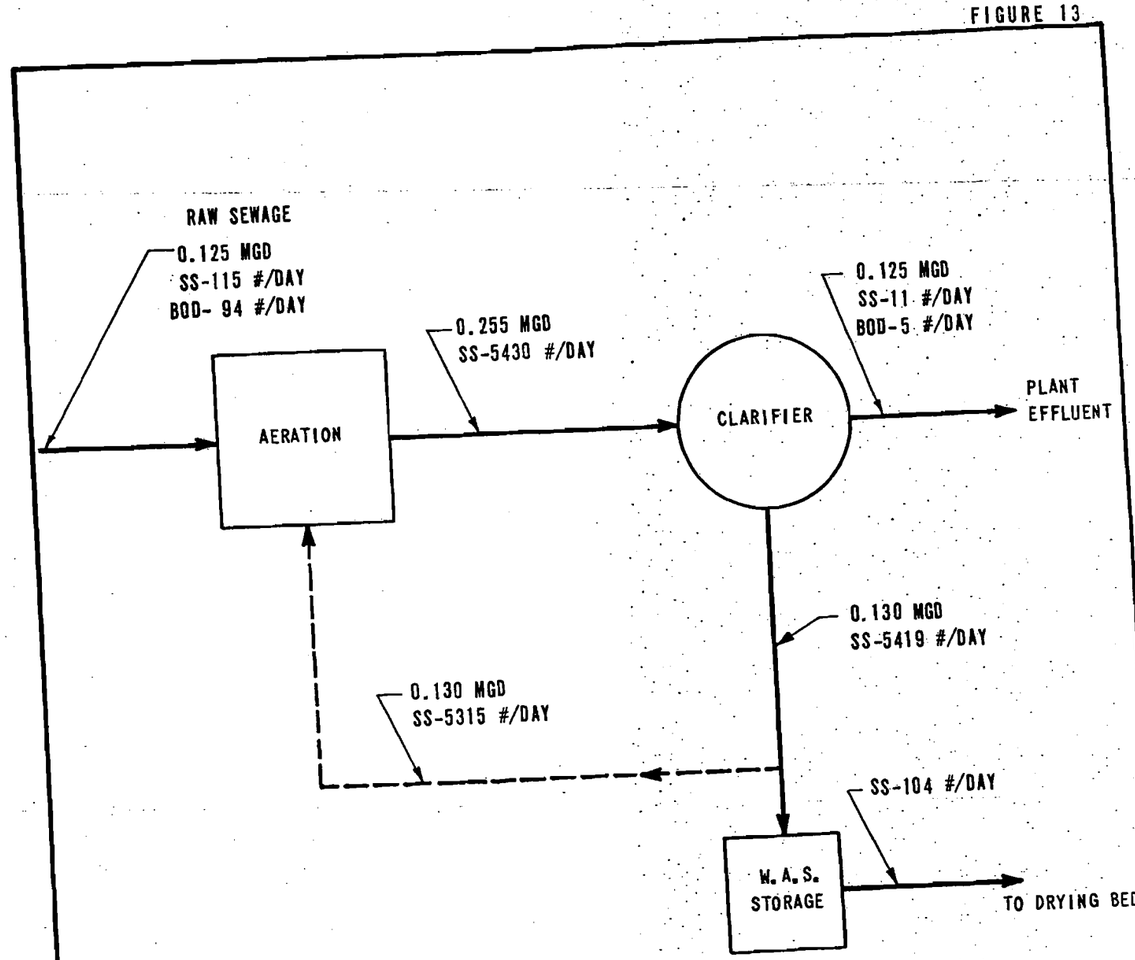
The hydraulic capacity of the plant is estimated to be between 0.7 and 1.0 mgd. An hydraulic profile of the plant was prepared to determine the effect of present minimum average, and peak flows at the plant on the hydraulic capacity. As shown by the hydraulic profile on Plate 10, the plant is more than capable of handling present peak flows.

Overall, the MOTBY treatment plant presently is well-maintained and is exceeding effluent standards outlined in the plant's NPDES permit. The plant is capable of handling future flows. The continued use of this plant for wastewater management in the planning area will depend upon a cost-effectiveness analysis to compare the costs for continued operation of the plant versus the costs to abandon the plant and pump flows to the Bayonne collection system.

5.4 Waste Characterization

The Bayonne Wastewater Treatment Plant presently receives wastes from domestic, commercial, and industrial sources. It is necessary to

FIGURE 13



ESTIMATED SOLIDS BALANCE
CURRENT OPERATION

NOTE: #/DAY - DENOTES POUNDS PER DAY.

HUDSON COUNTY SEWERAGE AUTHORITY
JERSEY CITY, NEW JERSEY
WASTEWATER FACILITIES PLAN
PLANNING AREA II - BAYONNE
U.S. MILITARY OCEAN TERMINAL
TREATMENT PLANT
SOLIDS BALANCE

MALCOLM PIRNIE, INC.

TABLE 5-3

U.S. MILITARY OCEAN TERMINAL TREATMENT PLANT
INFLUENT AND EFFLUENT CHARACTERISTICS
NOVEMBER 1976 - OCTOBER 1977

Month	Flow (gpd)	Suspended Solids (mg/l)		BOD_5 (mg/l)	
		Influent	Effluent	Influent	Effluent
11/76	108,400	110	11	101	5
11/76	125,000	117	9	101	7
1/77	131,000	115	11	88	5
2/77	124,200	115	10	59	5
3/77	130,200	91	9	38	3
4/77	125,700	143	12	66	4
5/77	118,900	138	11	99	6
6/77	121,400	99	7	124	6
7/77	131,700	96	7	102	7
8/77	129,100	112	9	101	7
9/77	122,300	101	8	108	6
10/77	124,300	86	7	68	4
Aver-age	124,350	110	9	88	5

characterize these wastes for the purpose of estimating future characteristics of wastes and establishing design criteria for expanding and upgrading the existing treatment facilities.

5.4.1 Plant Influent Wastes

The characteristics of existing wastewater flows to the Bayonne Wastewater Treatment Plant were determined from available operating reports and USEPA discharge monitoring reports for the plant for the years 1975 (three quarters), 1976, 1977, and 1978 (two quarters). In addition, a sampling program was conducted at the plant.

The Bayonne Plant's influent waste stream is sampled and analyzed five days a week by plant laboratory personnel. A 24-hour composite sampler is located after the grit chamber and influent pumping facilities and just downstream from the plant flow meter. The influent waste stream is analyzed to determine pH and concentrations of BOD_5 and total suspended solids. The available data from the plant's operating records concerning analyses of the influent waste stream are summarized in Table 5-4.

Over the period of record, the influent BOD_5 concentration ranged from 66 mg/l to 566 mg/l, while the influent total suspended solids concentration ranged from 25 mg/l to 984 mg/l.

A sampling program was conducted at the Bayonne Plant to obtain additional data concerning the plant's influent waste stream. A 24-hour composite sampler was installed at the plant just upstream from the influent bar screens. Composite samples of the plant's influent waste stream were collected and analyzed for 14 nonconsecutive days which

TABLE 5-4

BAYONNE WASTEWATER TREATMENT PLANT(1)
INFLUENT WASTE CHARACTERISTICS

		1975(2)	1976	1977	1978(3)
Flow	- mgd	12.55	11.56	12.84	12.80
BOD_5	- mg/l	280	230	197	208
	- lbs/day	29,300	21,800	21,100	22,250
TSS	- mg/l	340	290	208	200
	- lbs/day	35,200	28,000	22,300	21,300
pH	- range	6.5-9.3	5.9-9.8	5.9-9.8	6.5-9.2

Notes: 1. *All values represent average wastewater characteristics and loadings, except as noted.*

2. *Averages are based on last three quarters of 1975.*

3. *Averages are based on first two quarters of 1978.*

4. *Abbreviations:*

mgd	*- million gallons per day*
mg/l	*- milligrams per liter*
lbs/day	*- pounds per day*

extended over a period of two months. The results of this sampling program are summarized in Tables 5-5 and 5-6.

In addition to BOD_5 and total suspended solids, analyses of the plant's influent waste stream were performed to determine concentrations of chemical oxygen demand (COD), volatile suspended solids, lead, and oil and grease as shown in Table 5-5. During the sampling period, COD concentrations were generally more than twice the concentration of BOD_5 indicating a significant amount of industrial wastes.

Also during the sampling period, the concentration of lead in the influent waste stream was relatively high. Although only analyzed in three composite samples, lead concentrations were found to be greater than 2 mg/l. It may be necessary to limit the lead concentration in the waste stream prior to entering secondary treatment facilities because lead has been found to be toxic to microorganism in biological treatment systems.

The results of the sampling also indicated a high oil and grease content in the influent waste stream. The plant Superintendent indicates that periodically a significant amount of floating oil and grease enter the plant and must be manually removed and disposed of. A high oil and grease content in the plant influent will result in clogging and coating of pipes and pumping equipment if it is not removed at the head of the plant. Also, high oil and grease concentrations could upset biological treatment systems, especially if they are received as a slug.

TABLE 5-5

BAYONNE WASTEWATER TREATMENT PLANT
RESULTS OF INFLUENT WASTE SAMPLING PROGRAM

Date[1] (1977)	Flow (mgd)	BOD_5 (mg/l)	COD (mg/l)	TSS (mg/l)	TVSS (mg/l)	pH	Lead (mg/l)	Oil & Grease (mg/l)
10/5-10/6 (W-T)	9.86	460	1,408	184	N.A.	6.4	N.A.	120
10/6-10/7 (T-F)	11.50	370	776	256	108	6.6	2.33	156
10/7-10/8 (F-S)	10.11	297	720	408	136	6.8	2.45	48
10/21-10/22 (F-S)	14.42	130	365	164	N.A.	6.4	N.A.	N.A.
10/22-10/23 (S-S)	13.36	147	373	168	N.A.	6.9	N.A.	N.A.
10/23-10/24 (S-M)	11.88	169	432	164	N.A.	6.8	N.A.	N.A.
10/24-10/25 (M-T)	13.17	286	624	260	224	6.6	6.58	168
11/16-11/17 (W-T)	12.23	230	502	316	N.A.	7.0	N.A.	N.A.
11/17-11/18 (T-F)	20.70	150	455	212	N.A.	6.9	N.A.	N.A.
11/18-11/19 (F-S)	12.43	235	463	122	N.A.	7.1	N.A.	N.A.
11/19-11/20 (S-S)	10.89	208	384	82	N.A.	6.5	N.A.	N.A.
11/20-11/21 (S-M)	11.87	100	235	90	N.A.	6.6	N.A.	N.A.
11/21-11/22 (M-T)	12.90	220	466	162	N.A.	6.8	N.A.	N.A.
11/22-11/23 (T-W)	12.79	216	310	234	N.A.	6.7	N.A.	N.A.
Averages[2]	12.72	221	516	233	160	-	4.00	95

Notes:

1. *Composite samples were collected from 8:00 AM to 8:00 AM for each 24-hour period reported. Letters in parentheses indicate days of week (i.e., M-T refers to Monday to Tuesday).*
2. *Average concentrations represent composited averages based on flow.*
3. *N.A. - Indicates this parameter not analyzed.*
4. *Abbreviations:*

   mgd - million gallons per day
   mg/l - milligrams per liter
   COD - chemical oxygen demand
   TSS - total suspended solids
   TVSS - total volatile suspended solids

TABLE 5-6

BAYONNE WASTEWATER TREATMENT PLANT
RESULTS OF HEAVY METAL ANALYSES

Parameter	Date Sample Collected[1] (mg/l) 10/6-7/77	10/7-8/77	10/24-25/77
Cyanide	0.0006	0.0006	0.005
Cadmium	0.054	0.037	0.036
Chromium (total)	0.042	0.042	0.26
Copper	-	-	0.10
Iron	1.64	1.33	1.03
Manganese	0.30	0.265	0.345
Mercury	0.0088	0.0078	0.009
Zinc	-	-	0.177

Note: 1. All samples collected and analyzed were 24-hour composites.

Limited analyses of the plant's influent waste stream were performed to determine concentrations of several heavy metals. The results of these analyses are presented in Table 5-6.

The results of the plant sampling program indicate that pretreatment of the influent waste stream may be necessary prior to any biological treatment system. A review of the industries which contribute significant quantities of wastes to the sewerage system may indicate the need for pretreatment at the source of the industrial discharge rather than at the treatment plant.

5.4.2 Industrial Wastes

The quantitative and qualitative characteristics of the industrial wastes generated in the service area of the Bayonne Wastewater Treatment Plant were determined based on existing information and on information obtained from an industrial survey, as well as based on a sampling and analysis program conducted as part of this study. Details concerning the various information sources and the conduct of the industrial survey and sampling program are included in Appendix E. The results of the industrial waste characterization program are summarized in this section of the report.

According to a 1977 listing of industries in Bayonne prepared by the Bayonne Chamber of Commerce and Tax Research Council, there are approximately 150 establishments which are classified as industrial. This list includes not only heavy industries, such as chemical and food manufacturers, but also light industries such as warehouses, trucking companies, lumber yards, and various other service-related establishments. The majority of the heavy industry in Bayonne is located in

Constable Hook Industrial Park in the southeastern section of the city, with several other large industries located adjacent to Newark Bay in the southwestern portion of the city.

The majority of the above establishments discharge their wastes to the city's sewer system. However, many of the industries located in Constable Hook Industrial Park do not discharge their wastes into the city's sewer system, but utilize private septic tanks or discharge their wastes to the local waterways; either directly or after some treatment.

Several information sources which are listed in Appendix E were identified and utilized to determine the industries in Bayonne which may generate wastes containing significant amounts of industrial pollutants. In addition, an industrial waste survey was conducted and included 34 industries in Bayonne which were suspected of generating wastes containing significant amounts of industrial pollutants. An industrial waste questionnaire was developed to obtain information concerning industrial processes, raw materials used, and products manufactured, method of operations, waste flows and characteristics, pretreatment methods, and details of discharge points. The results of the industrial waste survey are included in Appendix E.

Based on the existing information sources and on the results of the industrial waste survey, it was found that there are presently 23 industries in Bayonne which generate wastes containing significant amounts of industrial pollutants. Of these industries, 12 presently discharge their wastes to the Bayonne sewer system (these industries are hereinafter referred to as "Municipal Dischargers"), while the remaining 11 industries discharge their wastes directly to the local waterways (these

industries are hereinafter referred to as "Direct Dischargers"). Of the 11 Direct Dischargers, six industries indicated in the industrial waste survey that they wished to have their wastes treated at a central treatment facility.

Information concerning the quantity and characteristics of the wastes generated by the 12 Municipal Dischargers and by the six Direct Dischargers was obtained from the industrial waste survey and/or from a sampling and analysis program conducted as part of this study and is presented in Appendix E. Tables 5-7 and 5-8 present a summary of waste flows and characteristics concerning five-day biochemical oxygen demand (BOD_5) total suspended solids (TSS), and pH of the major industries. Only four Direct Dischargers are listed in Table 5-8, as the remaining two indicated low flows with domestic waste characteristics.

In addition to the waste characteristics which are presented in Tables 5-7 and 5-8, the wastes of several of the industries exhibited characteristics which may affect the design and operation of a secondary treatment plant. These industries and their waste characteristics are briefly discussed below:

CPC International, Inc. Best Foods Division - The company is engaged in processing of vegetable oil and packaging of vegetable oil-based products. Their wastes are characterized by high concentrations of BOD_5, COD, TSS, and oil and grease. During the sampling and analysis program it was found that the waste characteristics vary during normal production hours such that maximum concentrations of these constituents may be twice the average shown in Table 5-7 during certain hours. Oil and grease concentrations ranged from 600 mg/l to 6,300 mg/l.

Dimensional Pigments, Inc. - This company manufactures a pearlized lead carbonate pigment used in vinyl plastic sheet products. Although the flow from this industry is only about 4,000 gpd, the characteristics of their wastes indicated very high concentrations

TABLE 5-7

FLOWS AND WASTE CHARACTERISTICS
OF MAJOR INDUSTRIES - MUNICIPAL DISCHARGERS

Industry	Daily Flow - gpd Average	Daily Flow - gpd Maximum	Av. Daily BOD_5 mg/l	Av. Daily BOD_5 lb/day	Av. Daily TSS mg/l	Av. Daily TSS lb/day	pH - Range
CPC International, Inc. Best Foods Division	282,000	862,000	2,780	6,500	1,350	3,200	3.5- 8.1
Dimensional Pigments, Inc.	3,800	4,300	N.A.	N.A.	200	5	7.5-11.1
Hunt-Wesson Foods, Inc.	104,400	147,600	2,500	2,200	1,110	960	8.5-12.0
ICI United States, Inc.	241,000	298,000	90	180	210	420	9.5-12.0
NL Industries, Inc.	63,000	71,600	3,800	2,000	1,500	800	5.5- 8.7
Norton & Son, Inc.	21,000	22,500	500	100	1,900	330	9.3-11.5
Rollins Terminals, Inc.	6,000	7,000	2,000	100	300	15	8.2-13.9
Mobay Chemical Corp. Verona Dyestuff Division							
Plant No. 1	250,000	345,000	810	1,700	700	1,500	8.6-12.1
Plant No. 2	253,000	328,000	690	1,500	100	210	7.6-12.2
Wachsberg Pickle Works	7,000	9,000	2,300	140	320	20	3.7-4.1
Totals - Municipal Dischargers	1,231,200	2,095,000	--	14,420	--	7,460	---

Note:

1. *N.A. denotes information not available.*

TABLE 5-8

FLOWS AND WASTE CHARACTERISTICS
OF MAJOR INDUSTRIES - DIRECT DISCHARGERS[1]

Industry	Daily Flow - gpd Average	Daily Flow - gpd Maximum	Av. Daily BOD_5 mg/l	Av. Daily BOD_5 lb/day	Av. Daily TSS mg/l	Av. Daily TSS lb/day	pH - Range
Bayonne Industries, Inc.	255,000	310,000	150	320	20,300	43,200	6.0-9.0
Kenrich Petrochemicals, Inc.	14,000	14,000	70	10	200	20	6.0-7.5
Southern California Chemical Corp.	12,000	22,000	N.A.	N.A.	N.A.	N.A.	7.5-8.5
Texaco, Inc. (2)	83,500	358,000	45	5	60	5	--
Totals - Direct Dischargers	364,500	704,000	-	335		43,225	--

Notes:

1. *Includes only the larger Direct Dischargers which indicated a desire to have their wastes treated at a central treatment facility.*
2. *Does not include 10,200 gpd of sanitary wastes and cooling water which are presently discharged to Bayonne sewer system.*
3. *"N.A." denotes information not available.*

of lead. A series of samples of their wastes showed lead concentrations from 123 mg/1 to 14,000 mg/1. Lead concentrations were generally highest between 6:00 am and 9:00 am when the company discharges the majority of its process wastes. These high lead concentrations in the company's wastes contribute to the relatively high lead concentrations in the Bayonne Plant influent waste stream.

Hunt-Wesson Food, Inc. - This industry is engaged in packaging edible vegetable oil products at its Bayonne plant. The wastes from this plant are characterized by high concentrations of BOD_5, COD, TSS, and oil and grease. Concentrations of these constituents were found to be as much as twice the average concentrations shown in Table 5-7 during certain hours of a production day. Oil and grease concentrations were found to range from 500 to 5,000 mg/1 during certain hours.

ICI United States, Inc. - This industry is engaged in chemicals manufacturing with major products such as chlorinated rubber, chlorinated paraffin, and polyurethanes. The wastes from this plant generally contain high concentrations of free chlorine. During the sampling and analysis program, concentrations of free chlorine ranged from 16 to 80 mg/1. The industry indicates that at times the discharge of free chlorine is between 500 and 600 mg/1. The waste from this industry contributes to occasional high concentrations of free chlorine in the Bayonne Plant influent stream. These conditions result in a strong chlorine odor at the plant which could be a potentially serious problem.

NL Industries, Inc. - This industry is engaged in vegetable oil processing with major products of caster oil and its chemical derivatives. The characteristics of the wastes from this plant contain high concentrations of BOD_5, COD, TSS, and oil and grease. During certain production hours, the concentrations of these waste constituents were twice the average concentration shown in Table 5-7. Concentrations of oil and grease ranged from 200 to 9,000 mg/1 during the sampling and analysis program.

Norton & Sons, Inc. - This company is engaged in the manufacturing of latex paint. The waste from this plant contains moderately high concentrations of BOD_5, COD, and TSS. The waste also contains a high color content which contributes to the color content in the Bayonne Plant influent waste stream.

Rollins Terminals, Inc. - This company is engaged in the storage and distribution of bulk liquid industrial chemicals. Their major product is anti-freeze. The waste from this industry contains extremely high levels of COD and color. During the sampling and analysis program, a BOD_5 analysis could not be run on several samples because of apparent toxicity in the waste.

Mobay Chemical Corp. Verona Dyestuff Division - This industry is engaged in the manufacturing of dyestuff and intermediates at two plants in Bayonne. The wastes from both plants contain high levels of color. Each plant includes pretreatment facilities which add bleach to reduce color loading.

The data presented in this report concerning the waste characteristics of the major wet industries in Bayonne generally do not reflect complete information under all process conditions for each industry. The most complete data were obtained from Mobay Chemical Corp., Verona Dyestuffs Division, which continuously monitors its flows from each of its manufacturing plants. The data for the other industries represent either results of the sampling and analysis program (one week or less of monitoring) conducted as part of this study or limited information received from the industries.

The data indicate that it may be necessary for several industries to pretreat prior to discharging their wastes to the Bayonne sewer system. However, the level of pretreatment for each industry should not be based on the short-term data presented in this report, but should be based on long-term sampling and analysis. In addition, the type and amount of industrial wastes discharged to the Bayonne sewer system indicate that it may be necessary to conduct a bench-scale treatability program to finalize the process design criteria for secondary treatment at the Bayonne Plant.

5.5 Infiltration/Inflow Analysis - Summary

The complete summary of findings, conclusions, and recommendations for the Bayonne Infiltration/Inflow Analysis are contained in Volume II of the Wastewater Facilities Plan, which is devoted entirely to the

subject of infiltration/inflow for the Bayonne collection system. This section includes only a summary of this analysis.

It was found that metered dry weather (non-rainfall) flows averaged about 10.4 mgd. This figure is based on seven-day composited average results from 26 metering points located strategically throughout the various subsystems of the collection area. This dry weather average includes all sewage and extraneous flows, but excludes storm flow.

The theoretical base sewage flow, or anticipated wastewater generation, is estimated at about 5.7 mgd, which includes an allowance of 200 gallons per day of minimal, allowable infiltration per inch diameter, per mile of length of pipe. This amount is considered as incapable of being removed from the system. It is concluded that the difference of 4.7 mgd represents all extraneous flows, including infiltration.

The cost-effectiveness analysis which was performed as part of the infiltration study disclosed that it appears only marginally cost-effective to attempt removal of possible infiltration for two Study Areas, 17 and 3. The single most cost-effective measure appears to be tide gate rehabilitation which would reduce plant flows by an estimated 2-2.5 mgd. A Sewer System Evaluation Survey directed at such tide gate rehabilitation is recommended.

More detailed information concerning the estimated costs for correction of tidal intrusions in relation to savings in treatment costs due to reduced flows may be found in Volume II.

6. ENVIRONMENTAL FUTURES

An initial step in the preparation of a wastewater facility plan is to forecast wastewater flows and wasteloads for the duration of the planning period. The USEPA defines the "planning period" as the time span over which wastewater management needs are forecast, facilities are planned to meet such needs, and costs are amortized.(42) The facility planning period commences with the initial operation of the planned facilities and should extend 20 years beyond this date. A planning period beginning in 1983 and extending to the year 2003 has been used in this report.

A forecast of future wasteloads and flows must be based on projections of future population and employment. These projections must, in turn, be consistent with applicable state, local, and regional land use and development plans.

6.1 Demographic Projections

6.1.1 Available Demographic Projections and Forecasts

Sources of population projections and forecasts consulted for this study are listed in Table 6-1. Seven different projections and forecasts are available for Hudson County as a whole for the period 1980-2000, but only one projection applies specifically to Planning Area II for this entire period.

6.1.2 Projections for Hudson County

The Hudson County Planning Board(43) projects a moderate increase in county population during the 1970's, followed by a larger increase in

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Ford

Let's protect our earth

State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF WATER RESOURCES
CN 029
TRENTON, NEW JERSEY 08625

GEORGE G. McCANN, P.E.
DIRECTOR

DIRK C. HOFMAN, P.E.
DEPUTY DIRECTOR

IN THE MATTER OF	:	ADMINISTRATIVE
THE CITY OF	:	CONSENT
BAYONNE	:	ORDER

This Administrative Consent Order (ACO) is entered into pursuant to the authority vested in the Commissioner of the New Jersey Department of Environmental Protection (hereinafter "NJDEP" or "Department") by N.J.S.A. 13:1D-1 et seq., and the Water Pollution Control Act, N.J.S.A. 58:10A-1 et seq., and duly delegated to the Director of the Division of Water Resources (DWR) pursuant to N.J.S.A. 13:1B-4.

FINDINGS

1. The City of Bayonne (hereinafter "Bayonne ") owns and operates the Bayonne Sewage Treatment Plant (STP) located at the Foot of Oak Street in Bayonne, Hudson County, New Jersey (Block 431, Lot 10.C1).

2. The New Jersey Water Pollution Control Act, N.J.S.A. 58:10A-1 et seq., and the regulations promulgated thereunder, N.J.A.C. 7:14A-1 et seq., state that no discharge of pollutants is allowed except in conformance with a valid New Jersey Pollutant Discharge Elimination System (NJPDES) permit.

3. Section 301(i)(1) of the Federal Clean Water Act (33 U.S.C. 1251 et seq.) , and the regulations promulgated pursuant thereto, mandate secondary treatment of all municipal wastewater treatment plants by July 1, 1988.

4. Pursuant to the Act and the regulations promulgated thereunder, N.J.A.C. 7:9-13 et seq., the Department, by letter dated August 12, 1985, invoked the sewer extension ban regulations effectively prohibiting construction in Bayonne until such time as NJDEP is satisfied that substantial improvements in effluent quality will occur.

5. On January 1, 1986 the New Jersey Department of Environmental Protection (NJDEP) issued New Jersey Pollutant Discharge Elimination System (NJPDES) Permit No. NJ0025836 (the "Permit") effective March 1, 1986 to the City of Bayonne. The Permit authorizes the discharge of pollutants from the STP to the Kill Van Kull, a surface water of the State. The Permit is scheduled to expire on February 28, 1991. Part III of the Permit, requires that the discharge from the Bayonne STP meet secondary effluent limitations upon the effective date of the Permit (March 1, 1986).

6. Based upon information received from Bayonne, as well as information in NJDEP's possession, NJDEP finds that Bayonne's STP is unable to meet the effluent limitations (secondary) specified in the permit and sections 201 and 208 of the Federal Clean Water Act. The existing STP is a primary wastewater treatment facility and is therefore inadequate to provide the secondary treatment required.

7. Bayonne recognizes that it is in its best interest and in the best interest of the public to resolve this matter by:

a) Abandoning the Bayonne STP and diverting the flow to the Passaic Valley Sewerage Commission (PVSC) secondary treatment facility;

b) Submitting and implementing a short term residuals management plan.

The parties further recognize that it is not feasible for said sewerage system to be constructed by July 1, 1988.

8. Bayonne authorized an engineering firm to design the facilities required to convey flow to PVSC and has submitted draft plans and specifications for review to the NJDEP.

9. Based on these Findings, the Department has determined that Bayonne has violated the Water Pollution Control Act, 58:10A-1 et seq., specifically N.J.S.A. 58:10A-6,and the regulations promulgated pursuant thereto, N.J.A.C. 7:14A-1 et seq., specifically N.J.A.C. 7:14A-1.2(c).

10. Based upon the information available to the parties on the effective date of this ACO and to amicably resolve the above matter, NJDEP and Bayonne enter into this ACO without trial or adjudication of any issue of fact or law.

NOW, THEREFORE, IT IS HEREBY ORDERED AND AGREED THAT:

11. Bayonne shall comply with the following schedule for implementing the construction of facilities which will convey all wastewater currently treated at the Bayonne STP to the PVSC facility:

a) Submit an acceptable application for a Stage 1 treatment works approval by September 28, 1987;

b) Submit an acceptable application for a Stage 2 treatment works approval by January 27, 1988;

c) Advertise for bids for the construction of such facilities by March 23,1988;

d) Award contracts for construction of such facilities and issue notices to proceed by May 23,1988;

e) Begin construction of the facilities by June 1, 1988;

f) Complete construction of the facility by June 1, 1990;

g) Obtain a Stage 3 treatment works approval by July 1,1990;

h) Cease all dry weather discharges to the Kill Van Kull from the Bayonne STP and submit an application for a NJPDES permit major modification for the existing Bayonne STP to the address referenced in paragraph 17 of this ACO by July 1,1990;

i) Submit Engineering Certification of project completion and attainment of performance standards by July 1,1991.

12. Within thirty (30) calendar days of the execution of this ACO Bayonne shall submit an acceptable short term residuals management plan to NJDEP. Upon approval of the plan by NJDEP, Bayonne shall implement the plan until such time that the connection with PVSC is completed.

13. Bayonne shall comply with the requirements of Attachment I, Interim Effluent Limitations, until such time as the connection to the PVSC treatment facility is completed.

14. The sewer extension ban imposed on Bayonne on August 12,1985 shall remain in effect until such time as it is modified or removed by NJDEP.

15. Bayonne may, in its sewer moratorium identified in paragraph 14 above, provide for exemptions to the program in accordance with N.J.A.C. 7:9-13 provided that the criteria for such exemptions is approved by NJDEP and that any exemption approved by Bayonne subsequently obtains the approval of NJDEP. Any such exemption shall contain a condition precedent to NJDEP's approving said exemptions that Bayonne has satisfied the conditions and requirements of N.J.A.C. 7:9-13.1 et seq and that Bayonne is in compliance with the terms and conditions of this ACO.

16. Bayonne shall, within thirty (30) days of the effective date of this ACO, retain the services of a qualified professional engineer to monitor its progress towards compliance. This person shall be available to assist NJDEP personnel who are monitoring the status of compliance and shall be responsible for submission of the quarterly reports referenced in paragraph 17 of this ACO.

17. Beginning with the first quarter subsequent to the effective date of this ACO and every quarter thereafter until full compliance is achieved, Bayonne shall submit in writing to NJDEP a report detailing the status and progress of projects under this ACO. Such reports shall be due on the 15th day of the month following the quarter for which they are due and shall include the following information:

a) Actions taken to achieve compliance with the due dates.

b) Actions still needed to achieve compliance with the due dates.

c) Whether the progress made to date is on, ahead of, or behind the schedule necessary to assure compliance with the due dates. If the project is behind schedule, the report shall include the following information:

i) A description of how much the project is behind schedule.

ii) A description of why the project is behind schedule.

iii) A description of any actions taken and/or proposed to be taken to put the project back on schedule to meet the due date.

iv) A description of any actions taken and/or proposed to be taken to prevent and control further delay.

v) A description of any factors which tend to explain or mitigate the delay.

vi) An estimate of the date by which the delay will be made up and the probability that the project will remain on schedule thereafter.

18. Bayonne shall submit all documents required by this ACO to:

Mr. Peter T. Lynch, Chief
Metro Bureau of Regional Enforcement
NJDEP - Division of Water Resources
2 Babcock Place
West Orange, NJ 07052

19. Bayonne shall submit copies of all documents required by this ACO to:

Dr. Richard A. Baker, Chief
Permits Administration Branch
Planning and Management Division
USEPA - Region II
26 Federal Plaza
New York, NY 10278

Stipulated Penalties

20. Bayonne shall pay to NJDEP stipulated penalties for any failure to comply with the requirements of this ACO as follows unless the Department has modified the compliance dates pursuant to the Force Majeure provisions below:

Calendar Days After Due Date	Stipulated Penalties
1 - 7	$ 1000 per calendar day
8 - 14	2000 per calendar day
15 - over	5000 per calendar day

For each violation of the interim effluent limitations as set forth in Paragraph 13 and Attachment I, Bayonne shall pay a stipulated penalty of $5000.00. Any such penalty shall be due and payable fourteen (14) calendar days following the receipt of a written demand by the Department, or if no such demand is received, on the 30th calendar day following the date the penalty accrues, and shall be due and payable every 30th calendar day thereafter. Payment of such stipulated penalties shall be made by cashier's or certified check payable to the "Treasurer, State of New Jersey" and delivered to the address referenced in Paragraph 18, above. Each payment of a stipulated penalty shall include a letter describing the basis for the penalty.

Force Majeure

21. If any event occurs which Bayonne believes will or may cause delay in the achievement of any provision of this ACO,Bayonne shall notify the Department in writing within ten (10) calendar days of the delay or anticipated delay, as appropriate, referencing this paragraph and describing the anticipated length of the delay, the precise cause of the delay, any measures taken or to be taken to minimize the delay, and the time required to take any such measures to minimize the delay. Bayonne shall adopt all reasonable necessary measures to minimize any such delay. If the Department finds that: (a) Bayonne has complied with the notice requirements of this paragraph and; (b) that any delay or anticipated delay has been or will be caused by fire, flood, riot, strike, or any other circumstances beyond the control of Bayonne, the Department shall extend the time for performance hereunder for a period no longer than the delay resulting from such circumstances. If the Department determines that either Bayonne has not complied with the notice requirements of this paragraph or the event causing the delay is not beyond the control of Bayonne, failure to comply with the provisions of this ACO shall constitute a breach of the requirements of this ACO. The burden of proving that any delay is caused by circumstances beyond the control of Bayonne and the length of delay attributable to those circumstances shall rest with Bayonne. Increases in the cost or expenses incurred by Bayonne in fulfilling the requirements of this ACO shall not be a basis for an extension of time. Delay in an interim requirement shall not automatically justify or excuse delay in the attainment of subsequent requirements.

General Provisions

22. Performance of the terms of this ACO by Bayonne is not conditioned in any way upon the lack of, receipt of, or application for any Federal or State grant or loan funds.

23. Bayonne shall perform all work conducted pursuant to this ACO in accordance with prevailing professional standards.

24. The provisions of this ACO shall be binding on Bayonne, its principals, directors, officers, agents, successors, assigns, and any trustees in bankruptcy or receiver appointed pursuant to a proceeding in law or equity.

25. Except as otherwise specifically provided herein, compliance with the terms of this ACO shall not relieve Bayonne from obtaining and complying with all Federal, State, and local permits, as well as applicable statutes and regulations while carrying out the obligations imposed by this ACO.

26. The execution of this ACO shall not preclude the Department from requiring that Bayonne apply for any permit or permit modifications issued by the Department under the authority of the Water Pollution Control Act N.J.S.A. 58:10A-1 et seq., and/or any statutory authority for the matters covered herein. The terms and conditions of any such permit shall not be preempted by the terms and conditions of this ACO even if the terms and conditions of any such permit are more stringent than the terms and conditions of this ACO.

27. All appendices referenced in this ACO, and all reports, work plans and documents required under the terms of this ACO are, upon approval by the Department, incorporated into this ACO by reference and made part hereof.

28. Bayonne shall submit to the Department all documents required by this ACO, including correspondences relating to Force Majeure issues, by certified mail, return receipt requested, or by hand delivery with an acknowledgement of receipt form for the Department's signature. The date that the Department executes the receipt or acknowledgement will be the date the Department uses to determine Bayonne's compliance with the requirements of this ACO and the applicability of stipulated penalties.

29. In addition to the Department's statutory and regulatory rights to enter and inspect, Bayonne shall allow the Department and its authorized representatives access to the site at all times for the purpose of monitoring Bayonne's compliance with this ACO.

30. No obligations imposed by this ACO are intended to constitute a debt, claim, penalty, or other civil action which should be limited or discharged in a bankruptcy proceeding. All obligations imposed by this ACO shall constitute continuing regulatory obligations imposed pursuant to the police powers of the State of New Jersey intended to protect public health or the environment.

31. The Department reserves the right to require Bayonne to take additional actions should the Department determine that such actions are necessary to protect the public health, safety, welfare or the environment. Nothing in this ACO shall constitute a waiver of any statutory right of the Department pertaining to any of the laws of the State of New Jersey should the Department determine that such measures are necessary.

32. Bayonne shall not construe any informal advice, guidance, suggestions, or comments by the Department or by persons acting on behalf of the Department, as relieving Bayonne of its obligations to obtain written approvals as may be required herein unless such advice, guidance, suggestions, or comments by the Department are submitted in writing to Bayonne.

33. No modification or waiver of this ACO shall be valid except by written amendment to this ACO duly executed by Bayonne and the Department.

34. Bayonne hereby consents to and agrees to comply with this ACO which shall be fully enforceable as an Order in the New Jersey Superior Court upon the filing of an action for compliance pursuant to N.J.S.A. 13:1D-1 et seq., and the Water Pollution Control Act, N.J.S.A. 58:10A-1 et seq. Bayonne agrees not to contest the authority or jurisdiction of the Department to issue this ACO.

35. Bayonne shall give written notice of this ACO to any successor in interest prior to transfer of ownership of Bayonne facilities which are the subject of this ACO, and shall simultaneously verify to the Department that such notice has been given.

36. When this ACO becomes effective, Bayonne waives its rights to an administrative hearing on the matters contained hereinabove pursuant to N.J.S.A. 52:14B-1 et seq. and N.J.S.A. 58:10A-1 et seq. and also agrees not to contest the terms of this ACO except as to interpretation of such terms and conditions in any action brought by the Department to enforce the provisions of this ACO.

37. The requirements of this ACO shall be deemed satisfied upon the receipt by Bayonne of written notice from the Department that Bayonne has demonstrated, to the satisfaction of the Department, that all the terms of this ACO have been completed.

38. This ACO shall take effect upon execution by both parties, but will be null and void if the original is not executed by Bayonne within fourteen (14) calendar days of its execution by the Department.

DEPARTMENT OF ENVIRONMENTAL PROTECTION

BY AUTHORITY OF
GEORGE G. McCANN, P.E.
DIRECTOR
DIVISION OF WATER RESOURCES

DATE: SEP 25 1987

BY: James E. Mumman

JAMES E. MUMMAN
ASSISTANT DIRECTOR
ENFORCEMENT ELEMENT

~~BAYONNE~~
CITY OF BAYONNE:

DATE: ~~Sept.~~ 28, 1987

BY: Dennis P. Collins

NAME: Dennis P. Collins

TITLE: Mayor

ATTACHMENT I

INTERIM EFFLUENT LIMITATIONS

EFFLUENT CHARACTERISTICS	Maximum Load Allocations (1)		Maximum Concentrations (1)		Minimum Percent Removal Limitations (1)	
	Average Monthly Discharge Limitation (kg/day)	Average Weekly Discharge Limitation (kg/day)	Average Monthly Discharge Limitation (mg/l)	Average Weekly Discharge Limitation (mg/l)	Average Monthly	Any Four Hour Period
5-Day 20°C Biochemical Oxygen Demand	—	—	156	—	25%	—
Suspended Solids	—	—	120	—	35%	—
Fecal Coliform Organisms Number per 100 ml (2)	—	—	200 (3)	—	—	—

(1) Whichever is most stringent

(2) Geometric Mean

(3) Based upon representative samples collected at a location Acceptable to NJDEP

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Tammany on the Hudson

MONDAY, OCTOBER 10, 2005

Bayonne MUA is in Deep

From the Jersey Journal:

BAF000004

00005649 People Have Witnessed the Corruption of Hudson County

HELP ME CLEAN UP HUDSON COUNTY! SEND ME A TIP!

PREVIOUS POSTS

LOW VISIBILITY TAX HIKES IN BAYONNE

JOURNAL ENDORSES RESERVOIR

SAVE THE RESERVOIR!

MY WAY OR ELSE!

LIPSKI FOLLOWS CONFLICT OF INTEREST WITH VOTE FOR FRIEND

DOUBLE DIPPING ENDS FOR ONE

HOW $5 MILLION IS REALLY ONLY $300,000

Bayonne MUA fined by state for 6 sewage-dumping incidents
Monday, October 10, 2005
By RONALD LEIR
JOURNAL STAFF WRITER

On a weekend in June this year, a Bayonne Municipal Utilities Authority worker made the mistake of leaving town with the key to the Oak Street pump station.

When the pump malfunctioned, more than 13 million gallons of raw sewage and stormwater was dumped into the Kill Van Kull.

For that incident and for five others over a three-year period that resulted in what the state characterized as "dry weather overflows" in violation of the state Water Pollution Control Act, the BMUA has consented to pay the state $42,750 in penalties.

The BMUA commissioners voted last week to authorize accepting a settlement agreement on the advice of counsel Joseph Nichols, who said he recommended making the payment to save the cost of litigation.

City of Bayonne
Hudson County, New Jersey

BAYONNE/PVSC SEWERAGE CONNECTION

OPERATION & MAINTENANCE MANUAL

1990

BAG000001

LAWLER, MATUSKY & SKELLY ENGINEERS
Environmental Science & Engineering Consultants
One Blue Hill Plaza
Pearl River, New York 10965

City of Bayonne
Hudson County, New Jersey

BAYONNE/PVSC SEWERAGE CONNECTION

OPERATION & MAINTENANCE MANUAL

1990

LAWLER, MATUSKY & SKELLY ENGINEERS
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Pearl River, New York 10965

PREFACE

This operation and maintenance manual for the Bayonne/PVSC Connection was prepared to assist plant operators in the daily operation of the facilities. The manual, when used in conjunction with manufacturer's operation and maintenance (O&M) literature, provides a complete guide for O&M of the facilities.

This manual conforms to "Outline of Topics and Concepts to be Covered in Operation and Maintenance Manuals for Wastewater Treatment Plants" issued by the State of New Jersey.

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O & M MANUAL

CHAPTER 1

INTRODUCTION

1.1 PURPOSE

The Bayonne/PVSC Connection project design provides for: abandonment of the existing primary treatment plant, except for the Operations Building containing the Pump Station and Administration Building, and the addition of new screening and grit removal facilities; replacement of the existing sewage pumps and conveyance of sewage via a new force main from Bayonne to the force main leading from the Jersey City West facilities to the Passaic Valley Sewerage Commissioners (PVSC) Treatment Plant in Newark. Excess combined sewage caused by storm flows will continue to be discharged through existing outfalls.

The purposes of this manual are to familiarize operating personnel with the equipment and facilities provided, and to recommend operation and maintenance procedures for effective and economical function of the facilities. The manual provides essential technical information and guidance and is intended to be used as a tool by operating personnel.

This manual is a working manual and should be continuously reviewed and updated by the Chief Operator as changes and modifications in procedures are made.

1.2 HISTORICAL BENCHMARKS

The Northeastern New Jersey Water Quality Management Plan was an areawide management assessment completed by the New Jersey Department of Environmental Protection (NJDEP) in 1979. In that plan, NJDEP designated the Hudson County Utilities Authority (HCUA) as

the lead agency for developing the more detailed wastewater management facilities plans that would be required in Hudson County pursuant to Section 201 of the Federal Water Pollution Control Act. These plans were prepared in 1979, and submitted to NJDEP for approval. The approval was granted and designs were undertaken for the facilities recommended.

The original 201 Plan prepared in 1979 for Planning Area II (Bayonne) consisted of the following basic elements:

> Upgrading the existing Bayonne plant to a secondary treatment plant with a design capacity of 11 MGD. The secondary treatment plant proposed for use was the diffused-aeration activated sludge process.
>
> The primary and secondary sludge would be thickened and dewatered, with the dewatered sludge cake to be trucked to the regional incinerator to be built at the Jersey City East plant for incineration.

However, after much reflection, Bayonne and HCUA concluded that an update of the 201 Plan might result in a more cost effective solution, especially in view of the reduction in grant aid available from 75% Federal and 8% State Funding in 1979 to 55% Federal and 0% State funding in 1985.

In October 1985 Lawler, Matusky & Skelly Engineers (LMS) published, on behalf of the Hudson County Utilities Authority (HCUA) the Selected Plan Report for Planning Area II of HCUA's 201 Facilities Planning Area which includes only the City of Bayonne. This Engineer's Report describes the basis of design for the Bayonne Selected Plan, known as the City of Bayonne/PVSC Connection, EPA Project No. C340399-06. This is the project for which HCUA received a construction grant on behalf of Bayonne.

1.3 PROJECT SUMMARY

The following is essentially a summary description of the Bayonne/PVSC connection based on the Selected Plan Report.

The selected plan consists of sewage pumping and transmission facilities required to convey the Bayonne sewage flows, utilizing transmission facilities of the Jersey City - PVSC pipeline to the PVSC plant in Newark, New Jersey (see Figure 1-1).

The proposed force main from the Bayonne plant location is 36 in.* in diameter, approximately 28,300 ft (5.36 mi) in length, and is routed in the abandoned railroad lines in Bayonne in the Conrail (CRRNJ) right-of-way. The use of the existing unused 30-in. water main to be lined and reinforced was abandoned when excavation during construction revealed the pipe to be deteriorated or not found. The reach of the existing 30-in. steel pipe was replaced with 24 or 30-in. ductile iron pipe relocated in the Conrail (CRRNJ) right-of-way to the vicinity of the Jersey City West treatment plant site where it joins the 72-in. Jersey City/PVSC pipeline. A pressure sewer conveys the aggregated Jersey City East, Jersey City West, and Bayonne flows from the force main junction to the PVSC plant. The first portion of this pressure sewer is 72-in. in diameter to the emergency overflow manhole at the east bank of Newark Bay. The 4800-ft long underwater crossing at Newark Bay is 72 in. in diameter. After receiving the flow from Kearny on the west shore of Newark Bay, the 72-in. transmission line continues for 3500 ft (0.66 mi)

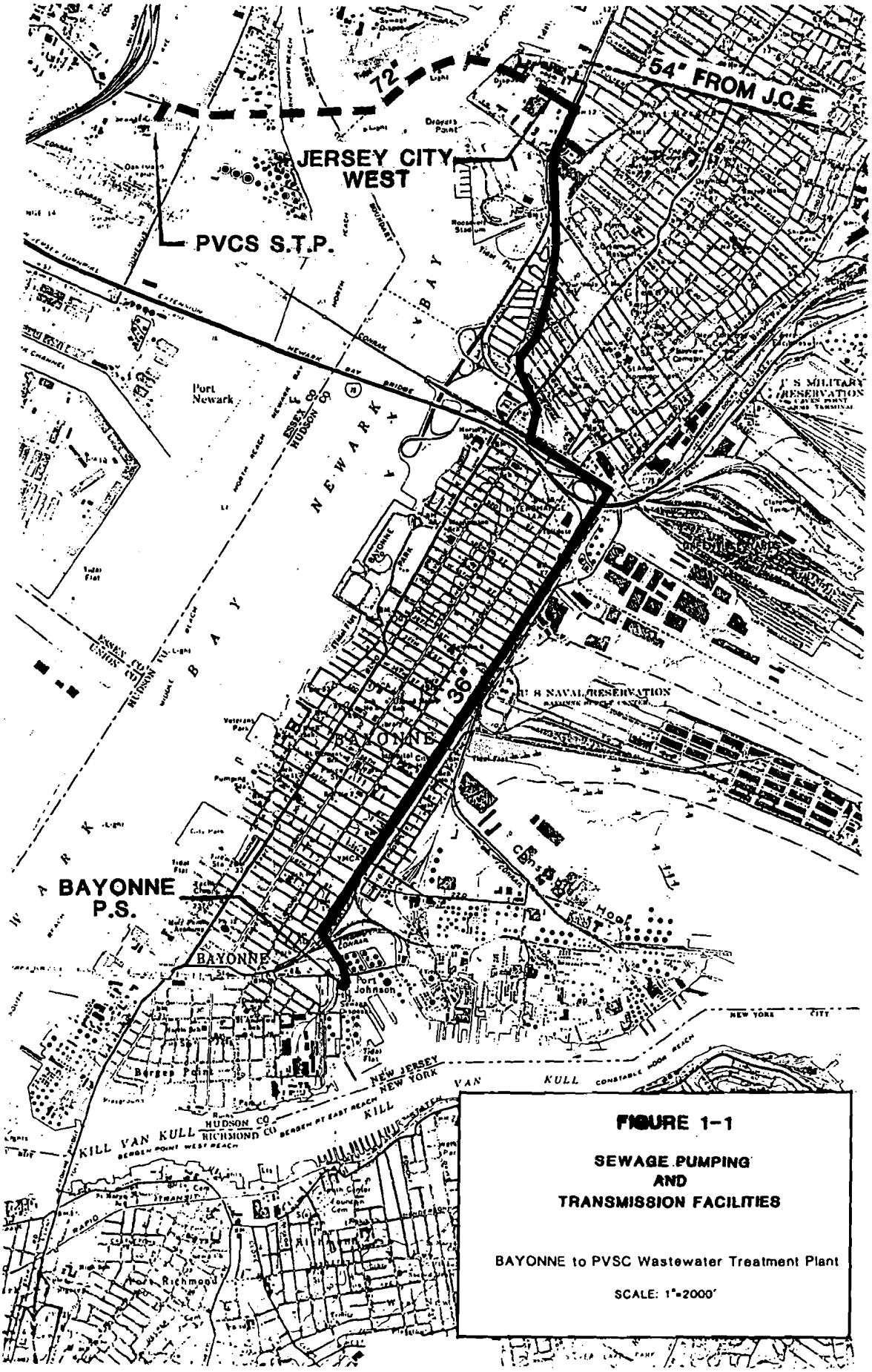


FIGURE 1-1

SEWAGE PUMPING AND TRANSMISSION FACILITIES

BAYONNE to PVSC Wastewater Treatment Plant

SCALE: 1"=2000'

along Wilson Avenue in Newark to the PVSC treatment plant.

The work constructed at the site of the existing Bayonne sewage treatment plant included the following major elements:

- Construction of a stormflow regulator on the existing 72-in. interceptor but to retain the existing influent intercepting sewers into the existing pump station without change or modification
- Screening and grit chamber equipment removal from the existing pump station, and construction of a new screening and grit chamber equipment installation in a new facility
- Handling and conveying equipment for grit and screenings for installation in the new facility
- Pumping equipment, valves, and piping for installation in the existing pump station located in the Operations Building
- Sewage force main/header piping in existing pump station
- Electrical work required to provide standby electric power generation equipment to keep the station in operation in the event of utility power outage
- Heating, ventilating, and air conditioning work for the existing pumping installation structure
- Architectural restoration of the existing pumping installation structure, as required for proper housing and maintenance of new equipment
- Architectural work in new structure housing screening and grit chamber facilities
- Restoration and cleanup of existing site at completion of construction

The 36-in. diameter force main from the Bayonne pumping station to the point of connection to the Jersey City/PVSC force main includes the following major elements:

- Force main from the Bayonne pumping installation to the CRRNJ cross-city right-of-way, including crossing under the existing Conrail trackage
- Force main in the CRRNJ right-of-way, including crossings of local streets by bridging or cut and cover, as appropriate
- Right-of-way restoration work as required to provide adequate clearance for the proposed force main and one-track railroad operation
- Force main from the Route 440 crossing to the junction with the force main from the Jersey City East and West pumping installations

1.4 POPULATION

In projecting future wastewater flows, consideration was first given to population projections. For Bayonne, the population was projected to increase from 72,756 in 1970 to 73,900 in 1983 and then to stabilize at 75,000 in 2003.

1.5 DESIGN FLOWS

The design flows for the elements of the project are shown on Table 1-1. The City of Bayonne flows were developed during the 201 planning update. The Bayonne sewers are a combined storm and sanitary system, with regulators to discharge excess flows to the Hudson River in times of storm. Peak influent to the pump station is thus controlled at the levels given in Table 1-1. The average flows were established in the original 201 plan for this Planning Area, based on 1976 flows at the facility, a very slight (3%)

increase in population over the planning period, correction of infiltration/inflow, and industrial waste survey data. They represent year 2003 flows, but provide no reserve capacity over existing flows.

TABLE 1-1
DESIGN FLOWS

PROJECT ELEMENT	FLOW (MGD) AVERAGE	PEAK	MINIMUM
City of Bayonne Raw Sewage	11.00	17.60[a]	5.50
Transmission main, City of Bayonne to Jersey City West	11.00	17.60	5.50
City of Bayonne Storm Flow	14.0	22.4[a]	7.0

[a]Total Combined Peak Flow (MGD): 40.0.

1.6 BAYONNE/PVSC CONNECTION FACILITIES

1.6.1 General Description

Combined sanitary and storm wastewater arrives at the existing Bayonne plant site via the 72-in. Northeast and the 54-in. Southeast interceptors whose flows meet in the modified intercepting chamber. Within the chamber is a weir whose crest is set to allow flows in excess of 17.6 mgd to overflow the weir. All flows 17.6 mgd or less are diverted to a new 48-in. intercepting sewer which conveys the wastewater to the new Screenings and Grit Removal Building where mechanical screens remove floating and coarse material to a belt conveyor for discharge into a screenings bin whence it is removed for trucking to off-site disposal. The screened wastewater continues to a grit chamber of the forced vortex type. The circumferential velocity of flow in the grit chamber is held to a constant value by the slowly rotating paddle. This permits the

grit to settle and to keep the lighter organics in suspension to exit the chamber. The grit settles to the sloping floor of the chamber and is eventually carried into the grit storage hopper. A turbine grit pump removes the grit and conveys it to a grit washer and classifier in which the grit is scoured to remove organics and washed in a counterflow pattern. An inclined screw conveyor within the washer moves the grit upward until the cleaned grit reaches the top of the classifier whence the grit drops into a chute and into a grit bin. The bin is removed from the building in the same manner as the screenings bin and trucked for off-site disposal. The screened and degritted wastewater from the Screenings and Grit Removal Building flows into a 36-in. pipe constructed under the floor of the existing Operations Building and drains into the existing effluent channel of the former but abandoned grit chamber and thence into the raw wastewater wet well. The Raw Wastewater Pumps RWW-1, RWW-2 and RWW-3 pump the raw wastewater into a 30-in. D.I. force main where the flow is metered before leaving the Operations Building. Outside the building the pipe size is increased to 36-in. and the pipe material changed from ductile iron to prestressed concrete cylinder pipe (PCCP). The 36-in. PCCP force main leaves the plant site and continues northerly across Oak Street and the right-of-way for the proposed Route 169 ramp, across the railroad right-of-way and on the north side of Route 169 whence it continues westerly, parallel to Route 169 to Sta 20 + 87 where it turns northerly in the Conrail ROW to Sta 25 + 36, and continues on the west side of Prospect Avenue from East 19th Street to the north side of East 21st Street. At Sta 29 + 81 the force main again turns northerly to the west side of the Conrail ROW at Sta 32 + 03, and continues in the Conrail ROW crossing under the New Jersey Turnpike to Sta 145 + 46 at which point the 36-in. force main turns northerly, remaining in the Conrail ROW, going under Railroad Avenue and Avenue C, and crossing to the west side of Mulcahy Street to Sta 172 + 80 where the pipe size is reduced to 30-in. and turns 90° north as a 30-in. ductile iron force main, going under

and across J.F. Kennedy Boulevard to Sta 188 + 67 where the force main is reduced in diameter to 24-in. and continues in the Conrail ROW to Sta 233 + 37 at which point the force main increases in diameter to 36-in. and by means of an adapter piece changes from ductile iron to PCCP. The 36-in PCCP force main continues to Sta 265 + 09 at which point it crosses Route 440, continues on the west side of Route 440 to Sta 268 + 92, where it makes two 45° turns westerly to enter the valve manhole specially designed by the Jersey City Sewerage Authority at the Jersey City West plant site to accept the wastewater flow from Bayonne. Thereafter, the Bayonne flow combines with the flow from Jersey City, continues across Newark Bay in the 72-in. underwater line, emerging from the water and on to Wilson Avenue in Newark to the PVSC plant for treatment and ultimate disposal.

1.6.2 Major Equipment and Facilities

Major equipment and structures in the Bayonne Pumping and Transmission Facilities include the intercepting chamber, preliminary facilities in the Screenings and Grit Removal Building (mechanical screens and screenings handling and disposal facilities; forced vortex type degritter, turbine grit pump, grit washer and classifier, and grit disposal facilities); and in the modified Pump Station portion of the existing Operations Building are located the Raw Wastewater Pumps; mechanical screen and screenings handling facilities for the storm flow; Storm Flow Pumps and controls; Raw Water Pumps discharge force main, Universal Venturi Tube and flow signal transmission to the flow receiver, and the 36-in. transmission line to the PVSC treatment plant. Each Storm Flow pump discharges into its dedicated existing vertical discharge chute and overflow weir and into the existing horizontal discharge channel; storm flow meter; 54-in. Storm Flow effluent pipe connection from the influent flume which discharges into the effluent channel of

the existing primary settling tanks, and exits the tanks into an existing 68 x 68-in. outfall to Kill van Kull.

1.6.3 Site Plan

The entrance to the Bayonne work site is on Oak Street. A site plan is shown on Figure 1-2.

1.6.4 Flow Diagram

A flow diagram of the Bayonne Pumping and Transmission Facilities at the existing Bayonne plant site is shown on Figure 1-3.

1.6.5 Hydraulic Profile

Plate 1 in the pocket at the back of this Manual shows the hydraulic profile of the Bayonne Pumping and Transmission Facilities and its continuation in Jersey City facilities to the PVSC Treatment Plant in Newark, New Jersey.

1.6.6 Major Bayonne Pumping/Transmission Facilities Equipment Items

Intercepting Chamber

No. of Units	1
Maximum Combined flow to Unit	40.0 mgd
Max Sanitary Flow	17.6 mgd
Max Storm Flow	22.4 mgd

Mechanical Bar Screens (Specification Section 15.9)

	Sanitary Flow Screening & Grit Removal Bldg.	Storm Flow Pump Pump Station Operations Bldg.
Number of Units	2	1
Model	HR200Z	HR320Z
Side Frames, Width	17.5 in.	21.66 in.
Bars, Size	2-1/2 x 3/8-in.	2-1/2 x 3/8-in.
Rake Shelf Depth	10 in.	12.5 in.

FIGURE 1 - 2

SITE PLAN

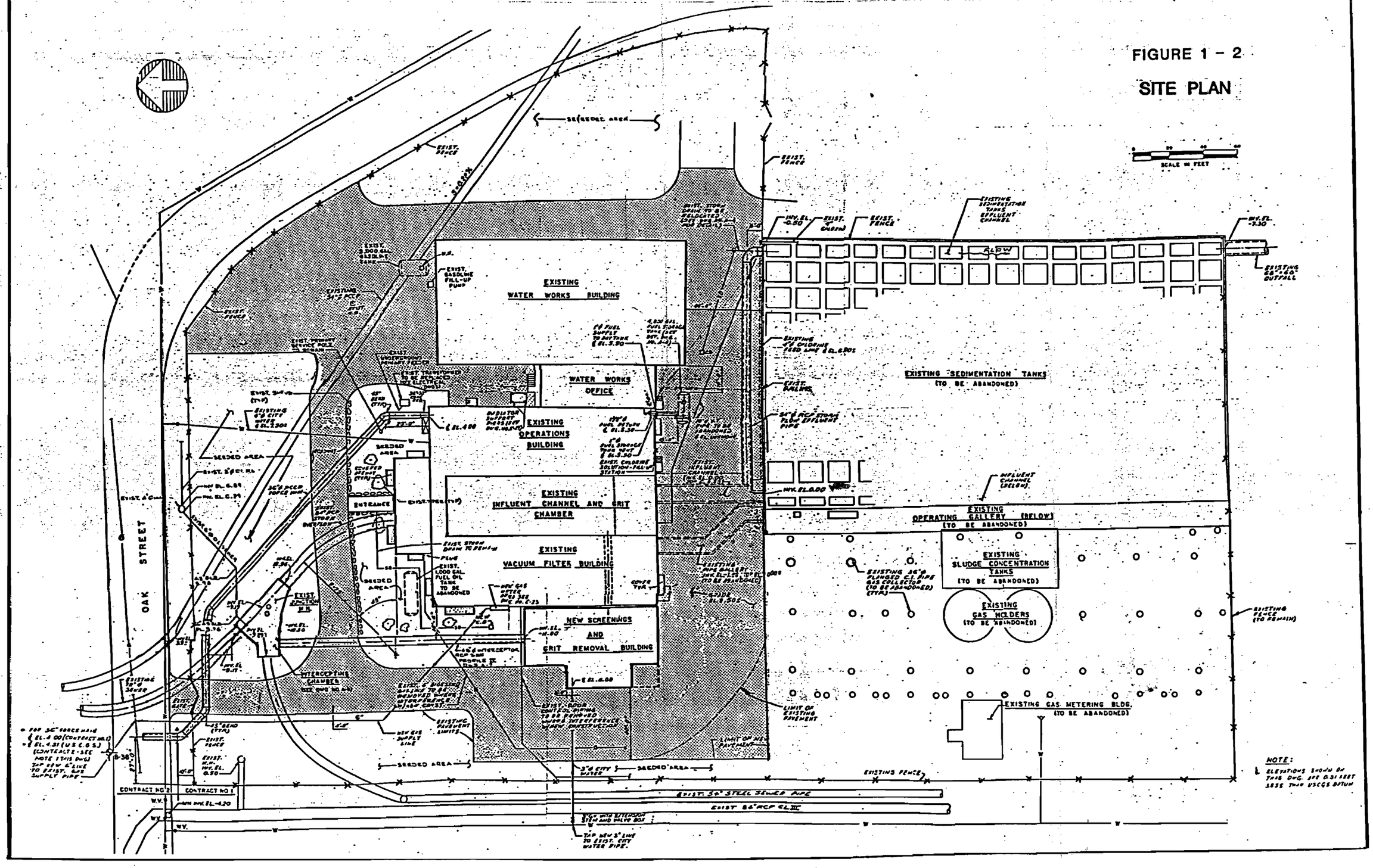
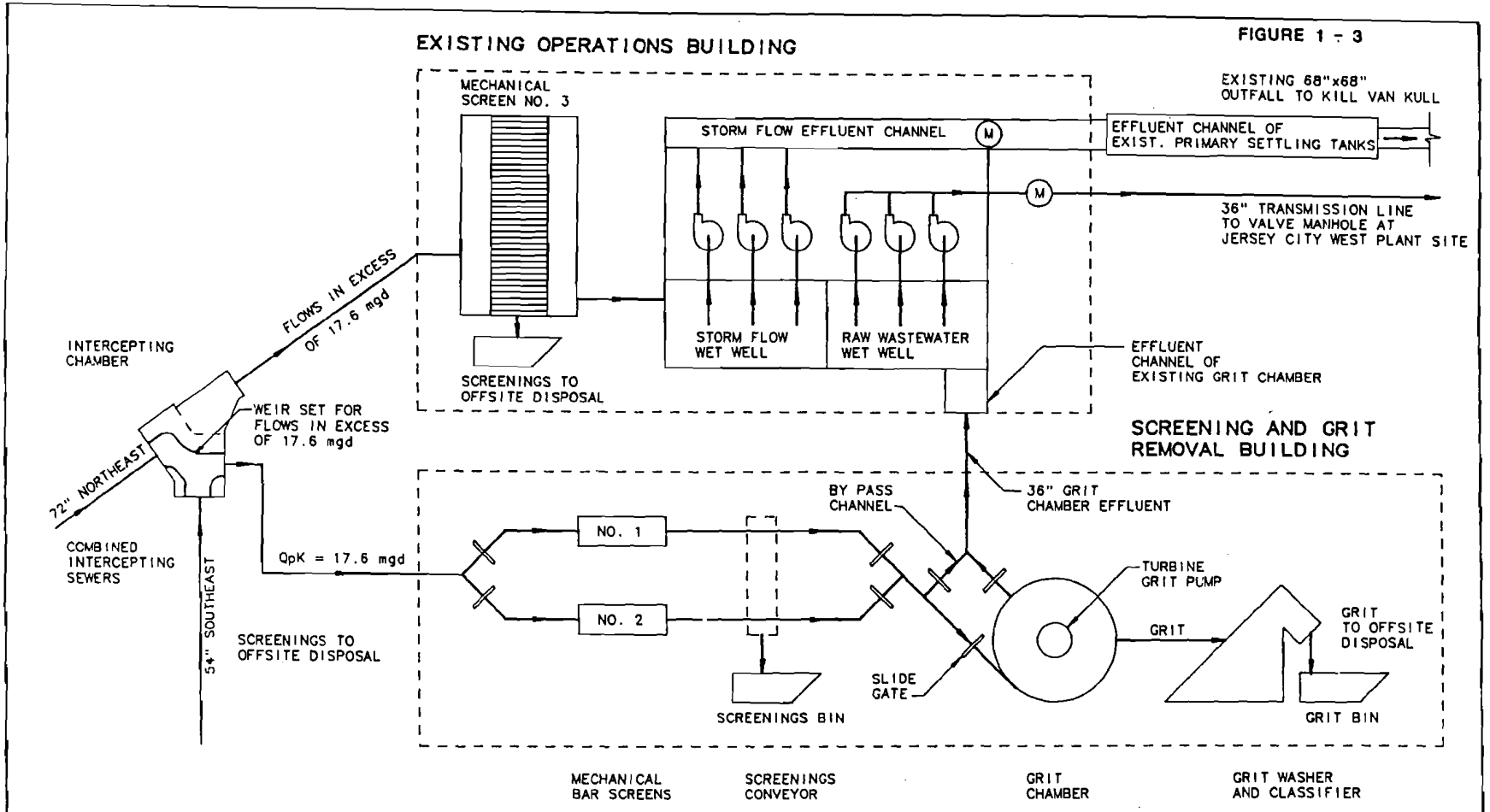


FIGURE 1 - 3



SCHEMATIC FLOW DIAGRAM

BAYONNE PUMPING / TRANSMISSION FACILITIES

Mechanical Bar Screens (continued)

	Sanitary Flow Screening & Grit Removal Bldg.	Storm Flow Pump Station Operations Bldg.
Channel Design		
Width	5 ft-0 in.	7 ft-0 in.
Depth	6 ft-0 in.	13 ft-6 in.
Water Depth	2 ft-9 in.	6 ft-3 in.
Distance between floors	17 ft-0 in.	15 ft-0 in.
Door Opening above floor	3 ft-0 in.	3 ft-0 in.
Clear space between bars	0 ft-3/4 in.	0 ft-1.5 in.
Bar rack height	3 ft-6 in.	6 ft-11 in.
Screen Driver Motor HP	2	5
Wiper	Counterweighted	Motorized - 3/4 HP
Clearance	21 in.	24 in.
Bearings	Sealed	Sealed

PVC coated control stations, 40 mil thick.

Manufacturer: Hycor Corporation
Lake Bluff, Illinois 60044

Forced Vortex Grit Chamber (Specification Section 15.10)

No. of Units	1
Unit Capacity	20 mgd
Unit Dimensions	
Diameter	16 ft-0 in.
Depth	3 ft-7 in.
Grit Storage Hopper	
Diameter	4 ft-11 in.
Depth	3 ft-7 in.
Impeller Drive Unit (Gear Motor and Gear Head)	3/4 HP explosionproof
Grit Pump, Vertical, close coupled	
Capacity	175 gpm
Total Dynamic Head (TDH)	35 ft
Motor	10 HP explosionproof

Manufacturer: Jones & Atwood
Libertyville, IL 60045

Vacuum Priming System for Degritting the Grit Storage Hopper

Air Compressor, Model TA-6102 Thomas Industries Inc.	2.5 CFM @ 100 psig
Motor HP	3/4
Vacuum Pump, Model 60	2.11 CFM @ 58 psi feed pressure
Maximum vacuum	- 85 k Pa (85%)

Grit Conveyor/Classifier (Specification Section 15.10

Screw Size	12 in.
Screw Length	20 ft-0 in.
Screw Drive	1 HP TEFC
Capacity	175 gpm
Grit Feed Pipe Size	4 in.
Organics/Water Return Pipe Size	6 in.

Raw Wastewater Pumps (Specification Section 15.5)

No. of Units	3
Designation	RWW-1, RWW-2, RWW-3
Type	Vertical, dry pit, centrifugal
Size and type	12 MNV-24 FR7H
Rated Capacity	6110 gpm
Total Dynamic Head	123 ft
Motor HP	250
Rated Pump Speed	875 rpm
Motor Controllers	2-variable speed (2:1) 3-constant speed
Impeller Diameter	23.82 in.
Pump Manufacturer:	Worthington Pump Dresser Pump Division Dresser Industries, Inc. Fairfield, NJ 07006

Storm Flow Pumps (Specification Section 15.5)

No. of Units	3
Designation	STF-1, STF-2, STF-3
Type	Vertical, dry pit, centrifugal
Size and Type	20 MNZ-24 FR 7L
Dated Capacity	9,370 gpm
Total Dynamic Head	31 ft
Motor HP	150
Rated Pump Speed	585 rpm
Motor Controllers	2-2 speed (585/400) (new) 1- variable speed (2:1) (existing)

Storm Flow Pumps (Specification Section 15.5) (continued)

Manufacturer: Worthington Pump
Dresser Pump Division
Dresser Industries, Inc.
Fairfield, NJ 07006

Storm Flow Wet Well Drain Pump (Specification Section 15.5)

No. of Units	1
Designation	SUBM-1
Type	Submersible
Model No.	FA 101
Capacity	250 gpm
Total Dynamic Head	15 ft
Motor HP	5.4
Pump and Motor Speed	1740 rpm
Motor Controller	Float Operated
Manufacturer: Davis/EMU Thomasville, Georgia 31792	

Duplex Sump Pumps (Specification Section 15.5)

No. of Duplex Units	2
Designation	SP-1 + SP-2, SP-3 + SP-4
Type	Vertical, wet pit, centrifugal
Model No. and Type	2SA Model 418A
Capacity	75 gpm
Total Dynamic Head	35 ft
Motor HP	1.5
Motor and Pump Speed	1750 rpm
Size of Pit	30 x 30-in.
Depth of Pit	46.5 in.
Size of Pit Cover	34 x 34-in.
Motor Controller	Float Operated
Manufacturer: Allied Pump Corporation Hoboken, NJ 07030	

Simplex Sump Pump (Specification Section 15.5)

No. of Simplex Units	1
Designation	SP-5
Type	Vertical, wet pit, centrifugal
Model No.	25A Model 418A
Capacity	75 gpm
Total Dynamic Head	35 ft
Motor HP	1.5
Motor and Pump Speed	1750 rpm
Size of Pit	30 x 30-in.
Size of Pit Cover	34 x 34-in.

Simplex Sump Pump (Specification Section 15.5) (continued)

Motor Controller	Float Operated
Manufacturer: Allied Pump Corporation Hoboken, NJ 07030	

Disconnected (Seal) Water Supply Pumps (Specification Section 15.5)

No. of Units	2
Designation	DWS-1, DWS-2
Type	Vertical, Close Coupled, 4 Stage Regenerative Turbine
Model No.	J100E
Capacity	30 gpm
Total Dynamic Head	206 ft
Motor HP	3
Pump and Motor Speed	3500 rpm
Seal Water Storage Tank Capacity	100 gal
Motor Control	Constant Speed, Continuous
Manufacturer: Peerless Pump Indianapolis, Indiana 46206	

Hydraulic Air/Oil Accumulator Components
(Specification Section (15.3)

Size of Unit	LP-100
Capacity of ASME Pressure Vessel	100 gal
Air Compressors, 2 SCFM @ 150 psig	2 Units
Compressor Drives	1 HP
Oil Pumps, 5 GPM	2 Units
Oil Pump Drive	1 HP
Electrical Control Cabinet	1
Manufacturer: Henry Pratt Company Aurora, Illinois	

Engine Generator Set (Specification Section 15.7)

Diesel Engine:

Manufacturer	Caterpillar
Model	3512
Operating Speed	1800 rpm
No. of Cylinders	12
Cycle	4 Stroke
Bore	6.7 in.
Stroke	7.5 in.
Piston Displacement	3158 cu in.
Compression ratio	16.2 to 1
Min. rating	1543 HP
Aspiration	Turbocharged-aftercooled
Engine cooling	Water Jacket Heat Exchanger

Engine Generator Set (Specification Section 15.7) (continued)

Heat Exchanger Manufacturer:	Perfex Model X-850-23 NTW
Heat Exchanger	25, 55, 400 Btu/hr

Generator:

Manufacturer	Caterpillar
Capacity	1100 KW
Electric power generated	277/480 V, 3 phase, 60 Hz
Operating speed	1800 cpm
Engine silencer	Maxim, 12 in., Type M-41

Underground Fuel Oil Tank (Specification Section 15.4)

Manufacturer	Xerxes Corporation Minneapolis, MN 55431
Capacity	4000 gal (4,150 gal actual)
Type	Fiberglass double wall
Dimensions	6 ft-3 1/2 in. Diam x 21 ft-11 1/8 in. long
No. of Manways	2
Piping: Exterior (buried)	Fibercast Dualcast double containment
Interior	Sch 40 steel pipe
Leak Detection System	Ronan Series X765
Tank Gauging System	Pneumercator Model P-14 Wall mounted, liquid level guage

Flow Metering System (Specification Section 15.6)

Primary Flow Meter Element:	
BIF Model 189 SBF II	
Pipe Size; Throat Size	30 in.; 17.4 in.
Capacity	20 mgd
Differential at 20 mgd	61 in.
Head loss at 20 mgd	4.9 in.
Explosionproof Indicating Electronic Transmitter	Model 251-19
Electronic Indicating Recorder Totalizer	Model 259-21
Totalizer	Electromechanical 7 digit no reset
Surge Arrestor	
BIF Sludge Manometer (Inverted U-Tube)	Model 22 DA40WM Meriam Instrument Cleveland, Ohio 44102

Compressed Air Equipment (Specification Section 15.11)

No. of Units	2
No. of Stages per Unit	2
Total Capacity per Unit	11.8 scfm
Piston Displacement	14.6 cfm
Compressor speed	497 rpm
Drive	V-Belt
Compressor Motor	3 HP, TEFC
Motor Speed	1800 rpm
ASME Air Receiver (tank) capacity	80 gal
Maximum working pressure	200 psig
Configuration	Horizontal

Manufacturer: Champion Pneumatic Co. Inc.
Princeton, IL 61356

Heating and Ventilating Units (Specification Section 15.12)

Manufacturer of all HV Units: King/National Air Systems
Owatonna, MN 55060

HV-1

Capacity	4000 cfm @ 3/4 in. SP
Heating Capacity, Output	350,000 Btu/hr
Type of Fuel	Natural Gas
Supply Fan Motor	3 HP

HV-2

Capacity	10,000 CFM
Heating Capacity, Output	850,000 Btu/hr
Type of Fuel	Natural Gas
Supply Fan Motor	5 HP
Combustion Air Fan Motor	1/2 HP

HV-3, HV-5, HV-8, HV-9

Capacity	8000 CFM
Heating Capacity, Output	650,000 Btu/hr
Type of Fuel	Natural Gas
Supply Fan Motor	3 HP
Combustion Air Fan Motor	1/3 HP

HV-6

Capacity	8000 CFM
Heating Capacity, Output	650,000 Btu/hr
Type of Fuel	Natural Gas
Supply Fan Motor	3 HP
Combustion Air Fan Motor	1/3 HP

HV-4

Capacity	2460 CFM
Heating Capacity, Output	200,000 Btu/hr
Type of Fuel	Natural Gas
Supply Fan Motor	1.5 HP

HV-7

Capacity	8000 cfm
Heating Capacity	650,000 Btu/hr
Type of Fuel	Natural Gas
Supply Fan Motor	3 HP
Combustion Air Fan Motor	1/3 HP

Fans (Specification Section 15.12)

TF-1

Capacity	5000 cfm
Motor	1/2 HP
Construction	Explosionproof

TF-2

Capacity	1400 cfm
Motor	1/2 HP
Construction	Explosionproof

TF-3

Capacity	1400 cfm
Motor	1/3 HP
Construction	Explosionproof

TF-4

Capacity	2000 cfm
Motor	1/4 HP
Construction	Explosionproof

TF-5

Capacity	4000 cfm
Motor	1/2 HP
Construction	Explosionproof

VF-1

Capacity	13,000 cfm
Motor	7.5 HP
Construction	Explosionproof

Fans (Specification Section 15.12) (continued)

EF-1

Capacity	5000 cfm
Motor	1/2 HP
Catalog No.	300 C5B

EF-2

Capacity	510 cfm
Motor	1/6 HP
Catalog No.	120 C 10 D

EF-3

Capacity	670 cfm
Motor	1/6 HP
Catalog No.	120 C 10 D

EF-4

Capacity	620 cfm
Motor	1/6 HP
Catalog No.	120 C 10 D

EF-5

Capacity	660 cfm
Motor	1/6 HP
Catalog No.	120 C 10 D

EF-6, EF-7, EF-8, EF-9, EF-10, EF-11

Capacity	8000 cfm
Motor	3/4 HP
Catalog No.	365 C 6 B

Manufacturer of all Fans: Loren Cook Company
Springfield, MO

Packaged Gas-Fired Boiler/Burner Unit (Specification Section 15.12)

No. of Units	1
Designation	B-1
Water Boiler Model No.	G-200-W-6
Input MBH	187.5
Output MBH	146.0
Type of Fuel	Natural Gas
No. of Booster Pumps	2
Capacity of Booster Pump	13 gpm

Packaged Gas-Fired Boiler/Burner Unit (Specification Section 15.12) (continued)

Motor 1/6 HP

Boiler Manufacturer: H.B. Smith
Westfield, MA 01086

Booster Pump Manufacturer: Bell & Gossett
Morton Grove IL 60053

CHAPTER 2

PERMITS AND STANDARDS

2.1 ADMINISTRATIVE CONSENT ORDER

The City of Bayonne and the New Jersey Department of Environmental Protection executed an Administrative Consent Order on 25 September 1987 which reflects agreements reached between representatives of the City of Bayonne and the New Jersey Department of Environmental Protection. The findings essentially state:

- NJPDES Permit No. NJ0025836, issued to Bayonne effective March 1, 1986 authorized the discharge of pollutants from the existing Bayonne Sewage Treatment Plant to the Kill Van Kull. The permit is scheduled to expire on February 28, 1991. Part III of the Permit required that the existing STP meet secondary effluent limitations on the effective date of the Permit (March 1, 1986).

- Bayonne recognized that it was in its best interest and in the best interest of the public to resolve the matter by:

  a. Abandoning the Bayonne STP and diverting the flow to the Passaic Valley Sewerage Commissioners (PVSC) secondary treatment facility;

  b. Submitting and implementing a short term residuals management plan.

- Construction of the above sewerage system by July 1, 1988 was not feasible.

- Completion of construction of the above sewerage system scheduled for June 1, 1990.

- Cease all dry weather discharge from the existing STP to the Kill Van Kull and submit an application for a major modification to the NJPDES permit for the STP by July 1, 1990.

2.2 REQUIREMENTS FOR PLANT CLOSURE

Upon the completion and acceptance of the construction of the two contracts implementing the agreements reached and embodied in the Administrative Consent Order, the existing STP will be abandoned and discharge of dry weather (sanitary) flow to the Kill Van Kull will cease. There will accordingly be no further requirement for a NJPDES permit for the STP.

Accordingly, the City of Bayonne will notify the New Jersey Bureau of Regional Enforcement, Division of Water Resources, within sixty (60) days prior to taking the Bayonne STP out of service, of the anticipated date of cessation of discharge. Enforcement personnel will inspect the site to verify cessation of discharge.

Additionally, the City of Bayonne will:

- Register with the Bureau of Underground Storage Tanks all sludge storage/holding tanks which are more than 10% underground.
- Certify in writing to the Bureau of Municipal Discharge Permits, Bureau of Regional Enforcement the following concerning planned closure activities:
  a. Date the facility will cease operation
  b. Date of completion of operations to seal the effluent and influent lines
  c. Plans for final disposition of the physical facilities, including all treatment units, outfall line, and all mechanical and electrical equipment and piping
  d. Execute other requirements pertinent to the closure of the Bayonne STP
  e. Execute a Certification of Closure form
  f. Execute an Application for Exemption of the NJPDES Permit

CHAPTER 3

BAYONNE PUMPING/TRANSMISSION FACILITIES

3.1 GENERAL

The Bayonne Pumping/Transmission Facilities are presented below essentially in the order of wastewater flow through them, as follows:

SECTION	FACILITY
3.2	Intercepting Chamber
3.3	Facilities in Screenings and Grit Removal
3.4	Facilities in Operations Building

This chapter provides the following information:

- Description of the wastewater handling facility
- An outline of facility operation and control
- Information on start-up
- Alternate Modes of operation

3.2 INTERCEPTING CHAMBER (FIGURE 3-1)

3.2.1 Description

The Intercepting Chamber serves to limit the wastewater flow to be screened, degritted, and then pumped from the Raw Wastewater wet well into the transmission main for ultimate delivery to the PVSC Treatment Plant for treatment and disposal. A substantial modification to the existing Intercepting Chamber permits diversion of the combined flows from the 72-in. Northeast Interceptor and

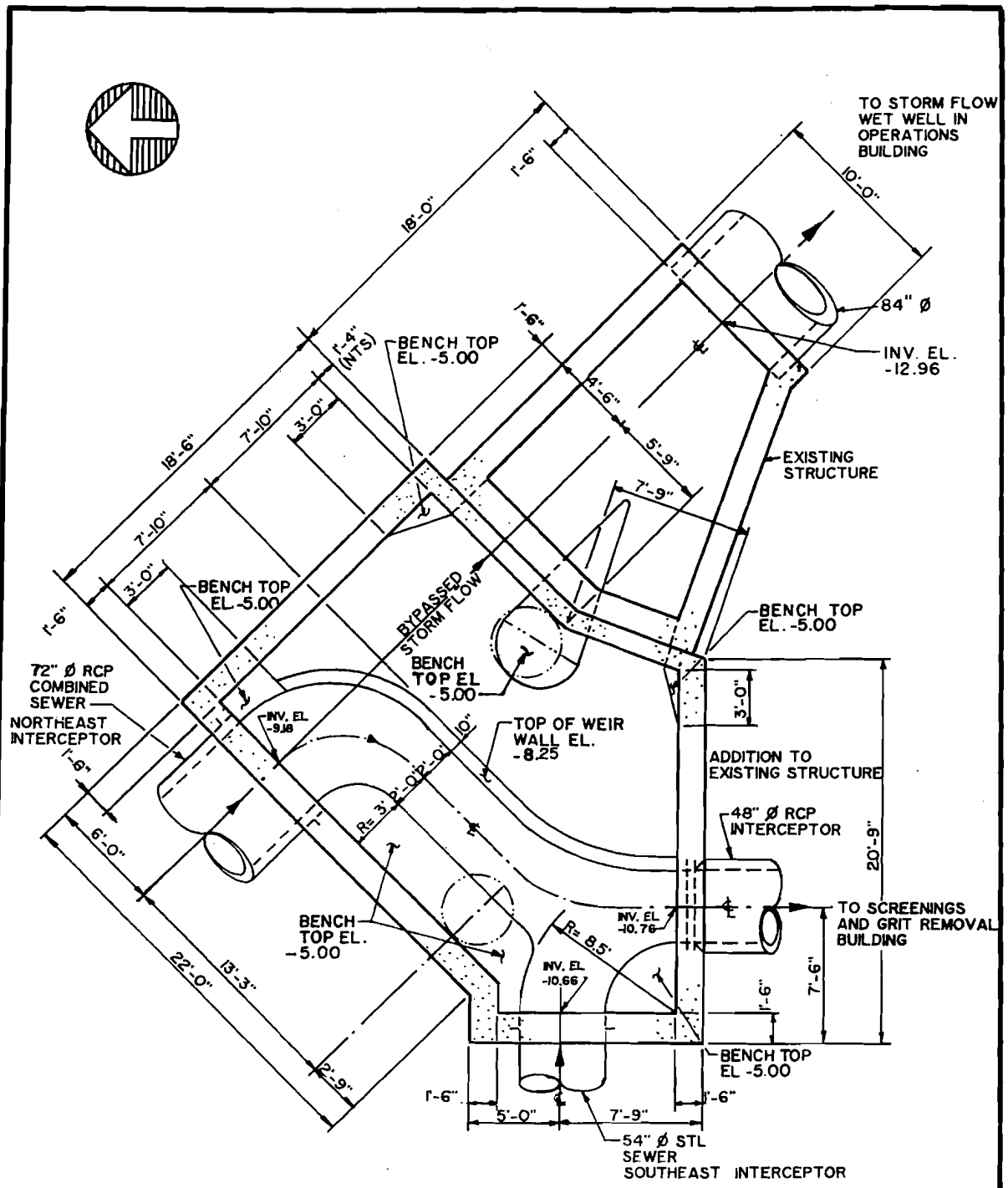


FIGURE 3-1

INTERCEPTING CHAMBER

54-in. Southeast Interceptor into a 48-in. gravity sewer to the new Screenings and Grit Removal Building. The 72-in. Northeast Interceptor enters the modified Intercepting Chamber at Inv. El. -9.18; the Southeast Interceptor enters at Inv. El. -9.89; the combined flows enter the 48-in. interceptor to the Screenings and Grit Removal Building at Inv. El. -10.76. Along the eastern edge of the 4 ft wide diversion channel is a 10 in. wide weir wall having a top (crest) elevation of -8.25. This permits all combined wastewater flows up to 17.6 mgd to flow to the 48-in. interceptor to the Screenings and Grit Removal Building. Flows in excess of 17.6 mgd overflow the weir and enter the portion of the existing Intercepting Chamber having an outlet at Inv. El. -9.10 to an existing 84-in. RCP sewer draining to the newly formed Storm Flow wet well in the existing operations building. The roof of the existing Intercepting Chamber is at grade while the roof of the added portion is at El. -2.75, with two precast concrete manhole accesses to the chamber below.

3.2.2 Maintenance

There area no moving parts in the Intercepting Chamber. Maintenance consists of daily inspection of the chamber to see that the flow channels and weir wall are kept clear of debris or other obstruction so that continuity or uninterrupted wastewater flow is maintained. A start-up of a storm flow pump during dry weather warrants an inspection of the Intercepting Chamber for obstruction of the normal flow channels by debris. If debris is found to interfere with normal flow in the channels, the debris should be removed and the channels cleaned to restore them to normal dry weather conditions. Vigilance during periods of rainfall is especially required to make certain that the flow channels and weir wall are kept clear of obstructions.

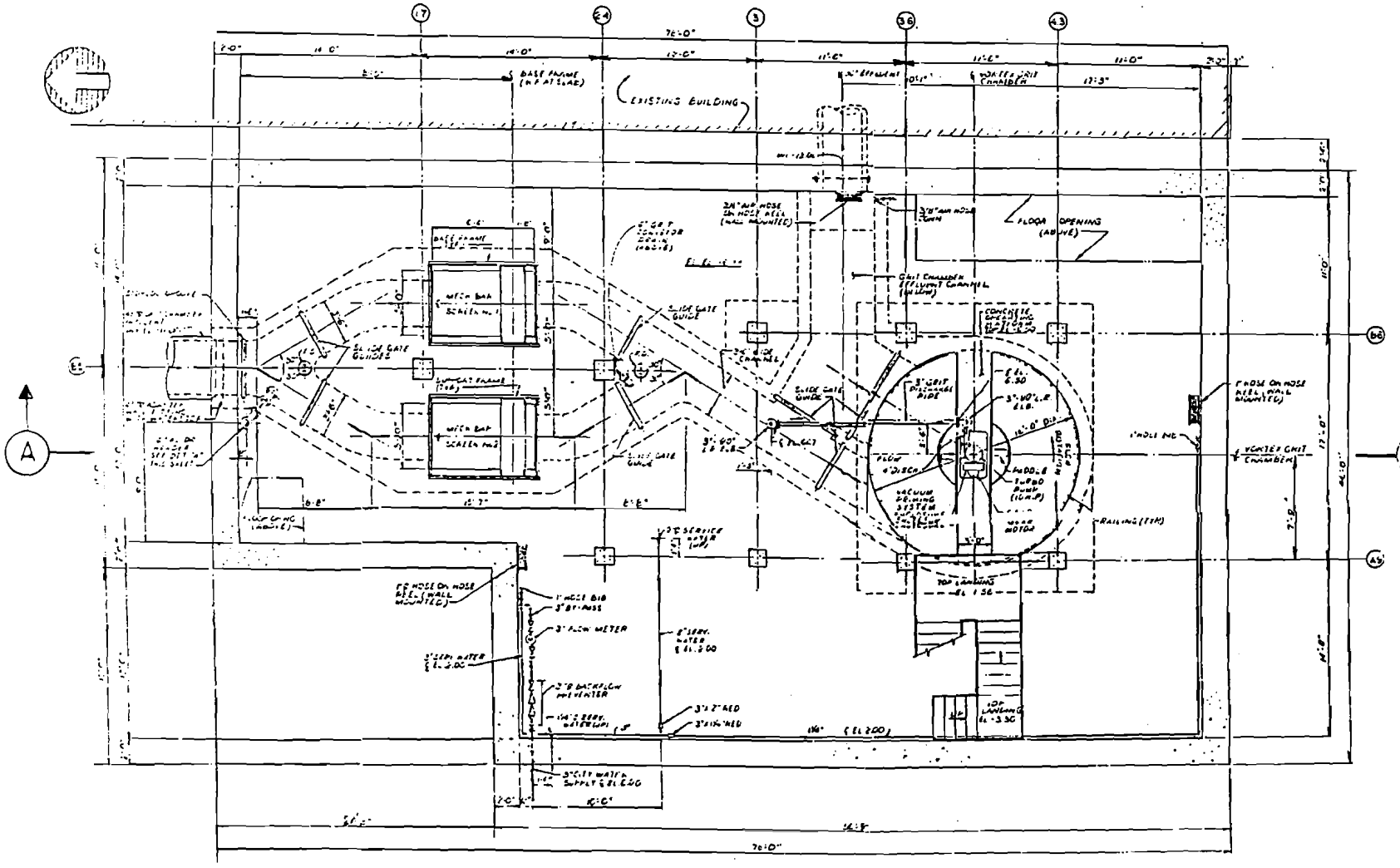
3.3 FACILITIES IN SCREENINGS AND GRIT REMOVAL BUILDING

3.3.1 General

The Screenings and Grit Removal Building is a new structure constructed at the west wall of the existing Operations Building. The new building is supported on piles and has two levels: a lower level having the operating floor at El. -6.33 and a main level having a floor at El. 10.67. At the lower level are the screen channels with the rack portions of the mechanical screens and the forced vortex grit chamber, including the turbine grit pump (see Figure 3-2). On the upper or main floor level are located: the housings for the mechanical screens, including the drives for the rakes; the horizontal belt conveyor to transport the screenings to the container in the Dumpster or Container Room; the grit concentrator; the grit washer, dewatering screw conveyor and screw conveyor drive. Both the horizontal screenings belt conveyors and the dewatering screw penetrate the west wall of the Screenings and Grit Removal Building to discharge the screenings and dewatered grit into the 2 cu ft containers in the Container Room. Entry into the building at the main floor is via exterior Door No. 5 at the south end of the Container or Dumpster Room. Across the platform from Door No. 5 is Door No. 6 which leads on to the Dumpster or Container Room; Door No. 4 provides entry for personnel on to the main floor of the Screenings and Grit Removal Building; access to the building for vehicles is via overhead Rolling Door No. 8 at the northwest corner; vehicular access to the Dumpster or Container Room is via overhead Rolling Door No. 7 at the north wall. The Electrical Room is at the Main Floor level with exterior access via Door No. 3 at the south wall of the building. Exterior Door No. 2 at the south wall of the building provides a second means of access and egress to the lower level of the Screenings and Grit Removal Building. The southeast corner of the building contains a part of the Odor Control Room. Door No. 1 on the Main Floor level provides

FIGURE 3-2

SCREENINGS AND GRIT REMOVAL BLDG



PLAN AT EL. – 6.33

SCALE IN FEET

access to this portion. The Odor Control Room is in the existing Operations Building and will be discussed in a later section of this manual. Entry into the existing Operations Building from the Main Floor of the Screenings and Grit Removal Building is via overhead Door No. 9. See Figure 3.3.

3.3.2 Screening Facilities

Flows from the 48-in. RCP sewer from the Intercepting Chamber enters the 4 ft wide influent channel at Inv. El. -11.00 in the lower level of the Screenings and Grit Removal Building. A stop log groove in the channel controls the influent flow. The operating floor for the lower level is at El. -6.50. The 4 ft wide channel divides into two 3 ft-6 in. wide channels, each controlled by a slide gate. The east channel contains Mechanical Bar Screen No. 1; the west channel contains Mechanical Bar Screen No. 2. The channel width at the bar screen is 5 ft-0 in. to accommodate the bar rack and raking mechanism. The effluent channel from each mechanical bar screen is provided with a slide gate control for isolation purposes so that maintenance work may be performed on one mechanical screen.

3.3.2.1 Mechanical Bar Screens

The dimensional information and equipment summary for the Model HR200Z Hycor mechanical bar screens in the Screenings and Grit Removal Building are given in subsection 1.6.6 of Chapter 1.

The Mechanical Bar Screen Mechanism

The bar rack for each screen consists of 2 1/2 x 3/8-in. rectangular mild steel bars assembled to provide the 3/4-in. clear spacing. The bars are straight and inclined 85° above the horizontal and span the full 5 ft-0 in. width of the channel. The bar rack is

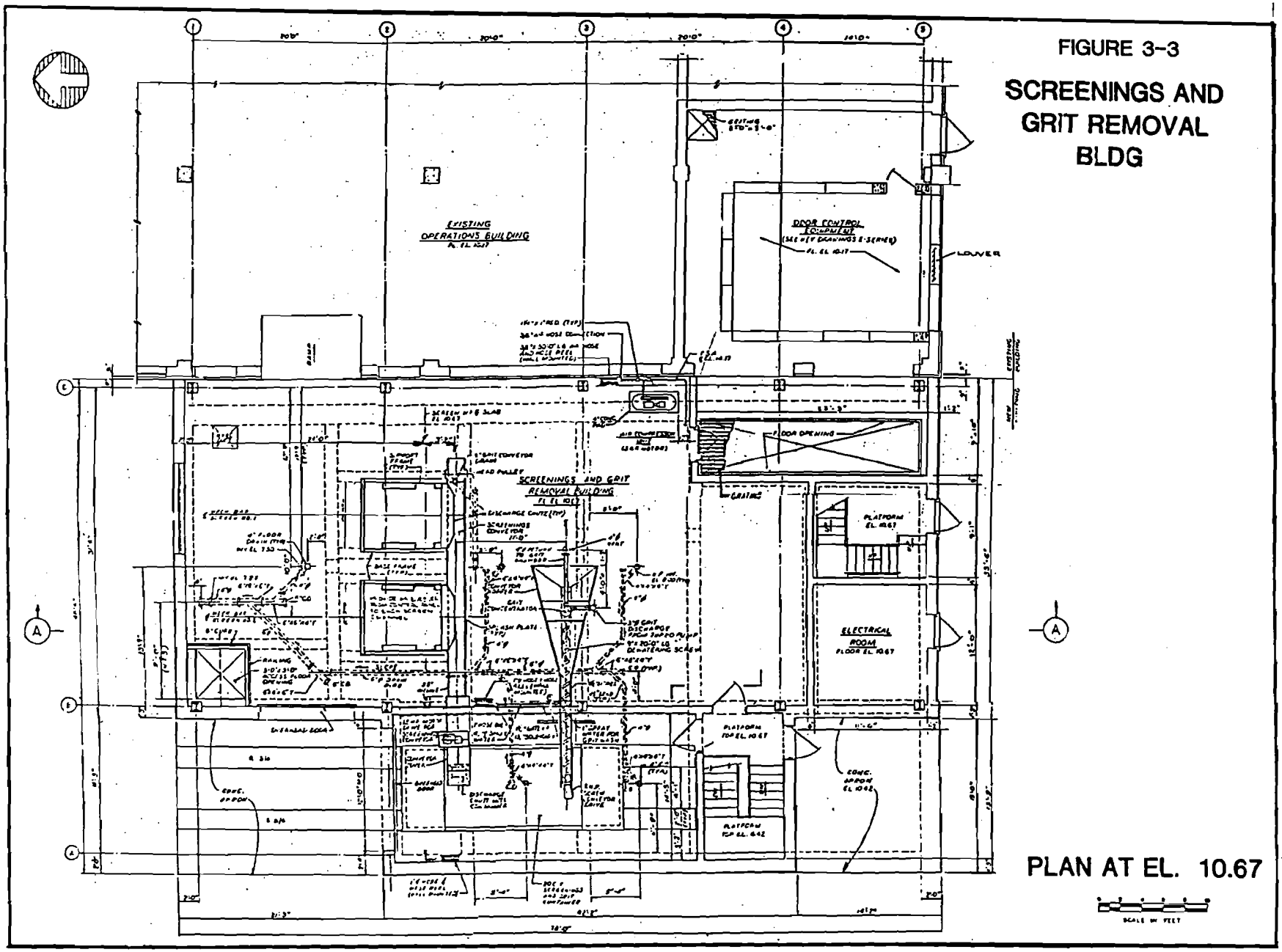


FIGURE 3-3
SCREENINGS AND GRIT REMOVAL BLDG
EXISTING OPERATIONS BUILDING
DOOR CONTROL EQUIPMENT
LOUVER
SCREENINGS AND GRIT REMOVAL BUILDING
FL EL 10.67
FLOOR OPENING
GRATING
PLATFORM EL. 10.67
ELECTRICAL ROOM FLOOR EL. 10.67
PLATFORM TOP EL. 10.67
PLATFORM TOP EL. 6.42
CONC. APRON EL. 10.42
PLAN AT EL. 10.67

supplied in 6-in. wide sections to allow for partial replacement or repair of the bar rack in the event of damage due to impact of large objects occasionally encountered in the channel. Each bar rack is attached at the bottom to the toe plate which is grouted in the channel floor recess, and at the top, to the dead plate. The 1/4-in. thick mild steel dead plate extends from the bar rack to the point of discharge.

The screening mechanism consists of the guide frame assembly containing the cog rails and guide channels, the rake assembly containing the guide bearings, log wheels and drive components, and the counterweighted wiper assembly.

The guide frames are 3/8 in. thick A36 steel plate construction formed to a channel section and suitably reinforced to support the required loads. The guide frames are securely fastened at both the top of the channel and at the operating floor through the use of a support frame made up of structural shapes having a thickness of 3/8 in.

A cog rail, designed to mesh with a cog wheel of hardened steel, is installed in each guide frame. The cog rail consists of sections which are individually removable for maintenance or replacement. Cog rail sections are reversible. Minimum length of each section is 11-1/2 in.

The debris is removed from the bar rack by a stainless steel rake assembly designed to mesh with the bar rack. The rake assembly consists of a shelf and tines (nominal 10 in. depth) attached to the rake arm. The rake has the capability of lifting a load of 75 lbs per ft of rake width per cycle.

The rake arm is supported and driven by the motor carriage assembly. The main drive shaft, mounted to the motor carriage assembly,

has a cog wheel attached at each end. The cog wheels rotate on and are supported by the cog rail.

The rake arm is held in a fixed position relative to the bar rack by a prestressed heavy duty rubber compression spring. Bronze wear shoes, located at each end of the rake shelf, insure proper depth engagement of the rake teeth into the bar rack, maintain critical clearance between rake teeth and dead plate and guide the rake shelf through the discharge operation. Stainless steel wear bars, upon which the wear shoes ride, guide the rake arm from initial rack engagement through solids discharge.

The mechanism is so designed that the rake can climb over and be free of an object encountered that cannot be removed. After the object has been bypassed, the rake again meshes with and continues to clean the bar rack. Positive overload protection against an object which is too large to be bypassed is provided by mounting the drive on a spring restrained rotating support. If the load on the rake carriage mechanism increases beyond a predetermined value, the drive linkage causes a limit switch to stop the drive. When the overload condition has been corrected, the drive is again made to operate by manual push button activation.

The bar screen mechanism supplied is designed to be reversed by manually operated electrical controls. A spring loaded switch provided to allow the operator to reverse the rake assembly free of the object which has caused the overload. The mechanism is capable of being reversed completely out of the channel to allow for unobstructed removal of the object by other means.

Accumulated debris is removed by a pivoting wiper arm. The wiper arm is designed to allow efficient cleaning of the rake on each pass and is cushioned during return to rest by shock absorbers. The wiper arm rests on four urethane pads while the screen is in-

active. The screenings removed by the wiper arm fall on to the discharge chute which is sloped so that the screenings discharge on to the horizontal belt conveyor.

Drive Unit. The 2 HP, TEFC brake electrical drive motor having a service factor of 1.00 operates on 460 volt, 3 phase, 60 Hz electric service, and is of explosionproof construction. The gearmotor is of the helical bevel type with a rugged cast iron housing and has a service factor of 1.25. The motor contains an integral spring loaded electromechanical disc brake released by energization of the operating coils simultaneously with starting the motor. This integral brake motor gearbox unit is by Eurodrive. All functions of cleaning, lifting, and dumping are done without stopping or reversing the motor.

Permanent or intermittently wetted parts are constructed of 304 stainless steel for corrosion protection. These parts include, but are not limited to, rake support arm, rake, deadplate and bar rack. Other parts are painted.

Controls.

The following controls are provided for each screen:

1. A time clock that provides 5 minute control increments as manually set for variations in operation over a 24 hour operating period.

2. A pneumatic differential bubbler controller that automatically controls the screen operation as a function of channel liquid level. The controller senses the headloss, in inches, through the bar rack. When a preset headloss is reached, it automatically starts the carriage rake to remove accumulated solids on the bar rack. The sensor continues to operate until the headloss is reduced to a preset operating liquid level.

3. The controls are furnished in a NEMA 12 enclosure suitable for wall mounting.

4. A local push-button station with lockout is provided at the screen for maintenance purposes. The push-button station is a NEMA 7 enclosure and is located at both the upper and lower elevations.

5. The screen is supplied with one home limit switch and one overload protection switch. The screen unit is prewired to a common terminal box for ease of wiring connections.

6. Spare Parts. The following spare parts are provided for each unit:

   One (1) set of cog wheels.
   One (1) torque overload switch.
   One (1) end of travel proximity switch.
   One (1) wiper blade.
   Five (5) gear rack sections.

3.2.2 Maintenance

The recommended oil and grease for use with the Eurodrive gear units are given in the O&M manual for the Hycor "Grabber Automatic Bar Screen".

The following maintenance schedule is suggested by the manufacturer.

1. All oil levels and oil quality must be checked every 5000 hours.

   If the oil is contaminated, burned or waxed, change the oil immediately and flush out the box if necessary.

2. Under normal operating conditions an oil change every 10,000 hours of operation or 2 years is recommended.

3. When a synthetic oil is used change the oil every 40,000 hours or 4 years.

4. Grease packed bearings must be cleaned and greased every 10,000 hours. The bearing grease

area must be filled to approximately 1/3 of the available area to avoid overheating of the bearing.

The above suggestions are however, subject to change if the units are running in high temperature, high humidity or corrosive environments. If any of these situations exist the lubricant may have to be changed more frequently.

3.3.3 Horizontal Screenings Belt Conveyor

The screenings conveyor is located on the south side of the mechanical screens with its length running from east to west into the Screenings and Grit Container Room. The equipment consists of one 18-in. Corra-trough conveyor having a horizontal loading section 21 ft-6 in. long, followed by a 12 ft-10 7/6 in. long section inclined at 35°. The equipment is manufactured by Buck - El, Inc. of Murray Hill, NJ. The top of the belt is 32.25-in. above Flr. El. 10.67.

The frame is fabricated from 3 x 1.5-in. x 11 gauge carbon steel tubing. The casing is fabricated from 10 gauge 304 stainless steel while the cover is of 12 gauge 304 stainless steel construction. The splash guards are of 12 gauge galvanized steel construction, as is the discharge chute. The drip pans are fabricated of 12 gauge 304 stainless steel.

The carcass belt, of 18-in. wide Black RMA Grade II, rubber covered, 2-ply nylon is joined by heavy duty plated lacings, with 3-in. high vulcanized black rubber corrugated edging (10-in. nominal net conveying width), and with 3-in. high black rubber cleats on 12-in. centers. The horizontal loading section includes two (2) sets of galvanized splash guards, 12 in. high x 6 ft-0 in. long on both sides of the conveyor in the area of the discharge from the

mechanical screens. The belt conveyor/elevator is provided with 10-in. diameter crowned drum type pulleys, with the head pulley fully lagged; with 2-1/2-in. diameter galvanized steel regreasable idlers on 24-in. centers on the carry run, and a polished stainless steel slider bed, which also serves as a drip pan, on the return run. The unit is powered with a 1.5 HP, 1800 RPM, TEFC Siemens-Allis, 3 Phase, 60 Hz, NEMA design B, Type RGZ, Frame 145T guarded drive via a worm gear reducer and chain and sprockets for a 60 fpm belt speed. The unit is also provided with a motorized belt thumper (cleaner) with its own 1.0 HP, Siemens-Allis, 1200 RPM guarded speed drive; with full ground supports; stainless steel enclosure with 18 x 18-in. doors; frame and supports are commercially sand blasted, all coated with a two part epoxy paint system.

The belt conveyor/elevator is electrically interlocked to operate with the mechanical screen and screenings handling equipment. The conveyor is provided with a zero speed switch off of the tail pulley which is interlocked to sound/indicate an alarm in event of belt breakage.

3.3.4 Screenings Container

The screenings belt conveyor transports the screenings removed by the mechanical screens to the screenings container or bin. Two screenings containers are provided: one for the raw sewage flow screenings, and one for the storm flow screenings. The container for the raw sewage screenings is used in the Screenings and Grit Removal Building. The container for the storm flow screenings is used in the Operations Building. Each container has a capacity of 2 cu yd. The reinforced steel body is 1/4-in. thick, continuously welded, reinforced, and provided with a structural steel base. The containers or hoppers are provided with a castered-base frame, with 2-swivel, 2-rigid casters and 6-in. diameter wheels, and are provided with an entry for a fork lift truck having a fork length of 48-in. and a fork spread of 61-in.

3.3.5 Fork Lift Truck

The fork lift truck is used to transport screenings and dewatered classified grit in the 2 cu yd containers from the Screenings and Grit Container Room to the 20 cu yd container in the yard which is then transported to an approved landfill for off-site disposal. The fork lift truck has a capacity of 15,000 lb at the 24-in. load center. The fork lift truck is a caterpillar Model V150D unit, as manufactured by Caterpillar Inc.

3.3.6 Degritting Facilities

The grit chamber at Bayonne is a size 900 Jeta Grit Trap manufactured by Jones and Attwood, Libertyville, Ilinois. The grit removal system is designed to meet the following:

3.3.6.1 Design Criteria

Flow through the grit chamber MGD
Maximum Peak - 20 M D

Required percentage of grit removal at flow of 20 MGD	- 95% of grit greater than 50 mesh in size
	85% of grit greater than 70 mesh but less than 50 mesh in size
	65% of grit greater than 70 mesh but less than 100 mesh in size

3.3.6.2 Grit Chamber Dimensions & Elevations

Trap Zone	
Diameter	16 ft-0 in.
Depth	10 ft-9 in.
Storage Sump	
Diameter	4 ft-11 in.
Depth	3 ft-7 in.

Grit Chamber Elevations

Operating Walkway	El. - 6.33
Datum Level	El. - 17.08
Storage Sump Floor	El. - 20.66
Max. Water Level	El. - 10.08

3.3.6.3 Grit Equipment

1. 1 x Sub Drive Head
2. 1 x Drive Tube and Impeller Assembly
3. 1 x Grit Suction Pipe
4. 1 x Grit Pump
5. 1 x Grit Cyclone (Grit Concentrator, Centrifugal Separator)
6. 1 x Grit Conveyor
7. Vacuum Prime System
8. Spare Impeller Drive Gear Motor, explosion proof, 1 Rotating Element (Impeller) and 2 sets of casing and seal gaskets for the grit pump
9. Control Panel

3.3.6.4 Grit Removal Equipment (Jeta Grit Trap)

Figures 3-2 and 3-3 show the layout and arrangement of the size 900 Jeta Grit Trap in the Screenings and Grit Removal Building at the Bayonne plant. A bypass channel is provided in event of outage of the grit chamber. During normal operation, with Mechanical Screen No. 2 as standby (not operating), and the Jeta Grit Trap in operation, slide gates SG-3, SG-4, and SG-1 are inserted in their respective guides. If Mechanical Screen No. 1 is in standby or out of service, then SG-1, SG-2 and SG-7 are inserted in their respective guides, and all other slide gates are not inserted. If the grit chamber is out of service as well as Mechanical Screen No. 2, then slide gates SG-3, SG-4, SG-5, and SG-6 are inserted in their respective guides, and the flow screened by Mechanical Screen No. 1

is bypassed to the bypass channel controlled by SG-7, which is removed from its guide.

The Jeta system comprises a rotating impeller mechanism housed within a specially designed tank to give sufficient retention to allow efficient grit collection.

The Jeta Grit Trap has been designed to remove 95% of grit greater than 50 mesh in size; 85% of grit greater than 70 mesh but less than 50 mesh in size; and 65% of grit greater than 70 mesh but less than 100 mesh in size. The design also incorporates several means of grit/organic material classification to achieve a clean dry grit in the final grit collection container.

The method for grit removal and grit/organics classification can be explained by breaking the tank chamber up into two portions. The outer annulus of the tank is quiescent and is not affected by the influence of the rotating impeller. This allows the grit to settle within the 270 degrees of its travel around the grit chamber. The grit falls and hits the conical surface of the concrete chamber. The grit is then forced to spiral downwards towards the classification gap between the rotating impeller and the edge of the grit collection hopper. Any lighter solids that have settled out with the grit will then come under the influence of the rotating impeller blades. The speed of the impeller is set such that the grit is unaffected by the impeller and passes easily through the classification gap. The lighter solids are forced upwards into the central section of the tank.

The central section of the tank is basically under the elevating forces of the rotating impeller. Any lighter solids in the flow are maintained at a high water level, and any solids that manage to settle out with the grit as described above are forced into this central elevating zone.

The impeller is exactly the same diameter as the grit collection hopper and by varying the height of the impeller on the drive tube varying degrees of grit/organics classification can be achieved. The impeller is running at all times.

The impeller has four secondary classification ports cut out immediately behind the impeller blades. As the impeller rotates a pressure differential is created between the front and back face of the blade thus creating an upward flow from the grit collection hopper up through the open ports in the rotating disc. This arrangement has been designed to provide a release for any heavier organic solids that have managed to get past the primary classification gap and so can be ejected by means of the flow induced as described above.

3.3.6.5 Removal of Grit

The grit collected in the grit storage hopper is pumped to the grit concentrator by a vacuum primed vortex grit pump. The pump is mounted on an eductor pipe which runs down the center of the gearhead and drive tube.

A grit eductor tube is positioned in the grit storage chamber and when the grit removal system is activated the vacuum pump control system located in the degritter control panel starts and runs the vacuum pump until the liquid fills the eductor tube and pump volute at which time the liquid makes contact with the liquid level electrode. The electrode will signal the control system to close the priming solenoid valve and also to shut off the vacuum pump. When the vacuum pump stops the grit pump will start and run as long as the operator feels necessary to remove the stored grit. A time delay relay will prevent any short circulating of the grit pump. In addition, a special check valve is installed in the grit dis-

charge line which prevents liquid loss in the grit line and therefore, insures a shorter priming time.

The grit is then pumped to the grit concentrator where the heavier particles (grit) are settled toward the wall and discharged through the apex to a screw conveyor. The finer and lighter particles move with the larger fraction of liquid, out through the vortex finder and back to the inlet side of the grit trap. See Figure 3-4.

The grit from the apex of the grit concentrator discharges into the screw conveyor where final dewatering of the grit takes place. The dry grit discharges into a storage hopper via a small chute.

3.3.6.6 Gear Head Assembly

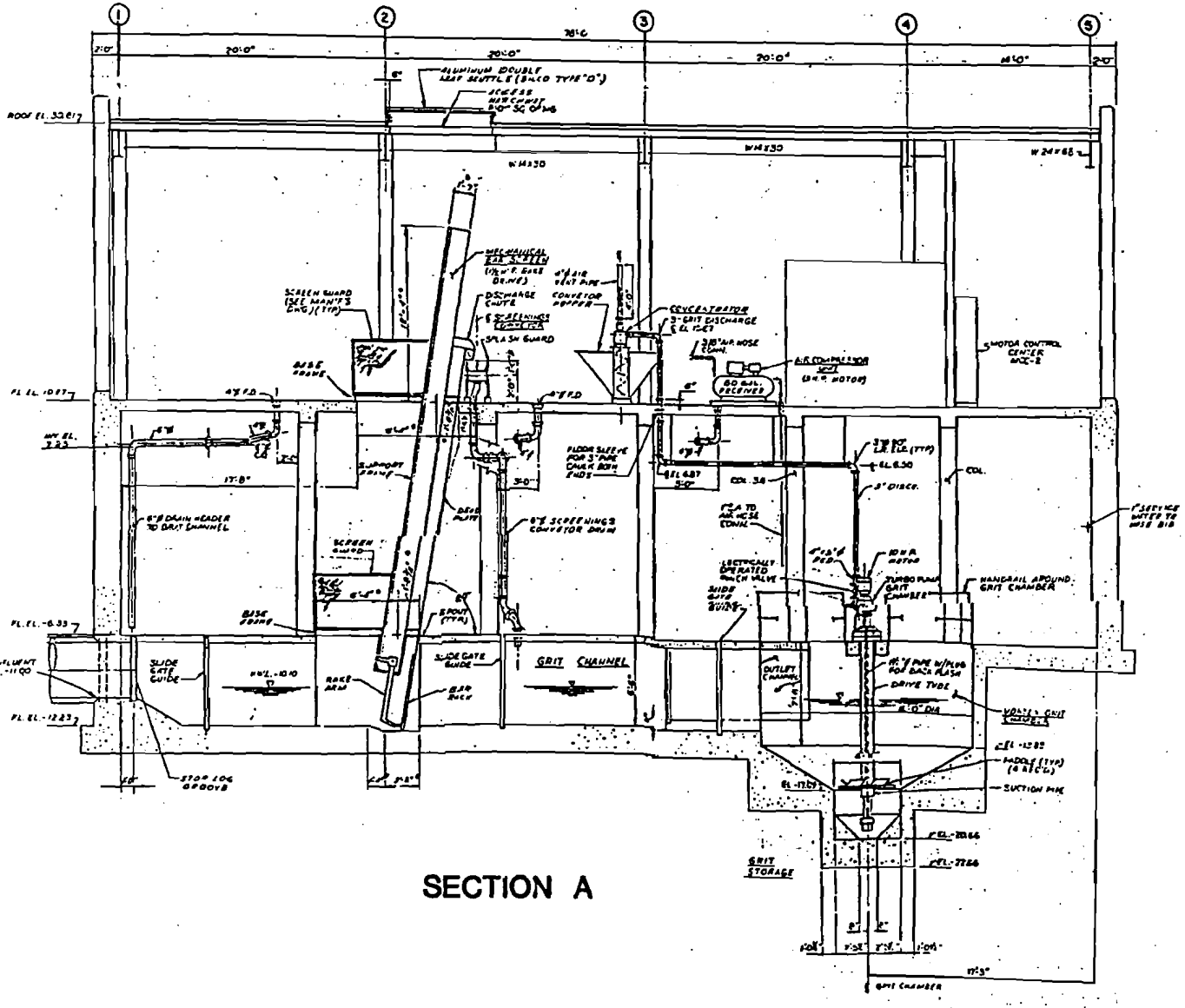
The gearhead comprises a heavy duty grey iron base and cover securely bolted together to form a composite unit. The base section supports the ball bearing slewing ring or turntable bearing and is designed to prevent distortion of the bearing. Rotation is achieved by means of a heavy duty meehanite flake graphite iron gear wheel securely bolted to the rotating member of the slewer ring and driven by an alloy steel pinion keyed to the output shaft of the geared motor. The gearhead cover supports the geared motor and a location in the cover enables the correct running center of the gear wheel and pinion to be achieved.

The gearhead is complete with a flange for supporting a 4-in. diameter flanged tube for the pump suction and fixings for an air bell below the gear head.

The flanged drive tube is supported on and driven by the gear wheel within the gear head. The rotor is securely clamped to the drive tube and comprises a spider arrangement with radial arms supporting

SCREENINGS AND GRIT REMOVAL BLDG

FIGURE 3-4



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removable segments for access to the grit sump. The upper surface of the rotor is complete with adjustable paddle blades set at a trailing angle of 30°.

3.3.6.6.1 Components of the Gear Head Assembly

A. Impeller (Paddles)

1. Adjustable Pitch
2. Four Blades
3. Sweep Diameter: 4 ft-11 in.
4. Material: ASTM A36

B. Impeller Drive Tube

1. Driven by a large, totally enclosed spur gear and turntable bearing.
2. Diameter: 10-3/4 in. minimum
3. Material: ASTM A36
   Flange Material - ASTM A36

C. Impeller Drive Unit (Gear Motor and Gear Head)

1. Motor

   a. Helical gear type
   b. 230/460V, 3 phase, 60 Hz of explosionproof construction
   c. 3/4 HP, 1800 RPM SYNC.
   d. Cast iron housing and frame
   e. Service Factor: 2.0

2. Gears

   a. Alloy steel, heat treated and hardened.
   b. Teeth. Hobbed and crown-shaped or crown ground.
   c. Helical Gears. Oil Lubricated.
   d. Spur Tooth Bull Gear. Large, driven by a pinion mounted on output shaft of helical gear motor, enclosed in heavy cast iron case. Meehanite Flake Graphite iron grade GA.
   e. Spur Gear: Rotate minimum 21-in. dia. turntable bearing (minimum life 20 years).
   f. Bull Gear: Rotate minimum 21-in. dia. turntable bearing (minimum life 20 years).

g. Service factor for pinion and bull gear. 6 at standard operating needs.

3. Bull Gear Box

a. Specifically designed for this service.
b. Provide opening for drive tube.
c. Seal with an air bell at bottom opening around drive tube.
d. Provide bolted flanged connection at top for suction of centrifugal pump.

4. General Requirements

a. Maximum drive output speed. 15 RPM.
b. Suitable for continuous (24-hr. per day year round) service.

5. Gear Speed

a. Gear Box: Motor Input Speed - 1800 RPM SYNC
Gear Box Output Speed - 32 RPM
Speed Reduction -

b. Bull Gear Box: Input Speed - 32 RPM
Output Speed - 12 RPM
Speed Reduction - 2.67:1

All bearings on the bull gear and geared motor shall have a minimum life of 50,000 hrs.

D. Grit Suction Pipe

1. 4-in. dia.
2. Extend from flange on top of gearbox through drive tube, to approximately 4 in. above invert of grit well.
3. Material: Sch. 40 steel pipe.

3.3.6.7 Jeta Drive Gearbox

Manufacturer:	Nord Gear Corporation
Type:	Unicase - Helical Gear Reducer
Unit No:	SK 32
Ratio:	562.5:1

AGMA Nameplate:	Yes
L10 Bearing Life:	100,000 Hours
Weight:	90 lbs
Service Factor:	2.0
Motor:	3/4 HP, 230/460V, 3PH, 60 Hz (Explosion proof)
Motor Mounting:	C-Face

3.3.6.8 Grit Trap

3.3.6.8.1 Construction and principle of operation.

The Grit Trap is usually positioned adjacent to the main inlet channel and comprises a circular conical bottomed settlement chamber with a smaller conical bottomed chamber, directly below, for collecting the settled grit. The size of the settlement chamber is determined by the rate of flow to the plant and dimensioned to allow time for the grit entering the grit trap to settle under gravity. The flow enters the chamber tangentially and a rotary motion is imparted to the liquid within the chamber when the light organics are held in suspension to be carried by the flow out of the grit trap, through the outlet channel to be returned to the main channel for further treatment.

A drive head is bridge mounted directly above the center of the chamber and comprises a ball bearing slewing ring for axially supporting the main drive tube. Rotation of the drive tube is achieved by a tooth belt drive from a vertical flange mounted geared motor positioned on the drive unit. In the case of an immersible drive, rotation of the drive tube is achieved by additional gearing from the flange mounted geared motor. The drive head is grease filled, sealed and is complete with an air-bell

fitted to the underside of the unit to allow the drive head to operate under flood conditions.

A circular disc rotor, with four blades attached to its upper surface, set at an angle of 30° and trailing, is clamped to the drive tube. The position of the rotor assembly is adjustable and fixed approximately 50 mm above the top of the grit collection chamber to almost separate the two chambers. As the grit settles on to the floor of the settlement chamber it is urged to move spirally inwards under the influence of the rotating water mass and the sloping floor of the chamber, into the classification gap formed by the periphery of the rotor and the floor of the chamber, for final settlement within the collection chamber. The heavier organics will also tend to settle but are rejected at the classification gap by the influence of the zone of the settlement chamber and are lifted by the upward current created by the rotor blades and carried by the flow through the outlet from the chamber.

Removal of the collected grit is carried out by a mechanical grit pump with the lower end of the suction tube positioned in the center of the conical bottomed collection chamber. The suction tube is installed through, and supported by, the hollow drive head. The mechanical grit pump is mounted at the upper end of the suction pipe above the drive head and is complete with a separate vacuum priming set. The details of the grit pump are summarized below.

3.3.6.9 Grit Pump

3.3.6.9.1 Pump.

1. Vertical configuration, torque flow type.
2. Close coupled.

3. Recessed impeller

4. Heavy cast iron construction

5. Size: 5 in. inlet/4 in. outlet

6. Capacity: 175 gpm at 35 ft TDH with static suction lift of 5 ft

7. Mechanical seal: constructed to drain and prime automatically each time pump is drained and primed.

8. Maximum size of test sphere capable of passing through pump: 3 3/4 in. dia.

9. Pump casting material: ASTM A48 cast iron

10. Seal type: silicon carbide/silicon carbide

11. All pump parts have a registered fit at connections

12. Flange Type: ANSI 125 lb flange thickness and drilling (inlet and outlet)

13. Mechanical seal lubrication from media being pumped

14. Spare parts to be supplied with pump: mechanical seal assembly

15. Pump bearing life: AFBMA L10. 40,000 hours (without adjustment factors)

3.3.6.9.2 Motor

1. 1730 RPM, 460/230 V, 3 PH, 60 HZ. 10 HP.

3.3.6.10 Vacuum Priming System

The vacuum priming system is provided as a package by Jones and Attwood, and consists of the following components:

TABLE 3-1

VACUUM PRIMING SYSTEM EQUIPMENT SUPPLIERS

Air Compressor	Thomas Industries 1419 Illinois Avenue Sheboygan, Wisconsin
Vacuum Pump	PIAB Box 123 S-18400 Arersberga Sweden Phone (0764) 64050
Vacuum Panel	TLC Controls Inc. 553 Prospect Road Mt. Prospect, IL 60056
Protection Valve	Affiliated Control Equipment Co. Inc. 650 Wheat Lane Wood Dale, IL 60191
Electrode	Hawker Electronics Ltd
Pinch Valve	Flexible Valve Corporation South Hackensack, New Jersey 07606

3.3.6.10.1 Operation of system

When the grit removal system is manually activated, the air compressor and vacuum pump located in the degritter control panel start and run until the liquid fills the eductor tube and pump volute at which time the liquid makes contact with the liquid level electrode. The electrode will signal the control system to close the priming solenoid valve and also shut off the air compressor and vacuum pump. When these stop, the grit pump will start and run as long as the operator feels necessary to remove the stored grit. A time delay relay will prevent any short circuiting of the grit pump. In addition an actuated plug valve is installed in the grit discharge line which prevents liquid loss in the grit line and therefore, shorter primer time.

3.3.6.10.2 Vacuum priming system.

The preassembled and prewired vacuum priming system contains the following components:

1. Air Compressor - Thomas Model TA-6102, 3/4 HP, NEMA 56 Motor Frame
2. Vacuum Pump - PIAB M60, 2.11 cfm at 58 psi feedpressure, complete with water vacuum trap, latching valve, electrode holder, pinch valve
3. Control Panel
4. Norgren Float Check Valve
5. 1/4 in. Solenoid Valve, 115V/3 PH/60 HZ
6. Electrode

NOTE: The pump is connected to the "T" priming point via a small bore pipe. This pipe is connected to the pump casing at a point to ensure that the mechanical seal is lubricated when the pump is being primed. The impeller and pump casing is designed to prevent any solids greater than 1/8 in. passing through to the upper chamber behind the impeller.

The water vacuum trap is a Model VWT 2 manufactured by Affiliated Control Equipment Co., Inc. and protects the vacuum pump from damage due to water injection, and has an automatic drain feature. The pinch valve in a Flexible Valve Corp. Type 9500, 4 is size.

3.3.6.11 Cyclone (Grit Concentrator, Centrifugal Separator)

The purpose of the cyclone, or grit concentrator, is to concentrate the grit solution discharged from the grit pump. The lighter mate-

rials (organics) are ejected by the unit and are returned to the liquid flow stream whilst the heavy grit is discharged from the base of the unit into the Grit Conveyor. The water/organic return line is vented to air. The cyclone is designed to accept quantities of grit and water pumped to it at a rate of up to 175 gpm and to operate at inlet pressures between 5 and 20 psi.

The cyclone is comprised of 3 basic components: the main body, the vortex finder, and the outlet flange. Details of the cyclone are summarized below:

A. Unit is mounted to discharge onto grit conveyor.

B. Operates on the vortex principle.

C. Purpose: To remove water and organics from mixture of grit and water (from Grit Trap) prior to Grit Conveyor.

D. Flow Pattern

1. Pumped flow enters tangentially through side.

2. Grit and small volume of water exit out of top of drain.

3. Organic material and excess water exit out of top of drain.

E. Material is ASTM A36 Steel.

Finish: Shot Blast, epoxy primer and two epoxy top coats.

F. No moving parts: Operates on hydraulic principles.

G. Inlet and Outlet

1. Feed Inlet: 4 in. dia.
Overflow Outlet: 6 in. dia.

H. Vortex Finders Supplied: 3 in. dia.
4 in. dia.

J. Underflow Outlets Supplied: 1 1/2 in. dia.
2 in. dia.

3.3.6.12 Dewatering Screw Grit Conveyor

The steel screw conveyor is provided with an inlet hopper to receive the grit and water slurry. The hopper is sized to allow grit to settle out in the water. An overflow is provided to return the excess water to the flow. The conveyor is of free standing design, with support legs to hold the conveyor at an angle of 20 degrees to the horizontal. The grit discharge has a rectangular outlet. The screw is driven by a shaft mounted helical gear motor positioned at the discharge end. See Figure 3.4.

The screw conveyor is provided with an open, steel formed, "U" trough. The steel screw is 12 in. diameter. The conveyor is 20 ft-0 in. long. The steel inlet hopper receives the grit and water slurry from the Grit Cyclone, and is provided with a 6 in. NPT overflow outlet.

The inlet end is fitted with a 2 in. drain.

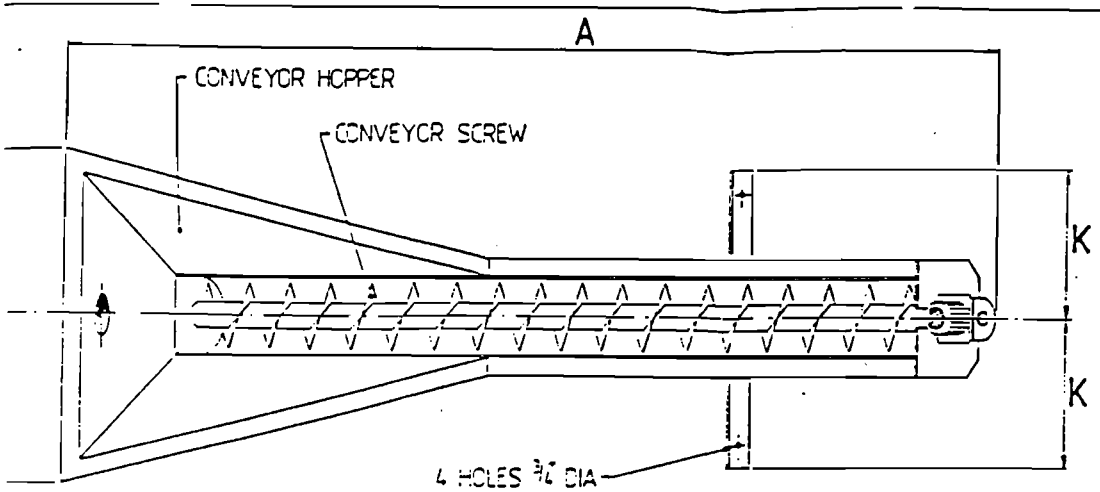
The conveyor drive consists of a shaft mounted worm gear reducer. The drive is powered by a 1 HP, TEFC, 460 Volt, 3 Phase, 60 HZ, NEMA design motor.

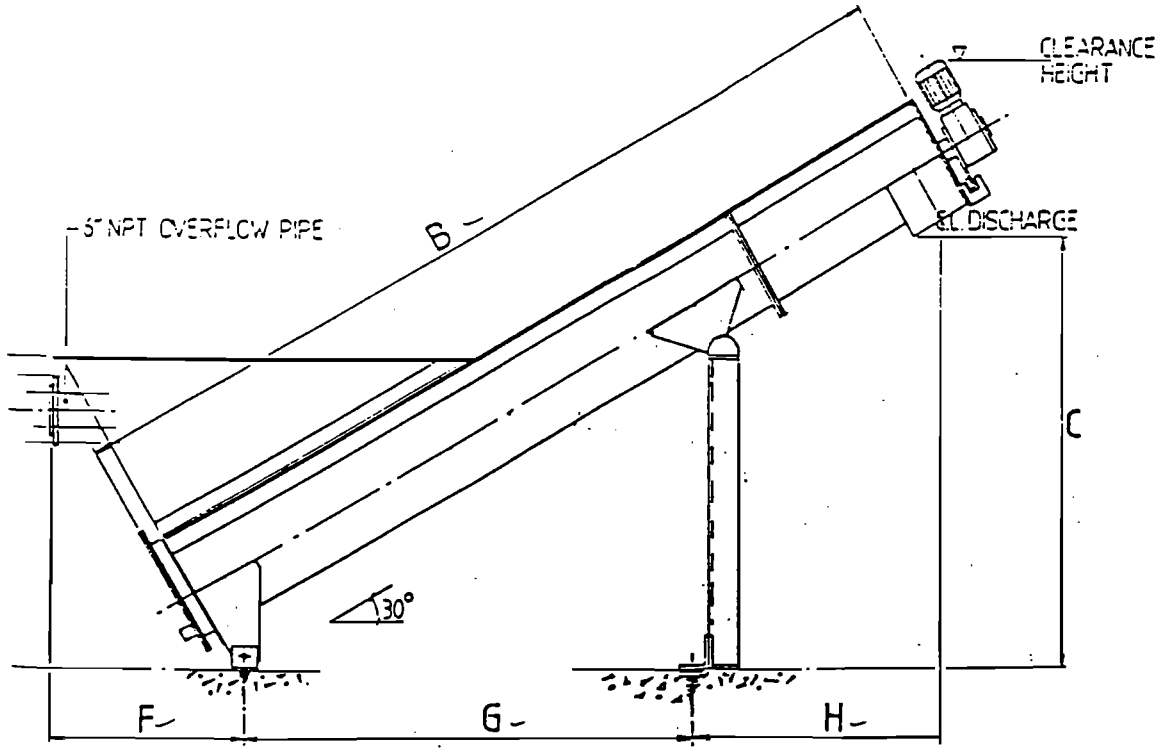
The bottom bearing is of a design that is hard wearing and prevents any leakage. The design consists of a steel bush running on a nylon bearing. The bearing has a curved surface and is fully self aligning. The bearing is fed with grease under pressure which prevents any leakage and ingress of grit.

JONES + ATTWOOD

SECTION 3300
DWG. No G- 3E
STANDARD 20-0" DEWATERING SCREW, GRIT CONVEYOR
J+A ORDER No. EA2015/88
BAYONNE STP.
NEW JERSEY.

ISSUE	REVISION	DATE





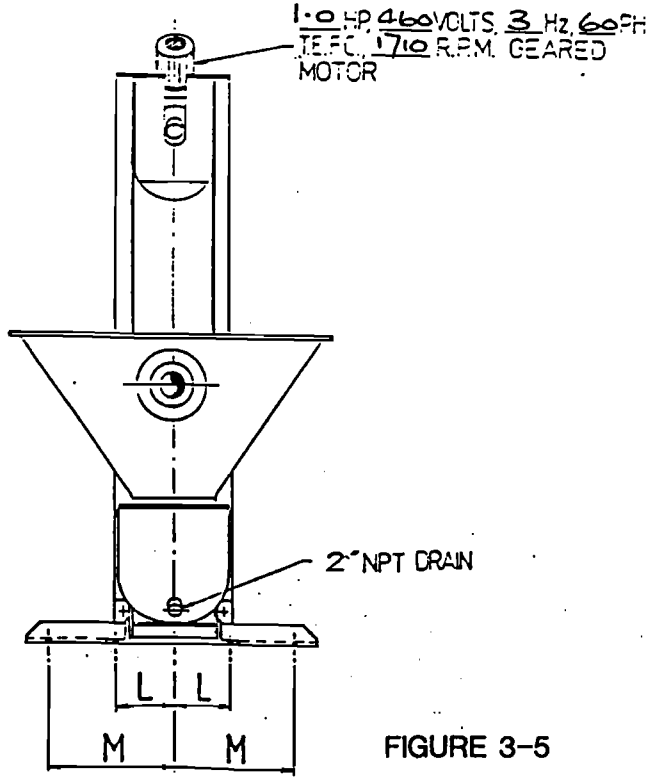


FIGURE 3-5

The characteristics of the Grit Conveyor are summarized below:

Capacity	175 GPM
Screw Speed	12 RPM
Screw Diameter	12 in.
Tube Diameter	6 in.
Screw Length	20 ft-0 in.
Material Construction	Mild Steel
Casing Thickness	1/4 in.
Screw Thickness	3/8 in.
Motor Size	1 HP
Frame Size	NEMA L143TD
Supply	460 V / 3 PH / 60 HZ
Enclosure	Weatherproof
G/Box	Flender Moto CD61K
Mounting	Shaft Mounted
Type	Worm Gear
Drive Arrangement	Motor directly coupled through NEMA C-Face flange adaptor
Grit Feed	4 in. dia.
Organics/Water return pipe	6 in. dia.

3.3.6.13 Operation

The equipment is kept in permanent service, day and night, electrical power consumption is very low, especially with large flows, because the contents of the grit trap chamber already have a circular motion, due to the tangential entry channel. The installation is also kept in service during grit washing and grit pumping.

The frequency of grit removal by the mechanical grit pump will depend on the amount of grit present in the sewage during dry weather periods. Experience will determine how often the grit should be removed. During storm periods there is usually a considerable amount of grit present, and therefore, grit extraction should be carried out during or immediately after high flows.

The mechanical grit pump is normally used in association with classification equipment at the delivery end of the pump discharge. This usually takes the form of a hydrocyclone or screw classifier. Both of these forms of classification have the capability of returning lighter organics and other materials back to the flow, thus removing the necessity for initial washing in the grit trap chamber. Grit pumps also help with classification by disintegrating the larger solids during pumping.

The sequence of operations for the vacuum primed grit pump is as follows:

A. The vacuum priming set is switched on and runs for approximately 30/60 seconds, until the water level reaches the level electrode positioned on the low pressure side of the pump. The level electrode signals the vacuum pump to switch off and simultaneously signals the grit pump to start.

B. The grit pump is operated for approximately three minutes.

C. When the grit pump is switched off, the plug/check valve closes and is ready to be primed for the next operation. A screw classifier is being used in conjunction with the grit pump, and the screw should be left running an additional 5 to 10 minutes to clean out the trough.

D. In automatic mode the screw conveyor is shut down after the period of time set on the timer elapses, and the controls reset for the next grit removal cycle. The times can be adjusted after a period of operational experience to accommodate Bayonne requirements.

E. After the grit has been washed and classified, the screw conveyor discharges the dewatered grit into the grit container in the container room of the Screenings and Grit Removal Building. Experience on the amount of grit removed from the influent wastewater will indicate the frequency of removal of the container by the fork lift

truck for discharge into a 20 cy yd container for eventual off-site disposal to an approved landfill.

The Grit Conveyor is positioned adjacent to the grit trap. It is of free standing design, with support legs to hold the conveyor at angle of 20 degrees to the horizontal. It consists of an open type, steel formed "U" trough, a steel inlet hopper, conveyor screw, angle iron support legs and drive unit.

The "U" trough section is manufactured from 3/16 in. steel plate designed to house the conveyor screw. The grit discharge has a rectangular outlet and a 2 in. drain is fitted at the inlet end.

The steel inlet hopper provided receives detritus from the grit trap, via the grit cyclone, where grit and other heavier materials are deposited in the base of the settling chamber. They are then removed by an inclined screw and discharged at a higher level. A 6 in. overflow outlet is supplied at the top of the hopper to allow lighter floating or suspended materials to return to the treatment system.

The conveyor screw is 12 in. in diameter and approximately 20 ft-0 in. long. It runs on a sealed, self aligning, flange mounted ball bearing unit at the outlet end, and a self aligning, hard wearing nylon bush type bearing at the inlet end.

The whole unit is supported at an incline of 30 degrees by angle iron support legs.

The conveyor screw is driven by a shaft mounted worm gear motor. The motor is 1 HP, TEFC, 460 Volt, 3 Phase, 60 Hz, NEMA design 3, and is weatherproof.

3.3.6.14 Maintenance

A. Settlement Chamber

The settlement chamber should be drained periodically to remove any rags, stringy matter, etc., that may collect on the rotor and rotor blades. The amount of rags entering the chamber will vary according to the site conditions. The intervals between cleaning should be sufficiently short to prevent large accumulations of rags, etc.

The grit chamber should operate with little or no trouble; however, if problems do occur, a trouble shooting guide for the grit chamber is given below. The operator should check on the following, twice for first shift operation and once on other shifts.

1. Paddle motion and removal of grit. Check level in grit container, inspect grit to make sure it is newly deposited. Check for leaks around the screw conveyor.

2. Each month the operator should check each function by manual operation of switches, and watch a full cycle of operation while checking each action, noting durations. The grit hopper should be drawn down to the top draw pipe to inspect the contents of the grit hopper. Check alternate action.

3. The quantity of grit collected should be removed routinely.

TABLE 3-2

SETTLEMENT CHAMBER TROUBLE SHOOTING

TROUBLE	PROBLEM	CORRECTION
Paddles won't turn	Lack of Power	Check fuses or circuit breaker or starter to make sure drive motor is energized.
	When power is turned on, drive tube turns slightly and motor loads up kicking out breaker or fuses	Dewater and check if obstruction is preventing paddles from turning
	If there is no obstruction to paddles turning, push paddles by hand to see if they are free to turn. If not free, check drive.	Remove gear motor and check if it turns freely. Turn paddles by hand and see if bull gear turns freely. Repair either one that is faulty

B. Immersible Gear Driven Drive Head

The immersible, gear driven drive head unit houses the ball bearing slewing ring and the reduction gearing from the geared motor to the rotor drive tube and is grease filled on assembly.

Two grease nipples are provided on the side of the immersible drive head to lubricate the gear and the slewing ring bearing separately. Each nipple should be charged with 6 strokes from a grease gun each week.

Recommend grease - Mobil LUX EPO

C. Geared Motor

It is important to maintain the oil in the gearbox at the correct level and the gearbox should be inspected frequently to ensure

this. Remove oil level and filter plugs. If oil is required, top up with the recommended grade of oil until it flows from the oil level hole. Allow to settle and then replace both plugs. The gearbox should not be filled above this level otherwise leaking and heating up may result.

NOTE: Always check the oil level and fill the gearbox when gears are at rest. Top up oil must be the same as the oil in use; never mix oils from different suppliers.

Check that the breather, if fitted, is clear.

Recommended Oil	Mobil Gear 630
Quantity	2 liters

D. Geared Motor (Immersible Gear Driven Drive Head)

After completion of the running in period of 500 operational hours the gearbox oil must be drained, the case flushed out with light flushing oil and refilled. Subsequently the unit should be drained, flushed out and refilled with new oil every 12 months.

Recommended Oil	Mobil DTE PB
Quantity	2 liters

E. Grit Pump

The pump is designed for minimum maintenance. The ball bearings of the motor are provided with a permanent grease lubrication. Periodic control of the leakage of the mechanical seal should be practised (drain hole at bottom of motor support). Very small leakages must be expected.

TABLE 3-3

PUMP TROUBLE SHOOTING

TROUBLE	CAUSE
1. Pump does not start	Electrical supply interrupted Cable broken Defective fuses
2. Not enough liquid delivered	Wrong direction of rotation of pump Wrong voltage or frequency Air pocket in impeller chamber, in casing, or in suction pipe Speed too low Isolation valve in suction line not completely open Delivery head required higher than specified. Friction losses in pipeline too great Worn impeller
3. Too much power absorbed by pump	Speed too high Delivery head required smaller than specified (capacity greater) Pump rotating assembly grinds against static parts

For other information see O&M Manual provided by Jones and Attwood.

F. Grit Conveyor

Bottom Bearing

The bottom bearing is a self aligning, continuously lubricated, bush type bearing designed for submerged operation.

Replacement of Bearing Unit

1. Drain conveyor via 2 in. outlet at base of trough.

2. Support conveyor screw at lower end.

3. Disconnect lubrication piping at access cover.

4. Remove access cover complete with stub shaft.

5. Remove bearing unit from conveyor screw.

6. Inspect bearing unit inner ring for wear, if worn replace complete bearing unit.

7. Inspect stub shaft for wear. If severe wear is evident rotate complete stub shaft trough 90 degrees, to place new sleeve surface in top position (12 o'clock position). The stub shaft can be rotated 3 times, in this manner, thus utilizing 4 quadrants of the sleeve.

8. Reassemble by reversing above procedure.

   NOTE: Ensure that flange faces on end of conveyor screw and bearing unit are clean and free from foreign matter.

   Apply "Copaslip" antiseize compound to all mating surfaces.

   Pack bearing unit with grease before fitting stub shaft.

9. Before placing conveyor back into service, operate the lubricator and ensure that grease is flowing to bearing.

10. If the lubricator is operating correctly and equipment re-assembled satisfactorily the conveyor can be placed back into service.

Top Bearing

The top bearing is a sealed, self-lube, self-aligning, flange mounted ball bearing unit.

The bearing unit as supplied does not require maintenance attention other than preventive maintenance inspections.

If it is required to convert the bearing to re-lubrication type, a grease nipple can be fitted.

Replacement of Bearing

1. Support conveyor screw at upper end.
2. Remove shaft mounted geared reducer.
3. Remove collar from drive shaft, adjacent to bearing.
4. Remove end plate.
5. Remove bearing from conveyor screw stub shaft.
6. Inspect bearing for wear and if worn replace a complete bearing unit.
7. Reassemble by reversing above procedure.
8. If all equipment is reassembled satisfactorily, conveyor can be placed back into service.

Lubrication

The grease output from the lubrication unit supplied has been set during operating tests at Jones and Atwood works.

To check for grease flow unscrew the knurled head pin, situated below the lubricator, one complete turn and leave for approximately one hour.

If the lubricator is operating satisfactorily, grease will have been forced out of the hole in the center of the pin.

On completion of the inspection return the knurled head pin to its original position.

The greased reservoir capacity is approximately 6.61 lbs.

Bottom Bearing Lubricant

Mobil - Mobilux EP 2 Texaco - Multifax 2 or Multifax 20	Shell Rhodina R2 Equivalent

Top Bearing Lubriant (if required)

Mobil - Mobilux 2 Texaco - Multifax 2 or Multifax 20	Shell Alvania R2 Equivalent

Shaft Mounted Gear Unit Lubricant

Mobil - Glygoyle 30	Shell Tivela WB Capacity 0.87 Gals

Motor Lubricant

The bearings in the drive motor are pre-packed for life with grease before leaving the manufacturer's works and need no further attention.

If the motor has been fitted with grease nipples, then the bearings should be lubricated in accordance with the manufacturers instructions.

3.4 FACILITIES IN OPERATIONS BUILDING

3.4.1 General

The modified existing Operations Building contains the following facilities:

Raw Wastewater Wet Well
Raw Wastewater Pumps RWW-1, RWW-2, and RWW-3
Storm Flow Wet Well
Storm Flow Pumps STF-1, STF-2, and STF-3

Pump Suction and Discharge Valves, Pipe, Fittings, and Accessories
Hydraulic Oil Accumular System to Operate Ball Check Valves
Administration Facilities
Disconnect Water Supply Pumps DWS-1 and DWS-2
Storm Flow Wet Well Drain Pump SUBM-1
Sump Pumps SP-1 to SP-5, inclusive
Storm Flow Mechanical Screen and Accessories
Variable Frequency Drives (VFD) for Raw Wastewater Pumps
Level Controls for Raw Wastewater and Storm Flow Wet Wells
Seal Water Supply System
Universal Venturi Tube Flow Measuring System
Standby Generator Set

3.4.2 Raw Wastewater and Storm Flow Wet Wells

The existing single wet well has been modified and converted to two separate wet wells by constructing a 12 in. reinforced concrete dividing wall 14 ft high midway between the third and fourth pump of the six operating pumps.

The raw wastewater wet well occupies the southern half of the wet wells having a bottom or floor elevation of - 20.50, and is 39.5 ft long x 14.5 ft wide. Three 30 in. flange and flare 90° elbows constitute the raw wastewater pump suction intakes for Pumps RWW-1, RWW-2, and RWW-3.

The storm flow wet well occupies the northern half of the wet wells having a bottom or floor elevation of -20.50, and is 42.0 ft long x 14.5 ft wide. Immediately north of the entrance to the storm flow wet well is a 7.0 ft wide mechanical bar screen. An existing 30 in. flange and flare 90° elbow is the suction intake for the southernmost Storm Flow Pump STF-3. Two 30-in. flares bolted to 30 x 24-in. reducing 90° elbows constitute the suction intakes for storm flow pumps STF-1 and STF-2. Since the storm flow wet well functions only during storm events when the combined wastewater flow to the Bayonne Pumpover facility exceeds 17.6 mgd, provision is made to reduce possible odors by flushing down the walls of the

storm flow wet well with city water and to drain the well by means of the submersible storm flow wet well drain pump SUBM-1, whose 4 in. discharge continues at center line El. 0.0 along the outer face of the west wall of the storm flow effluent channel. The 4 in. discharge drains into the raw wastewater wet well. See Figures 3-6 and 3-7 for details of the wet wells.

3.4.3 Raw Wastewater Pumps RWW-1, RWW-2, and RWW-3 Storm Flow Pumps STF-1, STF-2, and STF-3

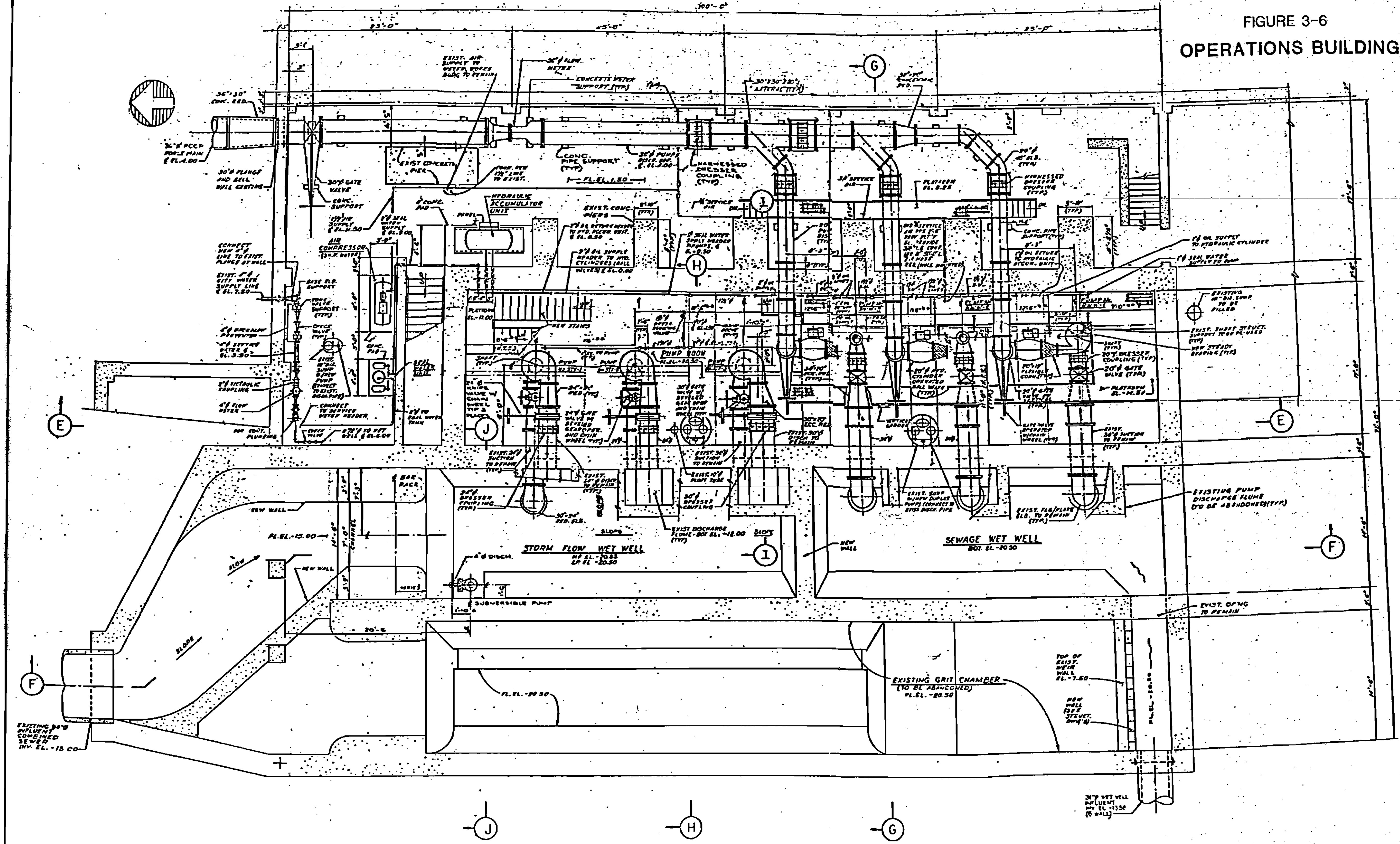
The three raw wastewater pumps are located in the southern half of the Pump Room having a floor elevation of -20.50. Each of the three pump suction lines from the raw wastewater wet well is at center line elevation -16.0.

3.4.3.1 Raw Wastewater Pump Suction and Discharge Piping

The suction piping for Pumps RWW-1, RWW-2, and RWW-3 has the same configuration, consisting of a 30-in. flange and flare 90° elbow, a 30-in. wall fitting, a 30-in. spool piece, a 30 x 20-in. eccentric reducer, 20-in. isolation gate valve, and a 20-in. mechanical coupling of the Dresser type followed by a 20 x 12-in. reducing base elbow connected to the pump. On the pump discharge is a 20 x 12-in. reducing flexible connection, a 20-in. hydraulic cylinder operated ball valve, 20-in. base 90° elbow, a 20-in. spool piece, a 20-in. chain wheel operated isolation gate valve, another 20-in. spool piece, a 20-in. mechanical coupling of the Dresser type, 90° elbow, and a length of 20-in. spool piece. This brings the 20-in. pump discharge pipe (force main) to El. 4.00, and to the west wall face of the pipe gallery west wall. A 20-in. spool going through the wall continues as a 20-in. to the 20-in. mechanical coupling of the Dresser type and is then followed by a 20-in. 45° elbow (see Figure 3-8). For Pump RWW-1, a 20-in. spool continues to another 45°-elbow, followed by a 20-in. spool and a 30 x 20-in. concentric reducer which connects to a 30 x 20-in. lateral. Pump

FIGURE 3-6

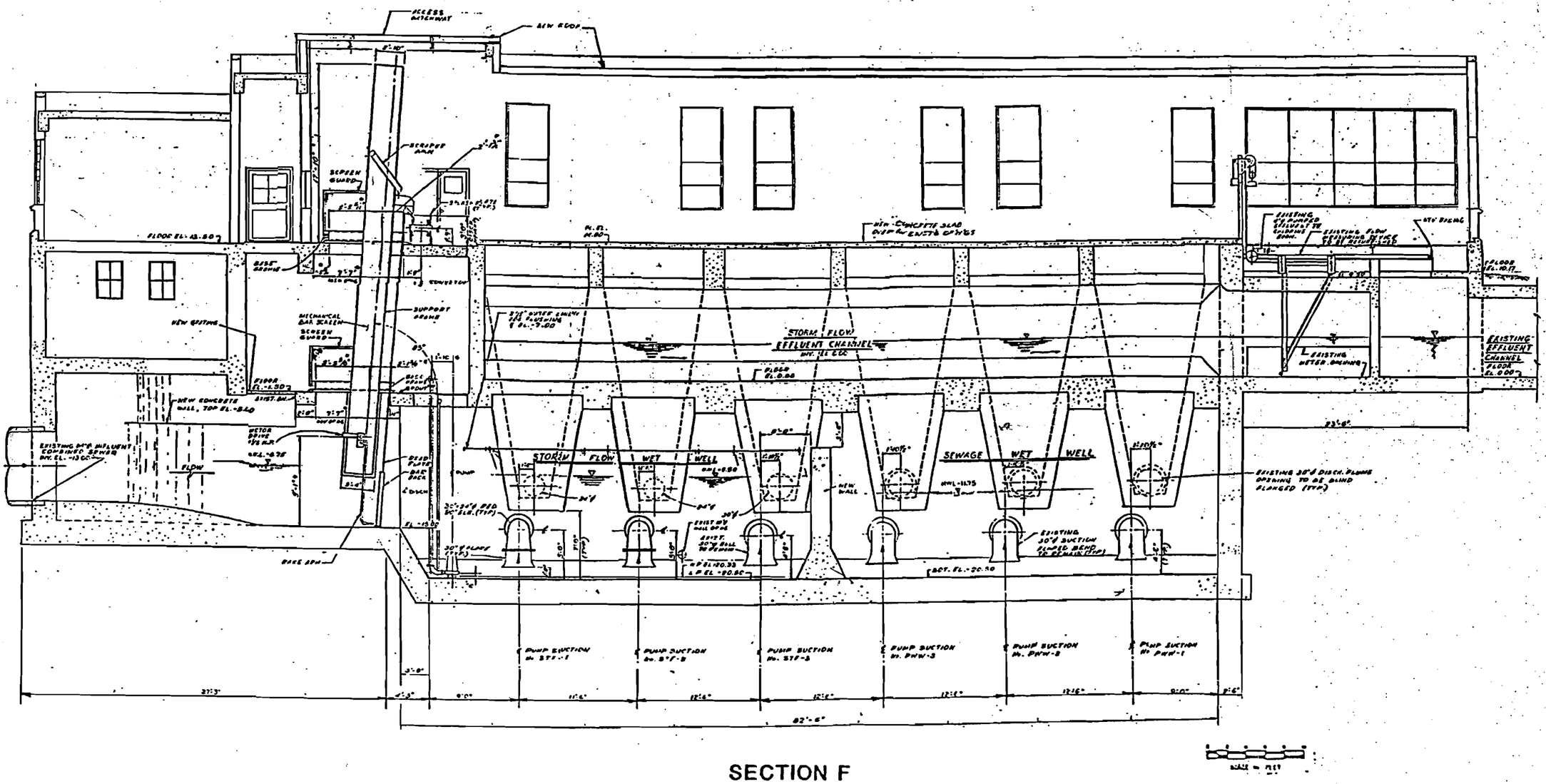
OPERATIONS BUILDING



PLAN AT EL. -20.50

FIGURE 3-7

OPERATIONS BUILDING



SECTION F

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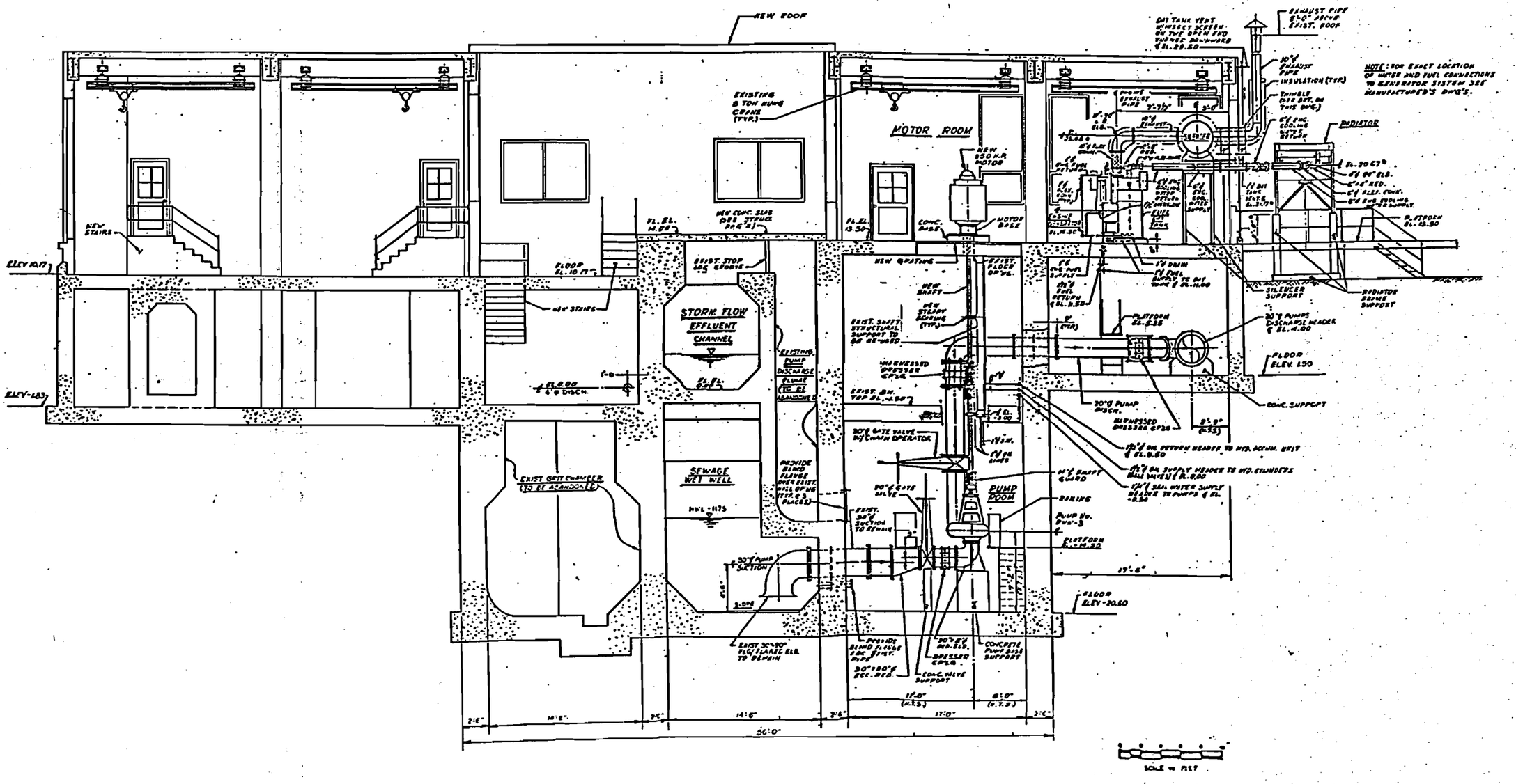
FIGURE 3-8

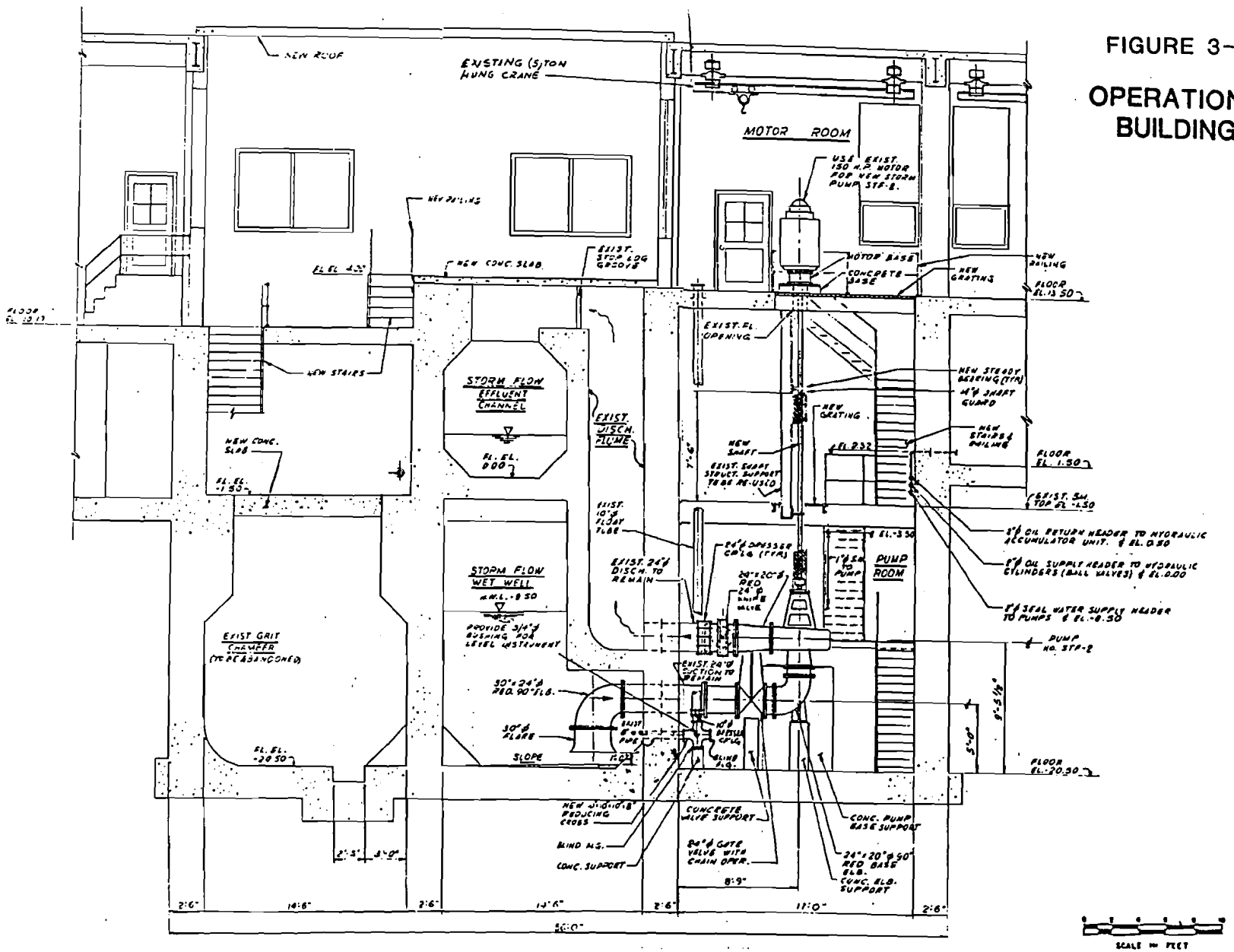
OPERATIONS BUILDING



SECTION G

FIGURE 3-9

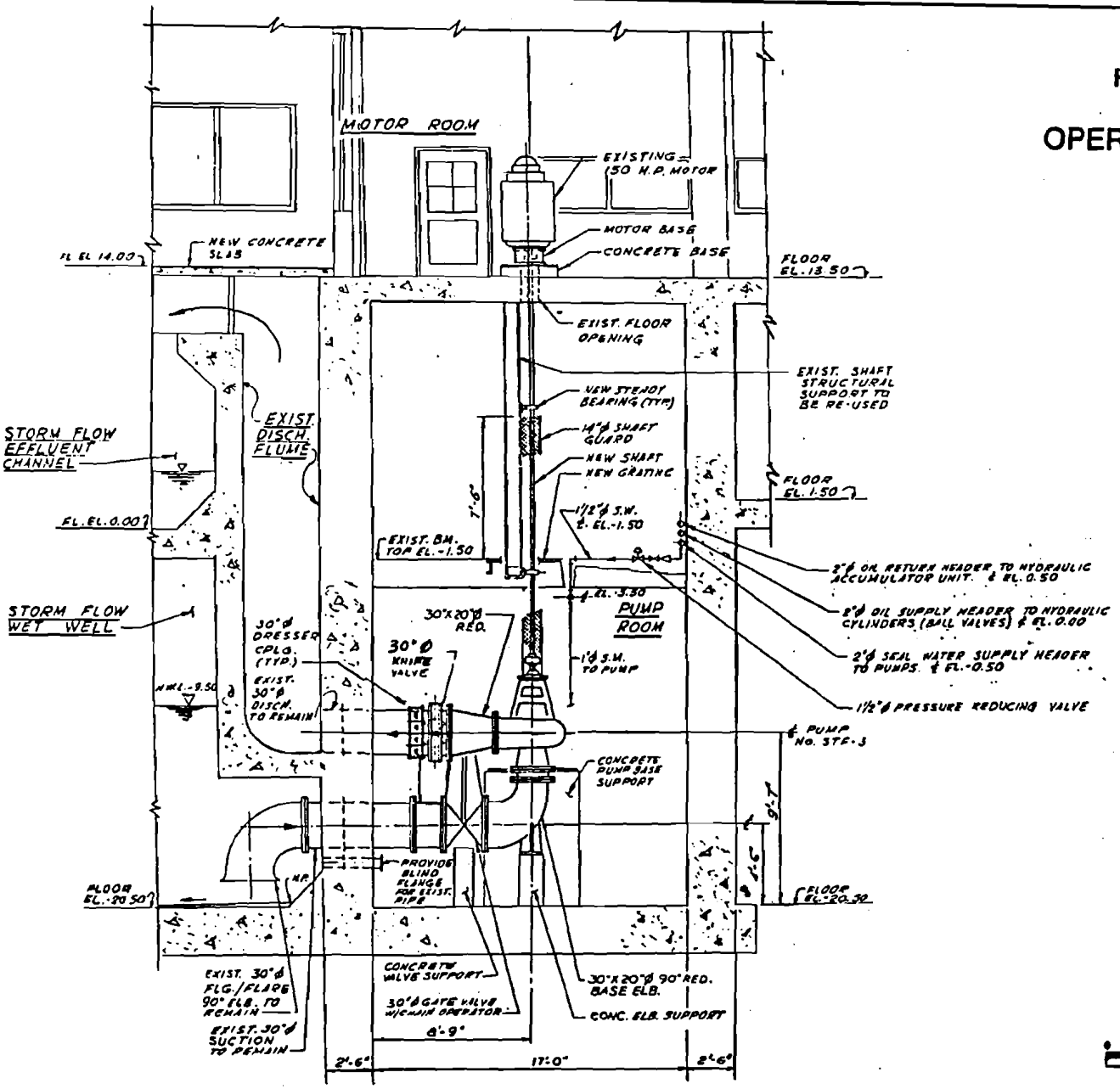
OPERATIONS BUILDING



SECTION H

FIGURE 3-10

OPERATIONS BUILDING



SECTION I

SCALE IN FEET

provided with a large handhole to permit inspection and cleaning of the pump interior. The handhole cover is bolted and its inner contour matches the contour of the casing. Three lifting eyes are furnished to facilitate handling.

Each casing is hydrostatically tested to one and one quarter times the maximum shut off pressure and is provided with three-quarter inch vent, drain and gauge connections.

Suitable feet and baseplates with anchor bolts are provided for each pump to support the entire weight of the pump unit on the foundation.

Suction Head

The suction head is of the same material as the casing and is designed to provide equal flow distribution to the impeller eye. It is provided with a flanged connection, a hand hole with removable cover and a one-half inch gauge tap connection.

Impeller

The impeller is of single stage end suction mixed flow enclosed construction having a minimum number of vanes and is designed to prevent clogging and to pass a minimum of 4-in. solids, trash, and stringy materials contained in sewage.

The impellers are made of close grained cast iron conforming to ASTM A48 Class 30 accurately machined and polished to remove hollows or projections which might encourage cavitation. Each impeller is statically and dynamically balanced prior to assembly.

The impeller is secured to the shaft with a key and contoured lock nut which in turn is secured by a locking screw. The arrangement

is such that the impeller cannot be loosened by torque from either forward or reverse rotation.

Wearing Rings

Removable wearing rings of unlike hardened stainless steel are furnished on the impellers and suction heads and are arranged with the wearing surfaces normal to the axis of rotation. They are securely fastened to prevent any relative rotation, and are designed to compensate for a minimum of one-quarter inch wear. The impeller ring is of 13% chrome steel construction while the suction head ring is of 17% chrome steel construction, and exceeds the impeller ring hardness by more than 50 Brinell units.

Pump Shafts and Sleeves

Pump shafts are of heat treated alloy steel of sufficient size to transmit the full driver horsepower with a liberal safety factor and are accurately machined over the entire length. The shafts are protected from wear in the stuffing box by a 13% chrome steel shaft sleeve sealed to prevent leakage between the sleeve and the shaft.

The shaft assembly including shaft, impeller and coupling are so balanced that there will be no vibration through the normal range of speed. No critical speed on the complete rotating assembly should occur up to a speed of 150% rated speed.

Pumps are connected to the driver by vertical flexible shafting, and guide bearings are suitably located. All shafting is provided by the pump manufacturer and is designed for all stresses. Anti-friction bearings are provided. Pump drivers are able to support the weight of all suspended parts without causing undue stress on the driver. Shafting is of the Watson-Spicer type.

Stuffing Box

The stuffing box is cast integrally with the stuffing box head. Sealing is accomplished by means of a single mechanical seal with carbon vs. tungsten carbide seal faces. Seal hardware is stainless steel. The seal is flushed by clean liquid injected through a solid gland. A restrictive bushing to limit the amount of seal water is provided in the pump end of the stuffing box.

Bearings

Pump bearings are of the tapered roller type mounted in a removable cast iron frame. The bearings are arranged to eliminate all radial play and are designed for a minimum B-10 life of 100,000 hours in accordance with AFBMA. The bearings are grease lubricated and provided with tapped openings for addition of lubricant and draining. Suitable seals are provided in the bearing covers to prevent the entrance of contaminants. The bearing frame is so arranged as to provide for the axial adjustment of the wearing rings by the use of jacking screws and removable shims between the bearing frame and stuffing box-head.

3.4.3.5 Pump Characteristics

The pump characteristics are tabulated below:

	Pumps RWW-1, RWW-2, RWW-3	Pumps STF-1, STF-2, STF-3
Size, In.	12	20
Rated capacity gpm	6,110	9,370
Total Dynamic Head, ft	123	31
Rated speed, rpm	885	585
Motor Controllers	2-Variable Speed (2:1) 3-Constant Speed	2-2 speed (585/400) 1 variable speed (2:1)

	Pumps RWW-1, RWW-2, RWW-3	Pumps STF-1, STF-2, STF-3
Motor hp	250	150
Motor Manfr.	General Electric	
Model No.	5K509DT417P	
Voltage	460, 3 Phase, 60 Hz	
Service Factor	1.15	
Pump Efficiency at rated speed, %	82, min.	80, min.
Additional Requirements: rpm/gpm/TDH	875/0/154 min. 875/7500/108 max.	585/0/42 min. 585/12,000/25 max.
Size of solid passes	3 in. min.	4 in. min.
Type:		
Worthington Model	12 MNV-24W/7H Frame	20MNZ-24 W/7L Frame
Serial No's.	89 ZUS008424-1	89 Z003208-1
	89 ZUS008424-2	89 Z003208-2
	89 ZUS008424-3	89 Z003209-1

3.4.4 Air Release Valve

Pumps RWW-1, RWW-2, and RWW-3 are provided with an air release valve. The valve has an elongated body and is designed to operate (open) while pressurized, allowing air that is trapped within the volute of the sewage pump to escape through the air release orifice. Following release of the trapped air, the air release orifice closes, thus preventing sewage from escaping from the pump and on to the pump room floor. The air release valve remains closed until more trapped air accumulates, at which time the air release valve opens automatically. Each air release valve is provided with a 1 1/2-in. blowoff valve and a 1/2-in. shutoff valve. A 6 ft length of hose is also provided to permit backflushing. The valve has a 2-in. inlet connection and a 1/2-in. outlet connection.

The air release valve is an APCO Series 400, manufactured by Valve and Primer Corporation, Schaumburg, Illinois.

3.4.5 Hydraulically Operated Ball Valves

Pumps RWW-1, RWW-2, and RWW-3 are each provided with a 20-in. hydraulically operated ball valve acting as a check valve. The hydraulic cylinder for each valve is sized to operate the ball valve at the system pressure and flows, and is designed for use with hydraulic oil furnished under pressure to the cylinder operator via a hydraulic low pressure oil accumulator system.

The ball valve is an E-Lok Style Rubber seat ball valve as manufactured by Henry Pratt Company, Avrora, Illinois 60507.

Flow control is achieved by rotating the rotor inside of the pipe line about its diametrical axis, hence changing the free flow area of the valve. At fully closed position, a leak tight seal is achieved by the rotor mechanically compressing the rubber seat causing a seal between the rotor and the seat.

Positioning of the rotor is achieved by the hydraulic valve actuator comprised of a non-metallic cylinder mounted on the MDT cylinder operator.

3.4.5.1 Ball Valve Operation

The hydraulic cylinder operated ball valve shall operate as follows:

1. When the pump is de-energized the valve shall remain closed.

2. When the pump is energized and develops minimum pressure of one PSIG greater than the pressure on the downstream side of the surge control valve, the surge valve shall start to open at a uniform rate. The control valve's opening time shall be field adjustable from 30 to 180 seconds, with an initial setting of 120 seconds. When the valve

reaches the fully open position, a yellow "valve open" light on the front of the control cabinet shall become lit.

3. When the valve reaches the fully closed position, a blue "valve closed" light on the front of the control cabinet shall become lit. If for any reason the pump is stopped before the vale is fully closed, it shall not be possible to restart the pump until the valve is fully closed.

4. Power Failure. In the event of power failure, the valve shall close rapidly and the speed of closure shall be independently adjustable from 5 to 50 seconds, with initial setting of 30 seconds.

3.4.5.2 Surge Control Safety Circuits

a. The surge control system shall contain safeties which will stop the pump if any of the following conditions exists at any time during the pump's operation:

   1. Failure of the pump to develop and maintain minimum discharge pressure.

   2. Failure of the surge control valve to open.

   3. Any condition which will cause the pump to run at its maximum shutoff head.

b. If any of these conditions exist for any adjustable time delay period, 10 to 90 seconds, the safety circuit shall cause the pump to be shut down and have its control circuit locked out. This condition shall be indicated by a red "Motor Stop" light located on the front of the surge control cabinet. It shall be necessary for operating personnel to make a visual inspection of the situation and manually reset the controls to start the pump. One auxiliary normally open contact wired to a numbered terminal strip shall be provided for remote indication of safety shutdown.

3.4.6 Low Pressure Air/Oil Accumulator System

3.4.6.1 Accumulator Construction

1. The entire assembly is provided with a suitable fabricated steel base for floor mounting which extends beyond each end of the assembly and is equipped with mounting holes. Suitable lifting eyes are affixed to the assembly to permit loading, unloading, or moving of the unit.

2. The entire assembly is made up as a complete self-contained unit with all components factory piped and wired. It is capable of being disassembled into three (3) components: pressure tank, sump assembly and control cabinet, if necessary to simplify installation. There is provided interconnection piping between the accumulator and the hydraulically operated equipment.

3.4.6.2 Accumulator System Components

The System contains:

a. A NEMA 12, 14 gauge control cabinet, which contains the necessary main circuit breaker, motor circuit protectors, motor starting contractors for the air compressor and pump motors, transformer, reset buttons, hand-off-automatic switches, pilot lights, control relays, terminal strips, pressure gauges, and pressure switches.

b. Two (2) positive displacement 1 HP, 5 GPM motor driven oil pumps with necessary valves and controls to transfer fluid adequately from the sump tank to the pressure tank at desired pressure and flow. The pumps work alternately with a lead/lag circuit in such a manner that if the lead pump either fails to start or fails to fill the pressure tank properly, the lag pump shall run to fill the pressure tank. A local, visual alarm with reset indicates operation of the lag pump and additional contacts are provided for remote indication.

c. Two (2) 1 HP, 2 SCFM, motor driven air compressors with the necessary valves and controls to maintain proper air pressure in the pressure tank. Both compressors are mounted and piped

directly to the pressure tank. The compressors work in an alternating lead/lag circuit in such a way that if the lead compressor is unable to build air pressure within the pressure tank, the lag compressor starts. A local, visual alarm with reset indicates operation of the lag air compressor and additional contacts are provided for remote indication.

d. Oil slight gauges with shutoff cocks to show the oil level in the pressure break tanks. Provision is made to shut off the pressure tank connections automatically if the gauge glass is broken.

e. Necessary manhole or hand holes to permit cleanout of pressure and sump tanks.

f. Drain lines and dirt pockets to collect foreign matter with cleanout facilities.

g. Fluid level control devices for both the pressure vessel and sump tank.

h. Necessary safety valves, strainers, pressure gauges, and pressure switches.

i. Each of the oil pumps and air compressors are equipped with isolation valves, check valves and unions for service.

j. A sump tank of the 76 gal capacity with automatic reset is supplied to shut down the oil pumps if sufficient fluid is not available within the sump tank. A local visual alarm on the control cabinet indicates a low sump level and additional contacts are provided for remote indication.

k. Hydraulic piping between the sump tank, oil pumps and pressure vessel are type K copper tubing soldered with 95/5 solder.

l. Electrical conduit is of rigid galvanized steel with short flexible liquid tight connections.

m. The pressure vessel of 100 gal capacity is constructed and tested in accordance with ASME Boiler Code, Section VIII, Division I, for Unfired Pressure Vessels. It is designed for a

pressure of 15 percent higher than maximum working pressure.

n. The entire assembly is sized to operate all four (4) control valves through 2 complete strokes without operation of the oil pumps or air compressors if required. The system is designed for use with a hydraulic oil equal to MIL-H-5605-A Specification.

o. The accumulator is a size LP-100 manufactured by Henry Pratt Company, Aurora, Illinois. See Figure 3-11.

3.4.6.3 Sequence of Operation

The sequence of operation for the air/oil accumulator system follows.

1. As oil is drawn from the pressure tank the float switch closes, energizing the control relay to disable the compressors and to enable the oil pump.

2. As pressure drops, the pressure switch closes by starting the lead oil pump. The oil level will rise in the tank until the level switch opens, thereby deenergizing the control relay and stopping the oil pump. The control relay also deenergizes the alternator, setting up the lag pump to be the lead pump on the next cycle.

3. With the oil level full and oil pressure below the PSI set point, the lead compressor runs until the pressure switch opens.

4. If at any time the level in the oil sump tanks falls to an unsafe level, the level switch will close, energizing the alarm relay which will stop the oil pumps until oil is added.

3.4.7 Pump Control Panels

3.4.7.1 Raw Wastewater Pumps

The Pump Control Panel for the Raw Wastewater Pumps, PCP-R, consists of an assembly of two (2) variable frequency drive (VFD) units and three (3) constant speed units, with interlocked magnetic contactor transfer units. Also, part of the assembly shall be the level control section, which shall contain the level controls, indications, and alarm system. The panel provides power, control, protection, indication, and alarms for the three (3) new 250 HP Raw Wastewater Pumps RWW-1, RWW-2, and RWW-3, as well as associated equipment controls, such as seal water and discharge valve hydraulic operators. See Figure 12.

3.4.7.2 Storm Flow Pumps

The Pump Control Panel for the Storm Flow PUmps, PCP-S, consists of an assembly of two (2) new two-speed step resistor, wound rotor, combination magnetic motor starters, together with the newest existing AUTOCON variable speed controller (VSC), and also the level control section. Magnetic contactors are provided, interlocked with starters and VSC. The level control section contains the level logic controls, indications, and alarms systems. The panel provides power, control, protection, indications, and alarms for the three (3) 150 HP wound rotor storm flow pumps STF-1, STF-2, and STF-3, and also associated equipment controls such as seal water operations.

3.4.7.3 Control Panel Construction

The pump control panels are contained in NEMA 1A enclosures 91.5 in. H x 20 in. D. The enclosure assemblies are arranged in a straight line-up as shown on the Drawing. Enclosure construction

is similar to motor control center construction and finish. Robicon Corporation, Pittsburgh, PA.

3.7.7.4 Transfer From Automatic Drive to Magnetic Starter Operation

Automatic and Manual transfer of the pumps from VFD or VSC drive to magnetic starter are provided.

3.4.8 Pump System Operation

3.4.8.1 Raw Wastewater Pumping Drive System

For normal automatic operation, the two VFD drives shall be lead and lag units, with a constant speed unit third.

1. At some relatively small demand, the lead pump would be started by its VFD and brought to some minimum speed, sufficient to ensure a small discharge flow. If this discharge flow exceeds the needed flow, the demand will decrease and eventually turn the lead pump off again. To control this cycling rate, hysteresis is present between the on and off points (set-points A and B).

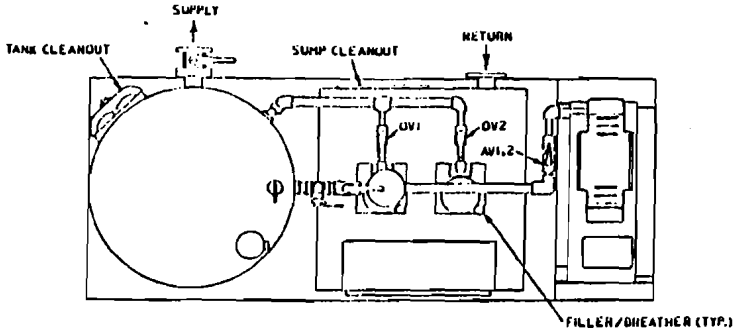
   If the demand should increase after the lead pump has started, at set-point C its speed would begin to exceed the minimum and vary linearly with demand, until it reaches maximum at set-point D.

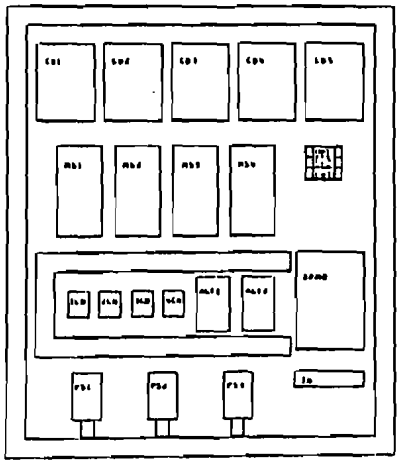
   Further increase in demand will start the second pump on the second VFD (set-point F), causing it to run at a new and higher minimum speed setting. At the same time, the lead pump will slow down and match speeds with the second pump, so that the total flow will be divided equally between them. The new minimum speed would be chosen to generate one-half of maximum flow through each pump. This technique is called "load sharing." If the demand were to decrease by more than the provided hysteresis, the second pump would be stopped (set-point F), and the lead pump would resume its former speed profile.

UNIT SIZE	DIMENSIONAL DATA												PERFORMANCE DATA						MINIMUM REQUIRED OIL (GALS) SEE NOTE 6
	A	B	C	D	E	F	G	H	J	K	L	M	TANK GALS.	SUMP GALS.	OIL PUMP RATING GPM MIN	OIL PUMP MOTOR HP	AIR COMPRESSOR RATING SCFM	AIR COMPRESSOR MOTOR HP	
LP-100	82-1/2	78	48	24	24	24	32	—	74.5	4-1/2	1-1/2 NPTF	1-1/2 NPTF	100	76	5	1	7	1	76
LP-200	88-1/2	84	48	36	36	36	32	—	72.5	4-1/2	2 NPTF	2 NPTF	200	160	6.5	1	2	3/4	160
LP-300	87-1/2	114	48	42	42	42	32	—	73.5	4-1/2	3 FLGD	3 FLGD	300	229	10	1-1/2	3	1	229
LP-400	91-1/2	118	52	48	36	48	40	—	83.5	6-1/2	3 FLGD	3 FLGD	400	274	13	1-1/2	5	1-1/2	274
LP-600	102-1/2	124	60	54	36	54	44	14	84	6-1/2	4 FLGD	4 FLGD	600	390	20	3	9	1-1/2	390
LP-1000	125-1/2	115	66	60	42	60	54	14	84	6-1/2	4 FLGD	4 FLGD	1000	620	15	5	10	3	620

NOTES:

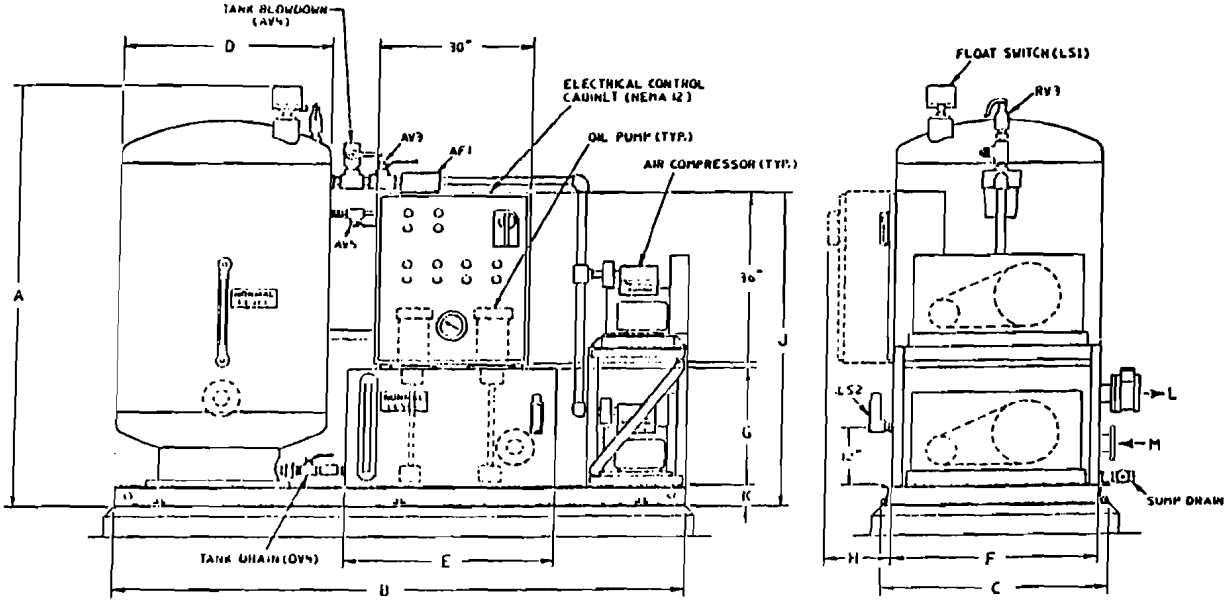
1. ALL DIMENSIONS SHOWN IN INCHES.
2. DRILLING OF END FLANGES CONFORM TO ANSI B16.5 CLASS 150.
3. USABLE OIL IS CALCULATED BETWEEN THE MAX. OIL PRESSURE LESS THE PRESSURE SWITCH DIFFERENTIAL TO THE MINIMUM PRESSURE.
4. PRESSURE TANK TO BE IN ACCORDANCE WITH ASME CODE FOR UNFIRED PRESSURE VESSELS.
5. RECOMMENDED OIL: GOOD HYDRAULIC SINGLE GRADE PETROLEUM BASE SAE 20.
6. REQUIRED OIL VOLUMES LISTED IN THE TABLE DO NOT INCLUDE THE OIL NECESSARY TO FILL THE CYLINDERS AND CONNECTING LINES.





INTERIOR PANEL LAYOUT

FIGURE 3-11



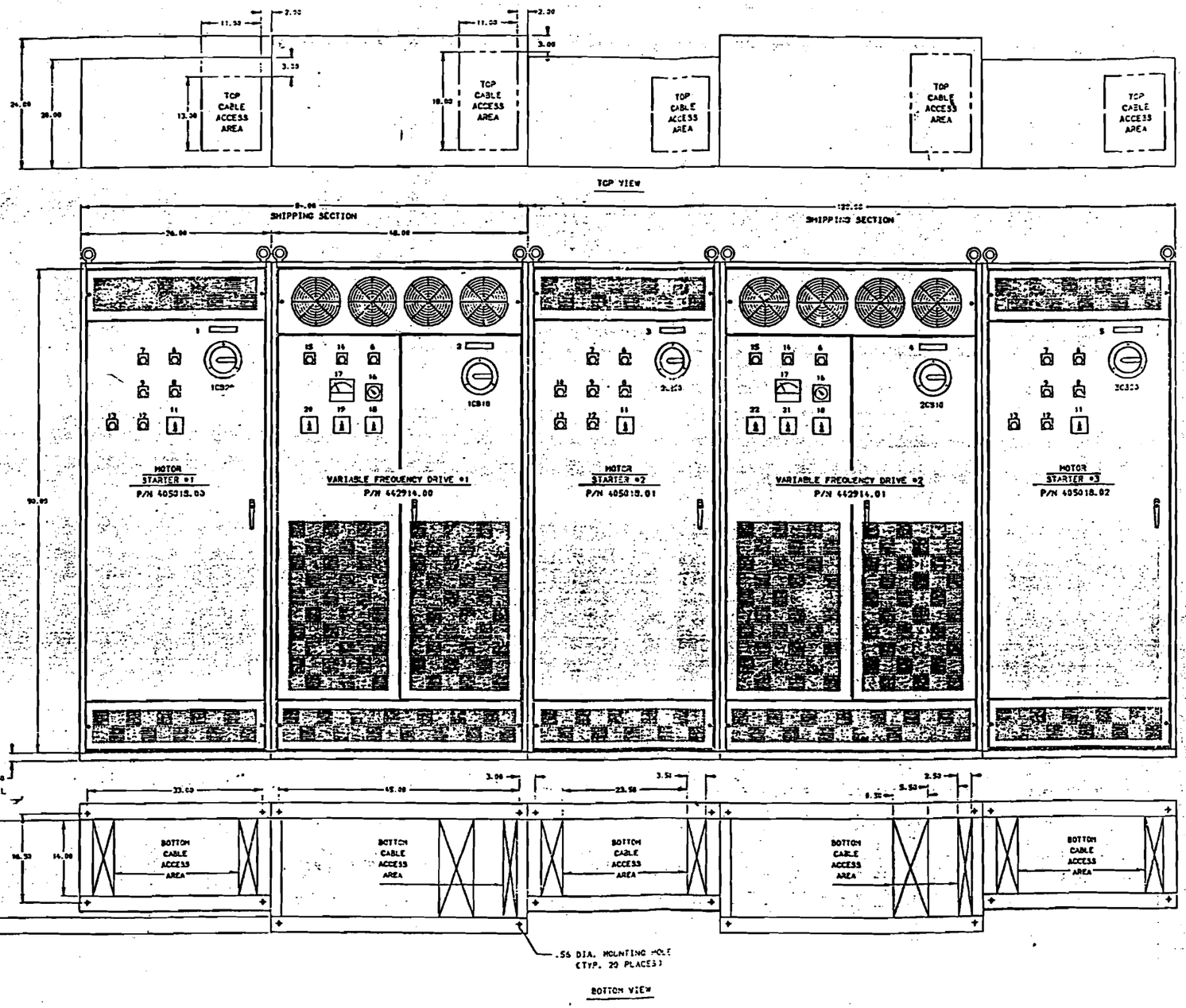
CUSTOMER: FOURETTE & CO., INC.
CUSTOMER O/E: C-6802
PRATT ORDER NO.: 086057
PROJECT: BAYONNE SEWAGE TRT. PLT.

PRATT ITEM	QUAN.	SIZE	MIN. PRESSURE	MAX. PRESSURE	THEORETICAL ISOTHERMAL USEABLE OIL	THEORETICAL ADIABATIC USEABLE OIL	VOLTAGE	TO OPERATE ORDER ITEM NO.	TOTAL CYLINDER VOLUME
03	1	LP-100	100 PSIG	150 PSIG	22 GAL.	16 GAL.	480	1	4 GAL.

GENERAL ARRANGEMENT
AIR/OIL ACCUMULATOR SYSTEM

SCALE: NONE DATE:
DRAWN BY: CHECKED BY:
APPROVED:

PAINT: EXTERIOR OF SYSTEM: INDUSTRIAL RUST-RESISTANT PRIMER AND WATERPROOF INDUSTRIAL ENAMEL



NOTES:

1. PART NUMBERS:
   - 405018.00 - MOTOR STARTER #1
   - 442916.00 - VARIABLE FREQUENCY DRIVE #1
   - 405018.01 - MOTOR STARTER #2
   - 442914.01 - VARIABLE FREQUENCY DRIVE #2
   - 405018.02 - MOTOR STARTER #3

2. REFERENCE DRAWINGS:
   - 477135 - SYSTEM SCHEMATIC

DOOR DEVICE NOMENCLATURE:

NO.	DESCRIPTION
1.	MOTOR STARTER #1
2.	VARIABLE FREQUENCY DRIVE #1
3.	MOTOR STARTER #2
4.	VARIABLE FREQUENCY DRIVE #2
5.	MOTOR STARTER #3
6.	POWER ON (RED LENS)
7.	MOTOR FAULT/RESET (RED)
8.	MOTOR ON VFD1 (RED)
9.	MOTOR ON CONSTANT SPEED (RED)
10.	MOTOR ON VFD2 (RED)
11.	MOTOR SELECT (HAND-OFF-AUTO)
12.	START (GREEN)
13.	STOP (RED)
14.	RUN (RED)
15.	VFD FAULT/RESET (RED)
16.	MANUAL SPEED ADJUST
17.	MOTOR SPEED (0-100%)
18.	MODE SELECT (HAND-OFF-AUTO)
19.	VFD MOTOR SELECT (1-2)
20.	VFD 1 MOTOR 2 SELECT (1-2)
21.	VFD MOTOR SELECT (2-3)
22.	VFD 2 MOTOR 1 SELECT (2-3)

RAW WASTEWATER PUMPS CONTROL PANEL

FIGURE 3-12

SCALE	3/32"=1"
DATE	02/15/89
DRAWN	TS
CHECKED	MCK
OFFICE	JEP
APPROVED	MCK

ROBICON CORPORATION
A BARBER-COLMAN COMPANY

TITLE	SYSTEM OUTLINE MK IV W/SYPASS 300 HP
DWG NO	405017
REVISION	-
SHEET NO	1

TIERRA-A-000443

However, if the demand continues to increase after the second pump has started, at set-point G the speed of both pumps would begin to exceed minimum and vary in union linearly with demand, until they reach maximum speed at set-point H.

A still further increase in demand shall require operating a third pump (set-point K), at constant speed.

On decreasing demand the system will return to standby by reversing the preceding sequence of events. All of the set-points must be field adjustable.

If some components of the system are out of service, the control strategy should still attempt to satisfy demand as well as possible.

2. Variable Speed/Hand Operation - Each VFD has the capability of being operated individually at variable speed, with the mode selector in the hand position, from the VFD cabinet.

3. Constant Speed/Automatic Operation - The variable speed system has the capability of operating in the automatic mode with the pump operating at full speed in the event of VFD failure. Automatic shall be a completely automatic unattended operation. When manually transferring from VFD drive to magnetic starter the control and auxiliary circuits are transferred accordingly in the same operation.

   In the event of a failure of a VFD an alarm is given.

4. Manual selection of sequence of pump operation is provided, with unlimited sequence arrangements. The control system places VFD units ahead of magnetic starter units.

   An alarm is given upon motor fault or pump failure at all times.

5. Control is automatically transferred to the backup level control system (as described hereinafter) when the high wet well level alarm condition is signalled by the backup transducer system. Reset shall be manual.

6. When operating on the standby generator (as signaled from the Automatic Transfer Switch) operation shall be limited to no more than four (4) of the six main pumps, with the RWW pumps taking precedence over the STF pumps.

7. Provision is made for control of pumps for the Seal Water System. Inside the level Control Panels are required control relays, timers, selector switches, alarms, and indicating lights necessary for a coordinated functioning system. The system is duplex with automatic standby and manual lead/lag selection.

   Also interface is provided with the hydraulic drive unit for operation of the main pump discharge valves. Sequence, interlocking, and failure alarms are provided for operation of the valves in proper coordination with the pumps. Coordination conforms to requirements given by the pump vendor.

When a pump is signaled to start it's corresponding discharge valve is signaled to open. If it does not open within a preset time (timing relay) then a failure signal is given, and the pump is stopped. Also the pump will not start if the valve is not fully closed.

A motion sensor is provided on each RWW pump shaft. If the sensor signals that there is back-spin rotation of the pump shaft, the motor cannot start.

3.4.9 Raw Wastewater Pump Control

This system provides sequence control to a Robicon motor control line-up with two VFDs and three constant speed starters. VFD-No. 1 may operate either RWW-1 or RWW-2 through interlocked magnetic contactors; and similarly VFD No. 2 may operate either RWW-2 or RWW-3. A constant speed starter is provided for each pump. A Consolidated Model A1000 is used to monitor the wetwell level and supplies a level signal to a Consolidated D520SR controller which pro-

vides the pump steps. A second submersible transducer and D520 controller provides a backup control system to the primary controller.

The two transducers are mounted in the raw wastewater wetwell, and each transducer is connected to a ISIA safety barrier. The safety barrier is used to limit the energy to the transducer so that an explosive spark cannot be generated in the wetwell area. The ISIA generates the excitation voltage for the transducer and receives back the level signal. The level signal then goes to the signal simulator. A switch on the simulator allows the operator to select which signal will go to the controller, the level signal or a manually simulated signal which allows the operator to run the control system through an operating sequence. The D520 controller then generates pump speed ramps for the VFDs, pump required steps, and high and low alarms.

A selector switch is provided to determine which controller, the primary or secondary will provide the control for the pumps. When the switch is in the auto mode the primary control will provide the pump control until a high alarm is sensed by the secondary controller. The control is then operated from the secondary system until the high level alarm is manually reset or the selector switch is set to the primary control system.

The pump required steps from the D520 go to a pump sequence selector switch. The first two pumps in the sequence operate on VFDs, the third pump operates in the constant speed mode. If the lead VFD should fail the second pump in the sequence will be called upon to operate as the lead pump and the first pump in the sequence will operate as the lag pump on constant speed. If the lead pump should fail the second pump in the sequence will be switched to the lead. Low level contacts are provided which lock out the pumps on a low wetwell.

Control for the seal water pumps is provided by this panel. A selector switch is used to select the lead pump or auto alternation. In auto alternation a time clock is used to provide pump alternation. If the lead seal water pump does not maintain header pressure timer TRI will time out and generate the seal water failure alarm. The lead seal water pump will be switched off and the lag pump called to run.

An alarm annunciator is used to flash plant alarms. When an alarm originates it's light will flash and the horn will sound. When the silence button is pressed the light will come on steady and the horn will turn off. When the alarm condition is eliminated the light will turn off.

3.4.10 Motor Controls for Constant Speed Drives

3.4.10.1 RWW Pumps

1. A constant speed starter is provided for each raw wastewater pump motor. The starter is enclosed as part of the Pump Control Panel line-up. The starter contains a circuit breaker with short circuit interrupting capacity of 42,000 symmetrical amps. The starter contains a three phase thermal overload with heaters sized for the full load amps of the motor.

2. The starter is of the reduced voltage, autotransformer type, closed transition.

3. A control transformer is provided for each combination starter.

4. Each motor control compartment has mounted on the door of the enclosure the following instrumentation.

    a. POWER ON pilot light indicating circuit breaker energized.

b. A HAND-OFF-AUTO selector switch for operation of the motor from the automatic level control system, or manually.

c. An elapsed time meter with five digits and tenths for running time of the motor.

d. Power ammeter and 3-phase plus off selector switch.

5. Termination boards in the motor starters are provided for the control and auxiliary wiring.

3.4.11 Motor Controls for Two-Speed Drives

1. A two-speed combination starter is provided for two (2) storm flow pumps (integrated with existing VSC and new contactors and level control section into PCP-S).

2. The starter is of the wound rotor motor, four-step resistor type with magnetic contactors, automatic timed steps. Resistors are crane-duty, continuous duty in ventilated enclosures on top of their respective starters. The first two steps are for reduced voltage starting. Steps three and four are continuous low speed and high speed as called for by the level control system. Resistors for steps three and four have tap connections to allow several adjustments in speed of approximately 2% each step.

3. The features described in subparagraphs (1), (3), (4), and (5), in 3.4.10.1 above also apply to these starters.

3.4.12 Automatic Transfer Contactors

On the load side of the controllers there are automatic transfer contactors which allow bypass of each pump to either a VFD (VSC) or its magnetic motor controller. The transfer contactors are incorporated in either the VFD (VSC) enclosures, or in separate individual enclosures. In either case, the contactors are in enclosures which form a continuous matching line-up of the Pump Control

Panel as a whole. Contactors are rated for the horsepower of the pump motors, at 480 V or more. Operation of the transfer contactors cause simultaneous transfer of control and auxiliary circuits, either by auxiliary contacts on the switch or interlock relays. Pairs of transfer contacts which are connected to a common motor have an interlock arrangement to prevent two controllers from being connected to the same motor.

Auxiliary contacts on contactors are interfaced with elapsed time meters on magnetic starters to give proper total running time of pumps regardless of which controller drives the pump.

3.4.13 Level Controls for RWW and STF Wet Wells

The level control section for each wet well consists of the following items:

1. System logic section to control the speed, sequencing, and alternation of the raw sewage and storm flow pump motors in response to wet well level changes.

2. Control transformer, 480 V to 120 V. Also power relay to transfer control source from one power feeder to the other upon failure of the normal source. A circuit breaker in each source, on the line side of the relay is provided.

3. A circuit breaker and pilot light in each 120 V control circuit is provided.

4. Control equipment and alarm for auxiliary systems is provided.

3.4.13.1 System Logic

The system logic section receives a 4-20 mA DC electrical signal from the Raw Sewage and Storm Flow wet well transducers and provides for the pump system operation as described in the "Pump Sys-

tem Operation" section of this manual. The 4-20 mA transducer signal feeds the programmer which has the following features.

1. LED light to indicate presence of 4-20 mA from transducer.

2. Individual field adjustments for each variable speed and two speed motor for:

   a. Start pump level (motor accelerates to minimum speed).

   b. Stop pump level.

   c. Level at which motor speed is increased above minimum. At this level motor speed is determined by slope set in adjustment d.

   d. Rate of change of pump speed in relation to level change (slope).

   e. Minimum speed.

   f. Maximum speed.

3. Three (3) LED lights for each pump to indicate pump "ON," pump operating above minimum speed, and pump operating at maximum speed.

4. Test switch with 4-20 mA signal detector to simulate system operation.

5. Sequential motor starting to prevent simultaneous starting of two or more motors. Motor starting time sequence shall be adjustable.

Alternation logic is provided for the following functions:

1. Selector system for selection of manual alternation.

2. Indicting lights to show which pump is in the lead position.

3. Failure of the motor when in automatic operation results in the failed unit automatically being alternated to the spare position. Operation continues in automatic.

4. The control function described above functions with solid state logic and not with control relays. Erasable Programmable Read Only Memories (EPROMS) or equivalent devices are utilized for reliability and ease of field modification.

5. The logic system described is Logicmate as manufactured by Robicon and is capable of providing the pump sequence described under each and every condition of drive and/or pump failure.

3.4.13.2 Transducer System

Furnished with each Control Panel, and installed in the raw wastewater wet well are two submersible level transducers, and in the storm flow wet well one (1) submersible level transducer, each of solid state 3-wire, 12 VDC, 34 ft range, 45 psi max, ± 1.5% repeatability, stainless steel construction with viton diaphragm and seals, 1 in. S.S. pipe and mounting clamps, Consolidated Model 157GSSE, with sufficient cable from mounting position to upper breather connection box.

The pressure transducer converts the pressure signal to a 1-5 VDC electrical signal representative of liquid level for input to the programmer.

An intrinsically safe barrier in the transducer control panel is provided to interface each transducer.

The calibration and maintenance of the liquid level controller is completely adjustable in the field in order to provide flexibility and fine tuning.

Instrumentation on the system logic cabinet includes:

1. Input circuit breaker with door interlock.

2. Power "ON" light.

3. Liquid level indicator.

4. Alarm silence.

Drawing for relay logic is JIC type with cross reference for each relay coil to grid location of the relay's contacts. Each relay coil contains a brief function description of the relay operation on the drawing. Normally closed contacts grid locations are underlined to indicate contact is normally closed.

3.4.14 Auxiliary Control and Alarm Panel

a. Auxiliary Control and Alarm features are furnished and installed in each Pump Control Panel. The features include, a back-up level control system for the main pumps, control and interlocking for Pump auxiliaries, and the alarm system as described.

b. The back-up level control system consists essentially of a back-up pressure transducer for the raw wastewater system, and duplicate solid state logic sequence and control system for the PCP-R; and the required relays, times, switches, pilot lights, etc., necessary to operate the three storm flow pumps in the PCP-S. Operation of the pumps shall be through the controllers in the Pump Control Panel. Six (6) float switches shall be provided in the STF wet well, whose functions for back-up shall be as follows. Starting at the lowest level:

   1. Low wet well alarm, all pumps off.

   2. All pumps off

   3. Start first pump

   4. Start second pump

   5. Start third pump

   6. High wet well alarm; and control transfer to this back-up level control system.

Additional features of each level control system are:

a. Manual selector switch to transfer control to back-up system or to normal system.

b. Adjustable time delay relays for each "pump start" signal, 0-60 sec.

c. Manual reset to restore control to normal system after an automatic transfer.

d. Normal safety and alarm functions to operate the same way in back-up as in normal control, including pump motor over temperature sensors, and discharge valve failure for the RWW pumps.

e. Indicating lights to show normal operation, each float level, and failures.

f. Power supply consists of two 120 V, 60 Hz, circuits in each Panel; one for each control system, and one for each alarm system.

g. Relays are plug-in type with transparent plastic dust cover, 8-pin, screw terminal sockets, 10 AMP, 240 V AC, gold-plated contacts 115V AC coils. Time delay relays are solid-state type, adjustable, same configuration and manufacture.

h. Pilot devices, such as indicating lights, pushbuttons, selector switches, etc., are heavy duty, and oil tight.

i. Intrinsically safe relays are provided to interface all switching devices in hazardous areas.

j. Terminal blocks for all interconnection and external wiring are provided.

k. Associated control devices, such as float switches, level transducers, pressure transducers, etc., as required for control and alarm are provided.

c. The required equipment for the Auxiliary Control and Alarm System is installed in these panels.

d. Panels include "OPEN" (red) and "CLOSED" (green) indicating lights, 120V AC, push-to-test type, for hydraulic valves, open and close push buttons, and "MANUAL-AUTO" selector switches.

3.4.15 Seal Water Supply System

3.4.15.1. A seal water distribution system from the disconnected water supply source for Pumps RWW-1, RWW-2, RWW-3, STF-1, STF-2, STF-3, is provided which is suitable for sealing the stuffing boxes of the above respective pumps.

3.4.15.2. The 1/2-in. dia. seal water supply line to each pump is via the casing and each line is comprised of the following items:

- o 1/2-in. isolation gate valve, ITT Grinnell Fig. 3000
- o 1/2-in. strainer, 20 mesh stainless steel screen, Keckley Style B
- o 1/2-in. solenoid valve, ASCO No. 8210G94
- o 1/2-in. needle valve, Whitey No. B-18VF8
- o 1/2-in. glass flow indicator, Ernst Series 136
- o 1/2-in. pressure gauge

3.4.15.3. A 1-in. recirculation line which returns to the tank through an all bronze pressure relief is provided on the seal water header.

3.4.15.4. One (1) pressure switch is furnished and installed in the common output piping of the disconnected water supply pumps for interlocking with the common seal water alarm. The switch is suitable for operation at 150 psi, housed in a general purpose enclosure and adjustable to open on rising pressure at approximately

15 psi and reclose on falling pressure at approximately 10 psi, above and below that which is required at the wastewater pumps.

3.4.15.5. Individual pump pressure switches and the main header pressure switch gives an alarm signal on pressure failure. In addition, loss of individual seal water pressure will stop the running pump and start the stand-by pump, provided there is pressure in the header. If header pressure fails, pumps shall not be stopped or prevented from starting. A time delay is provided on all pressure switch functions.

3.4.15.6. Time delay control is interlocked between stopping of a main pump and closing of its corresponding seal water solenoid valve to allow for thorough flushing. The solenoid valve opens instantly upon starting of its corresponding pump.

3.4.15.7. An automatic sequence changer to alternate duplex disconnected water supply pump operation every 24 hours at each installation is also provided.

3.4.15.8. Duplex electrical control panels are furnished.

3.4.16 Disconnect Water Supply System

3.4.16.1 Operations Building

The disconnect water supply system provides city water for hose bibs, for the water loop in the storm flow wet well for flushing the walls following the end of a storm flow event, and for supplying seal water to the seal water supply system. See Fig. 3-11. The system is located at the intermediate level (pipe gallery) of the Operations Building, and consists of a 100 gal, galvanized steel tank with a stilling well for a float valve, two close

coupled centrifugal pumps, rated at 30 gpm, when operating at 100 ft TDH, and accessories. These are:

- o Centrifugal pumps, 7.5 motor, Peerless No. 615 AM/BF
- o Isolation valves, bronze ball:

  1 - 2-in. inlet supply line

  2 - 2-in. pump inlet

  2 - 1 1/2-in. pump outlet

  1 - 1 1/2-in. storm pump header

  1 - 3/4-in. tank drain

  2 - 1 1/2-in. Grinnell 3.300 check valves

  2 - 1 1/2-in. Wye strainer on pump inlet, Keckley, Style B

  1 - 1 1/2-in. Pressure Relief Valve, Kunkle Fig. 20-1.

  1 - 1 1/2-in. Pressure Regulating valve, Storm Flow header, Cash-Acme, Series E

  1 - 2-in. Float valve, 6-in. SS float, Keckley No. 77.

The potable water supply header is provided with a 4-in. backflow preventer, as well as a 4-in. water meter with bypass, and 4-in. isolation valves.

3.5 MAINTENANCE OF OPERATIONS BUILDING EQUIPMENT

In general, the operation and maintenance manuals furnished with each item of equipment provides information for assembly, disassembly, parts replacement, lubrication, and general maintenance.

3.5.1 Troubleshooting the RWW and STF Pumps

3.5.1.1 Failure to Deliver Water or Insufficient Capacity

1. Pump not primed.
2. Speed too low.
3. Discharge pressure required by the system is greater than that for which the pump is designed.
4. Waterways of impeller, casing and/or piping partially clogged.
5. Wrong direction of rotation.
6. Valves not opened.
7. Insufficient net positive suction head.
8. Air leaks in suction piping.
9. Excessive amount of gas or air in liquid.
10. Air leaks throw gaskets or stuffing box.
11. Viscosity of liquid higher than that for which the pump is designed.
12. Mechanical defects:

    Impeller damaged.
    Wearing gap worn excessively.

3.5.1.2 Insufficient Discharge Pressure

1. Speed too low.
2. Excessive amount of air or gases in water.
3. Discharge pressure required by the system is greater than that for which the pump is designed.
4. Viscosity of impeller, casing and/or piping partially clogged.
5. Waterways of impeller, casing and/or piping partially clogged.

6. Wrong direction of rotation.

7. Mechanical defects:

   Impeller damaged.
   Wearing gap worn excessively.

3.5.1.3 Pump Loses Pressure After Starting.

1. Air leak in suction line.

2. Excessive amount of air or gases in the liquid.

3. Insufficient net positive suction head.

4. Inlet of suction pipe insufficiently submerged.

3.5.1.4 Pump Power Consumption Too High.

1. Speed too high for variable speed and two speed pumps.

2. Liquid pumped is of higher specific gravity or viscosity than that for which the pump is rated.

3. Mechanical defects.

4. Excessive solids concentration causing binding at the wearing gap area.

3.5.1.5 Pump Vibrates.

1. Misalignment.

2. Foundation not sufficiently rigid or foundation bolts loose.

3. Impeller partially clogged causing imbalance.

4. Mechanical defects:

   Bent shaft.
   Rotating element rubbing on stationary part.
   Worn bearings.
   Pump and/or driver rotor out of balance.
   Loose impeller screw.

5. The critical frequency of the system including pump, piping and foundation being excited.

6. Improper suction inlet piping.

7. Pump being operated too far away from capacities for which it is designed.

8. Insufficient net positive suction head.

9. Inadequate piping support.

10 Bearing end play too great.

3.5.1.6 Bearings Overheat and Have Short Life

1. Internal misalignment due to pipe strain or improper foundation.

2. Excessive coupling misalignment.

3. Shaft bent or damaged.

4. Excessive lubrication of the bearings.

5. Insufficient lubrication of the bearings.

6. Incorrect type of lubrication.

7. Improper end-play setting or installation of the bearings.

8. Lubricant contaminated.

9. Bearings rusted due to presence of water in bearing frame.

10. Excessive unbalance of the rotating assembly.

11. Pump being operated too far away from capacities for which it is designed.

12. Pump vibrating excessively.

13. Worn bearings.

14. Pump operating at too high a speed for the frame size being used.

3.5.1.7 Mechanical Seal Has Short Life or Leaks Excessively.

1. Shaft bent.

2. Shaft sleeve worn or scored or running off center.

3. Mechanical seal improperly installed.

4. Incorrect type of mechanical seal for the application.

5. Excessive vibration.

6. Abrasive material in seal cavity which could be a result of:

   a. Abrasive material in sealing water or pumped liquid.

   b. On double mechanical seals, the bottom seal unseated due to improper installation or incorrect seal water piping arrangement thereby causing the unseating after start up.

7. Mechanical seal was run dry.

8. Stationary ring in gland cracked due to over tightening of gland nuts at assembly.

3.5.2 Electric Motor Precautions, Operation, Maintenance, Troubleshooting

3.5.2.1 Safety Precautions

High voltage and rotating parts can cause serious or fatal injuries. Installation, operation, and maintenance of electric machinery should be performed by qualified personnel. Familiarization with NEMA Publication MG-2, Safety Standard for Construction and Guide for Selection, Installation and Use of Electric Motors and Generators, the National Electrical Code, and sound local practices is recommended.

For equipment covered by this Manual, it is important to observe safety precautions to protect personnel from possible injury. Among the many considerations, personnel should be instructed to:

- Avoid contact with energized circuits or rotating parts.

- Avoid by-passing or rendering inoperative any safeguards or protective devices.
- Avoid use of automatic-reset thermal protection where unexpected starting of equipment might be hazardous to personnel.
- Avoid contact with capacitors until safe discharge procedures have been followed.
- Be sure that the shaft key is fully captive before the motor is energized.
- Avoid extended exposure in close proximity to machinery with high noise levels.
- Use proper care and procedures in handling, lifting, installing, operating, and maintaining the equipment.
- Do not lift anything but the motor with the motor lifting means.

Safe maintenance practices by qualified personnel are imperative. Before starting maintenance procedures, be positive that:

- Equipment connected to the shaft will not cause mechanical rotation.
- Main machine windings and all accessory devices associated with the work area are disconnected from electrical power sources.

If a high-potential insulation test is required, procedure and precautions outlined in NEMA Standards MG-1 and MG-2 should be followed.

Failure to properly ground the frame of the machine can cause serious injury to personnel. Grounding should be in accordance with the National Electrical Code and consistent with sound local practice.

3.5.2.2 Motor Operation Prior to Initial Startup or Restart After Long Shutdown

Warning No. 1: Be sure that the motor is not running and the power supply is disconnected before working on the motor.

Caution: Before energizing the motor for the first time or after an extended shut down, it is advisable to check insulation resistance, power supply and mechanical freedom of the motor. If the motor has been stored in a damp location, dry it out thoroughly before operating.

Warning No. 2: Before measuring insulation resistance, the machine must be at standstill and all windings to be tested must be electrically connected to the frame and to ground for a time sufficient to remove all residual electrostatic charge.

Failure to observe these precautions may result in injury to personnel.

3.5.2.3 Lubrication

Motors are usually shipped without oil. Before starting fill each reservoir to the standstill level shown on the sight gauge. The ball bearings in the guides shall have an oil viscosity of 150 SUS at 100°F, and 45 SUS at 210°F. The oil should be the equal of GE D6B6A.

3.5.3 Maintenance of Pump Shaft and Shaft Sleeve

When the pump is dismantled, examine the shaft carefully. Its condition should be checked at the impeller hub fit, under the shaft sleeve (if sleeve is removed) and at the bearings. The shaft may become damaged by rusting or pitting due to leakage along the shaft at the impeller or shaft sleeve, excessive exposure to moisture, or mishandling.

Anti-friction bearings improperly fitted to pump shaft may result in inner race rotation on the shaft thus causing undue damage. Check the shaft keyways for distortion. Excessive thermal stresses or corrosion may loosen the impeller on the shaft and damage the keyway.

Replace a shaft that is bent or distorted. If wear on the shaft is slight, it may be possible to rebuild it by metal spraying or plating and re-grinding. This repair should be carried out by trained and competent personnel. After a shaft has been repaired, check it for possible runout (maximum 0.002 in.). Re-check it after complete bearing frame re-assembly.

When the sleeve has become worn appreciably, it becomes impossible to adjust the packing to prevent leakage and it should be replaced. Excessively grooved and scored sleeves will tear and score new packaging as soon as it is inserted into the stuffing box. Any sleeve grooved more than 1/8 in. deep must immediately be replaced to avoid damage to other components.

Note: The shaft sleeve is mounted on the shaft using a Loctite Type RC/680 retaining sealant and is keyed.

3.5.4 Maintenance of Pump Bearings

The RWW and STF pumps are equipped with anti-friction bearings of the tapered roller type. The line and thrust bearings are both mounted in the bearing housing, which is bolted to the stuffing box head. Anti-friction bearings are usually pressed or shrunk on the shaft. The outer races are pressed into the bearing housing.

Note: The bearing fits are not to be altered to avoid operational problems.

When a pulling device is used to remove a bearing from the shaft, the pulling jaws or fingers should be located on the inner race. When other parts do not interfere, the bearing inner race may be supported by a split ring and the shaft pressed out using an arbor press.

There are two methods in general use for mounting a bearing on the pump shaft:

1. Heating the bearing to expand the inner race and shrinking it on the shaft.
2. Forcing the bearing onto the shaft.

The first method is preferred. Heat the bearing in an oil bath, electric induction heater, or electric oven to a uniform temperature of 250 deg. F. When heated, quickly mount it on the shaft.

If the alternate method is used, apply the force by means of an arbor press. Use a tubular sleeve, ring, or a small block of equal thickness to apply the force to the inner race.

In forcing a bearing onto a shaft, be careful that the race is never cocked. Check the position of bearing on the shaft with a feeler gauge to make sure it is pressing firmly against the shaft shoulder.

3.5.5 Air/Oil Accumulator System Troubleshooting

See Table 3-4.

3.5.6 Disconnect Water Supply System Troubleshooting

See Table 3-5.

TABLE 3-4

AIR/OIL ACCUMULATOR SYSTEM TROUBLESHOOTING

FAILURE	PROBABLE CAUSE	RESPONSE
1. "Low sump oil level" alarm.	1a. Normal oil use.	1a. Add oil; check oil level more frequently and add oil regularly to prevent alarm condition.
	1b. Leak in System.	1b Add oil; locate and repair leak.
2. "Low accumulator oil level" alarm. ("Low sump oil level" alarm probably occurs first.)	2a. Problem in oil pumping system, oil level sensing or controls.	2a. Refer to manufacturer's literature. Section X, "Troubleshooting".
	2b. Oil pumps are shut off.	2b. Turn both pumps on and switch to "auto."
3. "Low air pressure" alarm.	3a. Air compressors are shut off or not operating properly.	3a. Turn on compressors; refer to manufacturer's literature for equipment problems.
	3b. Leak in air system (compressors run but pressure does not come up to normal).	3b. Locate and repair leak.
4. "Lag compressor" alarm.	4a. Alarm may occur under some normal operating conditions.	4a. Reset alarm.
	4b. Air leak in system.	4b. Locate and repair leak.
	4c. Compressor is off or has failed.	4c. Turn on compressor and switch to "auto". Refer to manufacturer's literature for equipment problems.
5. "Lag pump" alarm	5a. Alarm may occur under some normal operating conditions.	5b. Reset alarm.
	5b. Oil system leak.	5b. Locate and Repair leak.
	5c. Oil pump is off or has failed.	5c. Turn on oil pump and switch to "auto". Refer to manufacturer's literature for correcting equipment problems.

TABLE 3-5

DISCONNECT WATER SUPPLY SYSTEM TROUBLESHOOTING

FAILURE	PROBABLE CAUSE	RESPONSE
1. Disconnect water supply pump fails to start (low pressure alarm).	1. Circuit breaker is open or H-O-A switch is "off".	1. Close circuit breaker or switch to "auto".
2. Lack of seal water flow at the pump (low pressure alarm).	2a. Seal water supply or discharge valve is closed.	2a. Open valve.
	2b. Line break.	2b. Repair break.
3. Seal water pump motor overload (low pressure alarm).	3a. Discharge valve closed.	3a. Open valve.
	3b. Motor malfunction.	3b. Check motor (inform supervisor).
4. Low seal water pressure.	4a. See Items 1, 2 and 3 above	4a. See Items 1, 2 and 3 above.
	4b. Relief valve malfunction.	4b. Repair relief valve.
5. High water level in seal water tank.	5. Float valve is stuck open.	5. Free valve and check it for proper operation.
6. Low water level in seal water tank.	6a. Water supply valve is closed.	6a. Open valve.
	6b. Tank drain valve is open.	6b. Close valve.
	6c. Float valve in tank is stuck closed.	6c. Free valve and check it for proper operation. Replace it if necessary.
	6d. Supply line is broken.	6d. Repair supply line.

CHAPTER 4

ODOR CONTROL FACILITIES

4.1 PURPOSE

The odor control facilities for the Bayonne Pumpover Facilities are located in Room 127 of the Operations Building, and serve to remove or neutralize odorous gases. The equipment consists of vertically aligned odor absorber chambers and exhaust fans to draw odorous gases through the chambers. Figure 4-1 shows the plan layout of the Odor Control Room and equipment and Figure 4-2 shows the Absorber Chamber detail and deodorized air exhaust fan VF-1.

4.2 EQUIPMENT DESCRIPTION AND OPERATION

4.2.1 Operation

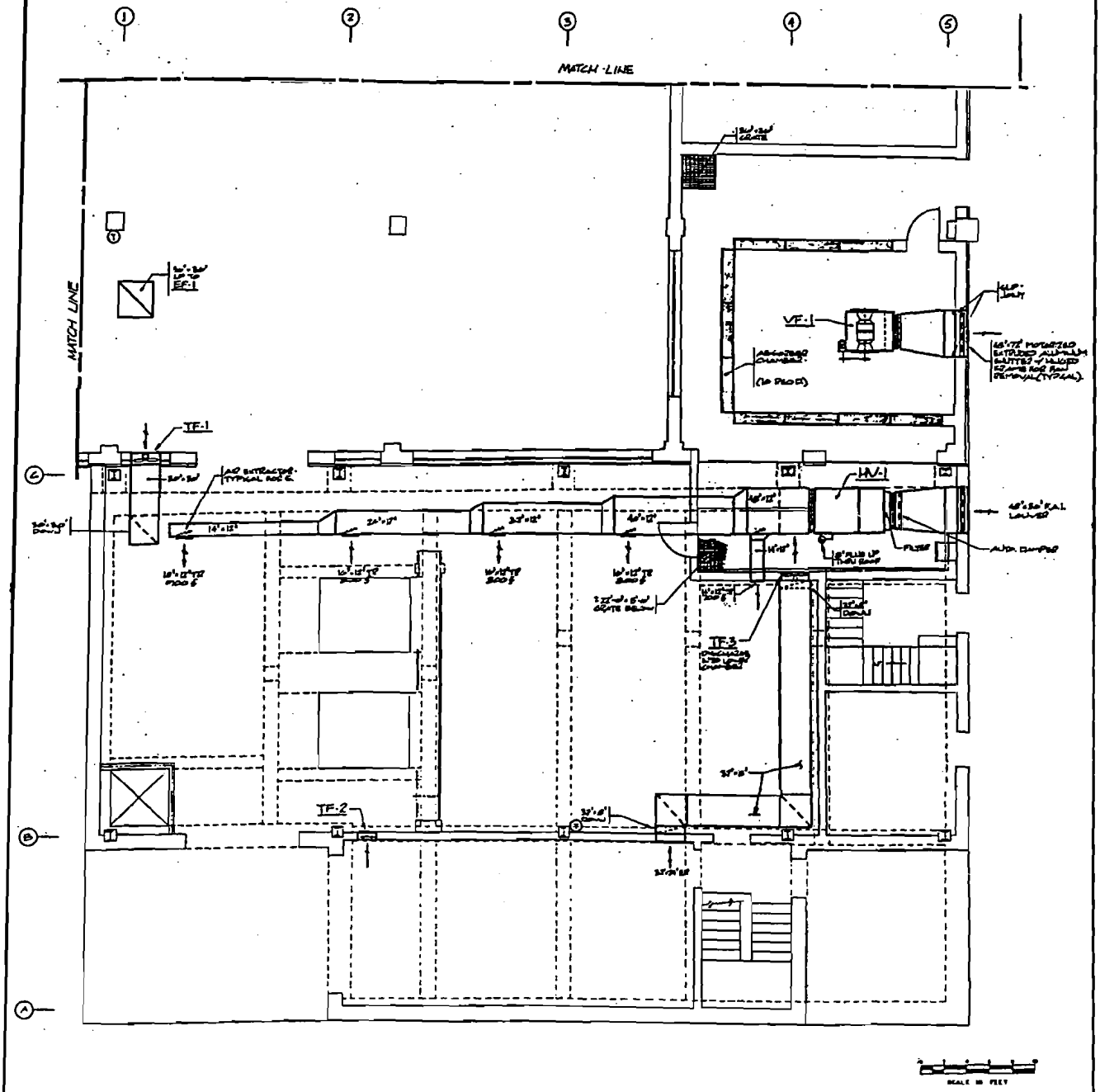
Air from the screen and Grit Chamber Room at Floor El. -5.33 is drawn by Fan VF-1 through the floor opening at El. 10.67 in the Screenings and Grit Chamber portion of the Odor Control Room, through the odor absorber chambers, and then blown outside after the odor bearing compounds are removed by oxidation. The capacity of fan VF-1 is 13,000 CFM at 1.0 in. static pressure, and is driven by a 7.5 HP motor.

Air is also withdrawn from the grit and screenings container room and into the Odor Control Room via a 32 x 8-in. duct by the fan TF-3. Fan TF-3 has a capacity of 1400 CFM at 0.5 in. static pressure, and is driven by a 1/2 HP single phase motor.

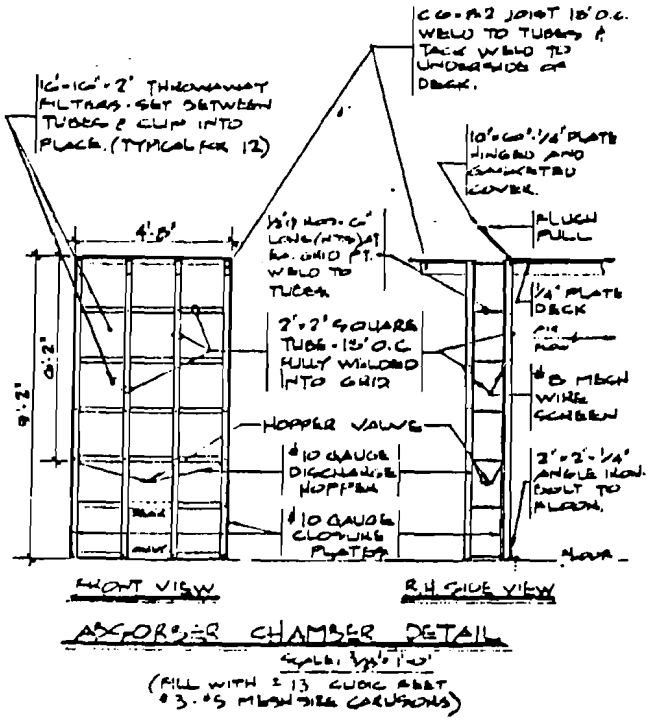
Air withdrawn from the grit chamber area includes both fresh air supplied through louvers and vents, gases that had been entrained in the influent wastewater and are released in the chamber, and

FIGURE 4-1

SCREENINGS AND GRIT REMOVAL BUILDING



FIRST FLOOR PLAN AT HP EL. 10.67 AND LP EL. 10.50

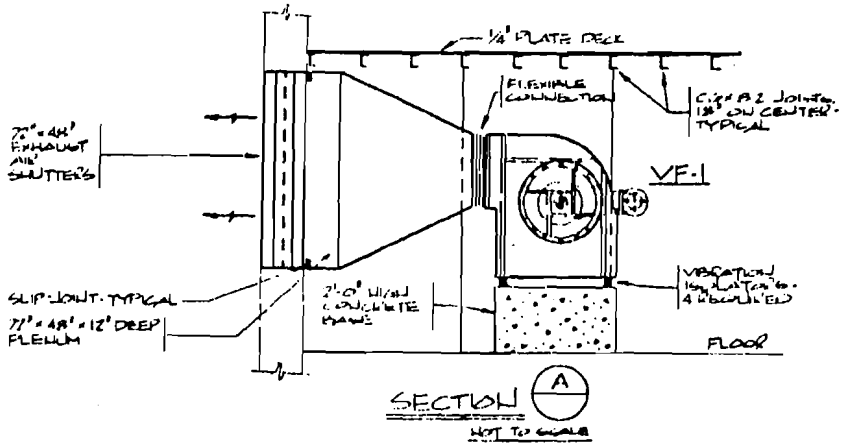


ABSORBER CHAMBER DETAIL

SCALE: 3/4" = 1'-0"

(FILL WITH ± 13 CUBIC FEET #3-#5 MESH SIZE CARBORUNDUM)

FIGURE 4-2



SECTION A

NOT TO SCALE

SECTION B

NOT TO SCALE

SCREENINGS AND GRIT REMOVAL BUILDING

HEATING AND VENTILATING

FLOOR PLAN AT EL. 10.67

SECTIONS

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DWG. NO.

C-1

gases that come out of solution from the wastewater. Hydrogen sulfide is the primary odorous gas removed in the absorber chambers, but other odorous gases are also removed.

The absorber chambers contain pellets of activated alumina and 4% potassium permanganate. The permanganate reacts with hydrogen sulfide to form an insoluble, sulfur-containing residue that remains on the pellets. Other odorous compounds also react with the permanganate and are oxidized to non-odorous substances. The pellets change from a purple hue to a grey-brown color as they react with odorous gases over a period of time. Reaction continues until the pellets are off-white in color, and then they must be replaced. The spent pellets must be disposed of in an environmentally approved manner.

Normal operation of the odor control equipment calls for both fans to be operated all the time. The access doors to the fan rooms and the odor chamber rooms should always be closed to draw the maximum amount of odorous air from the grit chamber area.

The permanganate pellets are replaced whenever their color has changed from purple to brown, gray or off-white, depending on the quality of exhaust air. The quality may be judged by the intensity of detected odor. When odors are considered unacceptable in the exhaust air or adjacent to the Screen Building, then the pellets should be replaced.

The pellets are replaced by opening the hopper valve at the base of each of the absorber chambers and allowing spent pellets to fill a bucket. The bucket of pellets should be emptied into a suitable waste container and the process repeated until the chamber is empty. The fans may be left running if desired. Fresh permanganate pellets are then loaded into the chambers.

4.3 ROUTINE MONITORING

The odor control system is designed for unattended operation and requires no periodic maintenance other than replacement of pellets as needed. Operation of fans should be checked daily for unusual noise and vibration. Permanganate chambers should be checked weekly for color change, and the vicinity of the Screening Building should be checked for odors regularly.

CHAPTER 5

STANDBY GENERATOR SET

5.1 GENERAL

A standby generator set is located on the Motor Room Floor of the Bayonne Pump Station in the Operations Building. The set is a diesel engine driven electric generator having a capacity of 1100 KW continuous standby duty, 0.80 power factor, 277/480 volts, 3 phase, 4 wire, 60 Hz operating at a speed of 1800 RPM. The stationary diesel generator unit with exciter is a Model 3512 TA as manufactured by Caterpillar Tractor Co. The generator is also a Caterpillar product. The unit is provided with an ASCO Model 9403200099 Automatic Transfer Switch to provide an independent standby power supply with local manual and remote automatic control. Accessories include a 12 in. Maxim exhaust silencer, fuel day tank of 100 gal capacity, Woodward EG10P/2301 electric governer, 24 volt battery/344 ampere hour by Royal Titan, Charles Model AS 2410 Trickle charger, and jacket heater.

5.2 OPERATION

The unit is required to start, in sequence, and run at least two (2) 250 horsepower raw wastewater pumps and two (2) 150 horsepower storm flow pumps. The raw wastewater pumps are controlled by SCR Variable Frequency drives. The storm flow pumps are capable of operating at two speeds. The generator regulator and control equipment are suitable for the above operations. A control signal is provided from transfer switch to pump controls to limit operation on generator to no more than two of the three RWW pumps.

The automatic transfer switch initiates automatic starting of the standby generator unit in event of utility power outage, and stopping of the engine and switching of the load when utility power is restored.

5.3 FUEL OIL STORAGE

No. 2 diesel oil is used to fuel the 1500 HP diesel engine operating at a speed of 1800 RPM. The engine is a Caterpillar Model 3572. Oil is stored in a buried 4000 gal capacity fiberglass double walled tank meeting the requirements of NJAC 7:14B-1, 2, 3 and 4. The tank is provided with a level indicating system. A tank monitoring system is provided to detect a breach in the outer or inner tank under all circumstances. A 2-gallon capacity reservoir is installed in the manway riser, which will drain if either wall is breached. A control panel is furnished to provide continuous monitoring and instant alarm. Oil is supplied to the City by contract with a local supplier.

CHAPTER 6

FORCE MAIN AND APPURTENANCES

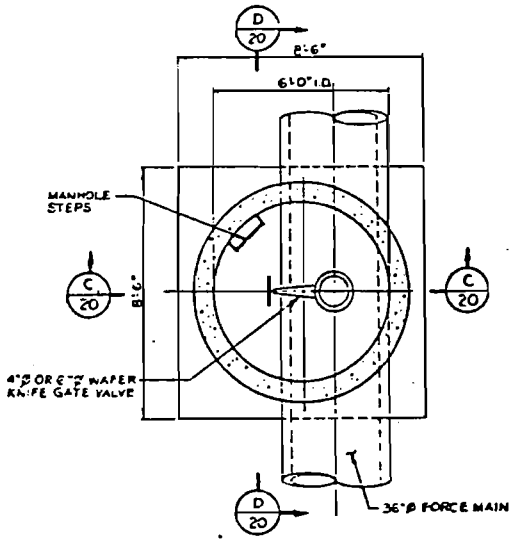
6.1 AIR AND VACUUM RELEASE VALVES

Combined air release and vacuum relief valves are located along the length of the 36 in. force main to release air where it could otherwise collect and to relieve vacuum conditions that could develop when pumps are shut off. Commonly called "sewage air and vacuum valves" they consist of a cylindrical metal body mounted vertically on top of the force main. A float inside of the body opens an air release port when there is no water inside the valve, but it seals the port when the float rises due to rising water level. Likewise, as the water level drops, the float drops, allowing the port to open and let in air to relieve vacuum conditions.

The valve has top and bottom flushing connections and a bottom shutoff valve. The manufacturer recommends that the valves be cleaned initially six months after the force main is put into service. If flushing removes the waste materials from the valve in a few minutes, then annual flushing should be performed thereafter. If flushing takes more than 15 minutes to obtain a clean rinse, then the valve should be flushed every three months. The top of the valve should be removed after a year's service to ascertain the amount of deposits that have accumulated on the inside parts. Inspections after that should be based on the mass of deposits that must be removed. See Figures 6-1 and 6-2.

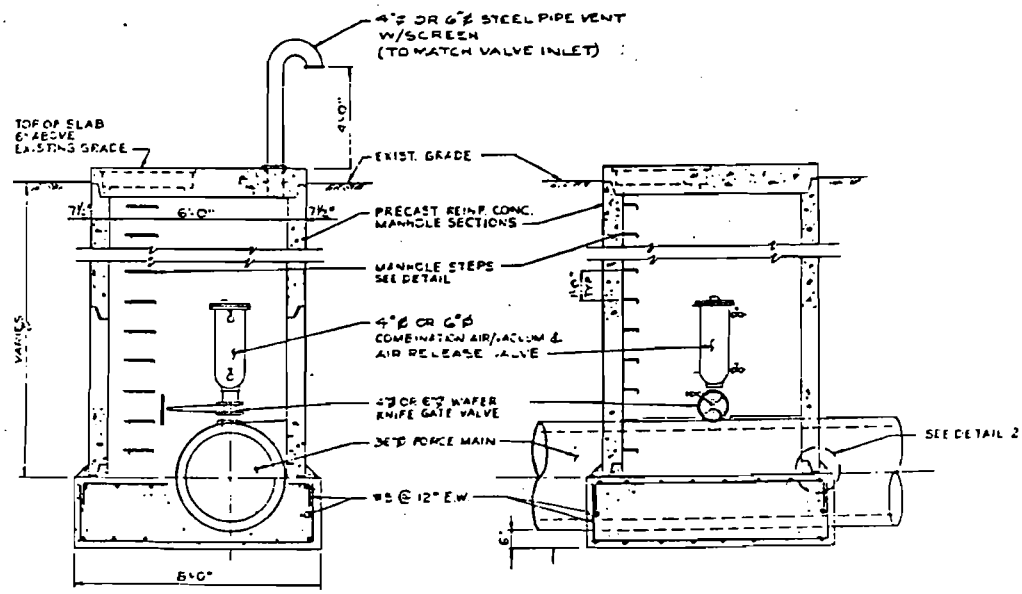
The manufacturer recommends the following cleaning procedure:

1. Close the bottom shutoff valve that connects the valve to the force main.



SECTIONAL PLAN

PLAN AT GRADE



SECTION C/20

SECTION D/20

FIGURE 6-1

COMBINATION AIR/VACUUM & AIR RELEASE MANHOLE

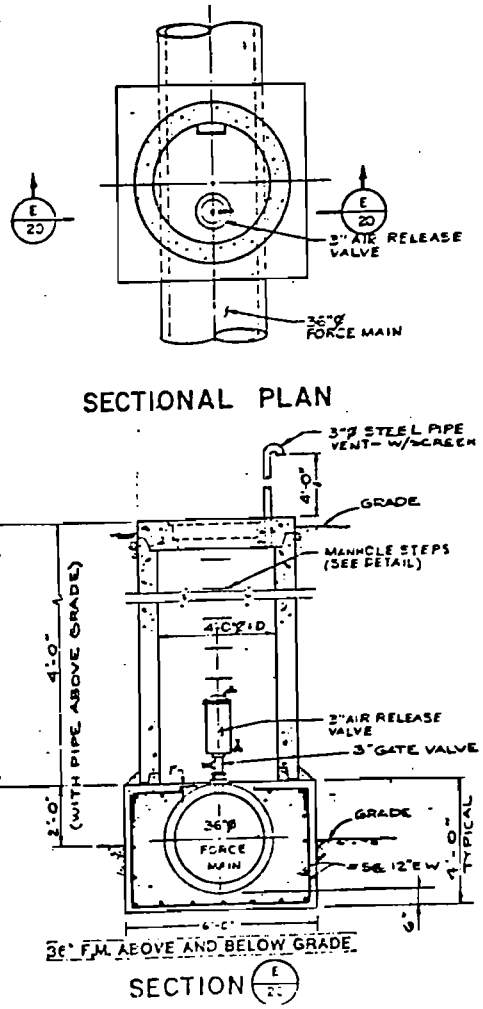


FIGURE 6-2

AIR RELEASE MANHOLE

2. Open the bottom flushing connection valve.

3. Connect a hose to the top flushing connection.

4. Open the top flushing connection valve and flush water through the valve until the flushing effluent is clean.

5. Close the top flushing valve, disconnect the hose, and flush the valve through the air release port on the top of the valve.

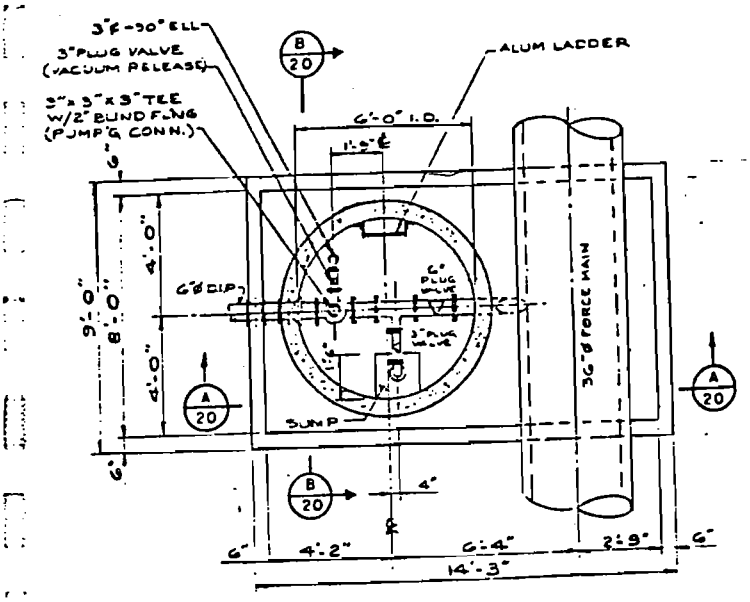
6. Close the bottom flushing valve and open the bottom shutoff valve to return the air/vacuum valve to service.

6.2 BLOWOFF VALVES AND MANHOLES

Blowoff manholes have been provided at low points along the force main for the purpose of flushing the system of any accumulated solids. The manhole contains a 6 in. manually operated plug valve on 6-in. ductile iron pipe from the bottom of the 36 in. force main. See Figure 6-3.

When the valve is opened by hand the internal pressure in the force main system will push the solids through the 6 in. pipe to a nearby sanitary manhole or appurtenance. Where there is no sanitary sewer in the immediate vicinity, a hose connection is provided near the top of the manhole. This allows the solids to be pumped into a tank truck.

A 3 in. plug valve and a sump are provided in each manhole. This allows the force main to be periodically tested for the accumulation of solids.



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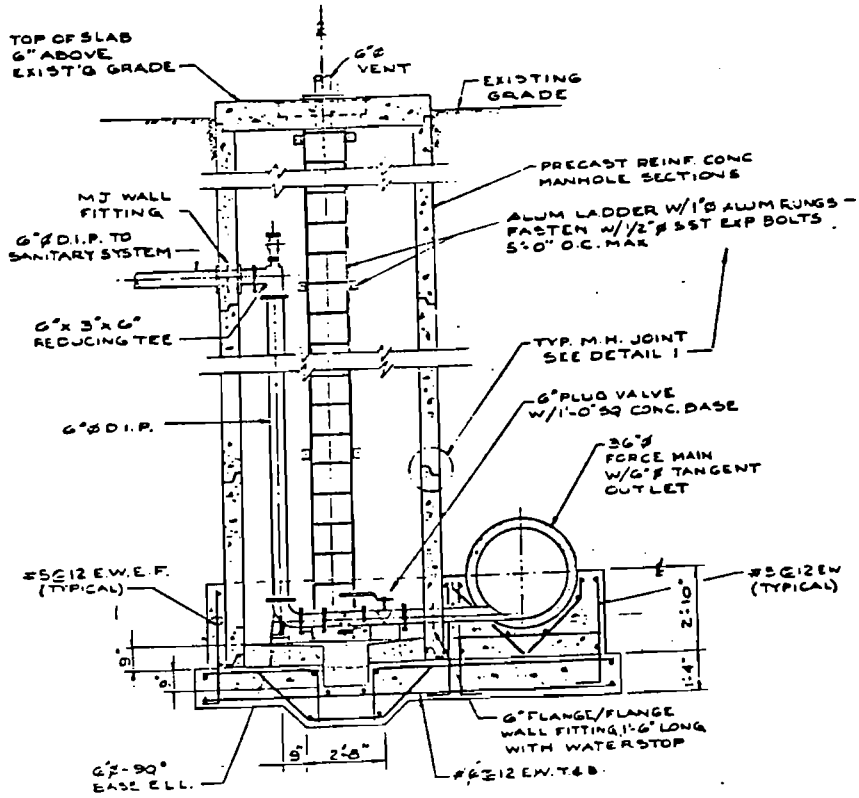
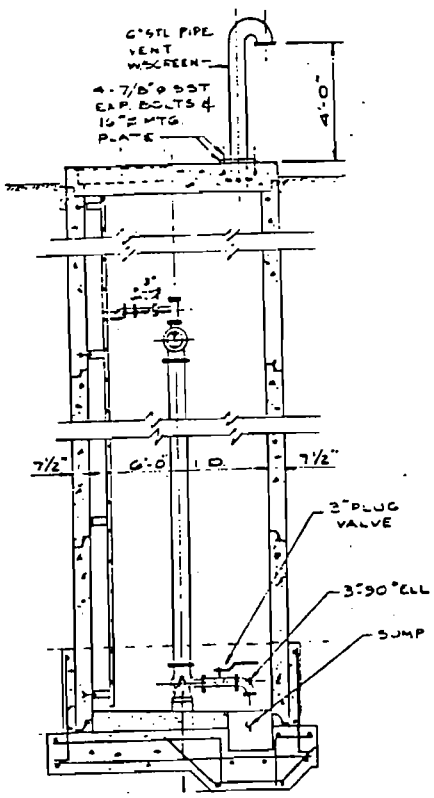


SECTION A/20



SECTION B/20

FIGURE 6-3

BLOWOFF MANHOLE

CHAPTER 7

EMERGENCY RESPONSE PROCEDURES

7.1 PROCESS EMERGENCIES

Process emergencies include equipment failures and various adverse operating conditions. Response to such emergencies is covered in Chapter 3 in respective process sections.

7.2 GENERAL EMERGENCIES

General emergencies, such as power failures and equipment failures, should be responded to by the operator who discovers them if he is knowledgeable of the correct response procedure. For every emergency, the plant superintendent should be notified, or someone higher in the chain of command if he is not available. Refer to the employee bulletin board for emergency phone numbers. Table 7-1 lists emergency responses to all general emergencies anticipated at the Bayonne Facilities.

7.3 EMERGENCY TELEPHONE NUMBERS

The following list of emergency telephone numbers has been prepared for the use of the Bayonne staff in the event that an emergency develops that requires outside assistance. This list should be reviewed at least annually to verify that the numbers are current.

Telephone Company:	New Jersey Bell Below ground cable	1 800 272-1000 555-1515
Electric Company:	Public Service Electric and Gas Company	653-7000
Gas Company:	Same as above	

Water:	Bayonne Water Department	658-6172
Medical Emergency:		911
Police:	Public Safety	858-6949
Board of Health:		858-6108
Bayonne Hospital:		858-5000
Fire:		911
Poison Control Center:		1 800 962-1253
Toxic substance spills, oil spills, and pollutant discharges (U.S. Gov't)		1 800 424-8802
State of New Jersey, Department of Environmental Protection:	24-hour hot line	1 609 292-7172
	Metro Field Office	669-3900

TABLE 7-1 (Page 1 of 2)

EMERGENCY RESPONSE PROCEDURES

EMERGENCY	RESPONSE
1. Power Failure	1a. Notify plant superintendent.
	1b. Call PSE&G at 633-6302 or 863-7070 to tell them power has failed.
	1c. Check the operation of the standby generator; check fuel supply.
	1d. Verify that plant electrical equipment has restarted.
2. Equipment Malfunction	2a. Notify plant superintendent.
	2b. Start-up standby equipment and shut down malfunctioning equipment.
3. Malfunction Alarm	3a. Determine the location and nature of the alarm and notify plant superintendent.
	3b. Refer to the O&M manual and take appropriate alarm response.
	3c. Place standby equipment into service if needed.
4. Gas Alarm	4a. Stay out of the area that is in alarm.
	4b. Notify plant superintendent.
	4c. Verify that ventilation for the alarmed area is functioning properly.
5. Fire	5a. Call the fire department at 911.
	5b. Notify plant superintendent.
	5c. Trained personnel to fight fire.

TABLE 7-1 (Page 2 of 2)

EMERGENCY RESPONSE PROCEDURES

EMERGENCY	RESPONSE
6. Accident or Injury	6a. Take the injured person the hospital in an emergency.
	6b. Notify plant superintendent.
	6c. Apply first aid.
	6d. Call ambulance at 911 or Bayonne Hospital at 858-5000.
7. Civil or Employee Disturbance	7a. Notify plant superintendent.
	7b. Call Police at 858-6949 if outside assistance is needed.
8. Flooding Due to Pump Failure	8a. Restart pumps or take other corrective action.
	8b. Notify plant superintendent.
	8c. Close influent gate(s) as a last resort.
9. Heavy Rain	9a. Notify plant superintendent.
	9b. Verify that all pumps are operable.
	9c. Throttle influent gate if necessary to restrict flow.

CHAPTER 8

SAFETY

8.1 GENERAL

The operation of wastewater pumpover plants, like other municipal facilities, can be a dangerous occupation if proper safety procedures are not followed. Physical injuries, chemical burns, explosions, and asphyxiation from gases or oxygen deficiency are potential hazards. All personnel should be aware of hazards, preventive measures, and emergency procedures to avoid any possible accidents.

8.1.1 Objectives

Objectives of the safety program are to protect employees and visitors from potential hazards, eliminate all possible sources of accidents, and prevent loss or damage to equipment and property. Injuries are not only indicative of improper operational procedures at the treatment plant, but they can also seriously affect the efficiency and cost of operation.

The Occuptional Safety and Health Act (OSHA) of 1970 (PL 91-596) requires that employers provide safe working conditions and that records be kept of all accidents. It is important that these accident records be accurate to provide personal and legal protection to the individual and the municipality.

8.1.2 Safety Responsibilities

Management - The supervisory personnel at the treatment plant have a key responsibility for safety within the plant. It is the obligation of the plant superintendent to provide safe working environments, develop and implement a safety program. Frequent reviews of

compliance with safety regulations and periodic inspections of the facilities and equipment throughout the plant should be performed to prevent accidents.

Staff - All employees are responsible for themselves on every job they do to prevent personal injuries. This can be done by following the established safety regulations and using proper safety equipment in the daily work routine. Human error is the most significant cause of accidents, and it is the employee's responsibility to perform his job safely.

8.1.3 Emergency Telephone Numbers

Emergency telephone numbers should be posted in the office and at all other telephone outlets in the plant. The phone number listing is included in Chapter 7.

8.2 SAFETY PROGRAM

The prime objective of a safety program is accident prevention. A good safety program should incorporate the following elements.

- Conscientious management
- Education - Manual, safety meeting, and training
- Attitude
- Auditing - Inspections and Accidents reports

8.2.1 Management

A safety policy commences at the top level of the community organization. This policy establishes the basic management attitude toward safety. Management is responsible for the initiation and implementation of the safety program.

A Safety Director may be assigned and given authority by management to carry out the safety program. The Safety Director should be a member of the supervising staff and have direct responsibility for all safety elements. However, the responsibility for the safety of the entire plant operation should always be with the supervisors.

8.2.2 Education

Safety education is perhaps the most essential element of a good safety program. This can be accomplished by use of manuals, organized safety meetings, and training programs.

A safety manual should be prepared by management in cooperation with the supervising staff. The manual must provide essential information regarding the importance of safety, responsibility, organization of a safety program, safety requirements, safe work practices and habits, and emergency plans. All employees and newcomers should be thoroughly knowledgeable with the manual's contents. The manual should be frequently updated as needed.

Periodic safety meetings should be held to evaluate performance of the safety program, discuss cases of accident and injury and how they could have been prevented, demonstrate use of newly added safety equipment, and to receive suggestions to improve the safety program. At these sessions, preventive measures or suggestions for safety improvement should be addressed.

All employees should be trained to use personal protection equipment properly, and how to use machinery, and tools.

8.2.3 Attitude

The heart of every safety program is people. Safety is a personal thing and is an individual responsibility. The success or failure

of any program is directly proportional to individual motivation and performance. It is important to encourage employee interest in safety.

Although each person is responsible for his own safety, he must always be aware that his actions can also affect the well-being of his co-workers. The brother-keeper relationship is an effective guideline for preventive safety.

Every employee has a personal stake in safety. However, guidance and support by management, plus conscientious and continued participation by each employee are the keys to a successful safety program.

8.2.4 Auditing

Investigations - The main goal of accident investigation is to establish recurrence control. This, however, largely depends on the thoroughness of communicating the causes of accidents in all operations having an identical or similar accident-causing situation. The type of investigation depends on the nature and magnitude of the accident.

Accident investigation is a scientific approach to accident prevention. It is a systematic method of collecting factual information, analyzing the cause, and determining the reasons for the cause. Once the primary cause and the reasons for it have been determined, preventive measures can be effectively applied to prevent recurrence.

Accident Reports - An accident report must be filled out by the injured person or his immediate supervisor following each work accident, a record kept in compliance with OSHA requirements. The accident should be graded for potential severity, not the injury.

The injury often, but not always, provides a clue to how serious an accident could have been. The following definition of the grades of potential severity are offered as a guide.

- o Minor Potential - An accident in which the extent of probable injury could cause only temporary discomfort or pain and the employee could continue work without difficulty.
- o Moderate Potential - An accident in which the probable injury could be serious enough to reduce the efficiency of the employee. He could continue to work but with some difficulty.
- o Extreme Potential - An accident in which the extent of the probable injury could cause loss of time from the job and/or some permanent impairment of the body.

Standard accident report forms are normally available from insurance companies and should be used. Special forms to meet specific needs and objectives should be prepared.

8.3 STANDARD SAFETY PROCEDURES

The occupational hazards commonly associated with waste treatment plants may be classified into the following broad categories.

- o Personal Safety
- o Physical and Mechanical
- o Electrical
- o Gases and Explosives
- o Chemical
- o Laboratory
- o Infection and Diseases
- o Fire
- o Buildings, Structures and Process Areas
- o Enclosed Areas

- o Driving
- o Visitors

Some basic rules of safety are listed below.

1. The practice of good personal hygiene is the best defense against infection from diseases caused by water borne vectors normally found in wastewater and its by-products. Hands and fingers should be kept away from the nose, mouth, eyes, and ears.

2. Before eating or smoking, after use of a toilet, and after work, the hands should be washed thoroughly with soap and water.

3. Minor cuts and injuries should be given first aid treatment immediately.

4. Drinking water from any source other than regular drinking fountains must be prohibited.

5. Observe no smoking signs. Smoke only at the designated areas.

6. All injuries, regardless of severity, must be reported to the appropriate supervisor and the Safety Director.

8.3.1 Personal Safety

Description

Personal safety and protective equipment must be worn to protect the individual against potential hazards to head, eyes, face, respiratory organs, hands, feet, and body.

Prevention

1. Protective hats of plastic-impregnated fabric or fiberglass crown must be worn at all times except in the Administration Building or other designated areas to protect against injury from any falling objects.

2. Safety glasses or goggles must be worn when performing work that may injure the eye. There are no alternatives. Eye protection is required in the following areas.

   - o Laboratory
   - o Screenings and Grit Removal Room
   - o Operations Building

3. Protective goggles, face shields and protective clothing must be worn when handling corrosive chemicals.

4. Laboratory coats are required for all laboratory work.

5. When working in dusty areas, or in the presence of toxic powders, fumes, vapors, or gases, respiratory protective equipment must be worn.

6. Rubber gloves should be worn when cleaning pumps; handling wastewater, screenings, sludge, or grit; or for other work in which an operator comes into direct contact with wastewater or sludge.

7. Safety shoes should be worn in the machine shop and other areas where tools or other heavy objects may fall on the exposed foot.

8.3.2 Physical and Mechanical

Description

Properly designed mechanical and electrical machinery normally incorporates standard safety features. Hazards associated with mechanical equipment are dependent upon their particular function and arrangement. Use of hoists can be particularly hazardous if precautionary steps are not followed.

Prevention

To eliminate or reduce physical and mechanical hazards, the following general safety precautions should be taken.

1. Use positive lockout mechanism and tagging procedures at electrical motor control centers.

2. Insofar as practicable, lubrication or adjustments should not be made on machinery in operation. If such services must be performed on operating machinery, a second man must be present and stationed at the stop-start switch.

3. Special precautions must be taken so that clothing and tools do not get caught on moving parts when services are performed on the equipment in operation.

4. Guards such as shields, fencing, rails, belt guards, or enclosures are generally provided with machines, prime movers, and power transmission equipment and should not be removed.

5. Floors and stairways must be kept clean, dry, and free of grease, oil, and ice to prevent being slippery.

6. Welding equipment should be kept in the assigned area and away from any combustibles.

7. The use of pneumatic, explosive-activited, and machine shop tools should be restricted to adequately trained mechanics.

8. Permanent warning signs should be placed at all hazardous locations and should be supplemented by temporary signs during emergency operations.

9. Maintain all mechanical equipment, tools, and working areas properly.

10. One of the most common injuries results from lifting objects improperly. All personnel should become familiar with correct lifting techniques. Get help if needed and use hoist and power equipment for lifting heavy objects wherever possible.

11. Tools to be used in an empty tank should be lowered in a pail, or by use of a rope, and removed in the same way.

12. Sharp projections or locations of low headroom should be padded and clearly marked or painted with a contrasting color.

13. Clothes, hats or gloves must not be hung on electrical handles, light switches or control panel knobs.

14. Use ear plugs and/or ear muffs when working in excessively noisy areas for extended periods.

15. Only experienced or trained personnel should be permitted to use the powered hoisting equipment.

    - o Never pick up a load whose weight exceeds the rated capacity of the hoist.
    - o Never carry or cause personnel to be lifted on the hook or the load.
    - o Do not leave a load suspended in the air for extended or unattended periods.
    - o Make sure a load clears machinery or other objects before moving it.
    - o Do not operate a hoist if it is functioning improperly.
    - o Avoid swinging the load or hook when traveling the hoist.

8.3.3 Electrical

Description

A wide variety of electrical equipment is normally used throughout the treatment plant. All electrical equipment should be assumed to be hazardous. The seriousness of the hazard increases as the operating voltage increases. When working on energized equipment, a safe distance or clearance as specified in the National Electric Code should be maintained.

Prevention

The following is a list of operation and maintenance procedures to eliminate or reduce electrical hazards.

1. Electrical maintenance and repairs should be performed only by licensed, qualified electricians.

2. All operation and maintenance personnel should be trained for the correct handling and use of the electrical machinery and equipment.

3. All members of the operating staff should become familiar with the types of electrical accidents, learn how to administer first aid and CPR (cardiopulmonary resuscitation), and how to rescue another person without endangering themselves.

4. Rubber mats should be placed in front of electrical switchgear when work is being performed on this equipment.

5. Never use any part of the body to test a circuit.

6. Adequate lighting should be provided before working on electrical equipment.

7. During maintenance or repair work at off-site or remotely located electrical equipment, use lockout switches and tags on controls.

8. Use only nonconducting, extinguishing agents such as carbon dioxide or dry chemical extinguishers to put out fires in electrical equipment. Never use water.

9. Consider all electrical circuits to be dangerous. Shocks from contact with even low voltage wiring has caused personnel to fall from ladders and scaffolds.

10. All dead circuits should be treated as they were live. An accident can result from the closure of the circuit by another person.

11. All electrical controls, switch boxes, and distribution panels should be clearly marked, identified, and easily accessible.

12. Safety tools, special devices, and protective clothing should be used when working on or near energized circuits.

13. If there is a question or doubt about any electrical equipment or wiring, it should be resolved before beginning or continuing work.

14. All electrical wires should be properly secured. Loose wires on the floor or suspended in the air can be hazardous.

Equipment Lockout Procedures

The Main Switchboard has a main service circuit breaker. Branch circuit breakers on the main switchboard feed MCC No. 1 and the Pump Control Panels which are within sight. In addition the units on the Pump Control Panels have disconnect circuit breakers. The Standby Generator set has a control panel with a main circuit breaker; and this, too, is within sight of the Main Switchboard. MCC No. 2 is not in the same room as the Main Switchboard but it has a main disconnect circuit breaker. On both Motor Control centers, MCC-1 and MCC-2, each unit has a circuit breaker which may be locked in the "OFF" positions.

8.3.4 Gases and Explosives

Description

Presence of a noxious vapor in the treatment plant frequently poses a potential safety hazard. It may be directly or indirectly injurious or destructive to the health or life of personnel, or may cause fires and explosions. Potentially hazardous gases that may be encountered at the treatment plant include sludge gas, methane, hydrogen sulfide, carbon monoxide, gasoline vapors, oil, and utility gas. Characteristics of these gases are shown in Table 8-1 and are briefly described below.

Sludge gas consisting of carbon dioxide, methane, hydrogen, ammonia, and hydrogen sulfide can accumulate as a result of fermentation

and decomposition of organic matter. Methane gas, one of the most combustible gases encountered in treatment plants is produced from the decomposition of organic matter in the wastewater or sludge. When the methane content of the surrounding air reaches between 5 and 15 percent an explosive mixture results. Hydrogen sulfide is highly flammable, corrosive, foul smelling, poisonous, and presents an explosion and asphyxiation hazard. Carbon monoxide, produced by incomplete oxidation or combustion of carbonaceous material, could leak into the air in a room. This gas is odorless, poisonous and flammable. It also constitutes an explosion and asphyxiation hazard. Gasoline vapors from accidental spills, particularly in sewers, manholes, and enclosed areas can impose a dangerous explosion hazard. Utility or natural gas is highly explosive. Leaks from interior gas piping should be checked immediately. Leaks from utility mains should be reported immediately to Niagara Mohawk Power Company.

Prevention

1. Preventive maintenance should be performed regularly on all ventilation equipment. Intake screens, filters, adjustable dampers, and exhaust ducts on all fans should be periodically inspected; replacement of used or spent expendables, such as filters, should be made.

2. Smoking is absolutely prohibited when checking for gas or entering manholes, closed tanks or any confined and poorly ventilated areas.

3. Before entering any manhole or vault, tests should be conducted to detect possible presence of dangerous gas with an approved gas indicator, or oxygen deficiency atmospheres.

4. If welding or burning torches are to be used in areas where explosive gases could be present, adequate mechanical ventilation equipment should be used to provide non-explosive mixtures in the atmosphere before proceeding with repairs.

5. Oxygen deficiency could be present in poorly ventilated rooms, structures, tanks, and manholes. Ample ventilation inside the building may be secured by opening doors or windows, or through the operation of fans. In the case of manholes, tanks or pits, compressed air or portable air blowers should be used to ventilate by the rapid air exchange of the atmospheres therein.

8.3.5 Chemical

Description

Potassium Permanganate - This chemical will be used in the Operations Building for odor control. The permanganate is a strong oxidizing agent, highly corrosive, and toxic. It can cause eye injuries or serious internal injury if ingested or inhaled. It should be stored in a cool dry place away from organic compounds and other combustible materials.

Laboratory Chemicals - Acids, alkalies, and other corrosive chemicals will be used in the laboratory for routine analytical work. Precautions to be taken in handling or using laboratory chemicals will be discussed in the next paragraph.

Prevention

The following preventive measures should be taken while handling corrosive chemicals.

1. Safety glasses, plastic or rubber clothing, rubber gloves and safety shoes should be worn.
2. Read the labels on the chemical containers and take the appropriate safety precautions.
3. Always observe the warning signs and instructions for the particular chemicals.

4. Practice good housekeeping in the vicinity of the chemical storage area, solution tank, and feed equipment.

5. Immediately flush with water if skin comes into contact with any chemical or solution.

6. Spillage should be flushed with water and cleaned immediately. The floor should be kept dry after cleaning.

8.3.6 Laboratory

Description

Only experienced, qualified personnel should be permitted to work in the laboratory. The laboratory and its equipment should be used only for its intended purpose. Care should be exercised in handling samples, equipment, and chemicals.

Prevention

The following safety precautions should be followed in the laboratory.

1. Personal hygiene should be constantly practiced by laboratory personnel.

2. Safety glasses and lab coats should be worn at all times.

3. Samples, reagents, and solutions are never pipetted by mouth. Use a safety pipet filler or bulb.

4. Any chemical spills should be neutralized, if necessary, and cleaned immediately.

5. All chemicals, reagents, and solutions should be labeled. Unidentified chemicals should be discarded.

6. Laboratory equipment and glassware, such as beakers, flasks, or dishes should not be used for eating and drinking.

7. Broken or chipped glassware should be discarded.

8. Eating and drinking are permitted only in authorized places, such as offices or the lunch room.

9. Never store food in the chemical or sample refrigerators. Food may be stored only in the refrigerator dedicated for food storage, located in the lunch room and kitchenette.

10. Wear protective gloves when handling hazardous chemicals, such as acids and caustics.

11. Use the proper type of equipment to handle hot containers and crucibles, i.e. asbestos gloves, tongs, etc.

12. Adequate ventilation in the laboratory during working hours must be provided.

8.3.7 Infections and Diseases

Description

Wastewater, sludge, screenings, grit, scum, and other contaminated materials normally encountered in the treatment plant contain pathogenic organisms, which will cause serious infections once they gain entry to the body. An immunization program should be developed to reduce these hazards. Laboratory personnel should be innoculated for protection against typhoid, tetanus, and poliomyelitis.

Prevention

The risk of infection can be reduced by taking a few minimal precautions to prevent the entrance of pathogens into the body.

1. Gloves should be used to protect hands from direct contact with infectious material such as sewage and sludge.

2. Any injury that breaks the skin should receive prompt medical attention.

3. Good housekeeping procedures should be practiced throughout the plant.

4. An inoculation program against diseases such as typhoid, paratyphoid, tetanus, and poliomyelitis should be instituted for all personnel.

5. Food and beverage should be consumed in the designated areas only.

6. Personnel should wash their hands with soap and water before leaving work and especially before eating.

7. Personnel should be encouraged to keep hands away from eyes, nose, ears, and mouth.

8. Fresh clean work clothing should not be stored in a locker with used soiled clothing.

9. Personnel should be encouraged to take a shower after each work day.

10. Garbage and refuse containers should be emptied regularly.

8.3.8 Fire

Description

Outbreak of fire is dependent on three elements; (1) source of ignition, (2) presence of combustible substances, and (3) oxygen. Possible sources of ignition include smoking; improper use of maintenance equipment for welding, burning, and soldering; and defective electrical equipment. Combustible materials normally found in the treatment plant are oily rags, waste paper, gasoline, utility gas, and sludge gas. It is management's responsibility to instruct

all employees in the fundamental practice of fire prevention. The following is a list of potential fire hazardous locations.

- o Sewers and manholes
- o Garage and maintenance shops
- o Laboratory
- o Boiler Room
- o Duckwork for heating, ventilating and air conditioning
- o Storage areas for flammable and combustible liquids and materials, such as the stock room, and underground storage tanks
- o Inaccessible, seldom used, or poorly cleaned areas

Prevention

To eliminate or reduce fire hazards effectively, the following precautions should be followed.

1. Develop and maintain good housekeeping habits to prevent any accumulation of combustible dusts, waste papers, and trash.

2. Restrict open flames and smoking to designated areas. "NO SMOKING" and "NO OPEN FLAME" signs should be posted in hazardous areas.

3. Restrict use of welding and burning equipment in the designated areas by qualified personnel.

4. Institute a fire prevention program for all personnel, including use of fire fighting equipment, emergency action in conjunction with the local fire department, and periodic, unannounced fire drills.

5. Maintain and locate fire fighting equipment in easily accessible areas.

6. Install warning signs near gasoline, utility gas, and other areas where potentially explosive liquids or gases are kept.

7. Provide covered containers for oily rags and waste materials and empty them daily.

8. Use non-spark tools for maintenance whenever possible. If a tool that may spark is used, positive ventilation should be provided.

9. Use respiratory equipment and protective clothing when possible.

10. Maintain good housekeeping habits, especially in the immediate vicinity of explosive liquids.

8.3.9 Buildings, Structures, and Process Areas

Description

Constant attention and alertness are the best ways to avoid injury in any situation or location. Never relax safety measures at any time even when no dangerous atmospheric conditions have been observed. Any hazardous environment can develop in any location of the plant if care is not exercised by personnel.

Prevention

The following are the general safety measures against potential hazards in buildings, structures, and process areas.

1. All file cabinets and shelves must be secured before use. Keep all drawers and doors closed when not in use.

2. Load a file or cabinet from the bottom up and place large heavy objects on low shelves.

3. Avoid storing material overhead where it may fall and cause injury.

4. Do not use chairs to stand on, use a sturdy stool or step ladder.

5. Do not leave any containers or cartons in the aisles or corridors.

6. Never use the waste basket for an ashtray.

7. Do not operate an office machine or other equipment unless you have been trained to operate it safely.

8.3.10 Enclosed Areas

See Appendix B.

8.3.11 Driving

Description

Automobile travel presents one of the greatest hazards of any work activity to both driver and passengers. Personnel safety during vehicle operation depends on several factors, such as the mechanical condition of the vehicle, the driver's physical, mental, and emotional fitness, and weather and road conditions.

Prevention

1. Before operating a vehicle, regardless of distance, a quick check of the following items should be made.
   - o Foot and emergency brake
   - o Head, directional and back-up lights, and emergency flasher
   - o Heater and defroster
   - o Rear view mirror adjustments
   - o Tire inflation and tread wear
   - o Steering mechanism

2. Be a defensive driver. Always anticipate and avoid emergencies. This includes the observance of traffic rules and adjustment of driving conditions to weather, road, and traffic conditions.

3. Use seat and shoulder belts at all times.

4. Do not drive while under the influence of alcohol, drugs or medication.

5. Do not drive while physically or emotionally impaired.

6. Do not pick up hitchhikers.

7. Municipal car or truck should be used for pick-up, delivery, and supply services.

8. Pick-up truck should not be overloaded.

9. When parked on a slope, cant the front wheels into the curb, and make sure the emergency brake is applied before leaving the car or truck.

10. Never operate a faulty vehicle. Mechanical defects or difficulties should be reported and corrected or repaired as soon as possible.

8.3.12 Visitors

Description

Safety of visitors is an integral part of the plant safety program. All visitors who enter the plant facilities for business, services, or on a tour must comply with all safety regulations.

Prevention

1. All visitors should be provided with protective safety equipment equivalent to that used by plant personnel, unless the Administration Building is the only place of visit.

2. All visitors must be accompanied by plant personnel during their stay at the plant.

3. Children under 12 years of age are not permitted in the laboratory area at any time, except on special occasions such as open house, or as approved by the safety director.

4. The plant personnel admitting a visitor is responsible for his safety at all times.

5. All visitors should check in and sign out at the reception room.

8.4 SAFETY EQUIPMENT AND FACILITIES

Safety equipment is provided at the Bayonne/PVSC Sewerage Connection Facility, and includes fire extinguishers, fire hose, a gas monitoring system, and audible alarms/horns to indicate trouble conditions. The equipment should be well maintained and all personnel should know the location of such equipment.

8.4.1 Fire Protection

There are two fire hydrants on City Water Lines; one located at the northwest corner of the plant site, and the other in the south west area near the abandoned Gas Metering Building to protect the buildings at the plant site.

Wall mounted fire extinguishers are located at a number of strategic locations in the Operations Building and Screenings and Grit Removal Building.

In addition, three wall mounted hose and hose reels are located in the Operations Building: one at Floor El. 10.17 above the old grit chamber; one below it at Floor El. - 1.50; and one on the south wall of the Pump Room Floor. There are four wall mounted hose and hose reels in the Screenings and Grit Removal Building: one in the Screenings and Grit Container Room; two in the Screenings and Grit Removal Building at Floor El. - 6.33; and one in the Screenings and Grit Removal Building at Floor El. 10.67.

8.4.2 Intercom and Radio

Intra-plant communication systems should be provided at the plant suitable for use in the following types of surroundings.

- o Extremely noisy, as high as 90 db sound pressure level
- o Extremely warm or cold locations (ambient temperature range of -30°F to +120°F)
- o Dusty and smoky locations, including dirt and flyash
- o Hazardous areas
- o Outdoors

8.4.2.1 There are no alarm systems utilizing leased telephone lines at present, but the city plans to install an alarm system to the Police Department. The Police Department has a list of personnel to be contacted by phone in event of emergency. There is existing telephone service at the Operations Building. Telephone: (201) 858-6169 and - 6170.

8.4.3 Safety Equipment

The following safety equipment should be available at the plant:

- o Hard hats
- o Safety shoes
- o Safety goggles and face masks
- o Rubber boots
- o Gloves (rubber and cotton)
- o Ear muffs or plugs
- o Respirators
- o Uniforms and lab coats
- o Life jackets
- o Safety harnesses
- o Life preservers

- o Flash lights
- o Showers

8.5 FIRST AID

Industrial first aid kits are installed in the First Aid Room.

8.6 SAFETY REFERENCES

The following Water Pollution Control Federation publications should be kept in the Administration office for ready reference:

MOP No. 1 - Safety in Wastewater Works
MOP No. 7 - Sewer Maintenance

CHAPTER 9

HEATING AND VENTILATING

9.1 GENERAL

A 6-in. natural gas line from PSE&G supplies the fuel used for firing the heating and ventilating units. The total gas input for all equipment is 6,500 cu ft/hr at an inlet pressure of 1 psig.

The heating and ventilating units are of the integral package type. The heater is warm air indirect-gas fired. The heat transfer surface is of stainless steel construction and cooled by the air to be heated. The heat exchanger design permits free, unrestricted lateral, vertical and peripheral expansion during the heating and cooling cycle without damage or strain to any part. The heat exchanger is so constructed to prevent contamination of heated air with products of combustion. The assembly houses the main fan motor and drive access panel.

9.2 SCREENINGS AND GRIT REMOVAL BUILDING

HV-1 is the unit that heats and ventilates the Screenings and Grit Removal Building. The unit is a gas fired, fully modulating furnace delivering 100% outdoor air at all times to satisfy code requirements for ventilation. Fresh air is taken in through a 48 x 36 louver, through an automatic damper and filter before entry into HV-1. The heated air (winter operation) or fresh outside air (summer operation) is distributed throughout the building by ductwork. The explosionproof requirements are met by isolating the furnace room and taking no return air. All air is exhausted via the odor abatement system and an explosionproof fan.

9.3 OPERATIONS BUILDING

9.3.1 HV Units

Seven indirect gas fired, modulating furnaces provide year around ventilation. In summer, units operate at 100% outdoor air for maximum effect. In winter, units operate at 50% outdoor air to satisfy code requirements and conserve fuel. Air is heated by a stainless steel heat exchanger. Power burners use spark ignition for maximum efficiency. Ventilation air is removed by roof mounted exhaust fans whose operation is coordinated to match the mode of operation of the heating and ventilating units.

HV-4 heats and ventilates the Administrative area of the Operations Building. HV-5 and HV-8 supplies the Motor Room Floor while HV-6 supplies the Pump Room Floor.

9.3.2 Hot Water Supply

Offices are heated by hot water radiation on exterior walls. A cast iron hydronic boiler is located in an isolated boiler room with independent outside air intake. The same boiler supplies hot water to plumbing fixtures as well as hot water to the fan tube radiators within the building.

9.4 SCHEDULES

9.4.1 HV Units

Table 9-1 shows the HV units, locations, capacities, and motor drives.

9.4.2 Fans

Table 9-2 shows the fan schedule, with locations, capacities, and motor drives.

TABLE 9-2

FAN SCHEDULE

No.	LOCATION	MODEL No.	CFM	HP	POWER
TF-1	Operations Bldg. - Room 106, Wall Mounted	24 A11DB	5,000	1/2	115-1-60
TF-2	Grit Container Room Area, Wall Mounted	16 A11DA	1,400	1/2	115-1-60
TF-3	West Wall, Odor Control Room, Wall Mounted	16 A17DA	1,400	1/3	115-1-60
TF-4	Floor Mounted at El. - 1.50, Old Grit Area	16 A17D	2,000	1/4	115-1-60
TF-5	Wall Mounted at Fl. El. - 1.50, Old Grit Area	24 A11DB	4,000	1/2	115-1-60
VF-1	Odor Control Room	245 DCA	1,000	7 1/2	115-1-60
EF-1	Room 106 Roof Mounted	300 C5B	5,000	1/2	208-3-60
EF-2	Test Lab - Roof Mounted	120C 10D	510	1/6	115-1-60
EF-3	Womens Toilet - Roof Mounted	120C 10D	670	1/6	115-1-60
EF-4	Men's Toilet - Roof Mounted	120C 10D	620	1/6	115-1-60
EF-5	Storage Area - Roof Mounted	120C 10D	660	1/6	115-1-60
EF-6	Screenings Room - Roof Mounted	365C 6B	8,000	3/4	208-3-60
EF-7	Screenings Room - Roof Mounted	365C 6B	8,000	3/4	208-3-60
EF-8	Pump Motor Room - Roof Mounted	365C 6B	8,000	3/4	208-3-60
EF-9	Pump Motor Room - Roof Mounted	365C 6B	8,000	3/4	208-3-60
EF-10	Pump Motor Room - Roof Mounted	365C 6B	8,000	3/4	208-3-60
EF-11	Pump Motor Room - Roof Mounted	365C 6B	8,000	3/4	208-3-60

CHAPTER 10

BAYONNE ELECTRICAL SYSTEM

10.1 GENERAL

Primary voltage for power is supplied by PSE&G at 13.2 KV, 3 phase to its pad-mount transformers providing service voltage at 480 volts, 3 phase, 3 wire, with four (4) parallel underground feeders, into the Main Switch Board in the Pump Motor Room of the Operations Building.

The Main switchboard contains utility service metering main 1500 Amp circuit breaker, with instrumentation; a 1600 Amp automatic transfer switch, and two sections of distribution molded case circuit breakers.

10.2 EMERGENCY POWER SUPPLY

The emergency source feeding the automatic transfer switch is a standby diesel generator by Caterpillar Tractor, rated 1100 KW, 0.8 power factor, with control panel containing a 1500 Amp main circuit breaker. See Chapter 5. The unit also includes a water-cooled heat exchanger, a day tank with automatic fuel transfer pump from a buried fuel oil storage tank, an automatic battery charger, and muffler exhaust system.

The fuel oil storage tank is of double wall construction to contain leakage from the interior tank, and is of 4000 gallon capacity. All underground fuel oil lines to and from the Operations Building are of double wall construction. A leakage detection system and tank and fuel gauge are provided. A storage tank is also provided to capture any above ground spillage during filling operations.

The oil supply is from local suppliers under annual contract to the City of Bayonne.

10.3 POWER DISTRIBUTION

The distribution sections provide a 400 Amp circuit breaker to each of three (3) 150 HP Storm Flow Pumps, and to MCC-1 and MCC-2; also, a 700 Amp circuit breaker to each of the three (3) main raw wastewater pumps (250 HP) constant speed starters and to each of the two (2) corresponding VFD drives, VFD-1 and VFD-2.

10.4 MOTOR CONTROL CENTERS

MCC-1 is in the Pump Motor Room; MCC-2 is in the Screenings and Grit Removal Building.

The two pump control panels (for the Storm Flow Pumps and for the Raw Wastewater Pumps) are in the Pump Motor Rm. The feeder distribution between Main Switchboard, Generator Control Panel, Pump Control Panels, and six main pumps consists of a cable tray system just below the main floor level with Type TC cable feeders. All other feeders and branch circuits consist of wires in conduit.

In each of the two Motor Control Centers there is a dry type transformer with 120/208 V, 3 phase, 4 wire secondary, which feeds all building lighting panels.

10.5 POWER FOR HVAC UNITS

The Heating and Ventilating equipment is supplied from the MSC panels. At MCC-1 there are two 480 V feeders to motor starter panels MSC-1A and MSC-2A. From each of these panels 480 volt units are served, as well as a 30 KVA dry type transformer, 120/208V, 3

phase, 4 wire secondary. The secondaries feed panels MSC-1B and MSC-2B, which serve single phase equipment.

10.6 INSTRUMENTATION

The Equipment Monitoring Panel is a status and alarm panel, intended to be located in the main operations office.

CHAPTER 11

ADMINISTRATION AND PERSONNEL

11.1 GENERAL RESPONSIBILITY

11.1.1 General

Responsibility for operating and maintaining the facilities rests with the City Engineer. Under the general direction of the City Engineer, operation is carried out under the direction of the Chief Operator. Maintenance is carried out by a maintenance group of 10 which is responsible for routine lubrication and maintenance tasks. Major maintenance work is done by contract as needed.

11.1.2 Sewer Operation and Maintenance

The City Engineer is responsible for operation and maintenance of the system of trunk sewers, pump station, overflow regulators, and catch basins, that comprise Bayonne's interceptor sewerage system and for operation, maintenance and repair of the local city sewers.

The Passaic Valley Sewerage Commissioners (PVSC) are responsible for the treatment works that process the Bayonne and other area wastewaters. The discharge permit is issued to the PVSC, but combined sewer overflows are permitted in Bayonne.

11.1.3 Regulation of Sewer Use

The Bayonne City government has passed an ordinance adopting the PVSC sewer use ordinance. Entitled "Rules and Regulations Concerning Discharges to the Passaic Valley Sewerage Commissioners Treatment Works", the ordinance includes such provisions as a system of

sewer connection permits, industrial user regulations, pretreatment regulations and user charges. A copy of the "Rules and Regulations" can be obtained from PVSC.

11.2 FINANCES

11.2.1 Budget and Cost Accounting

The City Engineer prepares an annual budget based on past expenses and estimates of future expenses. Accounting for costs conforms to generally-accepted public accounting practices. The details of budgeting and accounting can be obtained by contacting the City Engineer.

11.2.2 Revenue Sources

Funds to operate the Bayonne Pumpover system are based on a sewer fee and an industrial user surcharge. The user fee is collected by the City of Bayonne. The industrial surcharge is collected by Bayonne but is generated by PVSC based on its ordinance.

11.2.3 Disbursements

The City disburses funds to operate its facilities and to pay for treatment at the PVSC plant. The PVSC will bill the City for the cost of treatment based on measurement of flow, biochemical oxygen demand, and suspended solids concentrations.

11.3 STAFFING RECOMMENDATIONS

This recommendation for staffing of the Bayonne Pumpover/ Transmission Facilities is based on the experience of the consulting engineer in developing staff needs for other facilities of similar nature and on staff scheduling requirements.

The Facilities are staffed 8 hours per day, 5 days per week. A staff comprised of the Chief Operator and ten (10) Maintenance personnel are at the site to operate and maintain the pumpover/ transmission facilities. A minimum of two operators is recommended to be at the site at all times to ensure worker safety.

11.4 STAFF RESPONSIBILITY

11.4.1 Management and Supervision

The primary responsibility of management is to ensure that the facilities perform in a reliable and satisfactory manner. This is accomplished by directing and overseeing the daily operation and maintenance of facilities as described in this O&M manual and based on operating experience. This is accomplished in fact by ensuring that plant personnel carry out assigned duties and that personnel are trained and directed adequately to do their job.

Additional responsibilities of management are related to plant security, operating records, personnel records, training, personnel supervision, purchasing, cost control, periodic plant reports, and budget preparation and administrative.

11.4.2 Maintenance Staff

The primary function of the maintenance staff is to carry out their assigned jobs in a knowledgeable and efficient manner. This is accomplished by following proper operating and maintenance procedures and knowing the reasons for the procedures, by filling out data sheets and logs in a manner that truly reflects operating conditions and measurements, and by immediately informing supervisory personnel of malfunctions and unusual operating conditions. Additionally, the maintenance staff should:

- Follow safety procedures.
- Be aware of the impact of their areas of responsibility on other plant processes.
- Take corrective action when needed to prevent equipment damage or process failure.
- Maintain areas in clean and presentable manner.
- Participate in training activities and keep current on developments in the operations field.

11.5 SELECTED TRAINING COURSES AND PERIODICALS

The following is a list of available short courses, training manuals and operator schools for the continuing education of the operator:

a. Water Pollution Control Federation (WPCF) Courses
601 Wythe Street
Alexandria, Virginia 22314
703-684-2400

(1) Basic Course for Wastewater Treatment Plant Operators

(2) Wastewater Facility Management Skill Training Course

b. Layton and Associates International, Inc. (various locations)

612 Summit
Neosho, MO 64850
(414) 451-5807

Selected Layton and Associates Course Titles:

(1) Troubleshooting Operation and Maintenance Problems at Wastewater Treatment Facilities.

(2) Wastewater Certification Review.

c. Home Study Course

Operation of Wastewater Treatment Plant, A Field Study Training Program, Volume I, 1985

Professor Kenneth D. Kerri
Department of Civil Engineering
California State University, Sacremento
6000 Jay Street
Sacremento, California 95819

d. Periodicals

(1) Operations Forum

Water Pollution Control Federation
(see Item a)

(2) Water Engineering and Management

Scranton Gillette Communication, Inc.
380 Northwest Highway
Des Plains, IL 60016

e. WPCF Manuals of Practice

No. 1 - Safety in Wastewater Works
No. 11 - Operation of Wastewater Treatment Plants
No. 22 - Odor Control

f. The local chapter of the New Jersey Water Pollution Control Association conducts regular meetings which provide contact with operators from other agencies. Such contact provides valuable exposure to new concepts.

11.6 MAINTENANCE

The primary responsibility for maintaining the Facilities lies with the maintenance staff. It is responsible for routine, preventive maintenance and for troubleshooting and repairing equipment.

A trained and skilled staff is essential to perform these functions. Management is responsible for ensuring that an adequate number of personnel are hired and the personnel receive on-site training as needed.

Operations personnel are responsible for many routine inspection duties. Observation of equipment malfunction or apparent malfunction should be brought to the attention of supervisory personnel and of maintenance personnel who may be present.

A maintenance management system is essential to proper maintenance of treatment facilities.

11.7 OPERATOR CERTIFICATION

The Statutes and Regulations establish the classification of wastewater collection and treatment systems and the criteria required for licensure of operational personnel. These consist of:

a. NJSA 58:11-64 et seq, entitled "Water Supply and Wastewater Operators' Licensing Act"

b. NJAC 7:10-13 entitled "Rules Governing the Examining and Licensing of Operators"

11.7.1 System Classification

According to NJAC 7:10-13.14, the Bayonne Pumpover/PVSC Sewerage Connection Facilities are a Class C2 Facility, based on the following point allocations:

a.	Design Flow 2 pts/mgd x 17.6 mgd = 35.2 pts max. = 20	
b.	Variation in Raw Wastes	3
c.	Pretreatment	
	(1) Screening	3
	(2) Grit Removal	3
	(3) Plant Pumping of Main Flow	3
	Total	32

The range of points for a S2 Classification is 31-55.

11.7.2 Licensure Criteria

According to NJAC 7:10-13:15.2:

> "Any person applying to take an examination for a Class 2, 3, or 4 license shall complete an advanced course approved by the department in the subject matter pertaining to the license being sought, prior to applying to take the examination."

Additional requirements relate to educational and/or experience, which are detailed in Table VII on pages 21-22 of Appendix C.

Operators and supervisors are required to be certified in accordance with state requirements depending upon their level of responsibility. Appendix C contains a copy of certification requirements.

11.8 PUBLIC RELATIONS

Good public relations is an essential component of a successfully operating agency. Maintaining good public relations consists of such things as responding in a professional and businesslike manner to public inquiries and complaints; encouraging group tours of facilities; maintaining facilities in a presentable manner at all times; and avoiding nuisances such as odors and overflows of sewers.

APPENDICES

APPENDIX A

CONFINED SPACE ENTRY REGULATIONS

of the final *[decision]* **determination***, a written request for a formal hearing to be held in accordance with the Administrative Procedure Act, N.J.S.A. 52:14B-1 et seq., and the Uniform Administrative Procedure Rules, N.J.A.C. 1:1.

(e) Any failure on the part of the Controller to issue *[decisions]* **determinations*** within the timeframes set forth in this subchapter will not relieve the grantee/contractor/subrecipient from liability for any audit disallowances and/or sanctions.

(a)

DIVISION OF WORKPLACE STANDARDS

Safety and Health Standards for Public Employees; Work in Confined Spaces

Adopted New Rules: N.J.A.C. 12:100-9

Proposed: July 5, 1988 at 20 N.J.R. 1523(a).

Adopted: August 26, 1988 by Charles Serraino, Commissioner, Department of Labor.

Filed: August 26, 1988 as R.1988 d.451, **without change.**

Authority: N.J.S.A. 34:1-20, 34:1A-3(e), 34:6A-25 et seq., specifically 34:6A-30.

Effective Date: September 19, 1988.

Expiration Date: November 5, 1989.

Summary of Public Comments and Agency Responses:

The Department received one written comment during the comment period on proposed new rules N.J.A.C. 12:100-9 concerning work in confined spaces. The comment was received from the Western Monmouth Utilities Authority.

COMMENT: The commenter states that the proposed program is unreasonable for operators of sewage collection systems, as the permit program would be prohibitively expensive because it requires a permit to be issued for each separate entry. The commenter suggests that a checklist system be developed, which permits a non-management employee to complete a daily checklist whenever they enter a confined space rather than obtain a permit for each entry.

RESPONSE: The commenter has misinterpreted the intent of the rules. Pursuant to N.J.A.C. 12:100-9.5(b), concerning entry permits, an entry permit shall "authorize entry only by authorized entrants into a specific confined space, for a specific purpose, with entry by specific shifts or work crews, and be valid for a period not to exceed eight hours . . ." Thus, an employer can issue one permit which shall be valid for an eight-hour day.

Additionally, N.J.A.C. 12:100-9.13 provides procedures applicable for special entry permits for the duration of a job, and N.J.A.C. 12:100-9.14 provides for a special entry permit for one year duration for employers whose operations require employees to perform routine repetitive entry into a confined space which has no known potential for presenting an immediately dangerous threat to life and health atmosphere and no potential for an engulfment condition.

Finally, the concept of a checklist has been approved by the Department, and is addressed at N.J.A.C. 12:100-9.5(d).

COMMENT: The commenter states that the proposed rules are not applicable to wastewater collection systems, as a collection system can be considered to have no known potential for presenting an immediate danger to life and health atmosphere.

RESPONSE: The Department disagrees. The rules were designed to protect all public employees involved in underground work, such as in sewage plants, as these employees are often exposed to hazardous and toxic substances in confined spaces. Protection from situations which present an immediate danger to life and health atmosphere is only one aspect of the proposed rules.

Full text of the adoption follows.

SUBCHAPTER 9. WORK IN CONFINED SPACES

12:100-9.1 Scope

(a) The purpose of this subchapter is to set forth procedures to protect employees from the hazards of entry into and work within a confined space.

(b) The subchapter shall be applicable to employers and employees engaged in work within a confined space.

12:100-9.2 Definitions

The following words and terms, when used in this subchapter, shall have the following meanings unless the context clearly indicates otherwise.

"Acceptable environmental condition" means the limiting condition of health and safety required to be present before an employee can enter a confined space, such limiting conditions being set by established safety and health standards.

"Attendant" means a trained individual outside the confined space who acts as an observer of the authorized entrants within the confined space keeping in constant, though not necessarily continuous, communication with them, so the attendant can immediately call rescue services if needed.

"Authorized entrant" means an employee who is authorized by the employer or the designee of the employer to enter a confined space.

"Blanking" or "blinding" means the absolute closure of a pipe, line or duct by fastening across it a solid plate or cap capable of withstanding the maximum upstream pressure.

"Ceiling level" means the maximum airborne concentration of a toxic agent to which an employee may be exposed for a specified period of time.

"Combustible dust" means a dust capable of undergoing combustion or of burning when subjected to a source of ignition.

"Confined space" means a space which by design has limited openings for entry and exit, unfavorable natural ventilation which could contain or produce dangerous air contaminants, could contain a hazardous atmosphere and which is not intended for continuous employee occupancy. A confined space includes, but is not limited to, a tank, vessel, pit, ventilation duct work, vat, boiler, sewer, or underground utility vault.

"Double block and bleed" means a method used to isolate a confined space from a line, duct or pipe by locking or tagging closed two valves in series with each other, and locking or tagging open to the outside atmosphere a drain or bleed in the line between the two closed valves.

"Employee" means any public employee, any person holding a position by appointment or employment in the service of an employer and shall include any individual whose work has ceased as a consequence of, or in connection with, any administrative or judicial action instituted under the Act; provided, however, that elected officials, members of boards and commissions and managerial executives as defined in the New Jersey Employer-Employee Relations Act, N.J.S.A. 34:13A-1 et seq. shall be excluded from the coverage of the Act.

"Employer" means public employer and shall include any person acting directly on behalf of, or with the knowledge and ratification of:

1. The State, or any department, division, bureau, board, council, agency or authority, of the State, except any bi-state agency; or

2. Any county, municipality, or any department, division, bureau, board, council, agency or authority of any county or municipality, or of any school district or special purposes district created pursuant to law.

"Engulfment" means the surrounding and effective capture of an employee by finely divided particulate matter or a liquid.

"Entry" means any action resulting in any part of the face of the employee breaking the plane of any opening of the confined space and includes any ensuing work inside the confined space.

"Entry permit" means the written authorization of the employer for entry under defined conditions into a confined space for a stated purpose during a specified time.

"Entry permit system" means the system of the employer for assuring safe entry of an employee into and working within a confined space where entry is by permit only.

"Hazardous atmosphere" means an atmosphere presenting a potential for death, disablement, injury, or acute illness from one or more of the following causes.

1. A flammable gas, vapor, or mist in excess of 10 percent of its lower flammable limit;

2. An airborne combustible dust at a concentration that obscures vision at a distance of five feet or less;

3. Less than 19.5 percent or more than 23.5 percent oxygen;

4. An atmospheric concentration of any toxic or hazardous substance above the permissible exposure limits pursuant to N.J.A.C. 12:100-7, Standards for Toxic and Hazardous Substances;

5. An atmospheric concentration of any toxic or hazardous substance that is known to the employer to present a safety or acute health hazard; or

6. Any condition immediately dangerous to life or health.

"Hot work permit" means the written authorization of the employer to perform operations that could provide a source of ignition, such as riveting, welding, cutting, burning, or heating, in the confined space, or on the exterior surface of the space.

"Immediately dangerous to life or health" means any condition that poses an immediate threat to life, or which is likely to result in acute ot immediately severe health effects.

"Immediate severe health effects" means any acute clinical sign of a serious, exposure-related reaction manifested within 72 hours after exposure.

"Inerting" means rendering the atmosphere of a confined space nonflammable, nonexplosive or otherwise chemically nonreactive by displacing or diluting the orginial atmosphere with steam or a gas that is nonreactive with the atmosphere in the confined space.

"In-plant rescue team" means a group of two or more employees designated and trained to perform a rescue from a confined space in the workplace.

"Isolation" means the positive prevention of any unwanted form of energy or other agent with a serious potential for hazard from entering the confined space by means, such as blanking, double block and bleed, or lockout and tagout.

"Linebreaking" means the intentional opening in a confined space of a pipe, line or duct that is or has been carrying flammable, corrosive or toxic material, inert gas, or any fluid at a pressure or temperature capable of causing injury.

"Not-permitted condition" means any condition or set of conditions whose hazard potential exceeds the limits authorized by the entry permit.

"Oxygen deficient atmosphere" means an atmosphere containing less than 19.5 percent oxygen by volume.

"Oxygen enriched atmoshpere" means an atmoshpere containing more than 23.5 percent oxygen by volume.

"Permissible exposure limit" means the maximum eight hour time weighted average of any airborne contaminant to which an employee may be exposed.

"Purging" means the method by which gases, vapors, or other airborne impurities are displaced from a confined space.

"Qualified person" means a person designated by the employer, in writing, as capable by education or specialized training, or both, of anticipating, recognizing, and evaluating employee exposure to hazardous substances or other unsafe conditions in a confined space and capable of specifying necessary control or protective action both to insure worker safety.

"Retrieval line" means a line or rope secured at one end to a worker with the other end secured to a lifting or other retrieval device, or to an anchor point located outside the entry portal.

12:100-9.3 Confined space program

(a) The employer or individual who is responsible for sending workers into confined spaces shall:

1. Be a qualified person;

2. Establish written procedures for a confined space program;

3. Identify each confined space and inform employees by sign, placard, training program, or other effective means to prevent inadvertent entry;

4. Provide affected employees with the specific training necessary before the employees may be authorized to enter a confined space to perform their specific duties;

5. Assure the availability of protective clothing and other personal protective equipment necessary for safe entry;

6. Assure the ready on-site availability and use of rescue and safety related equipment or services, such as lifting or retrieval devices for use in an emergency;

7. Provide and require the use of retrieval lines for atmospheres immediately dangerous to life or health or where there is a risk of engulfment, to make a rescue possible without entering. There shall be adequate attachment points outside the confined space for tying-off or otherwise securing retrieval lines for all authorized entrants. Where retrieval lines could constitute an entanglement hazard or cannot be used, the employer shall provide an equivalent method for rescue;

8. Determine and evaluate the source of any atmospheric contamination found at the time of entry. The employer shall make appropriate provision in case the severity of the hazard could increase, while employees are in the confined space;

9. Provide and maintain the necessary monitoring devices to evaluate the atmoshpere of a confined space;

10. Provide an attendant for each entry permit, unless otherwise permitted by this subchapter;

11. Provide and maintain in proper working order all equipment necessary to make safe entry;

12. Establish an entry permit system pursuant to N.J.A.C. 12:100-9.4; and

13. Properly train employees to perform atmospheric tests in a confined space in the use and calibration of testing equipment.

12:100-9.4 Entry permit system

(a) The employer shall develop, implement, and use an entry system that includes a written procedure for issuance of a permit to enter a confined space;

(b) The employer shall ensure that the entry permit system developed complies with the following:

1. That the system identifies all confined spaces for employees;

2. That the system determines the actual and potential hazards reasonably expected to be associated with the confined space at the time of entry, so the employer can choose the appropriate means to execute a safe entry;

3. That the system provides for the monitoring of any air contaminant, oxygen deficiency, or flammable vapor that could be associated with the atmosphere in the confined space. This monitoring shall be performed immediately prior to entry and as often as is necessary thereafter;

4. That the system provides for proper calibration of test and monitoring equipment;

5. That the system provides appropriate vehicle and pedestrian guards, barriers or other means to protect the entry party and attendants from local traffic hazards, and protects non-entering employees from hazards arising from the confined space;

6. That the system provides pre-planned emergency evacuation;

7. That the system provides for pre-planned emergency rescue;

8. That the system identifies by job title those persons who must sign the entry permit and the duties of each, including the person in charge of entry;

9. That the system defines the role of the qualified person, if such a person is a part of the employer's entry permit system;

10. That the system provides that any employee who participates in an entry permit system in any capacity has been properly trained; and

11. That the system provides by appropriate testing that the control measures used are effective.

12:100-9.5 Entry permit

(a) The original of the entry permit shall be kept on file in the office of the employer who issued the entry permit and a copy of the entry permit shall be posted at the entrance to the confined space

(b) The entry permit shall authorize entry only by authorized entrants into a specific confined space, for a specific purpose, with entry by specific shifts or work crews, and be valid for a period not to exceed eight hours, except for

1. Rescue team entry; or

2. Entry authorized by special permit described in N.J.A.C 12:100-9.13 through 9.17.

(c) The entry permit shall:

1. Describe the hazards known or reasonably expected to be present in the confined space;

2. Specify the minimum acceptable environmental conditions for entry and work in the confined space.

3. Make provision for assuring and certifying that the specified pre-entry requirements are met;

4. Specify by name or job title the person authorizing or in charge of the entry;

5. Name the attendant, unless the permit directs that the attendant function rotates or unless otherwise permitted by this subchapter; and

6. Make provisions for assuring that the in-plant rescue team is available.

(d) The entry permit or a checklist attached to the entry permit shall:

1. Specify isolation, cleaning, purging, inerting, or ventilating to be done prior to entry to remove or control those hazards, or certify that these procedures have been done;

2. Describe any additional hazards that may be reasonably expected to be generated by the activities of the entrants in the confined space and specify any special work procedures to be followed;

3. Specify the personal protective equipment, including respiratory protection and protective clothing, that is necessary for entry or rescue in accordance with N.J.A.C. 12:100-4.2(a)7 Subpart I, Personal Protective Equipment;

4. Specify the atmospheric testing to be done immediately prior to and during the entry period and designate the individual responsible for performing the tests unless otherwise permitted by this section;

5. Where hot work is necessary, authorize such hot work, either as part of the entry itself or by a separate hot work permit which is attached to the entry permit, with its issuance noted on the entry permit; and

6. Specify the type of equipment necessary for rescue purposes that must be readily available. In the case of entry into an atmosphere actually or potentially immediately dangerous to life or health, a positive pressure, self-contained breathing apparatus approved by the National Institute of Occupational Safety and Health, and any other equipment necessary for rescue purposes shall be available at the point of entry.

12:100-9.6 Training for all employees

(a) The employer shall assure that all employees who may be exposed to confined spaces in the course of their employment are aware of the appropriate procedures and controls for entry.

(b) The employer shall assure that all employees are aware that unauthorized entry into such spaces is forbidden.

(c) The employer shall make all employees aware that the consequences of unauthorized entry could be fatal, and that their senses are unable to detect and evaluate the severity of atmospheric hazards.

12:100-9.7 Training for authorized entrants

(a) The employer shall assure that all authorized entrants and in-plant rescue teams have received training including annual retraining covering the issues of (b) through (f) below prior to entering any confined space. The employer shall retain a written record of the hours and subject matter of such training.

(b) The employer shall assure that every employee, before entering a confined space containing a potentially hazardous environment, understands the nature of the hazard and the need to perform appropriate testing to determine if it is safe to enter.

(c) Employees shall be taught the proper use of all personal protective equipment, including respirators and clothing required for entry or rescue, and the proper use of protective shields and barriers. The employer shall comply with the training provisions of N.J.A.C. 12:100-4.2(a)7 Subpart I, Personal Protective Equipment.

(d) Employees shall be trained to exit from a confined space as rapidly as they can without help (self-rescue), whenever an order to evacuate is given by the attendant, whenever an automatic evacuation alarm is activated, or whenever employees recognize the warning signs of exposure to hazardous substances whose presence in the confined space is known or expected.

(e) Employees shall be made aware of the toxic effects or symptoms of exposure to anticipated hazardous materials that may be inhaled or absorbed through the skin. Employees shall be trained to relay an alarm to their attendant and to attempt self-rescue immediately on becoming aware of these effects.

(f) The employer shall train employees in any modifications of normal work practices that are necessary for work in a confined space.

(g) Employees performing atmospheric tests of the confined space shall be properly trained in the use and calibration of testing equipment.

12:100-9.8 Training for person authorizing or in charge of entry

(a) The person in charge of entry shall be trained to:

1. Recognize the effects of exposure to hazards reasonably expected to be present; and

2. Carry out those duties that the entry permit assigns to the person in charge of entry.

12:100-9.9 Training for the attendant

(a) The attendant shall be trained in:

1. Proper use of the communications equipment furnished by the employer for communicating with authorized entrants or summoning emergency or rescue service;

2. Authorized procedures for summoning rescue or other emergency service;

3. Recognition of the early behavioral signs of intoxication caused by contaminants or asphyxiants whose presence could be anticipated in the confined space;

4. The requirements of N.J.A.C. 12:100-9.7, if the permit specifies that the function of the attendant will alternate among the authorized entrants; and

5. The requirements of N.J.A.C. 12:100-9.12, if the attendant will have rescue duties that could require entry.

12:100-9.10 Duties of the attendant

(a) The attendant shall:

1. Remain outside the confined space;

2. Maintain continuous communication with all authorized entrants within the confined space by voice, radio, telephone, visual observation, or other equally effective means. If it is not possible for one attendant to maintain communication with each entrant because of the work station of the entrant in the confined space, other arrangements shall be made to assure that the attendant is continuously aware of the location and condition of any entrant who is out of range of direct communication in the confined space because of his work station;

3. Have the authority to order entrants to exit the confined space at the first indication of a not-permitted condition, an unexpected hazard, indication of a toxic reaction, for example, unusual conduct by the entrants, or if a situation occurs outside the confined space that could pose a hazard to the entrants;

4. Know the procedure and have the means to summon immediate emergency assistance if needed;

5. Remain in his or her post and not leave for any reason except self-preservation, unless replaced by an equally qualified individual while entry continues. The attendant shall order the entrants to exit the confined space, if the attendant must leave and there is no replacement; and

6. Warn unauthorized persons not to enter, or to exit immediately if they have entered, and advise the authorized entrants and any others specified by the employer of entry by unauthorized persons.

12:100-9.11 Duties of the person in charge of entry

(a) The person in charge of entry shall:

1. Assure that the pre-entry portions of the permit are completed before any employee enters a confined space;

2. Verify that the necessary pre-entry conditions exist but he or she need not personally conduct the tests;

3. Verify, if an in-plant rescue team is to be used, that the in-plant rescue team is available;

4. Verify that the means for summoning the in-plant rescue team or other emergency assistance are operable; and

5. Terminate the entry upon becoming aware of a not-permitted condition.

(b) If the person in charge of entry is present throughout the entry period, this person may serve as the attendant.

12:100-9.12 In-plant rescue teams

(a) An in-plant rescue team shall consist of personnel equipped with the personal protective equipment, including respiratory protective equipment, necessary for entry into a confined space, and with the rescue and retrieval equipment the employer has provided for rescue from a confined space.

(b) The in-plant rescue team shall be trained in accordance with N.J.A.C. 12:100-9.7, and in the correct performance of the rescue functions assigned to them using the retrieval and rescue equipment furnished, and in the proper wearing and use of any personal protective equipment, including respirators, that they may need to use during an actual rescue.

(c) A rescue team shall practice, at least annually, removing simulated victims, such as dummies, mannequins, or real people, through representative openings and portals which have the same size, configuration and accessibility as the confined space from which an actual rescue would be required.

(d) At least one member of each rescue team shall hold current certification in basic first-aid and cardio-pulmonary resuscitation.

12:100-9.13 Special entry-permit for duration of job

(a) The procedures described in this section for the special entry permit for the duration of the job are applicable only for the restricted circumstances and conditions described in (b) below.

(b) Any entry permit for the duration of the job may be issued and used for the duration of a job provided that:

1. Conditions in the confined space have no known potential for presenting either an immediately dangerous to life or health atmosphere or an engulfing condition;

2. Inspection of the confined space and atmospheric testing, performed at least at the beginning of each work shift, confirms that acceptable conditions for entry exist, and that the periodic atmospheric testing conducted during the course of the work shift, as specified in the permit, also confirms that conditions remain acceptable as work progresses;

3. Only operations, processes or procedures that are specifically authorized by the permit, and which could not increase, or be the source of, a hazard to employees are used in the confined space;

4. Any process or procedure, such as welding, which is not addressed by the original permit shall not be conducted until the employer either issues a new entry permit or appends a special purpose permit to the original permit; and

5. All employees shall be immediately withdrawn from the confined space and the special permits shall be void if atmospheric testing or inspection indicates that a not-permitted condition exists as a result of special permit activity, or that conditions outside the confined space could pose a hazard to entrants. The employer shall correct the hazardous condition before a new special permit may be issued.

12:100-9.14 Special entry permit for one year duration

(a) The procedures described in this section for the special entry permit for one year duration are applicable only for the restricted circumstances and conditions described.

(b) Employers whose operations require employees to perform routine repetitive entry into a confined space which has no known potential for presenting an immediately dangerous to life and health atmosphere, and no potential for an engulfment condition, may issue an annual permit instead of a separate permit for each entry.

(c) When work in a confined space is to be done under the terms of an annual permit, the employer shall:

1. Establish specific entry procedures that must be followed for entry by annual permit before any employee may be authorized to make such an entry;

2. Train employees in the procedures required for such entries;

3. Assure that employees test the atmosphere prior to entry using an appropriate direct reading instrument, or other device which quantitatively identifies anticipated contaminants, with a remote sampling probe, testing for, in the following order, oxygen concentration, combustible gas, and suspected toxic materials;

4. Allow, at the employers' discretion, entry by one or more employees without an attendant where continuous, positive ventilation, sufficient to maintain the atmosphere within established permit conditions, or appropriate additional atmospheric monitoring is provided; and

5. Revoke the permit whenever any test done pursuant to this section shows that conditions in the confined space have become more hazardous than contemplated under the permit. When this occurs, entry may be made only after an entry permit has been issued in accordance with N.J.A.C. 12:100-9.4.

12:100-9.15 Special entry permit for diked areas

(a) The procedures described in this section for special entry permits for diked areas are applicable only for the restricted circumstances and conditions described.

(b) Diked areas for storage tanks may be entered using non-attendant entry procedures, without providing ventilation or performing atmospheric tests prior to entry to perform routine operations, provided that:

1. There is no reason to believe there is or may have been any escape of flammable, toxic, or corrosive material into the diked area in sufficient quantity to create an immediately dangerous to life and health atmosphere; and

2. If line breaking is to be done in a diked area, the line breaking procedure of the employer shall be followed.

12:100-9.16 Special entry for low hazard belowground space

(a) The procedures described in this section for special enty permits for low hazard belowground space are applicable only for the restricted circumstances and conditions described in (b) below.

(b) A belowground confined space may be entered by an annual or job duration permit as a non-attended entry where no risk of engulfment can exist, and where the atmosphere cannot become immediately dangerous to life and health, provided that:

1. The space prior to entry has been ventilated using a mechanically powered ventilator for not less time than is specified in the ventilation nomograph prepared for that ventilator, and that ventilation continues throughout the entry;

2. A combination of appropriate atmospheric testing and mechanically powered ventilation is used; or

3. Without the mechanically powered ventilation, appropriate continuous atmospheric monitoring or frequent atmospheric testing at intervals prescribed by the employer assures that permit conditions are maintained.

12:100-9.17 Special entry permit for a non-attended situation

(a) The procedures described in this section for the special entry permit for a non-attended situation are applicable only for the restricted circumstances and conditions described in (b) below.

(b) Routine or repetitive entries into a confined space, which have no known potential for an immediately dangerous to life or health atmosphere or an engulfment situation, and in which all known hazards are positively controlled, are permitted without an attendant, provided that:

1. The employer verifies, immediately prior to entry, that no hazard exists;

2. The entrant takes no materials that could cause a hazard into the confined space;

3. The entrant will not perform any work that could cause a hazard in the confined space; and

4. Adherence to the above conditions is assured by established work practices, or the use of a checklist, or by both.

(c) A non-attendant situation may be created by a permit valid for a period of up to one year under the conditions described in N.J.A.C. 12:100-9.13.

12:100-9.18 Contractors

(a) An employer who retains contractor services for work in a confined space shall inform the contractor of any potential fire, explosion, health or other safety hazards of that confined space which are reasonably ascertainable by that employer.

(b) An employer who retains the services of a contractor shall inform the contractor of the confined space program and other applicable safety rules of the facility. The employer shall inform the contractor of those portions of the emergency action plan, based on N.J.A.C. 12:100-4.2(a) Subpart E, Means of Egress, which are applicable to the employees of contractors who are public employees.

OTHER AGENCIES

(a)

ELECTION LAW ENFORCEMENT COMMISSION

Public Financing of Primary Election for Governor

Adopted Amendments: N.J.A.C. 19:25-16.4, 16.5, 16.11, 16.14, 16.18, 16.20, 16.27 and 16.33

Amendments Not Adopted: N.J.A.C. 19:25-16.6 and 16.10

Proposed: June 20, 1988 at 20 N.J.R. 1339(a).

Adopted: August 16, 1988 by the Election Law Enforcement Commission, Frederick M. Herrmann, Ph.D., Executive Director.

Filed: August 24, 1988 as R.1988 d.447, **with substantive and technical changes** not requiring additional public notice and comment (see N.J.A.C. 1:30-4.3) and **with portions not adopted.**

Authority: N.J.S.A. 19:44A-38.

Effective Date: September 19, 1988.

Expiration Date: January 9, 1991.

Summary of Public Comments and Agency Responses:

On June 20, 1988 the Election Law Enforcement Commission (hereafter, the Commission) proposed amendments to its rules concerning public financing of primary elections for governor (see 20 N.J.R. 1339(a)). Public hearings were conducted on July 19, 1988 and August 11, 1988. Testimony was submitted by Peter Nichols on behalf of Senator Richard M. Wagner (D.-13th Legislative District), by Assemblyman Robert J. Martin (R.-26th Legislative District) and by Assemblyman Alan J. Karcher (D.-19th Legislative District). Testimony was also given by Nancy T. Stultz on behalf of the National Organization for Women of New Jersey Political Action Committee. Written comments were received from Commissioner of Transportation Hazel Frank Gluck; from Vincent Trivelli, Legislative/Political Coordinator of the Communication Workers of America; from Assemblyman Thomas P. Foy (D.-7th Legislative District), general counsel, New Jersey AFL-CIO; and from Alan C. Staller, Esq.

COMMENT: Several commenters questioned the statutory authority of the Commission to enact rules requiring quarterly campaign reports from individuals who are raising or spending money to explore the feasibility of a gubernatorial candidacy (that is, "testing the waters"), or committees raising and spending funds to draft such individuals to become candidates (see proposed N.J.A.C. 19:25-16.4 and 16.5). One commenter suggested that such individuals should not be required to appoint treasurers or establish depositories for pre-candidate activity. Also, objections were raised that the proposed filing requirements for pre-candidate activities would result in unequal treatment between individuals who were "testing the waters" and obligated to file quarterly campaign reports, and announced candidates who would not be obligated to file any campaign report until 29 days prior to the election in which they were running (see N.J.S.A. 19:44A-16).

RESPONSE: The Commission believes it has statutory authority to regulate the raising and spending of funds which may reasonably be used by a person who becomes a gubernatorial candidate. The existing rules of the Commission require that all funds received by an individual, or committee on behalf of an individual, for the purposes of "testing the waters" must be deposited in a separate depository established for that purpose (see N.J.A.C. 19:25-16.5(b)). The Commission believes that the existing requirement is within its statutory authority, and further believes that its proposal to require such individuals or committees controlling such depositories to file a notice containing the name, address and account number of such a depository within 10 days after receipt of funds also within its statutory authority (see proposed N.J.A.C. 19:25-16.5(b)). However, the Commission agrees with those observations concerning the inequity of requiring "testing the waters" quarterly reporting. Candidates are not required to file campaign reports disclosing contributions and expenditures until 29 days prior to the election in which they are running (see N.J.S.A. 19:44A-16). Individuals who are conducting "testing the waters" activity should not be placed under a greater burden of reporting, and therefore the Commission has withdrawn its proposed amendment to N.J.A.C. 19:25-16.5(a) requiring such individuals, or committees on their behalf, to file quarterly reports of contributions and expenditures.

COMMENT: Two commenters opposed the Commission's proposal concerning contributions by children under the age of 18, and one commenter supported it (see proposed N.J.S.A. 19:25-16.6(c)). Under existing rules, contributions received by a gubernatorial candidate from a child 14 years of age or older must be accompanied by a signed statement from the child and the child's parent or guardian that the decision to contribute was solely that of the child and the funds used to make the contribution were legally and beneficially controlled by the child and were not the proceeds of a gift made for the purpose of making a contribution. Furthermore, for children 11 to 14, in addition to the evidence required above, evidence must be submitted that the child acted independently and with full knowledge of the contribution. Under existing rules, no provision is made for contributions from children under 11 years of age and therefore such contributions would be attributed to the parent or guardian. The proposed rule would require that all contributions from children under the age of 18 be attributed to the parent or guardian. The concern is that the contribution limit of $800.00 on individuals could possibly be circumvented by a parent or guardian who made several contributions in the name of his or her children. The commenters in opposition to the change felt that children in the age range of 14 to 18 should be encouraged to participate in the political process, even though they are ineligible to vote.

RESPONSE: The Commission is persuaded that its proposal is too restrictive, and a contribution from a child in the age category of 11 to 18 can be attributed to that child, provided that there is compliance with the safeguards contained in the existing rules. Therefore, the Commission is withdrawing this proposed amendment and will continue to rely on its existing rule.

COMMENT: Several commenters objected to the proposal concerning contributions from affiliated labor organizations and one person commented on the proposal concerning affiliated corporations (see proposed N.J.A.C. 19:25-16.10(e)). The existing text is referred to as the "anti-proliferation" restriction. The purpose is to prevent two or more entities that are under the same control from each giving contributions to a gubernatorial candidate that in the aggregate would exceed the contribution limit. The rule is intended to prevent a single contributor controlling several different entities from making a proliferation of contributions which collectively circumvent the contribution limit. In regard to labor organizations, the Commission proposed that where one labor organization had the legal authority to seize or otherwise encumber dues or assets of another they would be considered affiliated for the purposes of adhering to the contribution limit. The Commission also proposed that where the leadership of one labor organization was identical to another, they would similarly be considered affiliated. Although one commenter supported these tests, several commenters objected that the legal authority of a national or international union to seize the assets of a local bore little or no relationship to any exercise of control over the political contribution decisions made by the local union. The power to seize control over a local is rarely exercised, and exercised only under extraordinary circumstances. Also, it was observed that the test concerning identical leadership was unrealistic because that circumstance rarely if ever occurs. The commenters objected strenuously that imposition of the proposed test concerning legal authority to seize assets would effectively infringe upon the First Amendment rights of local unions to express political views. In regard to corporations, one commenter expressed the view that the proposed Commission standard that a majority of the directors are the same was inequitable when compared to the standard of "identical leadership" proposed for unions. Therefore, the commenter suggested that the standard for testing affiliation between corporations be the existence of identical directors. One commenter suggested that the test for determining whether corporations are affiliated should be set at 20 percent co-ownership, that is, when one corporation owns more than 20 percent of another, the corporations would be considered affiliated. Further, the commenter suggested that in regard to closely held corporations, any shareholder owning 20 percent or more of the ownership interest should be regarded as affiliated to the corporation.

APPENDIX B

BAYONNE/PVSCV CONNECTION

CONFINED SPACE ENTRY PROGRAM

BAYONNE/PVSC CONNECTION
CONFINED SPACE ENTRY PROGRAM
1990

1. PURPOSE AND LEGAL AUTHORITY

1.1 Purpose

The purpose of this confined space entry program is to protect the life and health of workers operating the facilities comprising the Bayonne/PVSC Connection who work in confined spaces. This program establishes the minimum requirements for working in a confined space. All employees operating the above mentioned facilities must comply with the requirements of this program.

1.2 Legal Authority

This program is required by the State of New Jersey. The statutory authority for this program is contained in N.J.A.C 12:100-9, "Work in Confined Spaces", copy of which is included as Appendix A.

2. DEFINITION

2.1 Definition of a Confined Space

A confined space is any enclosed space which has the following characteristics:

- Limited access for getting into or out of due to the size or location of the openings of the space.
- Poor natural ventilation which could result in the development of an unsafe breathing air. Unsafe breathing air is air that is toxic, combustible, contains an amount of oxygen that is less than 19.5%, greater than 23.5% oxygen, or any condition that is immediately dangerous to life or health.
- The space in not intended for continuous employee occupancy.

2.2 Confined Spaces at Bayonne Facilities

The following areas are considered to be confined spaces:

- At the Bayonne Pumping Station Site: Grit chamber, pump station wet well, pump station dry well, all manholes and sewer lines.

- In the PVSC Connection Sewerage System: All regulators, blowoff chambers, junction at Jersey City West Treatment Plant site, air release manhole, sewers and any other below-ground space.

2.3 Anticipated Hazards

The following hazardous conditions can be anticipated to occur in Bayonne Pumpover facilities:

- Hydrogen Sulfide Gas: This gas is a product of the decomposition of organic material. It is toxic at low concentrations. The allowed safe concentration for 8-hour worker exposure is 10 ppm. The gas is highly odorous, but it quickly dulls the sense of smell.

- Methane Gas: This gas is also a product of the decomposition of organic material. It is explosive at low concentrations, and it is odorless, colorless, and tasteless. A concentration above 10% of the lower explosive limit (10% LEL) is considered unsafe.

- Carbon Dioxide Gas: This gas is a product of normal human respiration, a product of decomposition of organic material,a gas that is formed during burning of organic material, and a product of many natural processes. Carbon dioxide is not toxic, but it does not support human life and can displace oxygen in confined spaces.

- Oxygen Deficiency: The normal concentration of oxygen in air is 20.5%. Concentrations below 19.5% or more than 23.5% are considered unsafe. Unsafe oxygen concentrations can develop due to displacement of oxygen by other gases or by use of oxygen in organic material decomposition.

- Engulfment: The danger of engulfment and drowning by sewage flow exists in certain of the Bayonne Pumpover facilities, such as sewers and junction chambers.

3. ENTRY PERMIT SYSTEM

3.1 Permit Required for Entry

Entry into all confined spaces is governed by an entry permit system. Any employee or any other person shall not enter a confined space unless a permit has been issued under the authority of the Director of Engineering, City of Bayonne.

3.2 Conditions and Limitations

The intent of the entry permit system is to ensure that the confined space being entered is safe before anyone enters it. Except for emergency rescue when self-contained breathing apparatus is used as described below, no one shall enter a confined space that is believed to be unsafe. This applies whether a permit has been issued or not. If a space cannot be made safe to enter then entry is prohibited unless approved by the Director of Engineering and only under the conditions set forth below governing emergency entry.

3.3 Types of Permits

3.3.1 Specific Entry or Eight-Hour Permit

A specific entry permit is issued for the purpose of allowing entry to one specific confined space and only for an eight-hour period. A specific entry permit is required before entering the Bayonne Pump Station wet wells; for any specific manhole or sewer at the Bayonne Plant Site; or for any specific confined space in the sewerage system. If work must continue beyond the 8-hour permit duration, a new permit must be issued.

3.3.2 Duration of Work Permit

A duration of work permit is issued for collection system work where it may be necessary to enter more than one below-ground structure during the course of the work day. A duration

of work permit is issued for an eight-hour period only and is identical to a specific entry permit in all other respects.

3.3.3 Annual Permit

Annual permits are issued for the following areas:

- Bayonne Pump Station dry well in the Operations Building.
- Bayonne Screenings and Grit Removal Building.

The annual permit applies only if the area is continuously ventilated and the gas detection system is in service. The permit is valid for daily maintenance and routine inspection for a period of one year.

3.3.4 Hot Work Permit

A "hot work" permit is issued when welding, cutting, heating, doing any spark-producing activity, or using an open flame is required. A hot work permit is issued for eight hours, and hot work shall not be done in any confined space that has any hazardous conditions of any kind.

3.4 Issuance of Permits

An entry permit is issued by the Director of Engineering or his authorized subordinate. Authorized subordinates include any foreman or entry team leader. In normal daily practice entry permits are routinely signed and issued by foremen or entry team leaders.

3.5 Permit Contents

3.5.1 Requirements

The entry permit shall list or identify the following:

- Space to be entered.
- Persons in charge of the entry and all entry team members and their signatures. Name of attendant and entering personnel.
- Atmospheric testing results before and during entry.
- Verification that ventilation has been performed and all other pre-entry preparation has been performed.
- List of the hazards to be expected and additional work requirements imposed by hazards that could be created by work in the confined space.
- Identification of in-plant rescue team or other rescue team and method of contacting (radio or telephone).
- Safety equipment required.

3.5.2 Entry Permit Forms

Entry permit forms are appended and should be used for all entries except for emergency entry.

3.5.3 Posting and Record-Keeping

The annual permits for the Bayonne Pump Station dry well and Screening and Grit Removal Building are posted at or near the entrance to these spaces. Other permits shall be posted on a clipboard and kept at the entrance to the confined space being entered, if possible.

A copy of the permit will be kept on file as directed by the Director of Engineering, and permits for work completed will also be kept on file.

4. RESPONSIBILITIES

4.1 Director of Engineering

The Director of Engineering shall be the person primarily responsible for the execution of the confined space entry program. His responsibilities include, but are not necessarily limited to, the following:

- Ensures that the provisions of the confined space entry program are followed by all employees.
- Arranges for training of employees and maintains records of training.
- Identifies confined spaces beyond those identified herein and ensures that all employees are aware of these spaces.
- Prepares entry.forms and maintains completed entry forms in appropriate files.
- Ensures that personal protective equipment and all other equipment required for confined space entry and rescue are available for use by employees and are regularly tested and maintained.
- Provides for the periodic testing of monitoring devices.
- Establishes written procedures governing confined space entry; sets up the confined space entry program.

The Director of Engineering is a "qualified person" as defined by New Jersey law. He is capable of recognizing confined space hazards and of specifying procedures and actions needed to ensure employee safety when working in confined spaces.

4.2 Person in Charge of Entry

The person in charge of entry shall be a foreman or other assigned employee who is in charge of employees who enter a confined space. The person in charge of entry may act as the attendant if he is present during the entire time of the entry, or he may act as an authorized entrant. If he acts as an entrant, he shall be governed by orders of the attendant as

- Understands the dangers involved in entering confined spaces and is thoroughly familiar with the proper procedures for safe entry.

- Assigns personnel to act as entrants and attendant.

- Ensures that the entry permit is completed and that all provisions and requirements of the permit are satisfied, and that pre-entry conditions exist.

- Verifies that the in-plant rescue team is available and that a means of summoning the team (such as a radio or telephone) is available at the location of the confined space entry.

- Terminates the confined space entry if hazardous conditions are identified or if non-permitted conditions are discovered (such as absence of the attendant or detection of a hazardous gas condition using the monitoring device). If non-permitted conditions are discovered, the person in charge of entry, after terminating the entry, shall notify the Chief Engineer of such conditions and of the termination of the entry.

4.3 Attendant

The attendant shall remain outside of the confined space at all times during the period of entry and shall observe and be in constant communication with the entrants. The attendant position may be rotated among all qualified employees. The person in charge of entry may act as the attendant. The responsibilities of the attendant include:

- Remains outside of the space during the entire entry and observes the entrants at all times if possible. He shall maintain communication with entrants by radio or other means so he is aware of all entrants' locations and physical condition at all times.

- Has the authority to order the entrants to get out of the space if, in the attendant's judgement, a hazardous condition has developed or is developing. A hazardous condition could be any condition that could be unsafe for the entrants.

- Prohibits unauthorized persons from entering the space.

- Knows how to summon the rescue team.

- Orders the entrants to get out of the space if the attendant must leave the area and there is no one to replace him.

- Uses self-contained breathing apparatus to perform an emergency rescue if an employee is "down" in a confined space and another authorized person is available to assume the duties of the attendant.

4.4 Authorized Entrants

An authorized entrant shall have received training in the hazards of confined space entry and shall understand the use of all safety equipment. Authorized entrants shall be trained sufficiently so that they can act as attendant.

4.5 In-Plant Rescue Team

The in-plant rescue team shall consist of at least two people, at least one of whom shall be certified in basic first aid and cardiopulmonary resuscitation.

The rescue team may consist of Bayonne Pumpover personnel or a local fire or police rescue unit. The in-plant rescue team during the day shift (8:00 a.m. to 4:00 p.m.) shall be the interceptor crew.

The rescue team shall be thoroughly familiar with proper procedures for rescue of persons in confined spaces and with use of rescue equipment. The team shall be able to respond immediately to a call for assistance.

The team shall be trained in the use of self-contained breathing apparatus, respirators, safety gear, and retrieval equipment used in rescue of conscious and unconscious persons from confined spaces.

5. TRAINING REQUIREMENTS

5.1 General Requirements

Annual training shall be provided. All employees who regularly enter confined spaces on 8-hour permits shall receive both entrant and attendant training. Only trained employees shall enter confined spaces.

5.2 General Training for All Employees

The Authority annually shall train all employees who might enter confined spaces during their normal work day. Training shall include:

- The types of hazards that can exist in confined spaces and the personal effects of these hazards (injury or death). Normal human senses are not sufficient to detect the presence or severity of the hazards.
- The symptoms of exposure to hazardous conditions, including materials that may be absorbed through the skin.
- The conditions under which a confined space should be evacuated, including gas alarms and personal reaction to a gas hazard.
- The permit system of entry. Entry into confined spaces is not allowed unless a permit has been issued and all permit conditions are met.
- The preconditions that must exist before entry into areas governed by annual permit is allowed.
- The location and significance of gas detectors and alarms.

5.3 Authorized Entrant Training

Authorized entrant annual training shall consist of general training for all employees and also the following for employees who regularly enter confined spaces on 8-hour permits:

- Use of gas detectors, personal protective equipment, and personnel retrieval equipment.

- Use of self-contained breathing apparatus. Each entrant shall demonstrate his ability to put on the apparatus without assistance and shall turn on and use the air supply.

- Calibration of gas detectors and the gas testing needs before confined space entry.

- Work procedures while wearing a harness with a lifeline attached and while wearing other personal protective equipment.

- Evacuation procedures when ordered by the attendant or person in charge of entry, when the gas monitor detects an alarm condition, when the effects of hazards are realized, or when a hazardous condition is discovered, regardless of orders or gas alarm conditions.

5.4 Attendant Training

Annual training of attendants shall consist of all training specified for all personnel and entrants and the training listed below.

- Recognition of hazardous condition impacts on human behavior and the need to evacuate personnel in such a situation.

- Communication needs and requirements between the entrants and the attendant. Instruction in the use of 2-way radios or other communications equipment shall be provided.

- The method of calling the in-plant rescue team.

- Rescue procedures when emergency rescue is required to save an employee in the space who is "down" and there is another authorized person available to act as attendant. The in-plant rescue team shall be summoned before emergency rescue is attempted.

- Current certification in basic first aid and cardio-pulmonary resuscitation.

- Removal of simulated victims from confined spaces.

- The attendant shall understand that he has the authority to order any entrant to get out of the space if the attendant identifies or suspects that hazardous conditions are developing or have developed.

5.5 Training of Person in Charge of Entry

The person in charge of entry shall receive all training required for all employees, entrants, and attendants and the following:

- Completion of the confined space entry permit.
- Verification that the in-plant rescue team is available and that there is a readily available means of communicating with it.
- Assignment of personnel to act as entrant(s) and attendant.

5.6 Trading for In-Plant Rescue Team

The in-plant rescue team shall be specially trained and equipped in the rescue of persons from confined spaces. Training for in-plant rescue team members shall be the same or equivalent to training for all employees and for entrants and attendants. In addition, regular practice, at least annually, shall be conducted in which the team is called out on a simulated rescue, and persons or @dummies shall be removed from the confined space at the rescue site.

When the in-plant rescue team consists of a local fire or police rescue team, the training regularly provided by their agency shall be accepted as adequate for rescue from Authority confined spaces, provided such training includes confined space rescue.

5.7 Record Keeping

A record shall be kept of the training provided all employees in confined space entry. The records shall be filed as assigned by the Chief Engineer.

6. EQUIPMENT

6.1 General

The equipment used for confined space entry shall be approved for use in the State of New Jersey, when applicable. All equipment must be suitable for the intended use.

6.2 Gas Detectors

The portable gas detector or detectors shall have sensors for detection of hydrogen sulfide, methane, and oxygen. The sensor shall alarm at 10 ppm of hydrogen sulfide or more, 10% of the lower explosive limit for methane, and below 19.5% oxygen. The detector shall be tested regularly and maintained in accordance with manufacturer's recommendations. Other gas detectors shall be used if a hazard from other gases is anticipated or identified.
The detector shall not be used and entry shall be terminated if the detector fails to respond properly to calibration tests or if it malfunctions.

6.3 Safety Lines and Retrieval Equipment

Safety harnesses and retrieval lines shall be provided and adequate for removal of an unconscious entrant. A lifting device or other means of retrieval shall be provided. One person shall be able to use the lifting device or other means of removal to remove an unconscious entrant.

6.4 Blowers

A portable blower or blowers shall be provided for confined space entry when fixed ventilating devices are not available to artificially ventilate a confined space. The portable blower shall be gas engine or electrically powered.

6.5 Self-Contained Breathing Apparatus.

The "pressure-demand" self-contained breathing apparatus (SCBA or "airpack"for short) shall be of the type approved by the Occupational Safety and Health Administration for use in hazardous atmospheres. Mine Safety Appliances (MSA) and Scott air packs are approved types. The air pack shall be maintained and tested in accordance with the manufacturer's recommendations. Maintenance and testing shall be routinely recorded on appropriate record sheets, and the Chief Engineer shall maintain a permanent file of these records.

6.6 Portable Lighting Equipment

Portable lighting used in confined spaces shall be explosion-proof or suitably sealed for use in explosive atmospheres.

6.7 Other Equipment

Other equipment including safety equipment such as gloves, steeltoed boots, goggles, face shields, hard hats and special tools shall be required to Perform every job in a safe manner.

6.8 Equipment Responsibility

The City of Bayonne supplies all the required protective clothing and gear for confined space entry, including blowers, safety ropes and harnesses, portable gas detectors, self-contained breathing apparatus and any other gear required. The Director of Engineering is responsible for seeing that the necessary equipment is supplied and that it is in workable and satisfactory condition.

7. ENTRY PROCEDURES

7.1 Introduction

This section includes procedures for entry into the confined spaces at all Bayonne Pumpover and transmission facilities. Entry into spaces covered by 8-hour permits is described in Part 7.2 of this section. Special conditions for entry into the Raw Wastewater and Storm Flow wet wells are described in part 7.3.

Entry into the dry well and the Screenings and Grit Removal Building on annual permits is covered by Part 7.4.

7.2 Duration of Work Permit and Eight-Hour Entry Permit Conditions

7.2.1 Verify Entry Permit Conditions

The person in charge of entry shall obtain the entry permit and shall fill it out as required. His other duties shall be as follows:

- Assign the entrants and the attendant. When the attendant position changes during the course of an 8-hour permit, show the name of each attendant in turn and the time of day that he assumed the responsibilities of attendant.
- Verify that the necessary equipment and safety gear is on hand and is suitable for use. Assemble all other needed tools to do the job.
- Verify that each gas detector is charged and that it has been recently calibrated in accordance with the manufacturer's instructions.
- Verify that the self-contained breathing apparatus is fully charged with air.

7.2.2 Assemble the Entry Crew

The minimum number of people for entry into a confined space is three. Normally, one man enters the space and one man serves as the attendant. The third man, usually the person in charge of entry, shall assist as needed. The attendant shall remain at the entrance of the space at all times and have the entrant in view. The attendant shall be responsible for ordering the entrant out of the space if the situation becomes hazardous in the estimation of any of the entry crew.

The following crew sizes are required:

- A crew of three if one man enters the space.
- A crew of four if two men enter the space.
- A crew of five if three men enter the space.

7.2.3 Set Up at the Confined Space

Set up traffic barricades or other barriers when working in areas where vehicular traffic is possible or pedestrians may gain access. Post the confined space permit at or near the opening of the space.

7.2.4 Isolate the Confined Space if Possible

Isolate the confined space from the rest of the operating system if possible. In most of the confined spaces at Jersey City, this will not be possible because the space must remain in service to convey wastewater. However, if the following actions can be taken to partially isolate the space, the following actions should be taken.

- Drain pipelines, channels and tanks.
- Disconnect, plug or otherwise secure pipelines so that wastewater does not flow into the space. Place a tag on valves or plugs that have been installed, and write the date the tag was placed and the name of the person who placed it.

- Minimize the amount of wastewater that flows into the space.
- If electrical components are to be worked on, be sure that they are disconnected from the source of power at the circuit breaker and a signed, dated tag has been applied to the locked open circuit breaker.
- Locks and tags are to be removed only by the person who put them on.
- Wash down or otherwise clean the space if possible.

7.2.5 Ventilate the Space

Provide mechanical ventilation of the space. Where ventilation of a collection system space is required, use a portable blower and power it from a vehicle battery or gas engine. Ventilate the space for a minimum of 10 minutes in the case of a manhole or a regulator having one opening only. For larger spaces ventilation of up to one hour may be required.

7.2.6 Test the Air in the Space

This is the most important step because it determines if the space is safe to enter without using breathing apparatus. The space must be tested before entry and must be tested continuously during entry. Test for the following conditions, as a minimum:

- Oxygen Concentration: Must be between 19.5% at a minimum and 23.5% at a maximum. Do not enter if the concentration is outside this range.
- Hydrogen Sulfide: Must be no more than 10 parts per million (ppm). Do not enter the space if the concentration is greater than 10 ppm.
- Explosive Gases: Must be no more than 10% of the lower explosive limit (LEL). Do not enter if the concentration is more than 10% of the LEL.
- Any other hazardous conditions that are anticipated. Do not enter if any other hazardous conditions are found.

The air must be tested throughout the space, at the top, middle and bottom of the space. The space must be evacuated immediately if any of the above safe limits are exceeded. The space must be excavated if any other hazardous condition develops.

7.2.7 Prepare Personnel to Enter the Space

Each person who enters the space must put on a body harness and be attached to a life line. The line must be secured in some manner outside the space, not attached to a vehicle, so that the entrant can be pulled from the space if emergency conditions develop. A hoist or other device, must be used so that one man can pull an unconscious entrant from the space.

7.2.8 Enter the Space

The space may be entered if there are no hazardous conditions in the space, if an attendant is posted at the entrance to the space, and if entrants are properly equipped to enter. The space must be immediately evacuated if any hazardous conditions develop. Evacuation must be immediate even if it means that work will be left undone or tools left in the space.

7.2.9 Additional Entrants

Additional entrants may enter the space, provided each is equipped with a body harness and attached to a life line. An attendant and one other person on the entry team shall remain outside the space at all times when there is one or more entrant in the space.

7.2.10 Self-Contained Breathing Apparatus

As required by the entry permit, one, fully-charged, ready-to-use self-contained breathing apparatus shall be available for use at the entrance of the space. The unit must be removed from its container and be prepared for immediate use. The attendant and other entry team members must be trained in its use.

7.3 Confined Space Entry Procedures for Entering the Storm Flow And Flow Wastewater Wells

The Storm Flow wet well presents special conditions for entry because it is ventilated continuously and is more readily accessible than the Raw Wastewater Wet Well.

Entry into the Storm Flow Wet Well in the Operations Building is made by removing the 5 ft-0 in. wide grating at Floor El. - 1.50 and inserting a ladder down to El. - 15.0. This is for entry upstream of the mechanical screen. For entry into the Storm Flow Wet Well proper the 3 ft square grating centered on the screen, but on the downstream side, is removed and a ladder inserted down to El. - 20.50

Entry into the Raw Wastewater Wet Well is via the new stair at El. 10.17 down to El. - 1.50 in the former Grit Room. By removing the 3 ft square grating at the southeast corner of the former Grit Room and inserting a ladder from El. - 1.50 to El. - 20.50, entry into the Raw Wastewater Wet Well may be effected.

An annual permit shall be issued if the supply fan supplies 12 air changes per hour. It now effects 6 air changes per hour.

7.3.1 Verify Entry Permit Conditions

The person in charge of entry obtains and completes the permit. The permit specifies the following:

- Ventilation with the supply fan shall occur for two hours before entry.
- If the fan stops the wet well should be evacuated immediately.
- A portable gas detector shall be in use at all times in the wet well.
- The attendant shall communicate with the entrants by portable radio. The purpose of the attendant is to ensure that the supply fan operates during the entire entry.

7.3.2 Remaining Steps of the Procedure

- Ventilate the space for a minimum of two hours before entry. It is preferable to ventilate it continuously,
- Assemble the entry crew.
- Enter the space. The attendant remains outside the space and communicates with the entrants by radio. The gas detector must be in use in the space at all times during entry.
- Evacuate the space if any gas alarm occurs.
- Complete the work in the space as quickly as possible and leave as soon as work is complete.

7.4 Dry Wells and Screenings and Grit Removal Building

These spaces are entered on an annual permit basis. The spaces must be ventilated all the time and the gas detector system must be in service. The permit must be initialed or signed upon each entry. The permit shall be posted by the entry door to the space.

8. EMERGENCY RESPONSE PROCEDURES

8.1 General Restrictions

An emergency rescue shall be attempted only by someone trained in such rescue. Immediate rescue shall be attempted by attendant personnel only if a self-contained breathing apparatus is used by each rescuer entering the space. No rescue shall be attempted if the rescuer may become a victim. The victim should be removed from the space using the hoist and lifeline if possible.

8.2 Attendant Rescue

The attendant can attempt an emergency rescue if he uses a self-contained breathing apparatus and:

- There is someone on the crew to take his place and assume his responsibilities.
- The in-plant rescue team has been summoned.

8.3 Rescue Team

The in-plant rescue team consists of a minimum of two members who are trained in team rescue. The team shall be called whenever an emergency develops or seems imminent. The in-plant team can be called by radio.

The rescue team during the evening and night shifts is the Bayonne Fire Department. The phone number is 911.

8.4 Hospitals

Victims rescued from a confined space shall be given immediate first aid and then transported to a hospital. The following hospital shall be used:

Bayonne Hospital located at 29 East 29th Street, Bayonne.

9. SAFE PRACTICES (ADDITIONAL)

The following safe practices must be observed:

- Ventilation of confined spaces at the Bayonne Facilities by use of permanently installed equipment shall be continuous.
- The permanently-installed gas detection system shall be maintained in accordance with the manufacturers directions.
- Smoking is not allowed in any confined space.
- Open flames are not permitted in a confined space.

10. TERMINOLOGY

The terms "shall", "should", and "must", and the present tense, have been used in this program description to describe conditions and * requirements for confined space entry. All of these conditions and requirements, regardless of written form, are mandatory.

BAYONNE/PVSC CONNECTION

ANNUAL PERMIT FOR CONFINED SPACE ENTRY

Issue Date: Effective Date: Expiration Date:

Issued By: (Director of Engineering)

Facility (check one):

Pump Station Dry Well ---------- ----------

Grit/Screen Chamber ---------- ----------

Date	Entrant	Gas Detector	Ventilation	Date	Entrant	Gas Detector	Ventilation

BAYONNE/PVSC CONNECTION

PERMIT FOR CONFINED SPACE ENTRY (8-HOUR)

Issue Date:_____ Issued By:_____

Time Issued:_____ Time of Expiration (8 hours from issue):_____

Confined space to be Entered:_____

Description of Work:_____

Safety Equipment

Harness and lifeline, each entrant_____
Retrieval device_____
Air pack, fully charged___
Lighting, type_____
Traffic barricades_____

Gas detector, type_____
Calibration date_____
Hard hats Gloves_____
Boots____ Other protective equipment_____
Blower_____

Rescue Team

Location_____

Means of contacting, phone_____

radio_____

Set Up

Traffic control_____
Blower_____
Air pack_____
Blocked lines_____
Electrical discon._____
Lighting_____
Retrieval device_____
Safety equip. and clothing _____

Gas Testing

Time	O_2%	LEL %	H_2S	(ppm)
Start	___	___	___	___
	___	___	___	___
	___	___	___	___
	___	___	___	___
End	___	___	___	___

Entry team(s) (signature signifies agreement with setup and understanding of safe entry requirements):

Time_____ Attendant_____ Entrant_____

Time_____ Attendant_____ Entrant_____

Time_____ Attendant_____ Entrant_____

Time_____ Attendant_____ Entrant_____

APPENDIX C

WATER SUPPLY AND WASTEWATER OPERATORS' LICENSING ACT

NJSA 58:11-64 ET SEQ.

RULES GOVERNING THE EXAMINING AND LICENSING OF OPERATORS

NJAC 7:10-13

Statutes and Regulations

Water Supply and Wastewater Operators' Licensing Act
N.J.S.A. 58:11-64 et seq.

Rules Governing the Examining and Licensing of Operators
N.J.A.C. 7:10-13

N.J. Department of Environmental Protection

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ARTICLE 10. LICENSING OF WATER SUPPLY AND WASTE WATER OPERATORS

58:11-64. Short title

This act shall be known and may be cited as the "Water Supply and Wastewater Operators' Licensing Act."

L.1983, c. 230, § 1, eff. June 29, 1983.

Title of Act:

An Act concerning the licensing of operators for water supply and wastewater plants and systems, and repealing parts of Title 58 of the Revised Statutes relating thereto. L. 1983, c. 230.

Library References

Health and Environment ⟵ 25.7(2).

C.J.S. Health and Environment §§ 125 to 128, 137.

58:11-65. Definitions

As used in this act:

a. "Commissioner" means the Commissioner of the Department of Environmental Protection or his designated representative;

b. "Department" means the Department of Environmental Protection;

c. "Licensed operator" means a licensee approved by the department holding any local title, designation, or job description who is on the premises of a system a significant amount of time, although not necessarily full-time, and who is actively involved in and responsible for the operation, maintenance, and effectiveness of the system and who holds a valid license equal or superior to that required for the system;

d. "Licensee" means a person who possesses a valid license issued by the department pursuant to this act;

e. "Industrial wastewater treatment system" means any treatment works regulated by the department pursuant to the "Water Pollution Control Act," P.L.1977, c. 74 (C.58:10A-1 et seq.);

f. "Operating requirements" means any and all provisions of permits or approvals, administrative orders, directives, or rules and regulations which the department may issue or adopt to insure the safe and efficient operations of systems, consistent with its statutory authority;

g. "Public wastewater collection system" means any collection system regulated by the department pursuant to the "Water Pollution Control Act," P.L. 1977, c. 74 (C. 58:10A-1 et seq.), and which system consists of structures which, operating alone or with other structures, result in the collection and conveyance or transmission of wastewater from private, commercial, institutional or industrial sources, to public wastewater treatment systems for subsequent treatment;

h. "Public wastewater treatment system" means any structure or structures by means of which domestic, or combined domestic and industrial liquid wastes or sewage are subjected to any process in order to remove or so alter constituents as to render the wastes less offensive or dangerous to the public health, safety, welfare, comfort,

property or environment of any of the inhabitants of the State before the discharge of the resulting effluent either directly or indirectly into any of the waters of the State, and which is regulated by the department pursuant to the "Water Pollution Control Act," P.L. 1977, c. 74 (C. 58:10A–1 et seq.);

i. "Public water supply system" means a system comprising structures which operating alone or with other structures results in the derivation, conveyance or transmission or distribution of potable water for human consumption and domestic purposes;

j. "Public water treatment system" means any structure or structures by means of which prior to discharge into a public water supply system is subjected to the addition or abstraction of a substance or substances in order to enhance the safety, palatability, public health or aesthetic qualities, or reduce the corrosive or hazardous properties of the water used for potable or domestic purposes;

k. "System" means any industrial wastewater treatment system, public wastewater collection system, public wastewater treatment system, public water supply system or public water treatment system defined in this act; and

l. "Waters of the State" means the ocean and its estuaries, all springs, groundwater, streams or bodies of surface waters, whether natural or artificial, within the boundaries of this State or subject to its jurisdiction.

L.1983, c. 230, § 2, eff. June 29, 1983.

Prior Laws: C. 58:11–18.1 (L.1938, c. 206, p. 488, § 1); 58:11–18.10 (L.1946, c. 295, p. 990, § 1, amended by L.1966, c. 93, § 1).

Library References

Health and Environment ⇐ 25.7(2).

C.J.S. Health and Environment §§ 125 to 128; 137.

Words and Phrases (Perm. Ed.)

58:11–66. Systems; licensed operator; classifications and reclassifications

a. Every system shall be operated and maintained by at least one licensed operator. Any person employed in the capacity of a licensed operator not holding the license required for a system, may continue in such capacity, at the discretion of the department, if he meets the other requirements of this act and the rules and regulations adopted thereto.

b. The commissioner shall, pursuant to the "Adminstrative Procedure Act," P.L.1968, c. 410 (C. 52:14B–1 et seq.), adopt, and may amend or repeal rules and regulations to classify and reclassify licenses and systems.

c. The department shall upgrade or downgrade the classification of a system whenever the system changes sufficiently to place it in a different classification from the one in which it is classified.

d. If licenses are reclassified by the department, subject to new classification requirements, the licensee at the time of the reclassification shall be reissued, at the time of the next license renewal, the highest license corresponding to the new classification.

L.1983, c. 230, § 3, eff. June 29, 1983.

Prior Laws: R.S. 58:11–14; C. 58:11–18.12 (L.1946, c.295, p.992, § 3, amended by L.1947, c.126, p.597, § 1).

58:11–67. Examinations; issuance of license; board of examiners; advisory bodies

a. The department shall conduct examinations for licenses to operate systems to be held at least twice annually, by the persons and at the times and places it may appoint. The department shall determine the subject matter to be included in the examinations and the manner in which the examinations shall be conducted. Every applicant who has been admitted to an examination, and who has successfully passed the examination shall receive the license of the classification for which the examination was held.

b. The commissioner shall establish a board of examiners composed of licensed operators, and employees of the department, and any additional advisory bodies deemed necessary, to assist the department in administering the licensing program established pursuant to this act. The board of examiners shall annually review the programs and regulations adopted pursuant to this act and make recommendations to the department for their improvement.

c. The commissioner shall adopt, and may amend, or repeal rules and regulations establishing the board of examiners, and other advisory bodies, their composition and duties, and the qualifications for issuance of licenses, examination methods and procedures, and all other matters including fees necessary to implement and administer an adequate licensing program.

L.1983, C.230, § 4, eff. June 29, 1983.

Prior Laws: R.S. 58:11–15; C. 58:11–18.11 (L.1946, c.295, p.991, § 2).

58:11–68. Fees; schedule; disposition; duration and renewal of licenses

a. The commissioner is authorized to adopt a fee schedule which shall reasonably cover the cost of examinations, licensing procedures, and the administration and enforcement of this act. All fees collected pursuant to the provisions of this act shall be deposited into the "Environmental Services Fund" created by P.L.1975, c.232 (C. 13:1D–29 et seq.). There shall be annually appropriated an amount equivalent to the amount anticipated to be collected as fees by the department for the administration of the licensing program.

b. The department shall issue or renew a license upon payment of the appropriate license fee to any applicant who in the opinion of the department has satisfactorily met all the appropriate requirements of this act and rules and regulations adopted pursuant to this act.

c. The department shall renew licenses annually and shall establish in its regulations the date on which licenses shall be renewed. Initial licenses shall be valid from issue date to the next effective date for license renewal. All other licenses shall be

:d from the renewal date of the license to the next annual renewal date. The depart-:nt may change the renewal date for all licenses. The department may charge a :linquent fee to any licensee who fails to renew his license prior to the renewal date. licensee who fails to renew his license within 1 year following the renewal date of license may not receive a new license until he successfully completes another ıtifying examination.

1983, c. 230, § 5, eff. June 29, 1983.

Prior Laws: C.58:11-18.4(L.1938, c. 5, p.439, § 4), 58:11-18.13 (L.1946, c. 5, p.993, § 4, amended by L.1966, c.94 :)

C.J.S. Health and Environment §§ 107, 134, 140.

:rary References
Health and Environment ←25.7(13to15).

:11-69. Issuance of license without examination

The department may issue licenses, without examination, for the operation of :ems to such persons who, in the judgment of the department, meet all the require-:nts of this act and the rules and regulations adopted pursuant to this act and who :d valid current licenses to operate a system with at least the equivalent classifica-n in a State country or territory other than the State of New Jersey, which State, :untry or territory also recognizes the validity of New Jersey licenses, and which has :uirements for the issuance of licenses to operate systems at least as stringent as the :uirements of the State of New Jersey.

1983, c.230, § 6, eff. June 29, 1983.

Prior Laws: C.58:11-18.12 (L.1946, c. 5, p.992, § 3, amended by L.1947, c.126, 97, § 1).

C.J.S. Health and Environment §§ 107, 134, 140.

:rary References
Health and Environment ←25.7(13to15).

:11-70. Revocation or suspension

a. The department may revoke or suspend the license of a licensee if the depart-nt determines that the application for the license included false information or that licensee is managing or operating the system in an incompetent manner, or is naging or operating the system in violation of this act or any operating require-:nts of the department, or has falsified records.

b. The order of revocation or suspension shall become a final order unless the :nsee submits a written request for a hearing within 20 calendar days after receipt the order. If a hearing is granted, the commissioner shall make the final decision the department.

c. Any person whose license has been revoked for the first time shall be ineligible admission to any examination authorized by this act for a period of not less than ear from the effective date of the revocation.

d. Any person whose license has been revoked for committing or omitting acts which the department determines with the concurrence of the board of examiners has caused substantial harm to the public, or whose license has been revoked more than once shall be ineligible for admission to any examination authorized by this act.

L.1983, c.230, § 7, eff. June 29, 1983.

Prior Laws: R.S. 58:11-16; C.58:11-18.14 (L.1946, c.295, p.993, § 5, amended by L.1966, c.94, § 2).

C.J.S. Health and Environment §§ 107, 134, 140.

Library References
Health and Environment ← 25.7(13to15).

58:11-71. Violations; injunctions; penalties; costs; recovery; disposition

a. If any person violates any of the provisions of this act, or any operating requirements, the department may institute a civil action in a court of competent jurisdiction for injunctive relief to enforce said provisions and to prohibit and prevent that violation and the court may proceed in the action in a summary manner.

b. Any person who violates or causes the violation of any of the provisions of this act or any operating requirements shall be liable to a civil administrative penalty of not more than $5,000.00 for each offense to be imposed by the department pursuant to standards adopted in regulations, or a civil penalty of not more than $5,000.00 for each offense. If the violation is of a continuing nature, each day during which it continues shall constitute an additional, separate and distinct offense.

c. The department may recover in any civil action the State's reasonable costs of preparing and litigating the civil action pursuant to this act.

d. Any and all penalties prescribed by any provisions of this act may be recovered in a civil action by a summary proceeding under "the penalty enforcement law" (N.J.S. 2A:58-1 et seq.). The Superior Court and county district court shall have jurisdiction to enforce the penalty enforcement law.

e. The department is authorized and empowered to compromise and settle any penalty imposed under this section in such amount in the discretion of the department as may appear appropriate and equitable under all of the circumstances.

f. All penalties received pursuant to the provisions of this act shall be paid into the "Environmental Services Fund" created by P.L.1975, c.232 (C.13:1D-29 et seq.), and expended for the functions authorized herein.

L.1983, c.230, § 8, eff. June 29, 1983.

Prior Laws: R.S.58:11-17; 58:11-18, amended by L.1953, c.54, p.959, § 24; C. 58:11-18.15 (L.1946, c.295, p.994, § 6, amended by L.1966, c.94, § 3); 58:11-18.16, 58:11-18.17 (L.1946, c.295, p.994, §§ 7, 8, amended by L.1953, c.54, p.960, §§ 25, 26); 58:11-18.20 (L.1946, c.295, p.996, § 11).

Library References
Health and Environment ←25.7(13to15).
C.J.S. Health and Environment §§ 107, 134, 140.

58:11-72. Inapplicability of act to prior or pending orders, proceedings or actions

a. Nothing herein contained shall be held to abate or render invalid any administrative order or proceeding, or suit at law or in equity, which may have been served, begun or instituted by the department, prior to the date hereof, in accordance with the powers and duties heretofore conferred upon it, but the same shall continue in full force and effect, and be further advanced and prosecuted in the name of the department, nor shall anything in this act be construed to anywise affect the protection afforded any person by section 3 of this act.

b. Any regulations concerning the licensing of operators promulgated by the Department pursuant to P.L.1938, c.206 (C.58:11-18.1 et seq.) shall remain in effect up to 1 year subsequent to the effective date of this act unless repealed by the department at an earlier date.

L.1983, c. 230, § 9, eff. June 29, 1983.

Prior Laws: C. 58:11-13.3 (L.1938, 206, p.459, § 3); 58:11-15.18 (L.1946, 295, p.935, § 9).

C.J.S. Health and Environment §§ 125 to 128, 137.

Library References
Health and Environment ⇐ 25.7(2).

58:11-73. Liberal construction of act; severability

The object and design of this act being the protection and preservation of the environment, and the protection and preservation of public health, safety, and welfare, this act shall be liberally construed and the powers granted and the duties imposed shall be construed to be independent and severable. If any one or more sections, clauses, sentences, or parts of this act shall for any reason be questioned in any court, and shall be adjudged unconstitutional or invalid, the judgment shall not affect, impair, or invalidate the remaining provisions thereof, but shall be confined in its operation to the specific provisions so held unconstitutional or invalid.

L.1983, c. 230, § 10, eff. June 29, 1983.

Prior Laws: C. 58:11-18.22 (L.1946, 295, p.935, § 13).

C.J.S. Health and Environment §§ 125 to 128, 137.

Library References
Health and Environment ⇐ 25.7(2).

RULES GOVERNING THE EXAMINING AND LICENSING OF OPERATORS

7:10-13.1 Scope and construction of rules

(a) This subchapter shall constitute the rules governing the eligibility, examining, and licensing of persons for licenses as operators of Industrial Wastewater Treatment Systems, Public Wastewater Collection Systems, Public Wastewater Treatment Systems, Public Water Treatment Systems and Public Water Distribution Systems.

(b) This subchapter shall be liberally construed to permit the Department to discharge its statutory functions.

(c) If any section, subsection, provision, clause, or portion of this subchapter is adjudged unconstitutional or invalid by a court of competent jurisdiction, the remainder of these regulations shall not be affected thereby.

7:10-13.2 Definitions

The following words and terms when used in this subchapter shall have the following meaning unless the context clearly indicates otherwise.

"Act" means the Water Supply and Wastewater Operators Licensing Act, N.J.S.A. 58:11-64 et seq.

"Board" means the Board of Examiners established by N.J.A.C. 7:10-13.3.

"Bureau" means the Bureau of Collections and Licensing, CN 402, Trenton, N.J. 08625.

"Commissioner" means the Commissioner of the Department of Environmental Protection of the State of New Jersey.

"Department" means the Department of Environmental Protection of the State of New Jersey.

"Licensed operator" means the licensee approved by the Department holding any local title, designation, or job description who is on-site at a system a significant amount of time, although not necessarily full time, and who has active involvement in and is responsible for the operation, maintenance, and effectiveness of the system and who holds a license equal or superior to that required for the system.

"Licensee" means a person who possesses a valid license issued by the Department pursuant to the Act.

"Industrial Wastewater Treatment System" means any structure or structures by means of which industrial liquid waste or sludges are subjected to any treatment process requiring the issuance of an

individual NJPDES permit regulated by the Department pursuant to the New Jersey Pollutant Discharge Elimination System Permit Program, N.J.A.C. 7:14A under the authority of the Water Pollution Control Act N.J.S.A. 58:10A-1 et seq.

"Operating requirements" means provisions of permits or approvals, administrative orders, directives, or rules and regulations which the Department may issue or adopt to ensure the safe and efficient operation of systems, consistent with statutory authority.

"Owner" means any municipality, institution, authority, commission, corporation, person or other similar body who owns or controls a system.

"Public Wastewater Collection System" means a system which serves more than 250 people or conveys more than 25,000 gallons of wastewater per day which is regulated by the Department pursuant to the Water Pollution Control Act, N.J.S.A. 58:10A-1 et seq. and which system consists of structures which, operating alone or with other structures, result in the collection and conveyance of wastewater from private, commercial, institutional or industrial sources, to public wastewater treatment plants for subsequent treatment, or a system which solely transmits treated effluent from a public wastewater treatment system for disposal.

"Public Wastewater Treatment System" means any structure or structures by means of which domestic, or combined domestic and industrial liquid wastes or sewage are subjected to any process in order to remove or so alter constituents as to render the wastes less offensive or dangerous to public health, safety, welfare, comfort, property or environment of the State or any inhabitants of the State before discharge of the resulting effluent either directly or indirectly into any waters of the State, and which is regulated by the Department pursuant to the authority of the Water Pollution Control Act, N.J.S.A. 58:10A-1 et seq.

"Public Water Distribution System" means a system comprising structures which is a public community water system identified by a specific ID number pursuant to the Safe Drinking Water Act Regulations, N.J.A.C. 7:10, and which operating alone or with other structures, results in the derivation, conveyance (or transmission) or distribution of piped water for human consumption and domestic purposes.

"Public Water Treatment System" means any structure or structures delivering water into a public water distribution system as identified by a specific ID number pursuant to the Safe Drinking Water Act, N.J.S.A. 58:12A-1 et seq., and which subjects water, prior to use for potable purposes, to the addition or subtraction of a substance or substances in order to enhance the safeness, palatability, public health, purity, or aesthetic qualities; or reduce the corrosive or hazardous properties of the water used.

"System" means any Industrial Wastewater Treatment System, Public Wastewater Collection System, Public Wastewater Treatment System, Public Water Distribution System or Public Water Treatment System.

"Waters of the State" means the ocean and its estuaries, all springs, groundwater, streams or bodies of surface waters, whether natural or artificial, within the boundaries of this State or subject to its jurisdiction.

7:10-13.3 Examining board

(a) A Board of Examiners is hereby established to advise and assist the Department in the preparation and administration of examinations conducted under the authority of the Act.

(b) The Board shall be comprised of certain engineering personnel of the Department, and actively engaged licensed operators having at least five years experience in the operation of a system in the State of New Jersey and possessing a current Class 4 license for one or more at the time of appointment. The members of the Board shall be appointed and may be reappointed by the Commissioner and shall:

1. Be appointed for a three year term and shall serve until the appointment of a successor;

2. Be comprised of three representatives from the water works field and three representatives from the wastewater field and three representatives from the Department's engineering personnel in the Division of Water Resources; and,

3. Be subject to removal at the discretion of the Commissioner.

(c) Five members of the Board shall constitute a quorum of the Board for conducting business.

(d) No compensation shall be paid for the services of the members of the Board but they shall be reimbursed for their necessary expenses incurred in performing the services herein prescribed.

(e) The Board shall keep minutes of its meetings and it shall transmit its recommendations through the Director, Division of Fiscal and Support Services to the Commissioner.

(f) The current members of the Board shall continue as members of the Board until completion of their terms, when they may be reappointed.

7:10-13.4 Examinations

(a) Examinations for licenses to operate Systems shall be given at least twice annually and at such other times as the Department may deem necessary. They shall be prepared, conducted, and scored in accordance

ith the Department's standard operating procedures with the advice of he Board.

(b) The examinations may consist of written questions, or oral estions, or a combination thereof.

(c) The Board shall establish examination review procedures which re fair to the applicants and which preserve the integrity of the minations.

10-13.5 Advisory committee on training

(a) An Advisory Committee on Water Supply and Wastewater Licensed erator Training is hereby established to:

1. Advise the Department through the Board on such matters as are ferred to the Committee by the Department or Board with respect to the structional process leading to State licensing of system operators and r the further educational advancement of licensees;

2. Coordinate the activities of New Jersey educational titutions offering or proposing to offer appropriate coursework.

3. Establish and periodically update standardized course outlines r the educational training of the operators of water supply and stewater facilities leading to State licenses and specifying a minimum ber of classroom hours for each.

4. Periodically review available textbooks in the field of water pply, water treatment and wastewater treatment, and make commendations for standard textbooks which should be used for approved rses.

5. Act as a clearing house on matters affecting water supply and stewater licensee training in New Jersey.

(b) The Committee members shall be appointed and may be reappointed the Commissioner for terms of three years and shall include, as a imum:

1. One representative from the Division of Fiscal and Support vices, Bureau of Collection and Licensing;

2. One representative who is a Department employee from the Board;

3. Three representatives from the Division of Water Resources;

4. Two representatives from nomination lists submitted by the New ey Section American Water Works Association; one of these resentatives shall be a licensed operator, and one shall be a member the Education Committee of the American Water Works Association;

5. Two representatives from nomination lists submitted by the New Jersey Water Pollution Control Association; one of these representatives shall be a licensed operator, and one shall be a member of the Education Committee of the Water Pollution Control Association;

6. Two representatives from nomination lists submitted by the Authorities Association of New Jersey; one of these representatives shall be from a water authority and one shall be from a wastewater authority.

7. One representative from a nomination list submitted by the New Jersey Chamber of Commerce.

8. One representative from a nomination list submitted by the New Jersey Business and Industry Council.

9. One representative per institution from a list submitted by each New Jersey Educational Institution currently conducting courses in water supply or wastewater operations or which has conducted an appropriate course during the preceding academic year.

(c) If a vacancy should occur on the committee during the term of a member, the Commissioner may fill the vacancy by appointing a qualified person for the time remaining in the term.

(d) The Advisory Committee shall meet at least twice each year.

1. Minutes shall be kept.

2. A copy of all recommendations and minutes shall be sent to each member, the Chairman of the Board and the Director of the Division of Water Resources.

(e) Administrative support for the Advisory Committee shall be provided by the Division of Water Resources.

7:10-13.6 Applications

(a) Applications for licenses shall be made on forms to be furnished by the Department and shall be filed with the Department on or before the prestamped closing date on the application form.

1. All applications shall be completed to the satisfaction of the Department and shall be accompanied by documentary evidence supporting education and experience, and the nonrefundable application fee.

2. Applicants shall be advised at least two weeks in advance regarding admission to examinations.

(b) Any applicant who submits false information when applying for a license may be disqualified from taking the examination or receiving the license. In addition, any licensee whose eligibility for a license was

based on the submission of false information is subject to having that license suspended or revoked by the Department.

7:10-13.7 Examination results

An applicant who passes the examination and pays the appropriate license fee shall be issued the license of the classification for which the applicant was examined.

7:10-13.8 Fees

(a) The fee schedule is based upon the approximate cost to the Department to process the action requiring the fee. All fees submitted to the Department are nonrefundable. The following fees must be received by the Department before any action shall be taken on the matter requiring the fee:

1.	Application Fee	$35.00
2.	Initial License Fee	$25.00
3.	Annual License Fee	$20.00
4.	Late Renewal Fee	$10.00

7:10-13.9 License renewal requirements

(a) Each license shall be valid from its issue date until the following October 1.

(b) Each license holder shall renew his license by submitting a complete renewal application and the nonrefundable annual license fee to the Bureau, for a new license prior to September 30, of each year.

(c) A licensee who fails to renew his license within one year following the renewal date of the license, may not receive a new license until he successfully passes another qualifying examination.

7:10-13.10 Licensed operator required, penalties

(a) Every owner of a system shall employ a licensed operator holding the license prescribed by the Department for that classification of system. This licensed operator shall be in charge of the operation of the system.

1. If a system is reclassified the licensed operator of the reclassified system may continue as the licensed operator of that system, regardless of the new classification of that system.

(b) Any time the licensed operator is unavailable to cover the system for which he is the licensed operator, the owner shall obtain the services of a licensee holding a license not more than one class lower

than the classification required for the operation of the system to cover the system during the unavailability of the licensed operator.

(c) Each class 3 treatment system and class 4 treatment system shall have the appropriate full-time licensed operator. In addition class 4 treatment systems should have a licensee possessing any valid treatment license within the appropriate system classification, physically present at the treatment system during that portion of each 24 hour period when the licensed operator is not present.

i. Those Class 3 and Class 4 treatment systems not presently employing a full time licensed operator shall have 2 years from the effective date of this subchapter to obtain an appropriate full time licensed operator.

(d) Those licensees desiring to be designated the licensed operator for more than one system shall apply for permission from the Department. If the Department grants permission it shall specify the time period of the permission and the minimum number of hours the licensed operator shall spend at each system.

1. The Department reserves the right to limit the number of systems a licensed operator may operate.

2. The licensed operator shall designate in his application for permisssion the person at the system to contact when the licensed operator is unavailable to the system.

(e) Licensed operators shall notify the department's Bureau of Collections and Licensing at least two weeks prior to changing their positions or employment.

(f) The owner of a system employing a new licensed operator shall notify, in writing, the Bureau of the name of the new licensed operator within two weeks after the licensed operator begins his employment.

(g) No person shall operate a system in violation of the provisions of the Act, this subchapter or any other operating requirements.

7:10-13.11 Reciprocity with other States

(a) The Department may issue licenses to persons meeting the requirements of N.J.S.A. 58:11-69.

(b) Any person meeting the requirements of N.J.S.A. 58:11-69 may apply to the Department for a license by filing a completed application form and the nonrefundable application fee with the Department.

(c) The Board shall evaluate the person's application and if it meets the criteria set forth in (a) above, the Department shall, upon receipt of the nonrefundable initial license fee, issue a license to the person.

:10-13.12 Records and reports

:censed operators shall submit to the Department, as may be required, :ports pertaining to the operation of their system.

:10-13.13 Conversion of licenses in effect on the effective date of these rules

(a) On the effective date of this subchapter the present public :stewater treatment system licenses, public water treatment system :censes, and the public water distribution system licenses shall be :nverted as follows:

1. The 1 level licenses shall become Class 4 licenses;
2. The 2 level licenses shall become Class 3 licenses; and,
3. The 3 level licenses shall become Class 2 licenses.

(b) Each holder of a S-IN license shall be granted a NN license :ich will permit the licensee to remain the licensed operator of the :stem at which he is employed on the effective date of this subchapter : long as he meets all requirements of this subchapter except the :quirements of N.J.A.C. 7:10-13.15. However the NN license may not be :ed to meet the licensed operator requirements for any other system.

(c) The department shall begin accepting applications for the new :dustrial wastewater treatment system licenses on January 1, 1985. The :osing date for applications to take the first set of examinations for :e new industrial wastewater system licenses shall be February 28, 1985.

1. The department shall continue to accept applications for :amination for the NN license until September 30, 1984.

(d) No paper documenting the new license shall be issued at the me of the conversion. The Department shall issue a new license :rtificate in accordance with this section at the time of the annual :ense renewal, to all persons holding valid licenses who apply for :newal.

(e) Any person operating a public wastewater collection system on e effective date of this subchapter shall be granted the collection :stem license required to operate that system if the person:

1. Submits a complete application and nonrefundable application e to the Bureau within six months after the effective date of this bchapter. Said application shall include a notorized statement by the ner of the system that the applicant is the operator of the existing blic wastewater collection system;

2. Meets the education and experience requirements, excluding the :quirement for a license, set forth in N.J.A.C. 7:10-13.15(b).

3. Pays the nonrefundable initial license fee it notified he is eligible for the license.

(f) Any person employed at a public wastewater collection system on the effective date of this subchapter and who meets the education and experience requirements, excluding the requirement for a license, set forth in N.J.A.C. 7:10-13.15(b), shall be granted a license equal to the license required to operate the collection system where he is employed, if the person:

1. Submits a complete application and nonrefundable application fee to the Bureau within six months after the effective date of this subchapter. Said application shall include a notorized statement by the owner of the system substantiating the applicant's experience.

2. Pays the nonrefundable initial license fee if notified he is eligible for the license.

(g) Any person operating a public wastewater collection system on the effective date of this subchapter who does not meet the requirements of N.J.A.C. 7:10-13.15, shall be issued a CN license restricted to that system, which license shall permit him to continue to operate that system if the person:

1. Submits a complete application and the nonrefundable application fee to the Bureau within six months after the effective date of this subchapter. Said application shall include a notorized statement by the owner of the system that the applicant is the operator of the existing public wastewater collection system.

2. Pays the nonrefundable initial license fee if notified he is eligible for the license.

(h) Any person possessing a valid public wastewater treatment system license on July 2, 1984 may obtain a public wastewater collection system license of the same class as his public wastewater treatment system license, if he submits a complete application and the nonrefundable application fee to the Bureau within six months after July 2, 1984.

(i) Owners of public wastewater collection systems shall obtain a licensed operator or, if eligible, a restricted licensed operator (CN) by October 1, 1985.

7:10-13.14 System classification

(a) On the effective date of this subchapter all public wastewater treatment systems and public water treatment systems shall be classified into one of the four classes established in Table I. Each public wastewater treatment system's classification shall be based upon the number of points it receives in accordance with Table II. Each public

water treatment system's classification shall be based upon the number of points it receives in accordance with Table III.

1. Table I: Classification of Public Wastewater Treatment System(S) and Public Water Treatment System(T)

FACILITY-CLASS	S1 or T1	S2 or T2	S3 or T3	S4 or T4
RANGE OF POINTS	30 and Less	31-55	56-75	76 & greater

2. Table II: Point System to be used in conjunction with Table I for Classifying a Public Wastewater Treatment System. The department shall assign points to the system for every item that applies. The department shall then total the points assigned and place the system in the classification for that amount of points set forth in Table I above.

Item	Points
Size	
Design flow	2 pt. per MGD or part thereof, Max. 20 Points
Effluent Discharge	
Surface Water discharge	2
Land disposal - evaporation	2
Subsurface disposal	4
Effluent used in direct recycle and reuse system	6
Variation in Raw Wastes (slight to extreme)	
Points will be awarded in accordance with Table IIa.....	0-10
Pretreatment	
Screening, comminution.....	3
Grit removal.....	3
Plant pumping of main flow.....	3
Equalization.....	3
Primary Treatment	
Primary clarifiers.....	5
Combined sedimentation/digestion.	5
Chemical addition (except chlorination, enzymes, etc).....	4
Secondary Treatment	
Trickling filter or rotating biological contactor w/secondary clarifiers.....	10
Activated sludge w/secondary clarifiers .... (including extended aeration and oxidation ditches)	20
Stabilization ponds without aeration.....	6
Aerated lagoon	10

Advanced Waste Treatment	
Polishing Pond.....	4
Chemical/physical - without secondary.....	18
Chemical/physical - following secondary ...	12
Biological or chemical/biological.....	14
Ion exchange	12
Reverse osmosis, electrodialysis	16
Chemical recovery, carbon regeneration.....	6
Sand filters	5
Solids Handling	
Thickening.....	6
Anaerobic digestion.....	12
Aerobic digestion	8
Evaporation sludge drying	2
Mechanical dewatering	10
Solids reduction (incineration, wet oxidation).....	14
Composting.....	5
Disinfection	
Chlorination or comparable treatment.....	6
On-site generation of disinfectant.....	6
TOTAL**.....	

**If unique treatment plant conditions exist, the Department may adjust the facility classification.

i. Table IIa: to be used with the "Variations in Raw Wastes" item in Table II. The system shall be awarded 0 through 10 points based on the following:

The key concept is frequency and/or intensity of deviation or excessive variation from normal or typical fluctuations; such deviation can be in terms of strength, toxicity, shock loads, Inflow/Infiltration etc. Suggested point values are:

Variations do not exceed those normally or typically expected	0
Recurring deviations or excessive variations of 100 to 200 percent in strength and/or flow.	3
Recurring deviations or excessive variations of more than 200 percent in strength and/or flow.	6
Raw wastes subject to toxic waste discharges which affect plant performance.	10

3. Table III: Point System to be used in Conjunction with Table I for classifying Public Water Treatment Systems. The department shall assign points to the system for each item that applies. The department shall then total the points assigned and place the system in the classifications for that amount of points set forth in Table I above.

	Points
Maximum population served, (Max 10 pts)	.....1 point per 10,000 or part thereof,
Peak month's production (average day) (Max 10 pts)	.....1 point per MGD or part thereof,
r supply source:	
Ground water	6
Surface water	22
treat:	
Iron/manganese removal employing oxidation-sedimentation	10
Ion exchange	10
Chemical precipitation softening	20
Coagulation-flocculation-sedimentation	15
Filtration	10
pH adjustment and/or corrosion control	 8
Taste and odor control (carbon or oxidants)	 8
Fluoridation	 8
Disinfection	 8
On site generation of disinfectant	 5
Reserve osmosis, electrodialysis, etc	15
In plant treatment of plant sludge including recycling but excluding lagooning	 6
*	.....

unique treatment plant conditions exist, the department may adjust acility classification.

Public wastewater collection systems (C) and public water ibution systems (W) shall be classified into one of the four classes termined by the criteria found in Table IV:

1. Table IV: Public wastewater collection systems (C) and public water distribution systems (W) shall be classified in accordance with the population served or the population equivalent as follows.

Facility-Class	Population served or Population Equivalent[1]
C4 or W4	50,001 or more people
C3 or W3	15,001 to 50,000 people
C2 or W2	1,501 to 15,000 people
C1	251 to 1,500 people
W1	101 or more service connections and less than 1,501 people

1.Population equivalent shall only be used to classify public wastewater collection systems and means the number of individuals who would normally be expected to generate a given flow or quantity of pollutants, based either on 100 gallons per person per day or 0.17 lbs. BOD or Suspended Solids per person per day.

(c) On July 2, 1984 all industrial wastewater treatment systems as defined herein including pretreatment plants shall be classified into one of the four classes established in Table V. Each industrial wastewater treatment system's classification shall be based upon the number of points it receives in accordance with Table VI.

1. Table V: Classification of Industrial Wastewater Treatment Systems (N)

FACILITY - CLASS	N1	N2	N3	N4
RANGE OF POINTS	6 to 19	20 to 49	50 to 69	70 and more

2. Table VI: Point system to be used in conjunction with Table V for classifying an industrial wastewater treatment system. The department shall assign points to the system for every item that applies. The department shall then total the points assigned and place the system in the classification for that amount of points set forth in Table V above.

Classification Consideration			Point Rating
A. Toxicity Group in accordance with U.S.EPA NPDES Permit Rating System	1.	I	1
	2.	II	5
	3.	III	10
	4.	IV	15
	5.	V	20
	6.	VI	25

Receiving Water

1.	Surface Water - FW	5
2.	Surface Water - TW	3
3.	Surface Water - CW	2
4.	Ground Water	5

Hydraulic Load

1.	Less than 0.1 MGD	2
2.	0.1 - 1.0 MGD	4
3.	1.0 - 10.0 MGD	6
4.	Greater than 10.0 MGD	10

Primary

1.	pH Adjustment	1
2.	Equalization	1
3.	Oil Separator	3
4.	Dissolved Air Flotation	3
5.	Chemical Coagulation/ Flocculation	5
6.	Sedimentation/Clarification	3
7.	Chemical Addition	2
8.	Filtration	5
9.	Disinfection	2
10.	Air Stripping	5

Secondary

1.	Activated Sludge	15
2.	Bio-Filtration	10
3.	Stabilization Pond	5
4.	Disinfection	2
5.	Spray Irrigation	10

Advanced

1.	Ammonia Removal	10
2.	Nutrient Removal	10
3.	Filtration	5
4.	Carbon Adsorption	10
5.	Ion Exchange	10
6.	Post Aeration	2
7.	Reverse Osmosis	10

Sludge Handling/Disposal

1.	Digestion	5
2.	Sludge Conditioning	2
3.	Mechanical Dewatering	4
4.	Drying Beds or Lagoons	2
5.	Thickening or DAF	3
6.	On-Site Landfill	2
7.	Composting	7
8.	Incineration	10

GRAND TOTAL*_____

*If unique treatment plant conditions exist, the department may adjust the facility classification.

7:10-13.15 Criteria needed to take the examination for each license

(a) Persons applying to take an examination for any license except an industrial wastewater treatment system license shall meet the following requirements and possess the minimum education and experience requirements for the license applied for found in Table VII in (b) below.

1. Persons applying to take any examination and holding no degree higher than a high school diploma shall have successfully completed an introductory course approved by the department in the subject matter pertaining to the license being sought, prior to applying to take the examination.

2. Any person applying to take an examination for a class 2, 3 or 4 license shall complete an advanced course approved by the department in the subject matter pertaining to the license being sought, prior to applying to take the examination.

3. Either or both of the courses required above may be waived if the applicant submits satisfactory proof of equivalent training to the department.

i. Such proof of equivalent training shall consist of transcripts and descriptions of relevant courses, including textbooks used in the courses, taken by the applicant.

(b) TABLE VII: Minimum requirements applicants for licenses, except industrial wastewater treatment system licenses shall meet before being admitted to take an examination for each classification.

Personnel Classification	Education	Operating Experience years[3]		Direct Responsible Charge[4] Experience years	Total Experience Years
ssification 1	High school Diploma or Equivalency Certificate,	1		0	1
	Associate Degree[1]	1		0	1
	Bachelor Degree Category.[2]	1		0	1
ssification 2	High school Diploma or Equivalency Certificate,	3		0	3
	Associate Degree,[1]	2		0	2
	Bachlor Degree Category.[2]	1.5		0	1.5
ssification 3	High school Diploma or Equivalency Certificate,	3	plus	3	6
	Associate Degree,[1]	2	plus	2	4
	Bachelor Degree Category.[2]	1.5	plus	1.5	3
ssification 4	High school Diploma or Equivalency Certificate,	6	plus	4	10
	Associate Degree,[1]	4	plus	3	7
	Bachelor Degree Category.[2]	3	plus	2	5

1. "Associate Degree" means successful completion of two years of formal college education resulting in an engineering or relevant science degree or post secondary vocational program acceptable to the department, or a college degree in a field that does not meet the requirements of the Bachelor Degree category.

2. "Bachelor Degree Category" means four years of formal college education resulting in an engineering or a related science degree acceptable to the department.

3. "Operating Experience" means the full time or equivalent time spent in the satisfactory performance of significant operational duties at a system which is acceptable to the Board.

4. "Direct Responsible Charge Experience" means active, daily, on-site supervision, including operation and maintenance responsibilities in a system with a classification no less than one classification lower than the license sought. This experience must be gained while in possession of a license no less than one grade lower than the license sought.

(c) Persons applying to take an examination for an industrial wastewater treatment system license shall meet the following requirements and possess the minimum education and experience requirements for the license applied for, found in Table VIII in (d) below.

1. Persons applying to take any industrial wastewater treatment system license examination shall have successfully completed an industrial waste course approved by the department prior to applying to take the examination. The course requirement may be waived if the applicant submits satisfactory proof of equivalent training to the department.

i. Such proof of equivalent training shall consist of transcripts and descriptions of relevant courses, including textbooks used in courses, taken by the applicant.

(d) Table VIII: Minimum requirements applicants for industrial wastewater treatment system licenses shall meet before being admitted to take an examination for each classification.

Personnel Classification	Education	Operating Experience years
Classification 1	High school Diploma or Equivalency Certificate,	1
	Associate Degree,[1]	1
	Bachelor Degree Category.[2]	1
Classification 2	High school Diploma or Equivalency Certificate,	3
	Associate Degree,[1]	2
	Bachelor Degree Category.[2]	1.5
Classification 3	High school Diploma	6

	or Equivalency Certificate,	
	Associate Degree,[1]	4
	Bachelor Degree Category.[2]	3
Classification 4	High school Diploma or Equivalency Certificate,	10
	Associate Degree,[1]	7
	Bachelor Degree Category.[2]	5

1. "Associate Degree" means successful completion of two years of formal college education resulting in an engineering or relevant science degree or post secondary vocational program acceptable to the Department, or a college degree in a field that does not meet the requirements of the Bachelor Degree category.

2. "Bachelor Degree Category" means four years of formal college education resulting in an engineering or a related science degree acceptable to the Department.

3. "Operating Experience" means the full time or equivalent time spent in the satisfactory performance of significant operational duties at a system which is acceptable to the Board. Manufacturing and process experience may be acceptable for operating experience.

APPENDIX D

PERMIT TO CONSTRUCT AND OPERATE TREATMENT WORKS

Permit No. SO-88-9169-4
Issuance Date 05/29/90

Let's protect our earth

STATE OF NEW JERSEY
DEPARTMENT OF ENVIRONMENTAL PROTECTION
CN 402
Trenton, N.J. 08625

PERMIT TO CONSTRUCT AND OPERATE* TREATMENT WORKS

The New Jersey Department of Environmental Protection grants this permit in accordance with your application, attachments accompanying same application, and applicable laws and regulations. This permit is also subject to the further conditions and stipulations enumerated in the supporting documents which are agreed to by the permittee upon acceptance of the permit.

PERMIT NO.	ISSUANCE DATE	DESIGN FLOW
SO-88-9169-4	05/29/90	11.0000 M.G.D.

NAME AND ADDRESS OF APPLICANT	LOCATION OF ACTIVITY/FACILITY	NAME AND ADDRESS OF OWNER
CITY OF BAYONNE 630 AVENUE C BAYONNE, NJ 07002	CITY OF BAYONNE HUDSON COUNTY	CITY OF BAYONNE 630 AVENUE C BAYONNE, NJ 07002

This permit grants permission to:

Operate a sewage pumping station, a combined (storm and sewage) pumping station, a force main, grit chamber and screening facilities to replace the City of Bayonne Sewage Treatment Plant.

According to plans identified as: "Contract 1 Sewage Treatment Plant Modifications; Contract 2 Transmiss. Line to PVSC Connect @ Jersey City W."

and according to specifications entitled as:"Contract 1 Sewage Treatment Plant Modifications; Contract 2 Transmiss. Line to PVSC Connect @ Jersey City W."

SPECIAL PROVISOS:

1. That pursuant to N.J.A.C.7:10-13.13 an appropriate public wastewater collection system licensed operator will be required for your system.

2. That the peak capacity of the sewage pumping station approved herein is considered to be 17.6 MGD with two (2) variable speed pumps ~~out of~~ in service.

3. That the current peak flow is considered to be 17.6 MGD and the current wet weather peak flow is considered to be 40 MGD.

4. That the peak capacity of the stormflow pumping station approved herein is considered to be 27 MGD with two pumps operating. A third pump is available with a pumping capacity of an additional 13.5 MGD for a total pumping capacity of 40 MGD, ~~and the City of Bayonne should provide additional back-up pumping facility in order to convey the wet weather peak flow to the Passaic Valley Sewerage Commissioner's Sewage Treatment Plant.~~

Page # 1 -- permit is continued on next page

* *Local Agency approval required prior to operation*

EXPIRATION DATE: This permit shall expire if construction is not initiated by

Approved by the Department of Environmental Protection

_____ _____
Date

(General Conditions are on the Reverse Side)

Let's protect our earth

STATE OF NEW JERSEY
DE ITMENT OF ENVIRONMENTAL PROTE ON
CN 402
Trenton, N.J. 08625

PERMIT TO CONSTRUCT AND OPERATE* TREATMENT WORKS

The New Jersey Department of Environmental Protection grants this permit in accordance with your application, attachments accompanying same application, and applicable laws and regulations. This permit is also subject to the further conditions and stipulations enumerated in the supporting documents which are agreed to by the permittee upon acceptance of the permit.

PERMIT NO.	ISSUANCE DATE	DESIGN FLOW
SO-88-9169-4	05/29/90	11.0000 M.G.D.

NAME AND ADDRESS OF APPLICANT	LOCATION OF ACTIVITY/FACILITY	NAME AND ADDRESS OF OWNER
CITY OF BAYONNE 630 AVENUE C BAYONNE, NJ 07002	CITY OF BAYONNE HUDSON COUNTY	CITY OF BAYONNE 630 AVENUE C BAYONNE, NJ 07002

This permit grants permission to:

5. The operation of these sewage facilities approved herein must adhere to all the effluent requirements as stipulated in the NJPDES Permit No. NJ0025836 or any modification thereof.

6. That the City of Bayonne must comply with the treatment plant closure requirements of the Department which shall include, but not be limited to, the requirement that all wastes materials are properly managed and that the remaining components of the facility have been properly secured regarding public health and safety.

7. That the permittee is to contact the Bureau of Underground Storage Tanks at (609) 984-3156 and the Bureau of Air Pollution Control Permits at (609) 984-3032 regarding the installation of an underground fuel storage tank and an electrical generator powered by an internal combustion engine.

Disposal of sewage into the Passaic Valley Sewerage Commissioner's Sewage Treatment Plant; effluent into the Newark Bay.

Prepared by Nicholas G. Horiates
Nicholas G. Horiates

* *Local Agency approval required prior to operation*

EXPIRATION DATE This permit shall expire if construction is not initiated by

Approved by the Department of Environmental Protection

Narinder K. Ahuja 05/29/90
Narinder K. Ahuja, P.E., Bureau Chief

(General Conditions are on the Reverse Side)

APPENDIX E

VALVE INDEX

APPENDIX E

VALVE INDEX

VALVE No.	REF. DWG No.	SIZE in.	SERVICE	LOCATION	FUNCTION
GV-1	A-5, B-1, B-4	3	City Water	Bldg B	Isolation valve
BFV-1	A-5, B-1, B-4	3	City Water	Bldg B	Back flow preventer
GV-2	A-5, B-1, B-4	3	City Water	Bldg B	Isolation valves for water meter
GV-3	A-5, B-1, B-4	3	City Water	Bldg B	
GV-4	A-5, B-1, B-4	3	City Water	Bldg B	Isolation valve, water meter bypass
GV-5	A-2	4	City Water	Yard	Isolation valve
BFV-2	A-5, C-6	4	City Water	Bldg C	Backflow preventer
GV-6	A-5, C-6	4	City Water	Bldg C	Isolation valves for water meter
GV-7	A-5, C-6	4	City Water	Bldg C	
GV-8	A-5, C-6	4	City Water	Bldg C	Isolation valve, water meter bypass
PV-1	B-4	4	Grit Line	Bldg B	Electrically operated pinch valve
GV-14	C-6, C-8	20	RWW Line	Bldg C	Isolation Valve, RWW-1 Suction
GV-13	C-6, C-8	20	RWW Line	Bldg C	Isolation Valve, RWW-2 Suction
GV-12	C-6, C-8, C-11	20	RWW Line	Bldg C	Isolation Valve, RWW-3 Suction
GV-17	C-6, C-8	20	RWW Line	Bldg C	Isolation Valve, RWW-1 Discharge
GV-16	C-6, C-8	20	RWW Line	Bldg C	Isolation Valve, RWW-2 Discharge
GV-15	C-6, C-8	20	RWW Line	Bldg C	Isolation Valve, RWW-3 Discharge
BV-3	C-6, C-8	20	RWW Line	Bldg C	Ball Check RWW-1 Discharge
BV-2	C-6, C-8	20	RWW Line	Bldg C	Ball Check RWW-2 Discharge
BV-1	C-6, C-8	20	RWW Line	Bldg C	Ball Check RWW-3 Discharge
GV-18	C-6	30	RWW Line	Bldg C	Isolation valve, RWW Force Main
GV-9	C-6, C-8	24	STF Line	Bldg C	Isolation valve, STF-1 Suction
GV-10	C-6, C-8	24	STF Line	Bldg C	Isolation valve, STF-2 Suction
GV-11	C-6, C-8, C-11	30	STF Line	Bldg C	Isolation valve, STF-3 Suction
KV-1	C-6	24	STF Line	Bldg C	Isolation valve, STF-1 Discharge
KV-2	C-6, C-11	24	STF Line	Bldg C	Isolation valve, STF-2 Discharge
KV-3	C-6, C-11	24	STF Line	Bldg C	Isolation valve, STF-3 Discharge
GV-19	A-2	3	City Water	Yard	Isolation Valve

Legend

GV = Gate Valve
BFV = Backflow Preventer
KV = Knife Gate Valve

BV = Ball check valve
PV = Pinch valve

RWW = Raw wastewater
STF = Storm flow

Bldg B = Screenings and Grit Removal Building
Bldg C = Operations Building

APPENDIX F

EQUIPMENT AND PIPING COLOR CODE

APPENDIX F

EQUIPMENT AND PIPING COLOR CODE

Equipment and Piping	Color
Radiators	Lt-Gray SB-1
Heating and Ventilating	Shale MC-66
Pumps	Henna MC-7
Sewage	Clove MC-55
Water Supply	Artic Blue MC-89
Water Return	Indigo MC-90
Oil	Green BM 28-14
Chlorine	Chrome Yellow MC-11
Potassium Permanganate	Purple BM 37-C

Note: Colors are those as manufactured by Con-Lux Coatings, Inc. Edison, NJ 08818

SCHWARTZ, TOBIA, STANZIALE ROSENSWEIG & SEDITA

Kip's Castle
22 Crestmont Road
Montclair, New Jersey 07042

Telephone #(973) 746-6000

FAX # (973)746-9885

FACSIMILE TRANSMITTAL COVERSHEET

DATE: June 1, 1999

TO: Steve Gallo, Asst. Bus. Admin.
Joseph Nichols, Esq.
Joseph Baumann, Esq.

FAX #: 201-858-6111
201-858-6092
973-622-7333

FROM: GARY S. ROSENSWEIG, ESQ.

DESCRIPTION: RE: City of Bayonne -- Please see attached letter from C. Licata DAG dated May 28, 1999 for your information.

Operator: Lorraine

PAGES:

TIME:

BAH000001

Fax: J. Nichols
S. [illegible]
E. Kaufman
cc: GAS
WBK

State of New Jersey
DEPARTMENT OF LAW AND PUBLIC SAFETY
DIVISION OF LAW
RICHARD J. HUGHES JUSTICE COMPLEX
25 MARKET STREET
PO BOX
TRENTON, NJ 08625-093

CHRISTINE TODD WHITMAN
Governor

PAUL H. ZOUBEK
Acting Attorney General

JEFFREY J. MILLER
Assistant Attorney General
Director

(609) 984-7147

May 28, 1999

Honorable Martin L. Greenberg
Brennan Courthouse, 2nd Floor
583 Newark Avenue
Jersey City, NJ 07306

Re: State of New Jersey v. City of Bayonne
OAL Docket No. C-118-97

Dear Judge Greenberg:

Attached please find for your consideration a proposed Order which would resolve the above matter. It has been consented to by the State of New Jersey and the City of Bayonne.

Per our discussions, you have indicated that this Order will not be entered until such time as the pending motions regarding the Rutger's Environmental Law Clinic's representation of the plaintiff-intervenors are decided. It is our understanding that at such time as those motions are decided you will allow the plaintiff-intervenors a reasonable period of time to lodge objections to the Order pursuant to the Township of Howell v. Waste Disposal, Inc., 207 N.J. Super. 79. The Court will then hold a Case Management Conference to determine the issues to be considered, establish a schedule for the filing of papers and the completion of discovery (if any is needed) and set a date for oral argument, or other hearings determined by the court necessary, in order to conclude this matter.

The State has consented to this procedure because Bayonne has, to date and throughout our negotiations, complied with the deadlines contained in the proposed Order and it is our understanding that they will continue to do so during the pendency of this action.

I trust this approach is in accord with your wishes.

Respectfully,

PAUL H. ZOUBEK
ACTING ATTORNEY GENERAL OF NEW JERSEY

By: _____
Charles A. Licata
Deputy Attorney General

CAL:fsl
Attachment
c: Gary Rosensweig, Esq.
Ann Alexander, Esq.
Gavin Rooney, Esq.
Jim Hamilton, Administrator
Water Compliance & Enforcement, DEP
Joseph Mikulka, Chief, NHWE
eslmgic

PAUL H. ZOUBEK
Acting Attorney General of New Jersey
Attorney for the Department of
Environmental Protection
R.J. Hughes Justice Complex
25 Market Street
PO BOX 093
Trenton, New Jersey 08625

By: Charles A. Licata
Deputy Attorney General
(609)984-7147

SUPERIOR COURT OF NEW JERSEY
CHANCERY DIVISION - HUDSON COUNTY
DOCKET NO. C-118-97

STATE OF NEW JERSEY, NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION, Plaintiff, and AMERICAN LITTORAL SOCIETY, INC.; D.W. BENNETT; ANDREW J. WILLNER, THE BAYKEEPER; and JOHN CRONIN, THE RIVERKEEPER, Plaintiff-Intervenors v. CITY OF BAYONNE, a body corporate and a political subdivision of the State of New Jersey, Defendant.	Civil Action ORDER

This matter having been presented to the Court by Paul H. Zoubek, Acting Attorney General of New Jersey, attorney for the plaintiff, State of New Jersey, Department of Environmental

Protection, ("Department") (by Charles A. Licata, Deputy Attorney General), in the presence of Charles Stanziale, attorney for the City of Bayonne("Bayonne"), and Edward Lloyd, attorney for the American Littoral Society, Inc. et al ("Plaintiff-Intervenors"); and it appearing that the Plaintiff filed a complaint alleging that the Defendant had violated the Water Pollution Control Act, N.J.S.A. 58:10A-1 et seq., as a result of the Defendant's alleged failure to comply with the terms of its New Jersey Pollution Discharge Elimination System Permit #NJ0109240 (hereinafter "NJPDES Permit") for discharge to a surface water, by virtue of Defendants' alleged failure to complete the planning and design activities required by said NJPDES permit; specifically in that the City of Bayonne, it is alleged among other requirements, did not submit a complete Interim Solids/Floatables Control Measures Plan ("interim plan") or a complete Long-term Solids/Floatables Control Measures Plan (the "Long-term Plan") to the Department by March 1, 1996, as required by Part III, Section D. 1 and 2 of the NJPDES permit; and the parties having recognized the substantial progress achieved by Defendant toward compliance with the NJPDES permit, particularly by completion of an Operation and Maintenance Manual, the submission of various reports and plans, the completion of the Interim and Long Term Solids/Floatables Control Plans, the design and TWA approval for Solids/Floatables Control Facilities for Outfalls 001/005, 006, 007, 008, 011, 013, 014, 015, 020, and the undertaking of construction of Solids/Floatables Control Facilities for Outfalls 005 and 015, the hiring of the necessary experts to

fulfill the NJPDES Permit's planning and design requirements and the setting aside of the funds necessary to complete this work; and the parties having engaged in extensive settlement negotiations, and these negotiations having resulted in Bayonne and the Department agreeing on a satisfactory resolution of all issues as embodied in this form of Order, and the Department and Bayonne agreeing to the entry of this form of Order, and the Court having considered the objections of the Plaintiff-Intervenors, and the Court having reviewed the Order and having found it to be in the public interest to adopt this Order, particularly the compliance schedule, the penalties for prior alleged violations and the stipulated penalties for any future non-compliance; and for other good cause shown;

IT IS on this day of 1999;

ORDERED as follows:

I. ENFORCEMENT COMPLIANCE SCHEDULE

A. Planning, Design and Construction

1. Bayonne submitted an Interim Solids/Floatables Control Measures Plan ("the interim plan") and a Long-term Solids/Floatable Control Measures Plan (the "Long-term Plan") for eighteen (18) Combined Sewer Overflow points ("CSO points") in October 1993. These 18 CSO points were identified later in Bayonne's authorization under the General Permit for Combined Sewer Systems (NJPDES Permit) as CSO point numbers 001, 005, 006, 007, 008, 009,

010, 011, 012, 013, 014, 015, 016, 017, 018, 019, 020, and 021. Bayonne discovered/identified fifteen (15) additional CSO points during the planning process. Bayonne designated the October 1993 plan as the Phase I Plan. The Department approved the Phase I Long-term Plan in May 1996 and approved the Phase I Interim Plan in November of 1996.

Bayonne submitted a subsequent Phase II Interim and Long-term Plan for the remaining CSO points on May 1, 1998. This plan included two additional CSO points not previously identified or authorized by the City of Bayonne's NJPDES permit. A request to modify the NJPDES permit to reflect the two additional CSO points has been submitted to the Department. The May 1998 Phase II Plan also revised the selected alternatives for some CSO points from the Phase I Plan.

For the purposes of this Order the CSO points have been divided into two groups. "Group I CSO points" which include CSO points 001, 005, 006, 008, 011, 013, 014, 015, and 020 and "Group II CSO points" which include CSO points 002, 003,004, 007, 009, 010, 012, 016, 017, 018, 019, 021, 022, 023*, 024, 025, 026, 027, 028, 029, 030, 031*, 032*, 033, 034, and 035.

***these outfalls have been determined to be storm sewers and not CSO's.**

Bayonne shall design and construct facilities capable of compliance with Part III, Section D.1 and D.2 of the permit in accordance with the schedule identified below.

directed by the Department pursuant to Part III.D.2.e of the NJPDES permit at the time of the TWA issuance.

D. Permit Submissions

7. The City of Bayonne conducted the annual inspections required by Part IV, Section A of the permit and submitted the Annual Certification (Attachment C of the NJPDES Permit) required by Part IV, Section B of the permit on November 12, 1997. Bayonne shall update this submission on an annual basis.

8. A) As required by Part V, Section B of the NJPDES permit, the City of Bayonne has submitted to the Department:

i) the Service Area Drainage and Land Use Report and the Monitoring Program Proposal and Work Plan on December 10, 1997; and

ii) the Facility Inventory and Assessment Report on March 12, 1998; and

iii) the Sewer System Assessment Inventory and Report on March 12, 1998.

B) As required by Part V, Section B of the NJPDES, permit, the City of Bayonne shall submit to the Department:

i) a Continuous Rainfall Monitoring Study, and;

ii) Combined Sewer Overflow Monitoring Study, and;

iii) Combined Sewer Overflow Modeling Study.

All of these studies shall be submitted within 12 months of the Department written authorization to proceed unless extended pursuant to a force majeure claim granted pursuant to paragraph 19 below.

C) Within sixty (60) days of receipt of the Department's written comments on the submissions identified, in this paragraph, Bayonne shall modify those submissions pursuant to the Department's written comments and resubmit it for the Department's approval. Copies of these reports shall be incorporated into the Combined Sewer Overflow Pollution Prevention Plan (the "CSOPPP") discussed in paragraph nine (9) below.

E. Operations and Maintenance

9 Bayonne shall immediately develop and implement the CSOPPP and within 30 days of the receipt of a filed copy of this Order submit to the Department the Preparation Certification Form (Attachment B

of the NJPDES Permit) as required by Part V of the NJPDES permit. Bayonne shall keep the CSOPPP current.

10. Bayonne shall incorporate the Departmentally approved interim and/or Long-term Plan into the Combined Sewer Overflow Pollution Prevention Plan (the "CSOPPP");

11. Bayonne shall immediately implement the O & M program required by Part III, Section E of the permit. Bayonne shall incorporate the O & M Program into the CSOPPP.

II. PROGRESS REPORTS

12. The City of Bayonne shall submit to the Department quarterly progress reports. The quarters shall be January through March, April through June, July through September, and October through December of each calendar year. Each progress report shall be submitted on or before the last day of the month following the quarter being reported. The City of Bayonne shall submit the first progress report to the Department within 2 weeks of the filing of this Order for the most recently ended quarter. Each progress report shall detail the status of the City of Bayonne's compliance with the Order, and shall include the following:

A) identification of site and reference to this Order;

B) the status of work at the site and progress to date;

C) difficulties or problems encountered during the reporting period;

D) actions taken or to be taken to rectify difficulties or problems;

E) activities planned for the next reporting period;

F) required and actual completion date for each item required by this Order;

G) an explanation of any non-compliance with the enforcement construction and compliance schedule; and

H) performance evaluation of all corrective remedial measures implemented to date.

III. PENALTIES

13. Without admitting any of the alleged violations or wrongdoing and in settlement of this litigation, the City of Bayonne agrees to pay a penalty of $7,500.00 and an economic benefit assessment of $22,808.00 for a total of $30,308.00 to the Department by check payable to the "Treasurer, State of New Jersey", within thirty

calendar days of the filing date of this Order in settlement of the alleged violations cited in the above findings. Payment shall be mailed with the bottom portion of the Penalty Invoice (attached) to the Division of Revenue at the following address:

Division of Revenue
New Jersey Department of Treasury
Carroll Building, 428 E. State Street, 1st Floor
P.O. Box 417
Trenton, New Jersey 08625-0417

14. The City of Bayonne shall pay stipulated penalties, as set forth below, to the Department for the failure to comply with the enforcement compliance schedule provisions of this Order and/or the progress report submission deadlines of this Order unless the Department has notified the City of Bayonne in writing that a stipulated penalty will not be assessed for violations of the enforcement construction compliance schedule pursuant to the force majeure provisions below;

A) For all violations of the enforcement compliance schedule set forth in paragraphs one (1) through - eleven (11):

Days Past Compliance Date	Stipulated Penalties
1st through 7th calendar day of failure to comply with the schedule	$100 per calendar day
8th through 14th day	$200 per calendar day
15th day and beyond	$500 per calendar day

B) For all violations of the progress reports set forth in paragraph twelve (12) submission deadlines:

Days Past Compliance Date	Stipulated Penalties
each calendar day that the City of Bayonne fails to submit a report	$50 per calendar day

15. All stipulated penalties shall be due and payable twenty-one (21) calendar days following the City of Bayonne's receipt of a written demand from the Department. Payment of stipulated penalties shall be made by certified or cashiers check payable to "Treasurer, State of New Jersey" and shall be submitted in the same manner and to the address given in paragraph thirteen (13) and above.

16. Additionally, the City of Bayonne reserves its right to defend its failure to pay stipulated penalties for violations of the enforcement compliance schedule based on the force majeure provisions below. There is no defense for failure to submit progress reports.

17. If the City of Bayonne fails to pay stipulated penalties pursuant to paragraphs fourteen (14) and fifteen (15) above and even if the City of Bayonne raises the defenses set forth in paragraph sixteen (16) the Department or Intervenor may petition

this Court for an Order to collect stipulated penalties and/or seek the assessment of up to the maximum civil penalties allowable under the WPCA.

IV. FORCE MAJEURE

18. If any event occurs which the City of Bayonne believes will or may cause delay in the achievement of the enforcement compliance schedule provisions of this Order the City of Bayonne shall notify the Department in writing within seven (7) calendar days of becoming aware of the delay or anticipated delay as appropriate, referencing this paragraph and describing the anticipated length of the delay, the precise cause or causes of the delay, any measures taken or to be taken to minimize the delay and the time required to take any such measures to minimize the delay. The City of Bayonne shall take all necessary action to prevent or minimize any such delay.

19. The Department shall extend the deadline for the City of Bayonne's performance under the enforcement compliance schedule of this Order, for a period no longer than the delay resulting from such circumstances, if the Department finds that:

A) The City of Bayonne has complied with the notice requirements of paragraph eighteen (18) of this Order, and

B) that any delay or anticipated delay has been or will be caused by fire, flood, riot, strike or other circumstances beyond the control of the City of Bayonne; and

C) that the City of Bayonne has taken all necessary actions to prevent or minimize the delay.

20. If the Department determines that either the City of Bayonne has not complied with the notice requirements of the preceding paragraph or that the event causing the delay is not beyond the control of the City of Bayonne, or that the City of Bayonne has not taken all necessary actions to prevent or minimize the delay, then the Department shall deny the City of Bayonne's force majeure request thereby subjecting the City of Bayonne to stipulated penalties. The burden of proving that any delay is caused by circumstances beyond the control of the City of Bayonne and the length of any such delay attributable to those circumstances shall rest with the City of Bayonne. Increases in the cost or expenses incurred by the City of Bayonne in fulfilling the requirements of this Order shall not be a basis for an extension of time. Delay in an interim requirement shall not automatically justify or excuse delay in the attainment of subsequent requirements.

21. The City of Bayonne, in agreeing to the terms and conditions of this Order, does not admit any violations of law or any wrong

doing on its part and its agreement shall not be deemed to be an admission of any facts, fault or liability in this action or in any other suit or proceeding with regard thereto and is without prejudice to Bayonne's position regarding the rights of the Plaintiff-Intervenors in this matter.

22. This Order shall be governed by and construed in accordance with the Laws of the State of New Jersey.

BE IT FURTHER ORDERED THAT matters not expressly governed by this Order including any other requirements or timetables, shall continue to be controlled by the terms and conditions of the NJPDES permit.

BE IT FURTHER ORDERED THAT this Order is also in settlement of the Administrative Order and Notice of Civil Penalty Assessment issued by the Department against the Defendant (which alleges substantially the same violations resolved herein) and which were appealed in a timely fashion to the Office of Administrative Law ("OAL") (Docket No. EWR 03877-98N). By entry of this Order the Department and the Defendant agree to the withdrawal of the pending OAL matter with prejudice.

BE IT FURTHER ORDERED THAT this Court retains jurisdiction over the parties to enforce compliance with the terms and conditions of this Order.

BE IT FURTHER ORDERED THAT upon the entry of this Order, the action brought by the Department against Bayonne and the Complaint filed by the Plaintiff-Intervenors shall be dismissed with prejudice and without costs.

Martin L. Greenberg, J.S.C.

The following counsel hereby consent to the form and entry of this Order.

PETER VERNIERO
ATTORNEY GENERAL OF NEW JERSEY
Attorney for the Department of
Environmental Protection

By: _____
Charles A. Licata

Dated: May 26, 1999

Attorney for Defendant
City of Bayonne

By: _____
Charles Stanziale, Esq.

Dated: May 27, 1999

5. All other required Federal, State and local approvals, licenses, and permits necessary for the commencement of work onsite have to be obtained. PMK Group is currently awaiting a response from Army Corps of Engineers for a Nationwide Permit Approval.

6. PMK Group is in the process of receiving information pertaining to Tidelands Conveyances. If a Tidelands Conveyance is required as a permit condition for all construction located below the Mean High Water Line (outfall repairs), the Waterfront Development Permit is not valid until the Bureau of Tidelands Management has delivered the necessary conveyances. However, all other work proposed above the Mean High Water Line can begin.

It is the responsibility of the Client to complete and submit the *Acceptance of Revocable Construction Permit/s* Form and to submit a copy of the permit to the County Clerk and provide verified notice (i.e. certified mail receipt) to the NJDEP. PMK will address the other conditions, as noted above. If you have any questions or comments regarding the information contained herein, please feel free to contact our office at (908) 497-8900.

Sincerely,

PMK Group

Ericka Toolan
Field Scientist

Encl.

CC: John Rolak, P.E., HMM

PMK Group
CONSULTING & ENVIRONMENTAL ENGINEERS

PRINCIPALS
James Ferris, P.E.
Gerald Perricone, P.E.
James Johnston, P.E.
Robert M. Gerard, CHMM
Philip M. Keegan (1942-1998)

Richard Erickson
Stanley Lewandowski
Mark Worthington, CHMM

ASSOCIATES
Raymond Volpe, P.E.
Thomas Mineo, P.E.
William P. Call, P.G.
Drew Di Sessa, P.E., P.P.
Robert Kingsbury
Nidal Rabah, P.E., Ph.D.
Jayanti Chatterjee, CIH
Ayman Hashem, P.E.
Lisa Sauer
Mete Talimcioglu, Ph.D.
Erich Christiansen, P.E.
Patrick Lorimer, MPH

April 23, 2003

Bayonne Municipal Utilities Authority
630 Avenue C
Bayonne, NJ 07002

ATTN: MR. STEVE GALLO

RE: NJDEP PERMIT APPROVAL
BERGEN POINT STORMWATER INFRASTRUCTURE REHABILITATION PROJECT
WEST FIRST STREET
CITY OF BAYONNE, HUDSON COUNTY, NEW JERSEY
PMK GROUP #0302002

Dear Mr. Gallo:

Enclosed please find a copy of the NJDEP Waterfront Development Permit approval for your files. This approval satisfies the permitting requirements for the rehabilitation of four headwalls and associated outfall structures, as well as the relining of storm sewers and manholes along West First Street. You should be aware that the permit approval is contingent on the following general conditions.

1. No construction activities may begin until the enclosed *Acceptance of Revocable Construction Permit/s* Form has been signed and returned to the NJDEP by the applicant (i.e. the Bayonne Municipal Utilities Authority).

2. Within 10 days of the receipt of this permit, the permit shall be recorded in its entirety in the office of the County Clerk or the Registrar of Deeds and Mortgages. Verified notice (i.e. certified mail receipt) of this action shall be forwarded to the NJDEP case manager by the applicant immediately thereafter.

3. The enclosed *Completion Report* must be completed by a Professional Engineer and submitted to the NJDEP within 30 days of the completion of the permitted activities. PMK will complete and submit this form as required.

4. The NJDEP has dictated that, in order to protect anadromous fish during migration and/or spawning within the Kill Van Kull, any turbidity generating activity within the banks of this or any other stream onsite are prohibited between April 1 to June 30 of each year. PMK does not anticipate that the imposed timing restrictions will impact the proposed project schedule.

STATE OF NEW JERSEY
DEPARTMENT OF ENVIRONMENTAL PROTECTION

(See Issuing Division below)

PERMIT*

The New Jersey Department of Environmental Protection grants this permit in accordance with your application, attachments accompanying same application, and applicable laws and regulations. This permit is also subject to the further conditions and stipulations enumerated in the supporting documents which are agreed to by the permittee upon acceptance of the permit.

Permit No. 0901-03-0001.1 WFD 030001 Upland WFD 030002 In Water	Application No.	
Issuance Date APR 10 2003	Effective Date APR 10 2003	Expiration Date APR 10 2008

Name and Address of Applicant	Name and Address of Owner	Name and Address of Operator
Bayonne Municipal Utilities Authority 630 Avenue C Bayonne, NJ 07002		
Location of Activity/Facility *(Street Address)* Bergen Point Stormwater Infrastructure West First Street City of Bayonne, Hudson County Lot: N/A; Block: N/A	Issuing Division Land Use Regulation Program	Statute(s) NJSA 12:5-3 NJSA 58:10A

Type of Permit: Waterfront Development	Maximum Approved Capacity, if applicable

This permit grants permission for: Bayonne Municipal Utilities Authority to rehabilitate an existing stormwater infrastructure located along the Kill Van Kull in the City of Bayonne, Hudson County. The overall rehabilitation consists of the stabilization and cleaning of four existing headwalls and associated outfall structures, as well as the relining of storm sewers and manholes along West First Street. In addition, the project includes the upgrade of the West First Street pumping station with the construction of new pumps, and necessary controls. In order to complete construction, 0.08 of an acre of temporary disturbance will occur around all the outfalls necessary for dewatering and 0.005 of an acre of permanent disturbance for the placement of soil stabilization structures. The activities authorized by this permit are shown on the plans entitled "BERGEN POINT STORM WATER INFRASTRUCTURE, REHABILITATION AND UPGRADE PROJECT, OWNER: BAYONNE MUNICIPAL UTILITIES AUTHORITY (BMUA), CITY OF BAYONNE, HUDSON COUNTY, NEW JERSEY, EDA AWARD NO. 01-79-55015, ENGINEER PROJECT NO. 0302002, CONSTRUCTION PLAN SHEET NO. CP-1 through CP-9 and SITE PLAN WEST FIRST STREET PUMPING STATION SHEET NO. SP-1 through SP-2," all dated November 25, 2002, sheets CP-1 through CP-6 and SP-1 unrevised, sheets CP-7 through CP-9 and SP-2 last revised December 20, 2002 and prepared by PMK Group.

This permit is authorized under, and in compliance with the following Rules on Coastal Zone Management, N.J.A.C. 7:7E-1.1 et seq., specifically: *Finfish Migratory Pathways* 7:7E-3.5, *Navigation Channels* 7:7E-3.7, *Ports* 7:7E-3.11, *Filled Waters Edge* 7:7E-3.23, *Flood Hazard Areas* 7:7E-3.25, *Historic and Archaeological Resources* 7:7E-3.36, *Endangered or Threatened Wildlife or Vegetation Species Habitats* 7:7E-3.38, *Public Open Space* 7:7E-3.40, *Special Hazard Areas* 7:7E-3.41, *Special Urban Areas* 7:7E-3.43, *Outfalls and Intakes* 7:7E-4.17, *Rule on Location of Linear Development* 7:7E - 6.1, *Public Facility Use Rule* 7:7E-7.6, *Water Quality* 7:7E-8.4, *Stormwater Management* 7:7E-8.7, *Public Access to the Waterfront* 7:7E-8.11.

By issuance of this permit, the State of New Jersey does not relinquish tidelands ownership or claim to any portion of the subject property or adjacent properties.

The permittee shall allow an authorized Program representative the right to inspect the construction pursuant to N.J.A.C. 7:7E-1.5(b)4.

Prepared By: Kimberly Kessler
Kimberly Kessler

(See page 3 for Director's signature.)

Revised Date	Approved by the Department of Environmental Protection
	Name (Print or Type) _____ Title _____
	Signature _____ Date _____

**The word permit means "approval, certification, registration, etc."*

(General Conditions are on Page Two)

This permit is issued subject to, and provided, the following conditions are met to the satisfaction of the Land Use Regulation Program. All conditions must be met prior to construction unless otherwise specified. Compliance with Administrative Conditions shall be determined once copies of all specified permits, certifications, plans, agreements, etc. have been received, not less than 30 days prior to construction, and approved by the Land Use Regulation Program. All Physical Conditions are subject to on-site compliance inspection by the Bureau of Coastal and Land Use Enforcement. As per N.J.A.C. 7:7-1.5(b)1, you must notify the Bureau of Coastal and Land Use Enforcement, (Toms River Office-1510 Hooper Avenue, Toms River, NJ 08753), in writing at least three (3) days prior to commencement of construction or site preparation.

GENERAL CONDITIONS:

1. This permit shall be recorded in the office of the County Clerk in the county wherein the lands included in the permit are located within ten days of the date that the applicant received the permit. Verification that the permit is recorded shall be forwarded to the Land Use Regulation Program at P.O. Box 439, Trenton, NJ 08625-0439 immediately thereafter.

2. This permit is NOT valid until the applicant signs and returns a permit acceptance form to the Land Use Regulation Program, agreeing to the terms and conditions of the permit.

3. The granting of this permit authorization shall not be construed in any way to affect the title or ownership of the property, and shall not make the Department of the State a party in any suit or question of ownership of the property.

4. This permit is not VALID and no work shall be undertaken pursuant to this authorization until all other required Federal, State, and local approvals, licenses, and permits necessary for the commencement of work onsite have been obtained.

SPECIAL CONDITIONS:

5. In order to protect anadromous fish during migration and/or spawning within the Kill Van Kull, any turbidity generating activity within the banks of this or any other stream on site are prohibited between April 1 to June 30 of each year. The Department reserves the right to suspend all regulated activities on site should it be determined that the applicant has not taken proper precautions to ensure continuous compliance with these conditions.

6. All necessary local, Federal, and other State approvals must be obtained by the applicant prior to the commencement of the herein permitted activities. Approvals from the following may be req[redacted] Bureau of Tidelands Management and Bureau of Non-Point Pollution Control, New Jersey Dep[redacted] of Environmental Protection.

7. The applicant must make specific arrangements to ensure the continuous maintenance and efficient operation of all proposed water quality measures on site. This includes, but not limited to, the cleaning and inspection of all water quality inlets at least twice a year and after every major storm. And the continuous implementation of appropriate soil conservation practices within any grassed swales, stormwater outfall structures and other similar appurtenances throughout the site in order to limit soil erosion and sediment discharge into adjacent waterways.

8. Trees, shrubs, grasses, and other vegetation within 25 feet from the top of all stream banks on site shall not be disturbed for any reason, except where approved by the Department. This condition applies to all streams and waterways on site, regardless of the contributory drainage area.

9. In accordance with the NJDEP, Site Remediation Program several known contaminated sites are located within a close proximity of the project area. Therefore, any soil or ground water encountered within a known contaminated site must be analyzed and disposed of in accordance with the Technical Requirements for Site Remediation at N.J.A.C. 7:26E, under the approval of the Bureau of Case Management.

10. The Land Use Regulation program has not reviewed this application for consistency with the Areawide Water Quality Management Plan and the issuance of this permit shall not be construed as an approval of any wastewater management plan for this project or site. There shall be no construction of any sewage generating structures unless and until the proposed development has been found to be consistent with the appropriate areawide water quality management plan.

FOR Mark N. Mauriello, Director
Land Use Regulation Program

4/10/03
Date

c: City of Bayonne Clerk
City of Bayonne Construction Official
City of Bayonne Planning Board
Ken Sass, NJDEP Bureau of Tidelands Management

James E. McGreevey
Governor

State of New Jersey
Department of Environmental Protection
Land Use Regulation Program
P.O. Box 439, Trenton, New Jersey 08625
FAX # (609) 777-3656
Web Site: www.state.nj.us/dep/landuse

Bradley M. C
Commiss

APR 1 0 2003

Dear Sir or Madam:

Enclosed is your approved construction permit. Please read it carefully and return the attached ***permit acceptance form*** if you agree with our decision. Construction may begin only after you have completed and returned this form. The project manager listed on the first page is available to discuss any concerns or questions you may have. If you consider yourself aggrieved by our decision, you may also request a hearing by completing the requirements of the attached ***administrative hearing request checklist and tracking form.***

Please keep your permit and any approved drawings at the construction site for the duration of the project. It is helpful if you have the proper documentation readily available when my staff inspects your work. If you have received a stream encroachment permit, please complete and return the attached ***construction notice*** at least fourteen days before construction is scheduled to begin. For all permits, please complete and return the attached ***completion notice***, properly signed and sealed by a professional engineer licensed in New Jersey, within thirty days of the completion of the project.

If a tidelands grant, lease or license is required as a permit condition, this permit is not valid until the Bureau of Tidelands Management has delivered the necessary conveyances. Construction prior to the receipt of the necessary conveyances is in violation of State law and will subject you to fines up to $1000.00 plus $100.00 per day. Furthermore, the cost for the tidelands instrument may be higher since the property claimed will be appraised as improved property. You may also be required to remove unauthorized structures placed in the tidelands claimed areas.

A copy of your permit will be shared with appropriate federal and local agencies to promote inter-governmental cooperation in the management of our natural resources.

Sincerely,

Mark N. Mauriello

Mark N. Mauriello, Director
Land Use Regulation Program

w/attachments

Adjudicatory Hearing Request Checklist
and Tracking Form

I Permit Decision or Other Department Decision Being Appealed:

Issuance Date of Decision Document Document Number (if any)

II.

Name of Person Requesting Hearing Name of Attorney (if applicable)

Address Address

Telephone No. Telephone No.

III. If you are the applicant or permittee, please include the following information with your hearing request:

A. The date you received the permit decision or other decision which you are appealing;
B. A copy of the decision document;
C. The findings of fact and conclusions of law you are appealing;
D. A statement as to whether or not you raised each legal and factual issue during the permit application process;
E. Suggested revised or alternative permit conditions;
F. An estimate of the time required for the hearing;
G. A request, if necessary, for a barrier-free hearing location for physically disabled persons;
H. A clear indication of any willingness to negotiate a settlement with the Department prior to the Department's processing of your hearing request to the Office of Administrative Law; and
I. This form, completed, signed and dated with all of the information listed above, including attachment, to:

1. New Jersey Department of Environmental Protection
Office of Legal Affairs
Attention: Adjudicatory Hearing Requests
401 E. State Street
P.O. Box 402
Trenton, NJ 08625-0402;

with a copy to:

2. New Jersey Department of Environmental Protection
Land Use Regulation Program
Attention: Director
501 E. State Street
P.O. Box 439
Trenton, NJ 08625-0439

Signature:_____ Date:_____

IV. If you are a person other than the applicant or permittee, please include the following information with your hearing request:

A. The date you or your agent received notice of the permit decision, and a copy of the permit decision;
B. Evidence that a copy of your hearing request has been delivered to the applicant for the permit decision which is the subject of your hearing request (e.g., certified mail return receipt);
C. A detailed statement of which findings of fact and/or conclusion of law you are challenging;
D. A description of your participation in any public hearings held in connection with the permit application and copies of any written comments you submitted;
E. Whether you claim a statutory or constitutional right to a hearing, and, if you claim such a right, a reference to the applicable statute or an explanation of how your interests are affected by the permit decision;
F. Suggested revised or alternative permit conditions;
G. An estimate of the time required for the hearing;
H. A request, if necessary, for a barrier-free hearing location for physically disabled persons;
I. A clear indication of any willingness to negotiate a settlement with the Department prior to the Department's processing of the hearing request to the Office of Administrative Law; and
J. This form, completed, signed and dated with all the information listed above, including attachments to:

1. New Jersey Department of Environmental Protection
Office of Legal Affairs
Attention: Adjudicatory Hearing Requests
401 East State Street
P.O. Box 402
Trenton, NJ 08625-0402

with a copy to:

2. New Jersey Department of Environmental Protection
Land Use Regulation Program
Attention: Director
501 E. State Street
P.O. Box 439
Trenton, NJ 08625-0439

V. Signature: _____ Date: _____

Stream Encroachment Only

CONSTRUCTION REPORT

Mail to:

State of New Jersey
Department of Environmental Protection
Land Use Regulation Program
P.O. Box 439
Trenton, New Jersey 08625

Review Engineer: _____

Engineer Section: _____

Permit Number/s: _____

_____

_____

Date Issued: _____

Applicant: _____

Name of Project: _____

Municipality/County: _____

Date Construction is to Begin: _____

I hereby give notice that construction will begin on the above noted project on the date stated above (must give at least 14 days notice). Also, as required by condition 7 of the stream encroachment permit, a copy of the above referenced permit/s along with all approved drawings shall be available for inspection at the project site throughout construction.

Engineer's Signature and Seal: _____

New Jersey License Number: _____

Date: _____

PMK

COMPLETION REPORT

Mail to:

State of New Jersey
Department of Environmental Protection
Land Use Regulation Program
P.O. Box 439
Trenton, New Jersey 08625

Review Engineer: _____

Engineer Section: _____

Permit Number/s: _____

_____

_____

Date Issued: _____

Applicant: _____

Name of Project: _____

Municipality/County: _____

Date of Completion: _____

The undersigned hereby certifies that all activities approved by the Department within the above referenced permit/s have been constructed and completed in accordance with the plans approved therein, that said project is in compliance with all terms and conditions of the same, and that all unauthorized encroachments have been removed.

Engineer's Signature and Seal: _____

New Jersey License Number: _____

Date: _____

ACCEPTANCE OF
REVOCABLE CONSTRUCTION PERMIT/S

Mail to:

State of New Jersey
Department of Environmental Protection
Land Use Regulation Program
P.O. Box 439
Trenton, New Jersey 08625

Review Engineer: _____

Engineering Section: _____

Permit Number(s): _____

_____

_____

Date Issued: _____

The undersigned hereby accepts the above referenced revocable permit/s, subject to the terms and conditions included therein, including but not limited to the right of the State to revoke said permit/s with cause, and also subject to all provisions of law, rules, and regulations of any applicable government agency.

Signature: _____

Printed Name: _____

Title/Affiliation: _____

Attest: _____

(To be properly witnessed, signed, and sealed)

State of New Jersey
Department of Environmental Protection
Land Use Regulation Program
Bureau of Inland Regulation

Environmental Summary Report
April 2003

Re: **Waterfront Development Permit**
Applicant: Bayonne Municipal Utilities Authority
Project: Bergen Point Stormwater Infrastructure
File No.: 0901-03-0001.1
Activity No.: WFD 030001 Upland
WFD 030002 In Water
City of Bayonne, Hudson County, New Jersey

Introduction:
The applicant, Bayonne Municipal Utilities Authority, is proposing the rehabilitation of an existing stormwater infrastructure located along the Kill Van Kull in the City of Bayonne, Hudson County. The overall rehabilitation consists of the stabilization and cleaning of four existing headwalls and associated outfall structures, as well as the relining of storm sewers and manholes along West First Street. In addition, the project includes the upgrade of the West First Street pumping station with the construction of new pumps, and necessary controls. In order to complete the project, both temporary and permanent disturbance above and below the mean high water line will occur. Specifically, approximately 0.08 of an acre of temporary disturbance will occur around all the outfalls necessary for dewatering and 0.005 of an acre of permanent disturbance for the placement of soil stabilization structures. The primary purpose for the rehabilitation of the existing stormwater infrastructure is to prevent future flooding events.

This project will not result in the disturbance of wetlands. Construction will be taking place below the mean high water line as well as within 500 feet of the Kill Van Kull, which is tidally influenced waterway. Therefore, the proposed project occurs within the waterfront area as defined in N.J.A.C. 7:7-2.3(a)3. As a result, the Land Use Regulation Program has regulatory jurisdiction over the project. Bayonne Municipal Utilities Authority has received a tidelands instrument.

Administrative History:

No previous activities were found for this site in the City of Bayonne, Hudson County.

Both the Waterfront Development and Freshwater Wetlands applications were received by the Department on January 14, 2003 therefore setting the 20-day review period at February 11, 2003. After initial review of the application, it was determined that the Freshwater Wetlands General Permit No. 11 was not necessary due to the absence of wetlands onsite. Therefore, after consultation with Chet Chase, the General Permit No. 11 was switched to a Waterfront Development – In Water in order to authorize activities below the mean high water line. No other deficiencies associated with this application were discovered. The 90th day deadline for this project is April 13, 2003.

Waterfront Development Permit Analysis:

The analysis of this application is based on the relevant criteria set forth in the Rules on Coastal Zone Management N.J.A.C. 7:7E- 1 et seq.

SUBCHAPTER 3 - SPECIAL AREAS

7:7E-3.1 Introduction:

Special Areas are those 48 types of coastal areas which merit focused attention and special management rules. This subchapter divides Special Areas into Special Water Areas (N.J.A.C. 7:7E-3.2 through 7:7E-3.15), Special Water's Edge Areas (N.J.A.C. 7:7E-3.16 through 7:7E-3.32), Special Land Areas (N.J.A.C. 7:7E-3.33 through 7:7E-3.35), and Coastwide Special Areas (N.J.A.C. 7:7E-3.36 through 7:7E-3.48).

All land or water locations, except Special Water's Edge Areas, are subject to either the Land Area or Water Area General rules. In addition, certain locations are subject to one or more Special Area rules. All Special Water's Edge Areas are subject to one or more Special Area rules. Where the applicable General and Special Area rules differ, the Special Area rules shall be applied.

7:7E-3.5 Finfish Migratory Pathways:

Finfish migratory pathways are waterways (rivers, streams, creeks, bays and inlets) which can be determined to serve as passageways for diadromous fish to or from seasonal spawning areas, including juvenile anadromous fish which migrate in autumn and those listed by H.E. Zich (1977) "New Jersey Anadromous Fish Inventory" NJDEP Miscellaneous Report No. 41, and including those portions of the Hudson and Delaware Rivers within the coastal zone boundary.

The Kill Van Kull is inhabited by a number of anadromous fish species, including but not limited to River Herring, Blueback Herring, American Shad and Striped Bass. A portion of this project is going to occur along the waters edge of the Kill Van Kull. This project proposes the replacement of four existing outfall structures that are in disrepair. The replacement of the existing structures will have a minimal impact on the Kill Van Kull. Additionally, this project is not expected to create a physical barrier within the river that would inhibit fish passage.

A timing restriction of April 1 through June 30 of each year in order to protect anadromous fish from any turbidity generating activity during migration and/or spawning will be imposed as a condition of this permit. Compliance with this rule has been demonstrated.

7:7E-3.7 Navigation Channels:

Navigation channels are tidal water areas including the Atlantic Ocean, inlets, bays, rivers and tidal guts with sufficient depth to provide safe navigation. Navigation channels include all areas between the top of the channel slopes on either side. These navigation channels are often marked with buoys or stakes. Major navigation channels are shown on NOAA/National Ocean Service Charts.

The Kill Van Kull is considered a navigation channel. The replaced outfall structures will not extend into this navigation channel. This project is not expected to cause terrestrial soil erosion and/or shoreline erosion. Compliance with this rule has been demonstrated.

7:7E-3.11 Ports:

Ports are water areas having, or lying immediately adjacent to, concentrations of shoreside marine terminals and transfer facilities for the movement of waterborne cargo (including fluids), and including facilities for loading, unloading and temporary storage.

The proposed project is not within and will not interfere with any nearby port areas. Compliance with this rule has been demonstrated.

7:7E-3.23 Filled Waters Edge:

Filled water's edge areas are existing filled areas lying between wetlands or water areas, and either the upland limit of fill, or the first paved public road or railroad landward of the adjacent water area, whichever is closer to the water. Some existing or former dredged material disposal sites and excavation fill areas are filled water's edge.

The proposed project is within a filled waters edge. The project consists of completing repairs to four stormwater outfall structures, maintenance of infrastructure along West First Street and the renovation of an existing pump station. The project site is currently located directly adjacent to a municipal park. The project is not expected to create disturbance to the park that would inhibit existing public access to and from the Kill Van Kull. Compliance with this rule has been demonstrated.

7:7E-3.25 Flood Hazard Areas:

Flood hazard areas are the floodway and flood fringe area around rivers, creeks and streams as delineated by the Department under the Flood Hazard Area Control Act (N.J.S.A. 58:16A-50 et seq.); and areas defined or delineated as an A or a V zone by the Federal Emergency Management Agency (FEMA). They are areas subject to either tidal or fluvial flooding. Where flood hazard areas have been delineated by both the Department and FEMA, the Department delineation's shall be used. Where flood hazard areas have not been delineated by the Department or FEMA, limits of the 100-year floodplain will be established by computation on a case-by-case basis. The seaward boundary shall be the mean high water line (see Appendix 1, Figures 6 and 7, incorporated herein by reference).

Portions of the site fall within the 100-year and 500-year floodplain of both the Kill Van Kull and Newark Bay. The majority of the project is replacing structures that currently exist. In addition, the public park adjacent to the Kill Van Kull will remain undeveloped for the purposes of public open space. Compliance with this rule has been demonstrated.

7:7E-3.36 Historic and Archaeological Resources:

Historic and archaeological resources include objects, structures, shipwrecks, buildings, neighborhoods, districts, and man-made or man-modified features of the landscape and seascape, including historic and prehistoric archaeological sites, which either are on or are eligible for inclusion on the New Jersey or National Register of Historic Places.

This project was sent to the State Historic Preservation Office for review and comment. Because the site is highly disturbed, SHPO has determined that this project will not adversely affect any historic and/or archaeological resources. Compliance with this rule has been demonstrated.

7:7E-3.38 Endangered or Threatened Wildlife or Vegetation Species Habitats:

There is no record of endangered or threatened species on or near the project area, therefore this rule is not applicable.

7:7E-3.40 Public Open Space:

Public open space constitutes land areas owned or maintained by State, Federal, county and municipal agencies or private groups (such as conservation organizations and homeowner's associations) and used for or dedicated to conservation of natural resources, public recreation, visual or physical public access or, wildlife protection or management. Public open space also includes, but is not limited to, State Forests, State Parks, and State Fish and Wildlife Management Areas, lands held by the New Jersey Natural

Lands Trust (N.J.S.A. 13:1B-15.119 et seq.), lands held by the New Jersey Water Supply Authority (N.J.S.A. 58:1B-1 et seq.) and designated Natural Areas (N.J.S.A. 13:1B-15.12a et seq.) within DEP-owned and managed lands.

The proposed project consists of the replacement of four stormwater outfall structures discharging into the Kill Van Kull, the cleaning and maintenance of manholes, storm sewers and of inlets along West First Street and the upgrade of an existing pump station all located adjacent to a municipal park. The NJDEP Green Acres Program reviewed this project for possible adverse impacts to the park. Green Acres has determined that disturbance associated with this project is minimal and therefore does not constitute a diversion. Compliance with this rule has been demonstrated.

7:7E-3.41 Special Hazard Areas:

Special hazard areas include areas with a known actual or potential hazard to public health, safety, and welfare, or to public or private property, such as the navigable air space around airports and seaplane landing areas, potential evacuation zones and areas where hazardous substances as defined at N.J.S.A. 58:10-23.11b-k are used or disposed, including adjacent areas and areas of hazardous material contamination.

The applicant has identified several known contaminated sites located within the project area. The applicant has stated that this project is not expected to impact any known contaminated sites, therefore having no immediate threat to the general public. Additionally, it is anticipated that this project will not release any potential hazardous substances and/or contaminated river sediments into the water supply. However, a condition will be added to the permit stating that any soil or ground water encountered within a known contaminated site must be analyzed and disposed of in accordance with the Technical Requirements for Site Remediation at N.J.A.C. 7:26E, under the approval of the Bureau of Case Management. Compliance with this rule has been demonstrated.

7:7E-3.43 Special Urban Areas:

"Special urban areas" are those municipalities defined in urban aid legislation (N.J.S.A. 52:27D-178) qualified to receive State aid to enable them to maintain and upgrade municipal services and offset local property taxes.

The City of Bayonne, Hudson County is listed as a special urban area. The proposed project will rehabilitate existing structures onsite in an effort to alleviate the frequency of flooding in the area. Therefore, the proposed project is not anticipated to adversely affect the economic well being of this special urban area. Compliance with this rule has been demonstrated.

SUBCHAPTER 4 – GENERAL WATER AREAS

7:7E-4.1 Purpose:

General Water Areas are all water areas which are located below either the spring high water line or the normal water level of non-tidal water that are subject to this subchapter and to Special Area rules.

7:7E-4.17 Outfalls and Intakes:

Outfalls and intakes are pipe openings that are located in water areas for the purpose of intake of water or discharge of effluent including sewage, stormwater and industrial effluents.

SUBCHAPTER 6 - GENERAL LOCATION POLICIES

7:7E - 6.1 Rule on Location of Linear Development:

A linear development as defined at N.J.A.C. 7:7E-1.8, shall comply with the specific location rules to determine the most acceptable route, to the maximum extent practicable. If part of the proposed alignment of a linear development is found to be unacceptable under the specific location rules, that alignment (perhaps not the least possible distance) may nonetheless be acceptable.

The purpose of the maintenance to the sewer infrastructure is to reduce the frequency of flooding in the immediate area. The majority of the maintenance work is located along an existing transportation corridor, West First Street. Overall, the maintenance work is not expected to cause adverse impacts to special areas. Compliance with this rule has been demonstrated.

SUBCHAPTER 7 - USE POLICIES

7:7E-7.1 Purpose:

Many types of development seek to locate in the coastal zone. The second stage in the screening process of the Coastal Zone Management rules involves analysis of appropriate uses of coastal resources. Use rules are rules and conditions applicable to particular kinds of development. Use rules do not preempt location rules which restrict development, unless specifically stated. In general, conditions contained in the use rules must be satisfied in addition to the location rules (N.J.A.C. 7:7E-2 through 6), and the resource rules described in the following subchapter (N.J.A.C. 7:7E-8).

7:7E-7.6 Public Facility Use Rule:

The purpose of the infrastructure maintenance and pump station upgrade is necessary to reduce flooding events caused by major storms. This project is not expected to generate significant secondary impacts. The overall rehabilitation project will help improve public health and safety. Compliance with this rule has been demonstrated.

SUBCHAPTER 8 - RESOURCE POLICIES

7:7E-8.1 Purpose:

The third step in the screening process of the Rules on Coastal Zone Management involves a review of a proposed development in terms of its effects on various resources of the built and natural environment of the coastal zone, both at the proposed site as well as in its surrounding region. These rules serve as standards to which proposed development must adhere.

7:7E-8.7 Stormwater Management:

Stormwater runoff is the flow of water on the surface of the ground, resulting from precipitation.

Coastal development shall employ a site design which, to the extent feasible, minimizes the amount of impervious coverage on a project site. In addition, the development shall use the best available technology to minimize the amount of stormwater generated, minimize the rate and volume of off-site stormwater runoff, maintain existing on-site infiltration, simulate natural drainage systems and minimize the discharge of pollutants to ground or surface waters. Consistent with the provisions of the Stormwater Management rule, the overall goal of the post-construction stormwater management system design shall be the reduction from the predevelopment level of total suspended solids (TSS) and soluble contaminants in the stormwater.

The applicant is improving the existing stormwater management infrastructure onsite. The proposed project will not increase impervious surfaces in the area. Additionally, these improvements are not expected to increase the discharge of pollutants to either ground or surface water. Compliance with this rule has been demonstrated.

7:7E - 8.11 Public Access to the Waterfront

Public access to the waterfront is the ability of all members of the community at large to pass physically and visually to, from and along the ocean shore and other waterfronts.

Coastal development adjacent to all coastal waters, including both natural and developed waterfront areas, shall provide permanent perpendicular and linear access to the waterfront to the maximum extent practicable, including both visual and physical access. Development that limits public access and the diversity of the waterfront experiences is discouraged.

This project is being implemented adjacent to an existing municipal park. The project was sent to Green Acres for consultation. It has been determined that all proposed activities involve the rehabilitation of existing structures, therefore no adverse impacts will be imposed on the park. The municipal park will remain undisturbed, allowing the public to pass physically and visually to, from and along the Kill Van Kull. Compliance this rule has been demonstrated.

Conclusion:

Based upon the preceding analysis, the applicable rules on Coastal Zone Management Policies will be met. The issuance of this Waterfront Development Permit is contingent upon compliance with the conditions listed on the permit.

Special Conditions:

1. In order to protect anadromous fish during migration and/or spawning within the Kill Van Kull, any turbidity generating activity within the banks of this or any other stream on site are prohibited between April 1 to June 30 of each year. The Department reserves the right to suspend all regulated activities on site should it be determined that the applicant has not taken proper precautions to ensure continuous compliance with these conditions.

2. All necessary local, Federal, and other State approvals must be obtained by the applicant prior to the commencement of the herein permitted activities. Approvals from the following may be required: Bureau of Tidelands Management and Bureau of Non-Point Pollution Control, New Jersey Department of Environmental Protection.

3. The applicant must make specific arrangements to ensure the continuous maintenance and efficient operation of all proposed water quality measures on site. This includes, but not limited to, the cleaning and inspection of all water quality inlets at least twice a year and after every major storm. And the continuous implementation of appropriate soil conservation practices within any grassed swales, stormwater outfall structures and other similar appurtenances throughout the site in order to limit soil erosion and sediment discharge into adjacent waterways.

4. Trees, shrubs, grasses, and other vegetation within 25 feet from the top of all stream banks on site shall not be disturbed for any reason, except where approved by the Department. This condition applies to all streams and waterways on site, regardless of the contributory drainage area.

5. In accordance with the NJDEP, Site Remediation Program several known contaminated sites are located within a close proximity of the project area. Therefore, any soil or ground water encountered within a known contaminated site must be analyzed and disposed of in accordance with the Technical Requirements for Site Remediation at N.J.A.C. 7:26E, under the approval of the Bureau of Case Management.

6. The Land Use Regulation program has not reviewed this application for consistency with the Areawide Water Quality Management Plan and the issuance of this permit shall not be construed as an approval of any wastewater management plan for this project or site. There shall be no construction of any sewage generating structures unless and until the proposed development has been found to be consistent with the appropriate areawide water quality management plan.

Prepared by:

Kimberly Kessler, Project Manager
Bureau of Inland Regulation

Approved by:

Robert B. Piel, Jr., Manager
Bureau of Inland Regulation

Approved by:

FOR: Mark N. Mauriello, Director
Land Use Regulation Program

Killam
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John S. Rolak, Jr., P.E.
Vice President

February 4, 2001

File
DWO
+
BHS DWO

Certified Mail - Return Receipt Requested 7000 0600 0022 4148 2570
Administrator
Water Compliance & Enforcement Element
New Jersey Department of Environmental Protection
PO Bo 422
Trenton, New Jersey 08625-0422

RE: Bayonne Municipal Utilities Authority
NJPDES Permit No. NJ0105023
Individual Authorization No. NJ0109240
Report of Dry Weather Overflow
Case Number 02-01-30-551-33
Job #294800.0003

Gentlemen:

In accordance with the requirements of the above referenced NJPDES Permit, we are herein forwarding information concerning the above referenced matter. We trust that this report is acceptable but will be happy to provide any additional information deemed necessary.

The following is a description of the dry weather overflow in compliance with the Part III.B.3.b of the above referenced permit:

i A description of the discharge - The discharge was being cause by the illicit service connection from Bayonne High School into the City's relief (storm) sewer system. The discharge was raw sewage being discharge through a service connection for the building connected into the relief (storm) sewer.

- The time of the discharge – the dry weather overflow was discovered in the morning of 1/30/02. The discharge was diverted on a temporary basis or about 3:00 pm on 1/30/02 to eliminate the discharge.
- Location of discharge – The discharge was to Newark Bay at 30th Street.
- Discharge Serial Number - 018/027 – Under the recent solids/floatables control program the discharge from Serial No. 027 was diverted to a common solids/floatables control facility and outfall. The dry weather overflow occurred from this outfall.
- Estimated volumetric flow rate of the discharge – The Authority has estimated the rate of discharge at approximately 5 gpm during school hours or approximately 2,400 gpd.

ii. The duration of the discharge – The date and time at which the discharge first began is unknown however it is anticipated that the connection from the high school into the relief (storm) sewer may go back to the time when the relief sewer was constructed. As indicated

above the discharge was stopped on a temporary basis at 3:00 pm on 1/30/02. The Board of Education has been notified and the Board is presently undertaking investigations to determine how the connection can be permanently diverted to the combined sewer system. The permittee returned to compliance with their permit by a temporary diversion of the flow back into the regulator and truck sewer.

iii. The cause of the discharge - is a previously unknown sanitary service connection into the relief sewer that discharges at 30th Street.

iv. Steps Taken to Determine the Cause – The Authority undertook field investigations and internal inspection of the sewers to determine the cause for the dry weather overflow and discovered the building connection from the High School when toilet paper was noted at the point of connection into the relief sewer.

v. The Authority undertook emergency steps to eliminate the dry weather overflow with the construction of a temporary weir within the solids/floatables control facility, and the forcing open of the tide gate between the regulator chamber and the inline netting chamber, so that sanitary flow would be backed up by the weir and forced though the tide gate into the regulator. At the present time sanitary flow from the high school is being prevented from discharging by this diversion.

vi. The Board of Education has been notified of the problem and is presently undertaking studies to determine how the sanitary flow from this connection into the High School can be redirected into the combined sewer system. Preliminary review of the inverts along the relief sewer and combined sewer indicate that there is a conflict and that the sanitary sewer may not be able to be connected by gravity. Accordingly, steps may need to be taken to pump this flow into the combined sewer system.

As required by the General Permit for Combined Sewer Systems the following additional information is herein provided:

i. All the information required by the Part III.B.3b – See above.

ii. The operating logs on the circumstances of the discharge will be forwarded directly to the NJDEP by the operator.

iii. Reasons for the DWO – see above.

iv. Evidence that the permittee was properly operating the facility at the time of the discharge – this DWO was found as part of the Authority's ongoing program to investigate the condition and layout of its combined sewer system. While inspecting the new solids/floatables control facility at Outfall 018/027 the Authority noticed flow entering the

chamber from the diverted relief sewer. Upon subsequent investigations upstream to uncover the reason for the flow the Authority noted evidence of sanitary waste (toilet paper) and dye tested the connection from the high school noting that the service lateral was tied into the relief sewer and not the combined sewer. Thus the connection was discovered by the Authority's ongoing operation and maintenance program to identify and eliminate problems within their combined sewer system.

v. Evidence that the Hot Line was called – The NJDEP Hotline was called about this DWO by Joseph Aidukas, BMUA Operator, on Wednesday, January 30, 2002 at approximately 4:00 pm after emergency steps were taken to eliminate the discharge. The Case Number provided at the time of the call was 02-01-30-1551-33.

vi. The dry weather overflow had been diverted at the time of the call, accordingly, no further remedial measures were required.

To our knowledge, this reported dry weather overflow consisted of only sanitary waste from the high school and accordingly did contain any other contaminant/pollutant. As such, we believe that this discharge did not cause injury to persons, or damage to the environment. The volume of the discharge was relative small in comparison to the volume of flow within the receiving water (Newark Bay) and the discharge is not located near any bathing beaches or shellfish beds. Accordingly it is anticipated that there was no or little permanent impact to the environment from this discharge.

We trust that the above is in accordance with the requirements of the Authority's NJPDES Permit and that this report satisfies all of the requirement of the permit however, we will be happy to answer any additional questions or to provide any additional information deemed necessary by the NJDEP. The Authority will maintain the diversion of sanitary flow as outline above until such time that the connection into the relief sewer has been eliminated at which time the Authority will provide notification to the NJDEP.

Very truly yours,

KILLAM ASSOCIATES

John S. Rolak, Jr., P.E.

JSR:mas
cc: Kevin Marlowe, NJDEP Enforcement
Steve Gallo
Joseph Aidukas
N:\Marianne\2002\jr\BayDWO0201.doc

FILE COPY

Hatch Mott MacDonald

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John S. Rolak, Jr., P.E.
Vice President

September 23, 2005

Fax #609-292-9938 and Federal Express
Administrator
Water Compliance & Enforcement Element
New Jersey Department of Environmental Protection
PO Box 422
401 E. State Street – 4th Floor East
Trenton, New Jersey 08625-0422

copy commission + file DWQ.

Fax #973-656-4400
New Jersey Department of Environmental Protection
Northern Bureau of Water Compliance & Enforcement
7 Ridgedale Avenue
Cedar Knolls, N.J. 07927
Attention: Mr. Joseph Mikulka, Chief

RE: NJDEP Hotline Case No. 05-09-19-1402-25
Oak Street Pumping Station
Dry Weather Overflow Incident Report
Bayonne Municipal Utilities Authority
Job #215742AA01

Gentlemen:

In compliance with NJAC 7:14A-6.10, we are herein forwarding on behalf of the Bayonne Municipal Utilities Authority (the Authority) this written report providing the required information on the above referenced case numbers. We trust that this submission is adequate, however, we will be happy to provide any additional information deemed necessary by the NJDEP.

General Background
The Bayonne Municipal Utilities Authority operates the combined sewer facilities that service the City of Bayonne. Wastewater from the City of Bayonne is collected by several pumping stations and two main interceptor sewers and transported to the Oak Street Pumping Station. The Oak Street Pumping Station transports all wastewater from the City of Bayonne by force main to the Passaic Valley Sewerage Commissioners Water Pollution Prevention Facility in Newark. The City's combined sewer system has combined sewer overflow discharge points which discharge directly to the Kill Van Kull,

Hatch Mott MacDonald

Newark Bay and Upper New York Bay. CSO discharges are permitted under the General Permit for Combined Sewer Systems NJPDES Permit No. 0105023 and Individual Authorization Number 0109240.

On Sunday, September 19, 2005 an employee of the BMUA received a VFD malfunction alarm at the Oak Street Pumping Station and responded to investigate the cause. While on site the employee noticed that the stormwater pumps were operating and creating a dry weather overflow through Outfall 001/005. The stormwater pumps were shutdown, stopping the discharge at about 11:00 am.

Investigation of the problem showed that the raw sewage bar screen was matted over resulting in high influent levels and a shut down of the modulating sluice screen to the closed position diverting sewage over to the storm side of the pumping station. The bar screen was put into manual position and operated to clean the bar screen and to reopen the sluice gate. Further investigation of the incident revealed that someone had activated the emergency shutdown button on the compressor for the bubbler system that operates the bar screen. Once the air in the reserve tank was exhausted, the bubble system failed to operate the bar screen allowing it to plug resulting in the shutdown the sluice gate. The nature of the problem has led the Authority to believe that this incident was the result of sabotage by one of its employees and they have referred the incident to the Bayonne Police Department. The criminal investigation is being conducted by Detective Keith Striffolino (201-858-6925) of the Bayonne Police Department.

1. **Description of the Discharges**

The failure of the bubbler resulted in plugging of the mechanical bar screen, which in turn resulted in the shutdown of the automatic sluice gate and activation of the wet weather pumps. The Authority is uncertain as to when the actual dry weather overflow occurred because there was rainfall on Saturday night, which initiated the stormwater pumps and a permitted discharge. The flow chart for Oak Street indicates that the station went to zero flow to PVSC at about 3:00 AM Sunday morning, which is when it is estimated the dry weather overflow began. The overflow continued until about 11:00 AM on Sunday.

While the wet weather side of the pumping station is metered, the exact volume of the dry weather flow cannot be determined due to a wet weather discharge on Saturday night. Nevertheless, the Authority has been averaging around 8.5 MGD to PVSC. Accordingly, based on the 8 hours of discharge in the early and mid-morning, the total volume is estimated at approximately 2.5 million gallons.

Hatch Mott MacDonald

2. **Steps Taken to Determine Cause of Non-compliance**

See description above.

3. **Steps Being Taken to Reduce, Remediate, And Eliminate the Non-complying Discharge and Damage to the Environment.**

As noted the Authority believes that the discharge was the result of employee sabotage and has the Bayonne Police Department investigating.

The Bayonne MUA is currently undertaking an upgrade of Oak Street Pumping Station and the station is currently operating on temporary controls and thus has limited alarm capability. The new controls being fabricated for the station will provide additional alarm flexibility, which when installed should assist the Authority in preventing or lessening these types of discharges.

4. **The Duration of the Discharge:**

As previously indicated, the discharge from Outfalls 011/005 occurred for a period of approximately 8 hours from 3:00 AM to 11:00 AM on Sunday September 18, 2005.

5. **The Cause of the Noncompliance**

See above description

6. **Steps Being Taken to Reduce, Eliminate, and Prevent Reoccurrence of the Noncompliant Discharge.**

See response to No. 3.

7. **An Estimate of the Threat to Human Health or the Environment Posed by the Discharge.**

The discharges occurred in a large tidal area wherein dilution would minimize any threat to human health or the environment. The discharges through Outfall 001/005 occurred shortly after a stormwater event, during which there were combined sewer overflows. There are no shell fishing beds, beaches, or water intakes in the area of the discharge and thus it is anticipated that the discharge had a minimal impact, if any, to human health and the environment.

Hatch Mott MacDonald

Modeling of the Lower Passaic River just upstream of the Bay conducted in the mid 1980's indicated that pollutant loads from CSO discharges completely dissipated within three days. It is therefore anticipated that the impact period of this dry weather discharge would of a similar period.

8. **Measures the Permittee Has Taken Or Is Taking to Remediate and Avoid a Repetition of the Problem.**

The events of this incident were beyond the control of the Authority. The only deterrent available to the Authority is to press criminal charges against anyone responsible for the incident. The Authority has undertaken the proper steps to prevent future incidents of sabotage by reporting the incident to the police, who have been interviewing all Authority personnel.

We trust this information adequately addresses the reasons and circumstances for the unforeseen failure of the Oak Street Pumping Station into upper New York Harbor. Please contact me at your convenience should you have any questions or need any additional information.

Very truly yours,

HATCH MOTT MACDONALD

John S. Rolak, Jr., P.E.

JSR:mas
cc: Steve Gallo
Joseph Aidukas
Joseph Nichols, Esq.
Wanda Chin Monahan, Esq.
Joseph Baumann, Esq.

U:\Marianne\2005\jr\Milkalka Oak Street DWO 923.doc

Hatch Mott MacDonald

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June 20, 2005

Fax #609-292-9938 and Federal Express
Administrator
Water Compliance & Enforcement Element
New Jersey Department of Environmental Protection
PO Box 422
401 E. State Street – 4th Floor East
Trenton, New Jersey 08625-0422

RE: Bayonne Municipal Utilities Authority
Report on a Dry Weather Overflow Incident at Outfall 001/005
NJPDES Permit No. NJ0105023
Individual Authorization No. 0109240
Hotline Case No. 05-06-13-1043-52

Job # 209118CA01

Gentlemen:

On behalf of the Bayonne Municipal Utilities Authority ("BMUA" or "The Authority"), we are herein forwarding this letter report on the above referenced upset at the BMUA Oak Street Pumping Station, which was reported to the NJDEP Hotline on June 13, 2005. We trust that the information provided herein is adequate, however we will be happy to provide any additional information deemed necessary.

The Oak Street Pumping Station and Force Main is used by the Authority to transport all wastewater flows generated within the City of Bayonne (the "City") to the Passaic Valley ("PVSC") Sewerage Commissioners Water Pollution Control Facility in Newark. The sewage pumping station is about 15 years old and P&H Construction is currently under contract with the Authority to upgrade valves, piping, pumps and controls at this, and other sewage pumping stations in the City. The Pumping Station has three (3) raw sewage pumps that are approximately eight months old. These three raw sewage pumps transfer wastewater to PVSC in Newark. Each existing pump has a 250 hp motor and a design flow of approximately 10 mgd. One pump is typically adequate to meet daily pumping requirements for the system, while the second pump is used during storm events to maximize the transfer of combined wastewater to PVSC. The BMUA is restricted by agreement to limit the flow

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to the PVSC to approximately 17.6 mgd. Two pumps operating at full speed have a design flow capacity of about 18-20 mgd. Therefore if one pump fails the third standby pump operates to maintain the maximum combined flow to PVSC.

Prior to Friday, June 3, 2005, Raw Water Pump #1 was being serviced in a repair facility, due to a pump seal failure. Then at about 8:00 AM on Friday, June 3, 2005, the electric motor of Raw Water Pump #2 failed and the pumping station was switched to Raw Water Pump #3. Immediate steps were take to reinstall newly repaired Pump #1. While Pump #1 was being reinstalled Pump #3 failed, due to pump seal failure, leaving the station with only one raw water pump in operation. Pumps #2 and #3 were removed and sent to a repair facility to investigate the reasons for these failures and also to repair the pumps as soon as possible. It is estimated that the two pumps would be out of service for a minimum of three weeks. Therefore the BMUA has arranged for a diesel pump and bypass piping to be installed at the station to provide the service for the missing second pump. Under these circumstances, an incident may have caused an overflow totaling 8.5 million gallons. The incident was reported to the NJDEP in our letter of June 9, 2005, and it is with this background we explain below the circumstances of Saturday, June 11, 2005.

While not directly related to the incident reported upon herein, it should be noted that the Bayonne Municipal Utilities Authority had a massive failure of a 30-inch water transmission main early Saturday morning that required the call out of operating personnel to open interconnections with out systems and to shutdown the main water transmission main for the City. The break, which caused low pressure within the water system and considerable flooding in Kearny, was an urgent priority for the Authority. The Licensed Operator for the Sewer System is also the utility superintendent and thus was completely involved in the emergency operations of the water system while the break was isolated and repaired. The repair to the water main was not completed until noon on Sunday, June 12, 2005 and resulted in some Authority personnel being on duty for over 24 hours.

At approximately 6:00 PM on Saturday during a severe thunderstorm and heavy rain, an electric power cable that supplies the Oak Street pumping station was completely severed by a lightening strike. The emergency backup generator immediately came on line and provided power to raw water Pump #1. The severed power cable was detected by PSE&G who responded quickly to facilitate the repair.

At 6:19 PM the BMUA operative who was providing the on-call coverage received an alarm via his beeper from the nearby 5th Street stormwater pumping station. The 5th Street station alarmed as it too is provided power via the same severed cable. The on-call operative responded to the 5th Street

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alarm, and observed that this station was also down.

At approximately 7:00 PM the operative, upon returning passed the Oak Street Station, noticed that the emergency generator was running and placed a call to the Licensed Operator for the System. The Operator who had been dealing with the problems associated with a 30-inch diameter water main break arrived at the pumping station within the hour. After confirming that the station was operating satisfactorily powered by the electricity generator, the Superintendent Operator left to return to supervise the repair to the water main that had suffered a failure earlier in the day. The Superintendent instructed the on-call operative to remain at the Oak Street Station until PSE&G had restored power to the station.

At 9:00 PM the Variable Frequency Drive (VFD) faulted and disconnected Pump #1 from the electrical generator, the generator continued to operate as designed, to supply power to the combined flow lift pumps, lighting, etc. It should be noted that the generator is extremely noisy. At this point the on-call operative who was still at the pumping station would have received an alarm via his beeper. The operative claims to have never received a beeper alarm nor did he observe the alarm lights and audible signal from the annunciator located in the main entrance to the pump station. If the annunciator alarm is responded to within 45 seconds, the emergency dial out to seven Authority employees in sequence will not initiate. No beeper alarms were received by any of the other seven individuals.

At approximately 10:45 PM, the mains power supply was restored to the Oak Street Pumping Station and the emergency generator commenced its cool down cycle. Sometime, shortly thereafter the operative left the station, but he did not check if the raw water pump #1 was running. Consequently, in the absence of any alarms or reports from the on-call operative, to everyone's knowledge the raw water pump was operating satisfactorily. The diesel pump and emergency bypass ordered by the BMUA on Saturday, June 4 to provide a second backup to raw water pump #1 was on this day still not operating in an automatic mode.

As a consequence of these extraordinary sets of events, no raw water pumping occurred between 9:00 PM on Saturday, June 11 to 8:00 AM on Monday, June 13. (a total of 35 hours). At 8:00 AM on Monday, the normal shift started work and noticed that raw water pump #1 was not operating. The pump was immediately started and the details reported to the Superintendent, BMUA Executive and Hatch Mott MacDonald (engineers for the BMUA). The on-call operative that had been on duty was questioned regarding this failure, and the alarm dial out system was checked and found to be in satisfactory working order. At 10:45 AM the overflow event was reported to the NJDEP hotline.

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Based upon reviewing the record charts in the station, it has been established that the total discharge from the Oak Street pumping station in the 35-hour period was 13.081 million gallons. As the series of events began during a heavy thunderstorm, the weather records have been checked and the amount of rainfall that occurred between 6:00 PM and 7:00 PM on Saturday, June 11, amounted to 0.51 inches, which we estimate accounts for 2 million gallons of the discharge resulting in a net dry weather discharge to the Kill Van Kull of approximately 11 million gallons.

In accordance with Part I-C of the above referenced permit, the following information is herein provided on this incident.

Written Report Requirements:

The written information to be submitted includes the following under c.ii:

A. A description of the discharge....

The discharge of combined flow occurred approximately between 9:00 PM on Saturday, June 11, 2005 and 8:00 AM on Monday, June 13, 2005 through the Oak Street CSO pumping station. The Oak Street CSO Pumping Station discharges through Outfall 001/005 to Upper New York Harbor near the Kill Van Kull. The discharge was of combined sanitary (primarily domestic sewage) and stormwater flows. The City received approximately 0.51 inches of rainfall during the same general period, which is estimated to have contributed approximately 2-million gallons of the discharge.

B. The duration of the charge...

The discharge occurred for approximately 35 hours from around 9:00 PM on June 11, 2005 until approximately 8:00 AM on June 13, 2005.

C. The cause of the discharge...

As detailed above, the discharge was apparently caused by an unexplained failure of the alarm system or, whether by misfortune or neglect, the failure of the onsite BMUA operative to properly assess and respond to the faulting of the power supply to a raw water pump. The Authority Operative has been an employee and an on-call employee for years and has received instructions/training on several occasions on the appropriate methods for responding to alarms. The Authority was also in the process of getting the emergency diesel pump and bypass installed, as a backup to the single operating raw water pump. Unfortunately the diesel pump bypass backup had not

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been completed when the interruption of power occurred.

D. Steps taken to determine the cause of the discharge.
The reason(s) for the failure has been investigated and is under review. Further investigations are planned to determine the actions of the BMUA operative who was on-call at the time of the failure, and the performance of the dial out alarm system, which it has been alleged to have failed. The operator has been suspended and served with a Preliminary Notice of Disciplinary Action advising him of his termination effective June 27, 2005.

E. Steps the permittee is taking to reduce and eliminate the non-complying discharge.
Following the extraordinary events of Friday and Saturday, June 3 and 4, 2005 when two raw water pumps broke down within hours of each other, the Authority took immediate steps to arrange for the installation of a diesel pump and emergency bypass as a backup to the single remaining stormwater pump. However the configuration of the existing pumping station does not readily lend itself to having a bypass installed, and several difficulties and engineering limitations prevented setting up the bypass prior to the power outage and succeeding events that resulted in the discharge reported in this letter.

F. Steps the permittee is taking to reduce, eliminate, and prevent reoccurrence of the discharge.
As indicated above, the Authority is fully investigating the failure to attempt to evaluate possible causes to better understand what happened so that, if possible, steps can be taken to minimize its reoccurrence. Since the Authority only has one operating electric pump, at the present, the BMUA has been expediting the repair of the two pumps and at the time of writing this letter has now completed the installation of a diesel pump and emergency bypass. In the event of a similar failure of the single electric raw water pump occurring before the return of the other two electric pumps, it is anticipated that the diesel bypass will be sufficient to handle 100% of the dry weather flow.

It is important to note the uncommon difficulties with which the Authority has had to overcome in order to install bypass pumping. The wet well floor of the Oak Street Pumping Station is approximately 30 feet below the surround ground surface. Each

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raw water pump operates with suction head of zero or less and discharges into a 20-inch DIP, which connects to a 30-inch DIP header. The force main at the exterior of the pumping station is a 36-inch Pre-stressed Concrete Cylinder Pipe (PCCP). The problem with providing bypass pumping for the station is threefold. Firstly, the pumping capacity, total head and power requirements are such that a suitably large bypass pump was difficult to obtain in a short period. Secondly, there is no existing bypass piping that would allow easy and safe connection into the force main into the PCCP force main outside of the pumping station. The PCCP force main does not lend itself to modification since any attempt to cut and connect into the existing pipe would weaken the structural integrity of the pipe. Thirdly, the emergency bypass pump could only be located on the ground outside the station; this meant that the suction head would be in excess of 30 ft., which is beyond the 20-foot suction capacity of most pumps. Therefore some reconfiguration of the pumping station was necessary to form a temporary wet well at a higher elevation which could then supplied by the stations lift pumps that are normally dedicated to lifting the combined flow to a discharge overflow channel.

As presently setup, one combined sewer overflow pump will be used to lift the dry weather flow into the combined flow discharge channel. The discharge channel has been dammed to its mid depth using a temporary bulkhead to create the temporary wet well. However, in the event of a failure in the sole remaining electric raw water pump, it may not be impossible to completely prevent a dry weather discharge. A possible problem that may arise with this temporary bypass arrangement is that the combined sewer pump runs at constant speed and is rated at 9,000 gpm, while we anticipate that the bypass will operate at approximately 6,500 gpm. As flow levels in the wet well rise and fall, the combined pump will operate and shutdown, but there is a potential that the combined flow pump could provide more flow to the temporary wet well than can be delivered into the force main by the bypass diesel pump and a resulting overflow of the bulkhead may occur. While this temporary arrangement is not ideal, there is no other practical means of providing any bypass pumping should the single electric pump or control fail at this time.

The current dial out alarm system has been in operation for over two years. In an emergency the current system will dial out to a beeper after 45 seconds of an alarm occurring. It will call the beeper twice then if there is no response in 10 minutes it will contact the cell phone of the on-call operative. If there is still no response it will

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call a second beeper of the assistant superintendent twice. After 10 minutes it will call the cell phone of the Assistant Superintendent, if no response it will call the Superintendent. The dial out alarm will repeat this process for seven individuals. At the end of the cycle of the seven individuals if there is still no response after 30 minutes have elapsed, it will begin at the start of the cycle of seven.

Due to the events describes herein it has been decided and steps taken to implement modification of the dial out alarm system so the beeper is eliminated and the dial out alarm will immediately contact the cell phones of the Authority's staff. This change will allow the exact time of the call and response to be closely monitored.

G. An Estimate of the Threat to Human Health or the Environment Posed by the Discharge

The Oak Street Pumping Station CSO Outfall is located in a large tidal area wherein dilution would minimize any threat to human health or the environment. The failure of the Oak Street Pumping Station also occurred during a period when approximately 0.5 inches of rainfall fell, and thus was partially a CSO discharge. There are no shell fishing beds, beaches, or water intakes in the area of the discharge and thus it is anticipated that the discharge had a minimal impact, if any, to human health and the environment.

The following additional information is also being provided:

1. **All properly signed, contemporaneous operating logs, or other relevant evidence, on the circumstances of the discharge.**
   A summary of the circumstances surrounding this incident by the licensed operator is included.

2. **Reasons that the DWO occurred, including the cause of the DWO.**
   See Paragraph C above.

3. **Evidence that the permittee was properly operating the facility at the time of the discharge.**
   The BMUA is in the midst of a cyclical capital maintenance program to totally upgrade three of its main pumping stations. Approximately 9-months ago, and during this upgrade, all three raw water pumps at Oak Street were replaced with new

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dry pit submersible pumps. Additional upgrades including new controls are being constructed at the present. The DWO discharge was directly caused by the single pump outage not having backup pumps in operational availability due to the extraordinary set of failures that had occurred to the backup pumps one week previous. Early investigation as to the cause of the pump failures have determined that the failures were not due to operational problems and may be the result of a manufacturing defect and in one case a problem with the electrical supply to the pump motor. Accordingly the facility is, and has been properly operated. As indicated above, the Authority took appropriate steps to deal with the problem when it initially occurred and returned the pumping station to operation as soon as the discharge was discovered.

4. **Evidence that the permittee submitted notice of the DWO as required ... or in the case of a DWO resulting from performance by the permittee of maintenance operations, evidence that the permittee provided prior notice and received prior written approval therefore from the Department....**
The incident was called into the NJDEP Hotline by our office (as evidenced by the above referenced case number) as soon as was possible following investigation of the cause the failure and the return of the pumping station to operation.

The Authority will undertake an investigation and review of all contributing events leading to this incident. The Authority is also taking procedural steps and operational modifications to reduce the potential for future failures of this nature. The call-out employee who was responsible for the facility at the time of the discharge has been in his position for the past 15 years. The Authority had no reason to doubt his ability to handle the situation. A series of tests of the emergency notification equipment confirmed that it is in proper working order. The employee has been served with a Preliminary Notice of Disciplinary Action advising him of his termination effective June 27, 2005. All other employees have been counseled and will receive additional training in the operation of the pumping equipment. The BMUA has requested that Hatch Mott MacDonald conduct a review of the operational procedures to identify any areas where improvements can be made.

We trust that the information provided herein is in compliance with the requirements of the above referenced permit.

Hatch Mott MacDonald

Please contact me at your convenience should you have any questions or need any additional information on this matter.

Very truly yours,

HATCH MOTT MACDONALD

John G. Armstrong, P.E.
Principal Project Engineer

JGA:mas
Enclosure
cc: Shadab Ahmad, Section Chief, MF&CE
Stephen Gallo
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U:\Marianne\2005\ja\Administrator BMUA Oak PS Failure 06-11-05 - FINAL.doc

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FILE COPY

Copy Commissioners J. Mokowski File DWO

AUG 3 0 2005

August 26, 2005

Fax #609-292-9938 and Federal Express

Administrator
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New Jersey Department of Environmental Protection
PO Box 422
401 E. State Street – 4th Floor East
Trenton, New Jersey 08625-0422

RE: Bayonne Municipal Utilities Authority
Report on a Dry Weather Overflow Incident at Outfall 015
Saturday 08/20/05 to Thursday 08/22/05
NJPDES Permit No. NJ0105023
Individual Authorization No. 0109240
Hotline Case No. 05-08-22-1403-12
Job # 209118CA01

Gentlemen:

On behalf of the Bayonne Municipal Utilities Authority ("BMUA" or "The Authority"), we are herein forwarding this letter report on the above referenced upset at the BMUA 22nd Street Pumping Station, which was reported to the NJDEP Hotline on August 22, 2005. We trust that the information provided herein is adequate, however we will be happy to provide any additional information deemed necessary.

The 22nd Street pumping station is currently undergoing some general rehabilitative work that includes replacement of the existing pumps, screen, grit removal system, electrical appurtenances and equipment controls. This ongoing upgrade work required the pump station to be temporarily bypassed. (Our letter of July 22, 2005 informed you of the temporary bypass arrangement). The dry weather overflow (DWO) being reported here resulted from the failure of the contractor-installed bypass.

The bypass was installed on Monday July 25, 2005 and was facilitated by a 3-phase electric submersible pump being introduced to the manhole immediately upstream of the inlet bar screen, the discharge from this submersible pump was arranged to directly discharge into the pump station's force main. In the event of a power outage and/or possible clogging of the submersible pump, provision was made to supplement this submersible pump with a 6-inch diesel pump which would automatically start based upon a second float control placed within the upper portion of the inlet manhole. A dial-out alarm system was connected to the diesel pump and arranged to signal an alarm at the pump start up. The alarm was sequenced such that the first and second alarm was made to the contractor's staff and the third alarm going to a BMUA operative. The diesel pump was equipped with tank large enough fuel tank to allow the pump to run for 24-hours.without further refueling.

On Monday August 22, 2005 at around 8:00 AM a BMUA operative and the contractor's foreman noticed that the sewage level in the bypass manhole was at a high level. Upon further investigation they found that the electric motor of the submersible pump had burnt out and the diesel pump was also stopped due to lack of fuel. It was also observed that the electric clock inside the pumping station had stopped at eleven o'clock, however whether this was AM or PM is uncertain. The diesel pump was immediately refueled and the bypass returned to service at around 9:00 AM.

Subsequent to the bypass being returned to service the causes of the bypass failure were investigated and it was discovered that the electrical submersible pump had failed due to a power interruption where one phase of the electric power supply to the electric motor had "dropped out". The pump motor had continued to run on the two phase supply until it finally burned out which resulted in the mains circuit breaker to isolate the entire pump station to power supply. Following the power failure the sewage levels in the bypass manhole began to rise which caused the diesel pump to successfully start. However, it has been reported by the contractor's staff and the MUA personnel that no alarm was received to alert that the diesel pump had started. The diesel pump continued to operate until it ran out of fuel. The dial-out alarm was tested on Monday morning and was reported by the contractor as operating satisfactorily, and that the reason for its failure could not be determined. PSE&G have also been contacted to establish if they have any record of any power interruptions occurring at the time the electric submersible pump is thought to have failed. At the time of writing this report letter the dial out alarm and power supply failures are still being investigated.

The bypass pumping system did not have any method for timing and/or recording flows, however in considering that the diesel pump could operate for a full 24 hours on a full tank, it is supposed that the electric clock stopped at 11:00PM on Sunday (August 21). This being the case the diesel pump must have started at approximately 11:00 PM on Saturday (August 20) and ran continuously until 11:00 PM on Sunday. It is therefore reasonable to consider that a dry weather overflow occurred between approximately 11:PM on Sunday to 9:00 AM on Monday (a total of ten hours). It is accepted that it is possible that the power failed at 11:00 PM on Friday August 19, 2005, however, this has been considered less likely as no one could be found that heard the diesel pump operating late Friday night or during Saturday.

The estimated normal daily average dry weather flow through the 22nd Street pumping station is 2.7 million gallons. Upon review of the flow records made at Oak Street Pumping Station, the typical dry weather flows between 11:00 PM and 9:00 AM represents approximately 20% of the City's total daily average. It is therefore estimated that the dry weather overflow that occurred on August 21/22 is approximately 540,000 gallons.

In accordance with Part I-C of the above referenced permit the following information is herein provided on this incident.

Written Report Requirements:

The written information to be submitted includes the following under c.ii:

A. A description of the discharge

An electric pump of the pumping station bypass, which was, installed by a contractor to allow him to complete some refurbishment work to the 22nd Street pumping station, failed due to an interruption in the main power supply. The diesel backup pump started successfully after the electric pump failure, however the diesel start up should have alarmed the contractor's personnel. The alarm failed and the diesel pump operated for 24 hours until it ran out of fuel. The bypass systems failure resulted in an estimated dry weather overflow of an estimated 540,000 gallons into Upper Newark Bay between 11:00 PM on Sunday August 21, 2005 to 9 :00 AM on Monday August 22, 2005.

B. The duration of the charge

The discharge occurred for approximately 10 hours from around 11:00 PM on Sunday August 21, 2005 to 9:00 AM on Monday August 22, 2005.

C. The cause of the discharge

As detailed above, the discharge was apparently caused by the failure of a 3-phase submersible electric pump. The failure of the pump was due to a phase drop-out in which caused the motor to run on an unbalanced 2-phase supply which in turn caused the it to burn out. The diesel backup pump started successfully after the electric pump failure, however the diesel start up should have alarmed the contractor's personnel. The alarm failed and the diesel pump operated for 24 hours until it ran out of fuel after which the dry weather flow occurred.

D. Steps taken to determine the cause of the discharge

The reason(s) for the failure is still being investigated It is however believed that the discharge occurred primarily due to a mains power interruption and the diesel backup system ultimately failed due to the a failure in the dial out alarm. Further corroborative investigations are continuing by contact with the electric utility company and the telephone company.

E. Steps the permittee is taking to reduce and eliminate the non-complying discharge

The non-complying discharge ceased at 9:00 AM on Monday August 25, 2005.

F. Steps the permittee is taking to reduce, eliminate, and prevent reoccurrence of the discharge

On Thursday August 25, 2005 the pump station has been returned to service. A single diesel pump bypass remains as an emergency standby while the entire pumping station refurbishment work is finalized.

G. An estimate of the threat to human health or the environment posed by the discharge

The CSO Outfall associated with the 22nd Street Pumping Station is located in a large tidal area wherein dilution would minimize any threat to human health or the environment. There are no shell fishing beds, beaches, or water intakes in the area of the discharge and thus it is anticipated that the discharge had a minimal impact, if any, to human health and the environment.

The following additional information is also being provided:

1. Reasons that the DWO occurred, including the cause of the DWO

See Paragraph C above.

2. Evidence that the permittee was properly operating the facility at the time of the discharge

The BMUA is in the midst of a cyclical capital maintenance program to totally upgrade it's three of its main pumping stations. The general refurbishment and equipment upgrade is nearing its final stages. The bypass operation at the 22nd Street facility was a contractor designed and installed temporary arrangement to allow him to complete the permanent work and was under his contract with the BMUA his responsibility. Early investigation of the bypass failure suggests that the resulting dry weather overflow was not due to negligence but was primarily the result of an unfortunate aberration in the mains power supply. Final determinations of the cause(s) of the failures are still being investigated.

Hatch Mott MacDonald

3. **Evidence that the permittee submitted notice of the DWO as required ... or in the case of a DWO resulting from performance by the permittee of maintenance operations, evidence that the permittee provided prior notice and received prior written approval therefore from the Department**

   The incident was called into the NJDEP Hotline by our office (as evidenced by the above referenced case number) as soon as was possible following initial investigation of the cause the failure.

We trust that the information provided herein is in compliance with the requirements of the above referenced permit.

Please contact me at your convenience should you have any questions or need any additional information on this matter.

Very truly yours.

Hatch Mott MacDonald

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COPY
COMMISSIONERS
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File
DWO

August 26, 2005

Fax #609-292-9938 and Federal Express

Administrator
Water Compliance & Enforcement Element
New Jersey Department of Environmental Protection
PO Box 422
401 E. State Street – 4th Floor East
Trenton, New Jersey 08625-0422

RE: Bayonne Municipal Utilities Authority
Report on a Dry Weather Overflow Incident at Outfall 015
Saturday 08/20/05 to Thursday 08/22/05
NJPDES Permit No. NJ0105023
Individual Authorization No. 0109240
Hotline Case No. 05-08-22-1403-12
Job # 209118CA01

Gentlemen:

On behalf of the Bayonne Municipal Utilities Authority ("BMUA" or "The Authority"), we are herein forwarding this letter report on the above referenced upset at the BMUA 22nd Street Pumping Station, which was reported to the NJDEP Hotline on August 22, 2005. We trust that the information provided herein is adequate, however we will be happy to provide any additional information deemed necessary.

The 22nd Street pumping station is currently undergoing some general rehabilitative work that includes replacement of the existing pumps, screen, grit removal system, electrical appurtenances and equipment controls. This ongoing upgrade work required the pump station to be temporarily bypassed. (Our letter of July 22, 2005 informed you of the temporary bypass arrangement). The dry weather overflow (DWO) being reported here resulted from the failure of the contractor-installed bypass.

The bypass was installed on Monday July 25, 2005 and was facilitated by a 3-phase electric submersible pump being introduced to the manhole immediately upstream of the inlet bar screen, the discharge from this submersible pump was arranged to directly discharge into the pump station's force main. In the event of a power outage and/or possible clogging of the submersible pump, provision was made to supplement this submersible pump with a 6-inch diesel pump which would automatically start based upon a second float control placed within the upper portion of the inlet manhole. A dial-out alarm system was connected to the diesel pump and arranged to signal an alarm at the pump start up. The alarm was sequenced such that the first and second alarm was made to the contractor's staff and the third alarm going to a BMUA operative. The diesel pump was equipped with tank large enough fuel tank to allow the pump to run for 24-hours.without further refueling.

On Monday August 22, 2005 at around 8:00 AM a BMUA operative and the contractor's foreman noticed that the sewage level in the bypass manhole was at a high level. Upon further investigation they found that the electric motor of the submersible pump had burnt out and the diesel pump was also stopped due to lack of fuel. It was also observed that the electric clock inside the pumping station had stopped at eleven o'clock, however whether this was AM or PM is uncertain. The diesel pump was immediately refueled and the bypass returned to service at around 9:00 AM.

Subsequent to the bypass being returned to service the causes of the bypass failure were investigated and it was discovered that the electrical submersible pump had failed due to a power interruption where one phase of the electric power supply to the electric motor had "dropped out". The pump motor had continued to run on the two phase supply until it finally burned out which resulted in the mains circuit breaker to isolate the entire pump station to power supply. Following the power failure the sewage levels in the bypass manhole began to rise which caused the diesel pump to successfully start. However, it has been reported by the contractor's staff and the MUA personnel that no alarm was received to alert that the diesel pump had started. The diesel pump continued to operate until it ran out of fuel. The dial-out alarm was tested on Monday morning and was reported by the contractor as operating satisfactorily, and that the reason for its failure could not be determined. PSE&G have also been contacted to establish if they have any record of any power interruptions occurring at the time the electric submersible pump is thought to have failed. At the time of writing this report letter the dial out alarm and power supply failures are still being investigated.

The bypass pumping system did not have any method for timing and/or recording flows, however in considering that the diesel pump could operate for a full 24 hours on a full tank, it is supposed that the electric clock stopped at 11:00PM on Sunday (August 21). This being the case the diesel pump must have started at approximately 11:00 PM on Saturday (August 20) and ran continuously until 11:00 PM on Sunday. It is therefore reasonable to consider that a dry weather overflow occurred between approximately 11:PM on Sunday to 9:00 AM on Monday (a total of ten hours). It is accepted that it is possible that the power failed at 11:00 PM on Friday August 19, 2005, however, this has been considered less likely as no one could be found that heard the diesel pump operating late Friday night or during Saturday.

The estimated normal daily average dry weather flow through the 22nd Street pumping station is 2.7 million gallons. Upon review of the flow records made at Oak Street Pumping Station, the typical dry weather flows between 11:00 PM and 9:00 AM represents approximately 20% of the City's total daily average. It is therefore estimated that the dry weather overflow that occurred on August 21/22 is approximately 540,000 gallons.

In accordance with Part I-C of the above referenced permit the following information is herein provided on this incident.

Written Report Requirements:

The written information to be submitted includes the following under c.ii:

A. A description of the discharge

An electric pump of the pumping station bypass, which was, installed by a contractor to allow him to complete some refurbishment work to the 22nd Street pumping station, failed due to an interruption in the main power supply. The diesel backup pump started successfully after the electric pump failure, however the diesel start up should have alarmed the contractor's personnel. The alarm failed and the diesel pump operated for 24 hours until it ran out of fuel. The bypass systems failure resulted in an estimated dry weather overflow of an estimated 540,000 gallons into Upper Newark Bay between 11:00 PM on Sunday August 21, 2005 to 9 :00 AM on Monday August 22, 2005.

B. The duration of the charge

The discharge occurred for approximately 10 hours from around 11:00 PM on Sunday August 21, 2005 to 9:00 AM on Monday August 22, 2005.

C. The cause of the discharge

As detailed above, the discharge was apparently caused by the failure of a 3-phase submersible electric pump. The failure of the pump was due to a phase drop-out in which caused the motor to run on an unbalanced 2-phase supply which in turn caused the it to burn out. The diesel backup pump started successfully after the electric pump failure, however the diesel start up should have alarmed the contractor's personnel. The alarm failed and the diesel pump operated for 24 hours until it ran out of fuel after which the dry weather flow occurred.

D. Steps taken to determine the cause of the discharge

The reason(s) for the failure is still being investigated It is however believed that the discharge occurred primarily due to a mains power interruption and the diesel backup system ultimately failed due to the a failure in the dial out alarm. Further corroborative investigations are continuing by contact with the electric utility company and the telephone company.

E. Steps the permittee is taking to reduce and eliminate the non-complying discharge

The non-complying discharge ceased at 9:00 AM on Monday August 25, 2005.

F. Steps the permittee is taking to reduce, eliminate, and prevent reoccurrence of the discharge

On Thursday August 25, 2005 the pump station has been returned to service. A single diesel pump bypass remains as an emergency standby while the entire pumping station refurbishment work is finalized.

G. An estimate of the threat to human health or the environment posed by the discharge

The CSO Outfall associated with the 22nd Street Pumping Station is located in a large tidal area wherein dilution would minimize any threat to human health or the environment. There are no shell fishing beds, beaches, or water intakes in the area of the discharge and thus it is anticipated that the discharge had a minimal impact, if any, to human health and the environment.

The following additional information is also being provided:

1. Reasons that the DWO occurred, including the cause of the DWO

See Paragraph C above.

2. Evidence that the permittee was properly operating the facility at the time of the discharge

The BMUA is in the midst of a cyclical capital maintenance program to totally upgrade it's three of its main pumping stations. The general refurbishment and equipment upgrade is nearing its final stages. The bypass operation at the 22nd Street facility was a contractor designed and installed temporary arrangement to allow him to complete the permanent work and was under his contract with the BMUA his responsibility. Early investigation of the bypass failure suggests that the resulting dry weather overflow was not due to negligence but was primarily the result of an unfortunate aberration in the mains power supply. Final determinations of the cause(s) of the failures are still being investigated.

Hatch Mott MacDonald

3. **Evidence that the permittee submitted notice of the DWO as required ... or in the case of a DWO resulting from performance by the permittee of maintenance operations, evidence that the permittee provided prior notice and received prior written approval therefore from the Department**

   The incident was called into the NJDEP Hotline by our office (as evidenced by the above referenced case number) as soon as was possible following initial investigation of the cause the failure.

We trust that the information provided herein is in compliance with the requirements of the above referenced permit.

Please contact me at your convenience should you have any questions or need any additional information on this matter.

Very truly yours,

Hatch Mott MacDonald

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JGA:mas

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