

NETWORK

Model Improvement Criteria

EXISTING SEWER EVALUATION:

Proposed Sewers 18" and Smaller, Allowable Flow/Cap Ratio = 1.000
Larger Existing Sewers, Allowable Flow/Cap Ratio = 1.000

RELIEF SEWER EVALUATION:

- (*) Use Parallel Reliefs
- () Use Replacement Reliefs

Proposed Sewers 18" and Smaller, n = 0.013
Large Proposed Sewers, n = 0.013

Proposed Sewers 18" and Smaller, Design Flow/Cap Ratio = 0.650
Larger Existing Sewers, Design Flow/Cap Ratio = 0.780

Relief Sewers 18" and Smaller, Design Flow/Cap Ratio = 0.650
Larger Relief Sewers, Design Flow/Cap Ratio = 0.780

PUMPING STATION EVALUATION:

Station Expansion, Allowable Flow/Cap Ratio: 2.000
Station Replaced When Flow/Cap Ratio > 2.000

FORCE MAIN EVALUATION:

- () Use Parallel Force Mains
- (*) Use Replacement Force Mains

Maximum Velocity at Peak Flow 12.0
Design Velocity for New Force Mains 6.0

NETWORK

RELIEF SEWER CONSTRUCTION COST
 (All Cost Factors Applied)

Table Description: BASE COSTS X 3/03 ENR

Current ENR: 6628.0
 ENR Cost Basis: 5400.0
 Additional Cost Factor: 1.00000
 Overall Cost Multiplier: 1.22740
 Additional Fixed Cost/foot: 0.00 \$ per lineal foot

| Sewer Diameter | 10 ft. | 15 ft. | 20 ft. | 25 ft. |
|----------------|---------|---------|---------|---------|
| (in) | (\$/ft) | (\$/ft) | (\$/ft) | (\$/ft) |
| 8 | 68.66 | 108.30 | 147.95 | 187.59 |
| 10 | 74.74 | 114.63 | 154.53 | 194.42 |
| 12 | 82.24 | 122.63 | 163.01 | 203.39 |
| 15 | 94.66 | 135.17 | 175.67 | 216.18 |
| 18 | 102.32 | 143.38 | 184.44 | 225.49 |
| 21 | 111.89 | 153.37 | 194.86 | 236.34 |
| 24 | 123.84 | 165.70 | 207.55 | 249.40 |
| 27 | 151.69 | 194.16 | 236.63 | 279.10 |
| 30 | 167.63 | 210.65 | 253.68 | 296.70 |
| 33 | 179.91 | 223.30 | 266.69 | 310.07 |
| 36 | 192.18 | 235.94 | 279.70 | 323.45 |
| 42 | 241.03 | 286.51 | 331.98 | 377.46 |
| 48 | 290.80 | 336.77 | 382.74 | 428.70 |
| 54 | 354.75 | 401.95 | 449.14 | 496.33 |
| 60 | 392.37 | 440.98 | 489.58 | 538.19 |
| 66 | 464.99 | 519.05 | 573.12 | 627.19 |
| 72 | 490.96 | 546.19 | 601.42 | 656.66 |
| 84 | 535.65 | 597.02 | 658.39 | 719.76 |
| 96 | 570.74 | 638.25 | 705.75 | 773.26 |
| 108 | 650.52 | 724.17 | 797.81 | 871.45 |
| 120 | 748.71 | 834.63 | 920.55 | 1006.47 |

* NOTE: Cost determined by SSMS program interpolates cost for each foot of depth greater than 10 feet.

NETWORK

RELIEF SEWER CONSTRUCTION COST BASIS
 (No Cost Factors Applied)

| | |
|-----------------------------|-----------------------|
| Table Description: | BASE COSTS X 3/03 ENR |
| Current ENR: | 6628.0 |
| ENR Cost Basis: | 5400.0 |
| Additional Cost Factor: | 1.00000 |
| Overall Cost Multiplier: | 1.22740 |
| Additional Fixed Cost/foot: | 0.00 \$/lineal foot |

Unit Costs per Lineal Foot - by Trench Depth

| Sewer Diameter | Up to 10 ft. | 10-15 ft. | 15-20 ft. | 20-30 ft. | > 30 ft. |
|----------------|--------------|-----------|-----------|-----------|----------|
| (in) | (\$) | (\$/ft) | (\$/ft) | (\$/ft) | (\$/ft) |
| 8 | 55.94 | 6.46 | 6.46 | 6.46 | 6.46 |
| 10 | 60.90 | 6.50 | 6.50 | 6.50 | 6.50 |
| 12 | 67.01 | 6.58 | 6.58 | 6.58 | 6.58 |
| 15 | 77.13 | 6.60 | 6.60 | 6.60 | 6.60 |
| 18 | 83.37 | 6.69 | 6.69 | 6.69 | 6.69 |
| 21 | 91.16 | 6.76 | 6.76 | 6.76 | 6.76 |
| 24 | 100.90 | 6.82 | 6.82 | 6.82 | 6.82 |
| 27 | 123.59 | 6.92 | 6.92 | 6.92 | 6.92 |
| 30 | 136.58 | 7.01 | 7.01 | 7.01 | 7.01 |
| 33 | 146.58 | 7.07 | 7.07 | 7.07 | 7.07 |
| 36 | 156.58 | 7.13 | 7.13 | 7.13 | 7.13 |
| 42 | 196.38 | 7.41 | 7.41 | 7.41 | 7.41 |
| 48 | 236.93 | 7.49 | 7.49 | 7.49 | 7.49 |
| 54 | 289.03 | 7.69 | 7.69 | 7.69 | 7.69 |
| 60 | 319.68 | 7.92 | 7.92 | 7.92 | 7.92 |
| 66 | 378.84 | 8.81 | 8.81 | 8.81 | 8.81 |
| 72 | 400.00 | 9.00 | 9.00 | 9.00 | 9.00 |
| 84 | 436.41 | 10.00 | 10.00 | 10.00 | 10.00 |
| 96 | 465.00 | 11.00 | 11.00 | 11.00 | 11.00 |
| 108 | 530.00 | 12.00 | 12.00 | 12.00 | 12.00 |
| 120 | 610.00 | 14.00 | 14.00 | 14.00 | 14.00 |

* NOTE: Cost determined by SSMS program interpolates cost for each foot of depth greater than 10 feet.

NETWORK

FORCE MAIN COST BASIS

| | | |
|---------------------------|-----------------------|--------------------|
| Table Description: | BASE COSTS X 3/03 ENR | |
| Current ENR: | 6628.0 | |
| ENR Cost Basis: | 5400.0 | |
| Additional Cost Factor: | 1.00000 | |
| Overall Cost Multiplier: | 1.22740 | |
| Additional Fixed Cost/ft: | 0.00 | \$ per lineal foot |

Force Main Cost per Lineal Foot

| Forcemain Diameter | Cost per Foot |
|--------------------|---------------|
| (in) | (\$) |
| 3 | 12.00 |
| 4 | 14.00 |
| 6 | 18.00 |
| 8 | 23.00 |
| 10 | 30.00 |
| 12 | 35.00 |
| 16 | 46.00 |
| 20 | 58.00 |
| 24 | 69.00 |
| 27 | 78.00 |
| 30 | 87.00 |
| 33 | 96.00 |
| 36 | 105.00 |
| 42 | 122.00 |
| 48 | 139.00 |
| 54 | 157.00 |
| 60 | 174.00 |
| 72 | 209.00 |
| 84 | 244.00 |
| 96 | 278.00 |
| 108 | 313.00 |
| 120 | 348.00 |

NETWORK

PUMP STATION COST BASIS

Table Description: BASE COSTS X 3/03 ENR

| | | |
|----------------------------|---------|------------------------|
| Current ENR: | 6628.0 | |
| ENR Cost Basis: | 5400.0 | |
| Additional Cost Factor: | 1.00000 | |
| Overall Cost Multiplier: | 1.22740 | |
| Additional Fixed Cost/CFS: | 0.00 | \$ per CFS of capacity |

| Pump Capacity (cfs) | Expansion Cost (\$) | Replacement Cost (\$) |
|------------------------|------------------------|--------------------------|
| 0.10 | 22,500 | 45,000 |
| 0.25 | 60,000 | 120,000 |
| 0.50 | 72,500 | 145,000 |
| 1.00 | 125,000 | 250,000 |
| 2.50 | 250,000 | 500,000 |
| 5.00 | 438,000 | 875,000 |
| 7.50 | 525,000 | 1,050,000 |
| 10.00 | 625,000 | 1,250,000 |
| 15.00 | 850,000 | 1,700,000 |
| 20.00 | 1,050,000 | 2,100,000 |
| 30.00 | 1,350,000 | 2,700,000 |
| 50.00 | 1,950,000 | 3,900,000 |
| 100.00 | 3,100,000 | 6,200,000 |

| JC03 | | | |
|-------|----------------|-------------------------|-------------------------|
| TIME | Hourly Average | Original Diurnal Factor | Adjusted Diurnal Factor |
| 0:45 | 0.689 | 1.157 | 1.284 |
| 1:45 | 0.608 | 1.022 | 1.040 |
| 2:45 | 0.507 | 0.852 | 0.732 |
| 3:45 | 0.422 | 0.709 | 0.473 |
| 4:45 | 0.390 | 0.656 | 0.377 |
| 5:45 | 0.367 | 0.616 | 0.305 |
| 6:45 | 0.360 | 0.604 | 0.283 |
| 7:45 | 0.415 | 0.698 | 0.453 |
| 8:45 | 0.493 | 0.828 | 0.689 |
| 9:45 | 0.539 | 0.906 | 0.830 |
| 10:45 | 0.651 | 1.093 | 1.168 |
| 11:45 | 0.712 | 1.196 | 1.355 |
| 12:45 | 0.734 | 1.232 | 1.420 |
| 13:45 | 0.703 | 1.180 | 1.326 |
| 14:45 | 0.697 | 1.171 | 1.310 |
| 15:45 | 0.669 | 1.123 | 1.223 |
| 16:45 | 0.623 | 1.047 | 1.085 |
| 17:45 | 0.608 | 1.021 | 1.038 |
| 18:45 | 0.619 | 1.040 | 1.072 |
| 19:45 | 0.651 | 1.093 | 1.168 |
| 20:45 | 0.678 | 1.139 | 1.252 |
| 21:45 | 0.703 | 1.181 | 1.328 |
| 22:45 | 0.727 | 1.221 | 1.400 |
| 23:45 | 0.724 | 1.215 | 1.389 |
| | 0.595 | 24.000 | 24.000 |
| | Maximum | 1.232 | |
| | Target | 1.420 | |
| | Ratio | 1.810344828 | |

| RS02 | | | |
|---------|----------------|-------------------------|-------------------------|
| TIME | Hourly Average | Original Diurnal Factor | Adjusted Diurnal Factor |
| 0:06854 | 0.06854 | 1.063 | 1.085 |
| 0:05589 | 0.05589 | 0.867 | 0.821 |
| 0:04374 | 0.04374 | 0.678 | 0.566 |
| 0:03695 | 0.03695 | 0.573 | 0.425 |
| 0:0378 | 0.0378 | 0.586 | 0.442 |
| 0:03753 | 0.03753 | 0.582 | 0.437 |
| 0:03461 | 0.03461 | 0.537 | 0.376 |
| 0:05531 | 0.05531 | 0.858 | 0.809 |
| 0:0594 | 0.0594 | 0.921 | 0.894 |
| 0:05963 | 0.05963 | 0.925 | 0.899 |
| 0:06498 | 0.06498 | 1.008 | 1.011 |
| 0:07254 | 0.07254 | 1.125 | 1.168 |
| 0:07515 | 0.07515 | 1.166 | 1.224 |
| 0:07655 | 0.07655 | 1.187 | 1.252 |
| 0:072 | 0.072 | 1.117 | 1.158 |
| 0:06876 | 0.06876 | 1.067 | 1.090 |
| 0:07029 | 0.07029 | 1.09 | 1.121 |
| 0:07452 | 0.07452 | 1.156 | 1.210 |
| 0:07164 | 0.07164 | 1.111 | 1.150 |
| 0:07763 | 0.07763 | 1.204 | 1.275 |
| 0:08582 | 0.08582 | 1.331 | 1.446 |
| 0:08483 | 0.08483 | 1.316 | 1.426 |
| 0:08222 | 0.08222 | 1.275 | 1.371 |
| 0:08105 | 0.08105 | 1.257 | 1.346 |
| | | 24.000 | 24.000 |
| | Maximum | 1.331 | |
| | Target | 1.446 | |
| | Ratio | 1.347432024 | |

| SF05 | | | |
|---------|----------------|-------------------------|-------------------------|
| TIME | Hourly Average | Original Diurnal Factor | Adjusted Diurnal Factor |
| 0:30402 | 0.30402 | 0.829 | 0.779 |
| 0:24053 | 0.24053 | 0.656 | 0.556 |
| 0:20565 | 0.20565 | 0.561 | 0.433 |
| 0:18572 | 0.18572 | 0.506 | 0.362 |
| 0:16425 | 0.16425 | 0.448 | 0.287 |
| 0:17735 | 0.17735 | 0.483 | 0.333 |
| 0:25061 | 0.25061 | 0.683 | 0.591 |
| 0:34772 | 0.34772 | 0.948 | 0.933 |
| 0:41823 | 0.41823 | 1.14 | 1.181 |
| 0:44276 | 0.44276 | 1.207 | 1.267 |
| 0:47408 | 0.47408 | 1.292 | 1.377 |
| 0:47345 | 0.47345 | 1.29 | 1.374 |
| 0:47138 | 0.47138 | 1.285 | 1.368 |
| 0:44487 | 0.44487 | 1.213 | 1.275 |
| 0:4289 | 0.4289 | 1.169 | 1.218 |
| 0:40658 | 0.40658 | 1.108 | 1.139 |
| 0:39641 | 0.39641 | 1.08 | 1.103 |
| 0:40419 | 0.40419 | 1.102 | 1.132 |
| 0:4212 | 0.4212 | 1.148 | 1.191 |
| 0:43097 | 0.43097 | 1.175 | 1.226 |
| 0:43047 | 0.43047 | 1.173 | 1.223 |
| 0:45801 | 0.45801 | 1.248 | 1.320 |
| 0:44501 | 0.44501 | 1.213 | 1.275 |
| 0:38291 | 0.38291 | 1.044 | 1.057 |
| | | 24.001 | 24.001 |
| | Maximum | 1.292 | |
| | Target | 1.377 | |
| | Ratio | 1.29109589 | |