

Section 5

Recommended Capital Improvement Program

This section presents the recommended Capital Improvement Program (CIP) for the DSRSD wastewater collection system, along with estimated project costs and proposed schedule for construction. Also included is the allocation of project costs to existing and future users. More detailed discussion of the development of the recommended collection system CIP is presented in TM 7 – Capital Improvement Program, included in the separately bound appendices to this report.

CAPITAL IMPROVEMENT PROJECTS AND COSTS

The recommended capacity improvement projects for the DSRSD wastewater collection system were described in Section 4. Preliminary opinions of probable construction costs were prepared for each of the proposed sewer improvement projects. The costs are based on unit construction costs from similar recent Bay Area sewer projects and cost criteria used by MWH for other collection system master planning studies. Unit costs include materials, labor and equipment for installation, and contractor's overhead and profit. In some cases, additional allowances have been included for special construction conditions such as extra traffic control or nighttime work. Allowances of 5 percent for mobilization and demobilization and 30 percent for contingencies due to unknown conditions were added to the baseline construction cost estimates to develop the total estimated construction costs. Estimated capital costs include an additional allowance of 25 percent for engineering design, construction inspection and administration, legal, and other administrative costs.

The estimates presented in this report represent current (2005) costs for the San Francisco Bay Area, as represented by an Engineering News Record Construction Cost Index (ENR CCI) of approximately 8230. All costs should be considered budget level planning estimates with an estimated accuracy of -30 to +50 percent. This level of accuracy is considered appropriate for CIP planning and represents an "order of magnitude" cost estimate as defined by the Association of Cost Estimating Engineers. However, all costs should be reviewed and updated based on more detailed information developed during design.

Table 5-1 presents the estimated construction and capital costs for the recommended sewer improvement projects. More detailed breakdowns of the estimated cost for each project are presented in the project description and cost estimate sheets in **Appendix B**. The total estimated capital cost of the recommended sewer improvement projects is approximately \$10.6 million.

ALLOCATION OF PROJECT COSTS

In the District's CIP, the costs of capital improvement projects are assigned to Local Sewer Replacement (Fund 210) and/or Local Sewer Expansion (Fund 220). The Replacement fund represents the costs that are allocated to existing users (generally through sewer rates), and the Expansion fund represents the costs allocated to future users (generally through connection fees). Projects that involve repair or replacement of an existing asset but no increase in capacity are

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considered to be Replacement projects. Projects that involve an increase in capacity are allocated to Replacement or Expansion based on the relative proportion of the 20-year storm design flow contributed by existing versus future users, respectively. **Table 5-2** presents the estimated cost allocations for the recommended sewer improvement projects, followed by a discussion of the basis for the proposed allocation for each project.

**TABLE 5-1
ESTIMATED SEWER IMPROVEMENT PROJECT COSTS**

| Project ID | Project Name | Estimated Cost (\$) | |
|------------|---|---------------------|-------------------|
| | | Construction | Capital |
| 1A | Dublin Blvd. West Relief Sewer (a) | 1,110,000 | 1,388,000 |
| 1B | Dublin Blvd. West Relief Sewer Extension | 351,000 | 439,000 |
| 2 | Dublin Blvd. East Relief Sewer | 319,000 | 399,000 |
| 3 | Dublin Blvd. Lift Station Expansion | 112,000 | 140,000 |
| 4 | Donahue Dr./Vomac Rd. Relief Sewer | 713,000 | 892,000 |
| 5 | Dublin Trunk Relief Sewer | 3,016,000 | 3,770,000 |
| 6 | Eastern Dublin Trunk Extension | 584,000 | 729,000 |
| 7 | Alamo Creek/I-580 Crossing Sewer Replacement | 2,046,000 | 2,588,000 |
| 8 | Orchard Supply Hardware Sewer Replacement (b) | 220,000 | 253,000 |
| | Total | 8,471,000 | 10,598,000 |

- (a) Alternative Project 1A Alt is estimated to be approximately the same cost.
 (b) Cost based on estimate developed by Winzler & Kelly for 90 percent design in November 2002, adjusted to current costs based on ENR CCI.

**TABLE 5-2
ALLOCATION OF PROJECT COSTS**

| Project ID | Project Name | Cost Allocation | |
|------------|--|-----------------|--------|
| | | Existing | Future |
| 1A | Dublin Blvd. West Relief Sewer | 20% | 80% |
| 1B | Dublin Blvd. West Relief Sewer Extension | -- | 100% |
| 2 | Dublin Blvd. East Relief Sewer | 21% | 79% |
| 3 | Dublin Blvd. Lift Station Expansion | 42% | 58% |
| 4 | Donahue Dr./Vomac Rd. Relief Sewer | 100% | -- |
| 5 | Dublin Trunk Relief Sewer | -- | 100% |
| 6 | Eastern Dublin Trunk Extension | -- | 100% |
| 7 | Alamo Creek/I-580 Crossing Sewer Replacement | 100% | -- |
| 8 | Orchard Supply Hardware Sewer Replacement | 68% | 32% |

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Project 1A - Dublin Boulevard West Relief Sewer. The required increase in capacity for this sewer ranges from about 0.3 to 0.4 mgd. Future development would add approximately 0.25 mgd. The proportion of the additional required capacity allocated for future development is approximately 80 percent, with the remaining 20 percent allocated to existing users to relieve the capacity deficiencies under predicted current 20-year design storm conditions.

Project 1B – Dublin Boulevard West Relief Sewer Extension. Hydraulic modeling shows that the existing 10-inch pipe has adequate capacity to handle existing design storm peak flows. Therefore, the entire cost of this project should be allocated to future users.

Project 2 – Dublin Boulevard East Relief Sewer. The required increase in capacity for this sewer is approximately 0.14 mgd, of which 0.11 mgd (79 percent) is attributed to future development and 0.3 mgd (21 percent) to existing users.

Project 3 – Dublin Boulevard Lift Station Expansion. The required capacity expansion is 0.12 mgd (from 0.32 to 0.44 mgd). Of this, 0.07 mgd (58 percent) is attributed to future development and 0.05 mgd (42 percent) to existing users.

Project 4 – Donahue Drive/Vomac Road Relief Sewer. The increase in capacity for these sewers is needed because of high infiltration/inflow (I/I) into the existing sewer system in the upstream tributary area. Very little, if any, additional infill development is anticipated in this area. Therefore, the entire project cost should be allocated to existing users.

Project 5 – Dublin Trunk Relief Sewer. While the capacity of the existing 42-inch trunk sewer varies due to varying slope, the overall capacity is approximately 19.5 mgd, which is adequate to handle the existing 20-year design storm peak wet weather flow of 17.4 mgd. Therefore, the required relief sewer is needed for future development only, and as such, the entire cost should be allocated to future users.

Project 6 – Eastern Dublin Trunk Sewer Extension. This project is required for future growth in Eastern Dublin; therefore, the entire cost is allocated to future users.

Project 7 – Alamo Creek and I-580 Crossing Sewer Replacement. This project is needed to replace the existing trunk sewer for reasons of structural integrity and operational reliability. The existing sewer has sufficient capacity to handle projected future design flows. Therefore, this project is considered a Replacement project and is allocated to existing users only.

Project 8 – Orchard Supply Hardware Sewer Replacement. The existing sewer requires replacement due to structural and maintenance problems, but will also need to handle flows from anticipated future high density and mixed use development near the future West Dublin BART station. Since this sewer is not considered a trunk system facility and was therefore not included in the hydraulic model, the percentages of existing and future flows were estimated based on the flow from the subbasin (DW2) in which it is located. The relative proportions of existing and future flows for this subbasin are 68 percent and 32 percent, respectively, which form the basis of the proposed project cost allocation.

PROJECT PRIORITIES AND SCHEDULE

The proposed schedule for the recommended collection system capital improvement projects is presented in **Table 5-3**. Capacity improvement projects have been prioritized based on the degree of existing capacity deficiencies, severity of potential surcharge under a 20-year design storm peak flow condition, and the timing of future development and need for increased system capacity. The proposed schedule for implementation of the capacity improvement projects, as well as the other non-capacity-related sewer improvement projects, also reflects input from District staff on anticipated need and potential coordination with City of Dublin road improvement work. Note that for completeness, the table also shows the Parks RFTA Wastewater Utility Improvements Program, which has been ongoing for the past five years.

**TABLE 5-3
PROPOSED SCHEDULE FOR COLLECTION SYSTEM
CAPITAL IMPROVEMENT PROJECTS**

| Project ID | Project Name | Begin Planning/Design | Complete Construction |
|-------------------|--|------------------------------|------------------------------|
| 1A | Dublin Blvd. West Relief Sewer | FY 2004/05 | FY 2006/07 |
| 1B | Dublin Blvd. West Relief Sewer Extension | FY 2004/05 | FY 2006/07 |
| 2 | Dublin Blvd. East Relief Sewer | FY 2006/07 | FY 2007/08 |
| 3 | Dublin Blvd. Lift Station Expansion | FY 2005/06 | FY 2005/06 |
| 4 | Donahue Dr./Vomac Rd. Relief Sewer (a) | FY 2005/06 | FY 2007/08 |
| 5 | Dublin Trunk Relief Sewer | FY 2008/09 | FY 2009/10 |
| 6 | Eastern Dublin Trunk Extension | FY 2005/06 | FY 2006/07 |
| 7 | Alamo Creek/I-580 Crossing Sewer Replacement | FY 2004/05 | FY 2006/07 |
| 8 | Orchard Supply Hardware Sewer Replacement | (b) | (b) |
| -- | Parks RFTA Wastewater Utility Improvements Program | ongoing | FY 2008/09 |

- (a) Project planning should include flow monitoring and I/I source detection field work to confirm project need and assess potential for I/I reduction.
- (b) Project is anticipated to be initiated in conjunction with new developments in vicinity of future West Dublin BART station.

IMPLEMENTATION RECOMMENDATIONS

The District should begin implementation of the Capital Improvement Program recommended in this Wastewater Collection System Master Plan Update, starting with the highest priority projects. The following items should be considered in project scheduling and design, and in future updates of the Master Plan.

- The alignments and sizes of all recommended projects should be verified with detailed predesign analyses, including topographic surveys, geotechnical investigations, utility research, and constructability reviews.
- The decision to parallel or replace existing sewers should consider the physical condition and remaining useful life of the existing pipelines; the availability of pipeline corridors for new sewer construction; and operation and maintenance concerns.
- The hydraulic model has been developed to assist the District in performing local capacity analyses and updating the Master Plan in the future. The model should be kept up-to-date with any changes to existing sewer connections, development plans, and sewer system facilities.
- The District should continue to monitor flows at key locations in the sewer system, particularly the Dublin and Camp Parks Trunk Sewers. Flow levels during large storm events should be compared to the peak flows simulated by the hydraulic model to verify the modeling predictions for the 20-year design storm.
- Additional field investigations, including wet weather flow monitoring, smoke testing, and manhole and pipeline television inspection should be conducted in the portion of the system tributary to Flow Meter 10 to confirm the need for the Donahue Drive/Vomac Road relief sewer project and/or identify potential opportunities for I/I reduction in this area.

This Wastewater Collection System Master Plan Update report is intended to be a working document to be refined and updated as additional data and new planning information becomes available. The Master Plan should be updated whenever there are major changes in planning assumptions or, at a minimum, every five years.