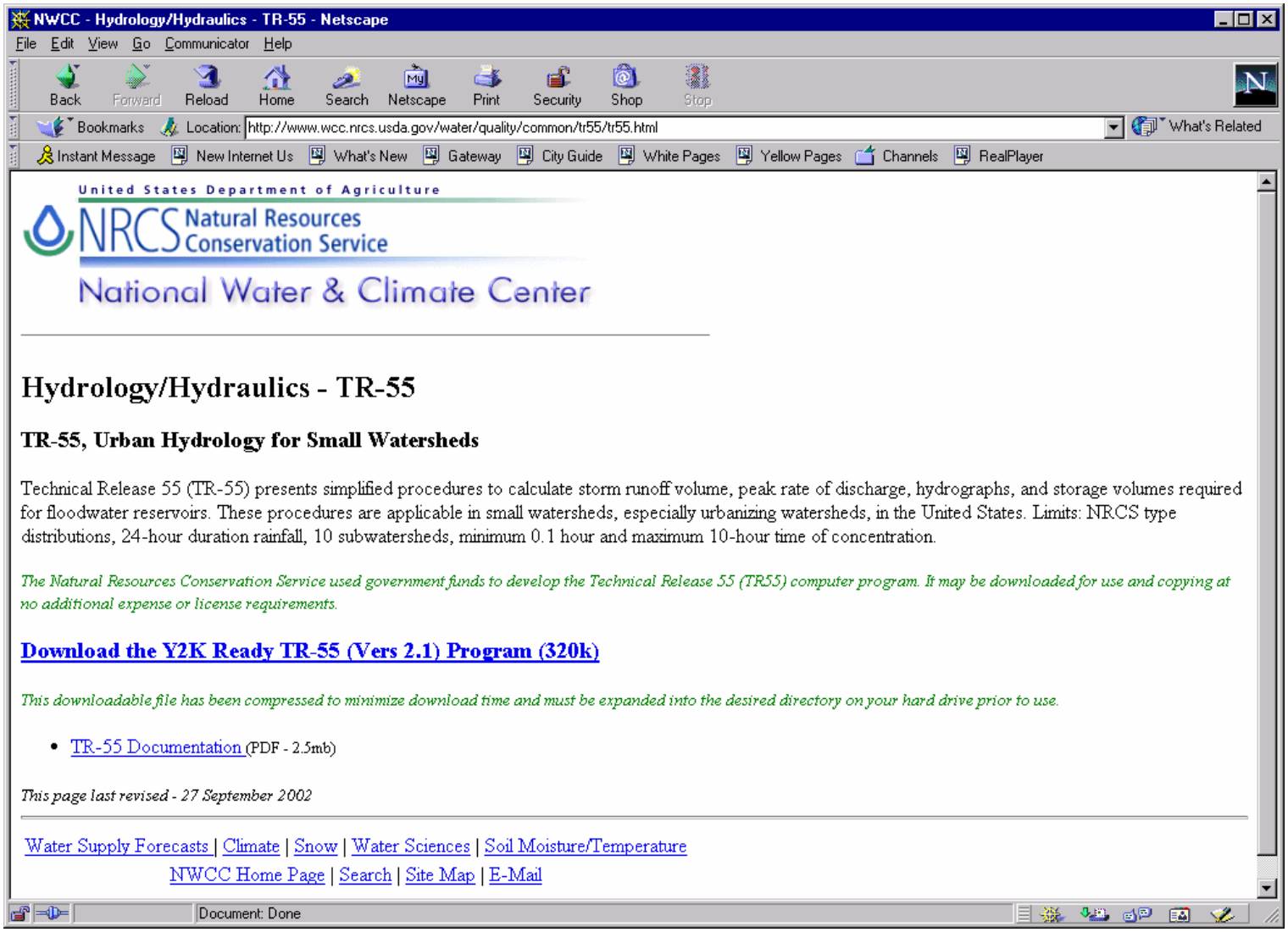
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Technical Release 55 (TR-55) presents simplified procedures to calculate storm runoff volume, peak rate of discharge, hydrographs, and storage volumes required for floodwater reservoirs. These procedures are applicable in small watersheds, especially urbanizing watersheds, in the United States. Limits: NRCS type distributions, 24-hour duration rainfall, 10 subwatersheds, minimum 0.1 hour and maximum 10-hour time of concentration.
The Natural Resources Conservation Service used government funds to develop the Technical Release 55 (TR55) computer program. It may be downloaded for use and copying at no additional expense or license requirements.
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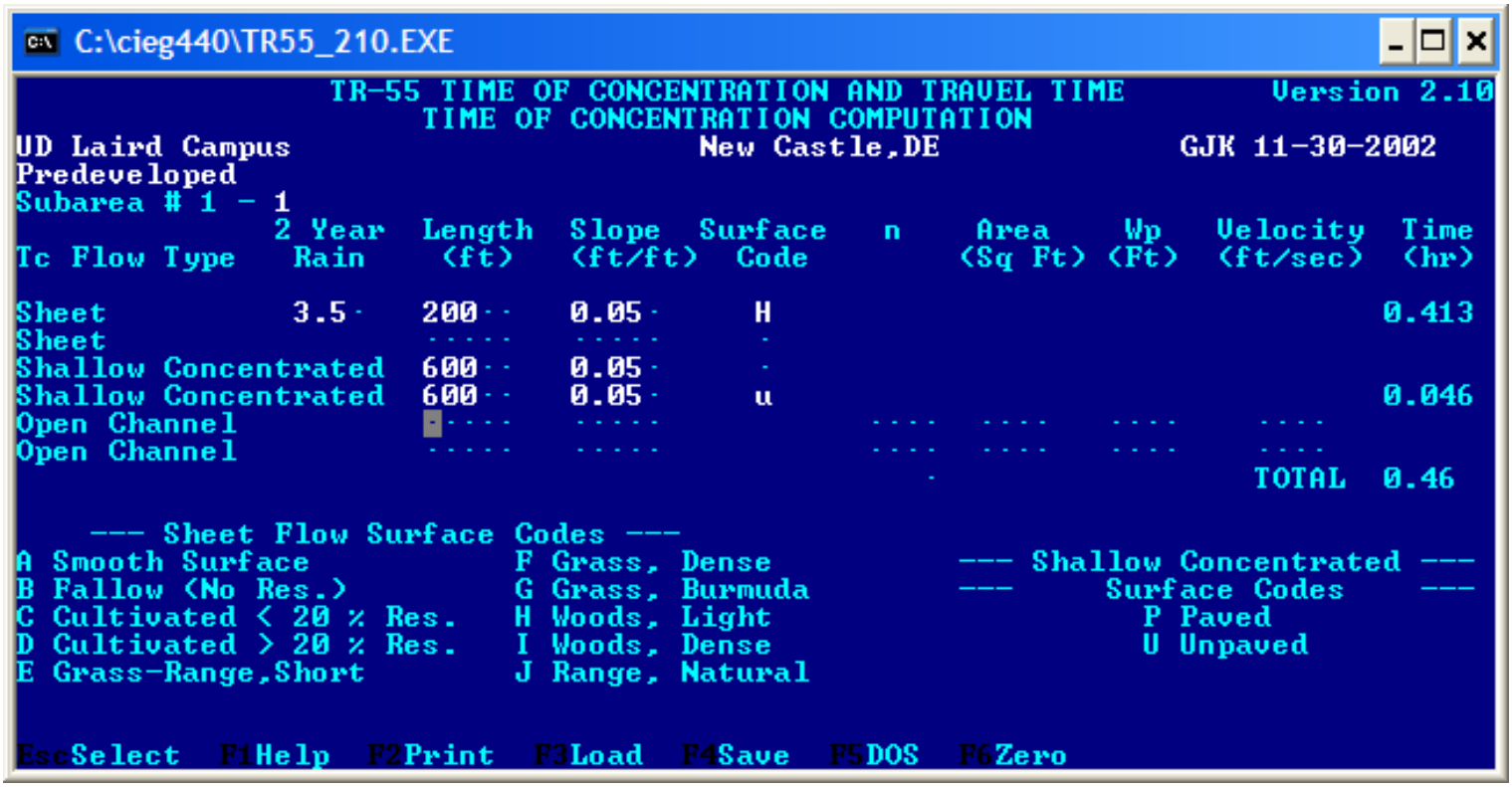
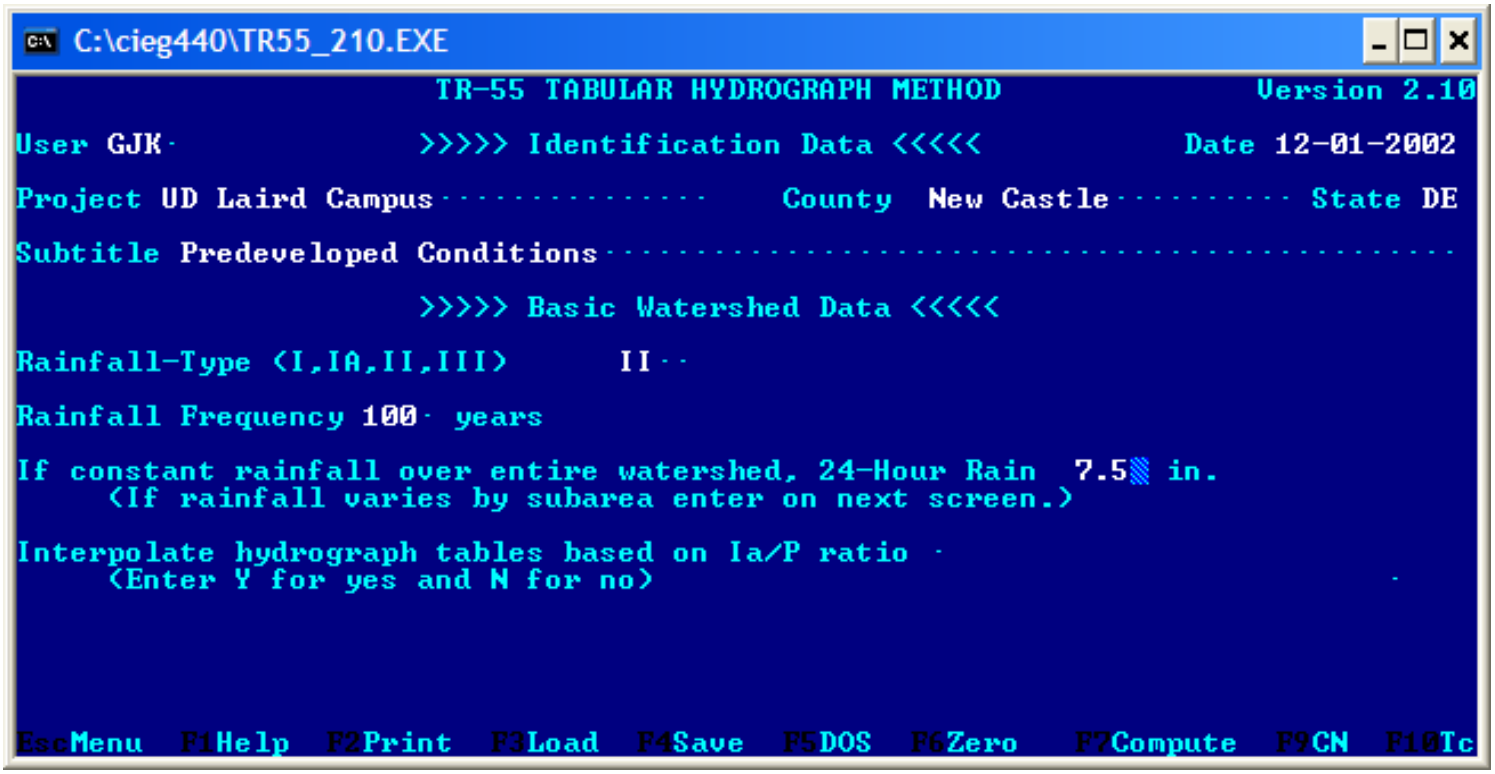
Step 1 – Delineate Watershed Area = 10 acres = 0.0156 sq. mi.

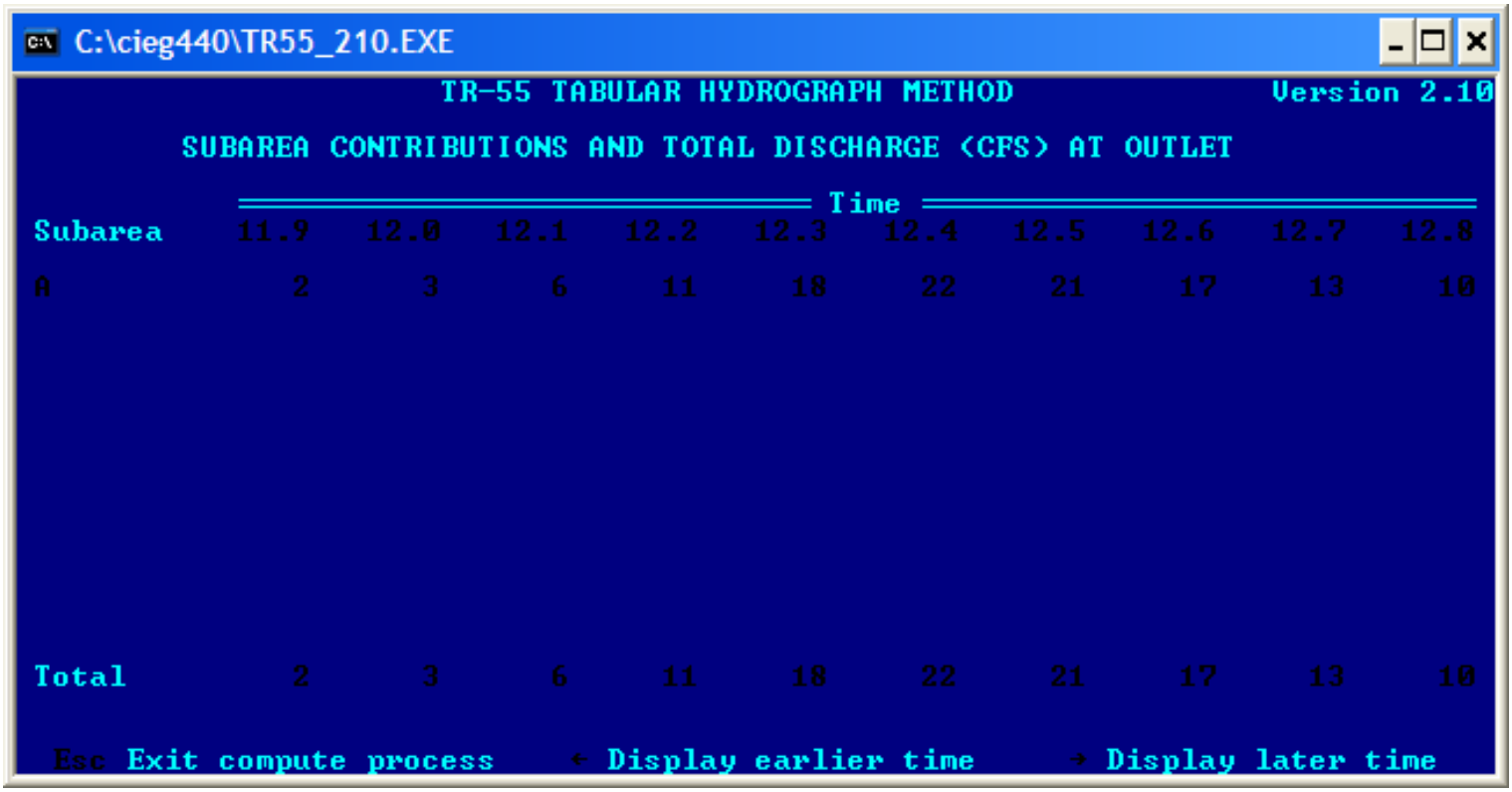
Step 2 – Predevelopment Condition – Compute Time of Concentration
Land Use – Wooded
Slope – 0.05 ft/ft



Step 3 – Predevelopment Condition – Determine CN – Wooded = 65, Class B Soils

Step 4 – Predevelopment Condition – Compute Hydrograph for 100 year Storm.
Peak flow = 22 cfs. Therefore, design detention basin with peak outlet flow = 22 cfs.





Predevelopment 100-yr Peak Flow = 22 cfs

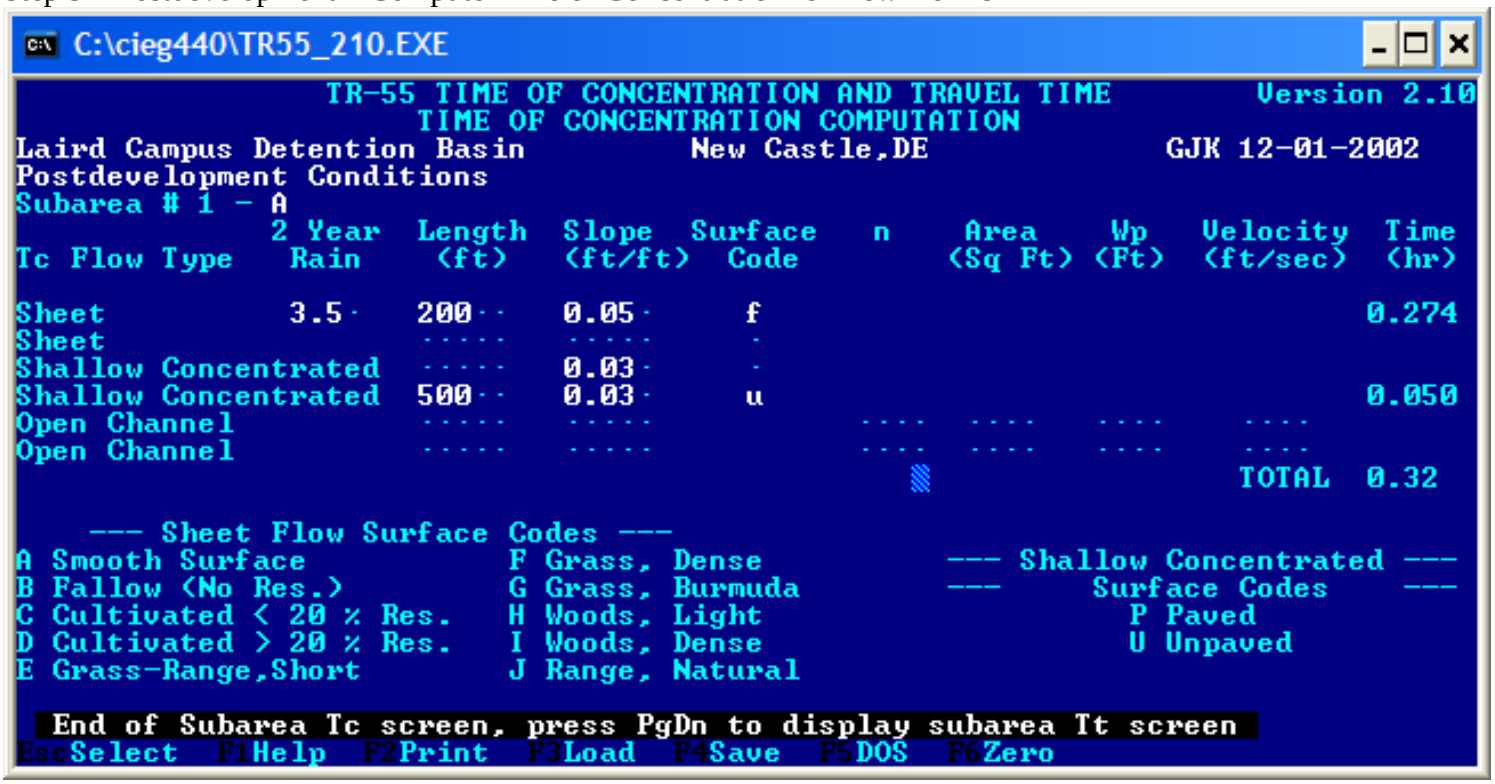
Try 18” dia outlet pipe from detention basin.

Compute rating curve for 18” pipe using Culvert Equation: Q = C*A*(2GH)**0.5.

Detention basin depth should be 3 to 4 feet for safety considerations and to allow for growth of wetland plants.

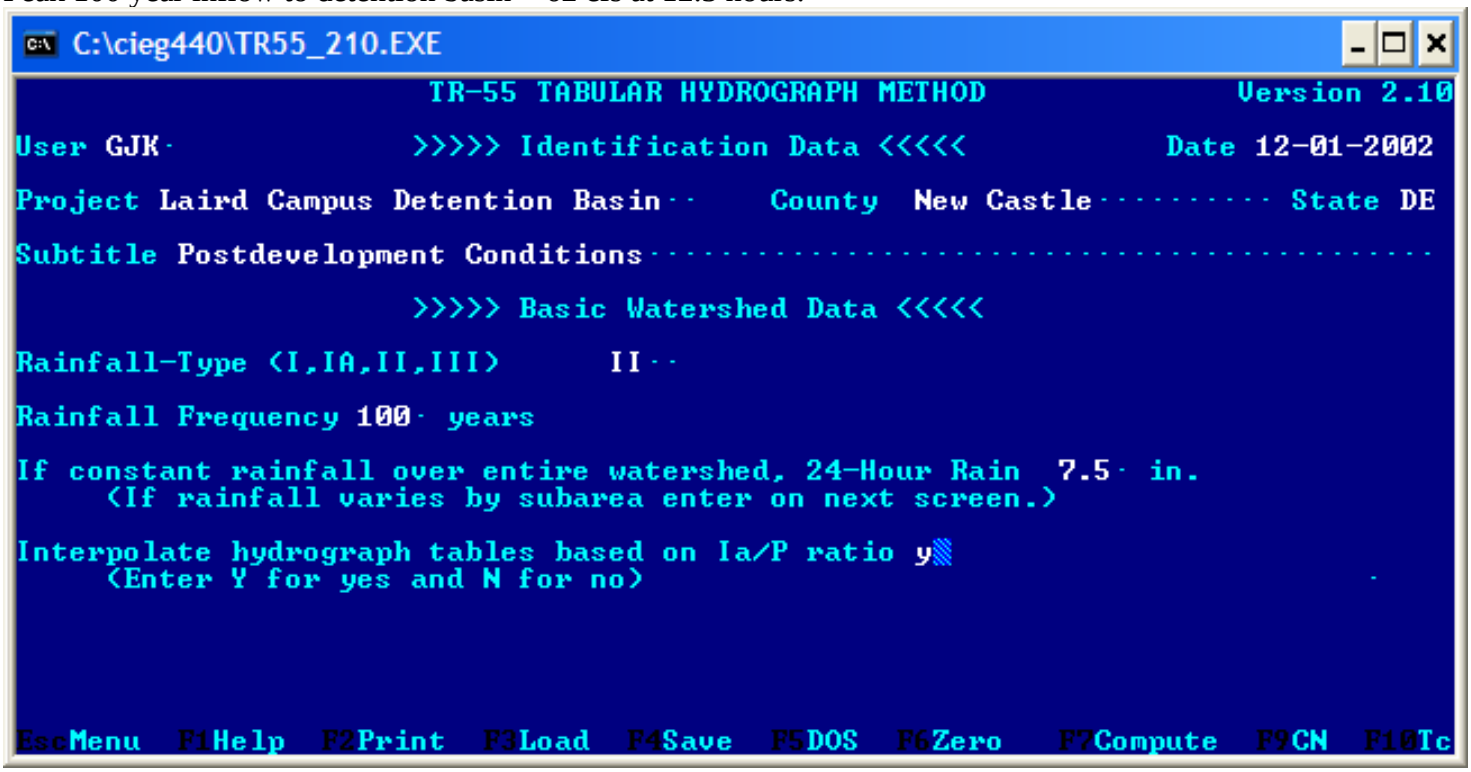
H	C	A	G	2GH	(2GH)**0.5	Q
0	1.0	1.8	32.2	0	0	0
1	1.0	1.8	32.2	64.4	8.0	14.4
2	1.0	1.8	32.2	128.8	11.3	20.3
3	1.0	1.8	32.2	193.2	13.8	24.8

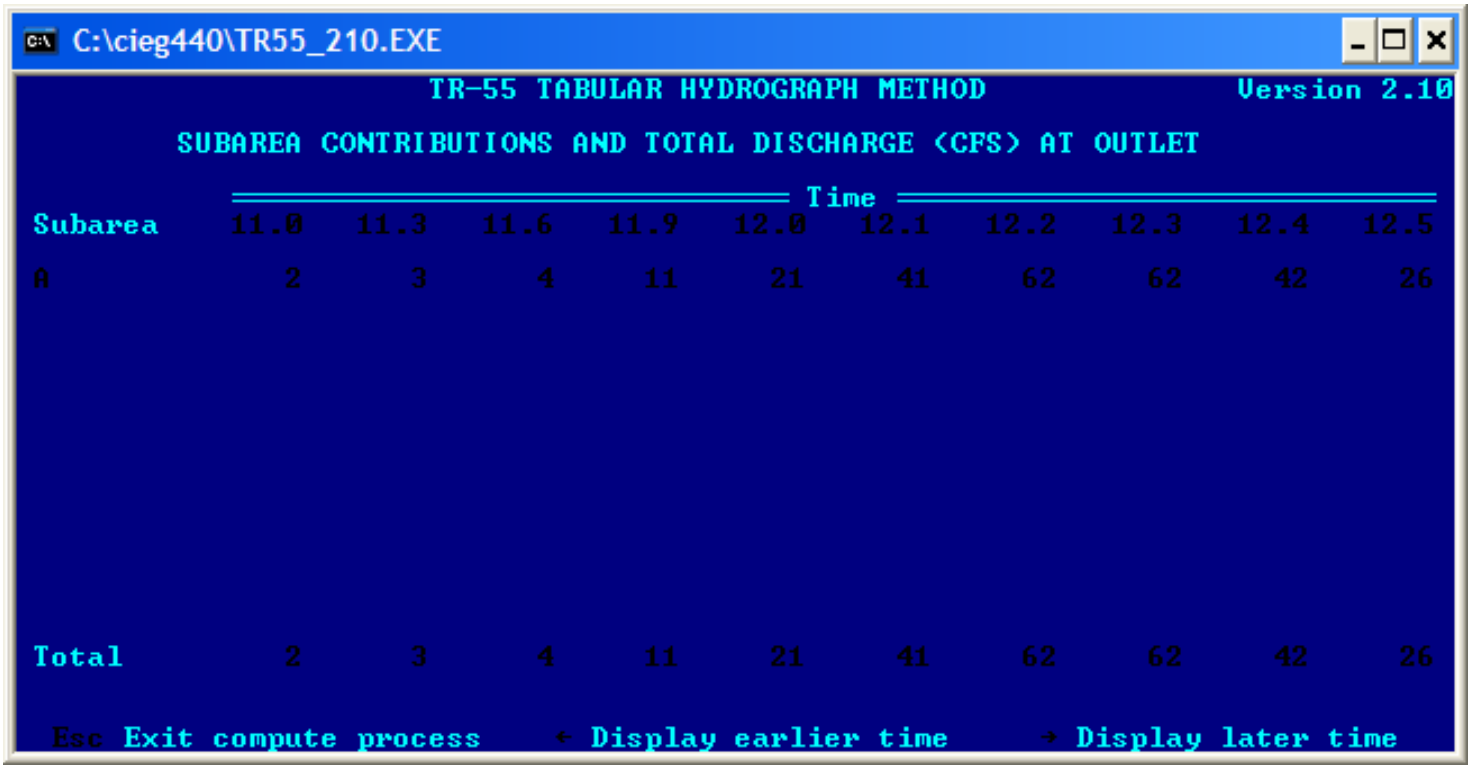
Step 5 – Postdevelopment – Compute Time of Concentration for New Dorms

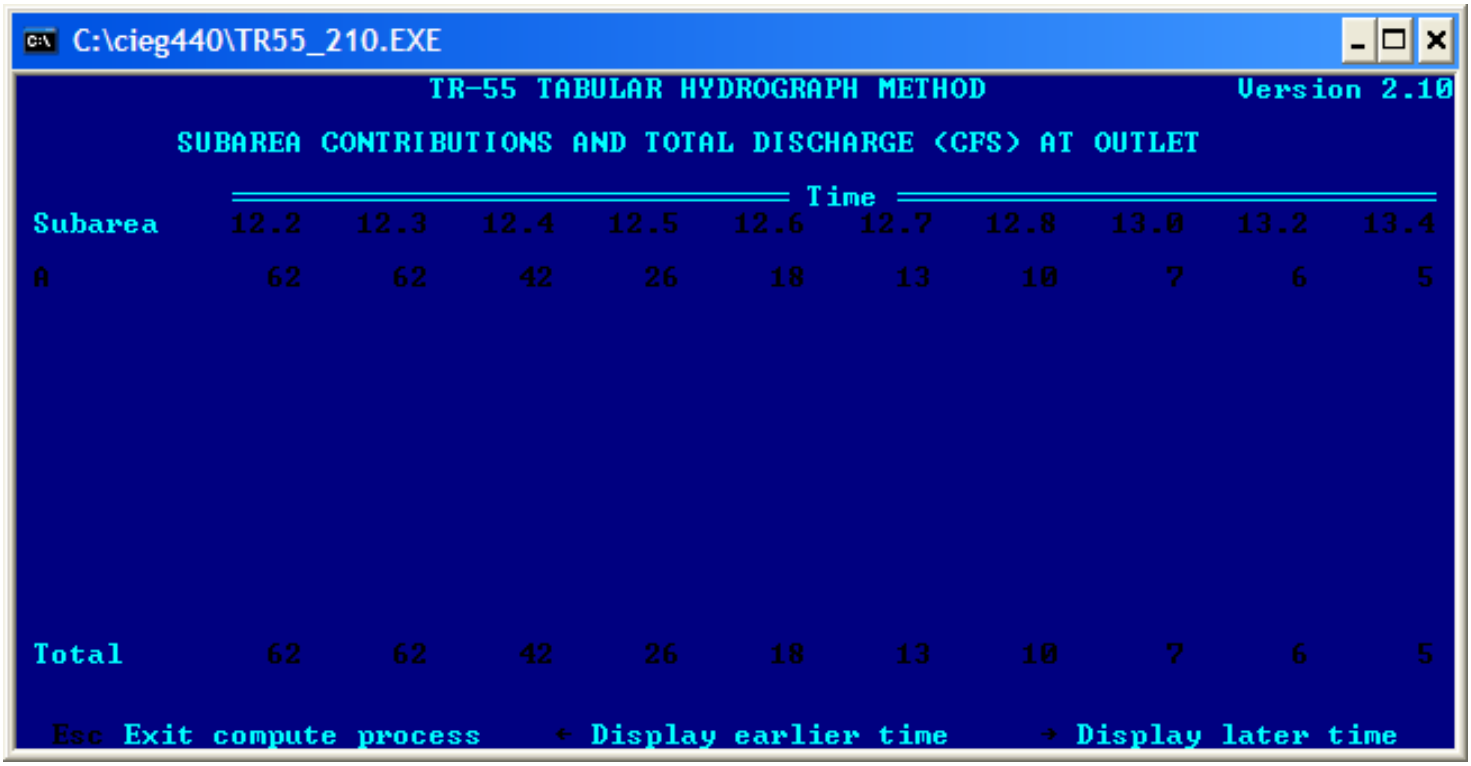


Step 6 – Postdevelopment – Compute CN for Land Use = Dormitories, Parking Lot.
CN = 85, Class B Soils

Step 7 - Postdevelopment – Compute inflow hydrograph to detention basin
Peak 100 year inflow to detention basin = 62 cfs at 12.3 hours.



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TR-55 TABULAR HYDROGRAPH METHOD
Version 2.10
SUBAREA CONTRIBUTIONS AND TOTAL DISCHARGE (CFS) AT OUTLET
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Total 62 62 42 26 18 13 10 7 6 5
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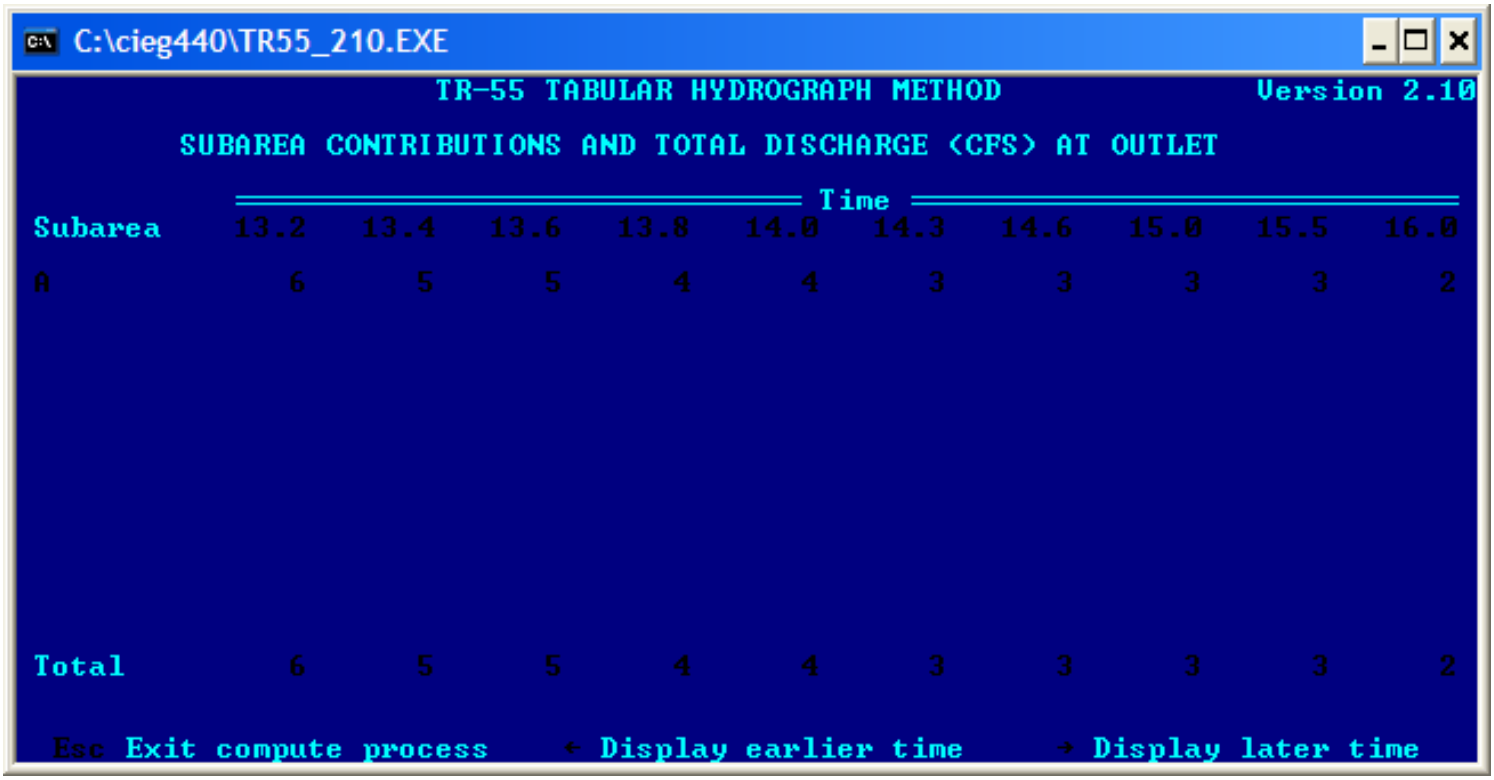
→ Display later time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TR-55 TABULAR HYDROGRAPH METHOD
Version 2.10
SUBAREA CONTRIBUTIONS AND TOTAL DISCHARGE (CFS) AT OUTLET
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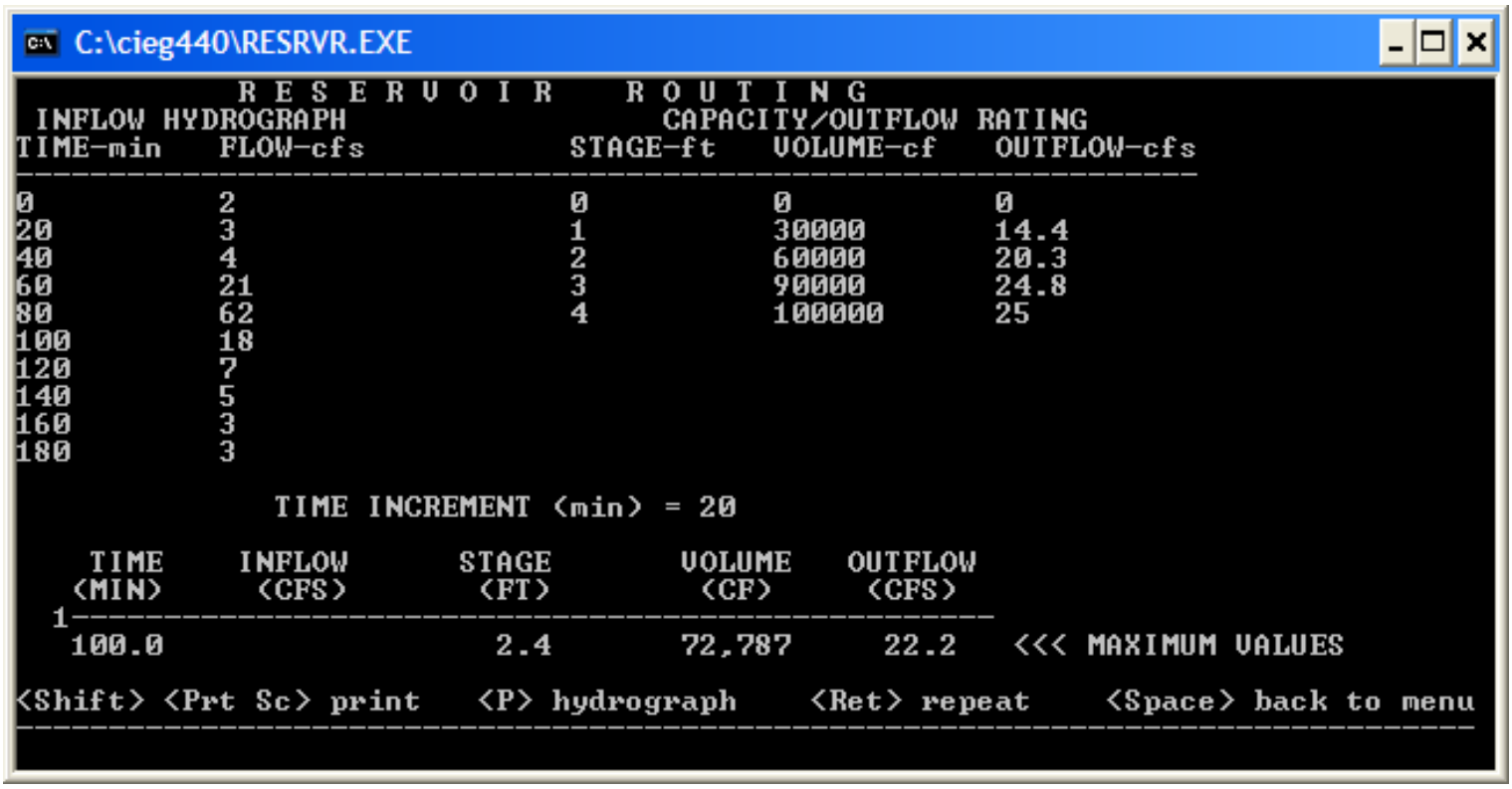
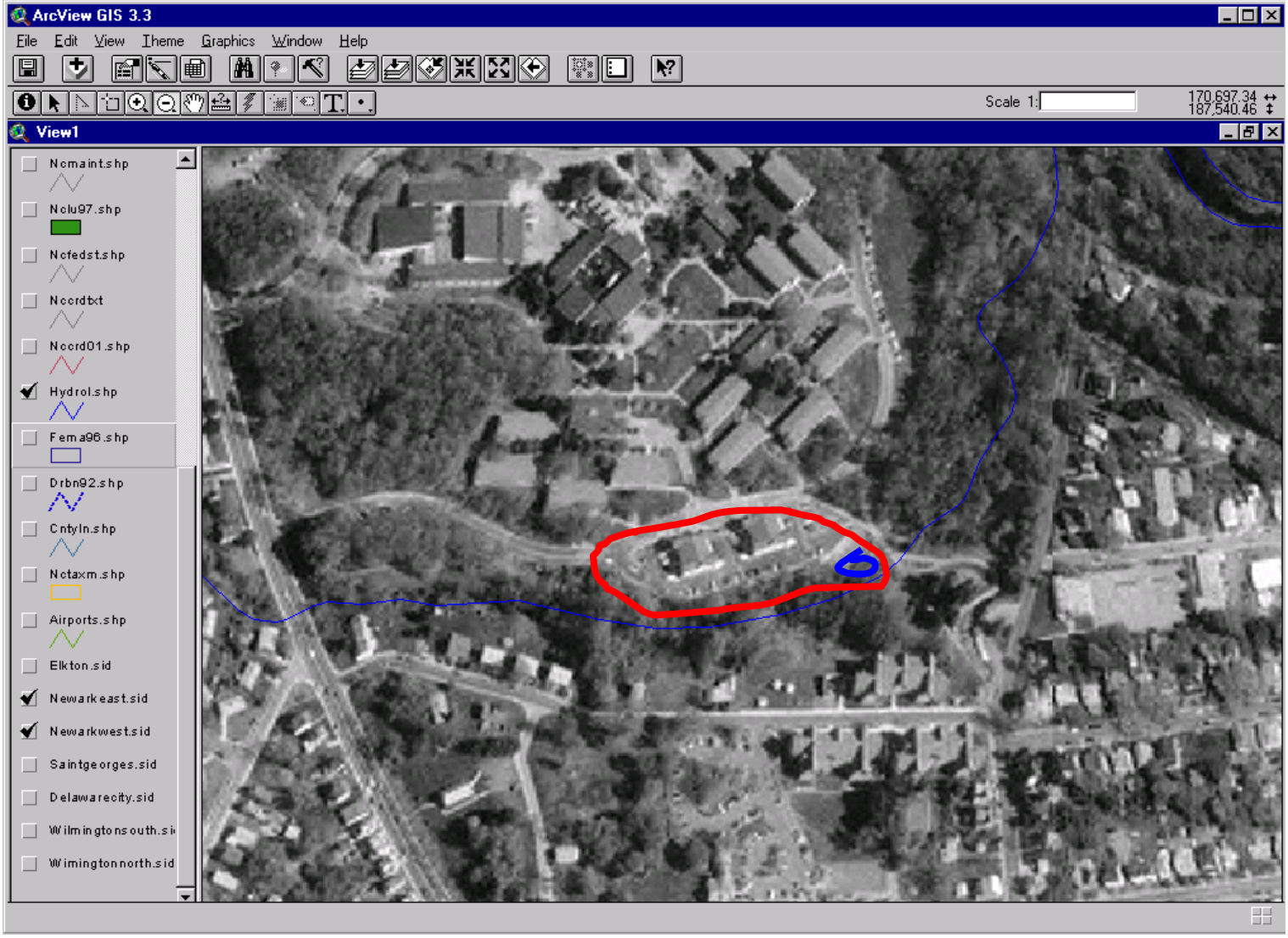
← Display earlier time
→ Display later time

Step 8 – Route Postdevelopment Inflow Through Detention Basin Using RESRVR.EXE

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