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NWS EARLE
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CORRESPONDENCE REGARDING PERMIT WQC 87-5-14 FOR HOUSING CONSTRUCTION
NWS EARLE NJ
10/9/1987
NAVFAC NORTHERN



DEPARTMENT OF THE NAVY

NORTHERN DIVISION

NAVAL FACILITIES ENGINEERING COMMAND
PHILADELPHIA, PENNSYLVANIA 19112-5094

6280

SER: 2059/143/TCW

09 OCT 1987

Mr. Brian McLendon
New Jersey Department of Environmental Protection
Bureau of Water Resources Management Planning
Division of Water Resources
401 East State Street
CNO 29
Trenton, NJ 08625

RE: NJDEP PERMIT WQC 87-5-14 FOR HOUSING CONSTRUCTION, NAVAL WEAPONS
STATION EARLE

Dear Mr. McLendon,

Calculations of the stormwater runoff from the housing area generated by a one year frequency 24-hour storm and the detention capacity of the area between the housing area and the existing perimeter road are forwarded for your review. It appears that the basin created by the perimeter road is large enough to meet the conditions of the Water Quality Certification.

As agreed in our conversation of 8 October, Northern Division personnel will meet with you on 22 October to develop the storm water control plan for the housing area. Technical questions regarding the calculations may be directed to Mr. Tim Bramhall at 215-897-6130.

Sincerely,

THOMAS C. WALKER
Agent for Corps of Engineers Permits
By direction of the Commanding Officer

Blind Copy to:
4051
202.2

NWS Earle 200 Unit Family Housing

Storm Drainage System for Compliance with NJDEP Permit

1. The following assumptions have been made in preparing the proposed design for storm drainage from the new housing site:

A) The hydraulic calculations for this project were performed use the Rational Method. This method assumes the flow from a drainage area is based on size, shape, slope, soil characteristics, land use, and storm intensity.

B) The formula used is:

$$Q = C \cdot I \cdot A$$

where:

Q is the flow in Cubic Feet per Second (CFS)

C is the runoff coefficient designating the percent of rainfall that becomes surface runoff. *

I is the rainfall intensity in inches per hour. **

A is the area which contributes to the flow at *** the point of measurement.

* The A/E who originally designed the housing area selected a C value of 0.35. This was based on the site being a flat residential area with approximately 30% of the land being impervious (paving, roofs, etc.). A C value of 0.20 was selected for the areas around the housing site. The area around the site is flat, densely wooded, and has a very sandy soil.

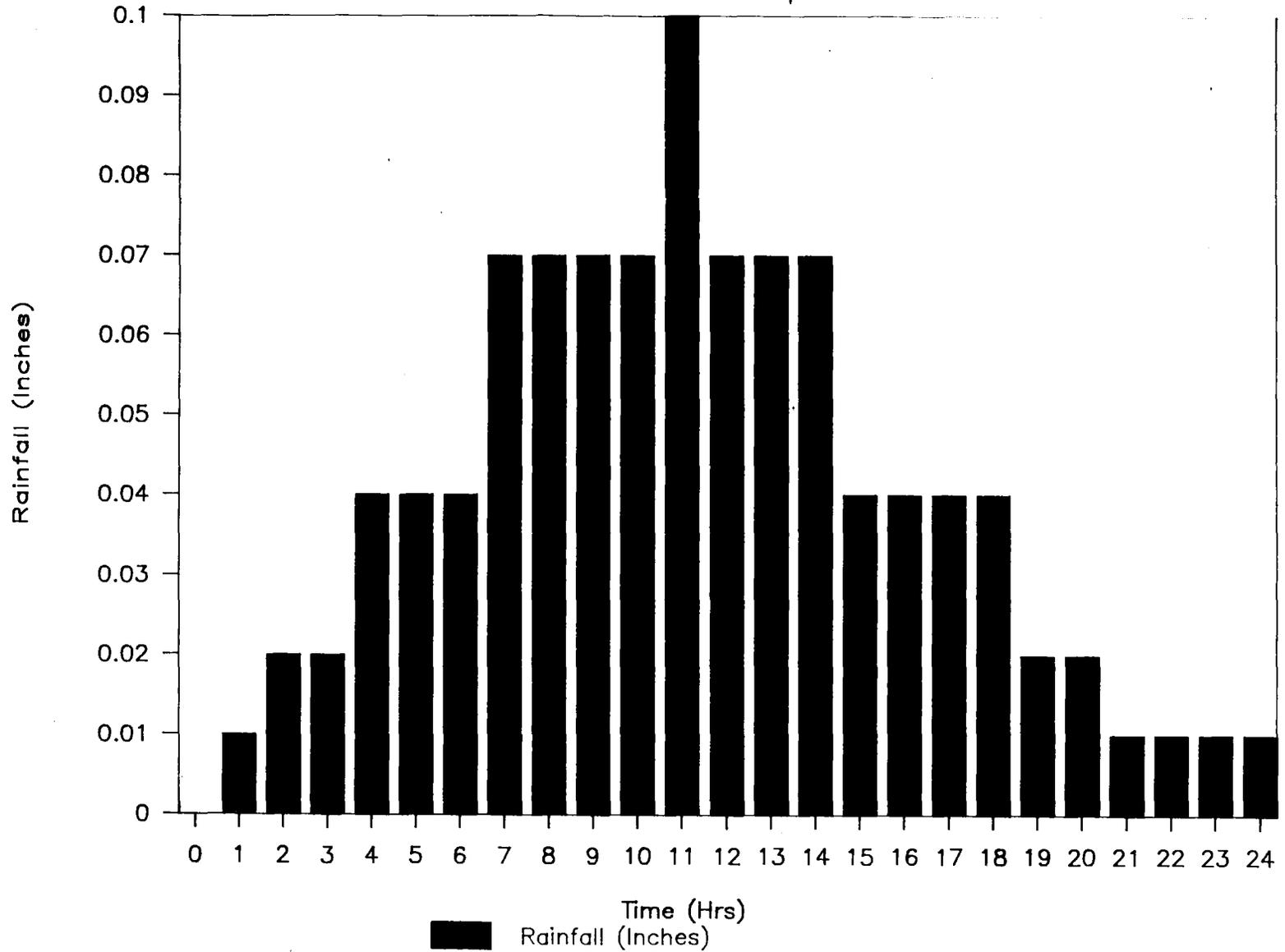
** The rainfall for the 1 year, 24 hour duration storm was obtained from Mr. George Sauls, Acting Head Hydrology & Hydraulics Branch, Philadelphia District, U.S. Army Corps of Engineers. He got the data from the National Weather Service Technical Paper No. 40, "Rainfall Frequency Atlas of the U.S. for Durations of 30 Minutes to 24 Hours, 1 Year to 100 Year Frequencies, May 1961". The value for the 1 year, 24 hour duration storm is 2.7 inches of rain. It was derived from a Partial Series Analysis which includes all the significant rainfall events not just the peak rainfalls for each year.

*** The area used in the formula was as follows:

Housing site	27.2 Acres
Non-Housing site	46.2 Acres

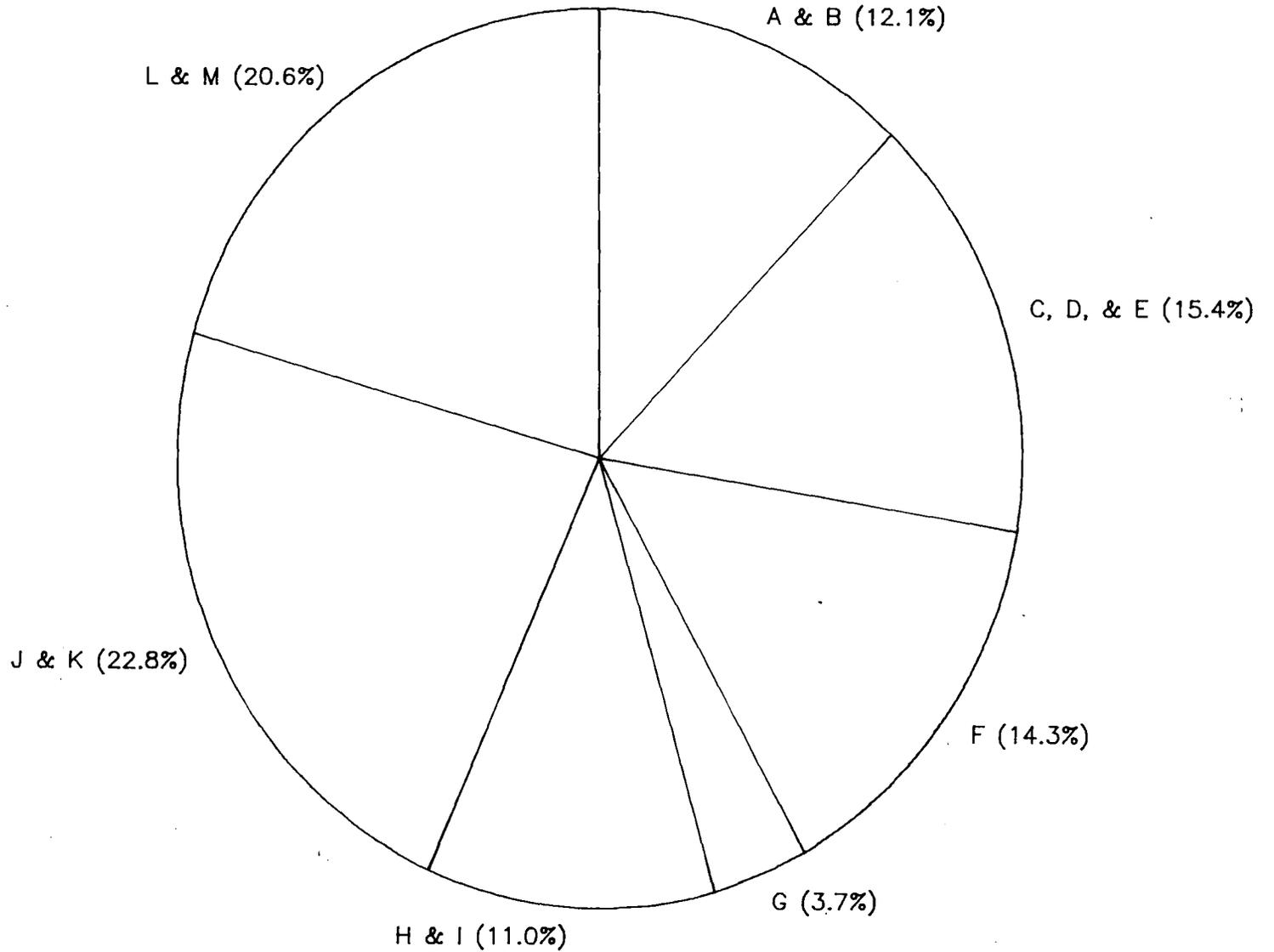
NWS Earle 200 Unit Family Housing Proj

Rainfall vs Time Graph



NWS Earle 200 Unit Family Housing

Storm Sewer Lines % Contribution



LINE "F"
14.3%

LINE
"C", "D", "E"
15.4%

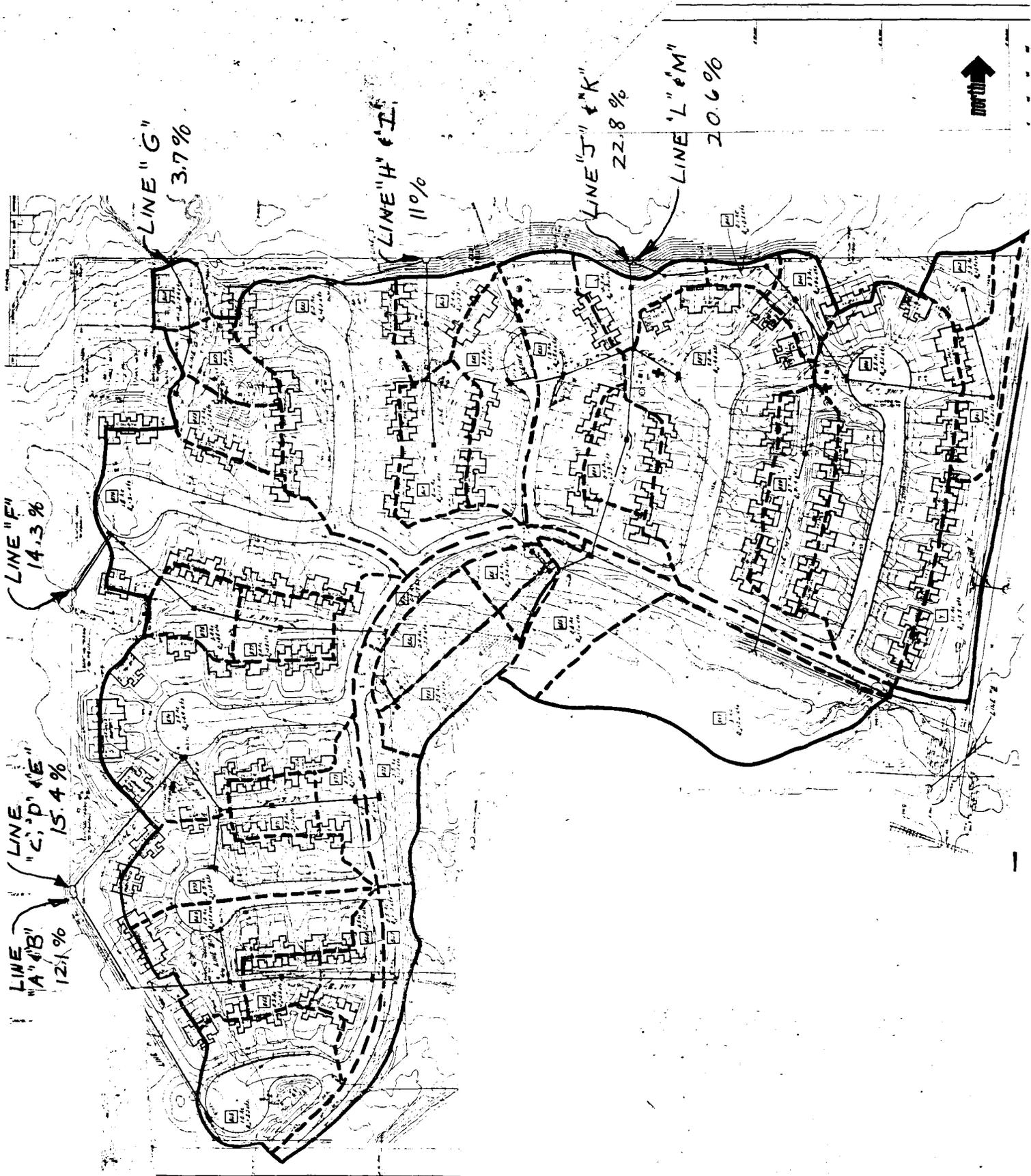
LINE
"A", "B"
12.1%

LINE "G"
3.7%

LINE "H" & "I"
11.0%

LINE "J" & "K"
22.8%

LINE "L" & "M"
20.6%



1	1:50,000
2	1:25,000
3	1:12,500
4	1:6,250
5	1:3,125
6	1:1,562
7	1:781
8	1:390
9	1:195
10	1:97
11	1:48
12	1:24
13	1:12
14	1:6
15	1:3
16	1:1.5
17	1:0.75
18	1:0.375
19	1:0.1875
20	1:0.09375

1,051,310

376,000

"G"

"H" "I"

"L" "M"

"J" "K"

"F"

584,000

"C" "D" "E"

"A" "B"

1	1:50,000
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4	1:6,250
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6	1:1,562
7	1:781
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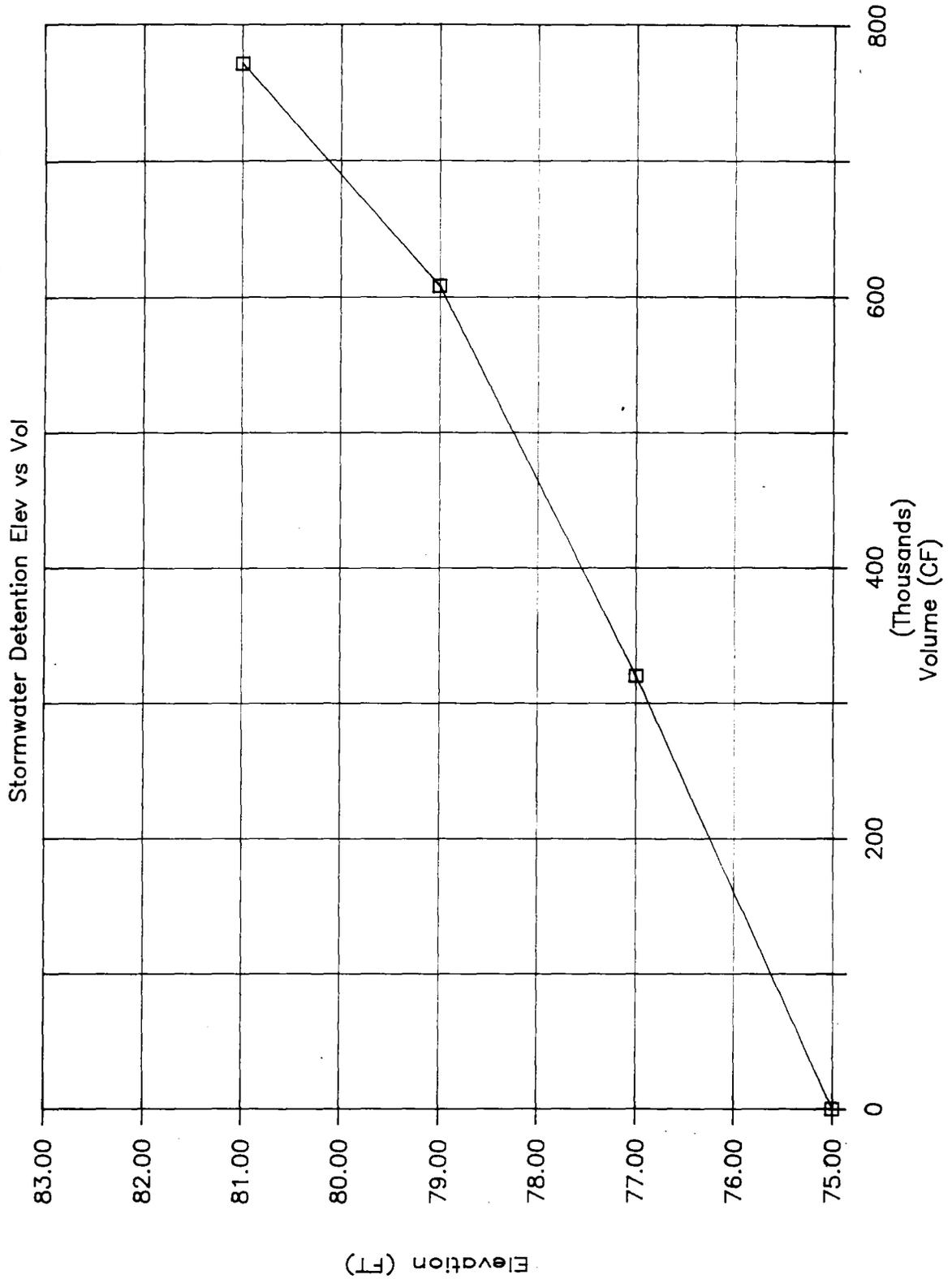
HALF SIZE

1	1:50,000
2	1:25,000
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5	1:3,125
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7	1:781
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HALF SIZE

NWS Earle 200 Unit Family Housing Proj



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Flow & Storage vs. Time (w/ C values)

