The Diffusion Hydrodynamic Model Applied to Alluvial Fan Flood Plain Analysis

The Diffusion Hydrodynamic Model, or DHM, was developed for the USGS Water Resources Division in 1985. Since its development, the DHM has been applied to several flood plain studies, and has been extended to accommodate various hydraulic complexities. In this paper, the DHM is reviewed, and applications are presented to demonstrate usage of the computer program.

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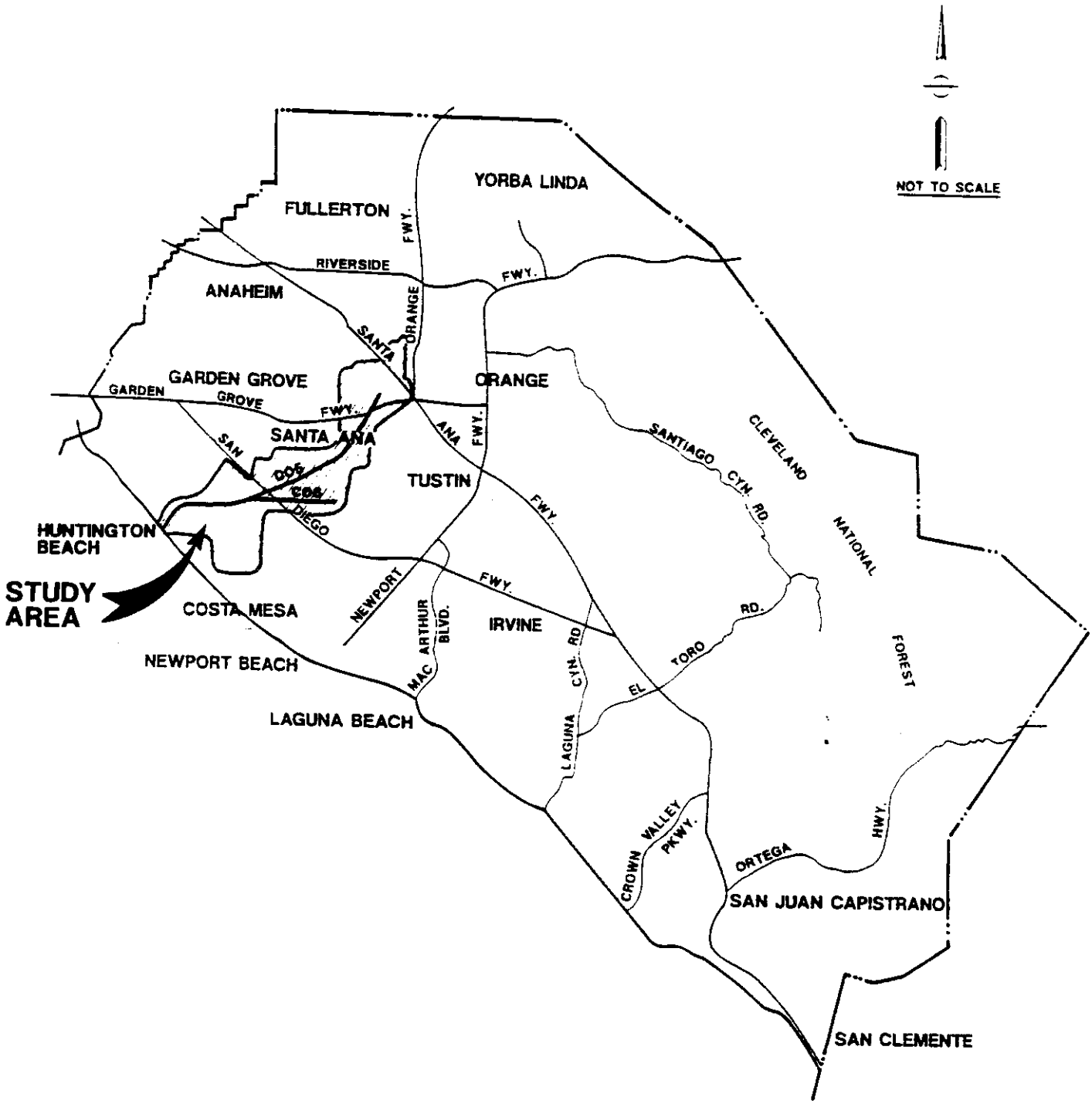
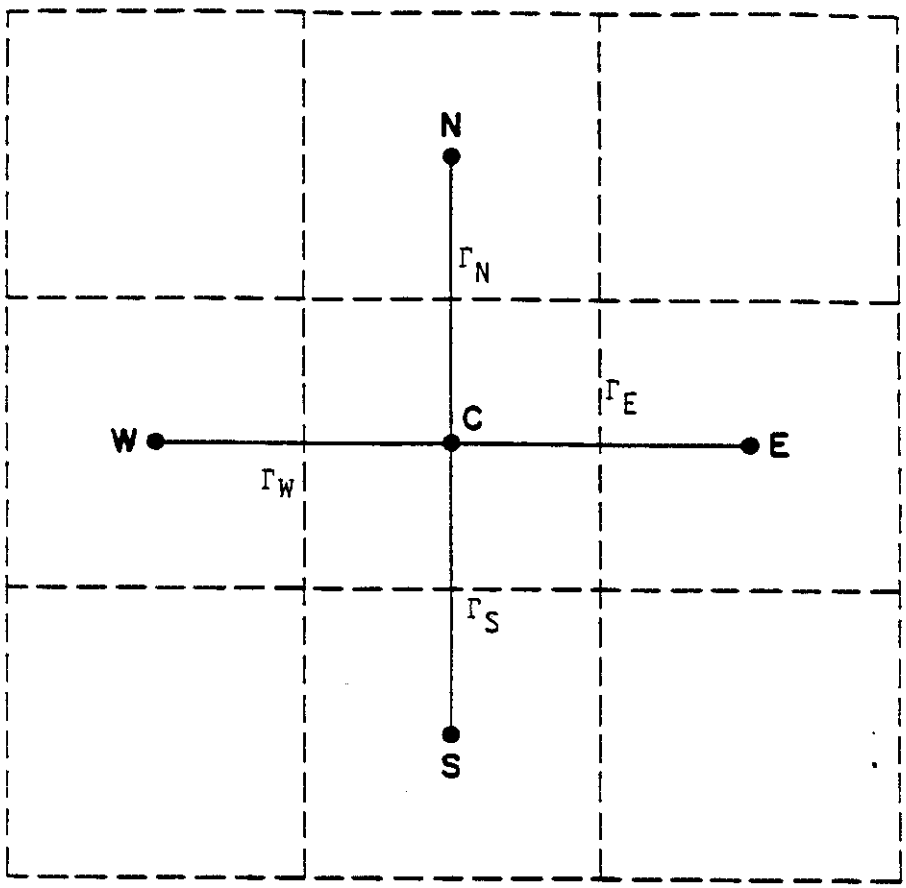
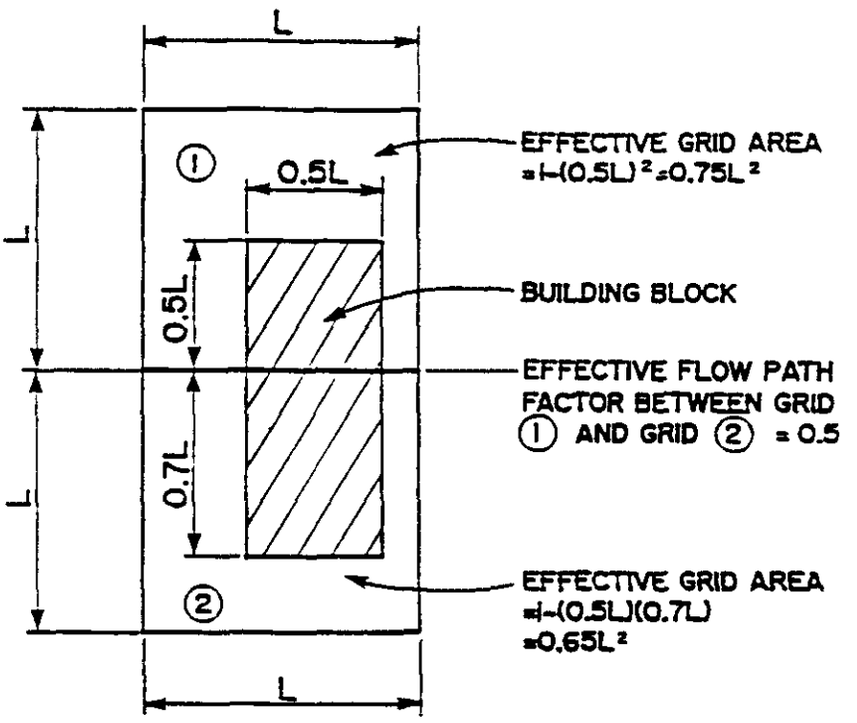


REGIONAL LOCATION MAP



DHM MODEL NODAL SYSTEM



DMH MODEL EFFECTIVE FLOW-PATH AND EFFECTIVE AREA ELEMENTS

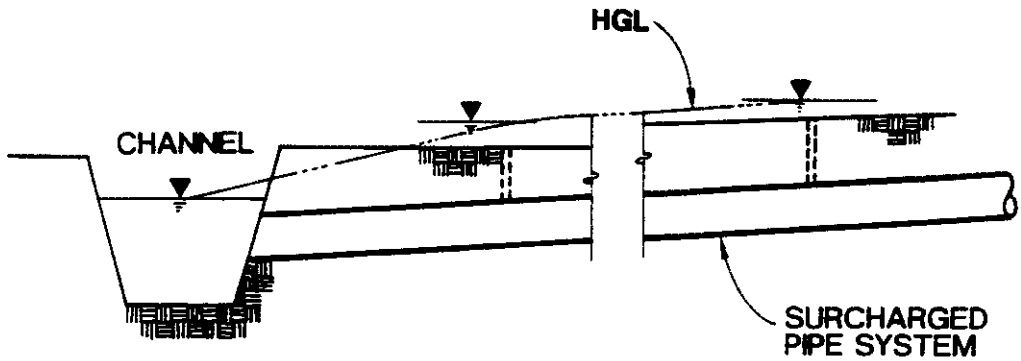
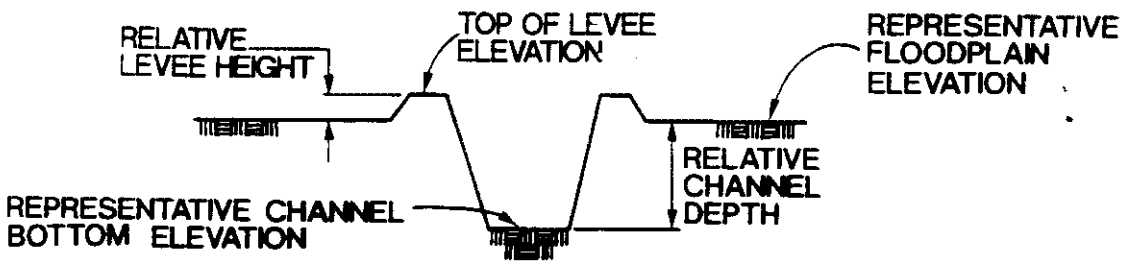
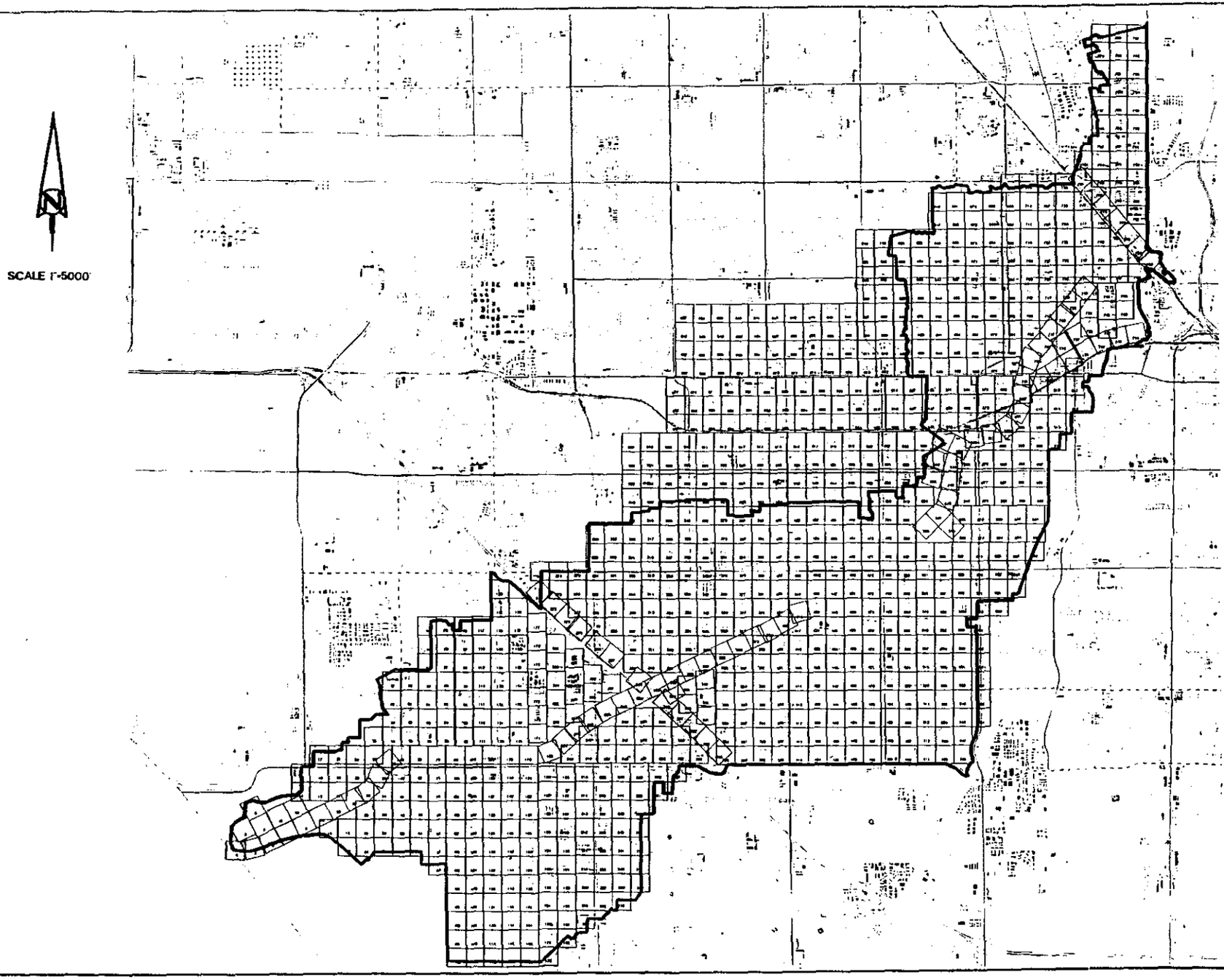


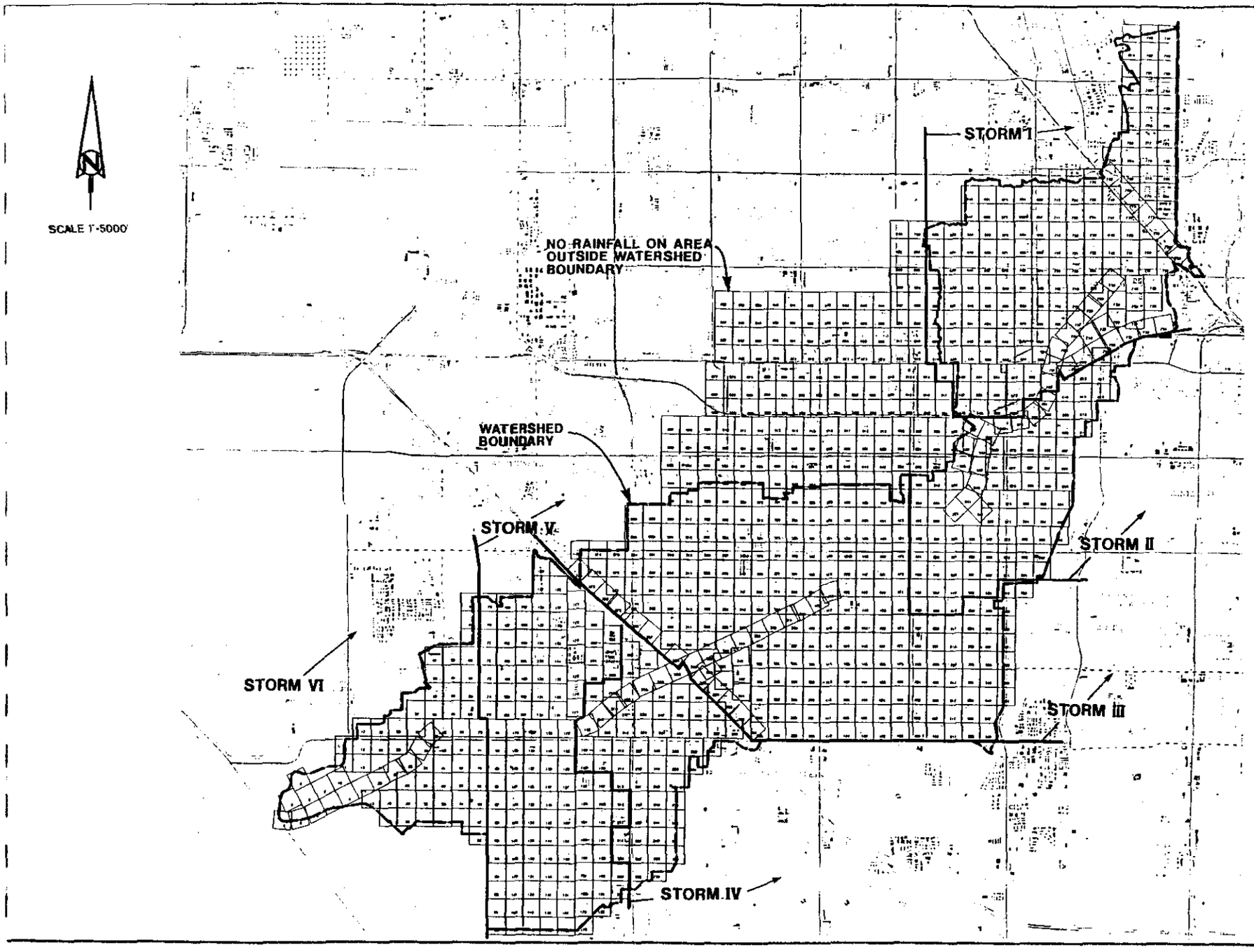
FIGURE 3.3 DHM MODEL SURCHARGED PIPE ELEMENT



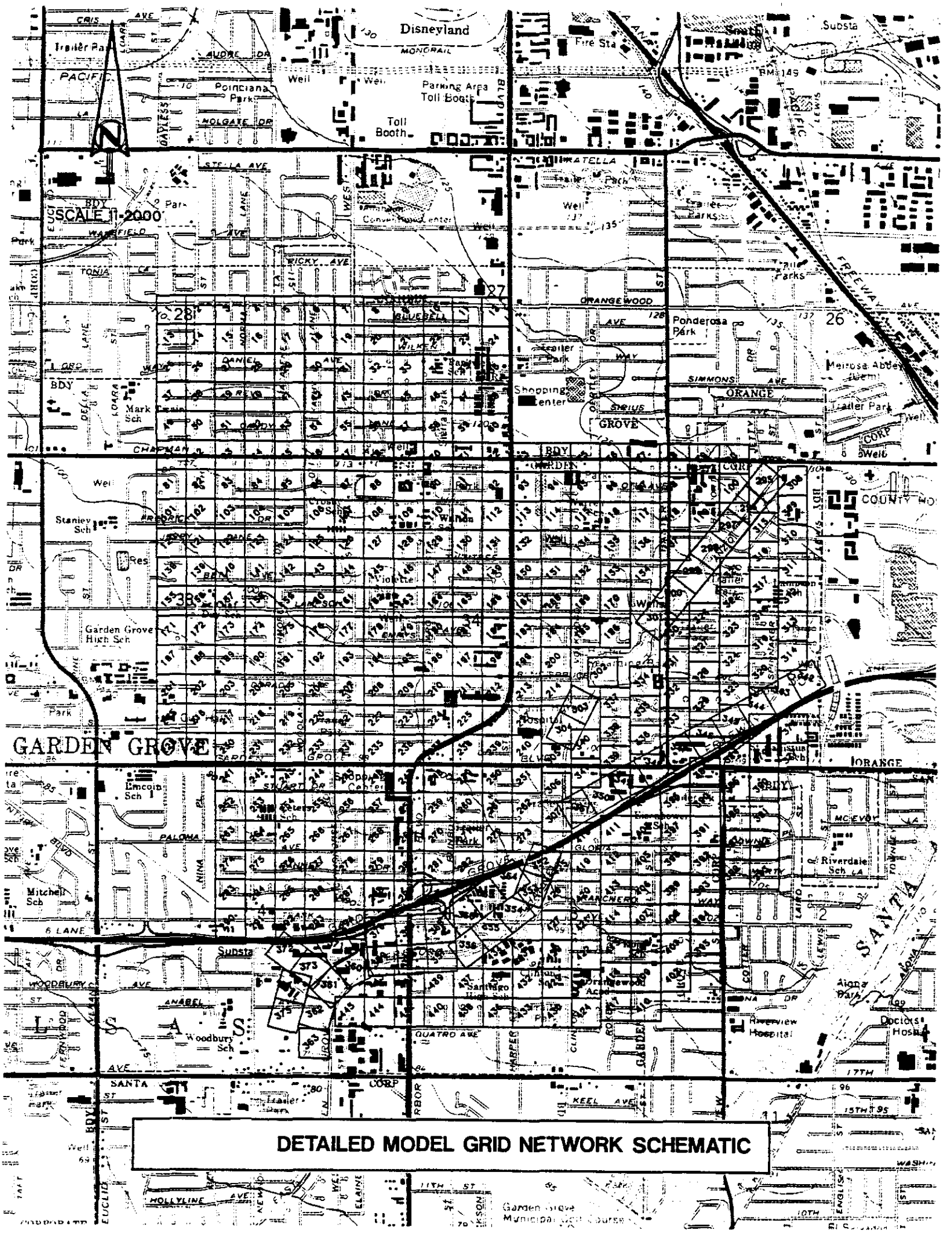
DHM MODEL TRAPEZOIDAL LEVEED CHANNEL ELEMENT

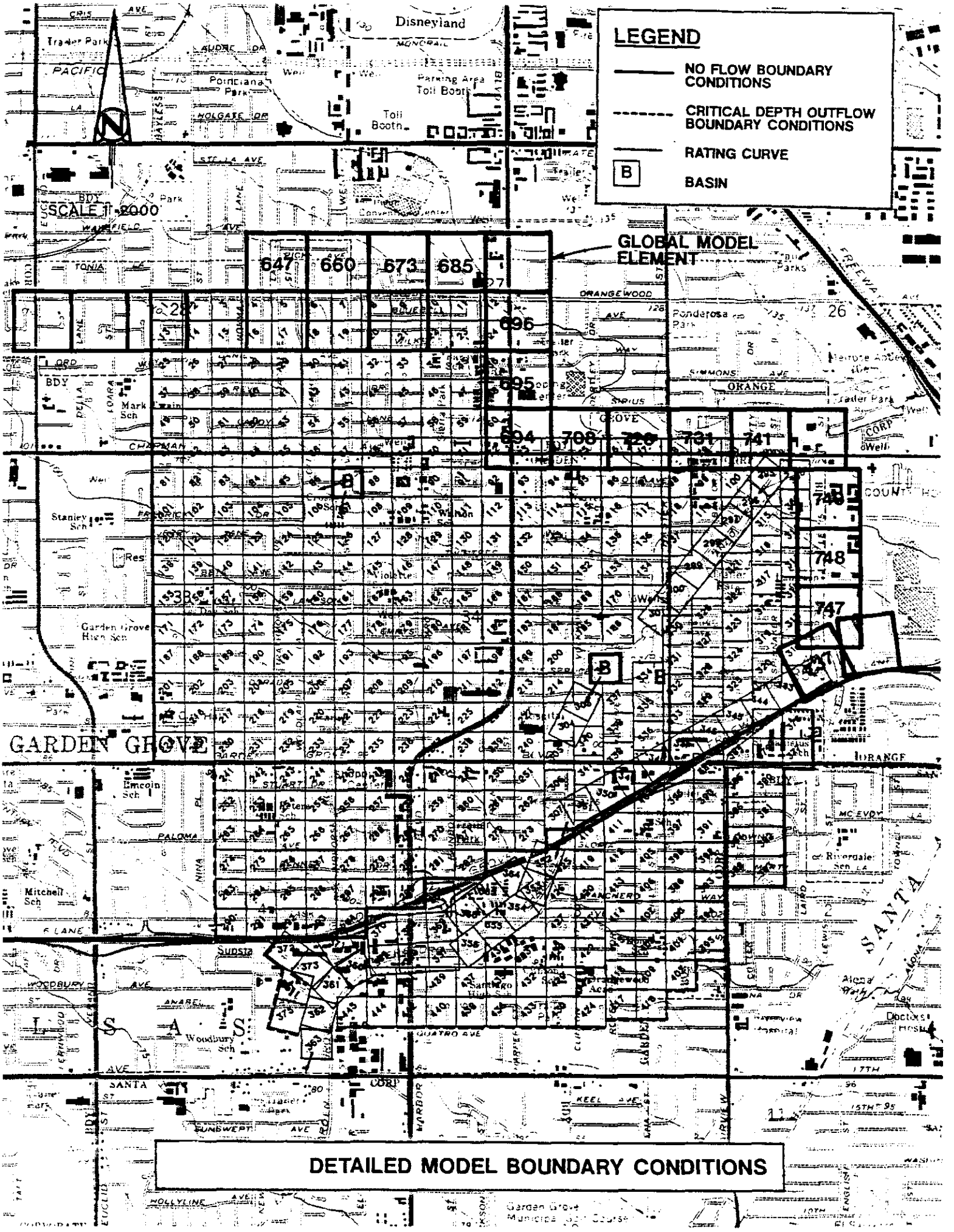


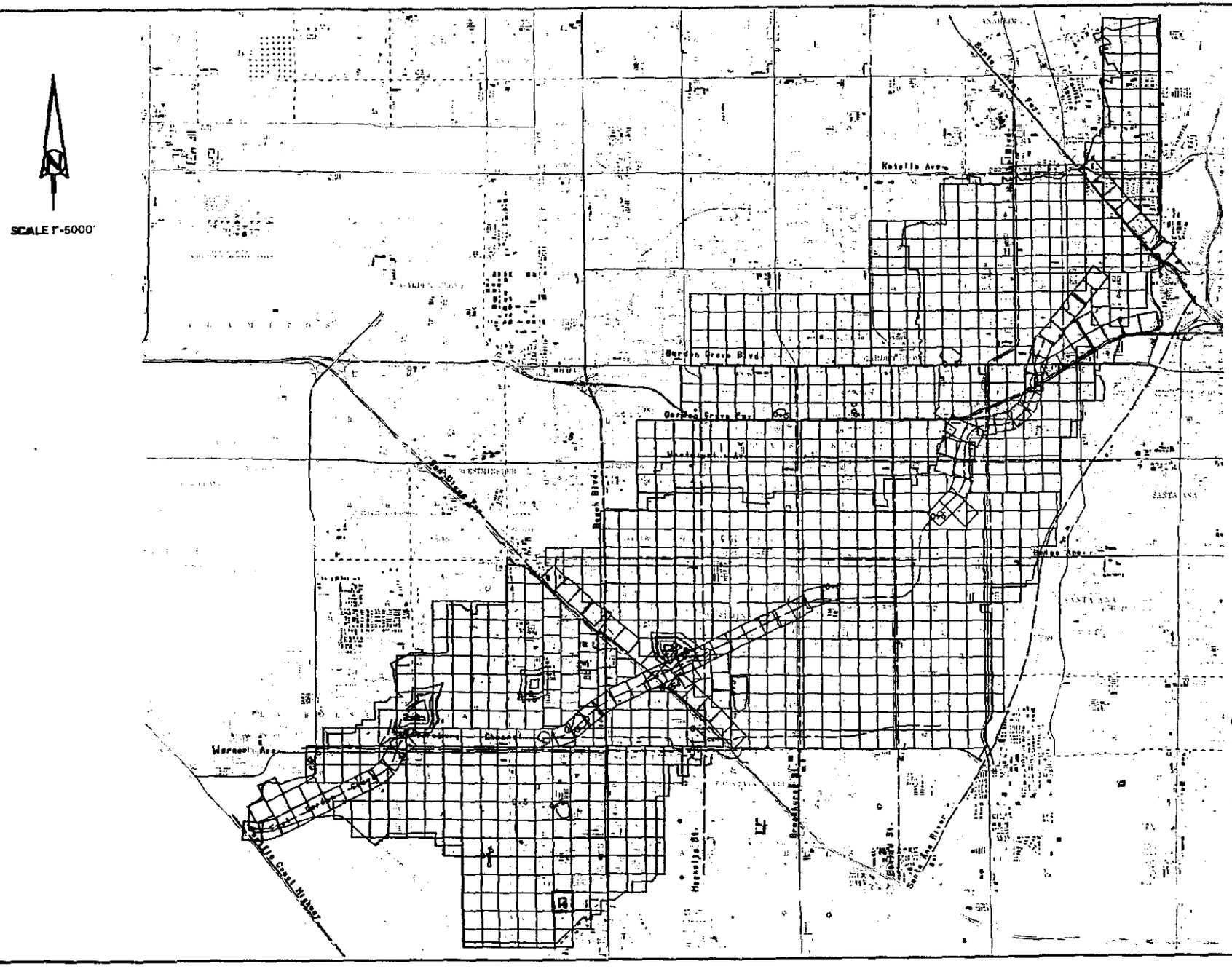
GLOBAL MODEL GRID
NETWORK SCHEMATIC



GLOBAL MODEL STC
CENTER LOCATIONS

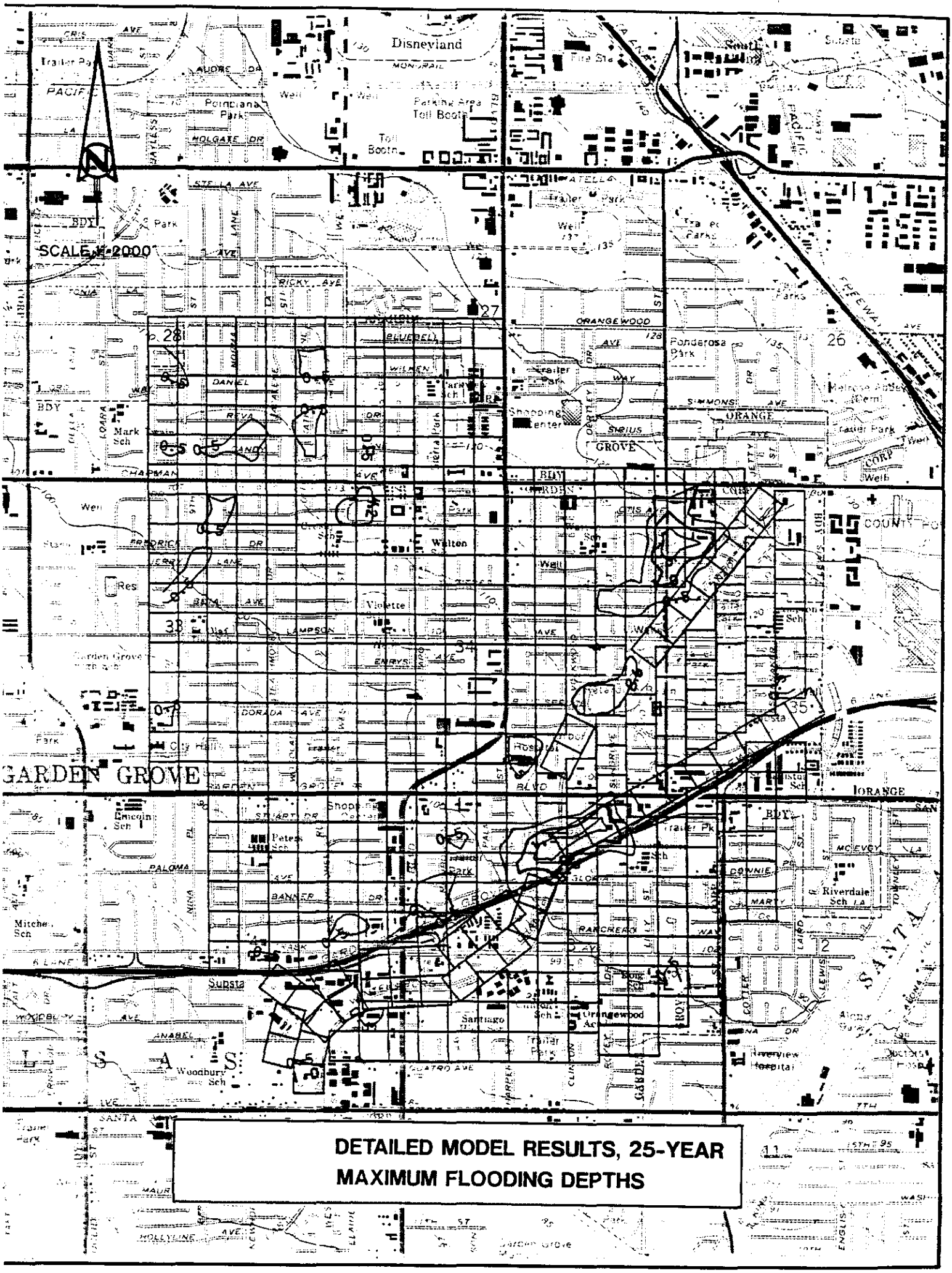

SCALE 1-2000
Disneyland
MONRAIL
Parking Area
Toll Booth
Toll Booth
Poinciana Park
Trailer Park
PACIFIC
NOLGATE DR
GAYLESS
Well
Fire Sta
Substa
BM 149
SANTA ANA FREEWAY
STELLA AVE
WATELLA
WESTERN
Trailer Park
Well
Parks
FICKY AVE
TONIA
ORANGEWOOD
BLUEBELL
WILKER
DANIEL
Ponderosa Park
Trailer Park
Shopping Center
SIMMONS
ORANGE
GROVE
Melrosa Abbey
Trailer Park
CHAPMAN
Well
BDY
GARDEN
CORP
COUNTY HO
Stanley Sch
Res
Violette
Garden Grove High Sch
Park
GARDEN GROVE
ORANGE
Lincoln Sch
PALOMA
Mitchell Sch
6 LANE
Substa
WOODBURY
ANABEL
Woodbury Sch
SANTA ANA
Riverdale Sch
MCEVOY
Riverview Hospital
Doctors Hospital
17TH
15TH
QUATRO AVE
KEEL AVE
HOLLYLINE
11TH ST
Garden Grove Municipal Golf Course
10TH
DETAILED MODEL GRID NETWORK SCHEMATIC

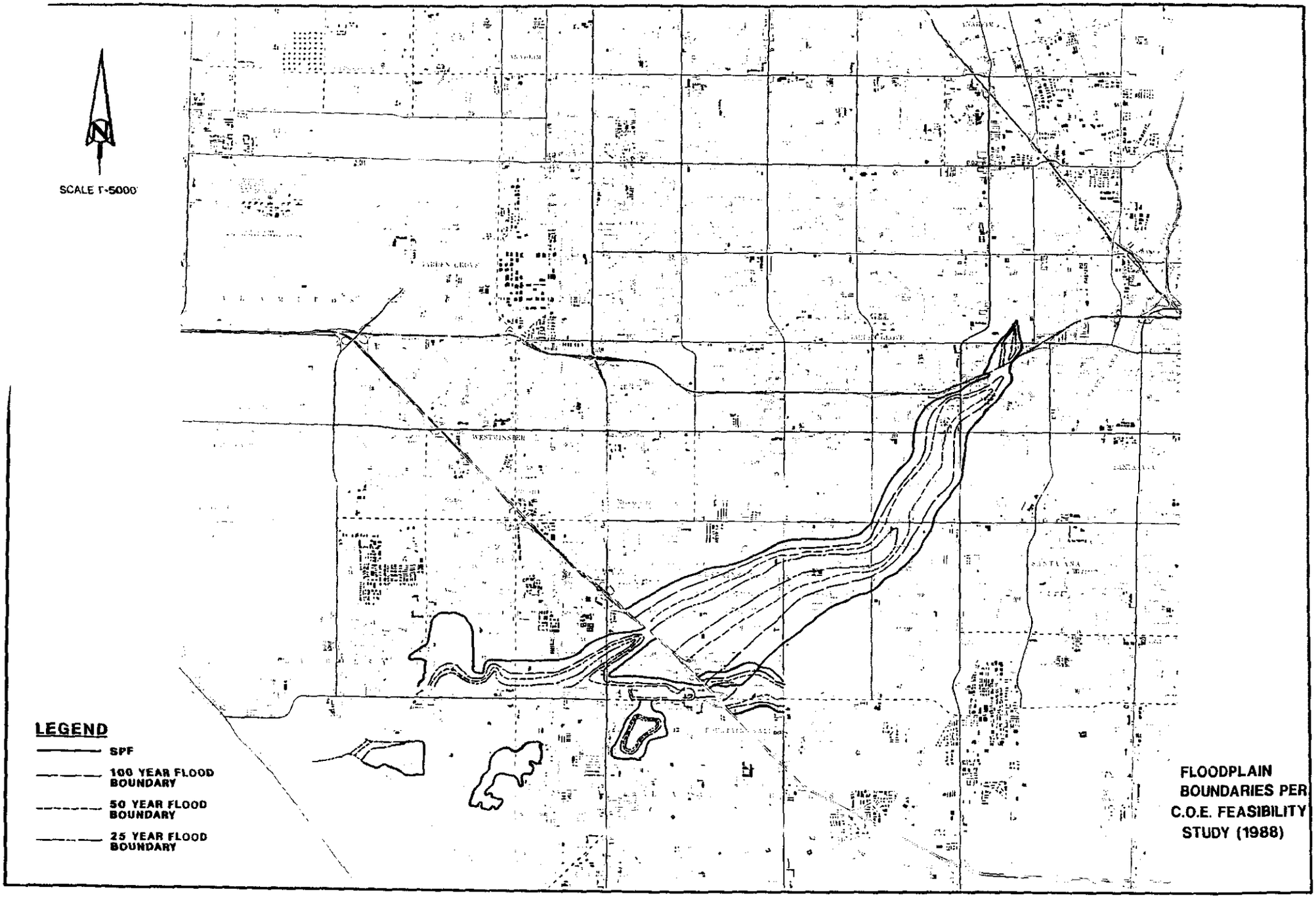

LEGEND
NO FLOW BOUNDARY CONDITIONS
CRITICAL DEPTH OUTFLOW BOUNDARY CONDITIONS
RATING CURVE
B
BASIN
SCALE 1" = 2000'
GLOBAL MODEL ELEMENT
647
660
673
685
696
695
694
708
720
731
741
748
747
Disneyland
GARDEN GROVE
SANTA ANA
DETAILED MODEL BOUNDARY CONDITIONS



GLOBAL MODEL RESULTS, 10-YEAR MAXIMUM FLOODING DEPTHS

50% CONFIDENCE LEVEL


SCALE: 1"=2000'
Disneyland
GARDEN GROVE
ORANGE
SANTA
DETAILED MODEL RESULTS, 25-YEAR
MAXIMUM FLOODING DEPTHS


SCALE 1"=5000'
LEGEND
SPF
100 YEAR FLOOD BOUNDARY
50 YEAR FLOOD BOUNDARY
25 YEAR FLOOD BOUNDARY
FLOODPLAIN BOUNDARIES PER C.O.E. FEASIBILITY STUDY (1988)