

Section 8

CAPITAL IMPROVEMENT PROGRAM

8-1 GENERAL

The primary goal of the Capital Improvement Program (CIP) is to provide the City of Ontario with a long-range planning tool for implementing its sewer infrastructure improvements in an orderly manner and a basis for financing of these improvements. To accomplish this goal, the program is phased based upon the implementation cost of the facilities, the quantity of work the City can reasonably administer each year, and the funds available for these projects.

8-2 CAPITAL IMPROVEMENT PROJECT PRIORITIES

The capital improvement projects were selected primarily with consideration of the health and safety of the public and protection of the environment by minimizing the possibility of overflows. The projects that will eliminate the capacity deficiencies in the gravity collection system are prioritized based upon the hydraulic analyses conducted during this study. When the City completes CCTV of its entire system and a full condition assessment, the capital improvement project priorities should be reevaluated.

For this study, the gravity sewer projects were prioritized as follows:

1. Facilities with existing dry weather capacity deficiencies. (Projects 1 through 4)
2. The facilities that have shown calculated capacity deficiencies but are currently adequate. Flow monitoring is recommended prior to project implementation. When the measured peak flows exceed the pipe capacity ($d/D = 0.64$ during peak dry weather conditions), the projects should be reprioritized.

In some cases, larger sewers are given higher priorities than small sewers because they serve larger areas and a future spill is expected to be larger in quantity. When segments of sewers with lower priorities are located in the same vicinity as a higher priority project, an exception is made to include these lower priority sewers in that project to provide a more economically feasible Capital Improvement Program.

8-3 CAPITAL IMPROVEMENT PROGRAM

The Capital Improvement Program is developed based upon the results of the hydraulic analyses and the priorities of Subsection 8-2. The recommended improvement project locations are illustrated on Figure 8-1. Gravity collection system projects are listed in detail in Table 8-1 by priority, along with cost estimates. These estimates are based upon recent information for similar projects in the Southern California area, and include contingencies for this planning level study. The cost estimates presented in Table 8-1 reflect replacement of the existing facilities. Replacement costs are more conservative and will therefore allow the City more flexibility for each project.

The construction costs are based upon the following:

| | |
|-----------------------------------|---------------------------|
| 8-18 inch diameter pipe | \$40 / diameter inch / ft |
| 21 inch diameter pipe and greater | \$35 / diameter inch / ft |

Old Model Colony is largely occupied and there are many existing utilities to consider. Therefore, the costs of replacing sewer facilities will be generally higher than in an area that is undeveloped such as New Model Colony. The total costs shown in Table 8-1 include engineering, administration and contingency costs, estimated at 55% of the construction cost per the City's standard. The CCTV inspection cost of the entire system is spread out over four years. The unit cost of \$2 per linear foot includes CCTV inspection and condition assessment evaluation. There are no other contingencies included.

The recommended CIP has been based upon the best information currently available. It should be updated as new information becomes available from sources such as CCTV inspections and from maintenance crew observations. The project priorities may be revised to correspond to changed conditions, such as impending facility failures, or to take advantage of concurrent construction such as street paving projects or adjacent infrastructure work.

Some of the projects recommended are small and it may not be feasible to implement them as a single project. Therefore, several projects should be combined and bid as a package. Some of the projects may be broken down into smaller components to fit the City's budgetary and other obligations.

The CIP shown in Table 8-1 includes about \$45.7 million dollars in gravity collection system projects. Approximately \$3.86 million dollars is allotted for CCTV inspection and condition assessment evaluation.

The pipe ID numbers and upstream and downstream manhole ID numbers given in Table 8-1 correspond to the City's sewer GIS and atlas maps.

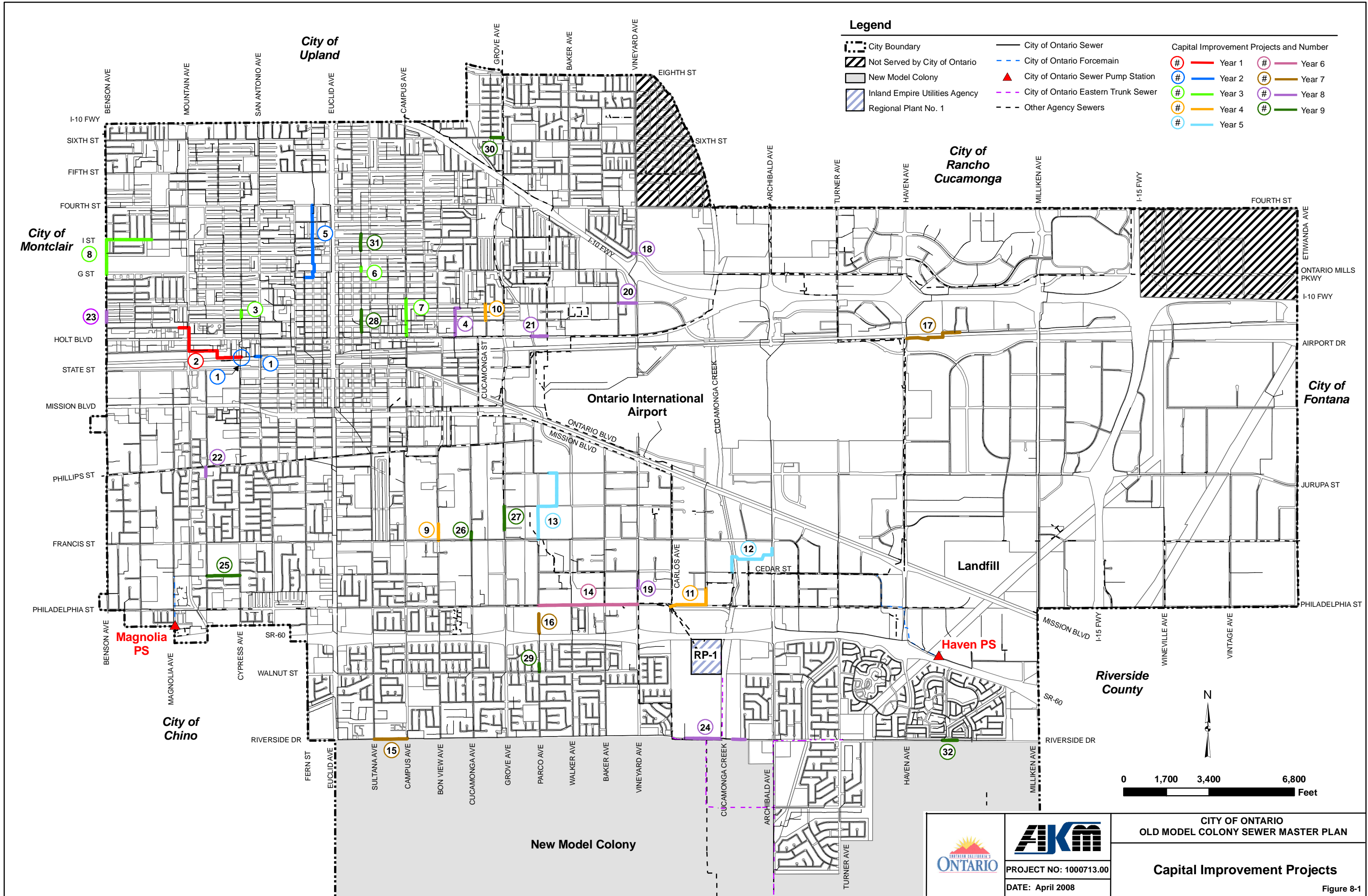
8-4 CAPITAL IMPROVEMENT PROJECT DESCRIPTIONS

Project No. 1 (Easement north of State Street and west of San Antonio Avenue)

Project No. 1 includes approximately 210 feet of pipe in an easement west of San Antonio Avenue (Manhole K12122 to Manhole K12120). The system hydraulic model and flow monitoring data showed that these sewers become surcharged under peak dry weather conditions. The existing pipe size is 8-inch. Upstream of this location, the pipe size is 12-inch. It is recommended that the deficient pipes be upsized to 12-inches as well.

There is a split manhole located upstream at Manhole K12125. In order to prevent hydraulic deficiencies downstream of this location (particularly in San Antonio Ave south of Phillips St, as well as the sewer mentioned previously from Manhole K12122 to Manhole K12120), the peak flow must be split equally to the east and the south. Project No. 1 also includes a recommendation to further study the sewer flows in this area and then construct a flow splitting structure that will divide the peak flows evenly to the east and south.

The estimated cost of Project No. 1 is \$656,200.



PROJECT NO: 1000713.00
DATE: April 2008

CITY OF ONTARIO
OLD MODEL COLONY SEWER MASTER PLAN

Capital Improvement Projects

Figure 8-1

Table 8-1
Capital Improvement Projects

| Project No. | Model | Pipe ID | U/S MH ID | D/S MH ID | Street Location | Existing Pipe Size (in) | Replacement Pipe Size (in) | Length (ft) | Slope | Unit Cost (\$/ft) | Cost (\$) | Schedule | Annual Cost (April 2008 Dollars) | | | |
|--|--|---------|-----------|-----------|---|-------------------------|----------------------------|-------------|------------------------|-------------------|-----------|-----------|----------------------------------|---------|--------|--|
| 1 | West | K121051 | K12122 | K12121 | Easement north of State St and west of San Antonio Ave | 8 | 12 | 110 | 0.0080 | 480 | 81,840 | | | | | |
| | West | K121052 | K12121 | K12120 | | 8 | 12 | 100 | 0.0080 | 480 | 74,400 | | | | | |
| | Flow splitting structure at MH K12125 | | | | | - | - | - | - | - | 500,000 | | | | | |
| | Subtotal | | | | | | 210 | Subtotal | | 656,240 | Year 1 | | | | | |
| 2 | West | J111074 | J11155 | J11154 | Stoneridge Ct, west of Mountain Ave | 12 | 15 | 318 | 0.0015 | 600 | 295,554 | | | | | |
| | West | J111075 | J11154 | J11153 | | 12 | 15 | 35 | 0.0131 | 600 | 32,550 | | | | | |
| | West | J111047 | J11153 | J11152 | | 12 | 18 | 21 | 0.0020 | 720 | 22,878 | | | | | |
| | West | J111060 | J11152 | J11163 | Mountain Ave, Stoneridge Ct to Brooks St | 12 | 18 | 236 | 0.0019 | 720 | 262,985 | | | | | |
| | West | J111061 | J11163 | J11164 | | 12 | 18 | 165 | 0.0022 | 720 | 184,307 | | | | | |
| | West | J111055 | J11164 | J11173 | | 12 | 18 | 279 | 0.0051 | 720 | 311,822 | | | | | |
| | West | K111009 | J11173 | K11114 | Brooks St, east of Mountain Ave | 12 | 18 | 226 | 0.0027 | 720 | 251,770 | | | | | |
| | West | K111016 | K11114 | K11112 | | 12 | 18 | 271 | 0.0014 | 720 | 302,425 | | | | | |
| | West | K111017 | K11112 | K11110 | | 12 | 18 | 276 | 0.0015 | 720 | 308,016 | | | | | |
| | West | K111024 | K11110 | K11109 | Easement east of Mountain Ave, Brooks St to Cypress Ave | 12 | 18 | 276 | 0.0015 | 720 | 308,016 | | | | | |
| | West | K111029 | K11109 | K11108 | | 12 | 18 | 118 | 0.0015 | 720 | 131,721 | | | | | |
| | West | K111028 | K11108 | K11107 | | 12 | 18 | 164 | 0.0015 | 720 | 183,024 | | | | | |
| | West | K111026 | K11107 | K11117 | Easement east of Mountain Ave, Brooks St to Cypress Ave | 12 | 18 | 283 | 0.0016 | 720 | 316,330 | | | | | |
| | West | K121004 | K11117 | K12128 | | 12 | 18 | 559 | 0.0015 | 720 | 623,308 | | | | | |
| | West | K121021 | K12128 | K12126 | | 12 | 18 | 286 | 0.0015 | 720 | 319,176 | | | | | |
| West | K121041 | K12126 | K12125 | 12 | | 18 | 98 | 0.0015 | 720 | 109,814 | | | | | | |
| Subtotal | | | | | | 3,611 | Subtotal | | 3,963,697 | Year 1 | | | | | | |
| 2A | CCTV of Sewers and Condition Assessment Evaluation | | | | | Varies | | 483,000 | | 2.0 | 966,000 | | | | | |
| | Subtotal | | | | | | 483,000 | Subtotal | | 966,000 | Year 1 | 5,585,937 | | | | |
| 3 | West | J121052 | J12119 | J12123 | Esmnt, north of Holowell | 8 | 15 | 181 | 0.0079 | 600 | 168,051 | | | | | |
| | West | J121053 | J12123 | J12125 | Esmnt, south of Holowell | 8 | 15 | 136 | 0.0079 | 600 | 126,201 | | | | | |
| Subtotal | | | | | | 316 | Subtotal | | 294,252 | Year 2 | | | | | | |
| 4 | North | J151043 | J15122 | J15123 | Easement between Allyn Ave and Virginia Ave, Elma St to Holt Blvd | 8 | 12 | 180 | 0.0079 | 480 | 133,920 | | | | | |
| | North | J151037 | J15123 | J15134 | | 8 | 12 | 327 | 0.0080 | 480 | 243,362 | | | | | |
| | North | J151036 | J15134 | J15141 | | 8 | 12 | 340 | 0.0082 | 480 | 252,960 | | | | | |
| | North | J151035 | J15141 | J15145 | | 8 | 12 | 337 | 0.0080 | 480 | 250,728 | | | | | |
| | North | J151033 | J15145 | J15155 | | 8 | 12 | 130 | 0.0081 | 480 | 96,348 | | | | | |
| Subtotal | | | | | | 1,314 | Subtotal | | 977,318 | Year 2 | | | | | | |
| 5 | West | H131049 | H13114 | H13126 | Easement, Fourth St to J St | 8 | 12 | 340 | 0.0050 | 480 | 252,960 | | | | | |
| | West | H131048 | H13126 | H13139 | Easement, J St to I St | 8 | 12 | 325 | 0.0030 | 480 | 241,800 | | | | | |
| | West | H131038 | H13139 | H13154 | | 8 | 12 | 345 | 0.0060 | 480 | 256,680 | | | | | |
| | West | H131039 | H13154 | H13161 | | 8 | 12 | 325 | 0.0030 | 480 | 241,800 | | | | | |
| | West | H131075 | H13161 | I13102 | Easement, I St to Granada Ct | 8 | 12 | 320 | 0.0030 | 480 | 238,080 | | | | | |
| | West | I131036 | I13102 | I13113 | Easement, Granada Ct to H St | 8 | 12 | 320 | 0.0030 | 480 | 238,080 | | | | | |
| | | | | | West | I131035 | I13113 | I13120 | 8 | 12 | 320 | 0.0020 | 480 | 238,080 | | |
| | | | | | West | I131028 | I13120 | I13122 | Easement, H St to G St | 8 | 12 | 57 | 0.0053 | 480 | 42,259 | |
| | West | I131027 | I13122 | I13131 | G St at Palm Ave | 8 | 12 | 297 | 0.0098 | 480 | 221,191 | | | | | |
| | West | I131033 | I13131 | I13132 | | 8 | 12 | 62 | 0.0060 | 480 | 45,875 | | | | | |
| | West | I131059 | I13132 | I13137 | | 8 | 12 | 190 | 0.0075 | 480 | 141,360 | | | | | |
| | West | I131060 | I13137 | I13FI | Palm Ave, south of G St | 8 | 12 | 46 | 0.0075 | 480 | 34,514 | | | | | |
| | West | I131062 | I13FI | I13145 | Easement, Palm Ave to Fern Ave | 8 | 12 | 351 | 0.0075 | 480 | 261,144 | | | | | |
| Subtotal | | | | | | 3,298 | Subtotal | | 2,453,824 | Year 2 | | | | | | |
| CCTV of Sewers and Condition Assessment Evaluation | | | | | Varies | - | 483,000 | - | 2.0 | 966,000 | | | | | | |
| 5A | Subtotal | | | | | | 483,000 | Subtotal | | 966,000 | Year 2 | 4,691,394 | | | | |
| 6 | North | I131014 | I13124 | I13129 | Cherry Ave, north of G St | 8 | 12 | 172 | 0.0033 | 480 | 127,968 | | | | | |
| | Subtotal | | | | | | 172 | Subtotal | | 127,968 | Year 3 | | | | | |
| 7 | North | J141021 | J14104 | J14117 | Campus Ave, D St to Holt Blvd | 8 | 12 | 400 | 0.0146 | 480 | 297,600 | | | | | |
| | North | J141064 | J14117 | J14139 | | 8 | 12 | 476 | 0.0203 | 480 | 354,144 | | | | | |
| | North | J141078 | J14139 | J14143 | | 8 | 12 | 163 | 0.0169 | 480 | 121,272 | | | | | |
| | North | J141079 | J14143 | J14163 | | 8 | 12 | 311 | 0.0168 | 480 | 231,235 | | | | | |
| | North | J141077 | J14163 | J14170 | | 8 | 12 | 28 | 0.0170 | 480 | 20,534 | | | | | |
| | North | J141084 | J14170 | J14186 | | 8 | 12 | 85 | 0.0140 | 480 | 63,240 | | | | | |
| Subtotal | | | | | | 1,462 | Subtotal | | 1,088,026 | Year 3 | | | | | | |
| 8 | West | H111001 | H11149 | H10134 | I St, Elderberry Ave to Benson Ave | 8 | 12 | 292 | 0.0038 | 480 | 217,248 | | | | | |
| | West | H101051 | H10134 | H10136 | | 8 | 12 | 50 | 0.0058 | 480 | 37,200 | | | | | |
| | West | H101052 | H10136 | H10138 | | 8 | 12 | 241 | 0.0036 | 480 | 179,304 | | | | | |
| | West | H101046 | H10138 | H10137 | | 8 | 12 | 100 | 0.0052 | 480 | 74,400 | | | | | |
| | West | H101032 | H10137 | H10139 | | 8 | 12 | 181 | 0.0036 | 480 | 134,664 | | | | | |
| | West | H101031 | H10139 | H10140 | | 8 | 12 | 149 | 0.0046 | 480 | 110,856 | | | | | |
| | West | H101024 | H10140 | H10141 | | 8 | 12 | 243 | 0.0041 | 480 | 180,792 | | | | | |
| | West | H101023 | H10141 | H10142 | | 8 | 12 | 252 | 0.0040 | 480 | 187,488 | | | | | |
| | West | H101022 | H10142 | H10135 | Benson Ave, I St to G St | 8 | 12 | 273 | 0.0048 | 480 | 203,112 | | | | | |
| | West | I101005 | H10135 | I10108 | | 8 | 12 | 527 | 0.0183 | 480 | 392,014 | | | | | |
| | West | I101011 | I10108 | I10111 | | 8 | 12 | 395 | 0.0184 | 480 | 293,880 | | | | | |
| | West | I101012 | I10111 | I10112 | | 8 | 12 | 444 | 0.0184 | 480 | 330,187 | | | | | |
| Subtotal | | | | | | 3,147 | Subtotal | | 2,341,145 | Year 3 | | | | | | |

City of Ontario

Table 8-1
Capital Improvement Projects

| Project No. | Model | Pipe ID | U/S MH ID | D/S MH ID | Street Location | Existing Pipe Size (in) | Replacement Pipe Size (in) | Length (ft) | Slope | Unit Cost (\$/ft) | Cost (\$) | Schedule | Annual Cost (April 2008 Dollars) |
|-------------|--|---------|-----------|-----------|--|-------------------------|----------------------------|-------------|----------|-------------------|-----------|-----------|----------------------------------|
| 8A | CCTV of Sewers and Condition Assessment Evaluation | | | | | Varies | - | 483,000 | - | 2.0 | 966,000 | | |
| | | | | | | | Subtotal | 483,000 | | Subtotal | 966,000 | Year 3 | 4,523,138 |
| 9 | West | N141086 | N14135 | N14145 | Bonview Ave, north of Francis St | 8 | 12 | 326 | 0.0060 | 480 | 242,544 | | |
| | West | N141085 | N14145 | N14151 | | 8 | 12 | 254 | 0.0060 | 480 | 188,976 | | |
| | West | N141083 | N14151 | N14159 | | 8 | 12 | 56 | 0.1086 | 480 | 41,292 | | |
| | | | | | | | Subtotal | 636 | | Subtotal | 472,812 | Year 4 | |
| 10 | North | J151018 | J15114 | J15125 | Virginia Ave, D St to Nocta St | 8 | 12 | 326 | 0.0041 | 480 | 242,172 | | |
| | North | J151045 | J15125 | J15137 | | 8 | 12 | 333 | 0.0041 | 480 | 247,603 | | |
| | | | | | | | Subtotal | 658 | | Subtotal | 489,775 | Year 4 | |
| 11 | East | O181004 | O18148 | P18101 | Hellman Ave, Spruce St to Philadelphia St | 18 | 24 | 369 | 0.0022 | 840 | 479,787 | | |
| | East | P181019 | P18101 | P18108 | | 18 | 24 | 263 | 0.0022 | 840 | 342,765 | | |
| | East | P181007 | P18108 | P18107 | Philadelphia St, west of Hellman Ave | 18 | 24 | 333 | 0.0014 | 840 | 434,087 | | |
| | East | P181008 | P18107 | P18106 | | 18 | 24 | 336 | 0.0014 | 840 | 437,472 | | |
| | East | P181011 | P18106 | P18105 | | 18 | 24 | 251 | 0.0014 | 840 | 326,151 | | |
| | East | P181016 | P18105 | P18104 | | 18 | 24 | 249 | 0.0014 | 840 | 324,328 | | |
| | East | P171009 | P18104 | P17143 | 18 | 24 | 247 | 0.0014 | 840 | 321,464 | | | |
| | | | | | | | Subtotal | 2,048 | | Subtotal | 2,666,053 | Year 4 | |
| 11A | CCTV of Sewers and Condition Assessment Evaluation | | | | | Varies | - | 483,000 | - | 2.0 | 966,000 | | |
| | | | | | | | Subtotal | 483,000 | | Subtotal | 966,000 | Year 4 | 4,594,641 |
| 12 | East | O191028 | O19102 | O19107 | Easement, Archibald Ave to west of Cucamonga Creek | 15 | 18 | 253 | 0.0079 | 720 | 281,890 | | |
| | East | O191016 | O19107 | O19106 | | 18 | 24 | 322 | 0.0016 | 840 | 418,827 | | |
| | East | O191017 | O19106 | O19114 | | 18 | 24 | 186 | 0.0016 | 840 | 241,990 | | |
| | East | O191018 | O19114 | O19113 | | 18 | 24 | 291 | 0.0016 | 840 | 378,882 | | |
| | East | O191006 | O19113 | O18106 | | 18 | 24 | 250 | 0.0016 | 840 | 325,500 | | |
| | East | O181079 | O18106 | O18105 | | 18 | 24 | 387 | 0.0016 | 840 | 503,874 | | |
| | East | O181025 | O18105 | O18103 | | 18 | 24 | 121 | 0.0016 | 840 | 157,542 | | |
| | East | O181012 | O18103 | O18102 | | 18 | 24 | 177 | 0.0016 | 840 | 230,272 | | |
| | East | O181016 | O18102 | O18108 | | 18 | 24 | 310 | 0.0016 | 840 | 403,802 | | |
| | East | O181015 | O18108 | O18118 | 18 | 24 | 311 | 0.0016 | 840 | 404,440 | | | |
| | | | | | | Subtotal | 2,607 | | Subtotal | 3,347,020 | Year 5 | | |
| 13 | West | M161010 | M16105 | M16104 | Acacia St, east of Mildred Ave | 8 | 10 | 322 | 0.0023 | 400 | 199,801 | | |
| | West | M161013 | M16104 | M16108 | Easement, Acacia St to Locust St | 8 | 10 | 296 | 0.0189 | 400 | 183,520 | | |
| | West | M161017 | M16108 | M16109 | | 8 | 10 | 296 | 0.0050 | 400 | 183,520 | | |
| | West | M161016 | M16109 | M16110 | | 8 | 10 | 296 | 0.0050 | 400 | 183,520 | | |
| | West | N161002 | M16110 | N16100 | | 8 | 10 | 296 | 0.0050 | 400 | 183,520 | | |
| | West | N161013 | N16100 | N16103 | Locust St, east of Parco Ave | 8 | 10 | 114 | 0.0050 | 400 | 70,624 | | |
| | West | N161016 | N16103 | N16104 | | 8 | 12 | 90 | 0.0369 | 480 | 66,930 | | |
| | West | N161012 | N16104 | N16105 | | 8 | 12 | 326 | 0.0050 | 480 | 242,544 | | |
| | West | N161011 | N16105 | N16108 | | 8 | 12 | 326 | 0.0050 | 480 | 242,544 | | |
| | West | N161017 | N16108 | N16999 | Parco Ave, Locust St to Francis St | 8 | 12 | 110 | 0.0101 | 480 | 81,881 | | |
| | West | N169999 | N16999 | N16998 | | 8 | 12 | 296 | 0.0050 | 480 | 220,224 | | |
| | West | N169998 | N16998 | N16506 | | 8 | 12 | 62 | 0.0050 | 480 | 46,128 | | |
| | West | N161038 | N16506 | N16112 | | 8 | 12 | 204 | 0.0050 | 480 | 152,022 | | |
| | West | N161037 | N16112 | N16119 | | 8 | 12 | 152 | 0.0050 | 480 | 113,088 | | |
| | | | | | | | Subtotal | 3,187 | | Subtotal | 2,169,866 | Year 5 | 5,516,886 |
| 14 | West | P161009 | P16112 | P16111 | Philadelphia St, Parco Ave to Vineyard Ave | 36 | 42 | 323 | 0.0005 | 1470 | 734,816 | | |
| | West | P161010 | P16111 | P16109 | | 36 | 42 | 330 | 0.0005 | 1470 | 751,905 | | |
| | West | P161011 | P16109 | P16107 | | 36 | 42 | 323 | 0.0005 | 1470 | 735,956 | | |
| | West | P161012 | P16107 | P16105 | | 36 | 42 | 312 | 0.0005 | 1470 | 710,892 | | |
| | West | P161021 | P16105 | P16104 | | 36 | 42 | 340 | 0.0005 | 1470 | 773,551 | | |
| | West | P161022 | P16104 | P16103 | | 36 | 42 | 327 | 0.0005 | 1470 | 743,930 | | |
| | West | P161023 | P16103 | P16102 | | 36 | 42 | 327 | 0.0005 | 1470 | 745,070 | | |
| | West | P171003 | P16102 | P17132 | | 36 | 42 | 326 | 0.0005 | 1470 | 743,611 | | |
| | West | P171015 | P17132 | P17131 | | 36 | 42 | 323 | 0.0005 | 1470 | 736,274 | | |
| | West | P171018 | P17131 | P17130 | | 36 | 42 | 325 | 0.0005 | 1470 | 739,373 | | |
| | West | P171020 | P17130 | P17128 | | 36 | 42 | 330 | 0.0005 | 1470 | 751,905 | | |
| | West | P171021 | P17128 | P17126 | | 36 | 42 | 309 | 0.0006 | 1470 | 703,373 | | |
| | West | P171022 | P17126 | P17115 | 36 | 42 | 5 | 0.2689 | 1470 | 10,253 | | | |
| | | | | | | Subtotal | 3,898 | | Subtotal | 8,880,909 | Year 6 | 8,880,909 | |
| 15 | South | R141017 | R14156 | R14155 | Riverside Dr, Sultana Ave to Campus Ave | 12 | 15 | 321 | 0.0011 | 600 | 298,158 | | |
| | South | R141018 | R14155 | R14154 | | 12 | 15 | 321 | 0.0011 | 600 | 298,167 | | |
| | South | R141019 | R14154 | R14153 | | 12 | 15 | 227 | 0.0016 | 600 | 210,766 | | |
| | South | R141016 | R14153 | R14150 | | 12 | 15 | 320 | 0.0011 | 600 | 297,972 | | |
| | South | R141060 | R14150 | R14148 | | 12 | 15 | 26 | 0.0016 | 600 | 23,901 | | |
| | | | | | | | Subtotal | 1,214 | | Subtotal | 1,128,964 | Year 7 | |
| 16 | South | P161042 | P16122 | P16128 | Easement north of SR-60 Fwy (mobile home park) | 8 | 12 | 326 | 0.0052 | 480 | 242,544 | | |
| | South | P161041 | P16128 | P16134 | | 8 | 12 | 326 | 0.0052 | 480 | 242,544 | | |
| | South | P161040 | P16134 | P16139 | | 8 | 12 | 117 | 0.0040 | 480 | 86,825 | | |
| | | | | | | | Subtotal | 769 | | Subtotal | 571,913 | Year 7 | |

Table 8-1
Capital Improvement Projects

| Project No. | Model | Pipe ID | U/S MH ID | D/S MH ID | Street Location | Existing Pipe Size (in) | Replacement Pipe Size (in) | Length (ft) | Slope | Unit Cost (\$/ft) | Cost (\$) | Schedule | Annual Cost (April 2008 Dollars) |
|-------------|----------|---------|-----------|-----------|---|-------------------------|----------------------------|-------------|----------|-------------------|-----------|----------|----------------------------------|
| 17 | East | J211030 | J21116 | J21117 | Guasti Rd, west of Sequoia Ave | 8 | 12 | 199 | 0.0018 | 480 | 148,190 | | |
| | East | J211036 | J21117 | J21118 | | 8 | 12 | 139 | 0.0055 | 480 | 103,282 | | |
| | East | J211029 | J21118 | J21120 | | 8 | 12 | 340 | 0.0032 | 480 | 252,960 | | |
| | East | J211028 | J21120 | J21122 | Easement east of Haven Ave | 8 | 12 | 135 | 0.0032 | 480 | 100,440 | | |
| | East | J211027 | J21122 | J21123 | | 8 | 12 | 326 | 0.0032 | 480 | 242,544 | | |
| | East | J211017 | J21123 | J21124 | | 8 | 12 | 254 | 0.0032 | 480 | 189,236 | | |
| | East | J211042 | J21124 | J21132 | | 8 | 12 | 67 | 0.0027 | 480 | 50,123 | | |
| | East | J211043 | J21132 | J21128 | | 8 | 12 | 198 | 0.0027 | 480 | 147,416 | | |
| | East | J211019 | J21128 | J21125 | | 8 | 12 | 198 | 0.0027 | 480 | 147,416 | | |
| | East | J211016 | J21125 | J21126 | | 8 | 12 | 326 | 0.0033 | 480 | 242,544 | | |
| East | J211041 | J21126 | J21127 | 8 | | 12 | 158 | 0.0032 | 480 | 117,552 | | | |
| Subtotal | | | | | | | | 2,341 | Subtotal | | 1,741,704 | Year 7 | 3,442,581 |
| 18 | North | I171011 | I17103 | I17104 | Plaza Serena St | 8 | 12 | 153 | 0.0040 | 480 | 114,152 | | |
| | Subtotal | | | | | | | | 153 | Subtotal | | 114,152 | Year 8 |
| 19 | West | O171057 | O17142 | O17152 | Vineyard Ave, south of | 8 | 10 | 347 | 0.0033 | 400 | 215,004 | | |
| | West | O171047 | O17152 | O17153 | Cedar St | 8 | 10 | 95 | 0.0444 | 400 | 58,900 | | |
| Subtotal | | | | | | | | 442 | Subtotal | | 273,904 | Year 8 | |
| 20 | North | J171006 | J17103 | J17105 | D St, Corona Ave to | 8 | 12 | 361 | 0.0060 | 480 | 268,324 | | |
| | North | J171007 | J17105 | J17104 | Vineyard Ave | 8 | 12 | 361 | 0.0060 | 480 | 268,324 | | |
| Subtotal | | | | | | | | 721 | Subtotal | | 536,647 | Year 8 | |
| 21 | North | J161027 | J16135 | J16137 | Holt Blvd, west of Imperial | 10 | 15 | 330 | 0.0026 | 600 | 306,435 | | |
| | North | J161047 | J16137 | J16133 | Ave | 10 | 15 | 303 | 0.0026 | 600 | 281,790 | | |
| Subtotal | | | | | | | | 633 | Subtotal | | 588,225 | Year 8 | |
| 22 | West | M111010 | M11121 | M11169 | Palmetto Ave, south of | 8 | 10 | 382 | 0.0100 | 400 | 236,871 | | |
| | West | M111092 | M11169 | M11144 | Phillips St | 8 | 10 | 34 | 0.0101 | 400 | 21,340 | | |
| Subtotal | | | | | | | | 416 | Subtotal | | 258,211 | Year 8 | |
| 23 | West | J101031 | J10122 | J10140 | Benson Ave, Hollowell St to Vesta St | 12 | 15 | 478 | 0.0046 | 600 | 444,075 | | |
| | Subtotal | | | | | | | | 478 | Subtotal | | 444,075 | Year 8 |
| 24 | South | R181059 | R18121 | R18120 | Riverside Dr, Colonial Ave to east of Whispering Lakes Ln | 10 | 12 | 186 | 0.0033 | 480 | 138,384 | | |
| | South | R181040 | R18120 | R18118 | | 10 | 12 | 326 | 0.0032 | 480 | 242,544 | | |
| | South | R181038 | R18116 | R18115 | | 10 | 12 | 282 | 0.0032 | 480 | 209,808 | | |
| | South | R181036 | R18115 | R18109 | | 10 | 12 | 288 | 0.0032 | 480 | 214,272 | | |
| | South | R181014 | R18109 | R18112 | | 10 | 12 | 254 | 0.0032 | 480 | 188,976 | | |
| | South | R181015 | R18112 | R18111 | | 10 | 12 | 246 | 0.0032 | 480 | 183,024 | | |
| | South | R181027 | R18111 | R18114 | 10 | 12 | 346 | 0.0032 | 480 | 257,052 | | | |
| Subtotal | | | | | | | | 1,928 | Subtotal | | 1,434,060 | Year 8 | 3,649,274 |
| 25 | West | O111052 | O11119 | O11118 | Easement, Palmetto Ave to Cypress Ave | 24 | 27 | 326 | 0.0011 | 945 | 477,333 | | |
| | West | O111001 | O11118 | O12133 | | 24 | 27 | 326 | 0.0011 | 945 | 477,435 | | |
| | West | O121005 | O12133 | O12132 | | 24 | 27 | 327 | 0.0011 | 945 | 478,607 | | |
| | West | O121010 | O12132 | O12131 | | 24 | 27 | 325 | 0.0011 | 945 | 475,531 | | |
| Subtotal | | | | | | | | 1,303 | Subtotal | | 1,908,906 | Year 9 | |
| 26 | West | N151027 | N15118 | N15125 | Cucamonga Ave, north of | 8 | 12 | 264 | 0.0064 | 480 | 196,416 | | |
| | West | N151028 | N15125 | N15142 | Francis St | 8 | 12 | 58 | 0.1012 | 480 | 42,780 | | |
| Subtotal | | | | | | | | 322 | Subtotal | | 239,196 | Year 9 | |
| 27 | West | N151053 | N15102 | N15107 | Grove Ave, Locust St to | 8 | 10 | 469 | 0.0065 | 400 | 290,861 | | |
| | West | N151051 | N15107 | N15116 | Maple St | 8 | 10 | 458 | 0.0064 | 400 | 283,681 | | |
| Subtotal | | | | | | | | 927 | Subtotal | | 574,542 | Year 9 | |
| 28 | North | J131019 | J13112 | J13124 | Cherry Ave, north of Holt Blvd | 8 | 10 | 441 | 0.0157 | 400 | 273,420 | | |
| | North | J131020 | J13124 | J13136 | | 8 | 10 | 261 | 0.0160 | 400 | 161,510 | | |
| | North | J131018 | J13136 | J13138 | | 8 | 10 | 181 | 0.0160 | 400 | 111,910 | | |
| Subtotal | | | | | | | | 882 | Subtotal | | 546,840 | Year 9 | |
| 29 | South | Q161057 | Q16132 | Q16153 | Parco Ave, north of Walnut St | 8 | 12 | 326 | 0.0068 | 480 | 242,544 | | |
| | Subtotal | | | | | | | | 326 | Subtotal | | 242,544 | Year 9 |
| 30 | North | F151047 | F15143 | F15144 | Sixth St, Virginia Ave to | 8 | 10 | 229 | 0.0041 | 400 | 141,670 | | |
| | North | F151048 | F15144 | F15145 | Grove Ave | 8 | 10 | 254 | 0.0041 | 400 | 157,449 | | |
| Subtotal | | | | | | | | 482 | Subtotal | | 299,119 | Year 9 | |
| 31 | North | H131016 | H13155 | H13165 | Easement west of Sultana Ave, I St to H St | 8 | 10 | 338 | 0.0070 | 400 | 209,746 | | |
| | North | H131002 | H13165 | I13101 | | 8 | 10 | 324 | 0.0070 | 400 | 200,880 | | |
| | North | I131017 | I13101 | I13106 | | 8 | 10 | 324 | 0.0070 | 400 | 200,880 | | |
| Subtotal | | | | | | | | 986 | Subtotal | | 611,506 | Year 9 | |
| 32 | South | R211149 | R21220 | R21219 | Riverside Dr, west of Mill | 10 | 12 | 296 | 0.0032 | 480 | 220,224 | | |
| | South | R211148 | R21219 | R21218 | Creek Rd | 10 | 12 | 294 | 0.0032 | 480 | 218,758 | | |
| Subtotal | | | | | | | | 590 | Subtotal | | 438,982 | Year 9 | 4,861,635 |

Project No. 2 (Stoneridge Ct, Mountain Avenue, Brooks Street, Easement to Cypress Avenue)

Project No. 2 will replace 3,611 feet of pipe, extending from Manhole J11155 in Stoneridge Court to Manhole K12125 in Cypress Avenue. The system hydraulic model showed existing depth to diameter ratios exceeding the criteria up to full flow. This was confirmed through flow monitoring.

The estimated cost for Project No. 2 is \$3,963,700.

Project No. 3 (Easement between Boulder Avenue and San Antonio Avenue, north and south of Hollowell Street)

Project No. 3 encompasses two sections of pipe in an easement located between Boulder Avenue and San Antonio Avenue. There is about 316 feet of 8-inch pipe located north and south of Hollowell Street that was shown to surcharge in the hydraulic model and flow monitoring data. It is recommended to replace the sewers with 15-inch pipe.

The estimated cost for Project No. 3 is \$294,300.

Project No. 4 (Easement between Allyn Avenue and Virginia Avenue, from Elma St to Holt Boulevard)

Project No. 4 includes 1,314 feet of pipe from Manhole J15122 to Manhole J15155, located on Holt Boulevard east of Bon View Avenue. Flow monitoring data showed peak depth to diameter ratios from 0.70 to 0.76. It is recommended to replace the existing 8-inch pipe with 12-inch pipe.

The estimated cost for Project No. 4 is \$977,300.

Project No. 5 (Easement between Vine Avenue and Euclid Avenue, Fourth St to Fern Avenue)

Project No. 5 is located in an easement between Vine Avenue and Euclid Avenue. The existing 8-inch sewer starts at Manhole H13114 in Fourth Street and continues south past G Street before turning west to Manhole I13145 in Fern Avenue. Flow monitoring data showed peak depth to diameter ratios up to 0.60. The system hydraulic model showed existing depth to diameter ratios from 0.63 to full. The total length of pipe is approximately 3,298 feet. It is recommended to replace this sewer with 12-inch pipe.

The estimated cost for Project No. 5 is \$2,453,800.

Project No. 6 (Cherry Avenue north of G Street)

Project No. 7 is 162 feet of 8-inch sewer located in Cherry Avenue, north of G Street (Manhole I13124 to Manhole I13129). The existing hydraulic model showed this sewer to be surcharged. The deficiency should be verified through flow monitoring. The recommended replacement size is 12-inches.

The estimated cost for Project No. 6 is \$128,000.

Project No. 7 (Campus Avenue, D Street to Holt Boulevard)

Project No. 7 is located at Campus Avenue from D Street to Holt Boulevard (Manhole J14104 to Manhole 14186). The existing hydraulic model showed depth to diameter ratios of 0.63 to full. The total length of the project is about 1,462 feet and the recommended replacement size is 12-inches.

The estimated cost for Project No. 7 is \$1,088,000.

Project No. 8 (I Street and Benson Avenue)

Project No. 8 begins at the intersection of I Street and Elderberry Avenue (Manhole H11149) and continues west to Benson Avenue (Manhole H10135) and then south to G Street (Manhole I10112). The hydraulic model showed this sewer to surcharge under ultimate conditions. The total length of the project is approximately 3,127 feet. The recommended replacement pipe size is 12-inches.

The estimated cost for Project No. 8 is \$2,341,100.

Project No. 9 (Bonview Avenue north of Francis Street)

Project No. 9 includes 636 feet of sewer in Bonview Avenue north of Francis Street (Manhole N14135 to Manhole N14159). The hydraulic model showed this sewer to surcharge under ultimate conditions. The recommended replacement pipe size is 12-inches.

The estimated cost for Project No. 9 is \$472,800.

Project No. 10 (Virginia Avenue, D Street to Nocta Street)

Project No. 10 includes 658 feet of sewer in Virginia Avenue from D Street to Nocta Street (Manhole J15114 to Manhole J15137). The hydraulic model showed this sewer to surcharge under ultimate conditions. The recommended replacement pipe size is 12-inches.

The estimated cost for Project No. 10 is \$489,800.

Project No. 11 (Hellman Avenue and Philadelphia Street)

Project No. 11 is 2,048 feet of sewer located in Hellman Avenue and Philadelphia Street (Manhole O18148 to Manhole P17143). The hydraulic model showed these sewers to surcharge under ultimate conditions. The recommended replacement pipe size is 24-inches.

The estimated cost for Project No. 11 is \$2,666,000.

It should be noted that the City currently has on-going construction of new developments in the area tributary to this project location.

Project No. 12 (Archibald Avenue, Easement to and on the west side of Cucamonga Creek)

Project No. 12 includes 2,607 feet of sewer in Archibald Avenue and an easement from Archibald Avenue to the west side of Cucamonga Creek (Manhole O19102 to O18118). The hydraulic model showed these sewers to surcharge under ultimate conditions. The recommended replacement pipe size is 24-inches.

The estimated cost for Project No. 12 is \$3,347,000.

It should be noted that the City currently has on-going construction of new developments in the area tributary to this project location.

Project No. 13 (Acacia Street, Easement to Locust Street, Locust Street, Parco Avenue)

Project No. 13 is located in Acacia Street, an easement, Locust Street, and Parco Avenue (Manhole M16105 to Manhole N16119). The hydraulic model showed depth to diameter ratios ranging from 0.65 to full under ultimate conditions. The replacement sewer includes 1,620 feet of 10-inch pipe and 1,567 feet of 12-inch pipe.

The estimated cost for Project No. 13 is \$2,169,900.

Project No. 14 (Philadelphia Street, Parco Avenue to Vineyard Avenue)

Project No. 14 is 3,898 feet of sewer located in Philadelphia Street from Parco Avenue to Vineyard Avenue (Manhole P16112 to Manhole P17115). The hydraulic model showed depth to diameter ratios ranging from 0.72 to 0.76 under ultimate conditions. The recommended replacement pipe size is 42-inches.

The estimated cost for Project No. 14 is \$8,880,900.

Project No. 15 (Riverside Drive, Sultana Avenue to Campus Avenue)

Project No. 15 is 1,214 feet of sewer located in Riverside Drive from Sultana Avenue to Campus Avenue (Manhole R14156 to Manhole R14148). The hydraulic model showed depth to diameter ratios ranging from 0.69 to full under ultimate conditions. The recommended replacement pipe size is 15-inches.

The estimated cost for Project No. 15 is \$1,129,000.

Project No. 16 (Easement north of SR-60, Mobile Home Park)

Project No. 16 is 769 feet of sewer located in an easement north of SR-60 (Manhole P16122 to Manhole P16139). The sewer is located on the property of a mobile home park community. The hydraulic model showed depth to diameter ratios ranging from 0.74 to full under ultimate conditions. The recommended replacement pipe size is 12-inches.

The estimated cost for Project No. 16 is \$571,900.

Project No. 17 (Guasti Road and Easement east of Haven Avenue)

Project No. 17 is 2,341 feet of sewer located in Guasti Road and an easement east of Haven Avenue (Manhole J21116 to Manhole J21127). The hydraulic model showed depth to diameter ratios ranging from 0.73 to 0.80 under ultimate conditions. The recommended replacement pipe size is 12-inches.

The estimated cost for Project No. 17 is \$1,741,700.

Project No. 18 (Plaza Serena Street, Granada Court to Vineyard Avenue)

Project No. 18 is 153 feet of sewer located in Plaza Serena Street from Granada Court to Vineyard Avenue (Manhole I17103 to Manhole I17104). The hydraulic model showed a depth to diameter ratio of 0.80 under ultimate conditions. The recommended replacement pipe size is 12-inches.

The estimated cost for Project No. 18 is \$114,200.

Project No. 19 (Vineyard Avenue south of Cedar Street)

Project No. 19 is 442 feet of sewer located in Vineyard Avenue south of Cedar Street (Manhole O17142 to Manhole O17153). The hydraulic model showed a depth to diameter ratio of 0.77 under ultimate conditions. The recommended replacement pipe size is 10-inches.

The estimated cost for Project No. 19 is \$273,900.

Project No. 20 (D Street, Corona Avenue to Vineyard Avenue)

Project No. 20 is 721 feet of sewer located in D Street from Corona Avenue to Vineyard Avenue (Manhole J17103 to Manhole J17104). The hydraulic model showed depth to diameter ratios of 0.75 under ultimate conditions. The recommended replacement pipe size is 12-inches.

The estimated cost for Project No. 20 is \$536,600.

Project No. 21 (Holt Boulevard, west of Imperial Avenue)

Project No. 21 is 633 feet of sewer located in Holt Boulevard west of Imperial Avenue (Manhole J16135 to Manhole J16133). The hydraulic model showed depth to diameter ratios of 0.71 to 0.72 under ultimate conditions. The recommended replacement pipe size is 15-inches.

The estimated cost for Project No. 21 is \$588,200.

Project No. 22 (Palmetto Avenue south of Phillips Street)

Project No. 22 is 416 feet of sewer located in Palmetto Avenue south of Phillips Street (Manhole M11121 to Manhole M11144). The hydraulic model showed depth to diameter ratio of 0.70 to 0.71 under ultimate conditions. The recommended replacement pipe size is 10-inches.

The estimated cost for Project No. 22 is \$258,200.

Project No. 23 (Benson Avenue, north of Hollowell Street to south of Vesta Street)

Project No. 23 is 478 feet of sewer located in Benson Avenue (Manhole J10122 to Manhole J10140). The hydraulic model showed a depth to diameter ratio of 0.70 under ultimate conditions. The recommended replacement pipe size is 15-inches.

The estimated cost for Project No. 23 is \$444,100.

Project No. 24 (Riverside Drive, Colonial Avenue to east of Whispering Lakes Lane)

Project No. 24 is 1,928 feet of sewer located in Riverside Drive from Colonial Avenue to just east of Whispering Lakes Lane (Manhole R18121 to Manhole R18114). The hydraulic model showed depth to diameter ratios of 0.68 under ultimate conditions. The recommended replacement pipe size is 12-inches.

The estimated cost for Project No. 24 is \$1,434,100.

Project No. 25 (Easement, Palmetto Avenue to Cypress Avenue)

Project No. 25 is 1,303 feet of sewer located an easement between Palmetto Avenue and Cypress Avenue (Manhole O11119 to Manhole O12131). The hydraulic model showed depth to diameter ratios of 0.66 to 0.68 under ultimate conditions. The recommended replacement pipe size is 27-inches.

The estimated cost for Project No. 25 is \$1,908,900.

Project No. 26 (Cucamonga Avenue, north of Francis Street)

Project No. 26 is 322 feet of sewer located in Cucamonga Avenue north of Francis Street (Manhole N15118 to Manhole N15142). The hydraulic model showed depth to diameter ratios of 0.68 under ultimate conditions. The recommended replacement pipe size is 12-inches.

The estimated cost for Project No. 26 is \$239,200.

Project No. 27 (Grove Avenue, Locust Street to Maple Street)

Project No. 27 is 927 feet of sewer located in Grove Avenue from Locust Street to Maple Street (Manhole N15102 to Manhole N15116). The hydraulic model showed depth to diameter ratios of 0.66 to 0.72 under ultimate conditions. The recommended replacement pipe size is 10-inches.

The estimated cost for Project No. 27 is \$574,500.

Project No. 28 (Cherry Avenue north of Holt Boulevard)

Project No. 28 is 882 feet of sewer located in Cherry Avenue north of Holt Boulevard (Manhole J13112 to Manhole J13138). The hydraulic model showed depth to diameter ratios of 0.66 to 0.68 under ultimate conditions. The recommended replacement pipe size is 10-inches.

The estimated cost for Project No. 28 is \$546,800.

Project No. 29 (Parco Avenue north of Walnut Street)

Project No. 29 is 326 feet of sewer located in Parco Avenue north of Walnut Street (Manhole Q16132 to Manhole Q16153). The hydraulic model showed depth to diameter ratio of 0.68 under ultimate conditions. The recommended replacement pipe size is 12-inches.

The estimated cost for Project No. 29 is \$242,500.

Project No. 30 (Sixth Street, Virginia Avenue to Grove Avenue)

Project No. 30 is 482 feet of sewer located Sixth Street from Virginia Avenue to Grove Avenue (Manhole F15143 to Manhole F15145). The hydraulic model showed depth to diameter ratios of 0.67 to 0.68 under ultimate conditions. The recommended replacement pipe size is 10-inches.

The estimated cost for Project No. 30 is \$299,100.

Project No. 31 (Easement west of Sultana Avenue, I Street to H Street)

Project No. 31 is 986 feet of sewer located in an easement west of Sultana Avenue, from I Street to H Street (Manhole H13155 to Manhole I13106). The hydraulic model showed depth to diameter ratios of 0.67 under ultimate conditions. The recommended replacement pipe size is 10-inches.

The estimated cost for Project No. 31 is \$611,500.

Project No. 32 (Riverside Drive, west of Mill Creek Road)

Project No. 32 is 590 feet of sewer located in Riverside Drive west of Mill Creek Road (Manhole R21220 to Manhole R21218). The hydraulic model showed depth to diameter ratios of 0.67 under ultimate conditions. The recommended replacement pipe size is 12-inches.

The estimated cost for Project No. 32 is \$440,000.