

## CE 3372 – Water Systems Design

### Demand Estimation

### Exercise Set 3

#### Exercise

1. Figure 1 is a layout of a hydraulic network model for the Somewhere USA subdivision. The blue line segments are pipes and are labeled (P1, P2, ...). The blue circles are nodes and are labeled (N1, N2, ...). The yellow polygons represent the lots assigned to each node; for example, node N2 supplies the six (6) lots located near the node.

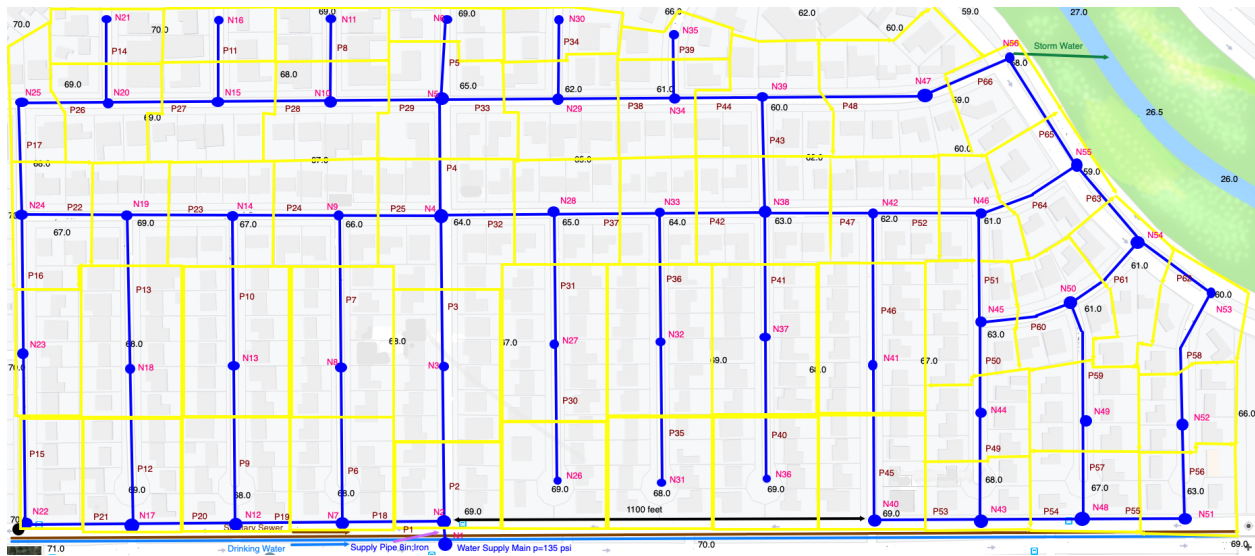


Figure 1: Hydraulic Model Network for Somewhere USA

- a) Determine the number of lots served by each node, these will constitute the by-node service unit equivalent (SUE).
- b) Estimate the average daily demand (ADD), by-node, for distribution system using San Marcos, Texas water system design guidelines.
- c) Estimate the maximum daily demand (MDD), by-node, for the distribution system using San Marcos, Texas water system design guidelines.
- d) Estimate the maximum daily demand (MDD) + fire flow, by-node for the distribution system using San Marcos, Texas water system design guidelines.
- e) Estimate the peak hourly demand (PHD), by-node, for the distribution system using San Marcos, Texas water system design guidelines.

Use your estimates to produce a completed version of Table 1. Save the table (in a file) – you will need it later in the design project RP-1.

Table 1: Node Demands for Somewhere USA Distribution System					
Node ID	SUE	ADD	MDD	MDD+Fire	PHD
N1	0	0	0	0	0
N2	6	...	...	...	...
N3	11	...	...	...	...
N4	...	...	...	...	...
N5	...	...	...	...	...
N6	...	...	...	...	...
N7	...	...	...	...	...
N8	...	...	...	...	...
N9	...	...	...	...	...
N10	...	...	...	...	...
N11	...	...	...	...	...
N12	...	...	...	...	...
N13	...	...	...	...	...
N14	...	...	...	...	...
N15	...	...	...	...	...
...	...	...	...	...	...
...	...	...	...	...	...
...	...	...	...	...	...
N47	...	...	...	...	...
N48	...	...	...	...	...
N49	...	...	...	...	...
N50	...	...	...	...	...
N51	...	...	...	...	...
N52	...	...	...	...	...
N53	...	...	...	...	...
N54	...	...	...	...	...
N55	...	...	...	...	...
N56	...	...	...	...	...